UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)
[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2016
OR

[ ] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from ______ to _______

Commission file number 1-5684

W.W. Grainger, Inc.

(Exact name of registrant as specified in its charter)

Illinois	**36-1150280**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
100 Grainger Parkway, Lake Forest, Illinois	**60045-5201**
(Address of principal executive offices)	(Zip Code)

(847) 535-1000
(Registrant's telephone number including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Name of each exchange on which registered**
Common Stock $0.50 par value	New York Stock Exchange

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes [X] No [ ]

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes [ ] No [X]

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes [X] No [ ]

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes [X] No [ ]

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. [ ]

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer [X] Accelerated filer [ ] Non-accelerated filer [ ] Smaller reporting company [ ]

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes [ ] No [X]

The aggregate market value of the voting common equity held by nonaffiliates of the registrant was $12,999,003,606 as of the close of trading as reported on the New York Stock Exchange on June 30, 2016. The Company does not have nonvoting common equity.

The registrant had 58,837,353 shares of the Company's Common Stock outstanding as of January 31, 2017.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the proxy statement relating to the annual meeting of shareholders of the registrant to be held on April 26, 2017, are incorporated by reference into Part III hereof.

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PART I

Item 1: Business

The Company

W.W. Grainger, Inc., incorporated in the State of Illinois in 1928, is a broad line distributor of maintenance, repair and operating (MRO) supplies and other related products and services used by businesses and institutions primarily in the United States (U.S.) and Canada, with a presence also in Europe, Asia and Latin America. In this report, the words "Grainger" or "Company" mean W.W. Grainger, Inc. and its subsidiaries.

Grainger uses a combination of multichannel and single channel online business models to provide customers with a range of options for finding and purchasing MRO products, utilizing sales representatives, contact centers, direct marketing materials, catalogs and eCommerce technology. Grainger serves approximately 3 million customers worldwide through a network of highly integrated distribution centers, websites and branches.

Products are regularly added to and deleted from Grainger's product lines on the basis of customer demand, market research, recommendations of suppliers, sales volumes and other factors.

Grainger's centralized business support functions provide coordination and guidance in the areas of accounting and finance, strategy and business development, communications and investor relations, compensation and benefits, information systems, health and safety, global supply chain functions, human resources, risk management, internal audit, legal, real estate, security, tax and treasury. These services are provided in varying degrees to all business units.

Grainger's two reportable segments are the U.S. and Canada, and they are described further below. Other businesses include Zoro Tools, Inc. (Zoro), the single channel online business in the U.S., MonotaRO Co. (MonotaRO) in Japan and operations in Europe, Asia and Latin America. These businesses generate revenue through the distribution of MRO supplies and products and provide related services. For segment and geographical information and consolidated net sales and operating earnings, see "Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations" and Note 16 to the Consolidated Financial Statements.

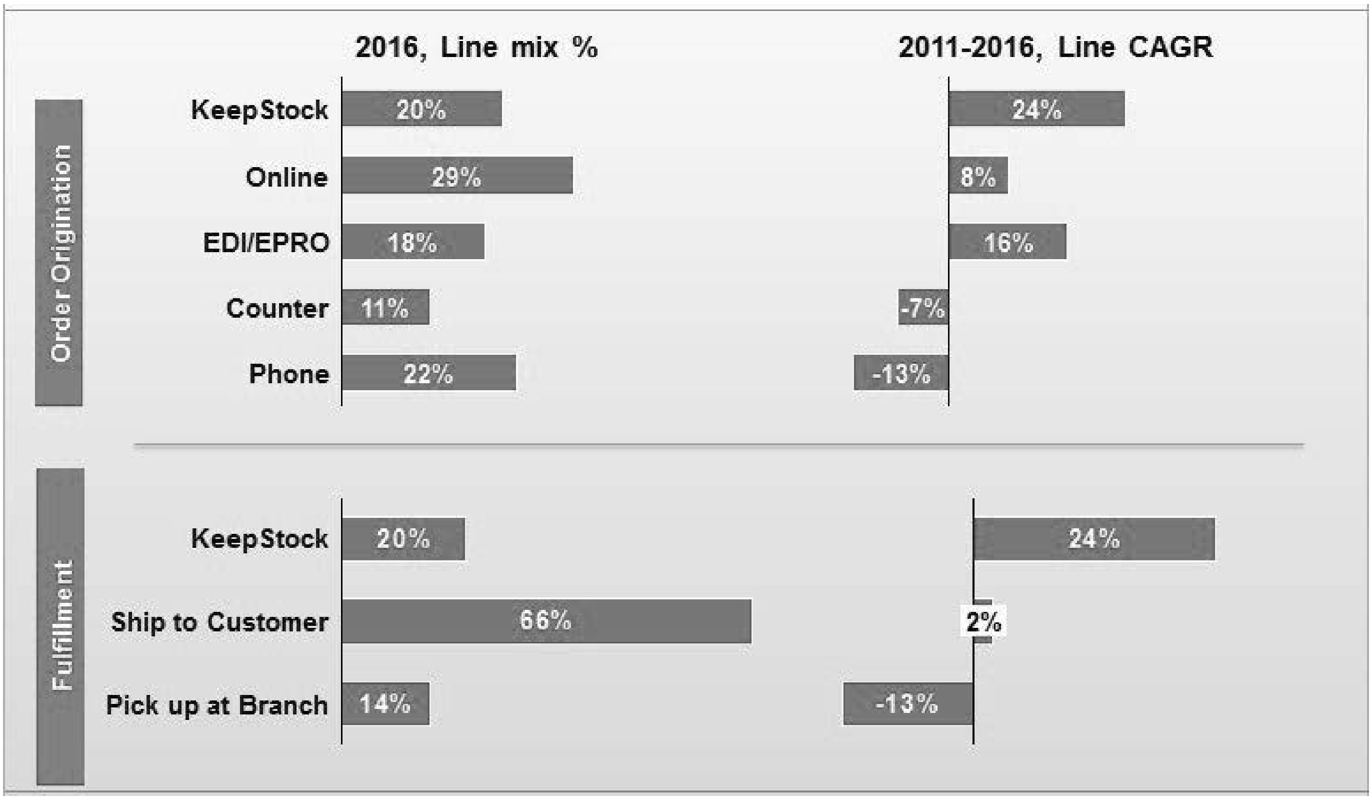
United States

The U.S. business offers a broad selection of MRO supplies and other related products and services through sales representatives, catalogs, eCommerce and local branches. A combination of product breadth, local availability, speed of delivery, detailed product information and competitively priced products and services is provided by this business. Products offered include material handling equipment, safety and security supplies, lighting and electrical products, power and hand tools, pumps and plumbing supplies, cleaning and maintenance supplies, building and home inspection supplies, vehicle and fleet components and many other items primarily focused on the facilities maintenance market. Services offered primarily relate to inventory management solutions. In 2016, service fee revenue represented less than 1% of sales.

The majority of products sold by the U.S. business are nationally branded products. In addition, 22% of 2016 sales were private label items bearing Grainger's registered trademarks, such as DAYTON® motors, power transmission, HVAC and material handling equipment, SPEEDAIRE® air compressors, AIR HANDLER® air filtration equipment, TOUGH GUY® cleaning products, WESTWARD® tools, CONDOR® safety products and LUMAPRO® lighting products. Grainger has taken steps to protect these trademarks against infringement and believes that they will remain available for future use in its business. The U.S. business purchases products for sale from more than 2,600 suppliers, most of which are manufacturers. Through a global sourcing operation, the business procures competitively priced, high-quality products produced outside the U.S. from approximately 400 suppliers. Grainger sells these items primarily under the private label brands listed above. No single supplier comprised more than 5% of total purchases and no significant difficulty has been encountered with respect to sources of supply.

The U.S. business operates and fulfills orders in all 50 states through a network of distribution centers (DCs), branches and contact centers. Customers range from small and medium-sized businesses to large corporations, government entities and other institutions. They are primarily represented by purchasing managers or workers in facilities maintenance departments and service shops across a wide range of industries such as manufacturing, hospitality, transportation, government, retail, healthcare and education. Sales in 2016 were made to approximately 1.1 million customers averaging 111,000 daily transactions. Approximately 79% of sales are concentrated with large customers and no single customer accounted for more than 3% of total sales.

Macro trends are changing the way Grainger's customers behave. Customers want highly tailored solutions with real-time access to information and just-in-time delivery of products and services. Demands for transparency are also increasing as access to information expands. These changes in behaviors are reflected in how customers do business with Grainger as demonstrated in the following chart:



Customers continue to migrate to online and electronic purchasing platforms such as EDI and eProcurement. Through Grainger.com and other branded websites, which serve as prominent channels in the U.S. business, customers have access to approximately 1.9 million products. Grainger.com provides real-time price and product availability and detailed product information and offers advanced features such as product search and compare capabilities. For customers with sophisticated electronic purchasing platforms, the U.S. business utilizes technology that allows these systems to communicate directly with Grainger.com. eCommerce revenues in the U.S. were $3.7 billion in 2016, an increase of 12% versus 2015, and represented 46% of total revenues.

Inventory management services is another area where the U.S. business helps customers be more productive. KeepStock® inventory solutions is a comprehensive program that includes vendor-managed inventory, customer-managed inventory and on-site vending machines. Grainger's KeepStock program currently provides services to almost 23,000 customers and completed approximately 11,000 installations in 2016. As of December 31, 2016, there were approximately 59,500 total installations. If the Company included KeepStock®, the electronic inventory management offering, total eCommerce and KeepStock® revenue for the U.S. business would represent 57% of total sales.

Due to the customer migration to online and electronic purchasing, Grainger initiated a restructuring that resulted in the closing of 49 branches in 2015 and 55 branches in 2016. As of December 31, 2016, the U.S. business had 284 branches (254 stand alone, 28 on-site and 2 will-call express locations), 18 DCs, 3 national contact centers and 39 regional contact centers, which are located within branches.

DCs range in size from 45,000 square feet to 1.3 million square feet, the largest of which can stock up to 500,000 products. Automated equipment and processes allow larger DCs to handle the majority of the customer shipping for next-day product availability and replenish the branches that provide same-day availability. The DC network increasingly fulfills a larger portion of customer orders, especially as customers migrate to online and electronic purchasing. Grainger completed the construction of a new 1.3 million square-foot DC in New Jersey and began operations in 2016.

Branches serve the immediate needs of customers in their local markets by allowing them to pick up items directly. In addition, branches support local KeepStock® operations. The branch network has approximately 1,800 employees who primarily fulfill counter and will-call product purchases and provide customer service. Grainger's contact center network consists of approximately 2,000 employees who handle about 74,000 orders per day via phone, e-mail and fax. The contact centers will be consolidating to 3 national contact centers with expanded work-from-home arrangements over the next 18 months, which will enable improved customer service, better team member engagement and efficiencies.

The U.S. business has a sales force of approximately 3,600 professionals who help businesses and institutions select the right products to find immediate solutions to maintenance problems and reduce operating expenses by utilizing Grainger as a consistent source of supply across multiple locations. In 2016, Grainger continued to focus its outside sales force on facilitating growth with large customers who typically have more complex purchasing requirements than small and medium-sized customers. To meet the needs of the medium-sized customers, Grainger added approximately 260 inside sellers during 2016 with a plan to add 115 in the second half of 2017.

The Grainger catalog, most recently issued in February 2017, offers approximately 383,000 MRO products and is used by customers to assist in product selection. The 2017 catalog includes almost 21,000 new items and approximately 1.1 million copies of the catalog were produced.

Grainger estimates the U.S. market for MRO products to be approximately $125 billion in 2016, of which Grainger’s share is approximately 6%.

Canada

Acklands – Grainger Inc. (Acklands – Grainger) is Canada’s leading broad line distributor of industrial and safety supplies. This business provides a combination of product breadth, local availability, speed of delivery, detailed product information and competitively priced products and services.

The Canadian business serves customers through branches, sales and service representatives and DCs across Canada. The business initiated a restructuring in 2015 in response to the decline in oil prices and the resultant weak economy and low MRO market growth. The restructuring resulted in the closure of 16 branches in 2015 and an additional 14 branches in 2016. As of December 31, 2016, Acklands – Grainger had 151 branches and 5 DCs. Approximately 12,000 sales transactions are completed daily. Customers have access to more than 152,000 stocked products through a comprehensive catalog. The most recent catalog, printed in both English and French, was issued in February 2017. In addition, customers can purchase products through Acklandsgrainger.com, a fully bilingual website. Grainger estimates the 2016 Canadian market for MRO products to be approximately $11 billion, of which Acklands – Grainger’s share is approximately 7%.

Other Businesses

Included in Other Businesses is Zoro in the U.S., MonotaRO in Japan and other operations in Europe, Asia and Latin America. The more significant businesses in this group, those with revenues of more than $100 million in 2016, are described below.

Zoro

Zoro is an online distributor of MRO products serving U.S. businesses and consumers through its website, Zoro.com. Zoro serves Canadian customers through ZoroCanada.com via export from the U.S. Zoro offers a broad selection of more than one million products at single, competitive prices. Zoro has no branches or sales force, and customer orders are fulfilled through the U.S. business supply chain.

MonotaRO

Grainger operates in Japan and other Asian countries primarily through its 51% interest in MonotaRO Co (MonotaRO). MonotaRO provides small and mid-sized Japanese businesses with products that help them operate and maintain their facilities. MonotaRO is a catalog and web-based direct marketer with approximately 91% of orders being conducted through Monotaro.com, through which customers have access to approximately 10 million products. MonotaRO predominantly fulfills all orders from three DCs, the largest of which is a 425,000 square-foot DC in the Osaka area. MonotaRO is currently building a 590,000 square-foot DC in the Tokyo area, which it plans to put into operation in April

2017. Grainger estimates the 2016 Japanese market for MRO products to be approximately $41 billion, of which MonotaRO's share is approximately 2%.

Cromwell

Cromwell is a broad line industrial distributor of MRO products in the United Kingdom (U.K.) serving approximately 70,000 industrial and manufacturing customers. Headquartered in Leicester, England, Cromwell has 52 U.K. branches and 10 international branches. Customers have access to almost 80,000 MRO products through a catalog and through cromwell.co.uk. Grainger estimates the U.K. market for MRO products to be approximately $16 billion, of which Cromwell's share is approximately 2%.

Fabory

The Fabory Group (Fabory) is a European specialty distributor of fasteners, tools and industrial supplies. Fabory is headquartered in Tilburg, the Netherlands. As of December 31, 2016, Fabory has 70 branches in 13 countries. Customers have access to more than 100,000 products through a catalog and Fabory.com. Grainger estimates the 2016 European market (in which Fabory has its primary operations) for MRO products, including fasteners, to be approximately $34 billion, of which Fabory's share is approximately 1%.

Grainger Mexico

Grainger's operations in Mexico provide local businesses with MRO supplies and other related products primarily from Mexico and the U.S. The business in Mexico distributes products through a network of branches and two DCs where customers have access to approximately 310,000 products through a Spanish-language catalog and through Grainger.com.mx. Grainger estimates the 2016 Mexican market for MRO products to be approximately $10 billion, of which Grainger Mexico's share is approximately 1%.

Seasonality

Grainger's business in general is not seasonal, however, there are some products that typically sell more often during the winter or summer season. In any given month, unusual weather patterns, i.e., unusually hot or cold weather, could impact the sales volumes of these products, either positively or negatively.

Competition

Grainger faces competition in all the markets it serves, from manufacturers (including some of its own suppliers) that sell directly to certain segments of the market, wholesale distributors, catalog houses, retail enterprises and Internet-based businesses. Grainger provides local product availability, a broad product line, sales representatives, competitive pricing, catalogs (which include product descriptions and, in certain cases, extensive technical and application data) and electronic and eCommerce technology. Other services, such as inventory management, are also offered. Grainger believes that it can effectively compete with manufacturers on small orders, but manufacturers may have an advantage in filling large orders. There are several large competitors, although the majority of the market is served by small local and regional competitors.

Employees

As of December 31, 2016, Grainger had approximately 25,600 employees, of whom approximately 24,400 were full-time and 1,200 were part-time or temporary. Grainger has never had a major work stoppage and considers employee relations to be adequate.

Website Access to Company Reports

Grainger makes available, through its website, free of charge, its Annual Report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements and amendments to those reports, as soon as reasonably practicable after these materials are electronically filed with or furnished to the Securities and Exchange Commission. This material may be accessed by visiting www.grainger.com/investor.

Item 1A: Risk Factors

The following is a discussion of significant risk factors relevant to Grainger's business that could adversely affect its financial condition, results of operations and cash flows. The risk factors discussed in this section should be considered together with information included elsewhere in this Annual Report on Form 10-K and should not be considered the only risks to which the Company is exposed.

Weakness in the economy, market trends and other conditions affecting the profitability and financial stability of Grainger's customers could negatively impact Grainger's sales growth and results of operations.

Economic and industry trends affect Grainger's business environments. Grainger serves several industries in which the demand for its products and services is sensitive to the production activity, capital spending and demand for products and services of Grainger's customers. Many of these customers operate in markets that are subject to cyclical fluctuations resulting from market uncertainty, costs of goods sold, currency exchange rates, foreign competition, offshoring of production, oil and natural gas prices, geopolitical developments and a variety of other factors beyond Grainger's control. Any of these factors could cause customers to idle or close facilities, delay purchases, reduce production levels or experience reductions in the demand for their own products or services.

Any of these events could impair the ability of Grainger's customers to make full and timely payments or reduce the volume of products and services these customers purchase from Grainger and could cause increased pressure on Grainger's selling prices and terms of sale. Accordingly, a significant or prolonged slowdown in activity in the United States (U.S.), Canada or any other major world economy, or a segment of any such economy, could negatively impact Grainger's sales growth and results of operations.

The facilities maintenance industry is highly fragmented, and changes in competition could result in decreased demand for Grainger's products and services.

There are several large competitors in the industry, although most of the market is served by small local and regional competitors. Grainger faces competition in all markets it serves, from manufacturers (including some of its own suppliers) that sell directly to certain segments of the market, wholesale distributors, catalog houses, retail enterprises and Internet-based businesses that compete with price transparency. The industry is also consolidating as customers are increasingly aware of the total costs of fulfillment and of the need to have consistent sources of supply at multiple locations. This consolidation could cause the industry to become more competitive as greater economies of scale are achieved by competitors, or as competitors with new lower cost business models are able to operate with lower prices and gross profit on products. These competitive pressures could adversely affect Grainger's sales and profitability.

Changes in inflation may adversely affect gross margins.

Inflation impacts the costs at which Grainger can procure product and the ability to increase prices to customers over time. Prolonged periods of deflation could adversely affect the degree to which Grainger is able to increase sales through price increases.

Volatility in commodity prices may adversely affect gross margins.

Some of Grainger's products contain significant amounts of commodity-priced materials, such as steel, copper, petroleum derivatives or rare earth minerals, and are subject to price changes based upon fluctuations in the commodities market. Fluctuations in the price of fuel could affect transportation costs. Grainger's ability to pass on such increases in costs in a timely manner depends on market conditions. The inability to pass along cost increases could result in lower gross margins. In addition, higher prices could impact demand for these products, resulting in lower sales volumes.

Unexpected product shortages could negatively impact customer relationships, resulting in an adverse impact on results of operations.

Grainger's competitive strengths include product selection and availability. Products are purchased from more than 5,100 suppliers located in various countries around the world, no one of which accounted for more than 5% of total purchases. Historically, no significant difficulty has been encountered with respect to sources of supply; however, disruptions could occur due to factors beyond Grainger's control, including economic downturns, political unrest, port slowdowns, trade issues and other factors, any of which could adversely affect a supplier's ability to manufacture or deliver products. As Grainger continues to source lower cost products from Asia and other areas of the world, the risk for disruptions has increased due to the additional lead time required and distances involved. If Grainger was to experience difficulty in obtaining products, there could be a short-term adverse effect on results of operations and a longer-term adverse effect on customer relationships and Grainger's reputation. In addition, Grainger has strategic relationships with a number of vendors. In the event Grainger was unable to maintain those relations, there might be a loss of competitive pricing advantages which could, in turn, adversely affect results of operations.

Changes in customer or product mix could cause the gross margin percentage to decline.

From time to time, Grainger experiences changes in customer and product mix that affect gross margin. Changes in customer and product mix result primarily from business acquisitions, changes in customer demand, customer acquisitions, selling and marketing activities and competition. If rapid growth with lower margin customers continues, Grainger will face pressure to maintain current gross margins, as these customers receive more discounted pricing due to their higher sales volume. There can be no assurance that Grainger will be able to maintain historical gross margins in the future.

Disruptions in Grainger's supply chain could result in an adverse impact on results of operations.

A disruption within Grainger's logistics or supply chain network, including damage, destruction, extreme weather and other events, which could cause one or more of Grainger's distribution centers to become non-operational, could adversely affect Grainger's ability to obtain or deliver inventory in a timely manner, impair Grainger's ability to meet customer demand for products and result in lost sales or damage to Grainger's reputation. Grainger's ability to provide same-day shipping and next-day delivery is an integral component of Grainger's business strategy and any such disruption could adversely impact results of operations.

Interruptions in the proper functioning of information systems could disrupt operations and cause unanticipated increases in costs and/or decreases in revenues.

The proper functioning of Grainger's information systems is critical to the successful operation of its business. Grainger continues to invest in software, hardware and network infrastructures in order to effectively manage its information systems. Although Grainger's information systems are protected with robust backup and security systems, including physical and software safeguards and remote processing capabilities, information systems are still vulnerable to natural disasters, power losses, computer viruses, telecommunication failures and other problems. If critical information systems fail or otherwise become unavailable, among other things, Grainger's ability to process orders, maintain proper levels of inventories, collect accounts receivable and disburse funds could be adversely affected. Any such interruption of Grainger's information systems could also subject Grainger to additional costs.

Breaches of information systems security could damage Grainger's reputation, disrupt operations, increase costs and/or decrease revenues.

Through Grainger's sales and eCommerce channels, Grainger collects and stores personally identifiable, confidential, proprietary and other information from customers so that they may, among other things, purchase products or services, enroll in promotional programs, register on Grainger's websites or otherwise communicate or interact with the Company. Moreover, Grainger's operations routinely involve receiving, storing, processing and transmitting sensitive information pertaining to its business, customers, suppliers and employees, and other sensitive matters.

While Grainger has instituted safeguards for the protection of such information, during the normal course of business, Grainger has experienced and expects to continue to experience attempts to breach the Company's information systems, and Grainger may be unable to protect sensitive data and/or the integrity of the Company's information systems. A cybersecurity incident could be caused by malicious outsiders using sophisticated methods to circumvent firewalls, encryption and other security defenses. Because techniques used to obtain unauthorized access or to sabotage systems change frequently and generally are not recognized until they are launched against a target, Grainger may be unable to anticipate these techniques or implement adequate preventative measures.

Moreover, from time to time, Grainger may share information with vendors and other third parties that assist with certain aspects of the business. While Grainger requires assurances that these vendors and other parties will protect confidential information, there is a risk that the confidentiality of data held or accessed by them may be compromised. If successful, those attempting to penetrate Grainger's or its vendors' information systems may misappropriate personally identifiable, credit card, confidential, proprietary or other sensitive customer, supplier, employee or business information.

In addition, a Grainger employee, contractor or other third party with whom Grainger does business may attempt to circumvent security measures in order to obtain such information or inadvertently cause a breach involving such information. Further, Grainger's systems are integrated with customer systems in certain cases, and a breach of the Company's information systems could be used to gain illicit access to customer systems and information.

Loss of customer, supplier, employee or other business information could disrupt operations, damage Grainger's reputation and expose Grainger to claims from customers, suppliers, financial institutions, regulators, payment card associations, employees and others, any of which could have a material adverse effect on Grainger, its financial condition and results of operations.

***Fluctuations in foreign currency have an effect on reported results of operations*.**

Grainger's exposure to fluctuations in foreign currency rates results primarily from the translation exposure associated with the preparation of the Consolidated Financial Statements, as well as from transaction exposure associated with transactions in currencies other than an entity's functional currency. While the Consolidated Financial Statements are reported in U.S. dollars, the financial statements of Grainger's subsidiaries outside the U.S. are prepared using the local currency as the functional currency and translated into U.S. dollars. In addition, Grainger is exposed to foreign currency exchange rate risk with respect to the U.S. dollar relative to the local currencies of Grainger's international subsidiaries, primarily the Canadian dollar, euro, pound sterling, Mexican peso, renminbi and yen, arising from transactions in the normal course of business, such as sales and loans to wholly owned subsidiaries, sales to third-party customers, purchases from suppliers and bank loans and lines of credit denominated in foreign currencies. Grainger also has foreign currency exposure to the extent receipts and expenditures are not denominated in the subsidiary's functional currency and that could have an impact on sales, costs and cash flows. These fluctuations in foreign currency exchange rates could affect Grainger's results of operations and impact reported net sales and net earnings.

Changes in Grainger's credit ratings and outlook may reduce access to capital and increase borrowing costs.

Grainger's credit ratings are based on a number of factors, including Grainger's financial strength and factors outside of Grainger's control, such as conditions affecting Grainger's industry generally or the introduction of new rating practices and methodologies. Grainger cannot provide assurances that Grainger's current credit ratings will remain in effect or that the ratings will not be lowered, suspended or withdrawn entirely by the rating agencies. If rating agencies lower, suspend or withdraw the ratings, the market price or marketability of Grainger's securities may be adversely affected. In addition, any change in ratings could make it more difficult for the Grainger to raise capital on acceptable terms, impact the ability to obtain adequate financing and result in higher interest costs for Grainger's existing credit facilities or on future financings.

Acquisitions, partnerships, joint ventures and other business combination transactions involve a number of inherent risks, any of which could result in the benefits anticipated not being realized and could have an adverse effect on results of operations.

Acquisitions, partnerships, joint ventures and other business combination transactions, both foreign and domestic, involve various inherent risks, such as uncertainties in assessing value, strengths, weaknesses, liabilities and potential profitability. There is also risk relating to Grainger's ability to achieve identified operating and financial synergies anticipated to result from the transactions. Additionally, problems could arise from the integration of acquired businesses, including unanticipated changes in the business or industry or general economic conditions that affect the assumptions underlying the acquisition. Any one or more of these factors could cause Grainger to not realize the benefits anticipated or have a negative impact on the fair value of the reporting units. Accordingly, goodwill and intangible assets recorded as a result of acquisitions could become impaired.

In order to compete, Grainger must attract, retain and motivate key employees, and the failure to do so could have an adverse effect on results of operations.

In order to compete and have continued growth, Grainger must attract, retain and motivate executives and other key employees, including those in managerial, technical, sales, marketing and support positions. Grainger competes to hire employees and then must train them and develop their skills and competencies. Grainger's results of operations could be adversely affected by increased costs due to increased competition for employees, higher employee turnover or increased employee benefit costs.

Grainger's continued success is substantially dependent on positive perceptions of Grainger's reputation.

One of the reasons why customers choose to do business with Grainger and why employees choose Grainger as a place of employment is the reputation that Grainger has built over many years. To be successful in the future, Grainger must continue to preserve, grow and leverage the value of Grainger's brand. Reputational value is based in large part on perceptions of subjective qualities. Even an isolated incident, or the aggregate effect of individually insignificant incidents, can erode trust and confidence, particularly if they result in adverse publicity, governmental investigations or litigation, and as a result, could tarnish Grainger's brand and lead to adverse effects on Grainger's business.

Grainger is subject to various domestic and foreign laws, regulations and standards. Failure to comply or unforeseen developments in related contingencies such as litigation could adversely affect Grainger's financial condition, results of operations and cash flows.

Grainger's business is subject to a wide array of laws, regulations and standards in every domestic and foreign jurisdiction where it operates, including advertising and marketing regulations, anti-bribery and corruption laws, anti-competition regulations, data protection (including payment card industry data security standards), data privacy (including in the U.S. and the European Union, which has traditionally imposed strict obligations under data privacy laws and regulations that vary from country to country) and cybersecurity requirements (including as to protection of information and incident responses), environmental protection laws, foreign exchange controls and cash repatriation restrictions, government business regulations applicable to Grainger as a government contractor selling to federal, state and local government entities, health and safety laws, import and export requirements, intellectual property laws, labor laws, product compliance laws, supplier regulations regarding the sources of supplies or products, tax laws (including as to U.S. taxes on foreign subsidiaries), unclaimed property laws and laws, regulations and standards applicable to other commercial matters. Moreover, Grainger is also subject to audits and inquiries in the normal course of business.

Failure to comply with any of these laws, regulations and standards could result in civil, criminal, monetary and non-monetary penalties as well as potential damage to the Company's reputation. Changes in these laws, regulations and standards, or in their interpretation, could increase the cost of doing business, including, among other factors, as a result of increased investments in technology and the development of new operational processes. Furthermore, while Grainger has implemented policies and procedures designed to facilitate compliance with these laws, regulations and standards, there can be no assurance that employees, contractors or agents will not violate such laws, regulations and standards or Grainger's policies. Any such failure to comply or violation could individually or in the aggregate materially adversely affect Grainger's financial condition, results of operations and cash flows.

Grainger also is, and from time to time may become, party to a number of legal proceedings incidental to Grainger's business involving alleged damages or injuries arising out of the use of Grainger's products and services or violations of these laws, regulations or standards. The defense of these proceedings may require significant expenses and divert management's time and attention, and Grainger may be required to pay damages that could individually or in the aggregate materially adversely affect its financial condition, results of operations and cash flows. In addition, any insurance or indemnification rights that Grainger may have with respect to such matters may be insufficient or unavailable to protect the Company against potential loss exposures.

Tax changes could affect Grainger's effective tax rate and future profitability.

Grainger's future results could be adversely affected by changes in the effective tax rate as a result of changes in Grainger's overall profitability and changes in the mix of earnings in countries with differing statutory tax rates, changes in tax legislation, the results of the examination of previously filed tax returns and continuing assessment of the Company's tax exposures.

Item 1B: Unresolved Staff Comments

None.

Item 2: Properties

As of December 31, 2016, Grainger's owned and leased facilities totaled approximately 29.3 million square feet. The U.S. and Canada businesses accounted for the majority of the total square footage. Grainger believes that its properties are generally in excellent condition, well maintained and suitable for the conduct of business.

A brief description of significant facilities follows:

Location	Facility and Use (6)	Size in Square Feet (in 000's)
U.S. (1)	284 U.S. branch locations	6,477
U.S. (2)	18 Distribution Centers	8,721
U.S. (3)	Other facilities	4,846
Canada (4)	159 Acklands – Grainger facilities	3,284
Other Businesses (5)	Other facilities	4,771
Chicago Area (2)	Headquarters and General Offices	1,226
	Total Square Feet	29,325

(1) Consists of 211 owned and 73 leased properties located throughout the U.S. ranging in size from approximately 1,000 to 109,000 square feet.

(2) These facilities are primarily owned and they range in size from approximately 45,000 square feet to 1.3 million square feet.

(3) These facilities include both owned and leased locations, consisting of storage facilities, office space, call centers and idle properties.

(4) Consists of general offices, distribution centers and branches located throughout Canada, of which 66 are owned and 93 leased.

(5) These facilities include owned and leased locations in Europe, Asia, Latin America and other U.S. operations.

(6) Owned facilities are not subject to any mortgages.

Item 3: Legal Proceedings

Environmental Matters

As previously disclosed, on August 5, 2015, Environment Canada initiated a proceeding against the Company's Canadian subsidiary, Acklands-Grainger, in the Provincial Court of Alberta seeking monetary sanctions based on allegations that Acklands-Grainger sold certain products containing an ozone-depleting substance in violation of the Canadian Environmental Protection Act, 1999 and prohibited by the Ozone-Depleting Substances Regulations, 1998. On December 12, 2016, as part of a negotiated plea agreement, Acklands-Grainger pleaded guilty in the Provincial Court of Alberta to two counts of violating the Ozone-Depleting Substances Regulations and agreed to pay a fine of C$500,000. Acklands-Grainger intends to seek indemnification from the suppliers that sold Acklands-Grainger the products in question.

Other Matters

For a description of other legal proceedings, see Note 17 to the Consolidated Financial Statements included under Item 8.

Item 4: Mine Safety Disclosures

Not applicable.

PART II

Item 5: Market for Registrant’s Common Equity, Related Shareholder Matters and Issuer Purchases of Equity Securities

Market Information and Dividends

Grainger's common stock is listed on the New York Stock Exchange, with the ticker symbol GWW. Effective January 1, 2015, Grainger voluntarily delisted its common stock from the Chicago Stock Exchange to eliminate duplicative administrative requirements. The high and low sales prices for the common stock and the dividends declared and paid per share for each calendar quarter during 2016 and 2015 are shown below.

		Prices		
	Quarters	High	Low	Dividends
2016	First	$ 234.77	$ 176.85	$ 1.17
	Second	239.95	212.64	1.22
	Third	235.53	212.54	1.22
	Fourth	240.74	201.94	1.22
	Year	$ 240.74	$ 176.85	$ 4.83
2015	First	$ 256.97	$ 228.15	$ 1.08
	Second	252.87	228.05	1.17
	Third	240.00	194.42	1.17
	Fourth	233.00	189.60	1.17
	Year	$ 256.97	$ 189.60	$ 4.59

Grainger expects that its practice of paying quarterly dividends on its common stock will continue, although the payment of future dividends is at the discretion of Grainger’s Board of Directors and will depend upon Grainger’s earnings, capital requirements, financial condition and other factors.

Holders

The approximate number of shareholders of record of Grainger’s common stock as of January 31, 2017, was 720 with approximately 218,500 additional shareholders holding stock through nominees.

Issuer Purchases of Equity Securities - Fourth Quarter

Period	Total Number of Shares Purchased (A)	Average Price Paid Per Share (B)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (C)	Maximum Number of Shares That May Yet be Purchased Under the Plans or Programs
Oct. 1 – Oct. 31	306,313	$212.89	306,313	6,367,978 shares
Nov. 1 – Nov. 30	239,007	$216.57	239,007	6,128,971 shares
Dec. 1 – Dec. 31	270,264	$236.75	270,264	5,858,707 shares
Total	815,584	$221.87	815,584	

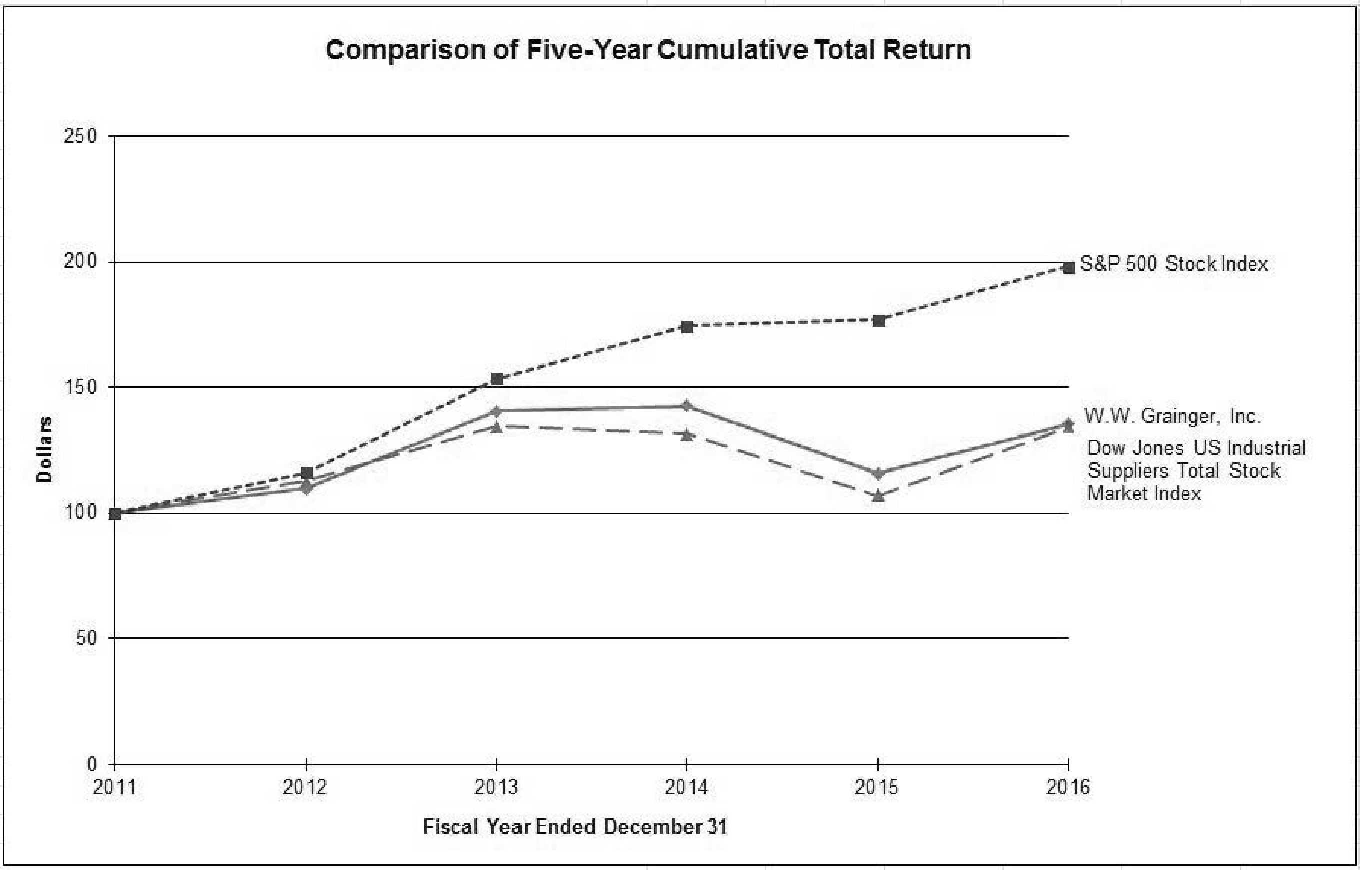
(A) There were no shares withheld to satisfy tax withholding obligations in connection with the vesting of employee restricted stock awards.

(B) Average price paid per share includes any commissions paid and includes only those amounts related to purchases as part of publicly announced plans or programs.

(C) Purchases were made pursuant to a share repurchase program approved by Grainger's Board of Directors. Activity is reported on a trade date basis.

Company Performance

The following stock price performance graph compares the cumulative total return on an investment in Grainger common stock with the cumulative total return of an investment in each of the Dow Jones US Industrial Suppliers Total Stock Market Index and the S&P 500 Stock Index. It covers the period commencing December 31, 2011, and ending December 31, 2016. The graph assumes that the value for the investment in Grainger common stock and in each index was $100 on December 31, 2011, and that all dividends were reinvested.



	December 31,					
	2011	2012	2013	2014	2015	2016
W.W. Grainger, Inc.	$ 100	$ 110	$ 141	$ 143	$ 116	$ 136
Dow Jones US Industrial Suppliers Total Stock Market Index	100	113	135	132	107	134
S&P 500 Stock Index	100	116	154	175	177	198

Item 6: Selected Financial Data

	2016	2015	2014	2013	2012
	(In thousands of dollars, except for per share amounts)				
Net sales	$ 10,137,204	$ 9,973,384	$ 9,964,953	$ 9,437,758	$ 8,950,045
Net earnings attributable to W.W. Grainger, Inc.	605,928	768,996	801,729	797,036	689,881
Net earnings per basic share	9.94	11.69	11.59	11.31	9.71
Net earnings per diluted share	9.87	11.58	11.45	11.13	9.52
Total assets	5,694,307	5,857,755	5,283,049	5,266,328	5,014,598
Long-term debt (less current maturities) and other long-term liabilities	2,159,602	1,716,507	737,232	743,702	817,229
Cash dividends paid per share	$ 4.83	$ 4.59	$ 4.17	$ 3.59	$ 3.06

Net earnings for 2016 included a net expense of $105 million, or $1.71 per share, consisting of the following:

- Restructuring: A net charge of $26 million, or $0.43 after-tax earnings per share expense related to restructuring actions. These actions primarily included branch closures, net of gains on sale of branch real estate in the United States (U.S.) and Canadian businesses.
- Goodwill and intangible impairments: A non-cash impairment charge of $52 million, or $0.85 after-tax earning per share, related to goodwill and intangible impairments in Other Businesses.
- Unclaimed property contingency: A charge of $23 million, or $0.37 after-tax earnings per share, related to an adjustment for unclaimed property in the U.S. business primarily related to activity from 2008 through 2012.
- General Services Administration (GSA) contingency: An expense of $6 million, or $0.09 after-tax earnings per share, to increase the U.S. business reserve for certain tax, freight and miscellaneous billing issues in connection with the audit of government contracts with the GSA first entered in 1999.
- Inventory adjustment: A charge of $7 million, or $0.12 after-tax earnings per share, related to an inventory adjustment in the Canadian business to reflect on updated reserve methodology and better visibility to inventory performance provided by the conversion to the U.S. ERP system.
- Discrete tax items: A benefit of $9 million, or $0.15 earnings per share, related to the conclusion of the federal income tax audit for the years 2009 through 2012 in the U.S. business and other discrete tax items.

Net earnings for 2015 included a $0.33 per share expense related to reorganization in the U.S. business and at the corporate office, a $0.05 per share expense related to reorganization in the Canadian business and a $0.07 per share expense for restructuring in Other Businesses. Results also included a $0.09 per share benefit primarily related to revaluation of deferred tax liabilities resulting from tax law changes in the United Kingdom. When combined, these items had a net expense effect of $0.36 per share.

Net earnings for 2014 included a $0.40 per share expense related to closing of the business in Brazil, a $0.15 per share non-cash charge due to the retirement plan transition in Europe and a $0.15 per share expense related to restructuring the business in Europe. Results also included a $0.11 per share expense related to a non-cash goodwill impairment charge in Other Businesses. When combined, these items had a net expense effect of $0.81 per share.

Net earnings for 2013 included a $0.29 per share expense related to non-cash impairment charges in Other Businesses, primarily for goodwill. Results also included a $0.10 per share expense related to restructuring the businesses in Europe and China. When combined, these items had a net expense effect of $0.39 per share.

Net earnings for 2012 included a $0.66 per share expense related to the settlement of disputes involving the GSA and United States Postal Service (USPS) contracts in the U.S. business. Results also included a $0.18 per share expense related to restructuring the businesses in Europe, India and China; a $0.04 per share expense due to a non-cash impairment charge in the U.S. business and a $0.03 per share expense related to U.S. branch closures. When combined, these items had a net expense effect of $0.91 per share.

Grainger completed several acquisitions for the years presented above, all of which were immaterial individually and in the aggregate. Operating results have included the results of each business acquired since the respective acquisition dates.

For further information see “Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations.”

Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations

Overview

General. Grainger is a broad line distributor of maintenance, repair and operating (MRO) supplies and other related products and services used by businesses and institutions. Grainger's operations are primarily in the United States (U.S.) and Canada, with a presence in Europe, Asia and Latin America. Grainger uses a combination of multichannel and single channel business models to provide customers with a range of options for finding and purchasing products utilizing sales representatives, catalogs, direct marketing materials and eCommerce. Grainger serves approximately 3 million customers worldwide through a network of highly integrated branches, distribution centers and websites.

Grainger's two reportable segments are the U.S. and Canada. The U.S. operating segment reflects the results of Grainger's U.S. business. The Canada operating segment reflects the results for Acklands – Grainger Inc., Grainger's Canadian business. Other Businesses include single channel online businesses such as MonotaRO in Japan and Zoro in the U.S., and business units in Europe, Asia and Latin America.

Business Environment. Given Grainger's large number of customers and the diverse industries it serves, several economic factors and industry trends tend to shape Grainger's business environment. The overall economy and leading economic indicators provide general insight into projecting Grainger's growth. Grainger's sales in the U.S. and Canada tend to positively correlate with Business Investment, Business Inventory, Exports and Industrial Production. In the U.S., sales tend to positively correlate with Gross Domestic Product (GDP). In Canada, sales tend to positively correlate with oil prices. The table below provides these estimated indicators for 2016 and 2017:

	U.S.		Canada	
	Estimated 2016	Forecasted 2017	Estimated 2016	Forecasted 2017
Business Investment	(2.8)%	3.4%	(2.8)%	0.7%
Business Inventory	1.0 %	0.6%	—	—
Exports	0.4 %	1.9%	1.0 %	1.9%
Industrial Production	(1.0)%	1.4%	(0.5)%	1.9%
GDP	1.6 %	2.3%	1.3 %	2.1%
Oil Prices	—	—	$43/barrel	$57/barrel
Source: Global Insight (February 2017)				

In the U.S., Business Investment and Exports are two major indicators of MRO spending. Per the Global Insight February 2017 forecast, Business Investment is forecast to improve in 2017 through equipment related spendings as the influence from slow growth abroad and in the United States fades. Export growth is expected to improve in 2017 as the global economy stabilizes and attracts more capital to the United States.

Per the Global Insight February 2017 forecast, Canada economic growth in 2016 is forecast to continue to remain low but improve in 2017. For the year, the Canadian economy, as measured by GDP, is forecast to grow to 2.1% in 2017 compared to the 2016 estimate of 1.3%. The 2017 forecast assumes that oil prices will continue a slow but steady rise and that business nonresidental investment (a component of Business Investment) will begin to increase. The latest forecast for the Canadian dollar includes further downward adjustments and weakness over the next two years compared to the U.S. dollar.

Outlook. Grainger plans to continue to make investments in its supply chain, eCommerce capabilities, information systems, sales force productivity tools and inventory management services. These investments will support the Company's revenue growth objectives of (i) continuing to grow its share of business with large, complex customers; (ii) creating a unique value proposition to further penetrate the medium customer segment and (iii) further leveraging its eCommerce capabilities to serve smaller customers. Through the execution of continuous improvement initiatives, the U.S. business will reduce its cost base while ensuring that it continues to deliver an effortless customer experience. In Canada, the Company took aggressive actions in 2016 that will position the business for long-term sustainable growth and profitability. These actions, which included business and personnel reorganization, branch closures, ERP and eCommerce investments, should position the Canadian business for growth in 2017 and restore the business to break even by the end of 2017.

On January 25, 2017, Grainger reiterated its 2017 sales and earnings per share guidance issued on November 11, 2016, and continues to expect 2 to 6 percent sales growth and earnings per share of $11.30 to $12.40 for 2017.

Matters Affecting Comparability. There were 255 sales days in the full year 2016 and 2015. Grainger completed one acquisition in 2015 and one in 2014, both of which were immaterial individually and in the aggregate. Grainger's operating results have included the results of each business acquired since the respective acquisition dates.

Results of Operations

The following table is included as an aid to understanding changes in Grainger's Consolidated Statements of Earnings (in millions of dollars):

	For the Years Ended December 31,							
				Percent Increase/ (Decrease) from Prior Year		As a Percent of Net Sales		
	2016 (A)	2015 (A)	2014 (A)	2016	2015	2016	2015	2014
Net sales	$ 10,137	$ 9,973	$ 9,965	2 %	— %	100.0%	100.0%	100.0%
Cost of merchandise sold	6,023	5,742	5,651	5 %	2 %	59.4	57.6	56.7
Gross profit	4,115	4,231	4,314	(3)%	(2)%	40.6	42.4	43.3
Operating expenses	2,995	2,931	2,967	2 %	(1)%	29.6	29.4	29.8
Operating earnings	1,119	1,300	1,347	(14)%	(4)%	11.0	13.0	13.5
Other expense	100	50	13	102 %	290 %	1.0	0.5	0.1
Income taxes	386	466	522	(17)%	(11)%	3.8	4.7	5.2
Noncontrolling interest	27	16	11	66 %	53 %	0.3	0.2	0.1
Net earnings attributable to W.W. Grainger, Inc.	$ 606	$ 769	$ 801	(21)%	(4)%	6.0%	7.7%	8.1%

(A) May not sum due to rounding

2016 Compared to 2015

Grainger's net sales of $10,137 million for 2016 were an increase of 2% when compared with net sales of $9,973 million for the comparable 2015 period. The 2% increase for the year consisted of the following:

	Percent Increase/ (Decrease)
Cromwell acquisition	3
Volume	1
Price	(2)
Total	2%

Sales growth to government, retail and light manufacturing customers were offset by a decline in sales to natural resource customers, resellers, contractors and heavy manufacturing customers. In 2016, eCommerce sales for Grainger were $4,757 million, an increase of 15% over the prior year and represented 47% of total sales. The increase was primarily driven by an increase in sales via EDI and electronic purchasing platforms in the U.S. and Japan businesses. If the Company included KeepStock®, the electronic inventory management offering, total eCommerce and KeepStock® sales would represent 56% of total sales. Refer to the *Segment Analysis* below for further details.

Gross profit of $4,115 million for 2016 decreased 3%. The gross profit margin for 2016 was 40.6%, down 1.8 percentage points versus 2015, primarily due to price deflation exceeding cost deflation and unfavorable customer mix.

Operating expenses of $2,995 million for 2016 increased 2% from $2,931 million for 2015. The increase was primarily due to the following:

- $35 million of restructuring charges primarily in the U.S. and Canadian businesses.
- $52 million of impairment charges for goodwill and intangible assets in Other Businesses.
- $36 million adjustment for unclaimed property in the U.S. business, primarily for the five years 2008 through 2012.
- $9 million increase in the U.S. business reserve related to certain tax, freight and miscellaneous billing issues in connection with the audit of government contracts with the General Services Administration first entered in 1999.

In 2015, operating expenses included $42 million related to restructuring and other charges primarily in the U.S. and Canadian business. Excluding the charges from both years, operating expenses were down 1%.

Operating earnings of $1,119 million for 2016 decreased 14% from $1,300 million for 2015. The decrease in operating earnings was driven by lower gross profit margin and higher restructuring costs and other charges. Operating earnings included the charges noted above. Excluding these charges from both years, operating earnings decreased 6%.

Net earnings attributable to Grainger for 2016 decreased by 21% to $606 million from $769 million in 2015. The decrease in net earnings primarily resulted from lower operating earnings, partially offset by lower income taxes. Excluding the charges from both years mentioned above and discrete tax items, net earnings decreased 10%.

Diluted earnings per share of $9.87 in 2016 were 15% lower than $11.58 for 2015, due to lower earnings, partially offset by lower average shares outstanding as a result of share repurchases. Excluding the charges mentioned above diluted earnings per share would have been $11.58 compared to $11.94 in 2015, a decrease of 3%.

The table below reconciles reported diluted earnings per share determined in accordance with generally accepted accounting principles (GAAP) in the U.S. to adjusted diluted earnings per share, a non-GAAP measure. Management believes adjusted diluted earnings per share is an important indicator of operations because it excludes items that may not be indicative of core operating results. Because non-GAAP financial measures are not standardized, it may not be possible to compare this financial measure with other companies' non-GAAP financial measures having the same or similar names.

	Twelve Months Ended December 31,		
	2016	**2015**	**%**
Diluted earnings per share reported	$ 9.87	$ 11.58	(15)%
Adjustments, pretax (1)	2.41	0.69	
Tax effect (1)(2)	(0.55)	(0.24)	
Discrete tax items	(0.15)	(0.09)	
Subtotal	1.71	0.36	
Diluted earnings per share adjusted	$ 11.58	$ 11.94	(3)%

(1) Adjustments discussed in detail in Item 6.
(2) The tax impact of adjustments is calculated based on the income tax rate in each applicable jurisdiction.

Segment Analysis
Grainger's two reportable segments are the U.S. and Canada. The U.S. operating segment reflects the results of Grainger's U.S. business. The Canada operating segment reflects the results for Acklands – Grainger Inc., Grainger's Canadian business. Other businesses include single channel online businesses such as MonotaRO in Japan and Zoro in the U.S., and business units in Europe, Asia and Latin America.

The following comments at the reportable segment and other business unit level include external and intersegment net sales and operating earnings. See Note 16 to the Consolidated Financial Statements.

United States
Net sales were $7,870 million for 2016, a decrease of $93 million, or 1% when compared with net sales of $7,963 million for 2015. The 1% decrease for the year consisted of the following contributors:

	Percent Increase/ (Decrease)
Intercompany sales to Zoro	1
Volume	(1)
Price	(1)
Total	(1)%

Mid-single-digit sales growth to government and retail customers and low single-digit growth to light manufacturing was offset by mid-teen declines in sales to natural resource and reseller customers and mid-single-digit declines to heavy manufacturing customers and contractors.

In 2016, eCommerce sales for the U.S. business were $3,660 million, an increase of 12% over the prior year and represented 46% of total sales. The increase was primarily driven by an increase in sales via EDI and electronic purchasing platforms. If the Company included KeepStock®, the electronic inventory management offering, total eCommerce and KeepStock® sales would represent 57% of total sales.

The segment gross profit margin decreased 1.3 percentage points in 2016 compared to 2015, driven by price deflation exceeding cost deflation and stronger sales growth to lower margin customers.

Operating expenses were down 2% for 2016 versus 2015. The decrease in operating expenses was driven by lower employees benefit costs, partially offset by higher restructuring costs and other charges discussed above. Excluding the restructuring and other charges in both periods, operating expenses would have been down 4%.

For the segment, operating earnings of $1,275 million for 2016 decreased 7% versus $1,372 million in 2015. The decline in operating earnings for 2016 was primarily driven by lower sales and gross profit margin, partially offset by lower operating expenses. Excluding the restructuring costs and other charges in both periods, operating earnings decreased 5%.

Canada
Net sales were $734 million for 2016, a decrease of $157 million, or 18%, when compared with $891 million for 2015. In local currency, sales decreased 15% for 2015. The 18% decrease for the year consisted of the following contributors:

	Percent Decrease
Volume	(10)
Foreign exchange	(3)
Price	(2)
ERP implementation	(2)
Wildfire impact	(1)
Total	(18)%

Sales performance in Canada was primarily driven by declines within the oil and gas sector in Alberta, combined with declines in all other end markets across the country. The Alberta region, which represents about one-third of the sales in the Canadian business, decreased 23% versus prior year, as it was negatively impacted by oil prices. Sales growth for the remaining regions in aggregate was down 10% in local currency. In addition, the Canadian business implemented the U.S. ERP system in February 2016, which negatively impacted sales as employees transitioned to operating with the new system.

In 2016, eCommerce sales for the Canada business were $98 million, a decrease of 8% over the prior year and represented 13% of total sales. The decrease was primarily driven by lower sales volume. If the Company included KeepStock®, the electronic inventory management offering, total eCommerce and KeepStock® sales would represent 26% of total sales.

The segment gross profit margin decreased 7.8 percentage points in 2016 versus 2015, due to an inventory adjustment of $10 million in the second quarter of 2016, along with price deflation versus cost inflation and higher freight costs from an increase in shipping directly to customers. As a result of service issues due to the ERP system implementation, the Company did not increase prices to customers during 2016.

Operating expenses decreased 8% in 2016 versus 2015. The decrease was due to the benefit of a $7 million gain from the sale of the former Toronto DC in the first quarter of 2016 and lower ERP system project costs, partially offset by higher restructuring costs. Excluding the restructuring costs from both periods, operating expenses decreased 11%.

Operating losses of $65 million for 2016 versus operating earnings of $27 million in 2015, a decrease of $92 million. Excluding the restructuring costs mentioned above, the operating losses would have been $41 million due to lower sales and gross profit margin and operating expenses declining at a slower rate than sales when compared to the prior period.

Other Businesses
Net sales for other businesses, which include MonotaRO in Japan, Zoro in the U.S. and operations in Europe, Asia, Latin America and Cromwell in the United Kingdom (U.K.) (acquired September 1, 2015) were $1,885 million for 2016, an increase of $479 million, or 34%, when compared to $1,406 million for 2015. The net sales increase was primarily due to the Cromwell acquisition and incremental sales at Zoro and MonotaRO. The 34% increase for the year consisted of the following contributors:

	Percent Increase
Cromwell acquisition	18
Volume	15
Foreign exchange	1
Total	34%

Operating earnings for other businesses were $41 million for 2016 compared to $48 million for 2015. Excluding goodwill and intangible impairment charges of $52 million in the Fabory and Colombia businesses and other restructuring charges in the prior year, operating earnings for other business increased by $39 million driven by strong performance from MonotaRO, Zoro and the earnings contribution from Cromwell.

Other Income and Expense
Other expense was $100 million in 2016 compared to $50 million of expense in 2015. The following table summarizes the components of other income and expense (in thousands of dollars):

	For the Years Ended December 31,	
	2016	2015
Interest income (expense) - net	$ (65,615)	$ (32,405)
Loss from equity method investment	(31,193)	(11,740)
Other non-operating income	1,300	1,102
Other non-operating expense	(4,931)	(6,572)
Total	$ (100,439)	$ (49,615)

The increase in expense was driven by higher interest expense from the $1 billion in long-term debt issued in June 2015 and $400 million in long-term debt issued in May 2016, as well as higher operating losses from the Company's clean energy investments.

Income Taxes
Income taxes of $386 million in 2016 decreased 17% compared with $466 million in 2015. Grainger's effective tax rates were 37.9% and 37.2% in 2016 and 2015, respectively. The year-over-year increase in the tax rate was primarily due to a larger proportion of earnings from higher tax rate jurisdictions, partially offset by a higher benefit from the Company’s clean energy investments. The twelve months ended December 31, 2016, included a benefit from the conclusion of the federal income tax audit for the years 2009 through 2012 and other discrete items. Excluding the discrete tax benefits and non-deductible intangible write-downs, the Company’s effective tax rate was 37.1%. The Company's clean energy investment generated $0.15 per share of earnings for the year ended December 31, 2016.

2015 Compared to 2014
Grainger's net sales of $9,973 million for 2015 were flat when compared with net sales of $9,965 million for 2014. Contributors to the sales performance for 2015 were as follows:

	Percent Increase/ (Decrease)
Volume	2
Business acquisition	2
Price	(1)
Foreign exchange	(3)
Total	—%

Sales growth to light manufacturing and government customers were offset by a decline in sales to natural resource customers, contractors, resellers and heavy manufacturing customers. In 2015, eCommerce sales for Grainger were $4,133 million, an increase of 16% over the prior year and represented 41% of total sales. The increase was primarily driven by an increase in sales via EDI and electronic purchasing platforms in the U.S. If the Company included KeepStock®, the electronic inventory management offering, total eCommerce and KeepStock® sales would represent 50% of total sales. Refer to the *Segment Analysis* below for further details.

Gross profit of $4,231 million for 2015 decreased 2%. The gross profit margin for 2015 was 42.4%, down 0.9 percentage point versus 2014, primarily driven by higher sales to lower margin customers and price deflation exceeding cost deflation.

Operating expenses of $2,931 million for 2015 decreased 1% from $2,967 million for 2014. The decrease was primarily driven by lower employee benefits, partially offset by higher severance and contract services costs. Operating expenses included new sales representatives, supply chain and inventory management solutions, as well as $42 million of charges primarily related to reorganizing the businesses in the U.S. and Canada. In 2014, operating expenses included $51 million related to the closing of the business in Brazil, restructuring costs, the transition of the retirement plan in Europe and an impairment charge for the business in Colombia. Excluding the reorganization and restructuring costs from both years, operating expenses were down 1%.

Operating earnings of $1,300 million for 2015 decreased 3% from $1,347 million for 2014. Operating earnings declined due to a lower gross profit margin, partially offset by operating expense leverage. Operating earnings included the charges noted above. Excluding these charges from both years, operating earnings decreased 5%.

Net earnings attributable to Grainger for 2015 decreased by 4% to $769 million from $802 million in 2014. The decrease in net earnings primarily resulted from lower operating earnings, partially offset by lower income taxes. Diluted earnings per share of $11.58 in 2015 were 1% higher than $11.45 for 2014, due to lower average shares outstanding.

The following table reconciles reported diluted earnings per share determined in accordance with generally accepted accounting principles (GAAP) in the U.S. to adjusted diluted earnings per share, a non-GAAP measure. Management believes adjusted diluted earnings per share is an important indicator of operations because it excludes items that may not be indicative of core operating results. Because non-GAAP financial measures are not standardized, it may not be possible to compare this financial measure with other companies' non-GAAP financial measures having the same or similar names.

	Twelve Months Ended December 31,		
	2015	2014	%
Diluted earnings per share reported	$ 11.58	$ 11.45	1 %
Adjustments, pretax	0.69	0.94	
Tax effect (1)	(0.24)	(0.13)	
Discrete tax items	(0.09)	—	
Total, net of tax	0.36	0.81	
Diluted earnings per share adjusted	$ 11.94	$ 12.26	(3)%

(1) The tax impact of adjustments is calculated on the income tax rate in each applicable jurisdiction.

Segment Analysis
The following comments at the reportable segment and other business unit level include external and intersegment net sales and operating earnings. See Note 16 to the Consolidated Financial Statements.

United States
Net sales were $7,963 million for 2015, an increase of $37 million, or flat when compared with net sales of $7,926 million for 2014. Contributors to the sales performance for 2015 were as follows:

	Percent Increase/ (Decrease)
Volume	—
Intercompany sales to Zoro	1
Price	(1)
Total	—%

Mid-single-digit sales growth to light manufacturing and government customers and low single-digit growth to commercial services were offset by a mid-teen decline in sales to natural resource customers and low-single-digit declines to heavy manufacturing customers and contractors. In 2015, eCommerce sales for the U.S. business were $3,275 million, an increase of 16% over the prior year, and represented 41% of total sales. The increase was primarily driven by an increase in sales via EDI and electronic purchasing platforms. If the Company included KeepStock®, the electronic inventory management offering, total eCommerce and KeepStock® sales would represent 51% of total sales.

The segment gross profit margin decreased 1.0 percentage point in 2015 compared to 2014, primarily driven by price decreases exceeding product cost decreases and higher sales to lower margin customers.

Operating expenses were up 1% for 2015 versus 2014. Operating expenses included an incremental $96 million in growth-related spending on eCommerce, new sales representatives, supply chain and inventory management solutions, as well as $32 million of charges related to reorganizing the business, including branch closures. Excluding the reorganization costs, operating expenses decreased 1% primarily due to lower employee benefit costs.

For the segment, operating earnings of $1,372 million for 2015 decreased 5% versus $1,444 million in 2014. Excluding the reorganization expenses mentioned above, operating earnings were down 3%. The decline in operating earnings for 2015 was due to a lower gross profit margin, partially offset by positive operating expense leverage.

Canada
Net sales were $891 million for 2015, a decrease of $185 million, or 17%, when compared with $1,076 million for 2014. In local currency, sales increased 5% for 2015. The 17% decrease for the year consisted of the following contributors:

	Percent Increase/ (Decrease)
Volume	(14)
Foreign exchange	(12)
Acquisition	5
Price	4
Total	(17)%

Sales performance in Canada was driven by mid-teen declines in the oil and gas, contractor, commercial services, heavy manufacturing, resellers and retail markets. Net sales in the agriculture and mining and utilities end markets were up in the mid-single digits. In 2015, eCommerce sales for Canada were $107 million, a decrease of 13% versus the prior year and represented 12% of total sales. If the Company included KeepStock®, the electronic inventory management offering, total eCommerce and KeepStock® sales would represent 23% of total sales.

The segment gross profit margin decreased 0.4 percentage point in 2015 versus 2014, primarily driven by product cost inflation exceeding price inflation driven by unfavorable foreign exchange, partially offset by higher supplier rebates.

Operating expenses decreased 4% in 2015. In local currency, operating expenses increased 11%, primarily due to higher severance costs related to reorganizing the business, higher depreciation driven primarily by a new DC and incremental costs from the WFS Enterprises Inc. (WFS) acquisition as 2014 included a partial year. Excluding the reorganization costs, operating expenses increased 9%.

Operating earnings of $27 million for 2015 decreased $61 million, or 69%, versus 2014. In local currency, operating earnings decreased 64%. The decrease in earnings was due to lower sales, lower gross profit margins and negative operating expense leverage.

Other Businesses
Net sales for Other Businesses, which include Zoro in the U.S. and operations in Europe, Asia and Latin America and Cromwell in the U.K. (acquired September 1, 2015), were $1,406 million for 2015, an increase of $224 million, or 19%, when compared with $1,182 million for 2014. The net sales increase was primarily due to incremental sales from Cromwell, Zoro and MonotaRO. The 19% increase for the year consisted of the following contributors:

	Percent Increase/ (Decrease)
Volume/Price	21
Acquisition	12
Foreign exchange	(14)
Total	19%

Operating earnings for other businesses were $48 million for 2015 compared to a loss of $38 million for 2014. The year 2015 included $6 million of charges for the continuing restructuring of the business in Europe and additional costs to shut down the business in Brazil. The year 2014 included a $29 million charge related to closing the business in Brazil, a $14 million charge related to the transition of the employee retirement plan in Europe, a $12 million impairment charge for the business in Colombia and $10 million in restructuring costs for the business in Europe. Excluding these charges in both years, operating earnings increased $27 million, primarily driven by improved operating performance by MonotaRO and Zoro, partially offset by incremental expenses associated with the single channel online business model in Europe.

Other Income and Expense

Other income and expense was $50 million of expense in 2015 compared with $13 million of expense in 2014. The following table summarizes the components of other income and expense (in thousands of dollars):

	For the Years Ended December 31,	
	2015	2014
Interest income (expense) - net	$ (32,405)	$ (8,025)
Loss from equity method investment	(11,740)	—
Other non-operating income	1,102	483
Other non-operating expense	(6,572)	(5,189)
Total	$ (49,615)	$ (12,731)

The increase in expense was driven by higher interest expense from the $1 billion in long-term debt issued in June 2015, as well as operating losses from the Company's clean energy investments. As discussed below, the operating losses in this investment were more than offset by energy tax credits that lowered Grainger's tax rate, which provided Grainger with positive net earnings and cash flow. The clean energy investment generated $0.09 per share of earnings for 2015.

Income Taxes

Income taxes of $466 million in 2015 decreased 11% compared with $522 million in 2014. Grainger's effective tax rates were 37.2% and 39.1% in 2015 and 2014, respectively. Excluding the effect of restructuring and non-operating items reported in both 2015 and 2014, Grainger's adjusted tax rate was 37.6% and 38.2% in 2015 and 2014, respectively. The decrease in the tax rate in 2015 was primarily due to the Company's clean energy investments, partially offset by a higher proportion of earnings in the U.S. versus geographies with lower tax rates.

Financial Condition

Grainger expects its strong working capital position, cash flows from operations and borrowing capacity to continue, allowing it to fund its operations, including growth initiatives, capital expenditures, acquisitions and repurchase of shares, as well as to pay cash dividends.

Cash Flow

2016 Compared to 2015

Net cash provided by operating activities was $1,003 million and $990 million for the twelve months ended December 31, 2016 and 2015, respectively. The increase was primarily the result of lower employee related costs.

Net cash used in investing activities was $262 million and $843 million for the twelve months ended December 31, 2016 and 2015, respectively. The higher use of cash in 2015 was driven by the Cromwell acquisition in September 2015. In 2016, lower additions to property, buildings and equipment compared to the prior year and higher proceeds from the sale of branch real estate assets contributed to the reduction in cash used in investing activities.

Net cash used in financing activities was $755 million and $63 million in the twelve months ended December 31, 2016 and 2015, respectively. The change in financing activities was primarily driven by the issuance of $400 million in Senior Notes in 2016 compared to the issuance of $1 billion in Senior Notes in 2015 and significantly lower stock repurchases in 2016 compared to 2015.

2015 Compared to 2014

Net cash provided by operating activities in 2015 were $990 million versus $960 million in 2014. This positive cash flow was due to relatively flat receivable balances, partially offset by a decrease in employee benefit liabilities.

Net cash used in investing activities was $843 million and $384 million in 2015 and 2014, respectively. The higher use of cash was primarily driven by $464 million of net cash paid for a business acquisition in 2015 versus $31 million in 2014.

Net cash used in financing activities of $63 million in 2015 decreased $695 million from $758 million in 2014. The decrease was primarily due to proceeds from the issuance of $1 billion in Senior Notes, a £160 million term loan and issuance of commercial paper to support the acquisition of Cromwell, as well as ¥6 billion term loans to support the construction of a new distribution center in MonotaRO. These proceeds were partially offset by an increase in share repurchases and dividends paid.

Working Capital

Internally generated funds are the primary source of working capital and funds used in business expansion, supplemented by debt. In addition, funds are expended to support growth initiatives, as well as for business and systems development and other infrastructure improvements.

Working capital consists of current assets (less non-operating cash) and current liabilities (less short-term debt and current maturities of long-term debt). Working capital was $1,722 million at December 31, 2016, compared with $1,794 million at December 31, 2015. At these dates, the ratio of current assets to current liabilities was 2.4 and 2.5, respectively. The decrease in working capital was primarily related to increases in accounts payable.

Capital Expenditures

In each of the past three years, a portion of operating cash has been used for additions to property, buildings, equipment and capitalized software as summarized in the following table (in thousands of dollars):

	For the Years Ended December 31,		
	2016	2015	2014
Land, buildings, structures and improvements	$ 70,942	$ 86,082	$ 159,793
Furniture, fixtures, machinery and equipment	139,474	202,137	140,358
Subtotal	210,416	288,219	300,151
Capitalized software	73,833	85,649	87,239
Total	$ 284,249	$ 373,868	$ 387,390

In 2016, the Company continued to invest in the North America distribution network, as well as the distribution network in other segments, and sales productivity initiatives. Other significant investments in 2016 included the eCommerce platform, sustaining capital investments in branches and distribution centers and other technology infrastructure.

In 2015, Grainger invested in the North America distribution center network and the completion of the common ERP platform for North America and made investments in support of sales initiatives. Other significant investments in 2015 included the eCommerce platform, sustaining capital investments for Grainger's branches and distribution centers and other technology infrastructure.

In 2014, Grainger made significant capital investments to build new distribution centers in the United States and Canada. In the U.S., Grainger began the replacement of its existing New Jersey distribution center with construction of a new 1.3 million square-foot distribution center, completed in 2016. In Canada, Grainger continued construction of the new distribution center in the Toronto area, completed in 2015. Grainger also invested in technology infrastructure, vending machines for the KeepStock® program and normal recurring replacement of equipment.

In 2017, capital expenditures are expected to range from $250 million to $275 million. Projected spending includes continued investments in the supply chain, eCommerce and inventory management solutions. Grainger expects to fund 2017 capital spending primarily from operating cash.

Debt

Grainger maintains a debt ratio and liquidity position that provides flexibility in funding working capital needs and long-term cash requirements. In addition to internally generated funds, Grainger has various sources of financing available, including bank borrowings under lines of credit. Total debt, which is defined as total interest-bearing debt (current plus long-term) as a percent of total capitalization was 54.1% and 45.8%, as of December 31, 2016 and 2015, respectively.

On April 16, 2015, Grainger announced plans to issue $1.8 billion in long-term debt over the next three years, to partially fund the repurchase of $3 billion in shares. The remaining amount is expected to be funded from internally generated cash. In June 2015, Grainger issued $1 billion in long-term debt, which was the first of three expected debt issuances. The debt is payable in 30 years and carries a 4.60% interest rate, payable semiannually. In May 2016, Grainger issued $400 million in long-term debt, which was the second of three expected debt issuances. The new debt is payable in 30 years and carries a 3.75% interest rate, payable semiannually. With the new long-term debt, Grainger expects to maintain a debt to EBITDA ratio in the 1.0–1.5x range. EBITDA, which is defined as Earnings before Interest, Taxes, Depreciation and Amortization, is a non-GAAP measure and may not be defined and calculated by other companies in the same manner. Refer to Note 7 and Note 8 to the Consolidated Financial Statements included in Item 8. The Company ended 2016 with a Debt/EBITDA ratio of 1.7x, slightly beyond its targeted range of 1.0-1.5x. During 2017, the Company plans to reduce its share repurchase target to $600 million from the $800 million planned repurchases originally announced in 2015 to reduce short-term debt. This action, along with the performance indicated by the Company's 2017 guidance announced on January 25, 2017, should help the Company improve its Debt/EBITDA ratio.

Commitments and Other Contractual Obligations

At December 31, 2016, Grainger's contractual obligations, including estimated payments due by period, are as follows (in thousands of dollars):

	Payments Due by Period				
	Total Amounts Committed	Less than 1 Year	1 - 3 Years	4 - 5 Years	More than 5 Years
Debt obligations	$ 2,266,176	$ 406,106	$ 158,009	$ 295,065	$ 1,406,996
Interest on debt	1,768,974	66,323	131,439	123,878	1,447,334
Operating lease obligations	178,325	59,045	78,120	25,691	15,469
Purchase obligations:					
Uncompleted additions to property, buildings and equipment	71,350	69,171	1,871	308	—
Commitments to purchase inventory	469,215	469,215	—	—	—
Other purchase obligations	216,917	121,297	78,461	17,159	—
Other liabilities	200,504	65,757	29,365	31,478	73,904
Total	$ 5,171,461	$ 1,256,914	$ 477,265	$ 493,579	$ 2,943,703

Purchase obligations for inventory are made in the normal course of business to meet operating needs. While purchase orders for both inventory purchases and non-inventory purchases are generally cancelable without penalty, certain vendor agreements provide for cancellation fees or penalties depending on the terms of the contract.

Other liabilities represent future payments for profit sharing and employee benefits plans as determined by actuarial projections and other employee benefit plans. Other employment-related benefits costs of $60 million have not been included in this table as the timing of benefit payments is not predictable. See Note 9 to the Consolidated Financial Statements.

See also Note 8 and Note 10 to the Consolidated Financial Statements for further detail related to interest on long-term debt and operating lease obligations, respectively.

Grainger has recorded a noncurrent liability of approximately $63 million for tax uncertainties and interest at December 31, 2016. This amount is excluded from the table above, as Grainger cannot make reliable estimates of these cash flows by period. See Note 14 to the Consolidated Financial Statements.

Off-Balance Sheet Arrangements

Grainger does not have any material exposures to off-balance sheet arrangements. All significant contractual obligations are recorded on the Company's Consolidated Balance Sheet or fully disclosed in the notes to Grainger's Consolidated Financial Statements.

Critical Accounting Estimates

The preparation of financial statements, in conformity with Generally Accepted Accounting Principles (GAAP) in the United States of America, requires management to make judgments, estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses in the financial statements. Management bases its estimates on historical experience and other assumptions, which it believes are reasonable. If actual amounts are ultimately different from these estimates, the revisions are included in Grainger's results of operations for the period in which the actual amounts become known.

Accounting estimates are considered critical when they require management to make assumptions about matters that are highly uncertain at the time the estimates are made and when there are different estimates that management reasonably could have made, which would have a material impact on the presentation of Grainger's financial condition, changes in financial condition or results of operations.

Note 1 to the Consolidated Financial Statements describes the significant accounting policies used in the preparation of the Consolidated Financial Statements. The most significant areas involving management judgments and estimates follow. Actual results in these areas could differ materially from management's estimates under different assumptions or conditions.

Allowance for Doubtful Accounts. Grainger considers several factors to estimate the allowance for uncollectible accounts receivable including the age of the receivables, the percent past due and the historical ratio of actual write-offs to the age of the receivables. The analyses performed also take into consideration economic conditions that may have an impact on a specific industry, group of customers or a specific customer. Based on analysis of actual historical write-offs of uncollectible accounts receivable, Grainger's estimates and assumptions have been materially accurate in regards to the valuation of its allowance for doubtful accounts. However, write-offs could be materially different than the reserves established if business or economic conditions change or actual results deviate from historical trends, and Grainger's estimates and assumptions may be revised as appropriate to reflect these changes. For fiscal years 2016, 2015 and 2014, actual results did not vary materially from estimated amounts.

Inventory Reserves. Grainger establishes inventory reserves for excess and obsolete inventory. Grainger regularly reviews inventory to evaluate continued demand and identify any obsolete or excess quantities. Grainger records provisions for the difference between excess and obsolete inventory cost and its estimated realizable value. Estimated realizable value is based on anticipated future product demand, market conditions and liquidation values. As Grainger's inventory consists of approximately 1.6 million stocked products, it is not practical to quantify the actual disposition of excess and obsolete inventory against estimated amounts at a stock keeping unit (SKU) level and no individual SKU is material. There were no material differences noted between reserve levels compared to the level of write-offs historically. Grainger's methodology for estimating reserves is continually evaluated based on current experience and the methodology provides for a materially accurate level of reserves at any reporting date. Actual results could differ materially from projections and require changes to reserves that could have a material effect on Grainger's results of operations, based on significant changes in product demand, market conditions or liquidation value. If business or economic conditions change, Grainger's estimates and assumptions may be revised as appropriate. For fiscal years 2016, 2015 and 2014, actual results did not vary materially from estimated amounts.

Goodwill and Indefinite Lived Intangible Assets. Business acquisitions result in the recording of goodwill and identified intangible assets that affect the amount of amortization expense and possible impairment write-downs that may occur in future periods. Grainger reviews goodwill and intangible assets with indefinite lives for impairment at least annually or when events or changes in circumstances indicate the carrying value of these assets might exceed their current fair values.

Grainger completed the annual impairment testing during the fourth quarter of 2016. For all of the Company's reporting units, the estimated fair values substantially exceeded the carrying values, except for the Fabory reporting unit. As of the 2015 test, the fair value of the Fabory reporting unit exceeded its $106 million carrying value by 15%. During the current year testing, Grainger considered Fabory's performance and the revised outlook. Prior branch rationalization initiatives and structural changes in the business contributed to cost improvements. However, declines in sales, primarily in the Netherlands and France, and price pressure contributed to lower earnings for the year. The current year business performance and revised financial projections also reflect market conditions, which continued to be negatively impacted by the downturn in oil and gas and maritime industries in the Netherlands, Fabory's largest market. The revised outlook and uncertainty beyond 2016 were factored into lower earnings, cash flow projections and long-term expectations for Fabory's future performance, resulting in the calculated fair value of the reporting unit below its carrying value in step one of the two-step quantitative test, and step two impairment calculations were required. As a result, a $47 million goodwill impairment charge was recorded with no tax benefit due to the non-deductibility of goodwill in the relevant taxing jurisdictions.

The risk of potential failure of step one of the quantitative tests in future reporting periods is highly dependent upon key assumptions included in the determination of the reporting unit's fair value. The fair value of reporting units is calculated primarily using the discounted cash flow (DCF) method and incorporating value indicators from a market approach to evaluate the reasonableness of the resulting fair values. The DCF method incorporates various assumptions regarding the amount and timing of future expected cash flows, including revenues, gross margins, operating expenses, capital expenditures and working capital based on operational budgets, long-range strategic plans and other estimates. The terminal value growth rate is used to calculate the value of cash flows beyond the last projected period and reflects management’s best estimates for perpetual growth for the reporting units. Estimates of market-participant risk-adjusted weighted average cost of capital are used as a basis for determining the discount rates to apply to the reporting units’ future expected cash flows and terminal value.

Changes in assumptions regarding future performance and unfavorable economic environment may have a significant impact on reporting units' cash flows in the future. Grainger performed a sensitivity analysis to determine the reasonableness of the step one results for the reporting units subject to the two-step quantitative tests and evaluated the impact of a 100 basis point increase in the discount rate or a 100 basis point decrease in the terminal growth rate. No indications of impairment resulted from this sensitivity analysis. Given the sensitivity of the calculated fair value to changes in these key assumptions, Grainger may be required to recognize an impairment for goodwill in the future due to changes in market conditions or other factors related to these key assumptions.

Stock Incentive Plans. Grainger maintains stock incentive plans under which a variety of incentive grants may be awarded to employees and directors. Grainger uses a binomial lattice option pricing model to estimate the fair value of stock option grants. The model requires projections of the risk-free interest rate, expected life, volatility, dividend yield and forfeiture rate of the stock option grants. The fair value of options granted used the following assumptions:

	For the Years Ended December 31,		
	2016	2015	2014
Risk-free interest rate	1.4%	1.5%	2.0%
Expected life	6 years	6 years	6 years
Expected volatility	24.5%	24.9%	25.0%
Expected dividend yield	2.0%	1.9%	1.7%

The risk-free interest rate is selected based on yields from U.S. Treasury zero-coupon issues with a remaining term approximately equal to the expected term of the options being valued. The expected life selected for options granted during each year presented represents the period of time that the options are expected to be outstanding based on historical data of option holders' exercise and termination behavior. Expected volatility is based upon implied and historical volatility of the closing price of Grainger's stock over a period equal to the expected life of each option grant. Historical information is also the primary basis for selection of the expected dividend yield assumptions. Because stock option compensation expense is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures, using historical forfeiture experience. The amount of stock option compensation expense is significantly affected by the valuation model and these assumptions. If different assumptions were used, the stock option compensation expense could be significantly different from what is recorded in the current period.

Compensation expense for other stock-based awards is based upon the closing market price on the last trading date preceding the date of the grant. Because the expense for other stock-based awards should reflect the awards ultimately expected to vest, it has been reduced for estimated forfeitures, using historical forfeiture experience.

For additional information concerning stock incentive plans, see Note 11 to the Consolidated Financial Statements.

Postretirement Healthcare Benefits. The postretirement healthcare obligation and net periodic cost are dependent on assumptions and estimates used in calculating such amounts. The assumptions used include, among others, discount rates, assumed rates of return on plan assets and healthcare cost trend rates and certain employee-related factors, such as turnover, retirement age and mortality rates. Changes in these and other assumptions (caused by conditions in equity markets or plan experience, for example) could have a material effect on Grainger's postretirement benefit obligation and expense and could affect its results of operations and financial condition. These changes in assumptions may also affect voluntary decisions to make additional contributions to the trust established for funding the postretirement benefit obligation.

The discount rate assumptions used by management reflect the rates available on high-quality fixed income debt instruments as of December 31, the measurement date, of each year. A higher discount rate reduces the present value of benefit obligations and net periodic benefit costs. As of December 31, 2016, Grainger decreased the discount rate used in the calculation of the postretirement plan obligation from 4.20% to 4.00% to reflect the decrease in market interest rates. Grainger estimates that this decrease could decrease 2017 pretax earnings by approximately $0.8 million. However, other changes in assumptions may increase, decrease or eliminate this effect.

A 1 percentage point change in assumed healthcare cost trend rates would have had the following effects on December 31, 2016 results (in thousands of dollars):

	1 Percentage Point	
	Increase	(Decrease)
Effect on total of service and interest cost	$ 1,411	$ (1,162)
Effect on postretirement benefit obligation	27,542	(22,748)

Grainger used Mortality Table RPH-2014 and changed the mortality improvement scale used to project mortality rates into the future from Mortality Improvement Scale MP-2015 to Mortality Improvement Scale MP-2016 at December 31, 2016. Mortality Table RPH-2014 is a headcount-weighted table that is more appropriate for the measurement of other postretirement employee benefit plans. Scale MP-2016, published by the Society of Actuaries, reflects the most recent data for mortality improvement. Grainger estimates this change could increase 2017 pretax earnings by approximately $0.6 million.

Grainger updated the 2016 census for involuntary terminations that occurred in 2016. Grainger estimates this change could increase 2017 pretax earnings by approximately $0.5 million.

As of December 31, 2016, Grainger adopted a new healthcare trend rate to include a pre and post age 65 trend rate. The alternative trend rates allow for a better estimate of expected trends for this plan. Grainger estimates this change could decrease 2017 pretax earnings by approximately $1.8 million.

Grainger uses the long-term historical return on the plan assets and the historical performance of the S&P 500 and the Total International Composite Index to develop its expected return on plan assets. In 2016, the Company increased the after-tax expected long-term rate of return on plan assets from 6.65% to 7.13% based on the historical average of long-term rates of return due to a change in the estimated tax rate. This change was due to the nature of the taxable income earned on the investments in the Group Benefit Trust and the applicable tax rates. Grainger estimates this change could increase 2017 pretax earnings by approximately $0.8 million.

Grainger may terminate or modify the postretirement plan at any time, subject to the provisions of the Employee Retirement Income Security Act of 1974 (ERISA) and the Internal Revenue Code, as amended. In the event the postretirement plan is terminated, all assets of the Group Benefit Trust inure to the benefit of the participants. The foregoing assumptions are based on the presumption that the postretirement plan will continue. Were the postretirement plan to terminate, different actuarial assumptions and other factors might be applicable.

Grainger has used its best judgment in making assumptions and estimates and believes such assumptions and estimates used are appropriate. Changes to the assumptions may be required in future years as a result of actual experience or new trends or plan changes and, therefore, may affect Grainger's retirement plan obligations and future expense. For additional information concerning postretirement healthcare benefits, see Note 9 to the Consolidated Financial Statements.

Income Taxes. The tax balances and income tax expense recognized by Grainger are based on management's interpretations of the tax laws of multiple jurisdictions. Income tax expense reflects Grainger's best estimates and assumptions regarding, among other items, the level of future taxable income, interpretation of tax laws and tax planning opportunities, plans for reinvestment of cash overseas and uncertain tax positions. Future rulings by tax authorities and future changes in tax laws and their interpretation, changes in projected levels of taxable income, changes in planned need for cash overseas and future tax planning strategies could impact the actual effective tax rate and tax balances recorded by Grainger.

Contingent Liabilities. At any time, Grainger may be subject to investigations, legal proceedings or claims related to the ongoing operation of its business, including claims both by and against Grainger. Such proceedings typically involve claims related to product liability, general negligence, contract disputes, environmental issues, unclaimed property, wage and hour laws, intellectual property, employment practices, regulatory compliance or other matters and actions brought by employees, consumers, competitors, suppliers or governmental entities. Grainger retains a significant portion of the risk of certain losses related to workers' compensation, auto liability, general liability and property losses through the utilization of high deductibles and self-insured retentions. Grainger routinely assesses the likelihood of any adverse outcomes related to these matters on a case by case basis, as well as the potential ranges of losses and fees. Grainger establishes accruals for its potential exposures, as appropriate, for claims against Grainger when losses become probable and the financial impact of an adverse outcome is reasonably estimable. Legal fees are recognized as incurred and are not included in accruals for contingencies. Where Grainger is able to reasonably estimate a range of potential losses, Grainger records the amount within that range that constitutes Grainger's best estimate. Grainger also discloses the nature of and range of loss for claims against Grainger when losses are reasonably possible and the exposure is considered material to Grainger's Consolidated Financial Statements. These accruals and disclosures are determined based on the facts and circumstances related to the individual cases and require estimates and judgments regarding the interpretation of facts and laws, as well as the effectiveness of strategies or other factors beyond Grainger's control. If the assessment of any of these factors changes, the estimates may change. Predicting the outcome of claims and litigation, and estimating related costs and exposure, involves substantial uncertainties that could cause actual costs to vary materially from estimates and accruals.

Other. Other significant accounting policies, not involving the same level of measurement uncertainties as those discussed above, are nevertheless important to an understanding of the financial statements. Policies such as revenue recognition, depreciation, intangibles, long-lived assets, fair value measurements and valuations and warranties require judgments on complex matters that are often subject to multiple external sources of authoritative guidance such as the Financial Accounting Standards Board and the Securities and Exchange Commission. Possible changes in estimates or assumptions associated with these policies are not expected to have a material effect on the financial condition or results of operations of Grainger. More information on these additional accounting policies can be found in Note 1 to the Consolidated Financial Statements.

Effects of Inflation and Changing Prices
Grainger is affected by inflation through increased product and operating costs, and the ability to pass on cost increases to customers over time is dependent upon market conditions. The ability to achieve sales growth through increased prices is also subject to inflation and normal competitive conditions. The predominant use of the last-in, first-out (LIFO) method of accounting for inventories and accelerated depreciation methods for financial reporting and income tax purposes result in a substantial recognition of the effects of inflation in the financial statements.

Some of Grainger's products contain significant amounts of commodity-priced materials, such as steel, copper, petroleum derivatives or rare earth minerals, and are subject to price changes based upon fluctuations in the commodities market.

Grainger believes the most positive means to combat inflation and advance the interests of investors lie in the continued application of basic business principles, which include improving productivity, maintaining working capital turnover and offering products and services that can command appropriate prices in the marketplace.

Forward-Looking Statements
From time to time, in this Annual Report on Form 10-K, as well as in other written reports and verbal statements, Grainger makes forward-looking statements that are not historical in nature but concern forecasts of future results, business plans, analyses, prospects, strategies, objectives and other matters that may be deemed to be "forward-looking statements" under the federal securities laws. Such forward-looking statements are identified by words such as "anticipate," "estimate," "believe," "expect," "could," "forecast," "may," "intend," "plan," "predict," "project" and similar terms and expressions.

Grainger cannot guarantee that any forward-looking statement will be realized, although Grainger does believe that its assumptions underlying its forward-looking statements are reasonable. Achievement of future results is subject to risks and uncertainties, many of which are beyond the Company's control, which could cause Grainger's results to differ materially from those that are presented.

Important factors that could cause actual results to differ materially from those presented or implied in a forward-looking statement include, without limitation: higher product costs or other expenses; a major loss of customers; loss or disruption of source of supply; increased competitive pricing pressures; failure to develop or implement new technologies or business strategies; the outcome of pending and future litigation or governmental or regulatory proceedings, including with respect to wage and hour, anti-bribery and corruption, environmental, advertising, privacy and cybersecurity matters; investigations, inquiries, audits and changes in laws and regulations; disruption of information technology or data security systems; general industry or market conditions; general global economic conditions; currency exchange rate fluctuations; market volatility; commodity price volatility; labor shortages; facilities disruptions or shutdowns; higher fuel costs or disruptions in transportation services; natural and other catastrophes; unanticipated weather conditions; loss of key members of management; the Company's ability to operate, integrate and leverage acquired businesses; changes in credit ratings; changes in effective tax rates and other factors identified under Item 1A: Risk Factors and elsewhere in this Form 10-K.

Caution should be taken not to place undue reliance on Grainger's forward-looking statements and Grainger undertakes no obligation to publicly update any of its forward-looking statements, whether as a result of new information, future events or otherwise.

Item 7A: Quantitative and Qualitative Disclosures About Market Risk

Grainger may use financial instruments to reduce its exposure to adverse fluctuations in foreign currency exchange rates and interest rates as part of its overall risk management strategy. The derivative positions reduce risk by hedging certain underlying economic exposures. Because of the high correlation between the hedging instrument and the underlying exposure, fluctuations in the value of the instruments are generally offset by reciprocal changes in the value of the underlying exposure. Grainger does not enter into derivative financial instruments for trading or speculative purposes.

Foreign Currency Exchange Rates

Grainger’s financial results, including the value of assets and liabilities, are exposed to foreign currency exchange rate risk when the financial statements of the international subsidiaries, as stated in their local currencies, are translated into U.S. dollars. While it is difficult to quantify any particular impact of changes in exchange rates, a uniform 10% strengthening in the U.S. dollar (whereby all other variables are held constant and unusual expense items described in "Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations" are excluded) would have resulted in an increase in net earnings of $2 million for the year ended December 31, 2016, and a decrease of $1 million for the year ended December 31, 2015. Comparatively, a 10% weakening of the U.S. dollar would have resulted in a decrease in net earnings of $2 million for the year ended December 31, 2016, and an increase of $1 million for the year ended December 31, 2015 . This sensitivity analysis of the effects of changes in foreign currency exchange rates does not factor in future potential changes in sales levels or local currency prices or costs.

Interest Rates

Grainger is subject to interest rate risk related to its variable rate debt portfolio. Grainger may enter into interest rate swap agreements to manage those risks. Based on Grainger's variable rate debt and derivative instruments outstanding, a 1 percentage point increase in interest rates paid by Grainger would have resulted in a decrease to net earnings of approximately $5 million for 2016 and $3 million for 2015. A 1 percentage point decrease in interest rates would have resulted in an increase to net earnings of approximately $5 million for 2016 and $3 million for 2015. This sensitivity analysis of the effects of changes in interest rates on long-term debt does not factor in future potential changes in long-term debt levels.

Commodity Price Risk

Grainger has limited primary exposure to commodity price risk on certain products for resale, but does not purchase commodities directly.

Item 8: Financial Statements and Supplementary Data

The financial statements and supplementary data are included on pages 39 to 80. See the Index to Financial Statements and Supplementary Data on page 38.

Item 9: Changes in and Disagreements With Accountants on Accounting and Financial Disclosure

None.

Item 9A: Controls and Procedures

Disclosure Controls and Procedures

Grainger carried out an evaluation, under the supervision and with the participation of its management, including the Chief Executive Officer and the Chief Financial Officer, of the effectiveness of the design and operation of Grainger's disclosure controls and procedures pursuant to Exchange Act Rule 13a-15. Based upon that evaluation, the Chief Executive Officer and the Chief Financial Officer concluded that Grainger's disclosure controls and procedures were effective as of the end of the period covered by this report.

Internal Control Over Financial Reporting

(A) Management's Annual Report on Internal Control Over Financial Reporting

Management's report on Grainger's internal control over financial reporting is included on page 39 of this Report under the heading Management's Annual Report on Internal Control Over Financial Reporting.

(B) Attestation Report of the Registered Public Accounting Firm

The report from Ernst & Young LLP on its audit of the effectiveness of Grainger's internal control over financial reporting as of December 31, 2016, is included on page 40 of this Report under the heading Report of Independent Registered Public Accounting Firm.

(C) Changes in Internal Control Over Financial Reporting

There have been no changes in Grainger's internal control over financial reporting during the last fiscal quarter that have materially affected, or are reasonably likely to materially affect, Grainger's internal control over financial reporting.

Item 9B: Information required to be disclosed in a Form 8-K

None.

PART III

Item 10: Directors, Executive Officers and Corporate Governance

The information required by this item is incorporated by reference to Grainger's proxy statement relating to the annual meeting of shareholders to be held April 26, 2017, under the captions “Directors,” “Board of Directors and Board Committees” and “Section 16(a) Beneficial Ownership Reporting Compliance.” Information required by this item regarding executive officers of Grainger is set forth below under the caption “Executive Officers.”

Grainger has adopted a code of ethics that applies to its principal executive officer, principal financial officer and principal accounting officer and controller. This code of ethics is part of Grainger’s Business Conduct Guidelines for directors, officers and employees, which is available free of charge through Grainger’s website at www.grainger.com/investor. A copy of the Business Conduct Guidelines is also available in print without charge to any person upon request to Grainger's Corporate Secretary. Grainger intends to disclose on its website any amendment to any provision of the Business Conduct Guidelines that relates to any element of the definition of “code of ethics” enumerated in Item 406 (b) of Regulation S-K under the Exchange Act and any waiver from any such provision granted to Grainger’s principal executive officer, principal financial officer, principal accounting officer and controller or persons performing similar functions. Grainger has also adopted Operating Principles for the Board of Directors, which are available on its website and are available in print to any person who requests them.

Executive Officers

Following is information about the Executive Officers of Grainger including age as of March 1, 2017. Executive Officers of Grainger generally serve until the next annual election of officers, or until earlier resignation or removal.

Name and Age	Positions and Offices Held and Principal Occupation and Employment During the Past Five Years
Laura D. Brown (53)	Senior Vice President, Communications and Investor Relations, a position assumed in 2010 after serving as Vice President, Global Business Communications, a position assumed in 2009 and Vice President, Investor Relations, a position assumed in 2008.
Joseph C. High (62)	Senior Vice President and Chief People Officer, a position assumed in June 2011. Prior to joining Grainger, Mr. High was the Senior Vice President of Human Resources at Owens Corning in Toledo, Ohio, a position assumed in 2004.
John L. Howard (59)	Senior Vice President and General Counsel, a position assumed in 2000.
Ronald L. Jadin (56)	Senior Vice President and Chief Financial Officer, a position assumed in 2008. Previously, Mr. Jadin served as Vice President and Controller, a position assumed in 2006 after serving as Vice President, Finance.
D.G. Macpherson (49)	Chief Executive Officer, a position assumed in October 2016. Previously, Mr. Macpherson served as Chief Operating Officer, a position assumed in 2015; Senior Vice President and Group President, Global Supply Chain and International, a position assumed in 2013; Senior Vice President and President, Global Supply Chain and Corporate Strategy, a position assumed in 2012, and Senior Vice President, Global Supply Chain, a position assumed in 2008.
Paige K. Robbins (48)	Senior Vice President, Global Supply Chain, Branch Network, Contact Centers and Corporate Strategy, a position assumed in 2016. Since joining Grainger in September 2010, Ms. Robbins has held various positions as a Vice President, including in the areas of Global Supply Chain and Logistics.
James T. Ryan (58)	Chairman of the Board, a role held since April 2009. Mr. Ryan also served as President and Chief Executive Officer of Grainger from June 2008 through September 2016.
Eric R. Tapia (40)	Vice President and Controller, a position assumed in 2016. Previously, Mr. Tapia served as Vice President, Internal Audit from 2010 to 2016. Mr. Tapia is a Certified Public Accountant (CPA) and before joining Grainger in 2010 was an audit partner with KPMG.

Item 11: Executive Compensation

The information required by this item is incorporated by reference to Grainger's proxy statement relating to the annual meeting of shareholders to be held April 26, 2017, under the captions “Board of Directors and Board Committees,” “Director Compensation,” “Report of the Compensation Committee of the Board” and “Compensation Discussion and Analysis.”

Item 12: Directors and Executive Officers

The information required by this item is incorporated by reference to Grainger's proxy statement relating to the annual meeting of shareholders to be held April 26, 2017, under the captions “Ownership of Grainger Stock” and “Equity Compensation Plans.”

Item 13: Certain Relationships and Related Transactions

The information required by this item is incorporated by reference to Grainger's proxy statement relating to the annual meeting of shareholders to be held April 26, 2017, under the captions "Election of Directors" and "Transactions with Related Persons."

Item 14: Principal Accountant Fees and Services

The information required by this item is incorporated by reference to Grainger's proxy statement relating to the annual meeting of shareholders to be held April 26, 2017, under the caption “Audit Fees and Audit Committee Pre-Approval Policies and Procedures.”

PART IV

Item 15: Exhibits and Financial Statements Schedules

(a) Documents filed as part of the Form 10-K

(1) Financial Statements: see Item 8, “Financial Statements and Supplementary Data,” on page 38 hereof, for a list of financial statements. Management's Annual Report on Internal Control Over Financial Reporting.

(2) Financial Statement Schedules: the schedules listed in Rule 5-04 of Regulation S-X have been omitted because they are either not applicable or the required information is shown in the consolidated financial statements or notes thereto.

(3) Exhibits Required by Item 601 of Regulation S-K: the information required by this Item 15(a)(3) of Form 10-K is set forth on the Exhibit Index that follows the Signatures page of the Form 10-K.