load it, the breech pin is withdrawn, the cartridge deposited in the barrel, and the breech pin then restored, and firmly secured. The invention consists in providing the breech pin with a number of expanding segments, operated by suitable mechanical means, by which they are drawn into a recess or groove round the breech pin to allow the pin to be inserted in or removed from the piece of ordnance. After the insertion of the breech pin, the segments are expanded or spread laterally into a groove, so as to form stays to act between the pin and the solid metal of the exterior of the breech. The pin is thus secured, held, and prevented from driving out when the explosion takes place.

Hand Corn Planter.—By H. B. Hammon, Bristolville, Ohio.—This is another of those contrivances that are carried in the hand like a cane, the planting being accomplished by thrusting the lower end of the machine down upon the ground. The invention consists in a novel arrangement of parts for depositing the seed into the lower end of the tube, ready for being forced into the soil by a plunger, whereby all liability of clogging and bruising the seed is prevented, and increased simplicity and certainty in the planting operation is secured.

Washing Machine.—By Israel F. Brown, of Columbus, Ga.—The clothes are placed in a slatted cylinder, made like a squirrel cage. Said cylinder has within it at each end, an obli ue corrugated board, and when the cylinder rotates, the boards cause the clothes to tumble from one end of the machine to the other, thus assisting the cleansing.

Saw Gummer.—By L. A. Dole, of Salem, Ohio.—Consists in the employment of a movable and fixed die, placed in a stock, so arranged as to form a powerful and convenient instrument for cutting the saw teeth.

Improved Harvester.—By W. P. Maxson, of Albion, Wis.—Consists, first, in operating the sickle by a crank fitted and working within a loop attached to the sickle. Second, in a raking apparatus moved by an endless chain. Third, in placing the driving wheel upon an arm of a lever, which is allowed to slide, so that a wheel on the driving wheel shaft may be thrown in and out of gear with a pinion, when desired, and the machine drawn from place to place without giving motion to the working parts.

Attaching Horses to Vehicles.—By Geo. H Gray, Sen. of Clinton, Miss.—Consists in a de vice attached to the shafts, and connected with the harness, whereby the usual whiffletree and traces are dispensed with, and the horse readily detached from the vehicle if he attempts to run away or becomes unruly.

New Method of Drawing Wire.—By F. Noette, of Brooklyn, N. Y., opposite New York City.—The wire is cut from a disk of iron by bringing the edge of the sheet in contact with a cutter, somewhat after the manner that a cobbler cuts a shoe string from a disk of leather. The strips of metal, as fast as they come from the cutter, are passed through draw plates of the ordinary kind, which reduce them to wires of the desired size. The wire is then wound on reels. There is a peculiar arrangement for feeding the metal disks up to the cutters. The reels are also so made as to be capable of being collapsed after a sufficient coil has been wound upon them, and thus permit the convenient removal of the wire.

Great Trial of Fire Engines.

Classic New Haven—the City of Elms—has exhibited a most astonishing and commendable fire annihilating spirit during the past few years, by inviting fire companies, with their engines, from different cities—near and remote—to come up to Collegedum once per annum, and try their skill by throwing tall streams over tall poles. This year three splendid prizes were offered them, of $500, $250, and $100, open to all fire engines. The trial came off on the 5th inst., and nineteen fire engines entered the lists—one from no less a distance than Chicago, Illinois.

Each machine played out of 450 feet of hose. The first prize was won by the *Rippowan* company, of Stamford, Conn., whose machine was made by Mr. Button, of Waterford, N. Y.; the second by the *Damper* company, Hartford, Conn., whose engine was made by H. Waterman, Hudson, N. Y.; and the third by the *Phœnix* company, of Brooklyn, N. Y., whose machine was made by Mr. Hunneman, of Boston, Mass. The engine that took the second prize was a very old one. It is said that it would have taken the first prize with ease, but was scantily manned.

The hight of the stream thrown by the first prize engine was 153 feet; by the second 152 feet; by the third 149 feet. This was pretty good playing. The result of the trial is quite flattering to the builders of the successful engines, although their reputation as manufacturers of excellent fire engines had been established "long, long ago."

Parian Ornaments.

Those beautiful small white figures—single and in groups—exposed in the show windows of large china ware stores, and on the mantelpieces of parlors are called "Parian marble," but they are formed of the same materials as fine unglazed porcelain. In softness of tint it rivals the finest marble employed in statuary. It is composed of nearly two-thirds of ground flint, one-third of fine Chinese clay and very minute portions of lime, soda, potash, magnesia, and a trace of iron. These are very carefully calcined, ground, sifted, and rendered perfectly impalpable. It is not molded from a doughy mass, but formed into a creamy consistency (as in the finest porcelain) and poured into the molds. The models of the figures are made by skillful sculptors, and from these molds are taken. The parian liquid, when poured into the molds, solidifies, and is afterwards slightly baked, until it becomes firm, when the molds are taken to pieces, the casts liberated, and the rough parts on their surfaces carefully removed. A single mold cannot be made to cast a single figure, it is the product of several. The head, the limbs, the drapery, have so many curves that only a part of a figure is produced by one mold, and some groups require no less than fifty.

After the molding and first baking, the most difficult part has still to be performed, namely, the building up and keeping the separate parts in perfect form. All the pieces have to be cemented together, and the joints so obliterated that they cannot be perceived. There is also another source of trouble to the parian artist—the shrinking of the material in drying, owing to the great amount of water it contains, and which is driven off thereby. If one part of a figure shrinks more than its corresponding part it may produce a wry-necked Venus, or a hunch-backed Adonis. And even when a figure is all made up, and its parts nicely proportioned and fitted, they have all to be further dried, and finally annealed in an oven, in which processes they are liable to be injured in their form by unequal heating, whereby they may be twisted and cracked. There is, therefore, a vast amount of waste and breakage in the manufacture of parian ornaments, and this is one reason why they are so dear. But when the gracefulness of their execution and their beautiful appearance are taken into consideration, rivalling as they do the finest chiseled marbles, they are, after all, not dear, for the same work, in marble, could not be produced at a hundred times their cost.

Parian manufactures, as a new branch of the ornamental arts, are hailed by the lovers of the beautiful, because such works are now brought within the reach of the many, and have an elevating influence.

Galvanized Iron Water Pipe.

Messrs. J. J. Walworth & Co., of Boston, having announced that they were ready to furnish galvanized wrought-iron water pipes for streets and dwellings, preparatory to the introduetion of Fresh Pond water, Prof. Horsford, of Cambridge, in the *Chronicle*, puts a few pertinent questions to them. He says he has been informed that these gentlemen considered such pipe permanently protected against the corrosive action of fresh water, and he requests that a demonstration of this be given by them, by exhibiting galvanized iron pipe used for ten or twelve years in New York or Philadelphia. The Professor also states that he has specimens of two inch cast iron pipe laid down in Boston, which was taken up after four years, and was found reduced to a quarter inch bore by incrustation; also specimens of wrought iron one inch pipe, laid down only one year, and was found completely choked up with tubercules of iron rust. The water of Lake Cochituate is *hard* to satisfy, when it rusts and crusts wrought and cast-iron pipe. If Fresh Pond water contains any free carbonic or other acid, Prof. Horsford knows that galvanized wrought iron pipe will not withstand its action very long.

Chronological Record of Means to Prevent Corrosion and Deposits in Steam Boilers.

1779, Tubular Condenser—Watt.
1805, Tubular Injection Condenser—Evans.
1807, Tallow in use on the Thames.
1818, Sediment Collectors—Haliburton.
1819, Potatoes in use on the Thames.
1820, Tubular Condenser—Bresson.
1821, Muriatic Acid for cleaning boiler scale—D'Arcet.
1821, Barley Combings and Peat in use.
1821, Amylaceous substances in general sug gested.
1821, Blowing off—Boulton and Watt.
1822, Change Water or Brine Pumps—Mandslay and Field.
1822, Lime or equivalent alkali suggested by Faraday.
1822, Tubular Condenser—Napier.
1823, High pressure steam affirmed to forbid deposit.
1824, Marbles, Oyster Shells, etc., recommended as collectors.
1824, Oxalate of Ammonia in feed water.
1824, Plate Condenser—Joslin.
1825, Injection Condensing system; first patent of Howard.
1825, Mixture for cleaning boiler scale—Gurney.
1826, Soap and Horse Chesnuts recommended.
1826, Injection Plate Condenser—Yandall.
1826, Fat Meat and balls of grease recommended.
1827, Voltaic method for deposits—Dumas.
1827, Sediment Collectors—Scott.
1827, Plate Archimedes Condenser—Wheeler.
1828, Coal Tar recommended.
1829, Self-Acting Scott's Collectors—Armstrong.
1830, Improved Sediment Collectors—Taylor.
1830, Concentric Plate Condenser—Church.
1831, Improved Condenser—Berry.
1831, Tubular Condenser; first patent of Hall.
1831, Anti-Sediment boiler—Collier.
1831, Charcoal recommended by Ferrari.
1832, Re-injecting Condenser; second patent of Howard.
1833, Improved Condenser—Gordon.
1833, Tubular Condenser; second patent of Hall.
1833, Sperm Oil foots recommended by Bedford.
1833, Injection Tubular Condenser—Holmes.
1833, Prismatic Collectors—Jennings.
1834, Condensing system; third patent of Hall.
1834, External Plate Condenser—Napier.
1835, Tubular Condenser—Pecqueur.
1836, External Injection Tubular Condenser—Symington.
1837, Argile or Prepared Clay—Choix.
1837, Galvanic Paint—Sorel.
1838, Graphite Paste—Gantier and Kennedy.
1838, Cleaning boiler scale, Method of—Dear.
1838, Air Condenser—Collins.
1839, Zinc Protectors—Althans.
1839, Plate Condenser—Zander.
1839, Salt deposit preventing apparatus—Seaward.
1839, Blow-off valves—Kingston.
1840, Common Salt and Muriate of Potash recommended by Flesselle.
1840, Anti-Corrosive Plating—Neilson.
1840, Tubular Air Condenser—Craddock.
1840, Curved Tubular Condenser—Treadwell.
1840, Galvanic Paint—Knapp.
1841, Quick-lime in feed water—Beale.
1841, Muriatic Amalgam—Wall.
1842, Tubular Condenser—Lynch.
1843, Mahogany Sawdust used.
1843, Salinometer—Russell.
1843, Tubular Condenser—Stephens.
1844, Inverted cylinder preservers—Jones.
1844, Patent Condenser—Smith.
1844, Animal Fiber generally recommended by Greaves.
1844, Anti-deposit mixtures—Watteen.
1844, Anti-deposit mixtures—Ritterbrandt.
1846, Injection Tubular Condenser—Pirsson.
1846, Re-injection Tubular Condenser; third patent of Howard.
1846, Anti-incrustation mixture—Delfosse.
1846, Anti-Corrosive plating—Elsner and Philips.
1846, Revolving Tubular Condenser—Craddock.
1846, Anti-deposit preparation—Graham.
1846, Patent Mahogany Sawdust—Anthony and Barnum.
1847, Tubular Condenser—Ericsson.
1847, Blow-off Valve—Copeland.
1848, Anti-corrosive mixtures—Seaton.
1848, Acetic Acid and Acetate of Potass recommended.
1848, Carbonate of Soda used by Harris.
1848, Tubular Air Condenser—Stenson.
1848, Prismatic Oak Protectors—Cave'.
1848, Double Vacuum Tubular Condenser—Pirsson.
1849, Salinometer—How and Sewell.
1849, Chamber Condenser—Urwin.
1849, Regenerative Plate Condenser—Siemens.
1849, Tubular Condenser and Auxiliary Engine—Ericsson and (apparently) Newton.
1850, Salinometer—Spray.
1850, Tubular Condenser and re-heater—Baldwin.
1851, Anti-corrosive Plating—Grissell.
1851, Tubular Condenser and Evaporator—Lynch.
1851, Anti-deposit mixture—Saillard.
1851, Zinc protectors—Babington.
1851, Mono-zygmatic Condenser—Miller.
1852, Preventing Scale—Sebbald.
1853, Tubular Condenser—Crawford.
1854, Tubular Condenser—Carpenter.
1854, Tubular Condenser—Sewell.
1854, Tubular Condenser—Waterman.
1854, Tubular Condenser—Brown.
1854, Tubular Condenser—Bollman.
1854, Removing Scale—Dimpfel.
1854, Preventing Scale—Smith.
1855, Coil Condenser—Hogg.
1855, Purifying Feed Water—Weissenborn.
1856, Removing Incrustations—Everet and Thomson.
1856, Preventing Incrustations—Sloan.
1856, Tubular Condenser—King.
1856, Tubular Condenser—Miller.
1856, Tubular Condenser—Denniston.

Keeping Grapes in Winter.

The following method of keeping grapes in winter is given by a correspondent of the *Rural New Yorker*:—

"I have packed grapes in various ways—in cotton batting, in cotton wadding, with the stems tied with twine, and with paper between the layers—and have arrived at the conclusion that none of these things are necessary, unless the grapes are put into tight boxes. If so packed there must be some dry substance to absorb the moisture, (always passing off more or less until the fruit becomes perfectly dry) otherwise it will mildew and rot the grapes.

The fruit keeps the best, I think, to let it hang on the vines as late as it can and not freeze; pick on a dry day, and place it in shallow boxes, not more than two clusters deep; keep it in as cool a place as you can and not let it freeze, and where there is sufficient circulation of air to carry off the moisture. I have kept them in this way until April, and though towards the last they were indented like raisins, they still retained their delicious flavor."

Ascent of Mount Arrarat.

Five Englishmen have, according to the London *Times*, recently made the ascent of Mount Arrarat, in Armenia, which tradition points out as the place where Noah's Ark rested, after the Flood. It is 17,323 feet above the level of the sea. It is stated that they reached the very summit, which never had been ascended by any person before.

Iron Railroad Cars.

Messrs. Passavant and Archer, of this city, have six elegant iron cars, for our city railroads, nearly completed. They are constructed according to La Mothe's patent.

Our publishers, when they reprint foreign books, should always give the date of their original publication.