

RECENTLY PATENTED INVENTIONS.

Engineering.

ENGINE.—Robert D. Knight, Vinita, Indian Territory. This is an engine more especially designed for use on locomotives, the invention covering an improvement whereby the engineer may control the introduction of steam into the cylinder regardless of the slide valve. The cylinder is connected by the usual ports with the steam chest in which operates the slide valve, and in the ports are arranged plugs which may be turned to close the ports and connect them by additional ports with the exhaust. The outer ends of the plugs are connected with each other and with the locomotive cab, permitting the engineer to change their position as desired, singly or collectively.

GAS OR VAPOR ENGINE.—Frederick W. Mellars, San Francisco, Cal. This engine is designed to be of very strong and durable construction and highly efficient in operation. It has a rocking valve adapted to open and close the gas inlet and exhaust, the valve being operated by a cam which, during the part of its revolution corresponding to the compression and expansion periods of the engine, holds the valve stationary and in a closed position over both inlet and exhaust.

VAPOR ENGINE.—Isaac F. Allman, Jersey City, N. J. This engine has a governor comprising a spring-pressed block mounted to slide on a running part of the engine and formed with an oblique groove engaged by a lever fulcrumed on the running part, while a sliding sleeve is connected with the lever and with the part to be governed. The improvement is designed to enable the engine to be improved with great precision, the governor acting positively and quickly when an abnormal speed is attained, causing the exhaust valve to remain closed to prevent the escape of burned gases and a drawing of the mixture into the cylinder until the speed is reduced.

Railway Appliances.

SWITCH.—William W. Doty, New York City. This is a switch especially designed for use on street railways, the switch being normally closed to the side track, but being opened, when desired, by pressure of the foot upon a lever projecting up through the car platform, as the car comes to the proper place, the switch being closed after the car has passed by the wheels coming in contact with another lever. Should the switch point be accidentally moved by a passing vehicle, a spring causes it to swing back to closed position. The entire construction is simple and not liable to get out of order.

RAILWAY GATE.—Samuel L. Reed, of Ebensburg, and William S. Reed, of Johnstown, Pa. This is an improvement in gates used at crossings, to close the roadway on the approach and passing of a train, and comprises a shaft connected with a pivotally mounted gate and having a flexible connection with cams adjacent to the track and adapted to be moved successively by a passing train. The device is so arranged that the gates are also automatically opened when the train has passed the crossing.

SIGNAL LANTERN.—Willard R. Dodson, Jermyn, Pa. This lantern is designed to burn both day and night for a week without attention and consuming but a very small quantity of oil, although giving a large degree of radiation, sufficient for signaling. The wick is made of a sheet of cloth and a sheet of asbestos paper, and is practically imperishable, needing but slight adjustment at long intervals. The lamp also combines various improved details designed to add to its commercial efficiency and insure its durability.

Agricultural.

PLOW.—Joseph J. Bonen, Iron Mountain, Mich. This is a plow especially adapted for the cultivation of the potato, or for drilling for planting or for digging potatoes. It is fitted with adjustable wings or mould boards, so that it may be accommodated to growing plants, and is provided with a shovel, which is detachable from the share and the stock, so that the plow may be used for ordinary purposes when desired. The share and stock are so made that in new ground the weeds will be cut as the plow is drawn forward.

CULTIVATOR SEEDER ATTACHMENT.—William R. Frost and William H. Butlin, Croton, Iowa. An attachment particularly adapted for sowing oats in corn ground or wheat in corn stubble, or like purposes, has been devised by these inventors, the attachment being used as readily on rough ground or on a hillside as upon smooth ground. Means are provided for controlling the amount of seed to be dropped per acre, the seed being dropped in front of and covered by the cultivator teeth, the seed box being close to the ground, so that seed will not be wasted in windy weather, and the planting and raking in of the seed being performed in one operation.

Miscellaneous.

BICYCLE SADDLE.—Sylvester J. Brown, Denver, Col. This inventor has devised a solid seat or saddle having a tree of wood or similar material, a waterproof covering of rawhide, and a suitable leather top, the saddle tree being made and shaped to give a maximum degree of comfort to the rider. The tree is formed in three sections, a body section forming its rear portion having a forward angular recess extending from end to end, while two side sections fit in the recess and are connected on a substantially central line and shaped to form a portion of the body and a horn.

SALUTING DEVICE.—James C. Boyle, Spokane, Washington. To lift the hat automatically in saluting, without raising the hand, this inventor has devised a mechanism principally contained in a casing inside the hat, there being on the lower side of the casing curved spring fingers which gently clasp the head of the wearer. In a hat containing this mechanism, when the wearer bows, the swinging of a pivoted weight block pushes a rod whereby a spring is released and an arm is operated to raise a bow piece to which the edges of the hat band are attached, the swinging back of the weight, as the wearer resumes an erect posture, causing the hat to drop into its normal position on the head.

PENCIL HOLDER AND CLIP.—William E. Quinn, Anniston, Ala. This is a simple device for the use of conductors, engineers, telegraph operators, etc., the device being a holder for a pencil or pen and also adapted to receive train orders, telegrams, etc., the holder being also conveniently attachable to any portion of the wearing apparel. On the front face of a back plate is pivotally mounted a spring-pressed clamping plate with pencil-holding fingers struck up from its central portion, while on the upper end of the back plate is pivoted a spring clasp.

COPYING PRESS MOISTENING DEVICE.—Wallace S. Hampsher, Mount Vernon, N. Y. This moistener comprises a pan adapted to hold between guide strips a block on which the sheets to be moistened are placed, the water in the pan rising nearly to the surface of the block, and the sheets being moistened by capillary attraction. The sheets are covered by a cover or presser plate with inclined top surface, and whose marginal edges come within and slightly below the upper edges of the pan.

PILE FABRIC.—Ludger Beauregard, St. Joseph de Levis, Canada. This is a fabric designed to form an imitation of Persian lamb, and consists principally of a fabric backing and a heavy strand of wool or other material interlaced with and knotted on the backing in a particular novel manner to form raised loops on the face of the backing. The strands forming the loops are made of a large number of loops which readily spread and fill the spaces between the adjacent loops, and the dyed fabric is singed to more closely imitate Persian lamb.

METALLIC ROOFING, SIDING, ETC.—Presley C. Patterson, Cambridge, Ohio. This is an improvement in the construction where the sheets or sections have parallel raised and depressed portions and interlocking side and end flanges for forming seams with adjacent sheets or sections, the improved construction having raised portions to form continuous air spaces and depressed portions forming channels for carrying off the water, while also forming a concealed lock, and a secret nailing flange extending under the raised body portion, while warping is prevented.

METALLIC ROOFING.—This is a further patent of the same inventor, providing more especially for the prevention of leaking, the sheets having interlocking side flanges for forming seams with adjacent sheets and a nailing strip extending under and formed on its top and at one side of the seam with a gutter for carrying off water leaking past the seam. This roof need not necessarily be laid on tight sheathing, but may be laid on laths from one to two feet apart, depending on whether light or heavy gage metal is used for the sheets.

FIRE EXTINGUISHER.—George W. Corran and William J. Murray, Baltimore, Md. This is an improvement in automatic extinguishers in which a fusible closure is provided upon the nozzles or outlets, and affords a simple means by which a reduction of air pressure in the pipe system will effect a flow through the system of gas, water or other extinguisher. The arrangement is such that when a certain diminution takes place in the pressure in the pipes a diaphragm in a connected tank falls, freeing a plunger and releasing the extinguishing fluid, the nozzles opening automatically on a sufficient rise in temperature.

CURTAIN FIXTURE.—Joseph Darling, Peachville, Pa. The curtain roller, according to this improvement, is of the automatic type, but the spring stud has an attachment composed of a headlike portion with inwardly facing flange or shoulder, there being a portion adapted to be pressed into locking contact with the spring stud of the roller. The invention affords improved means for connecting the roller with its main supporting bracket, for braking the curtain operating and supporting cord, and for connecting the cord to take up slack and level the roller.

INHALER.—Lyman P. Walter, Chicago, Ill. To facilitate inhaling various medicaments, this inventor provides a device which may be nested in small space and carried in the vest pocket, comprising a nose piece having an open side to fit over the nose and at the bottom a projecting nipple and cup to receive the medicament, the latter being preferably held in a small piece of sponge or other absorbent. The several parts of the device consist of three separable pieces and are preferably made of hard rubber.

CAN OPENER.—Oliver C. Thompson, Emporia, Kansas. This device consists of a slotted and sharp pointed lever to which a knifeholding clamp is adjustably attached, the point of the lever being adapted to pierce the head of a sheet metal can, and the knife or cutter being adapted to make a circular cut when the lever is turned on its point. The construction is such that the metal is severed by a clear draw or shear cut, enabling the lever to be operated with great ease.

CHICKEN COOP AND TRAP.—James M. Harvey, Palmyra, Tenn. This inventor has devised a coop in combination with a trap in which animals seeking to prey on the chickens may be caught and retained. It has two compartments, with a communicating door, one compartment for the chickens to live and roost in, and a trap section into which they are admitted to feed and exercise. Animals entering the trap section to prey on the chickens are imprisoned there.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

ARTESIAN WELLS AS A MEANS OF WATER SUPPLY. By Walter Gibbons Cox. Brisbane, Sydney, Melbourne and Adelaide: Sapsford & Company. 1895. Pp. 148. Price \$3.

In Australia an immense effect has been produced by artesian wells, and in California also the most important results have been obtained by them. This work, giving the most practical results in these and other countries, is very acceptable. Naturally, Australia receives the principal part of the attention, but America is not slighted. The list of topics purporting to be an index is exceedingly unsatisfactory and is an actual blemish to the work.

WEATHER AND DISEASE: A CURVE HISTORY OF THEIR VARIATIONS IN RECENT YEARS. By Alex. B. MacDowall. London: The Graphophone Company. 1895. Pp. 83.

In this book the curve system of obtaining results is extensively applied to the particular subject, and the author seems to have considerable confidence that by it he will obtain valuable results. The relations of climatic and weather conditions to hygiene have of late years received more scientific treatment than of old. This book is a step in that direction.

HOWELL'S STEAM VESSELS AND MARINE ENGINES. By G. Foster Howell. With a closing chapter on sailing ships and schooner yachts. New York: Published by the American Shipbuilder. Pp. 183. No index. Price \$5.

This excellent treatise gives a somewhat general review of ships of commerce and of yachts, and is particularly interesting from its presentation of the most modern types of vessels, including four and five masted sailing and auxiliary ships, and many classes of steam vessels, of engines and of equipments now being turned out from the different yards. People familiar with the shipping of America will have no difficulty in recognizing many old friends among the illustrations, which add very largely to the charm of the book, it being made up almost more of cuts than of text. The presentation of new and less familiar rigs is another feature. A most interesting series of portraits of well known ship builders and others interested in marine engineering completes the work. The absence of an index, however much it may be regretted, is compensated for to a very great extent by a full table of contents.

ELEMENTARY TREATISE ON ELECTRICITY AND MAGNETISM. Founded on Joubert's "Traité élémentaire d'Électricité." By G. C. Foster and E. Atkinson. New York, London, and Bombay: Longmans, Green & Company. 1896. Pp. xix, 552. Price \$2.25.

This work is a modified translation of Joubert's "Traité élémentaire d'Électricité," made with his consent and his authorization for the changes which the authors deemed it advisable to make in its arrangement. All that is necessary to say of it is that it treats very fully of its titular subject and that it forms another excellent addition to the library of the electrician, which will be, we are confident, very valuable and acceptable to many. It is printed clearly and is certainly a most useful work.

ELECTRICITY UP TO DATE FOR LIGHT, POWER AND TRACTION. By John B. Verity. London and New York: Frederick Warne & Company. 1896. Pp. xii, 238. Price \$1.

The preface states that some 20,000 copies of this work, now in its fifth edition, have found their way into circulation. It certainly seems a rather brief treatise when its subject is considered, and is devoted largely to English practice. Its interest for engineers in this country will be, of course, not enhanced by the fact that it is devoted to foreign practice, although ideas will certainly, in many cases, be widened by such study.

PETROLEUM. A treatise on the geographical distribution and geological occurrence of petroleum and natural gas, etc. By Boverton Redwood, assisted by George T. Holloway and other contributors. In two volumes, with numerous maps, plates, and illustrations in the text. Vol. I, Vol. II. London: Charles Griffin & Company, Limited. Philadelphia: J. B. Lippincott Company. 1896. Pp. xxv, 900. Price \$13.50.

This work we can recommend highly, as it covers the field of petroleum thoroughly. With numerous illustrations and exact technical information, it really seems to have filled what has been a want in scientific literature. Not the least interesting part of it is the section giving a quantity of matter and data which is of recognized value affecting the consumption of petroleum oil for burning purposes. The entire world is gone over for petroleum, the methods of drilling in different parts of the world are explained, and the tools illustrated, and very little that is to be desired will be found lacking. Another interesting feature is the description of the Peruvian oil fields, it being possible that the exhaustion of quinine in Peru and the gradual diminution of other exports will be compensated to some extent by her new petroleum discoveries. An excellent index and a good table of contents add materially to the value of the work.

THE POCKET LIST OF RAILROAD OFFICIALS. Containing the names of officials in charge of railroads, private car companies, fast freight lines and transportation companies of the United States, Canada and Mexico. Also showing the gage of each road, number of miles operated, and rolling stock in service of each company. Published quarterly (January, April, July, and October) by the Railroad Equipment and Publication Company, G. P. Conard, President and Treasurer, J. Alexander Brown, Manager, 326 Pearl Street, New York. Western office, 425 Rookery, Chicago. L. B. Sherman, Western Manager. Pp. 376. Vol. 2. No. 1. Serial No. 5. Price \$1 per annum.

Farming, March, 1896. This handsome illustrated monthly, the successor of The Canadian Live Stock and Farm Journal, is published at Toronto, Canada, by the Bryant Press. It is an enterprising, up-to-date periodical, presenting in most attractive form a large amount of reading of interest and value to the farmer, the gardener, the dairyman, and the stock raiser. Among the interesting articles of the March number are "Diarying in the New World," "Profit in Feeding Sheep," "Field Crops in the Northwestern States," "Pointers on Turkey Raising," etc.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion, about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works. Chicago. Catalogue free.
For logging engines. J. S. Mundy, Newark, N. J.
"C. S." metal polish. Indianapolis. Samples free.
Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.
Handle & Spoke Mch. Ober Lathe Co., Chagrin Falls, O.
Wanted—New articles to sell by canvassing in a mining country. Thos. J. Riley, Butte City, Montana.
Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Eighth and Canal Sts., New York.
Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.
Cripple Creek—Complete history of the great gold camp, with our big 56-col. paper 3 mos. for 25c. in stamps. Illustrated Weekly, Denver, Colo.
The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4, Munn & Co., publishers, 361 Broadway, N. Y.
For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 30 Rodney St., Brooklyn, N. Y.
Carpenters—Make more money. Investigate Ransome's Concrete Construction. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 622 Boylston Bldg., Chicago.
Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and though we endeavor to reply to all either by letter or in this department, each must take his turn.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(6792) G. C. W. asks: Will you please give me through your Notes and Queries column a receipt for a flash powder for photographic purposes? Would like an explosive powder, something of the nature of "Blitz Pulver." A. 1. Magnesium powder, 6 ounces; potassium chlorate, 12 ounces; antimony sulphide, 2 ounces; 75 to 150 grains of the powder should be used. 2. 15 grains of gun cotton and 30 grains of magnesium powder are used.

3. Magnesium..... 40 parts.
Permanganate of potassium..... 40 "
Peroxide of barium..... 20 "

(6793) F. L. S. says: Will you kindly give me the formula for making a preparation for sharpening razors by means of a paste or soap containing something like rouge or emery powder to be rubbed on the strop? A. Mix fine washed emery intimately with fat or beeswax until the proper consistency is obtained in the paste, and then rub it well into the leather strop. For a finer mixture use rouge or putty powder with the wax.

(6794) C. L. says: Will you kindly furnish me the formula for the best and cheapest method of rendering rancid butter sweet, or in other words, to eliminate the smell and render the butter odorless? A. 1. 100 pounds of butter is mixed with about 30 gallons of hot water, containing ¼ pound of bicarbonate of soda and 15 pounds of fine granular animal charcoal free from dust, and the mixture is churned together for half an hour or so. The butter is then separated; after standing, it is warmed and strained through a linen cloth, then re-salted, colored and worked up with one-half its weight of fresh butter. 2. Rancid butter may be restored, or at all events greatly improved, by melting it with some freshly burnt and coarsely powdered animal charcoal (which has been thoroughly freed from dust by sifting) in a water bath, and then straining it through clean flannel. A better and less troublesome method is to well wash the butter with some good new milk, and next with cold spring water. Butyric acid, on the presence of which rancidity depends, is freely soluble in fresh milk.

(6795) G. M. D. asks how a meerscham pipe which has been burned in smoking can be fixed so it will color again. A. When once burnt, the pipe cannot be satisfactorily colored, unless the burnt portion is removed and the surface again treated by the process by which meerscham is prepared. The coloring is produced by action of the smoke upon the oils and wax, which are superficially on the exterior of the pipe, and are applied in the process of manufacture.

(6796) J. O. asks: Will you be kind enough to send me the instructions for making shoe-maker's wax? A. This is made by melting together the best Swedish pitch and tallow in a vessel over the fire. The quantity of tallow must be determined by experiment. Roll into balls. The right kind of pitch is of a brown color when fractured.

(6797) J. H. B. writes: 1. I should like to know if the motor which you describe in "Experimental Science" could be modified so as to give the same power

and speed as it otherwise would, but to take a lower voltage than what it takes as it is? If it can be modified, how much current would it require? A. By using larger wire the motor can be made to run with any desired current, without change of power. 2. I should also be obliged if you would give me a receipt for a small but powerful chloride of silver battery. A. Chloride of silver batteries are not advised except for special work, such as measurements. For descriptions we refer you to our SUPPLEMENT, No. 157, also SCIENTIFIC AMERICAN, No. 3, vol. 72.

(6798) A. R. O. D. says: In answers to inquiries, please advise me if tobacco stems, mixed with a fertilizer, for raising garden truck, will prevent the existence of the cabbage worm. Also give a preparation, if you have one, to prevent or destroy the cabbage worm, if above is not good without injuring same. A. Answer by Entomologist United States Department of Agriculture: Your communication of recent date, transmitting a letter, has been referred to the entomologist, who reports that tobacco stems or dust from the waste of tobacco factories has long been used as a fertilizer and insecticide, having considerable value in both directions. If the cabbage worm referred to is the green cabbage worm, feeding above ground on leaves, the tobacco will be of comparatively little value, although when dusted over the cabbage as a very fine powder it will give some protection. The chief value is where incorporated with the soil against such insects as the cabbage and turnip maggots, and against these it is only a partial protection. It is a valuable repellent to various earthworms and subterranean insects in conservatories. The green cabbage worms are now commonly treated by growers with applications of arsenicals in very dilute form, usually as a powder intermixed with a large quantity of flour, as described in Farmers' Bulletin No. 19, of this department. The applications made in this way fall on the outer leaves and are usually made to the growing cabbages before the heads are mature, so that none of the poison reaches the cabbage head as marketed.

(6799) E. A. T. writes: 1. In a recent issue, A. J. H. asks through Notes and Queries the size of wire to use in winding a telephone magneto for a dynamo. I have made a dynamo in this way, winding armature with No. 18 wire. It will light a 4 candle power incandescent lamp (95 volts), and if only required for lighting the lamp, does not need a separate commutator, as it will do this work as well with alternating as direct current. What is the recipe for composition used in caps for toy pistols? A. The composition used in caps for pistols is usually fulminating mercury. 2. Which armature is best for a motor under 1/2 horse power—Gramme ring or drum armature? A. One is as good as the other. The ring armature is harder to wind. 3. Is it advisable to cast wrought iron field magnet cores in the pole pieces? A. No. 4. Is there any simpler way of making a commutator of twelve sections than that described in SUPPLEMENT, No. 600? A. We advise you, for serious work, to use the method described. For a simple commutator, see SUPPLEMENT, No. 641.

(6800) J. P. S. writes: 1. I have a battery to ring a bell which will run for about two days and then stop. It has a plate of carbon and a rod of zinc in a solution of bisulphate of mercury (3 ounces to the pint). When I looked at it, I found a gray deposit and bubbles of gas on the zinc. I would like to know what gas and what deposit are on the zinc, and how I could remedy this, as I think it stops the current. A. It is probably metallic mercury or some suboxide or oxide thereof, and hydrogen gas. Use one to two parts of salammiac to one of the mercury salt. 2. Please give me the chemical action of the battery. A. The zinc replaces mercury in the mercury salt, forming zinc sulphate and precipitating mercury or an oxide thereof. 3. How long will the zinc last? A. It depends on how long and how much you use it. 4. Have you a formula for a jet black varnish for iron castings? A. Varnish for Iron Work.—Dissolve in about 2 pounds tar oil 1/2 pound asphaltum and a like quantity of powdered resin; mix hot in an iron kettle, care being taken to prevent any contact with the flame. When cold the varnish is ready for use. This varnish is for outdoor wood and iron work. 5. Also a formula for a transparent jelly or paste for skin affections. A. Glycerine for Toilet Use, Solidified.—Transparent soap, 1 1/2 ounces; water, 6 ounces; mucous glycerine, 36 ounces. Dissolve the soap in the water by heat, add an equal weight of glycerine. When dissolved, add the rest of the glycerine, water q. s. to make up the weight. When nearly cold, add any perfume desired. Put in glass jars. It is of a pale amber color, and is transparent. 6. A cement for uniting metals. A. For formulas for cements for metals, see "The Scientific American Cyclopedia of Receipts, Notes and Queries."

(6801) R. W. asks what amount of No. 36 wire to use on an induction coil. This coil will have a hard rubber tube 7 1/2 inches long, 1 inch outside diameter, 3/4 full inside, with hard wood heads about half an inch thick, the rubber tube being filled with soft iron wire. I wish to get as long a spark as possible with it. Will three layers No. 30 do for primary coil? Will double wrapped No. 36 do, if just put on layer above layer, without any insulation between each? How much battery do you think it will need? What will be the voltage of the secondary or spark coil? Will a condenser attached to the primary give any better results? A. We refer you to the following SUPPLEMENTS for full information on induction coils: Nos. 160, 220, and 569. It is not advisable for an amateur to undertake to make too large a one. The approximate rule is that the voltage of the primary coil multiplied by the ratio of the terms in primary and secondary (primary being divisor) gives the voltage of the secondary. The condenser is of utmost importance. A one-tenth inch spark is taken as indicating 10,000 volts potential difference.

(6802) L. F. asks: What horse power would be required to operate a dynamo to run an electroplating apparatus of 10 gallons of solution? What amperage and voltage would be required? A. No answer is possible. Everything depends on the work being done. It would be fair to allow one-tenth horse power, and the amperage and voltage must be regulated by the work being done. We can supply you with a manual on electroplating, and in our SUPPLEMENT, Nos. 310 and 436, will be found excellent articles on the subject.

TO INVENTORS.

An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

March 17, 1896,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with names and patent numbers. Includes items like Adhesive composition, Aerostat, Air drying device, Alarm, Arc lights, Ash pan, Baling press, Ball grinding machine, Mand cutter and feeder, Barrel washer, Basket, Baths or basins, Battery, Battery connection, Bearing, Bicycle alarm, Bicycle attachment, Bicycle seat, Bicycles, Boiler, Bone black kiln, Book, Boring machine, Bottle, Box, Box nailing machine, Brake, Bridle bit, Buckle, Building structure, Burner, Butter manufacturing apparatus, Calculator, Can opener, Cane unloader, Car coupling, Car dumping machinery, Car fender, Car fender, automatic, Car fender, street, Car safety guard, Carpet stretcher, Carriage implement, Carriage wheel, Cask, Chain, Chains, detachable link for drive, Chair, Chart, astronomical, Check book, Check book, harness, Cigarette unrolling machine, Circuits, device for detecting short, Cleaner, Clevis, adjustable plow, Clock, electric program, Clothes peg, Cock, electrical gas, Colter attachment, Condenser, vapor or steam, Conductor, Converter bottom, Copy holder, Copy holder, Smith & Garrison, Copying book, Cord coupling, Cork extractor, Corn holder, Cotton drying and cleaning machine, Coupling, Cord coupling, Crushing mill, Cultivator, Curtain cabinet, Curtain fixture and fastening, Cushion, H. Wust, Cutting blade, Cutting elliptical figures from sheet metal, machine for, S. S. Wood, Cylinder stop, J. T. Smith, Desk and seat, adjustable school, W. L. Starkey, Dish cleaner, Dish cleaner, W. T. White, Door fastener, sliding, A. Bataille, Door indicator, F. Arenas, Door or blind clamping machine, C. D. Marsh, Drift belt or railway track spike drawer, H. N. Lewis, Drilling electric drill, Drilling wells, tunnels, etc., electrical apparatus for, P. Semmer, Driving band, T. C. Dennison, Dust collector, W. R. Marshall, Dust separator, M. G. Davis, Eccentric, D. T. Loe, Egg and packing separator, A. W. McFarland, Electric drill, M. Heben, Electric elevator, J. Parkinson et al., Electric furnace, Girard & Street, Electric heater, J. R. Williamson et al., Electric switch, B. L. Campbell, Electrotherapeutic apparatus, W. Carter, Electrotyping machine, W. W. McCarroll, Elevator, See Safety elevator, Elevator doors, appliance for operating, A. W. Meyers, Embossing machine, W. Crabban, Embroidering machines, cloth disengaging tool for, F. A. Loeb, Engine, See Hoisting engine, Rotary engine, Tractor engine, Eraser rubbers, inclosing case for, J. E. Landers, Excavating apparatus, earth, H. Nettelbeck, Extending table, B. Van Denburgh, Extension table, J. H. Robbins, Extractor, See Cork extractor, Pen point extractor, Eyelet covering apparatus, E. Kempshall, Facet grinding machine, A. Offenbacher, Fan, centrifugal, W. Baldwin, Faraday battery, portable, J. E. Unger, Feed water heater and purifier, J. E. Crawley, Fence, C. A. Phelps, Fender, See Car fender, Rocker fender, Fiber apparatus for treating vegetable, M. W. Stumpe, Fibers, digester for cleaning vegetable and animal, J. F. Lester, Film loader for roll holders, W. V. Esmond, Filter, R. Rooke, Filter, water, B. L. Campbell, Filtering material for purifying alcohols, oils, etc., N. Iseli, Filtering means for sewage water, F. L. Union, Fire-extinguishers, fusible plug for automatic, R. D. Johnson

Table listing inventions with names and patent numbers. Includes items like Fire kindler, R. C. A. Jones, Fireproof building, G. Rusforth, Fish hook, F. M. Robinson, Fishing reel crank, A. B. Hendryx, Flaxstax, C. S. Cabell, Flycatcher, pressure regulator, J. T. F. Conti, Fly exit, O. Taylor, Fly trap, Shumate & Bartels, Folding and extension table, combined, O. Unger, Folding chair, H. J. Hubbard, Furnace, See Electric furnace, Furnace air injector, C. E. Norton, Furnace center blast pipe, C. Johnson, Gage, See Sawing machine gage, Surface gage, Garbage crematory, W. L. Johnson, Garmet holder, J. Neumann, Gas and air mixing apparatus, G. R. Cottrell, Gas burner, adjustable, J. G. Hallas, Gas burner, self-lighting, H. A. Kent, Gas compressor, A. Giesler, Gas governor, G. E. Ford, Gas governor, W. Hooper, Generator, See Steam generator, Gearing, M. W. Parsons, Glue, J. H. Loewenstein, Glue joints, machine for making, W. D. Kenzie, Gold from solutions, extracting, G. O. Pearce, Governor for fluid motors, D. Richardson, Grate, shaking and dumping, G. M. Conway, Grinding machine, S. Nicholson, Grubber and, A. E. Oliver, Gutters, etc., apparatus for cleaning, F. L. DeCarle, Hame fastener, W. H. Frizzell, Hammock supporting hook, I. E. Palmer, Hand saw, adjustable, J. G. Hallas, Harrow, disk, C. F. Lindstrand, Hat pounding machine, G. R. Clarke, Hay rake and loader, J. Kaylor, Heater, See Electric heater, Feed water heater, Steam or hot water heater, Heating apparatus, Sawyer & Colcord, Heating system, W. P. Shiffrington, Heel, boot or shoe, J. D. Kaestner, Hoe, rake, and cultivator, combined, W. H. Wheeler, Hoisting and unloading railway cars, apparatus for, R. Basch, Hoisting engine, F. W. Scott, Hook, See Check book, Fish hook, Hammock supporting hook, Horse power, T. F. Marquand, Horseshoe, G. W. Willoughby, Hose bridge, street car fire, Sweeney & Clark, Hydraulic motor, A. A. Wood, Ice from freezing cans, apparatus for removing cakes of, H. Mock, Indicator, See Check book, Indicator, Inhaler, R. C. Cottingham, Iron, See Sad iron, Iron from solutions containing iron and zinc, precipitating, E. Warzee, Jack, See Looking jack, Knife, See Looking jack, Knitting machine, circular, F. A. Nye, Knob attachment, C. O. Noack, Ladder attachment, J. J. Hafermehl, Lamp, electric, C. E. Quimby, Lamp, electric, C. E. Quimby, Lamp, electric, T. Spencer, Lamp, hydrocarbon illuminating, J. P. McGarry, Lamp, incandescent gas, J. & G. Sulzbach, Lantern, T. Langston, Lath a turret, J. Hartst, Letter holder, J. Teeter, Life saving float and its detaching device, L. Viala-Chabrand, Linotype machine, F. Peterhansl, Liquid clarifier, W. B. Turner, Liquid elevating apparatus, J. G. Poble, Locomotive, electric, J. H. Stevens, Lock, C. W. Henson, Locomotive, electric, T. E. Adams, Log loading attachment for skidways, Bateman & Lyda, Loom, J. E. Gilchrist, Looking jack, J. E. Gilchrist, Loom, harness motion, J. T. Bolton, Loom shuttle, E. S. Stimpson, Loom thread parter, J. H. Northrop, Manhole, T. L. McGreer, Measure for cloth, ribbon, etc., scale, J. I. Wagner, Metal, manufacturing manganese, Cabot & Vaughten, Metal working apparatus, electric, Lemp & Lewis Mill, See Crushing mill, Windmill, Motor, See Hoisting engine, Motor suspension, N. C. Bassett, Muffler, exhaust, C. Loper, Multiphase distribution system, R. D. Mershon, Music holder, Leach & Bryant, Musical instrument, F. H. Rowe, Needle for making wire, C. Schmitz, Nut, lock, R. Larter, Nut lock, F. Reessing, Oiling attachment, T. M. Anderson, Ore concentrator, J. B. Waring, Overalls, M. O. Walker, Padlock, penumation, S. Bozano, Pan, See Ash pan, Paper box, knockdown, W. B. Howe, Paper feeding machine, F. Hoyer, Paper finishing machine, wall, T. Price, Pen, fountain, H. D. Weidlich, Pen, fountain, H. D. Weidlich, Penholder, J. Martin et al., Pen point extractor, W. Leizb, Penpoint sharpening machine, G. F. Ballou, Perforating machine, E. Grimm, Petroleum regulator, F. F. Grady, Photographs, producing embossed, F. A. Taber, Pianos, machine for preparing string framings for, H. H. Cummings, Pigment, preparing oxide of zinc, G. T. Lewis, Pipe, See Furnace center blast pipe, Tobacco pipe, Pipe section fastening, J. A. Hadley, Plaiting machine, Dumville, Jr., & Holly, Planter, J. J. Dewberry, Planter, C. M. Risley, Planter, seed, A. McKee, Planter, S. Fuller, Plow, V. E. Sapp, Plow, shovel, T. L. Bulow, Plow subsoil attachment, C. J. & D. A. Giffin, Plo table conduit, P. McCunningham, Pot or Pan, Hopper & Haddorf, Powder, See Hopper, Powder, See Hopper, Power, See Hopper, Power transmitter, C. L. Travis, Preservative coating for food, Morris & Parker Press, See Baling press, Printing press, Printing machine, W. Scott, Printing press, J. L. Firm, Projector, multiple, L. A. Johnson, Pulley, D. E. Newell, (Reissue), Pump, A. Marichal, Pump, air, F. N. Sleva, Pump, rotary, W. T. Bruges, Pump valve, T. S. Le France, Punch, check, C. H. Woodworth, Puzzle, C. M. Fitz, Race starting apparatus, A. Gray, Railway crossing signal, R. T. Toole, Railway car, H. C. O'Connell & Warren, Railway system, electric, B. E. Osborn, Railway tie plate, A. B. Harris, Railways, underground conductor for electric, G. Westinghouse, Jr., Rake, See Hay rake, Range, L. Sticks, Range, cooking, W. Wicke, Razor stop, P. C. McGrath, Reclining chair, H. W. & H. H. Fleer, Refrigerator, L. O. Reed, Refrigerator car, T. B. Roberts, Refrigerator car, H. R. J. Mills, Refrigerator, window, M. E. Bingham, Register, See Time register, Registering instrument, electrical, H. Lemp, Regulator, See Fluid pressure regulator, Rheostat, T. J. Fay, Riveting machine, A. M. Baird, Riveting machine, Nolan & George, Rocker fender, C. A. Galbraith, Rope grip, A. W. Wilson, Rotary engine, I. T. Seru, Rotary top table, double, B. F. Stevens, Rule, J. D. Maier, Jr., Sad iron, T. F. Hagerty, Saddle bridge, adjustable pack, G. F. Fortier, Safety elevator, J. Parkinson, Sash balance, R. K. Brown, Sash balance, R. K. Brown, Sash fastener, A. A. Page, Sash holder, L. W. Baldwin, Sash holder, A. N. Russell, Sawing machine gage, wood, J. Barnes

Table listing inventions with names and patent numbers. Includes items like Scissors or shears, W. Scheerer, Seed and fertilizer distributor, A. L. Griffith, Seed delinier, cotton, O. T. Bugg, Seed delinier, cotton, J. Faulkner, Separator, See Dust separator, Egg and packing separator, Sewing looped fabrics, machine for, C. McNeil, Sewing machine, W. F. Beardslee, Sewing machine, L. Goddu, Sewing machine, buttonhole, G. N. Raymond, Sewing machine, loop retainer, L. Muther, Shear, straight, G. J. McCarthy, Shears, H. F. & H. W. Riddard, Shoe polisher, H. D. Waddell, Shoulder brace, K. R. Lang, Show case fixture, J. Wayne, Steve, ash, L. R. Hall, Sura, See Railway crossing signal, Signaling apparatus, pneumatic, Hull & Boylett, Signal operating device, pneumatic, T. M. Warner, Siphon, F. S. Hillhouse, Sled propeller, W. A. Bradley, Sleeve holding device, P. L. Jacobson, Smelting galena, C. W. Parson, Snow cleaning apparatus, G. B. Siccardi, Spool attachment, D. E. Whitfield, Spools, balls or skeins of yarn, etc., device for holding, J. C. F. & J. C. E. Trachsel, Spraying device, plant, W. A. Van Deusen, Spring scale, W. Sprinkler, Stable cleaning device, C. A. Monroe, Stamp, time, W. T. Williams, Steam boiler, T. L. McGregor, Steam generator, C. E. Wakeman, Steam or hot water heater, J. J. Blackmore, Steam trap, automatic, N. Nilson, Stereoscopic, M. G. Crane, Stirrup, H. W. Judevine, Stopper fastener, W. R. Shurtleff, Stove, range, etc., M. M. Koch, Straw stacker, J. B. Bartholomew, Street sweeper, C. Brooks, Street sweeper, M. G. Bunell, Surface gage, Starrett & Fay, Switch, See Electric switch, Table, See Extension table, Folding and extension table, Rotary top table, Table, A. Mount, dining, C. E. Stewart, Telegraph, clock signal, C. M. Grace, Telephone, C. F. Dunderdale, Telephone switchboard, I. Anderson, Thill coupling, S. R. Bailey, Thill coupling, J. Seibel, Time register, workman's, C. A. Widmer, Tire, spring, J. S. Waddy, Tire, spring, J. S. Waddy, Tire, wheel, J. & E. D. Eynon, Tobacco pipe, C. A. Fingal, Tobacco pouch, G. E. Siebler, Toy, J. L. Collier, Track brake, Knudler & Vorpe, Tractor engine, S. E. Gray, Transom rod fastener, C. O. Noack, Trap, See Fly trap, Steam trap, Truss conveyor, E. D. Williamson, Truck hook, adjustable, N. L. Baker, Truss, C. Colver, Type writer desk, J. T. Straban, Type writing machine, J. D. Daugherty, Type writing machine keyboard, A. von Kunowski, Type writing machine, stenographic, F. E. Curtis, Valve, adjustable, C. A. Widmer, Valve, E. L. Rowe, Valve, balanced slide, W. T. Reaser, Valve, check, Kuiching & Rowe, Valve for hydraulic apparatus, etc., W. James, Vapor burner, Lannert & Jessons, Vehicle top, E. Lenney, Velociped driving mechanism, B. Ljungstrom, Vessels, order transmitting device for, W. Chadburn, Vice, foot, E. B. Newell, Voltaic battery, secondary, W. A. B. Buckland, Vulcanizers, oil flame regulator for, G. B. Snow Wagon body, T. Geisel, Wagon brake, automatic, Hartman & Strouse, Walking beam attachment, A. Ebert, Washboard, P. J. Joekken, Washboard, J. T. Sargent, Washboard, Sargent & Weiss, Washboard, A. Weiss, Washbasin, W. W. Sprague, Waterclosets, washstands or urinals, hopper or basin for, R. Coburn, Water heating apparatus, automatic, Porcher & Winterhood, Weeder, rotary, E. C. Welch, Wheelbarrow, electric, C. E. Hartman, Wells, increasing the flow of oil, H. Frasch, Wells, increasing the flow of oil, J. W. Van Dyke, Wheelbarrow, W. P. Carmichael, Windmill, D. W. Auld, Window cleaner, W. H. Ford, Wire fastener, W. Wait, Wire machines, stop motion device for barb, W. H. Dailey, Wire or metal bars, machine for truing flat, W. C. Stiles, Wire twister and tightener, G. A. Stafford, Wrench, H. Sprague

DESIGNS.

Table listing designs with names and patent numbers. Includes items like Carpeting machine frame, D. R. Bowen, Carpet, A. M. Rose, Carpet stretcher, H. M. Bridges, Chair, M. G. Van Denburgh, Game board, E. L. Hall, Handle for brushes, etc., G. de Festetics, Jet for lime lights, C. Beseler, Undergarment, S. E. Clifton

TRADE MARKS.

Table listing trade marks with names and patent numbers. Includes items like Ammunition, except bullets, Peters Cartridge Company, Antiseptic preparations, J. T. Milliken & Company, Baking powder, H. C. Kegeles, Bicycle gear, McElwaine-Richards Company, Bicycles, component parts of, G. T. Warwick, Bicycles, component parts of, G. T. Warwick, Cleaning and polishing cloth, Chemical Speciality Company, Disinfectant, incense to be burned as a, G. Miyamoto, Gelatin, Michigan Carbon Works, Hazelton Boiler Company, Hairpins, Richardson & De Long Brothers, Kerosene, resin, fire crackers, axle grease, lubricants, lard, oysters, lobsters and timber, Gant, Gohl Moss & Company, Medicine, stomach and liver, M. A. Simmons, Jr., Paints, J. E. Haskell, Plows and their parts, Bucber & Gibbs Plow Company, Remedy for skin diseases, J. Blanchard, Silver plated ware, Homan Silver Plate Company, Soap, sugar, maple, M. J. McMahon, Soap, tar, Bailey Soap Company, Starch packed in paper carton boxes, powdered, Beaham Manufacturing Company, Thread, spun and skeined silk, M. Heminway & Company, Unctions for eradication of cutaneous diseases, B. S. Gilbert, Washing and cleansing powder, Toppan Manufacturing Company, Whiskies, blended, W. P. Ives & Company, Whisky, Melwood Distilling Company, Yeast cake, Waterloo Yeast Company

PRINTS.

"Battery of Hazelton or porcupine boilers with brick-work settings and furnaces inclosed by metal casings or jackets and having square grate surfaces," Hazelton Boiler Company, 11
"Battery of Hazelton or porcupine boilers with metal casings or jackets lined with refractory material and having square grate surfaces," Hazelton Boiler Company, 12
A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 25 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York.
Canadian notices may now be obtained by their inventors for all the inventions named in the foregoing list, provided they are simple, at a cost of \$40 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.