

ENGINEERING INVENTIONS.

A car door has been patented by Mr. William J. Keyes, of Wheeling, Ala. This invention relates to improvements especially adapted for freight car doors, and provides means for effectively securing the door, and also for readily opening and automatically closing it.

A car seat has been patented by Mr. John O. Buerk, of Red Bank, N. J. This invention covers a novel construction and combination of parts, to so improve the striker arms of car seats that an ordinary form of seat may be simply and readily converted into a comfortable reclining seat.

A car coupling has been patented by Mr. Isaac Shotwell, of Bancroft, Mich. This invention provides a novel link lifter and link guide, with means for raising and dropping the pin without the necessity of trainmen going between the cars, the improvement being applicable to the ordinary form of drawhead, link and pin.

A car coupling has been patented by Mr. John Clarridge, Sr., of Libertyville, Ohio. In the drawhead is a spring-pressed follower adapted to support the coupling pin, the follower having a transverse link slot, and there being a second coupling at the rear of the drawhead recess, the device being capable of use for automatic coupling with the ordinary form of link and pin.

AGRICULTURAL INVENTIONS.

A hand planter has been patented by Mr. Thomas N. Lupton, of Winchester, Va. It is an improved device capable of use in planting corn, beans, and other seeds, the device being adapted to be carried by one hand and to have its movable part or parts operated by the handle grasped by the hand.

A cotton scraper and chopper has been patented by Mr. William E. Morris, of Crutchfield, Ky. The machine provided by this invention is for scraping, weeding and freshening the earth at each side of a row of plants, and also to chop the plants to a stand, the scraping and chopping devices being detachable to allow plows, harrows, etc., to be used with the sulky.

A combined plow and harrow has been patented by Anna Trexler, of Sabin, Minn. This invention provides a simple and inexpensive harrow attachment adapted for connection to a plow beam, and operating to pulverize the earth freshly turned over by the plow, to economically and efficiently accomplish the harrowing while the plowing progresses.

MISCELLANEOUS INVENTIONS.

A fire escape has been patented by Mr. Jacob M. Fink, of New York City. This invention provides a ladder of hinged sections, constructed and arranged to be located at the top of a building when not required for use, but which can be readily released and extended down the side of the building.

A bolt has been patented by Mr. John J. Holland, of New Orleans, La. It is for fastening window blinds, doors, etc., and consists of a sliding bar with a hole, a nut being fitted to the blind or door, and a screw fitted to the nut and operative through the bar hole from outside the bar when the bar is projected.

A wrench has been patented by Mr. William H. Brock, of Brooklyn, N. Y. It is of that class in which a chain is used with a serrated shoe to grip the pipe or other article, a dog engaging the chain, the invention covering an improved form of shoe for better gripping the pipe, and a more readily operated dog.

A duplex hand stamp has been patented by Mr. Robert Robinson, of Albany, N. Y. This invention provides an improved stamp for use by conductors, or as a check upon salesmen in any mercantile business, providing for the distribution of coupons to the purchaser and for the retaining of a record of the amounts paid for the coupons.

A wagon end gate has been patented by Mr. Ulysses S. Tym, of Ridgely, Neb. The invention covers a peculiar locking contrivance applied to one end of the gate, with an eye bolt secured in the bottom of the wagon body, which receives a bevel-ended hook secured to and holding the end gate against rising.

A button has been patented by Mr. Isaac Drechlinger, of New York City. The invention covers an improvement in buttons on a shank having an eye or loop, and is designed to obviate the lateral swaying or hanging down of the button to expose the fastening, by the use of a novel form of doubled wire shank.

A water elevator has been patented by Messrs. John W. and John J. Adams, of Charlotte, N. C. This invention relates to a form of elevator with a sprocket wheel carrying a chain whose ends are attached to a bucket, the buckets being arranged to have a reverse motion, the improvements patented consisting in the means for reversing the action of the buckets.

A piano truck has been patented by Messrs. Louis Miller and Thomas A. Wheeler, of Greenville, Ohio. It has a base frame on rollers, with detachable vertical frame, sliding adjustable clamp blocks, brace rods, and other novel features, making a movable scaffold for supporting and moving upright pianos on and off a wagon and over steps or stairs.

A straw burning attachment for stoves has been patented by Mr. Myron T. Andrews, of Iroquois, Dakota Ter. The attachment has a pouch forming a front extension to the stove to give increased capacity for holding straw or stalks used for fuel, with a novel construction of grate and means for adjusting it, and means for fitting the appliance to stoves of various sizes.

A reversing switch and rheostat for electric circuits has been patented by Mr. Charles G. Bickley, of New York City. The invention consists in

a three-part switch, a series of adjustable resistance coils or bobbins, a contact maker, and in details in the circuit, with especial reference to use in electroplating, to avoid reversals of current from polarization of the electrodes dipping in the electrolyte.

An automatic station indicator has been patented by Mr. Edward Blamey, of Jersey City, N. J. This invention covers a novel construction and combination of parts, whereby a station or street may be automatically indicated within a car, or stations on a main and branch road may be indicated, and wherein the apparatus will automatically advance and reverse, with other novel features.

A pipe wrench has been patented by Mr. Beverly Reagan, of Ouchita, La. It has a fixed jaw with ratchet teeth and a block on its shank carrying a movable jaw, a pawl being carried by the block and arranged to be forced into engagement with the ratchet teeth of the shank of the fixed jaw, the construction being designed to facilitate quick and accurate adjustment of the jaws to clamp and hold pipes of varying diameter.

A rotary corn popper has been patented by Mr. William C. Moore, of Springfield, Mo. It consists of a receptacle mounted on a shaft, and formed with a fixed portion and a portion movable endwise, a fastener for holding the movable portion in open and closed position, the shank having a crank handle and a loosely mounted supporting handle, the holder being grasped in one hand and the receptacle rotated by the crank handle with the other hand.

SCIENTIFIC AMERICAN
BUILDING EDITION.

OCTOBER NUMBER.—(No. 36.)

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3. A residence at Richmond Hill, N. Y., lately built, at a cost of ten thousand dollars. Perspective and floor plans.
4. A dwelling for three thousand five hundred dollars. Floor plans and perspective.
5. Villa at Fontainebleau—M. E. Brunnarius, architect. Cost, eight thousand six hundred dollars. Floor plans and perspective.
6. View of the new Protestant church at Lyons, France. Cost, eighty thousand dollars.
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14. Miscellaneous contents: A new regimental armory, New York City.—Ventilating pipes.—National Zoological Park.—Lime from oyster shells, showing pit for burning shells.—Roman road construction.—Beauty of the larch.—Sewage disposal in Great Britain.—Orchids, illustrated.—Test of fire-proof wire lathing.—A clematis porch illustrated.—Some ways of using the Virginia creeper, illustrated with 3 figures.—Feeding coal to the fire.—Wood that will not blaze.—Fall of a stone church tower.—A ruined city in Texas.—Loofah as a substitute for sponge.—A California farm.—Defects in plumbing in the Maine Insane Asylum.—An improved reversible shaper, illustrated.—Improved hand and foot power saws, illustrated.—Practical hints on disinfection.

The Scientific American Architects and Builders Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages; forming, practically, a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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A company having factory well fitted for manufacturing hardware specialties, tools, etc., desires some lately patented article to make on orders or on royalty. Address A. S. C., P. O. box 1748, New York.

For Sale—U. S. patent, No. 388 321, on sweet potato transplanter. C. E. Tobey, Arkadelphia, Ark.

Just Published—Elements of Electric Lighting, including electric generation, measurement, storage, and distribution. By Phillip Atkinson, A.M., Ph.D., author of Elements of Static Electricity. 260 pages; 104 illustrations. Price, \$1.50. For sale by Munn & Co., 361 Broadway, New York.

All books, app., etc., cheap. School of Electricity, N. Y. Mechanical drawing, calculations, etc., taught by correspondence. I. Donald Boyer, Dayton, Ohio.

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The Railroad Gazette, handsomely illustrated, published weekly, at 73 Broadway, New York. Specimen copies free. Send for catalogue of railroad books.

Wanted.—Thoroughly competent men to instruct evening classes in forging, foundry, and machine shop work. Address, stating experience, C. R. Richards, Pratt Institute, Ryerson St., Brooklyn, N. Y.

The Knowles Steam Pump Works, 113 Federal St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

Link Belting and Wheels. Link Belt M. Co., Chicago.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

The Holly Manufacturing Co., of Lockport, N. Y., will send their pamphlet, describing water works machinery, and containing reports of tests, on application.

Lockwood's Dictionary of Terms used in the practice of Mechanical Engineering, embracing those current in the drawing office, pattern shop, foundry, fitting, turning, smith's and boiler shop, etc., comprising over 6,000 definitions. Edited by a foreman patternmaker. 1888. Price, \$3.00. For sale by Munn & Co., 361 Broadway, New York.

Patents Bought & Sold. H. W. Booth & Co., Detroit, Mich.

Hodges' universal angle union makes pipe connection at any angle. Rollstone Machine Co., Fitchburg, Mass.

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Wrinkles and Recipes.—Compiled for the SCIENTIFIC AMERICAN. A collection of practical suggestions, processes, and directions for the mechanic, the engineer, the farmer, and the housekeeper. Illustrated colored frontispiece. Edited by Park Benjamin, Ph.D. Third edition. Price, \$2.00. For sale by Munn & Co., 361 Broadway, New York.

Hoisting Engines, Friction Clutch Pulleys, Cut-off Couplings. The D. Frisbie Co., 112 Liberty St., N. Y.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 28.

For best quality, order your steel castings from the Buffalo Steel Foundry, Buffalo, N. Y.

Belting.—A good lot of second hand helting for sale cheap. Samuel Roberts, 369 Pearl St., New York.

Specially adapted for machine shops—Talcott's combination patent belt hooks. Providence, R. I.

Duplex Steam Pumps. Volker & Felthousen Co., Buffalo, N. Y.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

NEW BOOKS AND PUBLICATIONS.

CONKLIN'S HANDY MANUAL OF USEFUL INFORMATION. Chicago: Laird & Lee. Pp. 440. Cloth, 50 cents.

This little pocket reference book is closely crowded with matters both curious and useful, such as all sorts of people are likely to ask questions about. The book has had a phenomenally large sale.

POOR'S MANUAL OF THE RAILROADS OF THE UNITED STATES, 1888. New York: H. V. & H. W. Poor.

This publication, which has now been issued annually for 21 years, brings together in one large volume a vast amount of information of the utmost importance to all who are interested in railroad properties or business. The general exhibit given shows that the total length of railroad lines in the United States laid up to the close of 1887 was 149,912 miles, the mileage of the various roads having been increased during the last calendar year by 13,080 miles. The equipment consisted of 27,850 locomotive engines and 983,805 cars, of which 20,582 were passenger cars, 6,592 were baggage and mail cars, and 956,631 freight cars. The total length of track footed up 189,346 miles, and of this amount 129,959 miles was laid with steel rails, and 60,387 miles with iron rails. The manual also includes the railways of Canada and Mexico, and a directory of the various tramways in the cities of the United States, but, large as is the amount of valuable information furnished in the 1,500 pages of this splendid volume, we wish the

publishers could have included in the scope of their work a summary of the railway construction and business of the rest of the world. Such a statement would add to the value of the work.

TURNING LATHES. By James Lukin. New York and London: E. & F. N. Spon. Pp. 160. Price \$1.00.

This is a manual for technical schools and apprentices in turning, screw cutting, metal spinning, etc., being an elementary work, presupposing no knowledge of tools or lathes. It has numerous illustrations of tools and lathes, and descriptions of various kinds of work, the directions being such as will be most simple to a young beginner.

THE MECHANIC'S WORKSHOP HANDY BOOK. By Paul N. Hasluck. London: Crosby, Lockwood & Son. Pp. 136. Price 80 cents.

This book is especially for young mechanics interested in the manipulation of metal. There are special chapters on iron, steel, and brass working, and on the principal alloys, on solders and soldering, files and filing, tool grinding, drills and drilling, abrasive and finishing processes, etc. The book has a greater variety and extent of matter than is ordinarily found in such manuals, together with a good index.

THE SHEET JOBBING AND PLATE ROLLER'S ASSISTANT. By C. H. Kaufman. Wheeling: West Va. Publishing Co. Pocket book form. Pp. 267. Price \$3.50.

This is a book full of tables designed to assist manufacturers and mill managers in saving time and labor in making calculations, also to assist the boiler maker and sheet iron worker, and the iron roofer, in making estimates for work, and to be of advantage to any one handling sheet iron.

THREE KINGDOMS. A hand book of the Agassiz Association. By Harlan H. Ballard. New York: The Writers' Publishing Co. Pp. 167. Cloth. Price 75 cents.

The Agassiz Association has a membership all over the United States, and to some extent in Canada and England. It is organized in nearly one thousand chapters, having a membership of some fifteen thousand persons, young and old, the object being the systematic study of elementary botany, entomology, geology, anatomy, physiology, etc., under the leadership of competent teachers. This book is designed to answer inquiries concerning the association and its work, and has much valuable information on the collection, preservation, and study of insects, plants, minerals, etc.

SEASIDE AND WAYSIDE. No. 2. By Julia McNair Wright. Boston: D. C. Heath & Co.

This is the second of a series of "nature readers," and describes ants and their work, the earth worm, the house fly, the beetle, the dragon fly, etc., and all in a way well calculated to impart instruction while being delightfully entertaining to the little folks.

WILLIAM SHAKESPEARE PORTRAYED BY HIMSELF. By Robert Waters. New York: Worthington & Co. Pp. 347.

This work is styled by its author "a revelation of the poet in the career and character of one of his own dramatic heroes," and the effort is made to show that Shakespeare is none other than King Henry V.

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.

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.

(1) B. J. asks (1) a process by which a wrought iron rod can be converted into steel. A. Your iron rod may be made into steel on its surface only by packing it in an iron tube with horn shavings, closing the ends with clay, and heating the whole to a full red for four hours. If kept too long, it will be of little value as a steel rod. It will become blister steel, which is coarse in grain and blistered on the surface. 2. A black enamel for bicycles. A. Use black japan varnish and bake in an oven at about 270° Fah.

(2) C. J.—Compressing two volumes in one of air or any gas, starting at atmospheric pressure, gives a resultant pressure of about 15 lb. per square inch. Electricity cannot be utilized as a motive power except through the aid of mechanical appliances. It can only be generated for power purposes by chemical means (a battery) or by the expenditure of power which may be produced through the agency of steam, water, or wind through engines, water wheels, or wind mills.

(3) W. E. L. asks the process of tempering needles—what kind of oil is used, and what degree of heat is required? A. Use clear lard oil and cherry red heat for the needles. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 51, for the process of manufacture.

(4) J. D. B. asks: 1. Why is it true that, if the direct rays of the sun are permitted to enter a darkened room through a square opening, where they impinge upon the floor or wall, the figure will be round? A. The sun, having sensible magnitude, produces a penumbra. This prevents the reproduction with sharp outlines of the aperture, and hence it is somewhat confused in shape, tending toward a circle. This refers to an opening of large size. If the opening is very small, not much larger in area than a pinhole, then a "pinhole" image of the sun will be produced. The production of such an image depends on the practical cutting off of all except one set of rays emerging from the sun. 2. Do motions possess the quality of cohesive attraction? A. No. 3. Is it not true in physics, as in physics and in politics, that we are expected to accept the dictum of some man as leaving nothing further to be said, and whose ipse dixit it were rank heresy to question? A. We know of no ipse dixit in physics, politics, or physics. The assertion of the highest authority is open to contradiction or discussion.

(5) R. Y. asks: 1. Is it necessary for the discharge end of a siphon pipe to be submerged in water to insure a continuous flow? A. No; provided the pipe is unobstructed for its full length. If partially stopped, so that there is a slow discharge, air may enter and stop the siphon from working. 2. What is the theoretical difference in the length of the pipe from the apex to the fountain, and from the same point to the discharge in order to insure a continuous flow? A. Any difference in length will insure a flow toward the longer leg. The height must not exceed 33 feet, as this is the limit of action.

(6) F. T. P. asks (1) how salicylic acid is made. A. Salicylic acid is made by treating sodium phenol (carbolic acid and soda) with carbonic acid gas. Caustic soda solution is evaporated with a proper amount of carbolic acid to a dry powder, and carbonic acid gas is passed over it while warm, the temperature being gradually increased from 212° Fah. to 482° Fah. Carbolic acid is made from coal tar. 2. Is salicylic acid injurious to the system? A. It has an injurious effect upon the system when taken in sufficient quantities. The effect of minute amounts long continued cannot yet be considered established.

(7) Shep asks what commercial value (if any) solidified petroleum or solidified kerosene has, and also mention some of the uses to which it could be put. A. It is impossible to say what value solidified petroleum would have. It is mainly as a method of preparing it for transportation that inventors have worked upon the problem. It has been suggested that it might be used as a fuel.

(8) R. B. H. asks: At what distance (in feet) would an iron steamship cause a deflection of a sensitive compass needle? A. The exact distance cannot well be stated. Probably a distance of one hundred feet would practically prevent defective influence.

(9) F. L. writes: A sheet of zinc about a foot square was accidentally dropped into a well. Will it poison or injure the water, so as to make it unfit for drinking purposes? A. While it is doubtful if the zinc will seriously contaminate the water, it would be good policy to remove it.

(10) J. J. B. asks: What will remove paint from window glass? A. Try solution of washing soda. If this is not strong enough, use caustic soda. These solutions will spot any other paint that they may fall upon.

(11) J. P. S. asks: 1. If there is a remedy to stop show windows from sweating in cold weather. A. Ventilation from the top is the most efficacious method in general use. 2. What will drive away or kill cockroaches that infest dwellings? A. Powdered borax is sometimes very effectual.

(12) R. W. W. writes: I wish to make a balloon of 4 or 4½ feet in diameter, suitable to raise a two-pound detective camera. What would be the best material (rubber, gutta percha, gold beater's skin, or what), and how should the seams be cemented? What dimensions would be necessary if coal gas was used instead of pure hydrogen? A. If filled with pure hydrogen, the gas contained in your balloon would have a lifting capacity of about 2½ lb.; as it would have to carry the weight of the balloon as well as camera, it would be far too small. With coal gas it would have about one-half the above lifting power. Silk varnished with a mixture of India rubber, linseed oil, dissolved in essence of turpentine, would be a good material. In storing it, the balloon should be suspended to prevent the varnish from heating. Your balloon should be about 8 feet in diameter for hydrogen, and 10 feet for coal gas, and even then unless the silk was very light and the varnish very thin, it is doubtful if it would have enough ascensional power.

(13) A. C. S. asks: 1. How to make asbestos a conductor of electricity. A. Soak it in nitrate of silver, dry, and expose to hydrogen gas, or ignite at a red heat. Or you may dip it in bichloride of platinum solution, then in chloride of ammonium, and ignite. 2. If a disk of any light material, about twenty feet in diameter, rests on a fine pivot (on the style of a compass dial), and the pivot is revolved very slowly, will the disk make as many revolutions as the pivot, or will there be a constant slip between the pivot and the disk? A. If the point is sharp and has a hard, smooth bearing, there will be a constant slip.

(14) D. D. C. asks: 1. Can brass or copper be silver plated without a battery, if so, how? A. Not very satisfactorily. 2. Will it be durable? A. The coating will be thin and not very durable.

(15) J. N.—Block tin is the only commercially successful lining ever used for soda water fountains. Glass fountains inclosed in iron or steel bands or cases have been used, but are very heavy and somewhat fragile. There is nothing dangerous in iron, though it may affect the color and taste of the water slightly.

(16) H. P. asks: Can you tell me if any one in this country has tried to get the coating of

tin off the scrap from can and tinware factories? If so what process is used, and oblige? A. This has never been successfully accomplished, though many attempts have been made to do it. A practical process would be very valuable.

(17) F. E. W. asks: What is the process and apparatus used in the manufacture of gas retort carbon black? A. The material in question is formed as a by-product in the manufacture of gas from bituminous coal. The hydrocarbons are decomposed by the heated walls of the retort, and carbon separates and is deposited in hard masses upon the back and upper surfaces of the retorts.

(18) S. W. R. writes: Replying to a query in your issue of September 1, you say that there is no substance that if placed between the poles of a magnet and its armature will counteract or insulate the magnetism. Now, I am puzzled to understand the principle of the "magnetic watch shield." Supposing that I had a proper grip on this law of magnetism, I have always held that these "shields" are frauds, but I find that their popularity is increasing, and that many of the case makers make their cases so fitted or not as ordered, and I notice also that some of the railroads that require a certain grade of watch to be used by their employes, specify the "magnetic shield" among other requirements. If you can enlighten me as to the composition of these "shields," and their general usefulness and the principles involved therein, it will be appreciated. A. Magnetic watch shields are not frauds. They operate, not by insulating the magnetism, but being made of iron they practically absorb it, acting like an armature of any neighboring magnet, and disposing of the lines of force before they can reach the inclosed watch. These lines of force are principally kept within the metal of the shield, so that the watch is partially protected.

TO INVENTORS.

An experience of forty 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 low, 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

September 18, 1888,

AND EACH BEARING THAT DATE.

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

Table listing inventions with names and numbers. Includes: Acid phosphate, making, C. Glaser... 389,566; Air brake, T. S. E. Dixon... 389,643; Amalgamating apparatus, A. D. Searles, Sr., et al... 389,558; Armature winding for dynamo electric machines, W. H. Knight... 389,558; Awning, D. Jannopoulos... 389,749; Axle box, J. Des Brisay... 389,631; Axles and shafts, roller bearing for, C. D. Meneely... 389,819; Bag holder, J. E. Coles... 389,738; Bagasse furnace, W. W. Sutcliffe... 389,774; Ball trap and target, Day & Colt... 389,741; Banker's case, M. F. Langfeld... 389,579; Basket or box, folding, C. R. Maguire... 389,753; Batteries, rheotome mechanism for medical, H. B. Cox... 389,640; Bearing, roller, R. W. Hent... 389,653; Beating engine, J. Norton, Jr... 389,760; Belt fastener, M. Seebold... 389,604; Belt rest, B. F. & J. F. Comstock... 389,686; Belt tightener, chain, O. Cooley... 389,835; Bit. See Bridge bit; Blind slats, machine for smoothing and finishing, A. F. Tyler... 389,826; Block. See Snatch block; Board. See Bosom board; Boat. See Portable boat; Boiler. See Steam boiler; Boiler cleaner, steam, J. S. Roake... 389,718; Boiler furnace, W. W. Sutcliffe... 389,773; Bolt, J. T. Gunniss... 389,646; Bolt, J. J. Holland... 389,704; Bolt cutter, D. J. Sligh... 389,766; Boot or shoe heel, J. Germun... 389,563; Boring machine, H. Longwell... 389,849; Bosom board, F. H. Argersinger... 389,682; Bottlestopper, P. Kottzen... 389,707; Bottle stopper, T. G. Turner... 389,677; Box. See Axle box. Casting box. Letter box. Bracket. See Coffin bracket; Brake. See Air brake. Sled brake. Wagon brake; Bridge, D. M. Eddy... 389,634; Bridge guard, W. C. Newman... 389,714; Bridle, B. L. E. Gowen... 389,701; Bridle bit, A. W. Helms... 389,609; Broom head, G. H. Kimbler... 389,657; Buckle, W. A. Meyer... 389,710; Buckle and trace carrier, combined back band, W. H. Hayden, Jr... 389,808; Buggies, drop reach for, R. H. Munro... 389,821; Burner. See Gas burner; Butter package, metallic, Higgins & Wheeler... 389,746; Button, J. Dreihlinger... 389,633; Button machines, nail and washer feeder for, E. B. Hamilton... 389,648; Buttoner, C. L. Urry... 389,823; Calipers, micrometer, J. D. Bishop... 389,734; Cam mechanism, C. H. Willcox... 389,782; Can forming machines, horn for, B. Adrance... 389,823; Cane, J. E. Hale... 389,804; Cane and camp stool, combined, H. Hendrickson... 389,810; Cane mill, scraper for, M. L. Flowers... 389,801; Car coupling, J. Clarridge, Sr... 389,687; Car coupling, I. Shotwell... 389,689;

Table listing inventions with names and numbers. Includes: Car coupling S. Shull... 389,771; Car coupling, J. F. Zeigler... 389,827; Car door, W. J. Keyes... 389,706; Car mover, M. F. Connett... 389,689; Car mover, O. E. Rose... 389,600; Car, passenger, C. H. White... 389,728; Car platform, MacMakin & Crow... 389,560; Car seat, J. O. Buerk... 389,686; Car wheel, cast steel, Bagaley & Hainsworth... 389,757; Carriage elevator, G. L. Loomis... 389,833; Cart, road, F. Higgins... 389,842; Case. See Banker's case. Medicine case. Wall case; Casting box, stereotype, J. Thompson... 389,673; Casting horsehoes, flask for, F. I. Freeman... 389,559; Chain, drive, B. A. Legg... 389,580; Chair. See Rocking chair; Checkrein hook, D. W. Brownell... 389,543; Chuck, drill, L. C. Taber... 389,721; Cigar box trimming machine, H. Leiman... 389,708; Cigar cutter, Richardson & Ridgway... 389,762; Circuit maker and breaker, automatic, W. W. Estabrook... 389,739; Clay to make ballast, etc., feeding apparatus for use in burning, W. Davy... 389,551; Cleaner. See Boiler cleaner. Flue cleaner; Cleaner and heater, combined, J. D. Sullivan... 389,720; Clips, die for forming spring head, E. J. Hess... 389,570; Clock, E. M. & M. Moulton... 389,652; Clothes wringer, A. Groves... 389,805; Cock, stop and waste, J. Heltzle... 389,652; Coffee or tea pot, I. Bouteil... 389,790; Coffin bracket, W. Hollis... 389,654; Collar machine, horse, E. Crawley... 389,630; Corn cutter, T. C. Williams... 389,783; Cot legs or other articles of like construction, bracing, attaching, and detaching, L. Banks... 389,733; Cotton scraper and chopper, W. E. Morris... 389,850; Coupling. See Car coupling. Pipe coupling. Thill coupling; Cultivator, W. Sobey... 389,860; Cultivator, sulky, J. C. Bird (r)... 10,959; Cultivator, wheel, W. Sobey... 389,859; Cutter. See Bolt cutter. Cigar cutter. Corn cutter; Darning last, C. Austin... 389,683; Decorations, transfer, C. J. B. Jensen... 389,816; Dental engine, C. Doriot... 389,796; Desk or other furniture, school, E. Haney... 389,807; Die. See Screw cutting die. Sole cutting die; Distilling alcohol, apparatus for, L. Bechaux fils... 389,539; Door check, Shaw & Wixom... 389,705; Door check, A. Sohns... 389,610; Door or window stop, N. Van Allen... 389,680; Draught equalizer, A. F. Gillet... 389,699; Drill. See Rock drill; Drills, mechanism for opening, W. Thiem... 389,613; Drilling machine, T. Townsend... 389,722; Drum, snare, H. C. Plowe... 389,594; Dust separator, Allington & Curtis... 389,786; Ear muff, A. L. Britton... 389,735; Ear wire, B. A. Ballou... 389,830; Egg beater, E. Baltzley... 389,631; Egg testing packet, M. L. Windlate... 389,625; Electric battery cell, S. L. Trippe... 389,676; Electric energy, means for distributing, S. Z. De Ferranti... 389,785; Electric light circuits, ground detector for, A. W. Morrell... 389,758; Electric machine, direct welding dynamo, E. Thomson... 389,779; Electric machine, dynamo, T. H. Hicks... 389,812; Electric machines, conductor for dynamo, E. F. H. H. Lauckert... 389,752; Electrical distribution by secondary batteries, T. P. Conant... 389,638; Electro therapeutic cap, N. P. Rutter... 389,764; Elevator. See Carriage elevator. Water elevator; Elevator safety apparatus, C. E. Ongley... 389,853; Embroidery frame, C. Herrmann... 389,811; End gate, E. C. Ward... 389,619; End gate, wagon, U. S. Tym... 389,679; Engine. See Beating engine. Dental engine. Gas engine. Pumping engine. Steam engine; Exercising apparatus, S. Wild... 389,622; Fair stitch looms, machine for cutting, A. G. Williams... 389,866; Fans, power transmitter for driving, J. M. Orford... 389,665; Fare register, E. M. Green... 389,702; Fare register, electric, E. A. Scales... 389,857; Faucet attachment, W. H. Tingle et al... 389,614; Fence, J. A. Harnsberger... 389,649; Fence machine, wire, J. & C. Lane... 389,751; Fence making machine, E. Blockett... 389,540; Fence making machine, P. Miles... 389,590; Fences, machine for making picket, E. E. Witter... 389,784; Fertilizer distributor, Malaler & Smith... 389,754; Fifth wheel, G. A. Lane... 389,578; Fire alarm system, T. G. Turner... 389,678; Fire escape, J. M. Pink... 389,636; Fish, device for stringing, F. A. Roberts... 389,598; Flour packer, J. T. Melich... 389,662; Flue cleaner, G. W. Berkshire... 389,634; Frame. See Embroidery frame. Paper machine frame; Fruit gatherer, G. A. & C. F. Fleming... 389,637; Furnace. See Bagasse furnace. Boiler furnace; Puddling machine. Regenerative furnace; Furnace, W. R. Jones... 389,575; Furnace grate, Z. F. Bryant... 389,833; Gauge. See Pressure gauge; Galley, Schnieidewand & Lee... 389,607; Game scoring tablet and indicating device, A. Kuper... 389,845; Garments, shoulder form for, J. J. Byers... 389,637; Gas, apparatus for the manufacture of, T. G. Hall... 389,547; Gas burner, E. Moreau... 389,757; Gas burner, incandescent, W. J. McNorton... 389,588; Gas engine, H. Skinner... 389,686; Gas lighting and extinguishing, system of electrical, H. T. Downs... 389,692; Gas saver, O. W. Bennett... 389,633; Gas scrubber, J. F. Allen... 389,785; Gate. See End gate; Gate, T. M. Russell... 389,823; Glass articles, manufacture of ornamental, J. Reder... 389,595; Grader, road, J. J. Mungen... 389,851; Grain binder, S. D. Locke... 389,817; Grapple, D. S. Sanborn et al... 389,856; Gridiron, J. W. Sankey... 389,602; Guard. See Bridge guard; Hairdressing device, A. F. Godefroy... 389,888; Harrow, P. J. Parmiter... 389,593; Harrow and seeder, combined disk, A. Corbin, Jr... 389,548; Harvester and binder, grain, S. D. Locke... 389,846; Harvester reel support, J. S. Davis... 389,537; Hay ricking device, H. A. Alden... 389,571; Heating apparatus, electrical, J. West... 389,729; Heel trimming machine, Noble & Childs... 389,759; Hing, spring, G. W. Warner... 389,727; Hinge, spring, G. M. Waldorf... 389,865;

Table listing inventions with names and numbers. Includes: Holder. See Bag holder. Paper holder. Spool, needle, and thimble holder. Stereotype plate holder; Hook. See Checkrein hook; Hook, C. H. Thurston... 389,825; Horse power machine, W. H. Williscraft... 389,623; Indicator. See Pressure indicator; Initial ring, interchangeable, Thie & Levy... 389,778; Insurance policy, complementary/accident, J. F. Lee... 389,818; Interlocking switch and signal, G. D. Fowle... 389,558; Iron, manufacturing wrought, L. D. Chapin... 389,545; Ironing machine, J. J. Daley... 389,794; Jack. See Lifting jack; Joint for furniture, boxes, or like articles, H. L. Beach... 389,684; Knitting machine for knitting rib tops, C. M. Musgrove... 389,592; Lamp, hanging, H. D. Richardson... 389,717; Lamp, kerosene, A. G. Heath... 389,589; Lamps, extension standard for, J. Kintz... 389,577; Lantern or lamp, tubular, L. F. Betts... 389,832; Lathe for turning wooden dishes, W. S. Shotwell... 389,824; Lead, making white, Morris & West... 389,591; Ledger and bull book, combined, C. L. Searcy... 389,683; Letter box, G. H. Flister... 389,744; Lifting jack, W. Dixon... 389,742; Lifting jack, A. L. Stanford... 389,861; Lock. See Nut lock. Permutation lock. Seal lock; Log turner and loader, W. A. Durbin... 389,743; Loom, take-up mechanism, W. M. Larned... 389,846; Lubricator, Mattes & Lewis... 389,755; Medicine case, W. H. Warren... 389,621; Medicine, remedy for scrofula, H. Helm... 389,651; Metallic fastener, Mandel & Henderson... 389,690; Metals, material for cleaning and polishing, J. Dean... 389,552; Motor. See Weight motor; Mower, lawn, F. E. Grothaus... 389,804; Mowing machine, A. O. Carman... 389,544; Nailing machine, W. Z. Bean... 389,692; Newspaper folding, wrapping, addressing, and binding machine, G. S. Alden... 389,639; Nut and bolt, A. Schutz et al... 389,603; Nut lock, H. F. Corey... 389,639; Nut lock, W. A. Jordan... 389,848; Oil distributor, T. F. Townsend... 389,615; Organ action, reed, L. K. Fuller... 389,698; Packing, H. R. Gillingham... 389,564; Packing ring, J. J. Sullivan... 389,722; Paddle wheel, Thayer & Phelan... 389,672; Paint, asbestos, F. De Coninck... 389,641; Paper holder, A. B. Sherwood... 389,606; Paper holder and cutter, roll, S. D. & N. W. Locke... 389,582; Paper machine frame, G. Kaffenberger... 389,576; Permutation lock, C. Hill... 389,703; Pin or match box and advertising card, combined, Hunter & Mackay... 389,814; Pipe coupling, S. R. Dresser... 389,797; Pipe wrench, P. Reagan... 389,666; Pipes, boilers, etc., non conducting covering for steam, H. C. Bradley... 389,542; Planter, hand, T. N. Lupton... 389,709; Planter, seed, H. Thaden... 389,776; Plaster, composition of matter for, Turley & Chamberlin... 389,724; Platform. See Car platform; Plow, J. King... 389,750; Plow and harrow, combined, A. Trexler... 389,675; Plow attachment, J. & S. W. Miles... 389,820; Plows, sulky attachment for walking, D. T. Jones... 389,705; Portable boat, C. W. King... 389,817; Postal package, H. R. Gillingham... 389,566; Pot. See Coffee or tea pot; Pressure gauge and draught regulator, combined steam, M. Wilkes... 389,730; Pressure indicator and recorder, W. H. Bristol... 389,635; Pressure regulator, C. E. Brown... 389,791; Printing machine, color, W. H. Fuller... 389,561; Printing machine sheet delivery mechanism, J. T. Hawkins... 389,650; Printing machines, delivery mechanism for, G. P. Fenner... 389,800; Printing presses, folding machinery for, G. W. Kendall... 389,656; Puddling furnace, T. C. Jones... 389,554; Pump, J. W. Vanmeter... 389,725; Pumping engine, E. G. Shortt... 389,679; Pumping engine, duplex, E. G. Shortt... 389,700; Punching and shearing machine, E. Jones... 389,655; Punching the eyes in axes, etc., device for, A. Garrow... 389,562; Rack for exhibiting garments, S. W. Wellerstein... 389,628; Railway, cable, G. W. Shepherd... 389,719; Railway system, electric, J. D. Nicholson et al... 389,822; Railway switch, G. N. Reif... 389,716; Railways, turntable for street, J. W. Warhurst... 389,620; Reel. See Warming reel; Regenerative furnace, W. & J. C. Swindell... 389,671; Register. See Fare register; Regulator. See Pressure regulator; Resonator, tubular, J. Harrington... 389,841; Ring. See Initial ring. Packing ring; Rock drill, A. W. & Z. W. Daw... 389,740; Rock drill, J. Massett... 389,567; Rock drill, steam, A. J. Sypher... 389,775; Rocking chair, adjustable folding and convertible, Holden & Rasmussen... 389,572; Rovins, etc., mechanism for evening, G. F. Evans... 389,635; Rules, attachment for carpenter's, Hall & Traut... 389,647; Running gear, A. T. Dickey... 389,554; Saddle, riding, D. R. Lakin... 389,659; Saw mills, automatically adjustable press roll for gang, F. O. Kilgore... 389,816; Saw set, H. Gates... 389,644; Saw wheel, band, R. H. Trumbull... 389,723; Scale, automatic grain, T. J. Underwood... 389,684; Screw cutting die, A. Wirsching... 389,627; Seal lock, G. W. Amos... 389,732; Seat. See Car seat. Vehicle seat; Seed, delinting cotton, F. C. Cooper... 389,759; Semaphore, A. A. Strom... 389,611; Separator. See Dust separator; Sewage and sea water, electrolyzing, W. Webster, Jr... 389,781; Sewers, apparatus for flushing, H. H. Mitchell... 389,712; Sewing machine, buttonhole, A. L. Coombs... 389,547; Sewing machine buttonhole attachment, A. W. Johnson... 389,573; Sewing machine take-up, J. Bolton... 389,738; Sewing machines, belt removing and replacing device for, J. Bolton... 389,789; Shaping fleecy masses, machine for, E. Goldman... 389,645; Shield, heat, H. Gross... 389,745; Shoe cabinet, W. S. Settle... 389,765; Signal. See Thermomatic signal; Sled brake, T. Ghlogley... 389,700; Snatch block, T. R. Ferrall... 389,527; Soldering tool, C. L. Wagandt... 389,756; Sole cutting die, O. Rock... 389,766;