### ENGINEERING INVENTIONS.

A valve for engines has been patented by Mr. James Des Brisay, of Kamloops, British Columbia, Canada. Combined with a valve adapted to rotate on its seat, and having a concentric projection, is a ring held on the projection and pressing against the valve, with other novel features, the valve being operated directly from the main shaft

A car dumping device has been patented by Mr. Daniel T. Denton, of Tower Mines. Minn. This improvement is specially adapted for cable cars loaded with ore, coal, or other material, and covers a novel construction and combination of parts by which the loaded cars are easily, quickly, and automatically

A car coupling has been patented by Mr. Simon J. Freeman, of Rochester, N. Y. The drawhead has a projection in its bottom, behind which is a recess, combined with a vertically sliding and longitudinally swinging arm extending up through a slot, with other novel features, whereby the coupling and uncoupling of cars may be readily effected without going between them.

A car coupling has been patented by Mr. David N. Tarbox, of Cedarville, Ohio. Combined with a drawhead in which is journaled a hooked coupling link is a transversely swinging weighted operating arm extending through the drawhead and having a limited movement through the coupling link, there being a pivoted retaining cam on the arm adapted to bear on the drawhead.

A steam boiler has been patented by Mr. George Kingsley, of Lowell, Mass. Combined with a double shell horizontal boiler having an inner and outer fire space and a water space between are inclined laterally projecting tubes screwed into the inner shell having their inner ands closed and elevated and projecting into the inner fire space, stay bolts alternating with the tubes and connecting the shells, the invention covering an improvement on former patented inventions of the same inventor.

## MISCELLANEOUS INVENTIONS.

A lotion to be used in the treatment of sores has been patented by Mr. Thomas Tomlinson, of Clarinda, Iowa. It is made of gambier, salt, sulphuric acid, and water, compounded in specified proportions, and used as directed.

Aratchet drill has been patented by Mr. Peter B. Erickson, of Ishpeming, Mich. The invention covers a novel construction and combination of parts, whereby the drill may be readily inserted and the action of the drill reversed, and wherein also the device will be durable and can be conveniently manipulated.

A vehicle spring has been patented by Mr. Edwin Jarrell, of Harper, Kansas. The invention consists in novel constructions and combinations of parts designed to render available in a simple manner the square torsion of the spring bars, with other special features.

A latch bolt has been patented by Mr. Franz Spengler, of Berlin, Germany. It is made in wedge-like form, having its end beveled from edge to edge and from side to side, being designed to reduce the friction between the head of the bolt and the keeper on the door casing to a minimum.

A shingler's gauge has been patented by Mr. Franklin P. Sanborn, of Standish, Me. This invention covers a device of novel construction to be used in applying shingles or clapboards to the roofs or walls of buildings for determining the proper position of each course with respect to the preceding course

A mole trap has been patented by Mr. Samuel J. Grimmett, of West Plains, Mo. Combined with set or fall sticks a board is used having pins on one side and a longitudinal knife on the other, the pins being adapted to impale or imprison a mole, and the knife for destroying snakes.

A bucksaw frame has been patented by Mr. Joseph W. Thompson, of Mount Pleasant, Iowa. The invention covers a novel construction and arrangement of parts and details for an improved saw frame in which each of the end pieces is made of a U-shaped bar so as to combine lightness with strength.

A wall protector, to prevent defacing of walls by furniture, has been patented by Messrs. Roldin S. Robbins, of San Francisco, and Alphonzo H. Broad, of Berkeley, Cal. It consists essentially of an elastic button with surrounding flauge, to be used with a retaining band or wire, to protect both the

A garment stay has been patented by Mr. Edward K. Warren, of Three Oaks, Micb. It is a covered stay for dresses or other garments, having a stiffening strip covered by separate pieces of fabric projecting beyond the side edges, and there stitched to m selvedges through which the seamstress stitch and secure the stay to the garment.

A weather board holder and gauge has been patented by Messrs. Madison G. Stanley and William F. Jones, of Kenton, Tenn. The device is simple and easy of manipulation, and is designed to dispense with driving nails in the previously put on boards, while affording means for expeditiously gauging the amount of lap to be allowed.

A crutch attachment has been patented by Mr. William J. Donald, of Tunnel City, Wis. This invention covers an improvement in that class of crutches which have an elastic foot and a spur, either of which may be adjusted for use alone by resting the foot on the ground or floor to screw or unscrew it. thereby projecting or withdrawing the spur.

A magic lantern slide has been patented by Mr. Edward T. Petter, of Newport, R. I. It consists of a continuous hand or strip of flexible transparent or translucent material, carried by reels or spools, upon which the views or figures are portrayed, combined with a motor for drawing the band through the lantern from one reel to another.

has been patented by Mr. Henry A. Hayden, of New York City. It has a series of fastening devices arranged on the inside of the covers, and consisting of overlapping metallic strips hinged to staples, being designed to display maps, time tables, etc., in prominent places.

A hammock has been patented by Mr. Barry A. Norris, of Houston, Texas. It is made with slats, each provided at its ends with a transverse aperture through which passes a cord or wire for holding the slats together, making a hammock designed to be simple and durable and yielding to the motion of the body.

A wheeled dumping scraper has been patented by Mr. Cyrus A. Kenney, of Nicholasville, Ky. The scoop is adapted to be lowered to present its scooping edge to the ground for filling, while it may be raised to a greater or less height and be dumped backwardly, the invention covering a novel combination and construction of parts.

A pay device has been patented by Mr. David W. Bundy, of Toronto, Ontario, Canada. The invention consists mainly of a tray having a series of pockets, each bearing the name and number of an employe, in connection with money boxes adapted to be received in the pockets and bearing a corresponding number.

A heating gas burner has been patented by Mr. Albert J. Doty, of Philadelphia, Pa. It is made of a disk of sheet iron, in the edge of which flaring slits are formed, the disk being swaged up so that the edges will be beveled and the slits made narrow, with parallel edges, making the desired form of orificefor the gas and air.

An image has been patented by Mr. with an inner wooden section and outer plastic side sections, whereby great strength is obtained and the BUILDING EDITION. muscles can be brought out naturally, as desired for images or figures of animals to be used in connection with carrousels or merry-go-rounds

A chill mould apparatus has been pa tented by Mr. William Fawcett, of Jersey City, N. J It is an apparatus for casting sash weights or similar articles, in which the moulds are chilled by water, the hollow sectional moulds being arranged in a rotary frame about a hollow axle having a water supply and exit pipes suitably attached.

A geometrical drawing board has been patented by Mr. James M. Pringle, of Bathurst, New South Wales. This invention provides a simple means for facilitating the teaching and explaining the principles of that branch of solid or descriptive geo metry used in construction, also illustrating these principles in the teaching of mechanical drawing.

A lock hinge has been patented by Mr. Leonard Tilton, of Brooklyn, N. Y. It consists of a vertical plate, with a slotted horizontal plate, in combination with a pivot bolt held in the slot, an arm, rack and locking bolt being held in an aperture in the window frame, making an improved fastener for window blinds, etc.

An apparatus for casting metal ingots has been patented by Mr. William Huffelmann, of Germaniahutte, Prussia, Germany. It is for casting small ingots suitable for the manufacture of wire, etc. and designed to produce great density at their outer part, with as little loss as possible from waste in the runner and gates.

An attachment for bicycles has been patented by Mr. Herman H. Holtkamp, of New Knoxville, Ohio. It consists of a runner or shoe arranged for connection with the small wheel of the vehicle, with bear ing plates which may be clamped to the peripheral face of the driving wheel, whereby the machine may be run upon ice or snowy ground.

An ice cutting machine has been patented by Messrs. Louis C. Hartung and William A. Haussner, of Stillwater, Minn. The frame is mounted at the rear on wheels and in front on runners, the turning of the wheels, which are spiked, acting on a shaft to drive a saw, the weight of the frame forcing the revolving saw down into the ice.

A drag saw has been patented by Mr. John Harrigan, of Brooklyn, N. Y. It is designed for cutting off the npper ends of piles and similar uses, and combines with a support to be fastened to the pile a yoke pivoted on the support, and having parallel ways adapted for the saw to slide therein, the saw having a handle set at an angle to the face of the blade.

A journal bearing has been patented by Mr. George L. Griswold, of Bellows Falls, Vt. This invention provides a bearing box or reservoir having a network of oil or lubricant passages or channels in it, at a number of the intersecting points of which are cavities or receptacles, the device being adapted for lubricating flat as well as convex or cylindrical surface

A toilet paper cutter has been patented by Mr. Henry H. Harrison, of New York City. It has a stationary blade, with rollers for drawing the paper from a drum, in combination with a pivoted blade and springs, and other novel features, whereby the paper may be conveniently drawn out and cut off in the desired lengths.

A velocipede has been patented by Mr. John Hagan, of Atlantic City, N. J. Combined with the main axle and driving wheels, springs are so secured to the main frame that power may be stored up therewith, by means of a crank arm, and can be used as desired in propelling the velocipede, provision being also made for the use of an electric motor and batteries.

A rowing gear has been patented by Messrs. Oren Tippy and Fred D. Smith, of New Carlisle, Ind. This invention provides a device by means of which a boatman may pull a boat in the direction in which he is facing, it being designed that every motion requisite in rowing may be obtained by

A portfolio for maps, periodicals, etc., the use of the device, while the oar can be manipulated with efficiency and ease

> A brick machine has been patented by Mr. Robert A. Willett, of South Amboy, N. J. This invention covers a novel construction, combination and arrangement of parts in a machine in which the clay is compressed in the form of bricks by different plungers, and in which the pressure may be adapted to different qualities of clay and the slow or quick move ment of the plungers in the mould boxes be regulated.

A gate has been patented by Mr. John W. Rutledge, of Shannondale, Ind. It is designed to be opened and closed by a person in a vehicle or on horseback, and is constructed to prevent snow and ice interfering with the action of the catches, and to render more effective and simple the means of actuating the latch, while the gate may readily be tightened and braced as required.

A wrench has been patented by Messrs. Albert M. Spaulding, of Flowerfield, Mich., and Herbert L. Case, of Bristol Center, N. Y. It is specially adapted for conveniently unscrewing the nuts of vehicle axles, and comprises a bar having a wrench head between its ends and arms mounted adjustably on the bar, the opposite ends of each arm being adapted to engage a spoke.

A breasting attachment for heeling machines has been patented by Messrs. Martin C. Mc-Geuness and John Tweedie, of Jefferson City, Mo. This invention covers a novel combination and arrangement of parts in a device designed to accurately trim the inner edge of the heel of a boot or shoe, without cutting the sole, while the top piece is put in place at

# SCIENTIFIC AMERICAN

### OCTOBER NUMBER.-(No. 36.)

TABLE OF CONTENTS.

1. Elegant plate, in colors, of a suburban dwelling costing eight thousand five hundred dollars. Floor plans, sheet of details, etc.

2. Elegant plate, in colors, of two cottages costing twelve hundred and sixteen hundred dollars, respectively. Sheet of details, floor plans, etc.

A residence at Richmond Hill, N. Y., lately built, at a cost of ten thousand dollars. Perspective and

A dwelling for three thousand five hundred dollars. Floor plans and perspective.

Villa at Fontainebleau-M. E. Brunnarius, architect. Cost, eight thousand six hundred dollars. Floor plans and perspective.

View of the new Protestant church at Lyons France. Cost, eighty thousand dollars.

Page of engravings showing the house at Stratfordon-Avon in which Shakespeare was born-Anne Hathaway's cottage, near Stratford-on-Avon-Trinity Church, Stratford-on-Avon, where Shake speare is buried-The residence of Mary Arden, the mother of Shakespeare-Old Elizabethan house, Stratford, showing the domestic architecture of the time of Shakespeare.

The chancel, Holy Trinity Church, Stratford-on Avon, showing the Shakespeare memorial bust and tablet, and the stained glass window, the gift of

A suburban villa lately built at Sound View Hill, Long Island Sound, near New York. Perspective view and floor plans. Cost, five thousand eight hundred dollars.

10. Design for a cottage by S. W. Whittemore, architect, Brick Church, N. J. Perspective and floor plans. Cost, three thousand five hundred dollars

11. A Queen Anne cottage in Rochelle Park. New Rochelle, N. Y., costing five thousand six hundred dollars. Plans and perspective.

12. An English double house of moderate cost. Per spective and floor plans.

13. Design for the Duquesne Club House, by Heins & La Farge, architects, New York.

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 fireproof 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 rnined 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.-Im-

proved hand and foot power saws, illustrated .-

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 ARCHITEC TURE, richly adorned with elegant plates in colors and with fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

Practical hints on disinfection.

The Fullness, Richness, Cheapness, and Convenience of this work have won for it the LABGEST CIRCULATION of any Architectural publication in the wor'd. Sold by all newsdealers.

> MUNN & CO., PUBLISHERS, 261 Broadway, New York.

## Business and Personal.

The charge for Insertion under this had 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 next issue.

Pattern letters and figures to place on patterns for astings. (H. W.) Knight & Son, Seneca Falls, N. Y.

All books, app., etc., cheap. School of Electricity, N.Y. Private line telephones. See illustrated adv., page 237.

Boiler Explosion.—Agents wanted to sell new book. Just published. Every owner of a steam plant and every fireman in the United States wants it, and must have it. Price, \$2.00. Address G. A. Zeller, bookseller. 18 So. Fourth St., St. Louis, Mo.

()ne hardly realizes the immense loss sustained in machine making (where many duplicate parts are required) by the old way of single forgings, or cutting out of solid metal, compared with the modern appliance of drop forging. With a die, by a single stroke or two, thousands are made exactly alike, in size and form, ready for the finishing, either of the best tool steel, Bessemer steel, iron, or copper. Mr. Charles Robertson, Broadway, Revere. Mass., makes a specialty of splendid drop forgings. All orders by letter, or in person, promptly attended to, and perfect satisfaction is guaranteed.

Rare Chance to Invest !- Cox's clothes drier. Useful in every family. Patent for sale, either as a whole or by States. Apply to patentee. Geo. Cox, No. 123 So. 6tb St. Reading, Pa.

Wanted-Purchaser for patent of successful water notor, or partner with capital to manufacture. Will sell on royalty. Geo. E. Reid, 46 Elm St., Albany, N. Y.

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 illus rations. Price, \$1.50. For sale by Munn & Co., 361 Broad-

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg.Co., New Haven, Conn.

Pratt & Letchworth, Buffalo, N. Y., solicit correspondence relative to manu facturing specialties requiring malleable gray iron, brass, or steel cast-

Supplement Catalogue.—Persons in pursuit of information of any special engineering, mechanical, or scientific subject, can have catalogue of contents of the Sci-ENTIFIC AMERICAN SUPPLEMENT seut to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

For the latest improved diamond prospecting drills, address the M. C. Bullock Mfg. Co., Chicago, Ill.

Nickel Plating.-Manufacturers of pure nickel anodes, pure nickel salts, polishing compositions, etc. \$100 "Little Wonder." A perfect Electro Plating Machine. Agents of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Perforated metals of all kinds for all purposes. The Robert Aitchison Perforated Metal Co., Chicago, Ill.

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

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J The Holly Manufacturing Ca., of Lockport, N. Y.,

will send their pamphlet, describing water works mahinery, and containing reports of tests, ou application.

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

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

No. 11 planer and matcher. All kinds of woodworking machinery. C. B. Rogers & Co., Norwich, Conn.

Billings' Patent Screw Plates. Drop Forgings, all kiuds. Billings & Spencer Co., Hartford, Conn

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Friction Clutch Pulleys. The D. Frisbie Co., N.Y. city.

Wrinkles and Recipes-Compiled from the Scien-TIRIC AMERICAN. A collection of practical suggestions. sees, 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.

Tight and Slack Barrel Machinery a specialty. John

Double boring machines. Double spindle shaping machines. Rollstone Machine Co., Fitchburg, Mass.

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

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

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

## NEW BOOKS AND PUBLICATIONS.

FIRST ANNUAL REPORT OF THE BOARD OF MEDIATION AND ARBITRATION OF MEDIATION AND ARBITRATION OF THE STATE OF NEW YORK. Commissioners, William Purcell, Gilbert Robertson, Jr., Florence F. Donovan. Transmitted to the Legislature January 16, 1888. The Troy Press Co., printers. 1888. Pp. 734.

In this report of the Board of Mediation and Arbitration of the State of New York the condition of several branches of manufacture, as revealed in the examinations of operatives and employers by the Senate committee, is given. The work is an interesting one, despite the unattractive form of question and answer in which most of it is necessarily presented, and many of the revelations of the examination as to the small amount | by reducing the grate and urging a still stronger fire. of wages earned by immensely long hours of work are It is where the boiler is of larger capacity than the well if its contents were read and studied by all who have a direct or indirect interest in the cause of the

THE CHEMICAL ANALYSIS OF IRON. complete account of all the best known methods for the analysis of stone, steel, pig iron, iron ore, lime-stone, slag, clay, sand, coal, coke, and furnace and producer gases. By An-drew Alexander Blair. Philadelphia: J. B. Lippincott Co. 1888. Pp. 282. Price \$4.

This excellent treatise is devoted primarily to the analysis of metallic iron; this is given in detail with all the determinations and the different methods of effecting them. The analysis of iron ores is treated in a special chapter, and then the analysis of allied substances is spoken of, such as limestone, clay, slags, fire sands. coal. and coke. and furnace gases. A chapter of tables giving atomic weights, factors, etc., concludes the work. It is very well illustrated by nearly 100 cuts of apparatus, and a satisfactory index is given. It can be recommended, not only on account of its author's high reputation, but also on account of its contents, to all chemists interested in the analyses of blast furnace and rolling mill and steel works material.

SPECIAL REFERENCE TO THE RUSSELL PROCESS. By Carl A. Stetfeldt. New York: Published by the author, 18 Broadway. Pp. xx, 234.

The title of this book discloses its nature. It is in effect a very extensive and elaborate monograph, and one which will undoubtedly be of value to all who are specially interested in this process. It is illustrated by a number of cuts showing the different apparatus entployed in the process treated of, while many figures, tables of results, etc., contained throughout the work add largely to its value. It is indexed, and the cuts already alluded to-thirty in number--embodied in the text are supplemented by several folding sheets showing the arrangement of different portions of the lixiviation plant treated of in the work.

RAILROADS AND ROLLING STOCK, A catalogue giving cost of plant and material for portable, light, and main lines, to which is added a chapter on river steamers and light craft, also dredging plant. Prepared by John Birch & Co., engineers and merchants, Liverpool. Pp. 232.

All that can be said of this catalogue is that it describes, notes, or illustrates almost everything that can be thought of under its title. Although a trade cata logue, it forms a very convenient and attractive manual for those interested in railroad and machine engineer-



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. Ruquirles not answered in reasonable time should be rejeated; 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

Minerals sent for examination should be distinctly marked or labeled.

- (1) G. F. asks how to make a good flash light for photographic purposes, A. Purchase one ounce of magnesium powder and one ounce of negative gun cotton from dealers in photographic materials. Place on a dust pan enough cotton, when pulled out, to measure about 31/2 inches in diameter. Sprinkle it over with twenty grains of magnesium powder to form a thin, even film. Lay over the magnesium thus arranged a very thin layer of gun cotton. Connect to the bunch of cotton a small fuse of twisted cotton about six inches long, so that it will ex- cheap way is known. 2. What cement will secure tend to the side of the dust pan. Then set the pan on a step ladder near the object, and when ready, light the to one side. A. Use bicycle tire cement, or disgun cotton fuse with a match, when instantly a brilliant solve 1 part India rubber in 12 parts benzine and add fiash will ensue. There are several ready prepared 20 parts of shellac and carefully heat until benzine is and lamps to fire them.
- (2) J. C. asks for a receipt for removing mildew from white silk. A. Perhaps naphtha will do it. Take to dve house, or try following: Dip a piece of fiannel in alcohol and water, and well rab the place; iron on wrong side, putting a piece of damp cotton cloth between the iron and the silk.
- (3) E. F. Co. write: We recently noticed an article in Scientific American upon the subject of size of fire box under boilers to give best results, and stating that the fire boxes are usually too and want to ascertain what size our grate between door and bridge wall ought to be under our boiler, 13 feet 6 inches long. 5 ft. diam., 84 tubes 216 inches, steam pressure required 80 pounds. A. The amount of grate surface required for your boiler is dependent upon the boiler with large grate surface can only keep up the steam required by strong firing, there is nothing gained brush.

very sad. It is published by the State, and it would be steam requirement that the gain is made by reducing the normal grate surface to the proportions mentioned in the article alluded to. Really, the great economy is madein having the boiler at least 50 per cent larger than the steaming capacity required, as usually computed. Then with a reduced grate surface and quick fire the utmost economy will result. The whole gist of steam economy is in saving the waste heat of the chimney and the exhaust. Of course proper care must be taken to prevent loss of heat from exposure of steamheated surfaces around boiler, pipes, and cylinder. Before we can advise a reduction in your grate, should know the temperature of the gases of combustion as they leave the heating surface. The difference between this temperature and the temperature of the steam will indicate the waste. Also, we should know if the present firing is strong or dull; it being a most important factor in making a change foreconomy to know the relative proportion of heating surface in the boiler to the amount of steam produced or work done. It is a mor common practice to urge a boiler to excessive duty and then complain of excessive coal consumption. We can only advise that, if you desire to make an experiment of any real value, you accurately weigh the fuel used for a day, or h tter for a week. Then put a row of fire brick on each side of the grate, three or four bricks high, making your actual grate surface 9 inches narrower. By urging the fire with the THE LIXIVIATION OF SILVER ORES WITH fuel weighed as before for a definite time—a day or preferably a week if you can—you may have an absolute test of the economy of the change in your case. If you succeed, your boiler is large enough for your wants. If not, the couclusion is that for economy you should have a larger boiler. The art of firing is an essential feature in steam economy, too often overlooked in the complaints as to fuel consumption. A difference of per cent or more may be made by variation in the management of doors and dampers

(4) P. I. J. asks: 1. Can a wine artificial in its make-up, or that has been colored or improved by ethers, be easily distinguished from a natural wine? A. It is sometimes very difficult to do. The aniline colors are tested for, and special tests applied for suspected adulterants. 2. Where may a full account of bago stove polish that will stand the heat. Nickel platthe various fruit ethers be obtained? A. These have to be studied in chemical treatises. There is no work devoted exclusively to them. 8. In making a vanilla extract, difficulty in completely pounding the bean to a pulp iu a mortar is experienced. Can you tell an efficacious method? A. Add white sand, and pulverize sand and beans together. 4. Are there any special colognes that are made, usually by simple solution of the oils in the cologne spirits, that would be improved on distillation? A. We know of none, 5, Which would make the best emulsion of wax-Castile soap or caustic potash? A. Neither will answer. Try dissolving the wax in oil and making an emulsion of the product with water and gum tragacanth.

(5) G. A. J. asks: 1. What is used for a gold bronze for wood, and how applied? A. The preparation is sold as a powder, and is applied mixed with a suitable varnish, or the surface is first varnished and the powder applied with a pad while the varnish is still tacky. 2. Does the use of mica oil in boilers lessen the heating capacity? The oil is used for the prevention of scale, etc. A. Not to any appreciable extent, unless used in large quantities. The boiler should be blown off from time to time. There is some danger of corrosion. 3. How to sugar-cure beef. A. Cure for 10 or 12 days with dry salt to which a little saltpeter has been added, along with some sugar and black peoper. It is then hung up until required. Folded in dry paper and hung in a dry place, it will keep two or three months. 4. Is there any way to temper brass wire after it has been hot? A. Light hammering, redrawing to a slightly smaller size, heating followed by a very slow cooling, all tend to harden brass. 5. What is the price of platinum, such as used in wire, etc.? Is it used as coin in some countries? A. \$9.00 an ounce. It has been used in Russia for coinage.

(6) C. G. H., of Wallingford, Conn., sends two worms found on a snowball bush. When they touch the hand, he says, it is badly nettled and inflamed for a few days. What is it? A. Professor C. V. Rilev says they are larvæ known commonly as saddle-backed caterpillars. They are the larvæ of a moth known as Empretia stimulea, which is comparatively common almost all over the country. The larvæ feed upon a great variety of plants, but are perhaps found more often upon corn than upon anything else. They belong to the group of stinging caterpillars, and the effect of their spines upon the skin is similar to that of a nettle.

(7) A. S. E. asks (1) how to deodorize wood alcohol to fit it for burning? A. No efficient and wood firmly to glass, same carried by wheel applied magnesium compounds now sold with special devices expelled. There is much danger of the benzine igniting. 3. How to make the aniline colors, getting them in the crystal forms. A. You can buy aniline colors from the dealers in chemicals.

> (8) W. B. K .- The terms "cold-blooded" and "warm-blooded," as applied to human beings, refer principally to the excitability or non-excitability of the individual, and not really to any difference in the heat of the blood. The temperature of the heart circulation in all persons in health is about 98° Fah.

(9) I. A. C. desires a receipt to make marking ink, black and red either or both, to mark cotlarge. We have suspected that we used too much fuel, ton bales and sacks. It must be cheap, as we sell by the barrel. A. Take of shellac 2 parts, borax 2 parts, water 25 parts, gum arabic 2 parts, and of either lampblack. Veuetian red, or ultramarine a sufficiency. Boil the borax and shellac in water till they are dissolved, and withdraw from the fire. When the solution amount of steam required, which you do not mention. has become cool, complete \$5 parts with water and add The article in question alludes to the construction of the coloring matter to bring the ink to sultable consistboilers of full capacity for the work to be done. If a ence. When it is to be used with a stencil, it must be made thicker than when it is to be applied with a

(10) T. R. M. asks a formula for chargng Babcock's fire extinguisher. A. The extluguisher is charged with a solution of bicarbonate of soda in water and sulphuric acid in a glass bottle, the latter, when required for use, being crushed with a screw, spilling the acid into the charge of soda and water. Carbonic acid gas is instantly generated, by which a pressure is obtained sufficient for throwing the whole contents of the apparatus with much force through a nozzle for fireextinguishing purposes.

(11) J. E. L. Co. asks how to cleanse sponges of the sand and white particles found in then as they are sold by the trade. A. Shake and wash, with a little hydrochloric acid in one of the wash waters

(12) C. W. B. asks the quickest and cheapest way of putting a fine polish on light-colored woods, such as white holly, etc. A. Rub paraffine on and polish with a white woolen cloth. Mastic varnish is suitable for white holly. Also, bleached shellac makes a good varnish, using 95 per cent alcohol for so-

(13) D. N. desires a receipt for making mocking bird food. A. Mix together 2 parts corn meal, 2 Darts Dea meal, and 1 Dart moss meal (made by dry, ing and grinding the imported German moss seed), add a little melted lard, but not sufficient to make the mixture too greasy, and sweeten with molasses. Fry in a pan for 1/2 hour, stirring constantly, and taking care not to let it burn; this makes it keep well.

(14) G. H. P. and others.—When a locomotive is drawing a train around a curve, the outside drivers slip backward. When running by momentum only, the slip may be on either side, depending upon the surface condition of tracks or treads, and also upon excess of weight thrown on outer wheels by centrifugal refer due to relacity and smallness of curve. When braking up or with reverse steam on curves, the slip is forward on the inner wheels.

(15) J. M. B. asks: Is there any method of giving to the surface of an iron stove a copper or bronze luster that will not be destroyed by the heat, or that could be cheaply renewed from time to time? A. There is nothing in the paint or polish line but pluming is much used now for ornamenting stoves

#### 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 unequaled facilities for procuring patents everywhere. 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. MUNN & CO., office Scientific American, 361 Broad-

# INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

October 2, 1888,

## AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.] Abdominal supporter, L. B. Craig ................. 390,570

	Abdominal supporter, L. B. Craig		L
	Addressing machine, Mace & Jackson		Ι
	Advertising device, automatic, E. C. Magnus	<b>390,</b> 383	F
	Advertising frame, G. G. Green	390,473	F
ı	Alloy of copper, nickel, and lead, G. F. Pottle	390,251	
1	Armature core for dynamos, W. S. Hill		E
ı	Axle, vehicle, S. J. Kurtz		_
١	Badge, H. R. Hansen.		E
١	Bag. See Paper bag.	,	Ē
١	Bale cover, cotton, A. J. McGehee	340.499	E
١			
I.	Bale cover, cotton, A. S. Ranlett	200,019	E
1	Bailing twine, etc., machine for, J. Good	900 F00	E
١	Band cutter and feeder, W. S. Nichols	390,509	F
J	Basket handle, W. J. Van Deusen	390.536	
!	Bath tub seat, G. B. Sioat	390 407	F
	Batterles, porous cup for galvanic, E. M. Hewett.	390,597	ŀ
	Batterles, system of utilizing secondary, H. Ed-		Ŀ
1	n:unds		F
١	Bearing, anti-friction, M. R. Wood	390.424	E
١	Bed stay, C. Bethea		E
١	Belt fastener, I. Jackson		
١	Belts, device for stretching and tightening ele-	,	
١	vator, J. J. Doughty	390.218	F
١	Bicycle attachment, H. H. Holtkamp		Ē
Į	Bit. See Bridle bit.	000,000	•
1			F
١			E
i	Board. See Drawing board. Plow mould board.	000 E49	
-	Boat launching carriage, H. J. Woods	290/1149	E
1	Boller. See Steam boiler.		E
.	Boll r, G. P. Erhard	390,466	E
1	Bolt. See Latch bolt.		ŀ
.	Bolts, mesh clearer for, W. H. George		
,	Bolting machine, T. W. Graham	390,225	E
	Book, G. D. Barnard	390.197	ŀ
.	Book. copying, E. R. Solliday	390,526	E
	Book covers, sheath for, C. H. Caryl		
٠.	Book holder, F. P. Harbaugh		E
4	Boot, H. L. Benson		ŀ
,	Boot or shoe sole edge trimming machine, V.	,	Ē
	Beauregard (r)	10,960	ì
	Boots, machine for manufacturing congress, C.	,	
	W. Shippee	390 283	i
•	Bottle, perfomery, W. W. Stewart		ì
	Bottle stopper, G. A. Fullerton		í
,		330,300	1
	Box. See Folded box.	200 200	i
•	Box, H. S. Munson		
•	Box and drawer corner, J. B. West	390,421	1
•	Boxes, machine for manufacturing wooden, E.		١
•	W. Locke		1
2	Bracket, T. Koehler	390,302	ļ
1	Brake. See Car brake.		١
	Brake, E. R. Snyder	390,316	1
-	Bridge gate, swinking, C. Ross	390,621	1
в	Bridle bit, E. R. Cahoone	390,567	
B.		390,432	1
	Buckle, suspender, J. T. Budd	390,290	ı

	2	51
	Bucksaw frame, J. W. Thompson	900 A10
	Burner. See Gas burner.	วอบ,รบก
	Butter package, D. W. Miller	390,388
	Butter worker, J. W. Button	390,565
I	Button, F. B. Crooks	390,209
I	Cake dropping machine, P. F. Carroll	390,202
I	Camphor, refining, M. J. Schreiter	390,523
I	Candle, sulphur, C. H. Shaw	390,414
I	Car brake, H. Otenhouse	390.513
I	Car coupling, J. W. Chisholm	390,345
I	Car coupling, S. J. Freeman	390,471
i	Car coupling, L. E. Hunt	390,862
i	Car coupling, D. N. Tarbox	390.411
I	Car dumping device, D. T. Denton	390 X50
ļ	Car router, J. H. Cook Car starter, C. H. Brown	390,283
ĺ	Cars, feed trough for stock, G. D. Burton	850,584
	Carbon filaments, making, T. A. Edison	390,462
i	Carpet, G. J. Bicknell	390,435
	Carriage top, F. R. Merrell	390,887
	Cart, road, N. H. Hill	390,598
	Cartridge, accelerating, H. P. Hurst	390,232
	Carving fork, W. W. Lee	390,489
	Cash and parcel carrier, D. Lippy	390.378
	Cash and parcel carriers, railway for, G. F.	000,010
ļ	Green	390,293
	Casting metal ingots, apparatus for, W. Huffel- mann	900 971
	Cattle guard, J. T. Hail	390,592
	Cattle, head frame for, J. O. Dorris	390,287
l	Chair. See Reclining chair. Chairs, foot rest for, J. Hogan	200 4577
İ	Check hook, C. C. Lovejoy	390,477 390,390
	Chill, W. Fawcett	390,290
i	Chill, W. Fawcett	390,455
l	Chimney, ventilating, L. Boutin	890,337 300,988
ļ	films Social Services along	
	Cleaning apparatus, magnetic, A. Hempel	
	Closet, See Water closet.	000,200
	Coat or hat lock, Young & McCrea	350,330
	Coin operated lock for receptacles, L. M. Ryfenburgh	200 699
	Comb. See Curry comb.	000,022
	Compound engine, Berwick & Sellers	330,434
	Condensing apparatus, J. U. Lloyd	
	Coop, chicken, Booth & Dawson	
	Counter skiving machine, E. F. Belding	390,551
	Coupling. See Car coupling. Pipe coupling. Shaft and pulley coupling. Thili coupling.	-
	Shaft and pulley coupling. Thili coupling.	900 640
	Crackers, showbox for, L. J. Anger	390,476
	Cultivator, C. E. Morton	390,506
1	Cultivator, C. E. Morton	390,305
	Cultivator shovel, reversible, J. A. Johnson Cultivators, spring tooth attachment for, J. R.	390,479
	Young	390,276
	Curry comb, H. W. Lawrence	390,484
	Curve scriber, E. A. Gleseler	390.360
	Cutter, See Band cutter, Feed cutter, Keyseat	250*01 <b>7</b>
	Cutter. See Band cutter. Feed cutter. Keyseat cutter. Paper cutter. Sod cutter.	
ĺ	Cuttor and auttor han Monton & Drown	300 606

Dentaltool, G. Evans Dentaltool, G. Evans 390,576
Dentures, removable bridge for artificial, C. M.
Richmoud 890,521
Digger. See Potato digger. 

Drawings, duplicating architectural and similar, J. M. Ewen. 390,577

Drill. See Rock drill. Seed drill. Drills, machine for cutting twist, J. Gaslorowski.. 390,223
Drilling machine, center, F. H. Richards....... 590,520 
 Drum tug, Foley & Wilbur
 390 469

 Dust collector, J. S. Smith
 390.524

 Dynamo, alternate current, E. Thomson
 200.318
 Electric circuit controller, A. F. L. Willatowsky.. 390.329 Electric conductors, device for protecting, E. G. Electric light circuit cut-off switch, W. A. John-

Electrical distribution, system of, N. Tesls....... 390,413 Electrical testing apparatus, J. W. Packard...... 390,510 Electrical testing apparatus, J. W. Packard. Electricity for lighting, distribution and control Elevator, D. P. Van Court...... 390,535 End gafe, waron, E. & J. P. Reichart 390,253 Engine. See Compound engine.

Eraser, slate, G. Wilkening..... Etching and producing inextinguishable metallic deposits upon bright metal surfaces, E. Nienstaedt ...... Excavator and conveyer, J. Cable...... Eye bars, machine for upsetting, Cooke & Car-

Fence post, N. Ensminger. 390,215 Fence post, Madding & Watson 380,495 

 Fence, wire, B. Scarles
 390,257

 Fence wire stretcher, J. F. Warner
 390,272

 vetter lock, W. Moran
 390,568

 setter lock, W. Moran
 390,508

 File, paper, L. E. Heltling
 390,598

 Filter press, Brock & Minton
 990,558

 Firearms, set trigger for, W. H. Davenport
 390,268

 Fire escape, W. Bruce
 390,445

 Fire escape, J. M. Murphy
 390,308

 Fireplace, A. J. Campbell
 380,202

Fork. See Carving fork.

Frame. See Advertising frame. Bucksawframe.