

## ENGINEERING INVENTIONS.

A car axle box has been patented by Mr. Stephen R. Stinard, of Pompton, N. J. The invention consists in fitting a tray having inclined or sloping side walls into the axle box below the axle journal, whereby the setting oiled waste will be forced or crowded against the axle journal and the lubricant be retained in the tray.

A metallic packing has been patented by Messrs. William E. and Frederick G. Brockett, of Park City, Utah Ter. It consists of a gland-like packing ring with lubricant-holding groove combined with fractional packing rings having sloping backs and grooves or recesses, in connection with a special form of stuffing box, being specially adapted for piston rods, valve stems, expansion joints for pipes, etc.

A railway train timer has been patented by Mr. George W. Housel, of Bloomsbury, N. J. This invention covers a special construction of clock and auxiliary features designed to indicate to engineers or trainmen when the last train passed the indicator, as well as the time of day, so that the engineer may know by a glance at the instrument the exact time between his train and the one preceding him.

A splice bar for railroad rails has been patented by Mr. Jonas Potter, of Morrellville, Pa. It consists of a plate with a central chair and end chairs, the rail having its base cut away to the face of the web at each side to form opposite rabbets in the base at the end, and recesses beyond the rabbets, making an economical and effective means of splicing the rails and securing them to the sleepers.

## AGRICULTURAL INVENTIONS.

A combined potato digging and harvesting machine has been patented by Mr. Arthur P. W. Wade, of Cedar City, Mo. This invention covers a novel construction, combination, and arrangement of parts in a machine by which the potatoes are plowed out of the ground, separated from the dirt and sticks, and transferred to a wagon or dropped in a row alongside the machine.

A double cutter bar has been patented by Mr. William T. Wardall, of near Manly Junction, Iowa. Combined with two cutter bars and their cutters a spacing strip is arranged between the sections of the finger bar and formed with slots through which the connecting bolts pass, making a double cutter bar which will not clog, and with the parts so constructed that the cutters may be adjusted to operate in the most effective position.

## MISCELLANEOUS INVENTIONS.

A curry comb has been patented by Mr. William R. Adams, of Omaha, Neb. The body portion has one toothed face and one plain face, the handle device being held adjustably to the body to allow either face to be used, the handle device consisting of a leather plate and a rubber strip.

A saw gauge has been patented by Mr. Edward S. Nixon, of near Chattanooga, Tenn. It is a novel device which can be readily applied to, a block or board, to be sawed, and held firmly in place thereon, to accurately guide the saw in the direction in which the block or board is to be cut.

A churn has been patented by Mr. William W. Perkins, of Palouse, Washington Ter. A cup-shaped dasher is journaled to rotate in a cream vessel, the dasher having a closed top, a bottom opening and side port, with a radial wing or piston operating when the dasher is rotated to force the cream through the port, and thus cause the butter to come quickly.

A combined mail bag fastener and tag holder has been patented by Mr. Henry N. Ockford, of Jackson, Mich. The body portion has a cross pin and a clamp for holding the mail bag ropes, and a tag holder with an eye to receive the pin of the fastener, with other novel features, for conveniently locking the bag and carrying its indicator tag.

A boot or shoe stretcher has been patented by Mr. Lloyd Nottingham, of Norfolk, Va. It is adapted for stretching a boot or shoe in length as well as width and in the instep portion, the invention covering a novel construction and adaptation of parts, whereby also the stretcher may be used in stretching two boots or shoes at the same time with one screw.

The manufacture of white lead forms the subject of a patent issued to Mr. William P. Talbot, of Brooklyn, N. Y. The invention covers an improved article of manufacture, being a circular lead buckle cast on one face with blade-like ridges on opposite sides of the diameter of the buckle, whereby the ribs will be quickly corroded with the body of the buckle.

A sleigh shoe has been patented by Mr. George A. Stevens, of Hartsville, Mass. It is of that class having a dovetailed groove in its inner face for receiving the bolt for securing the shoe to the runner, the invention covering the formation of the groove and the combination therewith of a bushing of suitable relative shape.

A spirit level has been patented by Mr. Enos F. St. John, of Highland Station, Mich. It consists of a circular tube partially filled with spirit or other proper liquid, mounted in connection with a semicircular graduated plate, whereby the instrument may be used for obtaining level or perpendicular lines or intermediate angles.

A kitchen cabinet has been patented by Mr. John G. Shaffer, of Clay City, Ind. It consists of a case with extension cupboard having centrally hung or pivoted safes, each with semicircular sides and back, the safes being adapted to discharge their contents without the use of a scoop or other means usually employed for that purpose.

A chain wrench has been patented by Mr. William H. Brock, of Brooklyn, N. Y. It is a pipe wrench of novel make, designed to give greater ease in applying the wrench to the pipe, the getting of a firmer

and more manageable grip, while making a strong wrench and one which can easily be repaired or parts replaced when worn.

A felly bolt has been patented by Mr. Duncan W. McKinnon, of North Sydney, Cape Breton, Nova Scotia, Canada. The bolt and nut are formed with re-enforcing sections, the head of the bolt being nicked after the manner of an ordinary wood screw, making an improved bolt for preventing the splitting of the fellyes without detracting from their appearance.

A floor jack has been patented by Mr. John L. Fredericks, of La Grangeville, N. Y. Combined with a brace bar having a spur and head adapted to be struck by a mallet is a pivoted lever and a push bar pivoted to the lever with a series of notches on its under edge, a block pivotally attached to its free end, with a link connecting the push and brace bars.

A conduit for electric conductors has been patented by Mr. Edward E. Greene, of New York City. Its sections are designed to replace and serve as the ordinary curb, and are cast or moulded in iron, artificial stone, or other suitable material, ducts for the conducting cables extending longitudinally through the sections, making a conduit which can be cheaply and easily laid, and affording ready access to the conductors.

A mop wringer and scrubbing brush holder has been patented by Messrs. Zottique R. La Fleche and Joseph A. Ledoux, of Concordia, Kansas. It is so made that the mop may be wrung by winding it upon a roller by means of a small crank, while the brush, pivoted in short arms, may be clamped in any desired position, the device being simple, convenient, and effective.

SCIENTIFIC AMERICAN  
BUILDING EDITION.

## JANUARY NUMBER.

## TABLE OF CONTENTS.

1. Elegant Plate in Colors of a Dwelling costing about Nine Thousand Five Hundred Dollars, with floor plans, specifications, sheet of details, etc.
2. Plate in Colors of a Dwelling of Moderate Cost, with floor plans, specifications, sheet of details, etc.
3. Illustrations of the Alcazar, and the magnificent Hotel Ponce de Leon, St. Augustine, Fla., also engravings showing the Main Entrance, Ladies' Entrance, and Dining Room. Beautiful examples of the Spanish Renaissance type of Architecture.
4. View of the beautiful Tower of the new Episcopal Church at St. Augustine, Fla.
5. Perspective Drawings of two Substantial Dwellings at Springfield, Mass.
6. Drawing in Perspective, with floor plans, of a Handsome Dwelling, costing Five Thousand Six Hundred Dollars.
7. Perspective view and floor plans of a Dwelling for Three Thousand Two Hundred Dollars.
8. Floor plans and perspective view of a House for Three Thousand Eight Hundred Dollars.
9. Drawing in perspective and floor plan of a Church costing Three Thousand Five Hundred Dollars.
10. Ground plan and perspective view of a Deer or Donkey House costing about One Hundred Dollars.
11. Perspective and ground plan of a Carriage House for One Hundred and Fifty Dollars.
12. Sketch of a Comfortable Dwelling erected in Minneapolis.
13. Side elevations and floor plans of a Dwelling of small cost.
14. Half page engraving of new Evangelical Church, Riedlingen.
15. Engraving of the new Masonic Temple at Newport, Ky.
16. Perspective view and floor plans of a Dwelling for Five Thousand Six Hundred Dollars.
17. A Dwelling for Two Thousand Nine Hundred Dollars. Perspective and floor plans.
18. Drawings of first and second floor plans and perspective of a Handsome Residence in Chattanooga, Tenn.
19. A House costing Seven Thousand Dollars. Perspective and floor plans.
20. A Window in the Cathedral of Murcia, Spain. Half page engraving.
21. Full page illustration of the exterior of Bristol Cathedral.
22. Page engraving of a picturesque Garden Pavilion near Paris.
23. Private Residence of M. Grevy, Ex-President of France.
24. Sketch for a Town Hall.—H. P. Kirby, architect.
25. View of a Country Residence; also sketch for a Tower, by John Calvin Stevens, architect.
26. Miscellaneous Contents: Keep Out the Water.—Improvement in Frescoing.—An Architectural of Fifty Years ago.—Lapagerias.—Decision on a Building Contract.—The Crocoting of Wood.—Life of Iron Pipes.—Sanitary Arrangements in a Country House.—Pinus Parviflora.—The Architectural League.—Spots upon Plaster Ceilings.—Straight and Curved Lines in Architecture.—The Murphy System of House Drainage.—Painting Iron Work.—Utility and Beauty in Architecture.—Railroad Snow Sheds.—Frost Glass.—Diminution and Enlargement of Columns.—How Mirrors are Made.—Clay Roofing Tile.—A Sewer Stopped by Tree Roots.—New Plan for a Storage Warehouse.—The Building and Decorative Stones of Egypt.—Gas Fire Radiator.—Architects, Clients, and Builders.—The Mortimer Apartment House.—Sewer Poison.—Metallic Roofing, with illustrations.—Boiling Bricks in Tar.—"Unique" Screw Holding Screw Driver, illustrated.—The Wooden Railway of the United States.—Prevention of Fire in Theaters.

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.

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

MUNN & CO., PUBLISHERS,  
361 Broadway, New York.

## 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 next issue.

Machinist with experience on cylinder printing presses. Address, stating age, experience, and salary required, Golding & Co., Boston.

Wanted—Metal pattern makers, first class men only. Must be familiar with working in brass. Address, stating experience, the United Brass Co., Lorain, Ohio.

For Sale—Second hand foundry cranes. Two large size cranes, capacity of about 6,000 lb. 30 feet gaff. In good order. Ready for delivery early in January. Apply to Otis Brothers & Co., 38 Park Row, New York.

Tanning Leather by Electricity.—A good, practical process wanted by Wm. F. Schmoelle & Co., 15 Belliard Street, Antwerp, Belgium.

Portable grinding mills. Chas. Kaestner & Co., Chicago, Ill.

Saws—How to straighten and gum all kinds. See p. 381.

A tried business man, one familiar with the sale of machinery, is wanted to take entire charge of a large and growing business in a thriving city on the Pacific coast. An applicant possessed of capital would be offered an interest in the house. The position will be given to a suitable person without capital if such a one applies. Address, with references and full statement of qualifications and experience, "Machinery," P. O. box 773, New York.

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.

Burnham's New Improved Turbine. Sold at cost of manufacturing and advertising. Address York, Pa.

Lacquers.—Zapon, Brilliantine, Brassoiline, Opaline, and other lacquers and special varnishes. Brilliant, hard, durable. Send for catalogue. The Fred'k Crane Chemical Co., Short Hills, N. J. N. Y. agent, Horace Van Sands, 738 Broadway.

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

For the latest improved diamond prospecting drills, address the M. C. Bullock Mfg. Co., 138 Jackson St., Chicago, Ill.

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

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.

Feed grinders. Chas. Kaestner & Co., Chicago, Ill.

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

Presses & Dies. Ferracute Mach. Co., Bridgeport, N. J. Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn.

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

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

Lathes for cutting irregular forms a specialty. See ad. p. 349.

Hartford drill chucks. 3 sizes. Hold to 1/4 in., 1/2 in., and 3/4 in. Cushman Chuck Co., Hartford, Conn.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

60,000 Emerson's 1887 Book of superior saws, with Supplement, sent free to all Sawyers and Lumbermen. Address Emerson, Smith & Co., Limited, Beaver Falls, Pa., U. S. A.

Hoisting Engines, Friction Clutch Pulleys, Cut-off Couplings. D. Frisbie & Co., 112 Liberty St., New York.

"How to Keep Boilers Clean." Send your address for free 88 page book. Jas. C. Hotchkiss, 120 Liberty St., N. Y.

Paint mills. Chas. Kaestner & Co., Chicago, Ill.

Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions, Sunday schools, colleges, and home entertainment. 152 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., New York.

Practical Working Drawings of machinery made by A. K. Mansfield & Co., 380 Broadway, N. Y. Life-long mechanics. One formerly R. R. supt. M. P. Important references. Work guaranteed. Correspondence invited.

Rollstone variety lathe—bores, beads, and turns at the same time. Rollstone Machine Co., Fitchburg, Mass.

Best belt hooks are Talcott's. Providence, R. I.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Engines and boilers. Chas. Kaestner & Co., Chicago, Ill.

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

## 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

December 20, 1887,

## AND EACH BEARING THAT DATE.

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

Acid to Glover towers, etc., apparatus for feeding, F. W. Chappell.....	375,121
Amalgamating pan, A. Soderling.....	375,212
Automatic gate, N. H. Long.....	375,171
Axle box, car, J. J. Stever.....	375,217
Axle box, car, S. R. Stinard.....	375,221
Baby jumper, W. Ransweiler.....	375,096
Bag. See Mail bag.	
Baling press, W. S. Livengood.....	375,078
Bar. See Cutter bar.	
Basket, fruit, G. H. Gillette.....	375,820
Battery. See Galvanic battery.	
Bed, spring, E. & E. W. Edgerton.....	375,141
Beds, device for working upright folding, J. Murray.....	375,188
Bedsteads, reclining attachment for, J. E. Beatty.....	374,922
Bedstead, wardrobe, A. Peterson.....	375,192
Beehive, T. M. Cobb.....	375,261
Beehive, F. Danzenbaker.....	375,269
Belt rope coupling, T. H. Sheldon.....	375,205
Belt, driving, J. Arnao, Jr.....	375,808
Belting, link, D. Young.....	375,040
Bevel protractor, M. Coughlin.....	375,049
Blasting powder, G. Antheunis.....	374,921
Board. See Ironing board.	
Boat lowering and hoisting device, L. J. M. Boyd.....	374,929
Boiler. See Steam boiler.	
Boiler stand or pedestal, A. P. Creque.....	375,183
Bolt. See Felly bolt. Screw bolt.	
Bolt cutter, A. Wood.....	375,087
Books and albums, hinged cover for, J. Borkersen.....	375,044
Books and pamphlets, manufacture of, D. S. Clark.....	375,125
Boring machine, wood, G. Swan.....	375,223
Box. See Axle box. Signal box.	
Boxes, adjustable partition for, S. T. Achon.....	374,320
Brace. See Chair brace.	
Brake. See Sewing machine motor brake.	
Brick machine, C. L. Carman.....	374,938
Brick or tile machines, cut-off and delivery table for, J. Fergusson.....	375,319
Bride, C. K. Millmore.....	375,179
Brushing machine, rotary, R. B. Hawkins.....	375,154
Buggy top, W. Blume.....	374,925
Buggy top, R. Kohn.....	375,075
Bung, Langstaff & Watson.....	375,076
Burner. See Gas burner.	
Bustle, E. C. Felton.....	375,318
Button, O. C. Devereux.....	375,187
Button fastening machine, A. H. Gleason.....	375,149
Button, hinged shoe, R. H. Lewis.....	375,297
Button making machine, J. C. Schott.....	375,004
Button, self-attaching, H. Gray.....	375,065
Cables, etc., clip or hanger clasp for supporting, T. T. Eckert.....	374,948
Cabs and other vehicles, door operating device for, R. Sproul.....	375,213
Can assembling machine, E. J. Dolan.....	375,053
Can holding device, G. W. Hill.....	375,158
Carburetor, C. B. Dudley.....	375,055
Car coupling, E. A. De May.....	375,272
Car coupling, W. L. Gordon.....	375,152
Car coupling, D. J. Harding.....	375,322
Car coupling, F. M. Hewett.....	375,157
Car coupling, A. E. Mitchell.....	374,989
Car coupling, E. F. Taylor.....	375,225
Car, express, P. D. Van Deventer.....	375,232
Car seats, apparatus for cleaning, D. W. Copeland.....	374,940
Car starter, E. Dederick.....	374,943
Car wheel, E. Peckham.....	375,092, 375,093
Cars, platform stop for railway, J. J. Stever.....	375,218
Carpet, ingrain, A. Heald.....	375,289
Carpet stretcher, Steuart & Welliver.....	375,019
Carpeting, etc., producing improved color effects in the manufacture of tapestry, G. Marchetti (r).....	10,590
Carriage wheels, machine for riveting iron, A. P. Ricard.....	374,998
Cart, road, M. Katzner et al.....	375,104
Casting lead seals, apparatus for, T. Conners.....	375,313
Casting machine, zinc, Smith & Janson.....	375,211
Chain, drive, B. A. Legg.....	375,296
Chain wrench, W. H. Brock.....	375,119
Chains, link for connecting, R. A. Breul.....	375,045
Chair. See Rocking chair. Tilting chair.	
Chair and carriage, combined, J. Nichols.....	375,300
Chair brace, G. Remaly.....	374,997
Check row wire, W. W. Dunn.....	375,275
Chuck, drill, J. Dixey et al.....	375,139
Chuck, lathe, E. Shaw.....	375,011
Churn, B. F. Nelson.....	374,991
Cider press, A. R. Wall.....	375,028
Cigar cutter, W. H. Lilly.....	375,296
Clamp. See Cord clamp.	
Closet. See Dry closet. Water closet.	
Clutch, H. A. Smith.....	375,210
Clutch, automatic gripping, J. L. Mitchell.....	375,180
Coal drilling machine, A. & S. J. Covey.....	375,262
Cock, gauge, S. P. Lathrop.....	374,978
Coffee roaster, Burt & Trusty.....	374,933
Coke oven door, J. J. Davis.....	374,942
Collar pad attachment, horse, E. E. Withey.....	375,111
Comb. See Curry comb.	
Compound engine, A. D. Linn.....	375,077
Cord clamp, F. Egge.....	375,143
Cord fastener, A. S. Mann.....	374,982
Corset trimming, J. Stone.....	375,106
Cot, folding, E. F. Tilley.....	375,363
Cotton gin, B. Andrews.....	375,115
Cotton openers, evening mechanism for, J. C. Potter.....	375,301
Cotton picker stem, C. T. Mason, Jr.....	375,084
Coupling. See Bell rope coupling. Car coupling. Pipe coupling. Thill coupling.	
Cribs, pneumatic apparatus for cleaning strainers of submerged, J. G. Falcon.....	374,952
Crushing mill, A. E. Roe.....	375,199
Cuff holder, S. H. Brooks.....	374,981
Cultivator, W. M. Coston.....	374,941
Cup. See Oil cup. Sponge cup.	
Curry comb, W. R. Adams.....	375,114
Cut-off and filter combined, rain water, N. W. Davis.....	375,207
Cut-off valve, J. A. Horton.....	375,070
Cut-off valve, O. Noll.....	375,090
Cutter. See Bolt cutter. Cigar cutter. Tube cutter.	
Cutter bar, double, W. T. Wardall.....	375,287