

ENGINEERING INVENTIONS.

An elevated railway has been patented by Mr. James M. Hannahs, of Chicago, Ill. Combined with a special construction of transverse arched trusses are longitudinal girders with steps resting on upper and lower angle irons of the trusses, with other novel features, designed to make a light and stable structure, the invention being an improvement on a former patented invention of the same inventor.

A railway rail bender and straightener has been patented by Messrs. Emory M. Woodin and Frank J. Gibbs, of Tyrone, Pa. The invention covers a novel construction and combination of parts, making a simple and powerful device whereby a rail may be quickly and effectively curved, or a curvature in a rail in position on the ties may be taken out and the rail straightened.

AGRICULTURAL INVENTIONS.

A machine for distributing fertilizers has been patented by Mr. James R. McCord, of Jackson, Ga. It is for distributing manures wet or dry, adapted for two rows at the same time, and to be adjusted for rows a greater or less distance apart, and to automatically follow irregular rows.

A cultivator has been patented by Mr. Jacob Shuck, of Blue Springs, Neb. It is applicable either as a corn cultivator or as a flat cultivator for wheat, is designed not to clog, and to automatically adjust itself to the contour of the ground over which it is passing.

A corn shock tyer has been patented by Mr. Uriah B. Watkins, of Barclay, Kansas. It is made with a sharpened pin, a metal stock being fixed to the shank, in connection with a knotted cord tightener, and has other novel features, to facilitate tying shocks of corn or other grain to protect them from storm.

MISCELLANEOUS INVENTIONS.

A soap compound has been patented by Mr. Frederick C. Bauer, of Philadelphia, Pa. The invention consists in combining with finely granulated porous material, such as sawdust, a quantity of soap of any approved manufacture.

An automatic damper has been patented by Mr. William A. J. Beauchamp, of Orange, Texas. By this invention an expansion bar is arranged in connection with a series of levers connected to the damper, whereby the fire may be controlled as desired.

A shirt has been patented by Mr. Jacob Falkenberg, of New York City. It has a front piece stitched by seams between the center of the form piece and its side edges to form two flaps, adapted to be folded to form a single, or opened out to form a double breasted front.

A sulky has been patented by Mr. Moses McCormick, of Calverton, Md. The invention relates to trotting sulkies, and provides an improved construction and arrangement of parts whereby the horse may be hitched closer to the driver's seat, and the sulky made lighter, less complicated, and stiffer.

An advertising stand has been patented by Messrs. Moses D. Greengard and Fradelshon Harris, of St. Louis, Mo. The invention covers a peculiar construction and arrangement of parts in a stand for holding goods to be displayed, and provided with an advertising plate.

A mop wringer has been patented by Mr. Henry I. Hotchkiss, of South Ryegate, Vt. It is designed to have a substantial support on and in a pail or tub, to balance the strains incident to wringing the mop, and prevent upsetting of the vessel, while allowing mops to be quickly and easily wrung.

A tag hook or needle has been patented by Mr. Oliver H. Hunter, of Warren, Pa. The invention covers a peculiar construction of needle for attaching a string ticket to the inner fold of a roll of goods, so as to avoid cutting off the ticket before the last yard of the piece is taken.

A salt making apparatus has been patented by Mr. Richard G. Peters, of Manistee, Mich. The invention covers a novel construction designed to utilize the waste heat from the vacuum pans to heat the grainers, which are of the ordinary type, instead of employing live steam for such purpose.

A sad iron has been patented by Mr. August F. Chable, of Evansville, Ind. It is of that class which rotate or are made reversible, so that different faces or irons may be used with one frame or handle, and is adapted to be evenly and quickly heated by any suitable hydrocarbon, such as naphtha at 74°.

A rubber dental plate has been patented by Mr. Ezra W. Talbott, of Napoleon, Ohio. The invention mainly consists in the use of two plates in manufacturing and finishing rubber dental plates, by a novel method of operation, to economize rubber and save much of the labor now required in their manufacture.

A sweat pad hook has been patented by Mr. Charles J. Gustavson, of Salt Lake City, Utah Ter. It is attached to the pad so as to be attachable and reversible, and so formed as to embrace the rim of the collar and be tightly held between the rim and the harness, to support the pad and also prevent the hames from slipping forward.

A driving mechanism for elevators has been patented by Mr. Joseph P. Bower, of Des Moines, Iowa. The invention consists of a belt pulley having internal gear teeth meshing into a gear wheel rotated by a train of gear wheels connected with the main driving shaft, a double flanged pulley forming part of the support for the belt pulley.

A head rest for barbers' chairs has been patented by Mr. Charles W. Delaney, of Hammond, Ind. A pivot projects from a circular plate secured to

the back of the chair, a slotted head rest bar being held upon the pivot, the bar being turned outwardly to form a shoulder to which is hinged a pillow, which may be turned to different positions.

A transom lifter has been patented by Mr. Albert Langstrom, of Council Bluffs, Iowa. Combined with a transom window is a lifting rod having notches, and sliding in fixed brackets at the side, making a simple and easy means for opening and closing the window, or for locking it in an open, partially open, or closed position.

A hair clipper has been patented by Mr. John Bestgen, of Boston, Mass. It has a fixed comb plate, with cutting knives and a cutter plate, operated through a gearconnection by turning a handle, with various novel features, making a device designed not to tire the operator, while being very quick and accurate.

An amalgamator has been patented by Mr. Nathan L. Raber, of Corvallis, Oregon. The construction provides a check valve for preventing the immediate contact of the feeder and the mercury, and the flowing of the latter from the motion of the former, a perforated partition plate for partially breaking up the circulation, with a concentrator at the upper end of the pansand means for oscillating it.

SCIENTIFIC AMERICAN
BUILDING EDITION.

FEBRUARY NUMBER.

TABLE OF CONTENTS.

1. Elegant Plate in Colors showing the perspective elevations of two Dwellings at Orange, N. J., costing about Five Thousand Dollars each, with floor plans, sheet of details, etc.
2. Plate in Colors of a House in the Colonial style, costing about Five Thousand Five Hundred Dollars, with floor plans, sheet of details, etc.
3. Elevation and first story plan of a Splendid Apartment House.—Geo. H. Griebel, architect, New York.
4. Perspective view and floor plans for a Suburban Residence, costing Sixteen Thousand Dollars.
5. Illustrations consisting of plans and perspective, for a corner house to cost about Five Thousand Five Hundred Dollars.
6. Views of two substantial Dwellings, at Springfield, Mass.
7. Perspective view and floor plans of a Dwelling of moderate cost.
8. Illustrations of a Residence at Latrobe, Pa., and a residence at Pittsburg, Pa., with floor plan.
9. Engraving of the beautiful new Cancer Hospital, New York.—C. C. Haight, architect.
10. Front elevation and plan of a small School House, costing about One Thousand Eight Hundred Dollars.
11. Perspective sketch of Main Stairway and Hall of the Handsome Residence of Mr. D. J. Chandler, at Chattanooga, Tenn.
12. Illustrations with floor plans of Snow Hall of Natural History, at Lawrence, Kansas.—Mr. J. G. Haskell, Topeka, Kas., architect.
13. Engravings of the Tavern, the Casino, and Casa Grande, at Decatur, Ala., also a picture of the Anniston Inn, at Anniston, Ala.
14. Sketch of the Birthplace of James Watt, at Greenock-on-the-Clyde.
15. A Riverside Residence at Maidenhead.—E. H. Bourchiers, architect.
16. Suggestions as to the adornment of Highways, with five figures.
17. Two perspective views and floor plans of a Villa on the Square of the Bois de Boulogne, in Paris.
18. Pictures of the great Lumber Raft recently lost at sea.
19. Designs for Furniture.
20. Scene in the Court of Inquiry as to the Cause of the Fire at the Opera Comique, Paris.
21. Miscellaneous Contents: Plastering; how it is applied, finished, and decorated.—Brick as a Building Material.—The Doorway of San Petronio at Bologna.—How I Build an Ice House.—Fireproof Wood.—Flow of Water through Pipes.—Classification of Styles.—Recent Discoveries at Pompeii.—Pressure at which Lead Pipes Burst.—New Materials and Inventions.—French Plaster.—New Method of Waterproofing Brick Walls.—Building Prospects.—Importance of Carpentry.—Permeability of Building Materials.—Compost for Cuttings.—Stiffness in Girders.—The Temple of Soleb, Ethiopia.—The Architect of Rome.—Worthless "Fireproof" Buildings.—Compound for Patching Stone.—The Chair of Queen Hatasu, illustrated.—The E. N. Gates System of Hot Water Heating, illustrated.—How to Braze Brass to Copper.—An Agate Forest in Arizona.—Pratt's Blind Opener, illustrated.—Drawing Instruments.—The Cortright System of Metal Plate Roofing, with illustrations.—Adjustable Tools, illustrated.—Art Metal Work, with illustration.

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.

"The Improved Greene Engine." Flat slide valves, both steam and exhaust. Providence, R. I., Steam Engine Co., sole builders.

Don't figure percentage and make mistakes. Send for circular. Ladd's Discount Book, 35 Chambers St., New York.

Send price list and discount screw cutting foot lathes, independent feed, to H. M. Hill, Clancey, Mont.

Practical working drawings of machinery made by A. K. Mansfield & Co., 280 Broadway, N. Y. Correspondence invited.

Belting.—A lot of good second-hand belting for sale cheap. Samuel Roberts, 363 Pearl Street, New York.

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

The Diamond Prospecting Co., 22 W. Lake St., Chicago, Ill., general agents for the Sullivan diamond prospecting drills.

Parties requiring milling machine or screw machine work furnished in large or small quantities, will please write to the manufacturers, E. E. Garvin & Co., 139, 141, 143 Center St., New York City.

For House Pumping.—For sale cheap—A 5' Rider air engine, with 1½" pump. But little used. H. N. M., P. O. box 773, New York.

Foree Bain, 76 Market St., Chicago, designer and constructor. Electrical apparatus, fine and special machinery, etc.

For Sale—A Springfield gas machine, 600 light, with all the appurtenances. In good order. Apply to Secretary of the Northern Liberty Market Co., Washington, D. C.

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.

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.

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

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. 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.

Lathes for cutting irregular forms a specialty. See ad. p. 62.

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

Curtis Pressure Regulator and Steam Trap. See p. 77.

A specialty made of copper forgings for electrical purposes. Steel Wrenches and Eye Bolts. Billings & Spencer Co., Hartford, Conn.

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

New cutting-off tool, with offset holder. Blades from 1-16 to 1-4 inch thick. Dwight Slate Mch. Co., Hartford, Conn.

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.

Safety Elevators, steam and belt power; quick and smooth. 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.

Planing and Matching Machines. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Patent Rights for Sale. Apparatus for building Concrete Buildings and Walls. County rights, \$50. State rights, \$500. See descriptive notice in SCI. AMERICAN, May 22, 1888. Send for circulars. Ransome, 402 Montgomery St., San Francisco, Cal.

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

Feed grinders. 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.

NEW BOOKS AND PUBLICATIONS.

MINERAL RESOURCES OF THE UNITED STATES. Calendar year 1886. David T. Day, Chief of Division of Mining Statistics and Technology. Washington: Government Printing Office. 1887. Pp. viii, 813.

We welcome the appearance of this interesting volume, that each year gains in character and value. A short summary of statistics of the mineral products of the United States in general opens the body of the

work. This is by the editor. After this the various products are treated *seriatim*. Iron, copper, lead, nickel, and the other leading metals, mineral products, and coal, are each written about by leading specialists. Not the least interesting part of the present large volume is the treatise by E. R. L. Gould upon mining law. To this nearly seventy pages are devoted, so that a treatment at once comprehensive and concise is guaranteed. As we so often have occasion to remark in these columns, want of space inevitably prevents us from giving a review, properly speaking, of so extensive a work. It may be correctly said that the book is its own best review, so little does it lend itself to summarizing or abbreviation.

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

January 31, 1888,

AND EACH BEARING THAT DATE.

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

Acid tester, manufacture of salicylic. C. Kolbe.....	377,311
Advertising stand, Greengard & Harris.....	377,251
Amalgamator, N. L. Raber.....	377,272
Ammunition case, E. C. Fremaux.....	377,150
Annunciator, electric, J. W. Hoffman.....	377,256
Anzer, square hole, Hughes <i>et al.</i>	377,199
Axle lubricator, car, E. Pynchon.....	377,271
Bale tie, G. A. Weld.....	377,092
Barbers' chairs, head rest for, C. W. Delaney.....	377,147
Basin, catch, J. Wiedmann.....	377,056
Battery. See Galvanic battery.	
Bedstead, folding, J. G. Twiss.....	377,179
Belt, electric, G. W. & P. C. Totman.....	377,216
Belt fastener, E. Weitzman.....	377,129
Belt, lady's, F. Scholl.....	377,276
Belting, manufacture of leather link, C. A. Schieren.....	377,334
Block. See Lettering block.	
Blotting pad, C. M. Moore.....	377,040
Board. See Center board.	
Boiler. See Steam boiler.	
Boiler attachment, auxiliary, J. H. Laumann.....	377,313
Boiler for steam heating, H. & C. A. McLaughlin.....	377,322
Boiler pipe coupling, J. Hollinger.....	377,156
Boiler tube cleaner, H. Randall.....	377,171
Book, manifold order, J. S. McDonald.....	377,360
Boot or shoe sole, G. W. Ellis.....	377,244
Bottle stopper, F. P. Morhous.....	377,042, 377,043
Box. See Cigar box. Miter box.	
Box loops, die for finishing, Perkins & Miller.....	377,267
Brace. See Rail brace.	
Bracket. See Clapboard bracket.	
Braid, J. McCahey.....	377,320
Brake. See Car brake. Railway brake. Wagon brake.	
Brush, W. Unger.....	377,190
Burner. See Hay and straw burner. Lamp burner.	
Button or stud, S. L. Child.....	377,255
Can. See Glue packing can.	
Candles or tapers, shade for, C. C. Worthington.....	377,435
Car brake and starter, J. N. Williams.....	377,404
Car coupling, W. F. Braun.....	377,280
Car door, safety, H. L. Renne.....	377,340
Car, hand, D. Chapel.....	377,362
Car replacer and portable switch, T. Holliday.....	377,155
Car seat, reversible, W. B. Luce.....	377,205
Car starter, J. O'Neill.....	377,113
Car transferring apparatus, R. Robinson.....	377,117
Car wheels, machine for truing, R. Bagaley.....	377,324
Cars, steam pipe connection between railway, J. R. Drodzewski.....	377,065
Cars, traveling current collector for electric railway motor, W. M. Schlesinger.....	377,215
Card grinding mechanism, W. H. Rankin.....	377,316
Carpet stretcher, J. A. Kienard.....	377,309
Carriage, cradle, and chair, combined, H. G. Portmann.....	377,270
Carriage jacks, oiling attachment for, B. F. Lancaster.....	377,262
Carriages, weather protector for, J. L. Heise.....	377,105
Cart, road, R. D. Buckingham.....	377,061
Case. See Ammunition case.	
Cash register and indicator, J. J. Webster.....	377,342
Casks, machine for making, C. & W. W. Hewitt.....	377,344
Center board, folding, A. Barnum.....	377,134
Chain, drive, F. F. Schofield.....	377,120
Chain, drive, D. J. Sheldrick.....	377,121
Chain, sheet metal, G. M. Jewett.....	377,076
Chair. See Reclining chair.	
Cigar box, F. A. Ford.....	377,245
Circle, double reflecting, C. H. Townsend.....	377,298
Clapboard bracket, J. A. Traut.....	377,178
Clasp. See Corset clasp.	
Cleaner. See Boiler tube cleaner.	
Clip. See Paper clip.	
Clipper, hair, J. Bestgen.....	377,138
Clock and lamp, combined, J. M. Crawford.....	377,240
Cloth napping machine, H. N. Grosselin, Fils.....	377,151
Coating iron, wood, canvas, etc., compound for, J. F. Martin.....	377,081
Cock, gauge, J. McGwin.....	377,321
Coffin fastener, J. R. Corbett.....	377,320
Coffin fastener, Duell & Laass.....	377,355
Coffin fastener, W. J. Noble.....	377,325
Coffins, head rest for, J. L. Krauser.....	377,164
Collar fastening, horse, A. F. Ransom.....	377,068
Collar pad, R. Schwahn.....	377,088
Color chart or scale, F. C. Schroeder.....	377,066
Coloring matter, production of new red, M. Ceresole.....	377,349, 377,350
Corn shock tier, U. B. Watkins.....	377,182
Corset clasp, M. P. Bray.....	377,282
Cotton openers, evening mechanism for, J. C. Potter.....	377,329