

ENGINEERING INVENTIONS.

An electric attachment for locomotives has been patented by Mr. Norman F. Chase, of Montrose, N. Y. The invention covers a novel combination and arrangement of parts whereby a person at the side of a track or at a station may cause certain devices upon the locomotives to be operated for signaling the engineer, and so that danger signals, etc., may be effective.

A railway rail bracket has been patented by Messrs. John Waterman and Nelson A. Gray, of Villisca, Iowa. It is formed with a head having bolt holes near its opposite ends and having the shank united at one end with the head centrally between the ends of the latter, and with a longitudinal rib, being intended especially for use in connection with guard rails.

A boiler has been patented by Mr. James A. Cauldwell, of Owego, N. Y. It is a sectional boiler formed of a series of hollow rings resting one upon another with their apertures in alignment, the space within the rings forming the fire and combustion chamber, the bolts by which the several sections are held together being so formed and placed that the sections and the bolts will expand about equally.

A railroad tie has been patented by Mr. Charles W. Yost, of Middletown, Pa. It consists of a bed plate having at each end an upturned tongue and slots, in combination with chain plates with a slot, a tongue, and pendent locking tongues, with device for locking the chains to the bed plate, so that the rails cannot spread and the chains give strength to the tie and relieve the bed plate of direct wear of the rails.

AGRICULTURAL INVENTIONS.

A seeder and cultivator has been patented by Mr. James Montgomery, of Munster, Ill. It is adapted more particularly for dropping seed grain between rows of corn stalks left standing after harvesting the corn crop and immediately harrowing in the dropped seed by cultivator plows to assure proper growth of the grain.

A harrow attachment has been patented by Mr. Calvin Kessler, of Pendleton, Oregon. The harrow is made with U-shaped perforated bars adapted to be raised and lowered upon the tooth bars, by means of which the teeth can be cleaned without stopping, or by lowering the bars so that the teeth will not project, they are made to serve as runners to permit the harrow to be readily transported from place to place.

MISCELLANEOUS INVENTIONS.

A biographical photograph card has been patented by Mr. George W. Fountain, of Cameron, Mo. Combined with a photograph card having a recess and a slot or opening is a blank having ears and a finger tab, whereby a short biographical record may be preserved in connection with a photograph.

A device for adjusting clothes lines has been patented by Mr. August W. R. Liebau, of New York City. It is a novel device by which the length of traveling clothes lines is adjusted, whereby they may easily be stretched or eased, and securely held in such adjustment, with provision also for carrying a large surplus line.

A cotton-seed press has been patented by Mr. William C. McBride, of Brooklyn, N. Y. Two hydraulic presses are located one above another, with a fixed plunger between them, the lower press raising a truck with perforated pipes leading into apertures, and there are various other novel details of construction and arrangement of parts.

A slope grader and ditching machine has been patented by Mr. John C. Sage, of Gainesville, Ga. Combined with a truck are outer and inner rollers, adjustable shovels, and other novel features of an improved ditching machine, the invention being an improvement on a former patented invention of the same inventor.

A windmill has been patented by Mr. Hiram Watkins, of Pueblo, Col. Combined with a vertical main shaft is a horizontal drum wind wheel having pivoted blades, which may be adjusted by an attendant at the base of the tower, there being a vertically reciprocating cross head on the shaft connected with and operating a gear wheel, with other novel features.

A reciprocating printing machine has been patented by Mr. Thomas H. Cole, of East Albany, N. Y. It has a revolving bed adapted to serve as an inking pad upon one face and platen upon the other face, the type carrier being operated up and down by a crank and pitman, and motion being communicated to the bed therefrom.

A book holder and cover has been patented by Messrs. Frank X. Cline and Alexander Cornstadt, of Portland, Oregon. It is a device which may be used for filing pamphlets, letters, and bills, and also as a cover or case for protecting books, or a number of books or pamphlets, and for carrying them from place to place.

A boot jack has been patented by Mr. James H. Kennedy, of Eola, La. It has a V-shaped notch for receiving the heel of the boot, and a loop formed of a metallic rod passing around the front of the boot jack and clamped to its sides, grooved edges of the boot jack forming guides for the looped rod, which engages the front part of the boot.

Improvements in accordions form the subject of two patents issued to Mr. John F. Stratton, of Brooklyn, N. Y. The inventions cover various novel details, including an extra set of keys, key valves, reeds and reed valves, added to the regular set of melody keys, and tuned to permit the player to perform, in connection with the regular set, all the notes in the scale, the same note to be sounded both by pushing and drawing the bellows, whereby the performer can execute in the melody all the notes and chords in the scale with a corresponding harmonious bass in the accompaniment.

NEW BOOKS AND PUBLICATIONS.

FOOD ADULTERATION AND ITS DETECTION. By Jesse P. Battershall, Ph.D., F.C.S., Chemist United States Laboratory. New York; E. & F. N. Spon. 1887. Pp. 328.

This work, on account of the competence of its author and of the elegant style of its production, is to be welcomed as a valuable addition to the chemical literature of this country. Dr. Battershall, for many years chemist in charge of the United States Laboratory in the appraiser's department of the Custom House, has had many very difficult problems in proximate analysis presented to him for solution. In these years many food products and similar substances have been examined by him to ascertain their purity and nature. In the work before us this experience is applied to one of the most difficult subjects of analytical work, the detection and determination of impurities and adulterations in food. The range of the work is extensive. The general headings into which the subject is divided are too numerous to give here in full. Tea, coffee, and other bases for beverages and beverages themselves are treated of at length with their adulterations. Milk and its products, flour, bakers' chemicals, sugar, pickles, olive oil, spices, and miscellaneous products, are included. The book closes with two chapters of peculiar value. One gives the bibliography of the subject, a laborious compilation of periodicals, official reports, and books on food adulteration. The last chapter is devoted to legislation. It gives the various United States laws and statutes of individual States on the subject of adulteration. The book is beautifully illustrated with colored plates illustrative of tea leaves and the spurious leaves mixed with them, and with a number of photomicrographic plates of butter and milk slides. Too much credit cannot be given to author, publisher, and engraver for the conscientious way in which they have all done their work. Although largely devoted to American practice, the book will undoubtedly have a good circulation abroad, and we hope it is the precursor of many future editions.

SCIENTIFIC AMERICAN BUILDING EDITION.

OCTOBER NUMBER.

TABLE OF CONTENTS.

1. Elegant Plate in Colors of a Residence of moderate cost, with floor plans, specifications, sheet of details, etc.
2. Plate in colors of a Country Store and Flat, with specifications, floor plans, sheet of details, etc.
3. Design of a one-story Southern Residence, with floor plan. Cost, Five Thousand Dollars.
4. Perspective and floor plans for Dwelling for a narrow lot. Cost, thirty-five Hundred Dollars.
5. Illustration of a two-story and attic Dwelling erected at Arlington, N. J., with floor plans. Cost, Two Thousand Eight Hundred Dollars.
6. Drawing in perspective, with floor plans, of a Double House of moderate cost. A pleasing design.
7. A Twelve Hundred and Fifty Dollar two-story attic House. Perspective and floor plans.
8. Perspective drawing, with a floor plan, of a House at Flushing, N. Y. A comfortable and substantial dwelling, costing about Eight Thousand Dollars.
9. View of the new United States Court House and Post Office at San Antonio, Texas.
10. Handsome design of a new Dry Goods Store erected at Winona, Minn.
11. Illustrations of small sea-side Cottages at Lion-Sur-Mer, Department of Calvados, France.
12. Page engraving showing Main Entrance Gate, Chateau at Bougival. M. Pasquier, Architect.
13. Views of a Church at La Capelle, France. M. Charles Garnier, Architect.
14. New Church at Stratton, in Hampshire, England.
15. Design of a Sideboard in Walnut.
16. New Exhibition Building of glass and iron, at Madrid. Half page engraving.
17. Villa St. George's, at Saint Lo. Half page engraving.
18. A City Residence in Mannheim. Werle & Hartmann, Architects.
19. Miscellaneous Contents: Cost of Brick and Brickwork.—United States Mail Chutes for Interiors of Buildings, illustrated.—An Improved Saw Filing Machine, illustrated.—Improved Device for Working Window Shutters, illustrated.—Drawing and Engineering Instruments.—Tests of Portland Cement.—Painting Brick and Stone Buildings.—Frosted Glass.—Action of Frost on Cements.—Oil of Bay for Flies.—Decorative Novelties.—Colored Mortar for Brickwork.—How to Clean and Polish Top Leather Screens.—Blinds.—To Transfer Prints to Wood.—Rules for Gas Fitting.—Bichloride of Mercury as a Disinfectant.—Chinese Brick-making.—The Long Leaf Pine.—New Galvanizing Process.—Earthquake Foundations.—Care in respect to Fire.—Healthy Habitations and Defective House Construction.—The Effect of Sea Water on Concrete.—Vassar College Sewerage.—Preservation of Stone.—Improved Surface Planing Machine, illustrated.—The "Auburn" Boiler for Steam Heating and the Woodcock Patent Shaking Grate, with illustrations.—Ebonizing.—Design in Architecture.

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We quote as above from a review by the Railroad Gazette of one of the earlier editions of Trautwine's "Civil Engineer's Pocket Book." Reviewing the 9th edition, or twenty-second thousand, the first of the "new editions" (1885), the same journal said:

"The additions and substitutions are so numerous and so well chosen that there is hardly an important topic of the volume which has not been affected by them and improved."

Still further improvements appeared in the edition of 1886, and in those of the present year.



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.

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Minerals sent for examination should be distinctly marked or labeled.

(1) G. H. asks (1) if hydrogen gas is better than coal and water gas for balloons. A. Hydrogen gas is far superior in lifting power to coal gas, and still more to water gas. It leaks out from a balloon, however, much faster than either. 2. What is the cheapest way to manufacture it, and how to obtain it pure? A. The general way of making it is to dissolve zinc or iron scraps in sulphuric acid and collect the gas evolved. It may also be made by passing steam over red hot iron turnings contained in a tube. 3. How much in weight will a cubic foot of hydrogen gas lift? A. 1,000 cubic feet of hydrogen will lift about 44 pounds.

(2) J. W. K. writes: I have an electro-magnet that will attract a weight of two pounds suspended at a distance of 1/4 inch from the poles of magnet. Now, what I would like to know is, what the loss would be in attractive power if the poles of the magnet and armature were nickel plated? A. The loss would be very slight.

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INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

September 20, 1887,

AND EACH BEARING THAT DATE.

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

Accordion, J. F. Stratton	370,217, 370,218
Adjustable table, S. Zenger	370,227
Aluminum, extracting, O. M. Thowless	370,220
Ambulance, H. H. Judson	370,063
Animal trap, H. G. Stone	370,101
Axle box, car, J. R. Baker	370,084
Axle box, H. Rogers	370,086
Axle skein, H. W. Nott	370,080
Baling press, A. Wickey	370,170
Baling presses, hale weighing attachment for, A. Wickey	370,171
Banjo, W. R. Wood	370,172
Bath tub, W. D. Stewart	370,089
Battery. See Secondary battery.	
Bed lounge, A. Stark	370,096
Bed, sofa, S. Karpen et al.	370,065
Beds, crib attachment for, W. C. Walter	370,112
Bell collar, J. J. Marshburn	370,271
Bell cord coupling, E. Brombacher	370,289
Bell door, C. L. Livingston	370,219
Belt, driving, F. B. Brock	370,237, 370,238
Belt shifter, G. W. Miller	370,153
Bin. See Flour bin.	
Binnacle, ship's, F. W. Cross	370,248
Boiler, J. A. Cauldwell	370,241
Boiler cleaner, D. N. Baxter	370,306
Boiler cleaner, F. W. Hornish	370,080
Book holder and cover, Cline & Cornstadt	370,244
Boot, fabric, M. V. Beiger	370,307
Boot jack, J. H. Kennedy	370,197
Boots or shoes, shank burnisher for, J. J. Fitzgibbon	370,053
Bottle jacket, H. Lightward, Jr.	370,289
Bottle stopper, M. S. Cahill	370,046
Bottle stopper, H. C. Walter	370,281
Box. See Axle box. Fare box. Fire alarm box.	
Box for samples, etc., O. Hoffstadt	370,069
Brace. See Shoulder brace.	

Bracket. See Railway rail bracket.
 Brake. See Car brake.
 Brake shoe, G. M. Sargent..... 370,080
 Brick machine, D. Woodbury..... 370,173
 Burner. See Gas burner. Hydrocarbon burner.
 Bustle, H. O. Canfield..... 370,181
 Bustle, T. P. Taylor..... 370,203
 Cab, hansom, J. C. Robinson..... 370,352
 Calcining apparatus, A. Drott..... 370,326
 Calculator for grain, etc., A. Seargeant, Jr..... 370,284
 Calculator, time, W. Wood..... 370,384
 Camera tripod, W. H. Carpenter..... 370,240
 Can protector, milk, J. H. Irwin..... 370,144
 Cans and bottles, device for handling, D. D. Brown..... 370,179
 Car brake, J. Hahn..... 370,190
 Car brake, F. Tentachert..... 370,104
 Car coupling, B. M. Bennett..... 370,115
 Car coupling, H. R. Hunt..... 370,062
 Car coupling, I. Kilng..... 370,343
 Car coupling, E. D. Shobe..... 370,092
 Car couplings, pin support and link adjuster for, A. B. Ewing..... 370,184
 Car heater, M. B. Derrick..... 370,049
 Car heater, A. Putnam, Jr..... 370,065
 Car, sand, W. H. Barrows..... 370,232
 Carburetor, J. Leede..... 370,149
 Carpet stretching machine, L. Hinkle..... 370,257
 Carving fork, F. W. Brittin..... 370,286
 Cash indicator and register, J. J. Webster..... 370,363
 Caster, furniture, W. Livingstone..... 370,270
 Chair. See Folding chair. Hammock chair. Operating chair.
 Chenille, machine for making, F. Landenberger..... 370,148
 Chuck, lathe, J. T. Paget..... 370,063
 Cigar bundling machine, J. M. Fry..... 370,262
 Clamp. See Rubber dam clamp. Suspender loop clamp.
 Clasp. See Pocket book clasp.
 Cleaner. See Boiler cleaner.
 Clock for timing watches, striking, J. F. Beyerle..... 370,038
 Clock striking mechanism, J. L. Sullivan..... 370,219
 Clothes line, H. E. Percival..... 370,843
 Clothes lines, device for adjusting, A. W. Liebau..... 370,199
 Clutch for power presses, F. M. Leavitt..... 370,198
 Clutch, friction, J. L. Bogert..... 370,118
 Clutch, friction, G. L. Hopping..... 370,332
 Coat adjuster, D. H. Purves..... 370,209
 Cock grinding machine, R. A. Register..... 370,160
 Coffin, T. H. Mooney..... 370,276
 Coffin fastening device, W. Hamilton..... 370,331
 Comb. See Curry comb.
 Combination lock, J. W. Hard..... 370,254
 Combination wrench, H. W. De Courtenay..... 370,048
 Cotton press, U. T. Stewart..... 370,298
 Coupling. See Bell cord coupling. Car coupling. Felly coupling. Thill coupling.
 Cuffholder, C. G. Bloomer..... 370,089
 Curry comb, C. B. Crosby..... 370,047
 Curtain pole, O. A. Strobel..... 370,239
 Damper and blower for open grates, A. Orelup..... 370,279
 Damper regulator, F. Leclere..... 370,267
 Disinfectant, C. H. Moore..... 370,277
 Door attachment, W. W. Allen..... 370,300
 Door hanger, G. M. Waldorf..... 370,109
 Doors, combined glass holder and number plate for, W. H. Taylor..... 370,166
 Doors, weather guard for, P. P. Negroponte..... 370,207
 Drill. See Expansion drill.
 Eaves trough hanger, C. Lumm..... 370,078
 Electric lights, manufacture of filaments for incandescent, T. A. Edison..... 370,124
 Electric meter, T. A. Edison..... 370,123
 Electrical transmission of power, T. A. Edison, 370,126 to 370,131
 Embroidered fabric, R. Cornely..... 370,246
 Engine. See Gas engine. Gas motor engine. Rotary steam engine.
 Expansion drill, M. T. Chapman..... 370,046
 Fabric. See Embroidered fabric. Textile fabric.
 Fabric turning implement, J. Borton..... 370,309
 Fare box and change maker, combined, J. L. Kall..... 370,261
 Felly coupling, J. F. McConnell..... 370,076
 Fence, J. A. Hay..... 370,356
 Fence, J. S. Orr..... 370,157
 Fence, T. D. Wilson..... 370,239
 Fibrous plants, apparatus for disintegrating, B. F. Sparr..... 370,236
 File or clamp, paper, M. F. Berry..... 370,116
 Filter for cisterns, F. M. Rankin..... 370,281
 Fire alarm box, B. S. Flanders..... 370,328
 Firearm and air gun, combined, J. G. Folsom..... 370,329
 Firearm, magazine, P. A. Altmaler..... 370,032
 Fire escape, R. Sutherland..... 370,102
 Flour bin and sifter, combined, F. Sieb..... 370,083
 Flower, artificial, A. Heck..... 370,140
 Folding chair, C. H. Jambkin..... 370,265
 Forceps, G. W. Melotte..... 370,204
 Fork. See Carving fork.
 Fuel, feed regulator for liquid, J. F. Irons..... 370,336
 Fumigator, G. S. Boln..... 370,233
 Furnace and burner for burning hydrocarbon oil, W. Field..... 370,251
 Furniture, school, J. C. Camburn..... 370,314
 Game apparatus, M. T. Wheeler..... 370,224
 Game apparatus, parlor, J. P. Lundeen..... 370,074
 Gas burner, C. B. Todd..... 370,107
 Gas engine, J. Charter..... 370,242
 Gas engine, F. W. Crossley..... 370,323
 Gas motor engine, Holt & Crossley..... 370,258
 Gas producer, W. L. McNair..... 370,273
 Gas tanks, blow pipe connection for, J. R. Knapp..... 370,067
 Gas, treating natural, T. G. Springer..... 370,358
 Glass and other plates, joining bar for uniting, M. Macleod..... 370,075
 Glass, apparatus for rolling, Brogan & Malloch..... 370,177
 Glass beveling machine, T. F. Gilroy..... 370,187
 Glass cover for pictures, etc., J. A. Egginton..... 370,123
 Glass, manufacturing checkered, Brogan & Malloch..... 370,176
 Glass to produce designs thereon, apparatus for rolling, Brogan & Malloch..... 370,178
 Gold and silver, refining, Johnson & Ryan..... 370,338
 Governor, steam engine, E. J. Armstrong..... 370,303
 Grain and ditching machine, slope, J. C. Sage..... 370,069
 Grain binder, Baker & Pridmore..... 370,304
 Grain binders, clearer for, Whiteley & Bayley..... 370,297
 Grinding mill, N. P. Bowsher..... 370,310
 Gun sight, B. Long..... 370,344
 Guns, automatic sight for turret, Noble & Murray..... 370,156
 Hair pin, M. J. Steffens..... 370,086
 Haker, W. G. Scusefer..... 370,163
 Hatter, rope, Lynch & Petty..... 370,346
 Hame, B. W. Jones..... 370,196
 Hame and collar fastener, H. I. Quikley..... 370,068
 Hammer, power, W. R. Jenkins, Jr..... 370,260
 Hammock chair, V. P. Travers..... 370,222
 Handle. See Shovel handle.
 Hanger. See Door hanger. Eaves trough hanger.
 Harrow, Bell & Ritty..... 370,037
 Harrow, M. C. Moore..... 370,154

Harrow attachment, C. Kessler..... 370,264
 Harrow or cultivator, L. F. Hartman..... 370,138
 Harvester, W. F. Olin..... 370,082
 Harvester and binder, combined, D. Strunk..... 370,380
 Harvester, kra n, Whiteley & Bayley..... 370,298
 Hatchway for elevators, automatic, A. J. Blaikie..... 370,308
 Hay rake, horse, W. W. Kelchner et al..... 370,263
 Hay tedder, R. G. Utter..... 370,169
 Heater. See Car heater.
 Hip roll or angle bead, metallic, J. S. Thorn..... 370,167
 Hitching post, A. A. Parker..... 370,158
 Hoisting and conveying machine, A. E. Brown, 370,311, 370,312
 Hoisting apparatus, J. Monaghan..... 370,078
 Holder. See Book holder. Cuff holder. Photographic web holder. Pillow sham holder. Spinning ring holder. Ticket holder.
 Hood, boa, and collar, combined, M. Bermond..... 370,174
 Hook. See Lifting and pulling hook. Snap hook.
 Horseshoe, soft ground, L. Brigham..... 370,040
 Hub, vehicle, B. Schad..... 370,285
 Hydrocarbon burner, J. F. Irons..... 370,337
 Hydrocarbon burner, J. Marlon..... 370,151
 Index, C. S. Perley..... 370,280
 Indicator. See Cash indicator.
 Infusions, apparatus for making, J. Hobbs..... 370,141
 Ironing machine, A. T. Hagen..... 370,197
 Jack. See Boot jack. Lifting jack.
 Lamp, carbureting, A. Kitson..... 370,340, 370,341
 Lantern, A. Loeffelholz..... 370,201
 Lap ring, T. N. Pulliam..... 370,084
 Latch and lock combined, W. D. Doremus..... 370,325
 Leather or other material, mechanism for uniting scraps of, F. Knox..... 370,068
 Ledger, petit, H. A. Pershing..... 370,349
 Level, spirit, P. L. Fox..... 370,064
 Levelling instrument, T. C. Thomas..... 370,106
 Lifting and pulling hook, A. A. Porter..... 370,350
 Lifting jack, E. B. Griffin..... 370,258
 Lock. See Combination lock. Permutation lock.
 Lock, W. D. Doremus..... 370,183
 Locomotives, electric attachment for, N. F. Chase..... 370,243
 Loop closing machine, E. L. Howe..... 370,143
 Malt germinating apparatus, P. Weing..... 370,296
 Mantel and fireplace lining, combined, W. W. Neuer..... 370,155
 Mattress for waterbeds, H. H. Judson..... 370,064
 Measure and register, lumber, J. U. S. Sands..... 370,212
 Measuring machine, cloth, E. M. Bliss..... 370,175
 Medicine, cough remedy, C. Haycock..... 370,191
 Metal cutting shears, E. H. Watrous..... 370,295
 Metals, electric welding and tempering, E. E. Ries..... 370,282
 Metals from their ores, separating, D. W. Birmingham..... 370,386
 Meter. See Electric meter.
 Milk and separating cream, device for cooling, N. Moes..... 370,205
 Mill. See Grinding mill. Roller mill.
 Mixing machine, R. M. Hunter..... 370,335
 Moulder's pot, R. A. Register..... 370,159
 Mowers, grass receptacle for lawn, W. R. Twigg..... 370,361
 Music leaf turner, H. W. Stone, Jr..... 370,165
 Nails, machine for making cut, L. Goddu..... 370,135
 Nut blanks, die for shaping, M. Kennedy..... 370,066
 Oar blade, G. W. Lingie..... 370,070
 Operating chair, T. A. Long..... 370,071
 Ore concentrator, J. A. Jones..... 370,145
 Paper bag machine, C. B. Stillwell..... 370,089
 Paper cutting machine, E. J. Sterling..... 370,237
 Patternmaker's tram, W. S. Burroughs..... 370,313
 Peanut stripper, C. W. Nicholson..... 370,278
 Pen, fountain, A. J. Kletzker..... 370,342
 Pencil sharpener, B. S. Cohen..... 370,162
 Pencil sharpener, slate, L. P. Maxwell..... 370,272
 Perforating machine, E. B. Stimpson, Jr..... 370,100
 Permutation lock, M. L. Harris..... 370,056
 Photograph card, biographical, G. W. Fountain..... 370,186
 Photographic paper, apparatus for coating, G. Eastman..... 370,050
 Photographic paper, coating, Walker & Eastman, 370,110, 370,111
 Photographic web holder, I. H. Stoddard..... 370,216
 Pilling, sheet, J. A. Wakefield..... 370,108
 Pillow sham holder, S. F. Marchant..... 370,202
 Pin. See Hair pin.
 Pipe. See Smoking pipe.
 Pipes, safety attachment for steam crother, W. T. Johnston..... 370,339
 Planter, P. W. A. Becker..... 370,036
 Plastering machine, brick, R. E. Hunn..... 370,061
 Plow, D. Lewis..... 370,069
 Plug for nail or other holes, wood, Little & Stoddard..... 370,200
 Pneumatic dispatch, sending device for, Bryson, Jr., & Mudge..... 370,044
 Pocketbook clasp, R. R. Debacher..... 370,122
 Post. See Hitching post.
 Pot. See Moulder's pot.
 Powders, apparatus for dividing medicinal or other, I. Robbins..... 370,351
 Power. See Water power.
 Preserver, fruit, A. E. Barber..... 370,085
 Preserving meats, etc., vessel for, P. E. Estable..... 370,250
 Press. See Baling press. Cotton press. Seed press.
 Presses, curb for, F. W. Cross..... 370,247
 Pressure regulators, diaphragm for fluid, T. McSweeney..... 370,152
 Printing machine, reciprocating, T. H. Cole..... 370,245
 Printing presses, feed governor for, J. L. Cox..... 370,321
 Protector. See Can protector.
 Pulley, expansion, B. J. Riley..... 370,087
 Pump, centrifugal, J. G. Bruggeman..... 370,042
 Railway, H. L. Stillman..... 370,164
 Railway cross tie, D. C. Heller..... 370,192
 Railway crossings, automatic gate for, W. H. Bishop..... 370,117
 Railway frog, A. H. Ege..... 370,051
 Railway gates and signals, mechanism for operating, J. Hahn..... 370,188
 Railway rail bracket, Waterman & Gray..... 370,232
 Railway switch, J. Hahn..... 370,189
 Railway switch, W. C. Meeker..... 370,274
 Railway tie, R. C. Luckens..... 370,072
 Railway tie, C. W. Yost..... 370,226
 Railways, underground conduit for electric and other, E. E. Ries..... 370,283
 Rake. See Hay rake.
 Ranges, cooking attachment for, W. P. Abendroth..... 370,228
 Rattan working machine, E. L. & J. G. Rungert..... 370,355
 Regulator. See Damper regulator.
 Rein attachment, check, E. T. Covell..... 370,320
 Ring. See Lap ring.
 Roller mill, J. Stevens..... 370,097
 Roof, E. Horbaczewski..... 370,259
 Roofing plate or shingle, metallic, Cortright & Darlington..... 370,417
 Rotary steam engine, E. E. Thomas..... 370,103
 Rubber dam clamp, H. H. Johnson..... 370,194

Ruling machine, I. M. Brown..... 370,041
 Saddle, riding, Laughlin & Thomas..... 370,268
 Saddle, riding, P. J. Peley..... 370,208
 Saddle tree, harness, E. T. Covell..... 370,318
 Saddle trees, seat for harness, E. T. Covell..... 370,319
 Sash balance, C. H. Ames..... 370,302
 Sash balance, F. R. Hunt..... 370,334
 Sash fastener, W. R. Abrams..... 370,229
 Sash fastener, J. Brady..... 370,215
 Sawmill carriages, steam feed mechanism for, W. E. Hill..... 370,058
 Saw swaging machine, B. H. Miller..... 370,367
 Scales, automatic grain, S. Case..... 370,316
 Scraper or leveler, earth, C. J. Minard..... 370,077
 Scraper, road, Moulton & Booth..... 370,347
 Screen. See Window screen.
 Screwdriver, D. R. Hart..... 370,255
 Screw threads, die for rolling, C. D. Rogers..... 370,354
 Screws, machine for making wood, C. D. Rogers..... 370,353
 Seat. See Stool seat.
 Secondary battery, O. C. Flick..... 370,184
 Seed press, cotton, W. C. McBride..... 370,308
 Seeder and cultivator, J. Montgomery..... 370,206
 Seeder, broadcast, T. A. Churchill..... 370,120
 Seeding machine, Alston, Jr., & Basket..... 370,301
 Semaphore, A. A. Strom..... 370,359
 Sewage, apparatus for burning, M. Vincent..... 370,223
 Sewing machine, A. M. Whipple..... 370,114
 Sewing machine, A. F. Wileman..... 370,225
 Shafting, detachable collar for, B. Truxal..... 370,168
 Shears. See Metal cutting shears.
 Shoes, device for cutting buttons from, L. C. Tappes, Jr..... 370,290
 Shoulder brace, C. J. Haley..... 370,055
 Shovel handle, metallic, J. O. Mantor..... 370,150
 Sifter, coal and ash, D. L. Falardeau..... 370,185
 Signal and pyrotechnic electric light, A. C. Ferguson..... 370,052
 Skimming device for milk cans, A. E. Meudenhall..... 370,275
 Skirt lining, J. Reinhardt..... 370,161
 Skiving machine, W. S. Fitzgerald..... 370,327
 Slag trough or spout, J. F. Kelper..... 370,262
 Smoking pipe, A. L. Johnston..... 370,196
 Snap hook, G. A. Huff..... 370,333
 Snow, apparatus for loading, J. P. Luyster..... 370,345
 Snow sweeper, W. H. Barrows..... 370,231
 Soap making apparatus, W. A. Grant..... 370,330
 Sole fastening wire, L. Goddu..... 370,136
 Spinning machine, G. W. Cumnock..... 370,334
 Spinning ring holder, J. Booth..... 370,234
 Spool, Cumnock & Skillings..... 370,121
 Square, framing, G. A. Staples..... 370,215
 Stamp, hand, E. Reynolds..... 370,211
 Stand. See Umbrella stand.
 Stone cutting machine, D. Brereton..... 370,119
 Stool seat, H. Ocorr..... 370,081
 Stopper. See Bottle stopper.
 Store service apparatus, J. F. Camp..... 370,180
 Stove, combined laundry and cook, J. T. Dugdale..... 370,249
 Stoves, ash chute for, H. W. Holcomb..... 370,142
 Stoves, grate for heating, Walker & Wilbur..... 370,362
 Sugar in boxes, machine for packing cube, Hersey & Winton..... 370,057
 Supporter. See Wall supporter.
 Suspender loop clamp, G. F. Atwood..... 370,033
 Switch. See Railway switch.
 Table. See Adjustable table.
 Telegraph, printing, R. J. Sheehy..... 370,357
 Telegraphy, T. A. Edison..... 370,132
 Telephone system, F. C. Watkins..... 370,293
 Telephones, adjustable support and automatic switch for, S. P. Jermian..... 370,198
 Telephones, auditory transmitter for, M. H. Allison..... 370,230
 Textile fabric, B. Scaries..... 370,091
 Thill coupling, J. B. Rathbun..... 370,210
 Thill coupling, J. T. Sollenberger..... 370,094
 Ticket holder, E. F. Smith..... 370,214
 Tie. See Railway cross tie. Railway tie.
 Tobacco evaporating and heating apparatus, R. J. Young..... 370,365
 Toy, L. Schuetz..... 370,356
 Toy, mechanical, C. M. Bartholomew..... 370,305
 Track building machine, Kimball & Appleton..... 370,147
 Trap. See Animal trap.
 Tree. See Saddle tree.
 Trough. See Slag trough.
 Tub. See Bath tub.
 Umbrella stand, H. Westphal..... 370,113
 Valve, steam, E. R. Bryant..... 370,043
 Vise equalizer, E. D. Sloan..... 370,213
 Wall supporter, J. H. Carroll..... 370,315
 Warping or reeling machine, V. & J. Royle, Jr..... 370,162
 Washing machine, M. Nations..... 370,079
 Watch, A. Junghans..... 370,146
 Water power, Culver & Crow..... 370,323
 Windmill, H. Watkins..... 370,294
 Winnower screen, C. Hayward..... 370,189
 Wire rope, R. A. Tilghman..... 370,221
 Wrench. See Combination wrench.

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