

a collar having in its outer side a recess to receive a spring pawl, while the nut has a flange on whose inner side is a notch forming a seat for the pawl, there being an opening through the flange for the insertion of an instrument to release the pawl.

PUMP.—James A. Fink, Russell Springs, Kansas. This pump presents a novel construction of reciprocating water tubes and cylinders, and intermediate connections between them designed to counteract or compensate for the momentum of the pipes and the water they contain when the pump is being operated, as well as their inertia at the start of each stroke.

AIR SHIP.—Thomas M. Crepar, Grand Rapids, Minn. This flying machine has elongated upper and lower balloon sections, connected by a hanger band and cordage, there being on each side of the lower shell aeroplanes, while projecting upwardly from its bottom in the interior is a cabin, below which is a power room and propelling and controlling devices.

RAZOR GUARD.—Howell T. Fisher, Pottsville, Pa. This is an extremely simple and inexpensive device adapted for convenient attachment to and adjustment on either side of a razor blade, to render self-shaving easy and safe.

HOLDER FOR CALENDARS, ETC.—Hugh Brown, Ann Arbor, Mich. This invention provides a holder consisting of a casing with opening in its back, and provided with a keeper, a spring-retaining device, a tongue adjustably connected with the back of the casing, and other novel features, the device being well adapted to hold the sheets of a calendar or teachers' class records, lists of words or other matters to be kept in a certain order and in convenient shape.

SHOE STOOL.—Charles J. Sawyer and Thomas F. Harris, Anniston, Ala. This stool comprises a stand at one end of which is a seat for a salesman or fitter, while at its other end is a fixed heel rest and a spring plate for the shoe sole to rest on, there being means for guiding the free end of the spring plate. The improvement is designed to facilitate the proper fitting of a shoe on the foot of a customer in shoe stores.

MANHOLE AND COVER.—John T. Cullen, Clinton, Iowa. To increase the strength of a boiler head and prevent leakage by forming a steamtight joint, according to this invention, the manhole is made with an annular marginal recess on its inner face, in which fits an annular marginal ridge of the cover, which is secured in place by outwardly extending bolts, threaded at their outer ends and held by nuts in screw-threaded apertures of yokes whose ends rest on the marginal bead of the manhole.

BURIAL CASKET.—Charles A. Ruebekam, Owosso, Mich. The covers or lids of the casket, around that portion at which the face of the occupant is to be exposed, according to this invention, are so constructed that their position may be readily changed to expose more or less of the person, the keepers for the covers, also, being hardly discernible in the moulding, and provision being made for the entire removal of the covers when required.

Designs.

HAT SUPPORT.—Harriette G. Cozzino, New York City. This invention is for a hat and garment support more especially designed for theater chairs, and consists of a body adapted for application to the back of a chair, and a front member with which a mirror is pivotally connected, the device not only serving as a rack, but facilitating the rearrangement of one's toilet.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS, ETC.

THE FLOODS OF THE MISSISSIPPI RIVER. Including an account of their principal causes and effects, and a description of the levee system and other means proposed and tried for the control of the river, with a particular account of the great flood of 1897. By William Starling. New York: The Engineering News Publishing Company. 1897. Pp. 57. Price 50 cents.

The author of this book is a civil engineer of reputation and has held for many years the position of chief engineer of the Lower Yazoo levee district, and is, therefore, specially competent to discuss the subject on which he writes. The work will be of no small public benefit in disseminating a higher knowledge of the conditions which confront the dwellers in the Lower Mississippi.

A DESCRIPTIVE CATALOGUE OF USEFUL FIBER PLANTS OF THE WORLD. Including the structural and economic classifications of fibers. By Charles Richards Dodge. Washington: United States Department of Agriculture. 1897. Pp. 361.

The fiber investigations of the Department of Agriculture have been recognized as of the utmost importance, and the present descriptive catalogue of useful fiber plants is one of the most creditable books which has been issued by the Department of Agriculture. The Dodge

pamphlets on fibers are of acknowledged authority and the present work admirably supplements them. The fibers are arranged in alphabetical order and the monograph has 103 illustrations and 11 plates.

We have received the "Marine Number" of Cassier's Magazine. It is one of the finest specimens of scientific and technical journalism we have ever seen. It consists of more than 300 reading pages, which are embellished with beautiful engravings, largely half tones, which are almost uniformly good. The entire number is printed on coated paper, bringing out the finest detail of the engravings. The reading matter is contributed by specialists, which include Sir William Henry White, A. F. Yarrow, Robert Caird, John U. Thornycroft, Sir Charles W. Dilke, John P. Holland, and others. We have no hesitation in commending this splendid number most heartily to all who are in any way interested in naval engineering. The price is 50 cents.

We have received the new 1897 "Circular of Information" of the International Correspondence School, of Scranton, Pa. This catalogue gives an excellent idea of the work which has been done by the students and the courses which they may take. Education by correspondence is now an assured success, and no student, even in far away country towns, need now be cut off from educational opportunities by reason of his isolation. It is a curious fact that the students of the International Correspondence Schools come from 45 different countries. For instance, there are 22 students in Japan and 17 in the South African republics. The new prospectus is very well calculated to give the reader the salient features of the system.

SCIENTIFIC AMERICAN BUILDING EDITION

SEPTEMBER, 1897.—(No. 143.)

TABLE OF CONTENTS.

- No. 1. Plate in colors, also another perspective elevation and floor plans of a residence at Bensonhurst, L. I., recently erected for Mr. Walter Jones. A design treated in an attractive style of architecture, with Colonial feeling and classic detail. Architect and builder, Mr. Walter Jones.
No. 2. A Colonial residence at Springfield, Mass., recently completed for Mr. N. N. Fowler, at a cost of \$13,000 complete. Two perspective elevations and floor plans. Mr. Guy Kirkham, architect, Springfield, Mass.
No. 3. Residence at Scranton, Pa., recently erected for Mr. Thomas R. Brooks. A unique design. Two perspective elevations and floor plans. Mr. John A. Duckworth, architect, Scranton, Pa.
No. 4. Elm Park Methodist Episcopal church and parsonage at Scranton, Pa. Two perspective elevations and floor plans, also two perspective elevations of the parsonage, with floor plans. Architects, Messrs. George W. Kramer & Co., New York City.
No. 5. English dwelling at Overbrook, Pa., recently erected for Mr. Smucker. An attractive design treated in the English style, half timber and stone. Perspective elevation and floor plans, also interior view. Architect, Mr. William L. Price, Philadelphia, Pa.
No. 6. Cottage at Binghamton, N. Y., recently erected for Mr. G. N. North, at a cost of \$3,200. Two perspective elevations and floor plans. A design with many excellent features, good elevations and well arranged plans. Mr. Alfred Bartoo, architect, Binghamton, N. Y.
No. 7. Modern cottage at Nyack, N. Y., recently erected for the Rev. Edward Mitchell, at a cost of \$2,500 complete. Two perspective elevations and floor plans. A unique design for small cottage. Mr. George F. Morse, architect, Nyack, N. Y.
No. 8. Modern suburban villa at Chestnut Hill, Mass., erected for Messrs. Merriam, Isbenbeck & Alvord. A design well treated in the modern American style with Colonial detail. Two perspective elevations and floor plans. Architect, Mr. J. H. Morse, Boston, Mass.
No. 9. A residence at Binghamton, N. Y., recently erected for Miss Q. M. French. Perspective elevation and floor plans. A very attractive design with excellent elevations.
No. 10. An actress' home at Chevy Chase, Md., illustrating the residence of Miss Annie Lewis. Two perspective elevations and floor plans. Mr. Louis D. Meline, architect, Chevy Chase, Md.
No. 11. Half page design of the New Rathapotheke in Bremen.
No. 12. Pulpit of the Cathedral of Sainte Gudule, Brussels.
No. 13. Miscellaneous Contents: New York as a furniture market.—Advantages of fresh air in apartments.—Exterior plaster for dwellings.—Rules for making good mortar.—Premature occupation of new homes; a test for relative humidity of habitable apartments.—Ventilation of apartments.—Does your faucet leak?—A new recording thermometer, illustrated.—Beautiful work in wood finishing.—Slate roofs.—Deco-re-co, illustrated.—Berkfeld filter, illustrated.

The Scientific American Building Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Thirty-two large quarto pages, forming a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates and fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects. All who contemplate building, or improving homes or structures of any kind, have in this handsome work an almost endless series of the latest and best examples from which to make selections, thus saving time and money.

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 the following week's issue.

- Marine Iron Works. Chicago. Catalogue free.
"U. S." Metal Polish. Indianapolis. Samples free.
Yankee Notions. Waterbury Button Co., Waterbury, Ct. For bridge erecting engines. J. S. Mundy, Newark, N. J.
Combined Ink, Pen, and Penholder Carrier. Patent for sale. M. Scougale, Fort Worth, Texas.
Improved Bicycle Machinery of every description. The Garvin Machine Co., Spring and Varick Sts., N. Y.
Concrete Houses—cheaper than brick, superior to stone. "Ransome," 757 Monadnock Block, Chicago.
For static machines for all purposes, and X ray apparatus, write Reedsburg Electric Mfg. Co., Reedsburg, Wis., U. S. A.
The Norwich Line—New York to Worcester, Lowell, Gardner, Winchendon and Keene, N. H. From Pier 40, North River, 530 P. M., week days only.
Machinery manufacturers, attention! Concrete and mortar mixing mills. Exclusive rights for sale. "Ransome," 757 Monadnock Block, Chicago.
The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.
The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.
Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(7204) E. T. H. writes: The SUPPLEMENT containing description of Aeolian harps (No. 483) which you sent me is at hand. Will you kindly inform me through your Notes and Queries the best strings to use in the construction of the Frost & Kastner improved harp described on page 7715 of that number? The article simply says catgut. Is small, as the E string of a guitar, or heavy, as F of the same instrument, preferable? Also which gives the more desirable tone—the harp with strings tuned all in unison or to the octave? A. The strings of an Aeolian harp are usually of fine catgut, tuned in unison, and of equal length. The varying force of the air causes them to divide into segments, and thus to produce the tones of the harmonic series. It is doubtful if the wind could start a string coarse enough to make a tone an octave below, or one strained tight enough to produce the octave above. It is, however, an experiment easily tried by our correspondent.

(7205) G. K. P. asks: How much spark and how many ounces of wire will it take to make an induction coil the same size of illustration in SUPPLEMENT, No. 160, which you say is one-half size of directions given? A. From 1/4 to 1/2 as much wire in secondary. If you reduce core and primary coil in proportion, you will probably obtain 1/2 as long a spark with the same battery power.

TO INVENTORS.

An experience of nearly fifty 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

AUGUST 31, 1897,

AND EACH BEARING THAT DATE.

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

- Air brake alarm clock, A. McIntosh..... 589,265
Air compressing apparatus, E. C. Nichols..... 589,190
Alarm. See Electric alarm. Fire alarm.
Ashes, receptacle for holding tobacco, F. R. Baker..... 589,257
Awning, L. T. Hagan..... 589,211
Axle box dust guard, vehicle, J. Loesewitz..... 589,211
Axle box lid, N. H. Davis..... 589,960
Bake pan, covered, N. Strack..... 589,229
Baling press, Albrecht & Bitner..... 588,938
Basin clamp, H. Mueller..... 589,136
Batteries, automatic switch for charging or discharging secondary, A. S. Hubbard..... 589,128
Battery. See Storage battery.
Bearing, adjustable, E. J. Muller..... 589,137
Bearing for bicycles, dust proof ball, L. H. Cobb..... 589,204
Bed, G. W. Bent..... 589,239
Bedstead, A. E. Strang..... 589,316
Beer, method of and apparatus for treating, O. Zwietsch..... 589,065
Bell, bicycle, W. A. Penfield..... 589,220
Belt shifter, Ferguson & Kline..... 589,967
Bench. See Wash bench.
Bending machine, J. F. Doolittle..... 589,167
Bicycle, G. P. Ohlgart..... 589,594

- Bicycle change gear, Nedland & Fredrickson..... 589,266
Bicycle construction, J. F. Black..... 589,240
Bicycle fastener, C. F. Carlson..... 589,336
Bicycle flagstaff holder, Koch & Rehm..... 589,267
Bicycle fork, L. Sturges..... 589,141
Bicycle frame, H. Cooper..... 589,305
Bicycle handle bar, A. F. Temple..... 589,045
Bicycle or tricycle attachment, H. Schneider..... 589,305
Bicycle propelling mechanism, I. W. Consey..... 589,955
Bicycle wheel, C. H. Gary..... 589,975
Billiard cue trimmer and tip fastener, C. Schoenbecker..... 589,225
Binder and power brake mechanism, C. H. Anspach..... 589,941
Blanks, etc., device for feeding, C. C. Freeman..... 589,355
Boat, sectional folding, A. J. Haggen..... 589,986
Boiler. See Steam boiler. Steam and hot water boiler.
Boiler tube cleaner, P. Hoerlein..... 589,126
Bonus determining device, A. Barnes..... 589,154
Bottle, G. V. Stallings..... 589,136
Bottle, D. J. Swaney..... 589,044
Bottle cap, W. Polson..... 589,365
Bottle cleaning apparatus, A. Altstetter..... 589,039
Bottle non-refillable, W. F. Bliss..... 589,947
Bottle non-refillable, Coates & Schutz..... 589,154
Bottle non-refillable, J. Fultz..... 589,207
Bottle non-refillable, G. W. Scott..... 589,035
Bottle washer, H. H. Miller..... 589,135
Box. See Folding box. Letter box. Match box.
Box attachment, H. Moran..... 589,188
Brake. See Vehicle brake. Velocipede brake.
Brake beam, J. Player..... 589,269
Branding machine, J. Ingle..... 589,067
Broom head, W. T. Watts..... 589,052
Brush of mop holder, P. E. Humbach..... 589,351
Brush, scrubbing, B. F. Grimm..... 589,171
Buggy top attachment, W. O. Wilbur..... 589,324
Burg branding machine, J. F. Theurer..... 589,231
Burner. See Incandescent burner.
Button, B. H. Cook..... 589,956
Cabinet, ticket or label, A. F. McIntyre..... 589,016
Calculating or roasting furnace, F. Brandenburg..... 589,549
Camera, kinetographic, T. A. Edison..... 589,168
Camera, magazine, E. E. Flora..... 589,346
Camera, photographic, L. J. R. Holst..... 589,349
Camera, photographic, S. Ritter..... 589,304
Can casing machine, J. P. Simmons..... 589,235
Car coupler, J. Miller..... 589,363
Car coupling, P. M. Reagan..... 589,140
Car coupling, W. B. Rice..... 589,027
Car door, grain, H. M. Tyrrell..... 589,136
Car, dumping, Cleek & Humphrey..... 589,363
Car, dumping, W. A. Smith..... 589,156
Car fender or guard, A. Barnes..... 589,153
Car, railway, L. Moss..... 589,215
Car ventilating wind wheel, Robinson & Rahe..... 589,195
Car wheel, Lewis & Stevenson..... 589,326
Carbonating apparatus, liquid, G. D. Rhinehart..... 589,371
Carburetor, J. Ormerod..... 589,094
Cardboard obliquely, machine for cutting, A. W. Darre..... 589,075
Carousel, R. M. Hunter..... 589,330
Carrage parasol holder, baby, J. A. Crandall..... 589,368
Carriage spring, A. F. Brandenburg..... 589,549
Cash register, F. H. Bickford..... 589,114
Cash register, T. Carney..... 589,245
Cash register, J. P. Cleal..... 589,246
Caster, G. E. Neuberth..... 589,217
Chain for sprocket wheels, G. W. Buford..... 589,203
Chair. See Sewing chair.
Channel flap turner, W. E. Fischer..... 589,270
Check branding apparatus, E. E. Angell..... 589,340
Chimney sweeper, G. W. Middleton..... 589,012
Cigarette machine, J. A. Bonsack..... 589,116
Cigarette machine, continuous, K. H. Carper..... 589,121
Clamp. See Sewing clamp.
Cleaner. See Boiler tube cleaner. Flue cleaner. Tooth cleaner.
Clipper, hair, G. H. Coates..... 589,954
Clothes line support, T. T. Parker..... 589,023
Clothes pounder, W. F. Rylander..... 589,359
Clutch, sprocket wheel, J. H. M. Copeland..... 589,338
Coating metals, W. J. Banfield..... 589,381
Coffee or tea pot, A. Macy..... 589,005
Colter and scraper for cotton cultivators, adjustable, H. W. Smith..... 589,311
Combination knife, A. R. Kolar..... 589,322
Combination pen, A. A. Bailey..... 589,327
Cot, trunk, J. B. Gosman..... 589,379
Coupling. See Car coupling. Pipe coupling. Thill coupling.
Crucibles or lining of furnaces, brasquing of, P. E. Placet..... 589,221
Crusher and pulverizer, N. F. Arnold..... 589,236
Crushing and grinding mill, W. H. Coward..... 589,248
Cultivator truck, O. Phinney..... 589,138
Cup and can, combined, C. P. Kertell..... 589,301
Curtain pole ring, Steiner & Babb..... 589,375
Curtain stretcher, W. A. May..... 589,263
Cutter. See Pipe cutter. Thread cutter.
Cycle, T. Hill..... 589,348
Cycle saddle, J. B. Brooks..... 589,243
Cylinder drier, J. Hundhausen..... 589,352
Dental furnace, electric, C. A. Timme..... 589,048
Desk light, E. R. Ryder..... 589,052
Digger. See Potato digger.
Disinfecting apparatus, R. Westphal..... 589,054
Distilling apparatus, H. J. Krebs..... 589,000
Door for poultry houses, T. N. Banner..... 589,111
Door stay, adjustable, Deplanty & Wilson..... 589,922
Doorstop, J. E. Minot..... 589,264
Drawers, device for covering and protecting contents of, H. R. Burt..... 589,159
Drier. See Cylinder drier.
Drill and oyster dredge, combined, T. Thomas..... 589,047
Drilling apparatus, T. L. Armstrong..... 589,126
Dynamite heater, G. R. Eckert..... 589,023
Dynamo brush, F. J. Chaplin..... 589,162
Dynamo, electric regulator for, W. H. Chapman..... 589,180
Educational appliance, J. M. Lamb..... 589,397
Electric alarm and call bell, F. C. Jordan..... 589,122
Electric car lighting system, F. M. Bennett..... 589,909
Electric meter, F. J. King..... 589,015
Electrical body appliance, J. P. McGill..... 589,015
Engine. See Fluid pressure engine. Gas engine. Rotary engine.
Engine indicators, reducing mechanism for steam, A. C. Pincock..... 589,359
Envelope, J. C. Griffith..... 589,985
Envelope safety device, C. H. Brown..... 589,158
Evaporator, H. A. Merriam..... 589,091
Extension table, Haynes & Laflam..... 589,388
Fanning mill, W. F. Frambach..... 589,972
Fastening device, W. H. Borman..... 589,323
Feed water heater, J. Pimbley..... 589,364
Feed water regulator, R. Berg..... 589,113
Feeding and watering device, poultry, S. D. Strong..... 589,230
Fence machine, wire and picket, B. L. Coutant..... 589,165
Fence post, D. Vanman..... 589,320
Fender. See Car fender.
Ferrule for tool handles, J. Swan..... 589,043
File cutting machine, J. Turner..... 589,232
Filter, J. A. Mullen..... 589,189
Filter water, W. F. Robertson..... 589,223
Fire alarm, J. W. Arnold..... 589,942
Firearm, automatic magazine, A. Burgess..... 589,118
Firearm, gas operated, A. Burgess..... 589,120
Firearm, magazine, A. Burgess..... 589,117
Firearms, locking means for operating levers of, T. G. Bennett..... 589,201
Fire extinguisher, E. S. Brown..... 589,232
Fire plug frost jacket, J. Link..... 589,357
Fire shield, W. J. Woodruff..... 589,022
Fires, extinguishing, F. Cantore..... 589,244
Flue cleaner, H. W. Hubbard..... 589,056
Fluid pressure engine, W. H. Knight..... 589,354
Folding box, satchel, valise, trunk, etc., J. G. Garrels..... 589,206
Folding machine, A. Blomfeldt..... 589,068
Folding machine, F. Hart..... 589,063
Food articles from milk, preparing, A. Bernstein..... 589,155
Fruit cleaning and assorting machine, W. P. & H. Rice..... 589,141
Fruit picker, J. H. Martindale..... 589,009
Furnace. See Calcining or roasting furnace. Dental furnace. Smelting and refining furnace.
Gage. See Water gage.
Garbage incinerating apparatus, J. J. Kennedy..... 589,998
Garment supporter, Suetpell & Kenney..... 589,317
Garment, union, J. L. Boyer..... 589,241
Gas apparatus, J. W. Ogden..... 589,219
Gas burner chimney, incandescent, E. M. White..... 589,322
Gas burner tip, acetylene, E. J. Dolan..... 589,323
Gas engine, J. C. Wilson..... 589,150
Gas incandescent, R. Moscheles..... 589,393
Gas lights, manufacture of mantles for incandescent, K. Trobach..... 589,376
Gate, J. E. Meesse..... 589,134
Gear, sprocket, T. S. Brown..... 589,950
Generators and storage batteries in conjunction, means for operating, Meredith & Hunt..... 589,186
Ginning machine attachment, N. R. Coursey..... 589,339
Glass cutting apparatus, J. W. Seiter..... 589,308
Governor, J. T. Tutthill..... 589,378
Governor, gas engine, R. Caldwell..... 589,325
Governor, marine engine, W. G. Hannah..... 589,172
Grading and scraping machine, J. Heuermann..... 589,922
Grain binder tension device, M. L. Pratt..... 589,222

(Continued on page 174)