

BAND FASTENERS THE BEST TANKS A. P. DICKEY MFG. CO., RACINE, WIS.

FREEDOM FROM FIRE

No fear of being burnt out in residence, office, or f tory as long as you use the

Stempel FIRE Extinguisher. Unequaled for simplicity, certainty, quickness and power in action. Adopted and indorsed by leading manufacturers. Best and most durable on the market, Illustrated catalogue free.

H. R. BENNETT, 1215 Filbert Street, PHILADELPHIA, PA.



ELECTRIC STOVE Enameled slate base. in two minutes. Emerg cooking or heating—al ready. Price \$5.00. Complete, ready for use, with cord and plug. Give make of lamp socket and voltage.

AMERICAN ELECTRIC HEATING CORPORATION GENERAL OFFICE: Sears Building, Boston BRANCH OFFICES: Havemeyer Bldg., New York. Monadnock Bldg., Chicago.



AMERICAN PATENTS. - AN INTEResting and valuable table showing the number of patents granted for the various subjects upon which petitions have been filed from the beginning down to December 31, 1834. Contained in SCIENTIFIC AMERICAN SUPPLEMENT. No. 1002. Price 10 cents. To be had at this office and from all newsdealers.

SO SIMPLE A CHILD CAN USE THEM



SUNART MAGAZINE CAMERA.

Folding Cameras. All sizes, ranging in price from \$5 to \$100. Sunart Junior, 3½ x 3½ picture, \$5. Send 2 cent stamp for Diustrated Catalogue.

SUNART PHOTO CO. 5 AQUEDUCT STREET, ROCHESTER, N. Y.

"It - Cells - About - Cools"



Every Mechanic, Metal Worker, or person interested in Machinery Supplies should have our new 1897 Tool Catalogue. It contains Tilpages, size 10½27½, and is an exhaustive and instructive list of all tools that may be required. Handsomely bound in cloth, express paid on receipt of \$1. Money paid for book will be refunded with first order amounting to \$10 or over. Send stamps or money order.

MONTROMERY & CO. MAKERS AND JOBBERS IN

FINE TOOLS 105 Fulton Street, New York City

Scientific

Books

Our catalogue S, is sent free for the asking. It lists books pertaining to all the sciences. A copy should be had for ready reference by those desiring electrical, medical, engineering, scientific, mining and technical books, which we sell to every-

body at wholesale prices.

Montgomery Ward & Co., Chicago.



PROPOSALS.

OFFICE LIGHTHOUSE ENGINEER, TOMPKINS-ville, N. Y., June 26, 1897.—Sealed proposals for six fog-bell striking machines will be received here until moon, July 20, 1897, and then publicly opened. Information furnished on application. D. P. HEAP, Lt.-Col Engineers.

THE OBER LATHES



For Turning Axe, Adze, Pic Sledge, Hatchet, Hammer, A ger, File. Knife and Chical Yger, File, Knife and Chisel Han dles, Whiffletrees, Yokes, Spokes Porch Spindles, Stair Balusters Table and Chair Legs and other irregular work.

The Oher Lathe Co., Chagrin Falls, O., U. S. A



Drying Machines for Grain, Sand, Clays, Fertilizers, Phosphates, Green Coffee, Wet Feeds, Sait, Sugar, Chemicals, etc. 15 Years in operation. Send for 6th Mustrated catalogue.

S. E. WORRELL, Hannibal, Mo.

PERPETUAL DATER 25C.

ALLyour letters, bills and papers about be DATED! This Dater adjusts to ANY desired date INSTANTLY and will save you time, money and trouble. It is Rapid, Legible and costs practically nothing: To present you our catalogue of 2000 spectalties with a specimen BARGAIN we will send this dater post-paid for ONLY 25c.

25or 60c. 182.00 a dozen. E Eul?

JONSECUTIVE NUMBERER, numbers refrom 1 to 10,000, same price. Out. . d both 1 AGENTS WANTED.

ROCT. H. IMBERSOLL & BROTHER.
Mail Order Bargain House.
Dept. No. 147, 65 Cordandt St., R. Y. City.

Typewriting machine, C. Sears. 585, 236
Typewriting machine, C. Sears. 585, 236
Typewriting machine feeding mechanism, C. Sears
Underflow teeting apparatus, H. V. Hinckley 585, 236
Universal joint, Atwater & Smith. 585, 239
Valve for steam car heating systems, train pipe, E. E. Gold. 585, 239
Valve for steam car heating systems, train pipe, E. E. Gold. 585, 231
Valve for steam car heating systems, train pipe, E. E. Gold. 585, 232
Valves, means for operating, W. Craig. 585, 327
Vanillin, obtaining, W. Majert. 585, 327
Valve of draught attachment, J. N. Blakesiee. 585, 327
Vehicle motor, H. R. Bird. 585, 237
Vehicle, motor, C. E. Woods. 585, 328
Vehicle, motor, H. Gilbert. 585, 328
Vehicle, motor, H. Gilbert. 585, 328
Warp threads, mechanism for handling, J. W. Foster. 585, 328
Warp threads, mechanism for handling, J. W. Foster. 585, 328
Water tube boiler, W. C. Stuckel. 585, 328
Water tube boiler, W. C. Stuckel. 585, 437
Water tube boiler, W. C. Stuckel. 585, 437
Water tube safety boiler and furnace for same, C. B. Humphrey. 585, 441
Weather strip, S. S. Howard. 585, 328
Wedge shaving machine, automatic, G. L. Bigelow in Market Mitchell. 585, 328
Wieel rin, Kydd & Mitchell. 585, 388
Wieel rin, Kydd & Mitchell. 585, 388

 Wheel. See Bicycle wheel. Car wheel. Fifth wheel.
 585,388

 Wheel rim, Kydd & Mitchel.
 585,486

 Wick adjuster and regulator, F. P. Glazier.
 585,487

 Windingmachine, cop, J. Zimermann.
 585,510

 Wire rolling machine, W. G. Allen.
 585,510

 Wire rolling machine, J. Brandy.
 585,617

 Wool cleaning machine, J. Brandy.
 585,617

 Wrench. See Ratchet wrench.
 585,413

 Wrench, A. E. Jenks.
 585,413

 Wrench, T. G. Thomas.
 585,413

 Wrench, M. Wenger (reissue).
 11,64

 Wrench attachment, E. C. Neal.
 585,321

 Zine and copper from ores, obtaining metallic, Burghardt & Rigg.
 585,335

TRADE MARKS.

Bacon, ham and shoulders, John Morrell & Company,
Deer, mait tonic, ale and porter, Minneapolis
Brewing Company,
Boots, shoes, buttons, hats, collars, cuffs, dress
facings and dress shields, Publishing, Advertising and Trading Syndicate.
Bottle stoppers, Bernardin Bottle Cap Company,
Canned fruits, vegetables, fish, oysters, lobsters,
meatsand poultry, Portland PackingCompany,
30,344,
Cement, Portland, Atlas Cement Company,
Coal of bituminous or semibituminous nature.

Cement, Portland, Atlas Cement Company.

Castner & Curran.

Castner & Curran.

Colognes and perfumeries, W. M. Rivers.

30,341

Colognes and perfumeries, W. M. Rivers.

30,299

Diapers, Canfield Rubber Company.

30,202

Duplicating devices, F. S. Webster Company.

30,203

Flour, self-raising, Topeka Milling Company.

30,204

Hair dye, W. H. Hambleton.

Jewelry and cases and boxes containing same, certain, F. J. Goldsoil.

Jewelry, fine gold, Ripley-Howland Manfacturing

Company.

30,202

Jewelry, fine gold, Ripley-Howland Manfacturing Company. 30,282 Knives and knife blades, C. D. Harrington. 30,283 Lamps or lanterns, vehide, E. M. Rosenbluth. 30,267 Leather and textile fabrics, Publishing, Advertising and Trading Syndicate. 30,273 knies, silk, cotton, woolen, worsted and hair fabrics and articles, certain, Bruhl Brothers. 30,275 Medicines, blood purifying, S. F. Giles. 30,283 Metal polish, F. J. Amphlett & Company. 30,307 Optical goods, including spectacles, eyeglasses, lenses, test cases and gages, American Optical Company. 30,281 Paper and paper articles, Publishing, Advertising and Trading Syndicate. 30,283 Perfumeries, Chapman & Rogers. 30,288 Perfumeries, Chapman & Rogers. 30,288 Perfumes, antipyretic and antineurals ic preparations, disinfectants, salicylic acid and its derivatives, Basle Chemical Works Bindschedler. 30,297 Planos, mechanical or automatic, Aeolian Company. 90,308 Metal, leather, etc., material to, pany.

tions, disinfectants, salicylic acida nd its derivatives Basle Chemical Works Bindschedler. 30,297
Pianos, mechanical or automatic, Aeolian Company. 90,268
Polish wood, metal, leather, etc., material to, Rogers & Pyatt. 90,288
Remedies, certain named, Barber & De Lorenzi. 90,288
Remedies, certain named, C. & H. Roewkamp. 90,287
Remedies, certain named, C. & H. Roewkamp. 90,287
Remedies for alcoholic diseases, tonic, R. A. Irving. 90,283
Remedies for coughs, colds, catarrh and similar affections, Shilling Remedy Company. 90,249
Remedies for tidney diseases, T. J. Turner. 92,212
Remedies for stomach diseases, rheumatism and female complaints, F. Bersuch. 90,231
Remedy, cancer, D. Byer. 93,283
Remedy, rheumatism, C. Muller. 93,283
Remedy, rheumatism, C. Muller. 93,283
Salves, ointments and liniments, F. Kramme. 93,285
Salves, ointments and liniments, F. Kramme. 93,285
Ships' bottoms, compositions for, Holzapfel's Compositions Company. 93,310
Shirts and overalls, S. Liebovitz 93,284
Silver articles, either useful or ornamental, Watrous Manufacturing Company. 93,364
Soap dissolved and cooled in convenient receptacies, Proctor & Gamble Company. 93,364
Starch, laundry, R. I. Sher man. 93,311
Starch polish, J. A. de Veernan. 93,327
Stoves, fluid or oil, Novelty Manufacturing Company. 90,273
Tobacco, leaf, F. Miranda & Company. 93,273
Stoves, fluid or oil, Novelty Manufacturing Company. 90,273
Watch movements, Hampden Watch Company. 90,284
Woods, both in sawed and log forms, bard, F. Purcell. 90,303

DESIGNS.

. 1		
٠.	Atomizer, S. E. Strong	27,257
81	Belt fastener, J. Hill.	27.262
201	Bicycie stand, G. E. Stokes	27 273
	Bottie, C. H. Beach.	27 261
24	Bottle, S. J. Carr	27 20
- 1	Bottle, perfumery, G. T. Brown.	97 950
- 1	Duchle A A Domeon	07 00
- 1	Buckle, A. A. Dawson.	07 050
- 1	Button hook, J. A. Haskett	21,204
-1	Card, sample, A. W. Clapp	21,281
-	Check, J. E. Farwell. Druggists' graduates, body for, C. E. Kemble	27,25
x	Druggists' graduates, body for, C. E. Kemble	27,250
il	Fork fulcrum, I. N. Woodward	27,27
-	Furniture support, F. W. Hill	27,272
i.	Handle for pans or lids, W. E. Baxter	27,270
•	Harpsounding board, A. P. Roth	27,276
- 1	Hot air register, F. O. Farwell	27,260
.	Kitchen cabinet, A. E. Morton	27,27
П	Knife and cleaver, steak, Barden & Carver	27,25
4	Lamp bulb, incandescent, J. T. Lister	27 26
ζ,	Padlock case, E. T. Fraim27,264 to	27 244
	Puzzle board, F. W. Velsor	97 97
	Ribbon, M. E. Wade	27 20
1-	Silverware border, P. J. Cheron	9 950
3.	Spoon or fork, G. W. Shiebler	07 05
3.	Spoon of fork, G. W. Sniebler	21,60
	Stovebase, H. R. Gummer	21,20
r	Target, W. R. Furness	21,23
	Teapot or like article, A. F. Jackson	27,250
L.	Thimble, E. Gerlach	27,250
•	Tire, bicycle, W. S. Gray	27,274
	Тоу, O. McDonald	27,279
-	Viaticum crucifix, G. Styer	27,249
	Which them W C Coles	27,278
1		

LABELS.

'King of Cereals' (for cereals), Muscatine Oat Meal

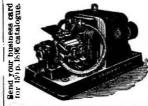
PRINTS.

Bicycle Girl" (for cigars), American Lithographic

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 10 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York. Special rates will be given where a large number of copies are desired at one time.

Canndian patents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are simple, at a cost of \$40 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway. New York. Other foreign patents may also be obtained.

THE ANDERSON TYPEWRITER BEATS SHORTHAND! One Stroke Prints a Word, 97 Nassau Street, New York.



NICKEL Electro-Plating Apparatus and Material. lanson & Van Winkle

Co., Newark, N. J. 136 Liberty St., N. Y. 35 & 37 S. Canal St., Chicago.

THE APOLLO COMPANY

never turned out a false-gauge sheet of galvauized iron.

> Apollo Iron and Steel Company, Pittsburgh, Pa.

ROSE POLYTECHNIC INSTITUTE

A College of Engineering Mechanical, Electrica, Civil Engineering, Chemical courses Well endowed. Extensive shops. Modernly equipped Laboratories in all Depts. Expenses low. 15th year. For extalogue address C. L. MEES, President, Terre Haute, Ind.

THE NEW BRISTOL COUNTER



Registers an accurate account of work done on printing presses, grain tallies, weighing, measuring and other automatic machines. Counts up to 1,000,000 and repeats automatically. Simple, accurate, durable. Special Counter to other cial counters to order. Bristol, Conn. U. S. A.



WE UNDERSELL ALL!

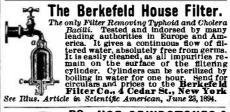
OHIO ELECTRIC WORKS, Cleveland, Ohio



WE MAKE HIGH GRADE STEREOPTICONS. MAGIC LANTERNS

and accessories which will assist the physician to demonstrate micro-copic lantern stides of the human bland, either normal or diseased. EF Call or write to PETERS, MANTZ & CO., Manufacturers and patentees,

Manufacturers and patentees, 125 and 127 Worth St., New York





P8U USE GRINDSTONES?

If so, we can supply you. All sizes mounted and unmounted, always kept in stock. Remember, we make a specialty of selecting stones for all special purposes. The CLEVELAND STONE CO. 2d Floor, Wilshire, Cleveland, O.



ACENTS' OUTFIT FREE. RESERVED.
We make a high grade BICYCLE
as low as \$24.00.
Fully guaranteed, Shipped anywhere on annoval, direct from our factory. Fully guaranteed. Shipped anywhere on anproval, direct from our factory.

ALPINE CYCLE CO., Dept. 92 . Cincinneti. O.



Anyone sending a sketch and description may quickly ascertain, free, whether an invention is probably patentable. Communications strictly confidential. Oldest agency for securing patents in America. We have a Washington office. Patents taken through Munn & Co receive special notice in the

SCIENTIFIC AMERICAN.

beautifully illustrated, largest circulation of any scientific journal, weekly terms\$3.00 a year; \$1.50 six months. Specimen copies and HAND BOOK ON PATENTS sent free Address

MUNN & CO., 361 Broadway, New York.

AMPLIPHONE

Speaking Trumpet For country, shore, and mountains, By its use ordinary speech can be distinctly heard for long distances.

Send for Circular.

HAWTHORNE & SHEBLE, 604-606 Chestnut Street, Philadelphia, Pa.



WE BUY PATENTS, small noveltles. Columbian Novelty Company, 766 Broad Street, Newark, N. J. FOR SALE.—Design patent No. 27,020 on Kitchen Cabinet. Addr. for terms: J. A. Overall, De Larrus, Mo.

MONEY ADVANCED to secure U.S. Patents. Address: Fritz Andreae, 256 West 21st St., New York

MODELS | UNION MODEL WORKS

Shorthand by Mail Thoroughly taught by re-porters. Catalogue and first lesson Free. Potts Shorthand College, Williamsport, Pa.

Idens Perfected and
J. C. SEYI.,
181 Madison St., Chicago.

MODELS done on short notice. Catalogue Free.

LE MACHINES, Corlins Engines. Brewers, and Bottlers' Machinery. The VILTER MFG. Co., 899 Clinton Street, Milwaukee, Wis. A BARE OFFER—For Sale: Exclusive right to Rogers spring rubber trunk protectors. Patent applied for. Has several advantages. For circulars & particulars address: Y. W. Rogers, General Delivery, St. Louis, Mo.

TYPE WHEELS MODELS LEXTERIMENTAL WORK SHALL WONDOWN THE MODELS LEXTERIMENTAL WORK SHALL WONDOWN THE STANDARD ST

Experimental & Model Work Cirs. and advice free. Gardam & Son, 45-51 Rose St., N.Y.



VOLNEY W. MASON & CO., Friction Pulleys, Clutches & Elevators PROVIDENCE R. I.



WOODEN TANKS. For Railroads, Millsand Manufactories.
Builders of Steel Towers and Tanks.
La. Red Cypress Wood Tanks a specialty. W. E. CALDWELL CO., 217 E. Main Street, Louisville. Ky.

LEHIGH PREPARATORY SCHOOL

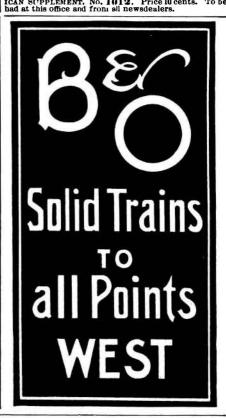
Best recommendations. Young men are prepared for Lehigh University, Yale. Harrsrd, Cornell, Princeton, etc. Over seven hundred pupils of this school have been admitted to Universities during the past eighteen years. For particulars apply to W. ULRICH, Ph.D., Bethlehem, Pa.





BRASS BAND Instruments, Drums, Uniforms, Equipments for Bands and Drum Corps. Lowest prices ever quoted. Fine Catalog, 400 Illustrations, mailed free; it gives Band Music & Instructions for Amateur Bands.

LYON & HEALY. 33-35 Adams St., Ch.cago. MANUFACTURE OF STARCH FROM Maize.—By J. Kriegner. Full details of the process. With one illustration. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1012. Price 10 cents. To be had at this office and from all newsdeulers.



Family Ice Machine Ice, etc., in a few minutes, \$10 and up. Filters, \$1.25 and up. Cookers, \$1. Seltrateurs to prepare one's self soda water, \$4.50 and up. L. DERMIGNY, 126 W. 25th St., N. Y.