76	
Metallic box or attachment for cultivators, F. E	445,056 444,844
McMullin Meter. See Electric meter. Water meter. Mill. See Crushing mill. Sawmill. Motor. See Current mctor. Electric motor. Spring motor.	
Spring motor, Multiple cylinder engine, C. C. Abbe Music box, J. Sohnnemann Musical instrument, R. W. Pain. Musicians, time indicating device for, I. G.	445,075
Lawshe. Nail extractor, G. J. Capewell Nail machine, wire, J. W. Thompson Nail puller, W. E. Pettengill Neckscarf, W. B. Erskine. Necktie or scarf and making the same, W. B.	445,119 444,948 445,097 445,077
Neckscarf, W. B. Erskine Necktie or scarf and making the same, W. B. Erskine Nut lock, H. T. Barlet	445,137 444,880 445,029
Erskine Nut lock, H. T. Barlet Nut lock, C. C. Clay Nuts and washers, method of and apparatus for for making, Mason & Wiegand Oil burner J. H. Graham Oil burner Oi	444,918
Oil burner, J. H. Graham Oil can, M. Jolly Oil can, C. E. Rand	445,015 445,061 445,127
Oil. apparatus for refining, B. N. Hawes. Oil burner, J. H. Graham Oil can, M. Jolly. Oil can, C. E. Rand Order holder, J. F. Brown Organ, Chase & Tracy Pad. See Hoof pad. Padlock, F. W. Mix. Paint, N. J. Mitchell. Pan. See Bed pan. Paper, composition for treating articles made	445.044 445.121
Pan. See Bed pan. Paper, composition for treating articles made from L. Grote	445,111
from, L. Grote Paper holder and cutter, roll, E. S. Knight. Paper holder and cutter, roll, C. K. Pickles. Paper making machine, H. Hoeborn.	445 (113
Paper mils, pulp screen for, P. R. Thom Paper pails, making, Hull & McEwan Paper strips, machine for making tubing from, H. Denney.	444,950 444,950
Denney. Paper tubing, machine for making, H. Denney. Payement, S. B. Jerome Pen, fountain, L. Bernhard Pencil and crayon holder, W. W. Climenson.	445,135 445,114 444,985 444,974
Pen, fountain, L. Bernhard Pencil and crayon holder, W. W. Climenson Piano pedal attachment, R. W. Blake. Piano, upright, G. Cock. Pie lifter, D. Munson Pillowsham holder, F. Karr	443,000
Pin. See Husking pin. Pipe cutting machine, W. H. Garland Hipe or rod cutter, W. Vanderman. Plane, carpenter's, O. Longval Plates for utility and ornament, preparing, H. Goodwin	445.138 444,995 444.897
	444,952 444,951
Plow, W. Watson	110,021
Pottery wave applying lithographic impressions to, J. & E. A. Ridgway Press. See Baling press. Filter press.	414,598
Plows, potato digging attachment for. A. Leonard. Polishing machine, A. P. Boardman Pottery wave, applying lithographic impressions to, J. & E. A. Ridgway Press. See Baling press. Filter press. Printing machine having means for preventing off-set, perfecting, J. T. Hawkins. Printing machine, multicolor, J. T. Hawkins. Printing machine, two-color, J. T. Hawkins. Printing machines, sheet transfer apparatus for.	445,058 445,059 445,017
J. T. Hawkins	445,018
Protector. See Nei puller. Puller. See Nai puller. Pulley, G. C. Cowles Pulleys, self-lubricating device for, W. W. Carey. Pulp moulding machine. D. H. Ferguson Pump, hydraulic beer, J. L. Shiring	44.5.047 444.812 444.916 444.934
Punch. P. H. Yawman. Punching machine, washer, A. J. Mason. Rack. See Hat and clothes rack. Show rack. Rail tie, W. G. Sears.	444,891 444,910
Railway rail tie and track fastener, W. G. Sears Railway signal, N. B. Cregier Railway ties or sleepers, construction of, C. D. Kubach	444,909 444,819 445,063
Railway trolley, electric, H. H. Blades	444,893 445,1 0 6
Railways, trolley wire support for electric, J. S. Hughes Range, combined cooking and heating, A. P. Proportal	445,142
Range, portable, D. H. Erdman Reel. See Twine reel. Reel, E. C. Cornwell	445,1 0 9 444,818
cars and omnibuses, T. Gregory	444,883 444,874
Riding habit, W. Shingleton. Roller. See Feed roller. Rope transmission, T. S. Miller.	444,942 444,919
Rotary engine, J. W. Hayes	444.938 445,039
Sampler, C. J. Menges Sash fastener, J. N. Beall Saw guide, W. H. Rice	444,887 445,033 444.851
Saw gumming machine, F. H. Abbott	444,870 444,848 444,965 445,089
Punching machine, washer, A. J. Mason. Rack. See Hat and clothes rack. Show rack. Rail tie, W. G. Sears	444,838 444,817
Separator, Cook & Harvey	445,133 444,859 445,142
Palmer. Sewing machines, channel cutting and flap turning attachment for, Johnson & Porter. Shades to rollers, attaching window, S. Harts-	444,846 444,895
Shaft ravarsing machanism counter W T Car-	111,002
Shears, G. W. Baker. Shears, E. Krusius. Sheet metal stamping apparatus, D. Stone Sheller. See Seed sheller.	444,983 444,861
Shoe, Merrill & Stowe Shoe fastener, A. S. French. Show case, J. M. Sweeney.	444,888 444,824 445,129
Sheller. See Seed sheller. Shingle painting machine, C. Cuno. Shoe, Merrill & Stowe Shoe fastener, A. S. French. Show case, J. M. Sweeney. Show rack for store windows, etc., B. G. Casler Signal. See Railway signal. Signaling apparatus. Morgan & Crowley Smoke deflector, J. Wisdom Snow broom. Baker & Booth Snow weeper, Baker & Booth Sole cutting machine, can, T. A. Hand. Sole cutting machine, Knight & Steele. Spewing box for use on board ship, H. Scheller Spring. See Door spring.	444,991 444,967
Snow Brooth. Baker & Booth	444,871 444,831 444,983
Spewing box for use on town ship, it. Scheiter Spring. See Door spring. Spring motor, E. S. Reed	444,908 444,905
Steam boller, J. O. Maguire. Steam engine, G. C. Pyle. Steam engine, direct-acting, J. A. Groshon. 444,828,	444,904 444,829
444,828, Stenographers and shorthand writers, machine for use by, F. E. Granger. Stereotype plates, backing block for, H. Dalziel. Stove, hygienic, F. W. Merriam. Sulky, H. B. Paul. Surface gauge, F. A. Welles. Switch. See Electric switch. Tape, woven, C. C. Hoyt. Thrashers, grain separating mechanism for trav-	444,953 444,949 444,841
Sulky, H. B. Paul Surface gauge, F. A. Welles. Switch. See Electric switch. Tape, woven, C. C. Hoyt.	444,921 444,865 445,141
eling, L. H. Hill	445,112
Fimber hangers, machine for making, J. Grant Timber hangers, machine for making, J. Russell Tongs, pipe, C. F. Spery. Tongue support, J. W. Lindquist Tooth powder box, I. W. Lyon	445.007 444,923 445.024 445,067
Tongs, pipe. C. F. Spery. Tongue support. J. W. Lindquist. Tooth seat, E. E. W. Lyon. Tooth seat, E. E. Whipple. Traction engine or road roller, M. E. Hershey Tree protector, fruit, D. Cripps. Truley wire clamp or support, W. Vogler Trough. See Watering trough Trousers stretcher and hanger, J. A. Traut Truck, electric motor, R. P. Faries. Trunk, F. J. Palica Truns, T. E. Wheeler. Turning machine, Baumeister & Heinz.	445,104 444.980 445.048 445,103
Trough. See Watering trough Trousers stretcher and hanger, J. A. Traut Truck, electric motor, R. P. Faries Trunk, F. J. Palica	445.099 445.051 444,941
Truss, T. E. Wheeler. Turning machine, Baumeister & Heinz. Twine reel, F. C. Werner Typewring machine, W. J. Barron.	444,899 445.032 444,866 444,873
Truss, T. E. Wheeler. Turning machine, Baumeister & Heinz. Twine reel, F. C. Werner. Typewring machine, W. J. Barron Typewriting machine, W. J. A. Sjoberg. Typewriting machine, C. J. A. Sjoberg. Umbrella or other sticks, machine for slotting and buring, Jesson & Weed valve, engineer's brake, G. A. Boyden. Valve, engineer's brake, G. A. Boyden. Vehicle, F. F. Landis. Vehicle, F. F. Landis. Velocipede, C. E. McGlinchey Velocipede, C. E. McGlinchey Velocipede brake holder, Krieger & Dallmer, Violin tuning peg, R. C. Bookser Wagon running gear, H. J. Gouldberg, Washing machine, J. H. Carpenter, Washing machine, W. R. Turner & M. Watch dials, making, J. Jacobson. Watch, stop, E. Kuhn	444,889 445,128 445,145
Valve, engineer's brake, G. A. Boyden	445,132 445,041 445,022 445,195
Velocipede brake holder, Krieger & Dallmer Violin tuning peg, R. C. Bookser Wagon running gear, H. J. Gouldberg Washing machine, I. H. Companyer.	445,118 444,972 444,827
Washing machine, W. R. Turner et al	444,964 444,894 445,064

_	· ——- · · · · · · · · · · · · · · · · ·		
6	Water glass, dissolving, P. Sievert	445 091	ŀ
٦I	Water meter, piston. Mosher & McMahon	445,070	l
4	Watering trough, automatic stock, C. A. Yont	441 911	l
٠,	Welding apparatus, portable electric, E. E. Ries.		
	Welding, electric, E, Thomson444,926 to 444,928,	444.946	:
	Well borer, artesian, T. H. Logan	444.839	•
	Wells, apparatus for removing paraffine from	,	
n I	pipes of oil. M. 'Turton	445.100	
ŝΙ	Wheat drill, O. L. Peterson.		
š	Whip socket, ()dell & Jones	445.126	
٦	Windmill, D. Bird		
9 l	Window bead fastener, J. Lowendahl	444.840	
ä I	Window screen frame, J. B. Phillips		
8	Wire covering machine, G. Lispenard		
7	Wire stapling machine, W. E. Harper45,139,	445.140	
7 i	Wire twisting tool, E. Beals		
	Wrench, S. Hussey	444.937	
0¦	Wrench. E. H. Kinsey	445.020	
9 Б	Zinc ores, treating, W. West	444,997	
6			
	· 		
8	DESIGNS.		
3	DEGIGNO.		

Brush, C. E. Thompson	
Check, bank, J. L. Copp	20,488
Dish. J. E. McBride	
Lamp, electric arc, Beesley & Benjamin	20,489
Toy, child's, M. M. Herrick	
Watch charm, T. Tugby	20,485
	•

	TRADE MARKS.	
Į	Biscuits, crackers, wafers, cakes, and kindred arti-	
	cles, New York Biscuit Company	18,894
	cles, New York Biscuit Company Boots, shoes, and shoe laces. J. K. Krieg & Co	18,868
	Buttons. jet. L. Prange	18.876
	Candles, A. Mandel Card clothing, Mechanical Fabric Company	18,870
	Card clothing, Mechanical Fabric Company	18,887
	Cigars, C. Alvarez 18,856, Cigars, L. Arenal & Co. 18,848 to	18,857
	Cigars, L. Arenal & Co	18,851
	Cigars, B. Celorio & Co	18,859
Ì	Cigars, Cortina & Gomez	18,855
	Cigars, J. Dzialyuski	18,860
	Cigars, F. Menendez y Martinez18,871 to	18,873
	Cigars, J. Saavedra	18,881
	Cigars, B. Suarez y Gonzalez	18,862
	Coffee, tea, and spices, G. F. Gilman	18.863
	Cotton fabrics, J. W. Woods	18.896
	Desks, school, Manitowoo Manufacturing Com-	
	pan y	18,893
	Dress goods. J. H. Fi thian	18,886
	Dress goods and umbrella coverings, W. F. Read	18,888
	Freezing fluids, structures or processes for, F. B.	
	Cochran	18.884
١	Flour, Thompson Milling Company	
i	Gypsum for paper making, pure, H. C. Hulbert	18,885
	Medicines and tonics, external, Silvera & Lopez	18,889
	Oleaginous preparation for washing clothes, Lily	
		18.869
	Packing for machinery, J. H. Billington	18,852
,	Paint, mixed, A. Wilhelm Company	
i		18,892
		18,891
ł	Remedy for diseases of the blood and liver, J. W.	
í	Jones Salve and cough slrup, corn, Kohler Manufactur-	18,866
	Salve and cough slrup, corn, Kohler Manufactur-	
	ing Company	18,867
	Sodawater, ginger ale, and beverages containing	
ľ	honey, St. Louis Honey Wine Co	18,882
	Tea. Japan, A. Ethridge & Co	18.885
Į	Tin and terne plates, Gummey, Spering & Co	18.864
	Tobacco, smeking, A. Beck & Company	18,883

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 25 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York.

Canadian 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.

Advertisements.

Inside Page, each insertion - - - 75 cents a line Back Page, each insertion - - - \$1.00 a line.

The above are charges per agate line—about eight words per line. This notice shows the width of the line, and is set in agate type. Engravings may head advertisements at the same rate per arare line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to amear in next issue.

USE ADAMANT WALL PLASTER



It is Hard, Dense, and Adhesive. Does not check or crack. It is impervious to wind, water, and disease germs. It dries in a few hours. It can be applied in any kind of weather. It is in genuixing using, and selling.

Address ADAMA STR.

Address ADAMANT MFG. CO. 309 E. Genesce St., Syracuse, N. Y.

Patent Foot Power Machinery Outfits.

Wood or Metal workers without steam power. can successfully compete with the large shops, by using our New LABOR SAVING Machinery, latest and most improved for practical shop use, also for Industrial Schools, Home Training, etc. Catalogue free. Seneca Falls Mfg. Co. 695 Water Street, Seneca Falls, N. Y.





PARABOLON MAGIC LANTERN



Price \$45.00.

Particularly suitable for making Bromide Enlargements and projecting Lanten Transparencies. We make several other styles singly and in pairs, for use with oll or Lime light. Our Oxy-Hydrogen-Jets and oil Lamps are interchangeable on all our lanterns. Special facilities on the premises for the production of Apparatus seum of Natural History, has charge of our Stide Coloring. Slides to order from Amateur Negatives. Correspondence solicited. J. B. OLLY & CO.

16 Beckman Street. Price \$45.00.



Single Bell Chime Whistle, and all instruments used in connection with Steam, Air and Water.

Sole Agents for Clark's Lanen Fire Hose. CROSBY STEAM GAGE & VALVE CO. 98 Officer St.

LIST OF

Books on Electricity.

nating Current Transformer.

Arithmetic of Electricity. By T. O'Conor Sloane,
A.M., E.M., Ph.D. This work gives Electric Calculations
in such a simple manner that it can be used by any one
having a knowledge of Arithmetic. It treats of calculations for wiring, resistance in general, arrangement of
batteries for different work, and is supplemented by the
most practical series of tables ever published. It is absolutely indispensable to the practical electrician, as
well as to the amateur. Fully illustrated. 1891...\$1.00

Plictionary of Electrical Words. Terms, and Phrases. By E. J. Houston. 640 pages, with an appendix of 15 pages, and illustrated by 396 engravings. The author gives a concise definition of the word, term, or phrase, and a brief statement of the principles of science involved in the definition, with illustrations where

tors. By Frank L. Pope. Twelfth edition. Revised and enlarged. With illustrations. N. Y., 1888..........\$1.50 Electric Light and Power. Economic Value of Electric Light and Power. By A. R. Foote. 1889...\$1.00 Electric Light and Fower. by A. B. Fower
Electrical Rules, Tables, Tests, and Formulæ,
By Andrew Jamieson, C.E., F.R.S.E. Fully illustrated,
75

Handbook," 'Bell Hangers' Handbook." 'B89...\$1.00

Practical Electric Lighting. By A. B. Holmes. Explaining in simple language the principles involved in the production of the light and the construction and working of the apparatus employed. Fourth edition. 183 pages, with 89 illustrations. 12mo, cloth......\$1.00

Practical Electrical Measurement. (55 illustrations). By J. Swinburne. London and N. Y., 1881...\$1.75

Practical Electric Bell Fitting. A Treatise on the Fitting-Up and Maintenance of Electric Bells, and all the necessary apparatus. By F. C. Allsop. With nearly 150 illustrations. 1885................................\$1.25

36 | Broadway, New York.

187 Send for our Newand Complete Catalogue of Books, sent free to any address.

Awarded the Grand Prize at late Paris Exp

ICE-HOUSE AND REFRIGERATOR. Directions and Dimensions for construction, with one illustration of cold house for preserving fruit from season to season. The air is kept dry and pure throughout the year at a temperature of from 34° to 36°. Contained in SCIENTIFIC AMERICAN SUPPLEMENT NO. 116. Price locents. To be had at this office and of all news-dealers. **d**ealers.

A XMAS HEALTH CIFT

(Exerciser Complete \$5) Is Best of All. CIRCULAR FREE.





CLARK'S

Windsor Locks, Ct.

ON GAS ENGINES.—A VALUABLE paper by E. Delamare-1-beoutteville, touching upon the history of gas moi ors in general, and describing in detail the "Simplex" engine invented by the author and Mr Marandin. With 25 figures. Contained in SCINTIFIC AMPLICAN SUPPLEMENT, Nos. 715 and 716. Price 10 cents each. To be had at this office and from all newsdealers. ON GAS ENGINES. - A VALUABLE

OTTO GAS ENGINES

33,000 SOLD. Engines and Pumps Combined.

For COAL GAS

or GASOLINE.

SCHLEICHER, SCHUMM & CO.

PHILA DELPHIA, NEW YORK. CHICAGO.



Barnes' Foot-Power Machinery
Complete outfits for Actual Worksnop
Business. A customer says: "Considering its capacity and the accuracy of
your No. 4 Lathe, I do not see how it
can be produced at such low cost. The
velocipede foot-power is simply elegant. I can turn steadily for a whole
ay, and at night feel as little tired
as if I had been walking around."
Descriptive Price List Free.
W. F. & JOHN BARNES CO.,
1859 RUBY ST. Rockford, Ill.

THE MODERN ICE YACHT. — BY Geo. W. Polk. A new and valuable paper, containing full practical directions and specifications for the construction of the fastest and best kinds of Ice Yachts of the latest, most approved forms. Illustrated with engravings drawn to scale, showing the form, position, and arrangement of all the parts. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 624. Price 10 cents. To be had at this office and of all newsdealers.

STARRETT'S

SPEEDED SCREW MICROMETER
Price \$6. With Morocco Case, \$6.75.

Surface Gauges, Combination Squares, Hardened
Steel Squares, Universal Bevel Protractors,
Fay's Patent Spring Dividers, Spring Calipers, Screw Pitch Gauges, Steel Rules, Micrometer Caliper Squares, etc., etc.
Send 2-cent stamp for full list.
L. S. STARRETT, ATHOL, MASS.
Manufacturer of Fine Tools.

The author has aimed to give.

The author has aimed to give has a failed for the part of the apparatus described on the lectro-metal hard.

The art of Soap Making. Thermopiles, and of the Materials and Processes used in every department of the Art, and several chapters on Electro-metal lurgy. The Art of Soap Making. The cleentonetal lurgy. By Alexander Wait, author of "Electro-metal lurgy." The Art of Soap Making. The cleentonetal lurgy. By Alexander Wait, author of "Electro-metal lurgy." The Art of Soap Making. The cleentonetal lurgy. By Alexander Wait, author of "Electro-metal lurgy." The Art of Soap Making. The cleentonetal lurgy.

The Art of Soap Making. The cleentonetal lurgy.

The Art of Soap Making. The cleetro-metal lurgy.

The Art of Soap Making.

The Art o

SIERED ILF IN U.—A VALUABILE series of lectures by Thomas Bolas, discussing the most recent methods in this branch of typography. With 23 fillustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 773 and 774. Price 10 cents each. To be had at this office and from all newsdealers.



Stored

THE ACCUMULATOR COMPANY, 44 Broadway, N. Y. City. 224 Carter St., Phila., Pa