

(24) J. A. C. asks: Does the electric current used in sending a message to Europe or elsewhere return again to the instrument from which it emanates, either by a wire or by the ground? If the wire is dispensed with, does the current return by way of the earth in a direct line, and, having an affinity for the place from which it came, pass by all other attractions in its passage to that? A. The current does not return through the earth, but is absorbed by it at each end, thus causing a movement in the wire the same as if the ends were joined. It was formerly supposed that the current returned through the wire, but this has been proved to be incorrect.

(25) M. M. M. asks: By what method and under what conditions can the power of a permanent steel magnet be kept exactly the same for any length of time? A. The most effective way is to place a bar of iron across the poles.

(26) W. M. J. asks: 1. Would good varnish or paraffin make a good insulator for wire intended to be used in the helices of a relay? A. Silk or cotton would be better. 2. In what way does insulation act upon the condition of a magnet other than to separate one wire from another in the coils? A. Insulation of the wires is only intended to separate them, and prevent any conduction between the layers.

(27) E. C. C. asks: 1. I am about to make an electro-motor. What metal must I use on which to wind the magnetic coils? A. Iron. 2. What kind and size of wire must I use? A. No. 14 copper wire.

(28) N. W. L. says: You state that grease or paint applied to the cells of a telegraph battery will prevent creeping. Having been annoyed by the creeping of our battery, and acting on the hint, we applied butter to it, that being the only grease at hand at the time. Since the application the battery does not creep, but the current is a great deal weaker. Is the butter the cause? A. No. Probably the battery needs fresh water.

(29) W. L. asks: 1. What bright large star is in the northeast, not very high, at about 6 P.M.? A. It is Capella, the principal star in the constellation Auriga. 2. What bright bluish star is high overhead to the westward? A. It is Vega, but more frequently called Lyra. It is the principal star in the Harp. 3. What large star is near Orion on the west side? A. It is Aldebaran, the largest star in the constellation Taurus.

(30) W. P. H. says: I have in my possession two glass disks 2 inches in diameter, made by Chance & Co., of Birmingham, England. One consists of hard crown glass and one of dense flint. With these I wish to make a plano-convex achromatic objective: what should be the radii of curvature for the surfaces of the disks in order to have a focus of 10 inches? A. If the flint is of medium density, the curves of the crown may be 3-4 inches radius. The flint glass should be double concave, one side to fit the crown, the other side of 25 inches radius. If the flint is very dense, the curves may be of 3-5 inches radius for each side of the crown, and 20 inches for the long side of the flint. 2. What would be the negative and positive foci of the disks? A. The focus of the crown will be the radius, that of the flint 1/2 its radius.

(31) C. M. B. says: I have a soapstone griddle which, by accident, was thoroughly greased. How can I extract the grease? A. Wash it carefully with hot potash lye, and rinse with clean cold water until all trace of the alkali has been removed.

(32) R. F. S. asks: 1. What are the diameter, focus, and shape (plano convex or double convex) of the eye lens for a good microscope, and is it achromatic? A. The lenses of the eyepiece of a microscope are both plano-convex, made of single pieces of glass. The field lens is usually larger and of longer focus than the eye lens. 2. What is the diameter, focus, and shape of the field lens, and is it achromatic, and what is the proper distance between the eye lens and field lens? A. For medium powers, the field lens may be of 2 inches focus and the eye lens of 1 inch focus, set 1 1/2 inches apart, with the convex sides toward the object. As they correct each other, the combination is achromatic. 3. What is the proper shape of an achromatic objective, plano-convex or double convex? A. The best objectives for high powers are made of three separate lenses, each lens of two kinds of glass. The best form for a single lens of one piece of glass is a double convex, whose radii are as one to six.

(33) I. J. asks: How shall I clean the lenses of optical instruments? A. Breathe on the glass, and wipe with chamois skin or the nap side of cotton flannel. Paper of any kind would be very likely to scratch the glass. This also answers A. F. O.

(34) H. S. asks: What is the magnifying power of the home-made compound microscope, described in your issue of October 30, 1875? A. If the tube or body of the home-made compound microscope be 12 inches in length, the magnifying power would be about 100 diameters. The same eyepiece, with an objective of 1/4 inch focus, would give a power of about 200 diameters; then by lengthening the body, the power may be easily increased to 300 or more. A common and convenient way of determining the power of a microscope is to focus an object of known size, and place a rule on the stage outside, then look with one eye at the object in the microscope and with the other at the rule. It will readily be seen how large the object appears to be on the rule, and this gives the approximate magnifying power.

(35) H. M. says: I am getting up a small engine and boiler to drive a yacht. If my boiler will furnish steam to fill a 3x3 cylinder, and I put 6 cylinders each 3x3, cut off each at 1/2 stroke, and use the steam expansively the rest of the way, could you recommend such a course? A. We cannot recommend the plan.

(36) R. J. F. asks: Is it possible to improve an object glass of a telescope by change of figure, if the fringes around objects are equally colored with green and purple? Would the thickness of the glasses make much difference? A. Telescopes are usually made of a double convex crown and a concave flint. In small objectives, of less than 3 inches diameter, the flint is usually double concave, and in large glasses, concavo-convex. The following curves for a 3/4 inch objective, of 8 feet focus, answer very well: Outside curve of crown 50 inches radius, contact curves 20 1/4 inches, and the back convex side of flint 140 inches. This combination forms an achromatic lens, which will get rid of your trouble.

(37) R. M. asks: How must the lenses be set, and of what size and focus must they be for the home-made microscope, recently described by you? I want it to magnify from 1,000 to 1,500 times. A. The lenses must be set as described in the article. The focal length of the objective should be about 1/2 of an inch, and of the field lens of the eyepiece 1 1/2 inches, and the eye lens 1/2 inch. Then, by lengthening or shortening the body, a power of 1,000 or 1,500 may be obtained.

(38) J. B. says: I am building a machine showing the earth turning on its axis at an inclination of 23 1/2 degrees, the moon revolving around the earth, and all around the sun. Is there such an apparatus in existence? A. There are very perfect instruments for showing the movements of the solar system. They are called planetaria. 2. Would it be best to make it vertical or horizontal? A. For the sake of convenience they are made vertical. They cannot be made correct, but only approximately so. 3. Do the planets return to the same places in a year? Will they be seen next year in the same place on the same day at the same time? A. The planets never return to the same place on the same day of the year.

(39) W. H. D. L. says: If milk is not properly cooled, or is confined in a tight can before the animal heat has passed off, it soon becomes tainted. Would bacteria or some similar organisms be present in such a case? A. Yes. 2. What must be the magnifying power of a microscope to reveal such organisms? A. A power of 200 diameters shows the animalcules in stagnant water; and no doubt it would be all you would require. A less power, even, might answer your purpose.

(40) S. D. T.—You could not see anything in a mirror attached to a kite, because of the constant movement of the mirror and the highly magnified condition of the light coming from the mirror to the observer.

(41) E. R. asks: Does any one manufacture cast steel that can be tempered? A. All cast steel can be tempered.

(42) T. C. asks: It is asserted that water, in running out of a basin through a hole in the bottom, takes a rotary motion, and, when unmolested, the circular motion is always one way, namely, the same as the hands of a watch laid on its back. Is this true? A. We think not.

(43) F. R. B. asks: Can I arrange a small compound microscope so as to throw an enlarged image on a screen, as a stereopticon does? A. You cannot do it, on account of the high magnifying power, small field, and want of sufficient illumination.

(44) C. T. P. says: Please inform me which is the proper way to run a belt, with the grain or the flesh side next to the pulley. A. The grain side.

(45) W. H. P. says: I am running a 50 horse power tubular boiler, but have not got draft enough at times. The main flue is of iron, 2 feet in diameter, and passes up through the roof of the building about 4 feet, and then on a level 17 feet to the chimney. Will a jet of steam help the draft? If so, how large should it be, and where should it enter the flue? A. A jet of steam in the iron flue will help your draft without damaging the chimney. The size of your jet must be determined by experiment.

(46) T. W. C. says: I have a boat, 50 feet long by 18 feet beam by 3 1/2 feet depth. What should be the dimensions of engine, boiler, and feed pump respectively? She is to have a stern wheel, and her engine is to work at high pressure. A. You might use two engines, with cylinders 7 by 12 inches, and a vertical boiler 5 feet in diameter and 8 feet high. Feed pump should be 2 1/2 inches in diameter and of 12 inches stroke.

(47) J. M. says: Please give us the best composition of brass to be polished, so as to give it the nearest resemblance of gold. A. Mix 10 parts copper and 1 part tin. Add 2 lbs. spelter to every 100 lbs. of the brass.

(48) S. M. C. says: Bloxam's "Chemistry" p. 203, Philadelphia edition, says: In the reduction of iron ore, a large sized blast furnace consumes daily 50 tons of ore, 30 tons of coal, 6 tons of limestone, and 100 tons of air. Is not the amount of air exaggerated? The working of a blast furnace is familiar to me; and considering the size of the blowers and number of strokes per minute, I cannot conceive of this amount of air passing through the tweers in the time given. A. The statement is correct. It falls under, rather than over, the truth.

(49) S. H. says: In regard to your article on "Flat Surfaces" (October 23, 1875) I would like to ask how the constants used in the formulae are obtained? You say the factor of safety used is 8, but that seems to me to be indefinite unless we know what modulus of strength is used, and how it comes in. If you could give the formulae in such a way as to bring in the ultimate tenacity or some other modulus easily determined for different qualities of metal, you would, it seems to me, make them much more useful to engineers. Perhaps you will inform us what different quanti-

ties are included in the constants of the given formulae, that is to say, what modulus of strength, etc. A. The constants are those for tensile strength. It is assumed in the article that the ultimate strength is as follows: Cast iron, 20,000 lbs. per square inch. Wrought iron, 48,000 lbs. per square inch. Steel, 80,000 lbs. per square inch.

(50) A. J. M. says: I have an electromagnet of 1 inch iron, 1 foot long, having 100 feet of No. 16 copper wire on it. What amount of horse power will I require to make an electro-magnetic machine to cause that magnet to lift 100 lbs.? A. An eighth of a horse power would be ample.

(51) S. W. says: Salt of steel is the sal martis of the old chemists. It is common copperas, or green vitriol, or sulphate of iron.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

A. G. S.—It consists of manganese, with iron, alumina, and silex.—J. M.—It is made of burnt sugar and chicory.—W. A. W.—The paper was covered mostly with a pigment having clay and lime for its basis, and no poisonous matters were detected in the small scrap forwarded.—O. P.—It is bituminous shale rock.—J. E. B.—It is sulphuret of iron.—W. L. W.—It is iron pyrites, and is worth working if the quantity is very large and the cost of mining small.—C. P. C.—It is carbonate of magnesia.—J. M. R.—It is yellow hydrated sesquioxide of iron on micascist.—E. S. B.—It is galena, with a trace of silver.—A. M. C.—It is gold.—H. J. R.—If the specimen referred to was inclosed in a box (unlabeled) marked "Fine Steel Cutlery," it is iron pyrites.—C. F. H.—No. 1 is pyrites (no gold detected). No. 2 is an inferior kaolin. Use Dana's "Mineralogy."—J. F. F.—They are fragments of quartz and amethyst, with magnetic iron sand.—P. J. M.—We were unable to detect any foreign substance with the gelatin.—W. D. C.—It is calc spar and hornblende.—A. J. H.—Both are oxide of iron.—J. H. P.—Nos. 1 and 2 are quartz rock with small scales of mica. No. 3 is bituminous slate.—E. P. McL.—No. 1 is iron filings. No. 2 is red jasper.

A. C. S. asks: Can you give me a recipe for removing black smoke marks off a brick wall? We do not want to paint the wall.—W. A. K. asks: Can any one inform me of a good way of heating street railway cars.

On page No. 396 of this paper will be found an advertisement of a new recipe book, just published, which will be found a useful companion for reference by every one.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On a New Method of Ventilation. By L. B. G.
On Instinct. By C. T.
On the Formation of Planets. By H. L.
On Bankers' Safes. By S. M. L.
On the Wagner Free Institute. By W. H. W., and R. G.
On Explosive Oils. By J. R. C.
On Spectral Lines and Atomic Weights. By A. H. McK.

Also inquiries and answers from the following: A. K.—J. R. T.—J. B. O.—S. W.—N. F. F.—R. M.—J. G.—D. A.—J. G.—G. N. T.—F. G. S.—J. D. H.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of inquiries analogous to the following are sent: "Who makes rubber tires for traction engines? Who sells machines for bending cold iron bars? Who sells carrier pigeons? Who makes screw-cutting dies, made to the Whitworth thread? Whose is the best engine governor?" All such personal inquiries are printed, as will be observed in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

November 16, 1875

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

- Addressing machines, R. Dick..... 170,068, 170,069
Album, photograph, H. T. Anthony..... 170,042
Anti-incrustation compound, E. Weiss..... 170,137
Apple slicer, I. C. Richards..... 170,017
Bale band tightening device, C. H. Chase..... 170,054
Bale hooks, bending, B. R. Springsteen..... 170,026
Bale tie, J. P. Radley..... 169,920
Bar for landside blanks, J. Sandage..... 170,020
Bearings, anti-friction, Lathrop and Weber (r)..... 6,748
Earrings, lining machine, Lathrop and Weber..... 170,000
Eed bottom, C. W. and S. Purcell..... 170,111
Bed bottom, spring, W. Goforth..... 170,077

- Bed bottom, spring, A. Youngs..... 170,040
Bedstead, invalid, W. J. Kerr..... 170,030
Bedstead, sofa, J. B. M. Field..... 169,976
Bedstead, sofa, F. Fischbeck..... 169,978
Bedstead, sofa, J. H. Gould, Jr..... 170,079
Beer, etc., preserving, L. Wienmar..... 169,934
Belt, chain, H. Bushnell..... 169,955
Billiard table, H. W. Collender..... 170,059
Blood, offal, etc., treating, T. Webber..... 170,036
Blotter and paper weight, W. H. Babcock..... 170,043
Boiler covering, I. L. Merrell..... 170,039
Boiler, reversible steam, S. S. Vail..... 170,032
Boiler, rotary steam, C. W. Pierce (r)..... 6,750
Boiler, sectional, Firmenich and Striker..... 169,977
Boiler tube, S. W. Martin..... 169,913
Boiler, wash, C. W. Guenther..... 169,982
Boit, shutter, J. Mitchell..... 170,104
Bolts, heading, Hull and Thomas (r)..... 6,747
Book cover protector, G. W. Holden..... 169,985
Boot and shoe, W. B. Rice..... 170,016
Boot stiffeners, cutting, J. M. Watson..... 170,135
Boot and shoe tip, Straw and Sparrow..... 170,028
Boot crimper, W. H. Eddy..... 169,971
Bottle, J. Ernst..... 170,073
Box trimming machine, C. Bopp..... 170,046
Bracelet, J. N. Thomson..... 169,929
Broom, R. H. Eastburn..... 170,071
Brush, paint, G. P. Hunt..... 169,906
Buckle, S. Porter..... 170,100
Buckle, P. Whitney..... 169,937
Buckle, reversible lock, L. Lewine..... 170,044
Buttons, etc., fastening for, Williams et al..... 170,114
Can, milk, J. H. Lester..... 170,094
Cane, W. R. Park..... 169,918
Car axle box, L. R. Faught..... 169,975
Car axle box packing ring, T. C. Hargrave..... 170,184
Car coupling, Carson and Whiting..... 169,991
Car coupling, O. E. Ford..... 169,981
Car coupling, G. E. Lacy..... 170,092
Car coupling, J. Singer (r)..... 6,752
Car coupling, T. A. Watson..... 170,035
Car coupling and brake, F. M. Campbell..... 169,937
Cars, transferring goods to and from, W. Elliot..... 169,996
Carbureter, S. McKissock..... 170,097
Card for wrapping thread, H. Suro (r)..... 6,751
Carriage, child's, M. Meart..... 170,089
Carriage wheels, dust guard for, M. C. Nay..... 169,915
Chair, dentist's, J. B. Newbrough..... 170,012
Chair, folding, I. N. Dann..... 169,968
Chair for schoolhouses, etc., P. Mihan..... 169,914
Chair seat, L. Atwood..... 169,944
Churn dasher, E. Steadman..... 170,126
Cigar machine, C. Talbot Clarke..... 170,030
Clasp, Frost and Phelps..... 169,983
Clothes dryer, W. Adams..... 169,939
Clothes pounder, E. Crowell..... 169,963
Cock, compression and swing, W. L. Brownell..... 170,123
Coffin handle, T. C. Richards..... 169,922
Coffin screw, F. W. Cabot..... 169,989
Cog wheel, C. E. Brooks..... 170,049
Confectionery, casting, S. F. Whitman..... 169,935
Cooler, milk, C. A. Douglas (r)..... 6,744
Copy holder, L. Conant..... 169,993
Cord binder, W. B. Snyder..... 170,123
Corn cutter, P. McI. McLeod..... 170,010
Coupling, G. W. Rowell..... 170,019
Cow tail holder, G. Stickney..... 170,127
Crank stop, W. H. Phillips..... 170,013
Curtain fixture, W. H. Maine..... 170,006
Curtain roller, Fisher and Lichtenber..... 169,979
Curtain roller and bracket, O. Ellsworth..... 170,072
Dental engines, hand piece for, E. T. Starr..... 170,125
Dental engines, tool carrier for, T. Cogswell..... 170,057
Dental plugger, S. D. Strohm..... 170,129
Dental plugger, electro-magnetic, W. G. Bonwill..... 170,045
Derricks, operating, A. Jackson..... 169,966
Die stocks, threading, A. Saunders..... 170,119
Elevator, platform, G. C. Howard..... 170,057
Explosive compound, H. J. Detwiler..... 170,066
Fare box, recording, E. H. Schnell..... 170,022
Fats, rendering animal, W. E. Andrew (r)..... 6,737
Faucet, D. W. Goodell..... 169,968
Feed cooker, J. S. Brubaker..... 170,050
Feed cutter, B. A. Wilton..... 169,937
Feed regulator, Ford & Hicks..... 169,982
Fence, H. B. Cluxton..... 170,055
Fence, iron, D. C. Guttridge..... 169,989
Fence, wire, T. S. Seabury..... 170,024
Fire arms, lock for, G. E. Williams..... 170,038
Fires, extinguishing, J. H. Connolly..... 170,060
Fluting iron, M. Newton..... 170,105
Foot rest, F. A. Farnham..... 169,997
Fork, horse hay, E. Raber..... 169,919
Fringe, J. Hirner..... 169,993
Fruit gatherer, I. Coe..... 170,056
Funnel, measuring, R. A. Landon..... 170,033
Furnace, ore-roasting, W. McCall..... 170,035
Furnace, singeing, B. Rose..... 170,018
Gas apparatus, J. H. Eichholz..... 169,973
Gas retort lid, H. Collinson..... 169,960
Glass, underlay for printing on, J. L. Wells..... 170,136
Globe for schools, N. N. Brown..... 169,950
Harness, elastic back band for, J. W. Hollis..... 169,994
Harness rosette, S. S. Sargeant..... 170,021
Harvester, J. H. Whitney..... 170,140
Harvester, corn, Blood & Hager..... 169,946
Harvester rake, P. F. Hoages..... 170,036
Harvester rake, J. H. Whitney..... 169,936
Harvester, grain wheel arm, C. H. Salzman..... 169,924
Harvester, sliding rake, Brown & Hoover..... 169,951
Heel-burnishing machine, C. J. Addy..... 169,984
Hides, coloring, Merrill & Hoitt..... 170,100
Hinge, L. H. Rogers..... 170,116
Horse collar, Van Wagenen & Goble..... 169,923
Horse-hitching device, J. Schoonmaker..... 170,023
Horses, checking, J. Knight..... 170,091
Hose nozzle, C. S. Westland..... 170,138
Indicator, navigator's bearing, J. D. Leach..... 170,001
Jewelry, braided, W. W. Alden..... 169,940
Kaleidoscope, J. F. Adams..... 169,982
Kitchen shelf, A. A. Carter..... 169,992
Knitting machine needle, C. J. Appleton..... 169,943
Lamp extinguisher, W. C. Cross..... 170,064
Lantern, R. Nutting..... 169,916
Lantern and inner kettle, W. W. Price..... 170,110
Latch, gate, J. Vetterlein..... 170,033
Lathe and belt saw, H. A. Kimball..... 169,998
Lathing machine, C. B. Trimble..... 170,031
Letter box, D. J. Wilcoxson..... 170,141
Level, plumb, H. S. Tarr..... 169,927
Lock till, G. H. Peacock..... 170,108
Locking device, drawer, J. H. Williams..... 170,145
Loom let-off mechanism, J. H. Moore..... 170,011
Loom shuttle check and binder, S. T. Hurd..... 169,995
Loom stop motion fork, J. McCaffrey, Jr..... 170,007
Lumber dryer, M. Harris..... 169,903
Malt, stirring, A. Von Schlemmer..... 170,134
Matches, etc., automaton box for, H. Roman..... 169,933
Matching machine, G. T. Riddle..... 170,114
Meat cutter, G. L. & J. B. Chadborn..... 170,053
Milk, preserving, J. H. Lester..... 170,008

SCHEDULE OF PATENT FEES.

On each Caveat.....\$10
 On each Trade mark.....\$25
 On filing each application for a Patent (1 year).....\$15
 On issuing each original Patent.....\$20
 On appeal to Examiners-in-Chief.....\$10
 On appeal to Commissioner of Patents.....\$30
 On application for Reissue.....\$30
 On filing a Disclaimer.....\$10
 On an application for Design (3 1/2 years).....\$10
 On application for Design (7 years).....\$15
 On application for Design (14 years).....\$30

CANADIAN PATENTS.

LIST OF PATENTS GRANTED IN CANADA,
 November 12 to 16, 1875.

5,383.—R. C. Nugent et al., Dayton, O., U. S. Machine for turning flanges on boiler heads. Nov. 12, 1875.
 5,384.—A. Payette, Montreal, P. Q. Axle box. Nov. 12, 1875.
 5,385.—G. W. Copeland, Malden, Mass., U. S. Boot and shoe lasting machine. Nov. 12, 1875.
 5,386.—E. S. Howland, Batavia, Ill., U. S. Dress for metallic grinding rings. Nov. 12, 1875.
 5,387.—F. N. Dubeis, New York city. Manufacture of plumbers' traps. Nov. 12, 1875.
 5,388.—W. H. Babbitt, Toronto, Ont. Cooking pot. Nov. 12, 1875.
 5,389.—J. C. Blyth et al., Ottawa, Ont. Milk can. Nov. 12, 1875.
 5,390, 5,391.—E. W. Grant, Ypsilanti, Mich., U. S. Step ladder. Extension of No. 4,705. Nov. 12, 1875.
 5,392.—A. M. Brush, Potsdam, N. Y., U. S. Organ stop action. Nov. 15, 1875.
 5,393.—W. H. Johnson et al. Combined milk pan and water vat. Nov. 15, 1875.
 5,394.—A. Button, East Saginaw, Mich., U. S. Combined tool. Nov. 15, 1875.
 5,395.—A. N. Breneman, Lancaster, Pa., U. S. Boot and shoe holder. Nov. 15, 1875.
 5,396.—H. Whiteside, Jr., Montreal, P. Q. Sectional mattress. Nov. 15, 1875.
 5,397.—M. Glenn, Stratford, Ont. Machine for separating wheat, seeds, etc. Nov. 15, 1875.
 5,398.—F. C. Crean et al., Montreal, P. Q. Propeller wheel. Nov. 15, 1875.
 5,399.—E. Longley, Cincinnati, Ohio, U. S. Addressing machine. Nov. 15, 1875.
 5,400.—J. C. Bassett, Oshawa, Ont. Thrashing machine gearing. Nov. 15, 1875.
 5,401.—C. Appleton, Whitechurch, Ont. Sleigh brake. Nov. 15, 1875.
 5,402, 5,403.—W. N. Whiteley, Springfield, Ohio, U. S. Extension No. 4,863. Mower and reaper. Nov. 16, 1875.

Advertisements.

Back Page \$1.00 a line.
 Inside Page 75 cents a line.

Engravings may head advertisements at the same rate per line, by measurement, as the letter press. Advertisements must be received at publication office as early as Friday morning to appear in next issue.

WANTED—For a Steam Tannery, some device or invention to prevent Sparks from escaping from the Chimney. Address, with particulars and price, CYRIL FRANKLIN, Box 202, Halifax, Nova Scotia.

TO ENGINE BUILDERS—NEW ENGINE.—One Cylinder Eccentric, Steam Chest, one Bed, &c., gives same result as two Cylinders in Locomotive Style—no dead centers. Will send explanation, showing economy of construction, simplicity, and desirability. Want responsible builders to introduce the same; will make it an object. Address A. R. C., Lincoln, Illinois.

AN EXCELLENT OPPORTUNITY OFFERED to Enterprising Men: Private Sale of the Missouri Brass Foundry, Steam and Gas Pipe Works of the late John Kufferle, situated at the corner of Second St. and Washington Avenue, in the City of St. Louis, Mo. The above mentioned well known establishment, situated in the heart of the City, and in complete running order, and having a very extensive and valuable customer, is now by leave of the Probate Court of St. Louis County, offered for sale upon reasonable terms. For particulars, apply to JOSEPH DEGENHART and CHARLES SEITZ, Executors, No. 609 N. Second Street, St. Louis, Mo.

A VALUABLE ADJUNCT TO CENTENNIAL exhibitors will be an ELEGANT GLASS SHOW TABLE, made from unique and appropriate designs. These brilliant display signs will attract the eye of thousands of visitors, and thus call their special attention to the goods you exhibit. Also varied effects on metal, wood, &c. Prices and information on application. BLACKMER & CO., 96 Court St., Boston, Mass.

AGENTS WANTED FOR POSITIVELY NEW ARTICLES. An economy in every house. Demand unaffected by times. Send stamp for particulars. PLUMB & EAGAN, 17 Court St., Boston, Mass.

TO MANUFACTURERS OF AGRICULTURAL and Domestic Machinery—A House in Holland, doing a good business in above, will be glad to receive (post free) catalogues, terms, &c., of implements and household articles. References given and required. Address K. F., care of Nijgh and Van Dittmar, Rotterdam.

TO INVENTORS—Parties having any patents of light useful inventions which they wish to have placed upon the market, will do well to address, giving full description of the article. MERIDETH, No. 13 North 3rd St., St. Louis, Mo.

WALTHAM, ELGIN, AND HOWARD WATCHES.

Prices reduced from thirty per cent. Catalogue giving prices of one hundred and forty-four American Watches, mailed free to any address by N. H. WHITE, 441 Broad St., Newark, N. J.

TO MANUFACTURERS AND BUILDERS.—The advertiser is a native of Brazil, and has been engaged in mech. business in this country for 8 years. He is about to return to his country, and wishes to introduce Am. machinery there. He requests all parties interested to send him illustrated circulars and price list. Address, inside of 3 weeks, to F. H. DE GRONHA, P. B. No. 248, Wilmington, Del.

TO ELECTRO-PLATERS, JEWELERS, AND WATCHMAKERS.—BATTERIES, CHEMICALS, AND MATERIALS, in sets or single, with Books of Instruction for Nickel, Gold, and Silver Plating. THOMAS HALL, Manufacturing Electrician, 16 Bromfield Street, Boston, Mass. Illustrations Catalogue sent free.

DESIGNS PATENTED.

8,793.—STOVES.—J. J. Bonnet, Quincy, Ill.
 8,794.—BUTTONS.—J. R. Farrell, Boston, Mass.
 8,795.—EMBROIDERY.—E. Crisand, New Haven, Conn.
 8,796 and 8,797.—SOA WATER APPARATUS.—F. H. Shepherd, Boston, Mass.
 8,798.—JAWERS.—T. J. Stearns, Boston, Mass.

WARDWELL PATENT,
 FOR CUTTING STONE INTO VARIOUS SIZES AND DIMENSIONS IN ALL KINDS OF QUARRIES.

STEAM STONE CUTTER CO., RUTLAND, VT.
 SOLE PROPRIETORS AND MANUFACTURERS.

OPIMUM and Morphine habit absolutely and speedily cured. Painless; no publicity. Send stamp for particulars. Dr. CARLTON, 187 Washington St., Chicago, Ill.

\$8 YOUNG AMERICA SCROLL SAW. Send to J. M. BEUGLER, M'P'r, Williamsport, Pa.

Hammond's Window Springs.
 Six Samples mailed for 50 cents.
 W. S. HAMMOND, Lewisberry, York Co., Pa.

Non-Freezing, Filtering, Automatic STEAM TRAP.

Send C. O. D. to any part of the country, and warranted to work perfectly, or the money refunded. No. 0 drains 2,000 ft., 1 in. pipe, \$30. No. 1, 4,000, \$40. No. 2, 20,000, \$50, largest size, 9x11x18 in. Send for Circular.

WM. H. JENKINS & CO.,
 238 Church Street, Philadelphia, Pa.

CANCER Successfully Treated, without use of Knife or Caustic. Dr. A. H. Brown, New Haven, Conn. Send two postage stamps. Correspondence from Physicians solicited.

WITHERBY, RUGG & RICHARDSON, Manufacturers of Woodworth Planing, Trenching, and Grooving Machines, Dautel's Planers, Richardson's Patent Improved Tenon Machines, Mortising, Moulding, and Ho-Saw Machines, and Wood-Working Machinery generally, 20 Salisbury Street, Worcester, Mass. (Solely authorized by R. BAILL & CO.)

GARDINER'S PATENT Centring Attachment, AND Squaring Attachment, FOR LATHES. Address, R. E. STATE, SPRINGFIELD, O. SEND FOR CIRCULAR AND PRICE-LIST.

FOR RENT, WITH STEAM POWER—A brick two story building, 50x100 ft., with Steam Drilling House, and a Complete System of Modern Machinery for the Manufacture of Flooring, Doors, Sash, Blinds, &c., at Columbus, Ga. For further particulars, apply to WM. H. BINDE, Cuyahoga Falls, Ohio.

LIFE-LIKE PICTURES, accurate as photographs, can be drawn on paper by means of wonderful Camera Obscura. Price only \$1.25, express paid. Send to F. BLOCKLEY, 253 Van Buren Street, Brooklyn, N. Y.

MICROSCOPES.
 First class Microscopes, magnifying 100 diameters. Price \$2.00. Smaller size, with same focal adjustment, \$1.50. Address F. BLOCKLEY, 253 Van Buren Street, Brooklyn, New York.

THE Commercial Agency,
 109 & 111 WORTH ST., NEW YORK.

MERCHANTS contemplating changes in their Partnerships, or the formation of NEW FIRMS, will oblige by communicating the same to us, that their names may appear correctly in the "COMMERCIAL AGENCY REGISTER."

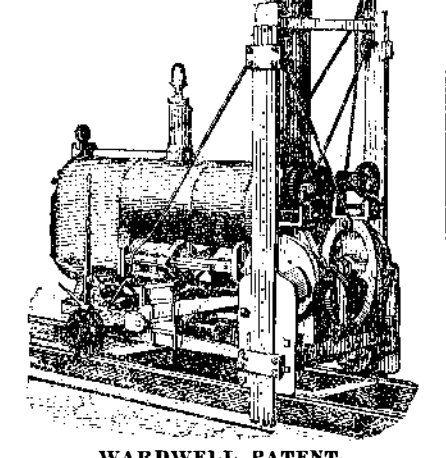
Desiring to have our Records as accurate as possible, we will accept the Statements and References of any Merchant, and give the same the most thorough scrutiny.

BANKERS, MERCHANTS AND MANUFACTURERS will oblige by informing us if in any case their knowledge and experience do not harmonize with our reports. We ask this that we may, by fresh and thorough investigation, correct errors, if any are found to exist.

The "COMMERCIAL AGENCY REGISTER" will be ready for delivery shortly after the first of January next.

MCKILLOP & SPRAGUE CO.

Stone Channeling
 OR
Quarrying Machine,



WARDWELL PATENT,
 FOR CUTTING STONE INTO VARIOUS SIZES AND DIMENSIONS IN ALL KINDS OF QUARRIES.

STEAM STONE CUTTER CO., RUTLAND, VT.
 SOLE PROPRIETORS AND MANUFACTURERS.

OPIMUM and Morphine habit absolutely and speedily cured. Painless; no publicity. Send stamp for particulars. Dr. CARLTON, 187 Washington St., Chicago, Ill.

\$8 YOUNG AMERICA SCROLL SAW. Send to J. M. BEUGLER, M'P'r, Williamsport, Pa.

Hammond's Window Springs.
 Six Samples mailed for 50 cents.
 W. S. HAMMOND, Lewisberry, York Co., Pa.

Non-Freezing, Filtering, Automatic STEAM TRAP.

Send C. O. D. to any part of the country, and warranted to work perfectly, or the money refunded. No. 0 drains 2,000 ft., 1 in. pipe, \$30. No. 1, 4,000, \$40. No. 2, 20,000, \$50, largest size, 9x11x18 in. Send for Circular.

WM. H. JENKINS & CO.,
 238 Church Street, Philadelphia, Pa.

CANCER Successfully Treated, without use of Knife or Caustic. Dr. A. H. Brown, New Haven, Conn. Send two postage stamps. Correspondence from Physicians solicited.

WITHERBY, RUGG & RICHARDSON, Manufacturers of Woodworth Planing, Trenching, and Grooving Machines, Dautel's Planers, Richardson's Patent Improved Tenon Machines, Mortising, Moulding, and Ho-Saw Machines, and Wood-Working Machinery generally, 20 Salisbury Street, Worcester, Mass. (Solely authorized by R. BAILL & CO.)

GARDINER'S PATENT Centring Attachment, AND Squaring Attachment, FOR LATHES. Address, R. E. STATE, SPRINGFIELD, O. SEND FOR CIRCULAR AND PRICE-LIST.

FOR RENT, WITH STEAM POWER—A brick two story building, 50x100 ft., with Steam Drilling House, and a Complete System of Modern Machinery for the Manufacture of Flooring, Doors, Sash, Blinds, &c., at Columbus, Ga. For further particulars, apply to WM. H. BINDE, Cuyahoga Falls, Ohio.

WRINKLES
 AND
RECIPES,
 COMPILED FROM THE SCIENTIFIC AMERICAN.

An Illustrated Hand-Book of Practical Hints and Suggestions for Mechanics, Engineers, Farmers, Housekeepers, and Workmen generally.

The volume comprises 250 pages, is printed on fine paper, with gilt edges, and is of large pocket-book form flexible covers, neatly ornamented.

Mailed, post paid, on receipt of \$1.50. 1 copy Scientific American, 1 year, and 1 copy Wrinkles and Recipes.....\$4.20

H. N. MUNN, PUBLISHER,
 P. O. Box 772,
 37 Park Row, New York City.

\$12 a day at home. Agents wanted. Outfit and terms free. TRUE & CO., Augusta, Maine.

\$500 IN GOLD GIVEN AWAY, also 50 per cent Commission. You can make from \$10 to \$20 daily. FAMILY JOURNAL CO., 232 Broadway, N. Y.

WHIPPLE'S
Patent Door Knob.

Awarded a Bronze Medal at the American Institute Fair for 1874. The Judges say: "We consider this method of fastening DOOR KNOBS a great improvement over anything yet invented for the purpose, as it obviates the use of side screws and washers, and can be regulated to suit any thickness of Doors." Send for Circular.

THE PARKER & WHIPPLE COMPANY,
 West Meriden, Conn., or 97 Chambers St., N. Y.

H.W. JOHNS' PATENT
ASBESTOS
MATERIALS.

Roofing, Roof Coating, and Cement, for repairing Roofs. Paints—all colors, ready mixed. Roof Paint. Fire Proof Coating, Boiler and Steam Pipe Coverings, Steam Packing, Roofing, Sheathing and Lining Felts, &c.

All ready for use, and easily applied. Send for Pamphlets, Price Lists, &c.

H. W. JOHNS, 87 Maiden Lane, N. Y.
 Patentee and Manufacturer. Established 1858.

THE IMPROVED
NIAGARA STEAM PUMP,
 83 to 97 Pearl St., Brooklyn, N. Y.
 Agency at 40 John St., New York.

Hubbard & Aller,
 SOLE MANUFACTURERS,
 ENGINES AND BOILERS,
 Pulleys, Shafting and Hangers
 a Specialty.

\$77 A WEEK to Agents, Old & Young, Male & Female, in their localities. Terms & OUTFIT FREE. Address P. O. VICKERY & CO., Augusta, Me.

EAGLE FOOT LATHES,
 With Scroll and Circular Saw Attachments, Slide Rest, Tools, &c.; also Small Engine Lathes, Metal Hand Planers, &c. Neatest designs, superior finish. Low Prices. Our new Catalogue describes these and every tool necessary for the Artisan or Artizan. Send for it.

WM. L. CHASE & CO.,
 85 & 97 Liberty St., New York.

Planing & Matching.
 Moulding, Re-sawing and Tenoning Machines. Scroll Saws and General Wood-Working Machinery. JOHN B. SCHENCK'S SONS, Martineau, N. Y. Send for Catalogue. 118 Liberty St., N. Y. city.

PILES. A Sure Cure. Trial box only 25c. F. W. Putnam, 95 E. Broadway, N. Y.

Machinists' Tools,
 All sizes at low prices. E. GOULD, Newark, N. J.

The Caxton Press.
 Size 4 x 6 inside chase. Self-inking. Price \$14. THE BEST MADE.

The operation is rapid, and for printing Cards, Tags, &c., it cannot be equalled. LARGER SIZES \$37 and \$60. TYPE AND MATERIALS FURNISHED TO ORDER.

H. P. HUBBARD, Manufacturers' Agent,
 Room 23, 69 Church St., NEW HAVEN, CONN.

OTIS' SAFETY HOISTING
Machinery.
 OTIS, BROS. & CO.,
 No. 348 BROADWAY, NEW YORK.

\$250 A MONTH—Agents wanted everywhere. Business honorable and first class. Particulars sent free. Address J. WORTH & CO., St. Louis, Mo.

Polytechnic Chemicals, Soluble Glass, Hydrofluoric and White A. Nickel-Plating and Glass Manufacturing Articles, Steam maker's ingredients, Manures, Plasters, Feibair, Mineral White, Asbestos, Zaffre, Oxides Cobalt, Antimony, Copper, Iridium, Putty. L. FEUCHTWANGER & CO., 50 Fulton St., N. Y.

FLEETWOOD SCROLL SAW, With Boring Attach. & Flower. It will cut with Greatest Rapidity and Accuracy, the most Delicate Designs; make Inlaid or Mosaic Work, parts of Models or Small Machines, Society Badges, &c. Saws Brass 1/2 in. thick, or Wood 1 in. and under; also Shell, Horn, Ivory, &c. Unequalled for Durability and Low Cost. Price \$10 to \$15. Boring Attachment, \$5.50; Blower, \$1. Send for pamphlet, circular, and list of designs of Fleetwood's. THOMAS BROS. Manufacturers, Wilmington, Del.

SECRETS WONDERS
 And Mysteries. A 64 page Book, colored and printed on Illustrations. Sent free to all for 2 postage stamps. Address J. HITCHER & CO., Williamsburgh, New York