

moving ink stains refer to iron inks. A. First try a little strong alcohol, and, if this fails, moisten with very dilute sulphuric acid, then with a strong solution of chloride of lime, expose for an hour to bright sunlight and wash well with clean hot water.

(31) M. A. F. says: I want to make a boiler 8 inches in diameter and 20 inches long. If made of 1/4 inch copper, how many lbs. pressure will it stand per square inch, and how many tubes of 1 inch diameter shall I put in? A. You can carry a pressure of 100 lbs. per square inch with a copper boiler. 2. Will a wrought iron boiler of the same size stand as much pressure as the copper one? A. The iron boiler will stand 140 lbs. Allow a space between the tubes of from 1/2 to 3/4 inch. 3. Will the iron boiler do to run an engine 1 1/2 x 3 inches? A. The boiler is rather small, if you desire to work the engine up to full capacity.

(32) T & D. say: We have a blower, running at the rate of 3,000 revolutions per minute. Does it make any difference in the hardness of iron, if the blower is near the cupola or some distance from it? A. Within the ordinary limits of a foundry, the position of the blower will not make any material difference.

(33) E. C. B. asks: I hold that if 1 ton pressure be applied to the plunger of a hydrostatic pump, which is 1 square inch in area, the pressure on a 6 inch ram connected therewith will be 28 2/3 tons, regardless of size of connecting pipe, if the latter is full of water. My friend asserts that the hole in the connecting pipe gives the pressure, and the increase will be as its area differs from the area of the ram. Who is right? A. You have the correct idea.

(34) S. H. B. says: One of your correspondents recently asked for the correct name of what is called the blue hawk. I find, by Cone's "Key to North American Birds," that it is the peregrine falcon (Falco communis).

(35) S. H. B. says: I had occasion to test one of your answers a short time since as to silvering glass, and had good success, except that I do better without warming the solutions, and by cleaning glass as a photographer does.

(36) J. A. H. says: I have a hard black rubber ornament that I wish to fasten to a piece of hard wood. How can I do it? A. Try glycerin and white lead.

We use plumbago, etc., and that, with iron and steel filings and other dirt, gets ground into my hands so that it takes a great deal of time and labor to clean them. Can you give me a recipe for something that will take the oil and dirt off thoroughly and quickly? A. Wash your hands first with oil and sand and then with soap and water and pumicestone.

COMMUNICATIONS RECEIVED.

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

- On Separating Cobalt from Nickel. By L. S.
On Reapers. By G. H. R.
On Instinct. By E. H. R.
On the Supposed Planet Vulcan. By P.
On Poisonous Fireworks. By D., S., & Co.
On Boiler Explosions. By C. W. Y.
On Milking Cows. By A. E. U.
On Force Analyzed, etc. By T. D.

Also inquiries and answers from the following:
P. H. & C. F.—J. E. G.—J. C. W.—D. J.—E. G. M.

NOTES 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.

Inquiries 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 machinery for spinning cotton twine? Who sells acid chromate of lime? Who sells cedar board for boat-building? Who sells hair-heading machines? Where can sunflower seed be bought? Who sells machines for cutting cards? Where can railway ticket-printing machines be bought?" 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

January 30, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

- Alloy, composition, F. Raymond. 186,876
Animal trap, W. P. Cox. 186,806
Animal trap, S. Friend. 186,671
Animal trap, S. T. Stout. 186,898
Axle boxes, making, T. V. Le Roy (r). 7,482
Bag machine, M. & R. W. Murphy. 186,866
Ball and ear for buckets, A. Miller (r). 7,483
Bale tie, A. A. Goldsmith (r). 7,480
Bale tie, A. J. Hanson. 186,675
Bale tie, P. Hayden. 186,855
Barbed fence wire, A. C. Decker. 186,716
Bed bottom cover, spring, K. K. Peck. 186,759

Table listing various items and their patent numbers, including: Bedstead, invalid, W. Spanner; Beehive, H. Hatfield; Bell toy, E. C. Barton; Bessemer steel scrap, piling, P. & W. R. Hayden; Binder for books, metallic, H. H. Edwards; Binnacle screen, G. W. Chapin; Blank book, F. Bowman; Bobbin winder, A. C. Carey; Boiler, Selden & Nagle; Bolster and step, Nealon, Higgins & Knott; Book clamp, G. T. Wood; Boot attachment, J. H. Johnson; Boots, moulding soles of, J. H. Walker; Boots, etc., sandpaper roll, N. M. Seelye; Bottle tops, cover for, F. M. Piper; Bottling machine, A. Christian; Bran treating process, E. O. Pease; Breech-loading fire arm, R. F. Cook (r); Brick kiln, E. W. Bingham; Broom, A. C. Jacques; Brooms, bunching, D. Van Wicklen; Brush, making, J. M. Patterson; Butter worker, E. D. & E. W. Kitchen; Camel for raising vessels, J. S. Dowale; Can, sheet metal, A. E. Leland; Can, tin, J. C. Howard; Car brake, street, Kimpel & Porchland; Car coupling, C. M. Knowlton; Car heater, J. S. Linsley; Car starter, S. S. Vollum; Cars, draw bar for street, M. Osborn; Carpet sweepers, A. W. Stewart; Carriage jack, A. J. Tschantz; Carriage painter's easel, J. G. Mohenstein; Carving attachment for lathes, F. Arbey; Chair, F. L. Patch; Chair, barber's and dentist's, L. M. Angle; Churn, J. F. Hennessy; Churn, J. Higgins; Churn dasher, C. J. Syme; Cigar box, F. A. Braymer, Jr.; Cigars, mouth piece for, J. L. Gross; Clay picking machine, R. W. Stieneker; Cloth measuring machine, A. Brown; Clothes sprinkler, Maas & Schnellke; Coffee mill, A. Shepard; Coin wrapper, E. A. Scott; Corn planter, J. Clarridge; Corn planter, H. Jones; Corn planter, S. P. Loyd; Corn planter, J. G. & J. H. Stokesbary; Corn sheller, G. Godard; Corset, E. S. Reed; Cotton gin, P. C. Sawyer; Cotton gin, W. O. Watson; Cotton gin feeder, Coons & Van Winkle; Cotton seed planter, J. Clarridge; Cradle, J. A. Kirchner; Cultivator and corn planter, J. F. Poole; Cup, S. S. Newton; Dental instrument case, E. P. Brown; Dental plugger, C. King; Dental purposes, gold foil for, R. S. Williams; Desk, advertising, F. Vornbrock; Die for making hoes, J. C. Klein; Dough-kneading machine, E. L. Edwards; Earth auger, G. Fletcher; Earth auger, G. B. Franklin; Egg poaching utensil, Townsend et al; Electric telegraphy, A. G. Bell; Engine, duplex pumping, G. F. Blake; Engine, rotary, J. C. Thomas; Eraser and pencil combined, P. Schrag; Evaporating alkalies, Keen & Burgess (r); Explosive composition, E. Judson (r); Eyelet, S. W. Young; Faucet for baths, etc., double, H. C. Meyer; Fellies, making metal, R. W. Davis; Fence, D. R. Ostrander; Fence, farm, Ogle & Robinson; Fertilizer and seed sower, Galer & Spencer; Fire alarm signal box, G. Floyd; Fire alarm signal, C. Selden; Fire kindler, G. W. Greenwood; Fireproof curtain, W. D. Baker; Fireproof express chest, Glover & Morris; Fireproofing composition, W. J. Ryckman; Flavoring powder, W. P. Clotworthy; Flour sifter, C. F. Wickwire; Fruitbasket, C. C. Roberts; Furnace, etc., smoke consuming, K. M. Jarvis; Furnaces, heat fender for, J. B. Chandler; Game apparatus, Pitman & Jacobson; Gas, hydrating chlorine, W. Maynard; Gas extinguisher, automatic, T. T. Fryer; Gas from petroleum, etc., J. Rigby; Gas purifier, P. Munzinger; Gas regulator, G. E. Bingham; Gasoline burner, J. H. Bean; Gate, J. Coffits; Gate latch, J. J. Deal; Gates, operating, A. R. Sherman; Grasses, exterminating noxious, L. Martin; Grocer's scoop, W. T. Sherer; Harness pad skirt loop, J. R. Stone; Harness saddle, S. E. Tompkins; Harrow, D. Couch; Harrow, A. F. Davis; Harrow, W. C. Moore; Harrow and cultivator, H. H. Miller; Harvester, Lomont & Brown; Hat rack, L. F. Gehr; Heater, J. Guardiola; Heater, portable, M. Waterbury; Heating apparatus, hot water, E. W. Kempin; Heating soldering irons, etc., J. S. Hull; Helmet light, H. K. Nutze; Hollow auger, G. N. Stearns (r); Money box, H. N. Tennant; Horse hay rake, B. Owen; Horse power, Rhodes & Holden; Horse shoe nails, making, H. P. Fowler; Hose to coupling, attaching, E. A. Leland; Hydraulic elevator valve, T. Meikle; Hydraulic motor, W. J. Lane; Ice cream receiver, J. D. Taber; Ice elevator, L. Zistel; Lamp, Hinrichs & Reistle; Lamp, W. Staehlen; Lamps, heater attachment for, C. A. Howard; Lap board, G. L. Price; Lath sawing machine, J. W. Calkins; Lath for irregular bodies, F. Arbey; Lightning rod coupling, Reyburn & Martin; Line fastener, D. S. Coonrad; Loom, A. Gartenmann; Loom shuttle, A. Mallowell; Mail bag, E. W. Glover; Meal cabinet, J. M. Evans; Meat cutter, etc., Goodchild & Hay; Millstones, dressing, L. Moore; Millstones, dressing, Off, Cookson & Rastetter;

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