

(25) J. C. asks: What is the amount of horse power claimed for the steamer Great Eastern? A. 3,800 horse power nominal.

(26) C. C. D. asks: 1. Can you tell me how to bend spring steel wire 17 size? I find in trying to bend the same that it most always breaks, and cannot get it in the proper shape that I wish. A. If you use a good quality of wire there will be no difficulty in coiling it. Piano wire makes an excellent spring and requires no tempering. 2. After the temper has been taken out how can I retemper it to its former stiffness? A. Springs made of ordinary steel wire are hardened by heating them to a cherry red and plunging them into cold oil. They are tempered by heating them in a flame until the oil blazes. They should be turned constantly to insure an even temper throughout. In some cases it is necessary to "blaze them off" more than once. 3. How to nickel plate the same: will a battery be required? A. See p. 209, Vol. 38, SCIENTIFIC AMERICAN.

(27) H. B. asks (1) how to make a solution for battery of 1 zinc plate 3x4 inches, and 2 carbon plates 3x4 1/2 inches. A. Dissolve two parts of bichromate of potash in twenty parts of warm water. When cool add one part of sulphuric acid. 2. How far apart should the plates be? A. About 1/2 inch.

(28) J. C. H. asks how precipitated chalk is made to adhere to form balls such as druggists keep for sale, for the face. A. By subjecting it to heavy pressure while slightly moist.

(29) J. C. writes In your issue of July 26, page 59, question 26, J. D. asks [See his question and your answer]: Assuming 306 cubic feet to be discharged under 3 1/2 foot head, and 347 feet with same apertures under 4 1/2 foot head, flowing on a 13 1/2 foot overshot wheel in both cases, you state the power of the wheel will be 11.8 and 13.4 horse power respectively; if I read the questions and answers correctly is this so? I make it 306x62.5x13.5 = 783x75 = 576+ actual H. P. 33000 and 347x62.5x13.5 = 887x75 = 656+ " "

Assuming the duty of the wheel to be 75 per cent the value of the water. A. You are right. The error, whatever it was, evidently affected proportionately both calculations. 2. Is 306 and 347 horse power the actual discharge under the above conditions (aperture 1 1/2 by 4 1/2 inch)? A. Very nearly; in practice probably 5 per cent should be deducted on account of form of opening and friction. 3. What is the best recorded duty of overshot wheels? A. Bresse records 80 per cent, Daubisson, very large wheels, 83 per cent, and Morin claims to have obtained experimentally 90 per cent. 4. What is the average duty of engines and boilers per pound of coal per horse power per hour, in New England woolen and cotton mills, after being in use from 6 to 10 years—approximately? A. We are not aware of any experiments to determine the duty of the class of engines you mention. 5. What is the best coating for a turbine wheel when the water has the effect to rust it and form tubercles on the buckets? A. We think if well painted with brown oxide, ground in pure linseed oil, it would be well protected.

(30) "Operator" asks: 1. How can I make a small, cheap furnace to melt brass, zinc, etc., say from an ounce to one half pound, and what fuel should be used to get heat enough? A. A common cylindrical coal stove connected with a chimney having a good draught, may be used for this purpose. Use anthracite coal for fuel. 2. Can a person make an article (patented) for his own use without infringing; for instance if I should make a pair of Bell telephones for my use, would it be infringing? A. See Rights of Investigators, p. 128, Vol. 39, of SCIENTIFIC AMERICAN.

(31) R. B. N. writes: I have a set of German silver drawing instruments, but from bad management the steel has rusted and the silver dulled; will you please inform me through your "Notes and Queries" how I can make both bright again? A. The only remedy is to repolish by means of emery and crocus wheels or by hand, using fine emery paper and finishing with crocus cloth.

(32) F. G. will probably find the following tonic for the hair as good as any he can use: Take one ounce of sage and steep it in boiling water for ten minutes; strain and add two ounces of glycerine, one quarter ounce of powdered borax, one quarter ounce of lac sulphur, one quarter ounce of tincture of cantharides, bergamot sufficient to perfume. Apply twice a week with the hand, and rub thoroughly in. It will remove dandruff and strengthen the growth. It will also, it is said, prevent gray hairs.

(33) C. S. Y. writes: 1. I wish to make a battery like one described on page 91, current volume of SCIENTIFIC AMERICAN. How is the battery fluid made? A. Dissolve two ounces bichromate of potash in one pint of warm water. When cold, add slowly two ounces sulphuric acid. 2. How can I fasten a wire to the flat surface of the carbon so as not to be eaten off by the acid? A. Drill a small hole in the carbon, taper the end of the wire, and twist it tightly into the hole. Heat the carbon plate so that it will just melt paraffine, and apply a little paraffine to the carbon around the wire. After it has soaked through, allow it to cool, and place a drop of melted paraffine over the lower end of the wire. Care must be taken to avoid saturating too much of the carbon with paraffine, as this renders the carbon useless. 3. How is a Bunsen battery made? A. For full instructions for making batteries of various kinds see SUPPLEMENTS 157, 158, and 159. 4. What is the name of the metal I inclose, and what is it used for? I have a piece the size of a chestnut. It was found in Peru about 22 years ago. A. It is an amalgam of silver and mercury, containing also lead, antimony, copper, and a trace of gold—probably not of natural occurrence.

(34) Q. E. D. asks: 1. Please to tell me how I can make a common electric call bell ring when the circuit is open. I want to connect it with a door, so that when the door is opened the bell will ring. A. A single stroke bell may be made to strike on opening the circuit by employing the magnet to hold the hammer away from the bell, and providing a spring, or its equivalent, to carry the hammer against the bell when released by the magnet. You might operate a vibrating bell by

employing a local battery and a relay; but an open circuit battery like the Leclanche or the Fuller would be far better. If such were used, you would need to arrange your door fixtures so that the circuit would be closed on opening the door. 2. How many feet of outdoor wire are there in a pound? A. There are about 22 feet of No. 10 iron wire in a pound. 3. Do old battery zincs that have not been used for some time have to be amalgamated again before they will work? A. If the zincs have not a coating of mercury they should, of course, be re-amalgamated.

(35) C. E. G. asks the Proportion of magnesia, zinc, etc., for making imitation meerschaum, and how it is prepared. A. To a hot concentrated sirupy solution of zinc chloride add powdered magnesia to form a thick paste, which should be moulded into form as quickly as possible, and after baking at as high a heat as it will permit without injury, cover it with powdered caustic lime and let it cool slowly.

(36) O. D. writes: 1. I have often seen sumac quoted in the New York market. Is it the kind that grows native in central New York; if so, what portion is used and how is it prepared for shipping? A. Yes; see p. 199, vol. 36, and 204 (67), vol. 37, SCIENTIFIC AMERICAN. 2. What kind of a crucible is required for fusing iron, and where are they to be found? A. Use a blacklead (graphite) crucible. See "Business and Personal" column. 3. I see no advertisement in your columns of minerals. Where can tungsten, silver, nickel, etc., be purchased? A. Any metallurgist or chemist can obtain them for you.

(37) E. I. B. asks for the name of some good book on the assaying of gold and silver ores. Something that is not too expensive and that is practical. A. Consult Rickett's "Notes on Assaying."

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

S. L.—Marcasite—sulphide of iron.—H. M. H.—Sample appears to contain a gold telluride, but the amount available was too small for confirmatory tests.—M. B.—The ore is an argentiferous (silver bearing) galena—lead sulphide. If the sample is a fair representative of the ore body the property is valuable. A series of assays would determine its actual richness.—F. B. F.—It is an impure ferruginous clay or ochre containing a sufficient quantity of iron oxide to, if properly washed and roasted, be used as the basis of a cheap paint for iron work, etc.—M. E. S.—The ore contains nearly 20 p. c. of copper. The value of the property will depend somewhat upon its location.—M. Bros.—The rocks contain shell lime stone and a semi-decomposed feldspathic. The former, if properly kilned, will make a good agricultural lime, and the latter may also be used with advantage as a dressing for some crops.—Correspondents who sent supposed tin ore and antimony please send address.

COMMUNICATIONS RECEIVED.

- On Many Ported Slide Valve. By F. G. N.
On the New Optical Delusion. By P. J. W. G. S.
List of Exports from Augsburg to the United States. M. O.
On Compressed Air Theory. M. R. C.
On Local Government. R. P. P.

[OFFICIAL.]

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending August 12, 1879, AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Table listing inventions and their patent numbers, including items like Adjustable roller and stalk cutter, Advertising umbrella, Aerial ship, Animal trap, Atmosphere moistener, Axle, carriage, H. Killam, Baking pan, Wassner & Yoe, Balance wheel, J. V. Morton, Bale tie, cotton, T. J. Torrains, Baling press, M. C. Hall, Bed clothing, O. S. Baker, Bird and similar cages, B. A. Drayton, Bit stock, O. W. Stow, Bobbin, W. T. Carroll, Bolting screens, clearing the meshes of, Holcomb & Heine, Bracket, M. J. Burkarth, Brick kiln, T. S. Hawkins, Bricks, manufacture of white or light colored, T. C. Clark (r), Broiler, C. F. Henis, Brush, A. L. Sonn, Brush, scouring and scrubbing, J. S. Dunham, Buckle, W. J. Carnes, Jr., Butter package, A. White, Button hook, G. L. Platt, Can guard or jacket, Perkins & Browne, Capstan, power, T. W. Hyde (r), Car coupling, E. R. Hollenbeck, Car coupling, S. J. Keim (r), Car coupling, E. M. Williams, Car, iron railway, T. E. Allison, Car, steam street, J. Aspey, Car wheel, J. Rigby, Car wheel, J. Taylor, Carpet stretcher, J. S. Hendrickson, Carriage spring, D. S. Bailey, Caster, furniture, O. Pederson, Cattle, horn tip for, G. W. Carroll, Centrifugal machine, S. S. Hepworth, Chain, ornamental, J. P. Carpenter, Check, lunch and baggage, H. M. Richards, Cheese cutter, Blockett & Felix, Churn, W. M. Myers, Churn, power, A. Miers, Clock, J. Dittmeier, Coffee pot, C. & W. Kirkpatrick, Collar, A. U. Waterman, Commode, J. W. Sprint, Cooker and drier, steam feed, T. E. Daniels, Cop tube, A. Ball, Copies of writings, producing, E. Du Zuccato (r), Corset steel, P. Ladin, Cotton chopper, R. E. Lee, Coupling device for lines, etc., B. Bird, Cultivator, J. L. Buskett, Cultivator, C. Hargrave, Cultivator, O. Olson, Cultivator, R. B. Robbins, Cultivator, C. Stephens, Curd cutter, H. H. Potter, Damper, automatic, H. W. Taber, Dishes and table cutlery, apparatus for washing, E. P. Walling, Draught equalizer, A. J. F. Ehrlich, Dredging machine shovel, J. Canan, Drying house, J. Kennedy, Drying house, fruit, S. W. Craven, Egg crate, J. L. Stevens, Egg tester, J. G. Halsey, Electricity, reproducing objects by, R. Barrie, Elevator gate, automatic, J. F. Newhall, Fare register, J. B. Benton, Feed water heater and condenser for steam boilers, R. Llewellyn, Fence, barbed, G. M. Fish, Fence wire, barbed, J. A. Duncan, File, newspaper, J. J. Christie, Filter, water, L. Brach, Finger nail cutter, A. McDonald, Firearm, magazine, W. H. Elliot, Fire extinguisher, C. L. Delmage (r), Fire extinguisher, automatic, H. S. Parmelee, Fire extinguisher automatic valve, F. Grinnell, Fires on shipboard, etc., apparatus for extinguishing, J. H. & T. E. Connelly, Flue boilers, cleaner for vertical, C. M. Miller, Flue boilers, thimble for vertical, C. M. Miller, Fluid propeller or motor, J. B. Vliet, Folding chair, J. Weber, Jr., Fountain, F. C. Boswell, Furnaces, construction of domes or crowns of gas and ether, W. Smith, Furnaces used in the manufacture of iron and steel, lining of cupola, reverberatory, Bessemer, and other, G. J. Snelus, Garment stiffener, A. M. Day, Gas maker, W. Smith, Gas, scrubber or purifier for illuminating, A. W. Wilkinson, Gas washing machinery, T. K. Lees (r), Gate, J. Malone, Gate, W. N. Fort, Governor and self-adjusting cut-off, C. B. Cook, Grain binder, S. D. Locke, Grain drill, F. M. Steves, Grain drill shoe, J. T. West, Grain elevator, pneumatic, J. B. Stoner, Grain for aftermilling, preparing, S. Potts, Grain meter, J. B. Stoner, Grain separator, L. W. Hasselman, Grapes, restoring moisture to, C. J. Renz, Grass, paper, etc., cutter, R. C. Fletcher, Grate, J. B. Geysler, Gun, magazine, Tiesing & Kennedy, Gymnastic apparatus, W. C. Shimonock, Hame fastening, J. L. Tilly, Harness, C. R. Stanhope, Harrow and plow, combination, C. J. Daniels, Harvester, M. L. Gorham, Hat shade, D. C. T. Davis, Hat and cap sweat band, T. W. Bracher, Hats, finishing, D. Wheeler, Hinge, W. H. Hart, Hinge, gate, T. Crane, Horse detaching device, E. Stevens, Horse toe weight, H. Redmon, Jr., Horseshoe, G. Bacon, Hydrant, P. H. Baermann, Inhaler, vaporizer, and douche, J. B. Haight, Injector, steam boiler, D. Fergus, Jugs, etc., attaching tops to molasses, A. A. Adams, Kneading dough and working butter, device for, H. A. Riceout, Knitted work, transferring mech. for, B. F. Shaw, Knitting machine, B. F. Shaw, Knitting machines, web holding mechanism for, B. F. Shaw, Lamp, C. F. Spencer, Lamp, electric, J. B. Fuller, Lamp reflector holder, F. A. Dunning, Lamp stand, J. Robinson, Sr., Latch, reversible, H. E. Russell, Jr., Lemon squeezer, S. D. Samuels, Life preserver, F. Vaughan, Lubricator, M. Lloyd, Lumber drier, J. J. Curran (r), Magneto-electric machine, Z. T. Gramme, Mail package, G. Bassett, Medical compound for catarrh, M. Tremblay, Metal can, hermetically sealed, J. Broughton, Middlings separator, R. J. Skinner, Milk cooler, D. Van Hovenberg, Milk, vessel for setting, M. C. Weld, Mining drill, R. C. Fishburn, Mining machine, S. F. Lechner, Mirror, hand, C. E. Page, Motion transmitter, S. Dennis, Motor, W. C. Reicheneker, Mower, J. H. Jones, Muffle furnace, J. R. Clark, Nut, top prop, F. A. Bradley, Ore separator, revolving, H. F. Kennedy, Overalls, P. Banner, Paper box, C. E. Bolchini, Paper, making water and fireproof, H. S. Lucas, Papier mache articles, making, J. W. Bryant, Paring, coring, and quartering apples, machine for, T. G. McConnell, Pen, stylographic fountain, C. H. Downes, Permutation lock, J. McCaskey, Pianoforte, E. Kaps, Piano lock, E. L. Gaylord (r), Pitchers, binged top for molasses, H. Wright, Plow, A. Goodyear, Plow, A. Newson, Plow, W. J. Pirkle, Plow standard, G. C. Avery, Plow, sulky, I. R. Gilbert, Pocketbook recording device, H. C. Baker, Polishing apparatus, E. Ford, Polishing powder from coal ashes, utensil for making, B. F. Hughson, Portable boiler, T. McBride, Printer's composing stick, W. H. Price, Printing press, cylinder, J. L. Cox, Propeller, screw, E. A. Heath, Pulp machine, wood, J. Taylor (r), Pump, W. J. Pirkle, Pump and windlass, ship's, L. H. Lyqq,

Table listing inventions and their patent numbers, including items like Pump, steam, J. Gates, Pump valve, steam, G. W. Dixon, Rail supporting shoe plate, J. Keller, Rail tie, A. P. Whitting, Railway crossing gate, Meehan & McLean, Railway frog, M. McAlleenan, Railway frog, J. T. Richardson, Railway gate, automatic, McAneeny & Schobert, Railway portable, T. E. Allison, Raising and moving heavy bodies, machine for, T. Thayer, Reflector, Bryant & Russell, Reverberating furnace, H. C. Kriete, Rocket, C. Morris, Sash holder, J. B. Yeagley, Scraper, J. A. Peek, Screw cutting die, J. F. C. Rieder, Scythe, C. Roby, Sewing machine, D. M. Legat, Sewing machine case, A. Steward, Sewing machine, wax thread, S. W. Wardwell, Jr., Sewing straw braids, machine for, C. H. Wilcox, Shade supporter, J. Graff, Sheep shears, E. Wilkinson, Sheet metal can, Follett & Fellows, Sheet metal vessel, M. Campbell, Shoe fastening, W. C. Egan, Shoe stiffening, N. J. Simons (r), Shot grading machine, lead, Granniss & Tracy, Shot screening machine, Granniss & Tracy, Side stick and quoin, G. T. Gosorn, Sled brake, P. C. Doyle, Sounding board, L. Chase, Spear, eel, C. M. Knowles, Sprinkler, M. H. Campion, Sprinkler, J. H. O'Connor, Stage, carpenter's and painter's, J. S. Schenck, Stall cattle, J. B. Greenhut, Staple maker, T. Tracy, Steam boiler attachment, F. W. Kremer, Steam boiler, vertical, V. Penard, Steam engine, compound, M. B. Harvey, Steam engines, apparatus for regulating the supply of steam to, Koch & Durham, Steam generator, C. M. Grannis, Stilts, J. F. Schultheis, Stone, artificial, H. A. Comins, Stove, S. H. Bingman, Stove, W. C. Davis, Stove, gas and vapor, W. Bliesner, Stove, cooking, T. S. Mitchell, Stove grate, J. Grossius, Straw burner boiler, H. Gillett, Sugar in centrifugal machines, apparatus for, Liquor block, A. A. Goubert, Suspender pulley, J. Davey, Switch operating rods, deflection stand for, A. G. Cummings, Syringe, water bag, M. Mattson, Tag, H. C. Bainbridge, Tag, merchandise, H. M. Reis, Tanner, hide and skin, G. King, Telephone and microphone switch, Anderson & Briggs, Telephone, electric, S. H. Short, Tellurian, S. D. Engle, Tether, animal, J. W. Ricker, Time lock, Kook & Hall, Toy, pistol, J. L. Williams, Tramway, C. A. Edge, Tramway rail fastening, H. T. McNeale, Tramways, permanent way for, S. Nicholls, Truck for moving houses, B. Sperry, Truck for moving oil cloths, etc., B. K. Parker, Tunneling apparatus, pneumatic, L. Taskin, Umbrella drip cup, W. H. Ellis, Valve, F. Grinnell, Valve, stop, E. C. Post, Vehicle rub iron, A. Palm, Vehicle wheel, F. W. Kuehn, Vehicle wheel, D. Mulock (r), Wagon, buckboard, C. W. Saladee, Wagon, spring road, D. H. Emery, Walls and ornaments, composition for, J. B. King, Wash board, E. M. Stevens (r), Washing machine, J. Meek, Washing machine, H. Smoot, Waste pipe connection for wash basins, etc., G. E. Potter, Watch and clock safety pinion, Moseley & Bitner, Watch stem fastener, G. F. Dobeicki, Watch winding device, Zinn & Porter, Waterway for street washers and houses, M. A. Penn, Whip socket attach. to brake locks, S. S. Hurlbut, Wire splicer and twister, H. P. Wilson.

TRADE MARKS.

Table listing trade marks and their owners, including items like Articles of stationary, E. A. Gray, Cigars, G. Bence, Cigars, Rokohl & Co., Cigars, cigarettes, and smoking tobacco, Straton & Storm, Cigars, cigarettes, and cheroots, Rosenthal Bros., Chewing and smoking tobacco and cigarettes, J. Allen & Co., Coal tar dyes or coloring matters, A. F. Poirrier, Coffee, A. L. & B. L. Ackermann, Jr., Liquid preparation for the complexion, C. Stoddard, Polishing fluid and paste, Baxter & Hugboun, Preparations of ground coffee, J. B. Carriere, Punch, C. H. Graves & Sons, Rivets, burrs, and chains, Holmes & Co., Sarsaparilla or blood purifier, G. L. Carroll, Shirts, drawers, overalls, engineers' jackets, and bathing suits, D. W. J. Hutton, Spurs, A. Buermann, Table cutlery, pocket cutlery, and butcher knives, Lanfers, Frary & Clark, Watches, C. Perret.

DESIGNS.

Table listing designs and their owners, including items like Basket rack brackets, C. P. Howard, Caster bottles, J. B. Beach, Center piece, H. Berger, Fork and Spoon handles, E. C. Moore, Gimp, C. Weinberg, Ice pitchers, H. Berry, Umbrella tip cup, W. H. Blake.

English Patents Issued to Americans.

From August 1 to August 5, inclusive. Bed linings, W. N. Blakeman, Jr., New York city. Feather machinery, M. S. Heymann et al., N. Y. city. Imitation feathers, M. S. Heymann et al., N. Y. city. Letter file, J. S. Shannon, Downer's Grove, Ill. Railway brake, O. B. Kennell, Buffalo, N. Y. Sewing machine, L. B. Miller et al., Elizabeth, N. J. Vaginal syringe, R. H. Woodward, New York city.