

(29) R. F. says: Is it not a generally accepted theory that, in order to double any given speed of a vessel propelled by steam, it requires four times the power? If so, why is it that a piece of timber shaped to the model of the hull of a steamer and drawn through the water by means of a string passing over pulleys, and with weight attached sufficient to pull the hull readily, has its motion accelerated to just double the speed when twice the weight is applied to the cord? A. You confound force and power. Suppose, in your experiment, the strain of the cord is 1 lb. and the speed 1 mile per hour, in the first case, and that, on increasing the strain of the cord to 2 lbs., the speed is 2 miles per hour. Then the power exerted in the second case, where twice the strain moves with twice the velocity, is 2x2=4 times the power exerted in the first case. This would be the deduction from the experiment as you have stated it; but your result is so much at variance with those obtained by other experimenters that we hesitate to accept it.

(30) B. N. G. asks: How much pressure of steam to the square inch will a tin can, that holds 1 quart and is made of medium quality tin, carry with safety? A. Do not exceed a pressure of 10 lbs.

(31) F. B. R. says: In an argument as to economy of exhaust jackets around steam engine cylinders, A contends that the exhaust keeps the cylinder warm, while B argues that the exhaust continually sweeps away the heat from the cylinder down to the temperature of exhaust in non-condensing engines, say to 212° at least. We noticed in your description of "Maxim's engine," May 6, 1876, that you uphold A.'s view of the case. Please tell us if that is the true theory. A. An engine jacketed with exhaust steam would have some advantage over another in which the cylinder was exposed to the air; at the same time, as long as the temperature of the interior of the cylinder is greater than that of the exhaust steam, the action described by B. must take place to some extent.

(32) H. A. S. asks: 1. Of what size should cedar logs be for an aqueduct, if bored with a 2 inch hole, to sustain a pressure of 100 feet of water? A. From 4 to 5 inches in diameter. 2. How thick should wrought iron pipe be for the same purpose? A. About 7/8 of an inch.

(33) E. E. C. asks: What pressure of gas would be required to throw the oil from a well 1,050 feet deep, 4 inches in diameter? A. A pressure per square inch equal to the weight of a column of oil with 1 inch cross section and 1,050 feet high, with a slight addition to overcome friction.

(34) J. J. R. says: I have an ordinary furnace in the basement of a three story house. The furnace has a sheet iron cover which becomes hot and radiates in the cellar. Could I check the radiation by blanketing the cover with asbestos or other felting? A. Yes.

(35) J. E. T. asks: What is the horse power of a stream of water 10 feet deep and 10 feet wide, acting on an improved turbine under the most favorable circumstances? A. About 75 per cent of the full effect of the water.

(36) T. W. says: We steam our handles, which are made of ashwood, but find that a great many split and break in bending; is there any preparation we can put into the water to make the wood soften so it will not break? A. We think not. Good bending apparatus, thorough steaming, together with at least a fair quality of wood, will generally insure success.

(37) H. M. asks: 1. Can you tell me of an alloy, not containing copper, that would answer for the working parts of models? A. Typemetal, composed of lead and antimony, will answer for many purposes. 2. What is the melting point of copper? A. About 2,500° Fahr.

At what speed must I run an emery wheel 3 inches in diameter? A. At from 3,000 to 3,500 revolutions per minute.

(38) M. M. H. asks: Will as much water fall into a vessel at an angle of 45° or 60°, driven by the wind, as when falling perpendicularly? A. No.

(39) F. C. R. asks: 1. Will a horizontal boiler 2 3/4 feet long by 14 inches diameter be large enough to furnish steam for an oscillating engine 2 1/4 inches diameter by 4 inches stroke, making 100 revolutions per minute? A. It is rather too small. 2. Would such a boiler, of black sheet iron, carry 40 or 50 lbs. of steam with safety? Thickness of iron is 1/2 of an inch. A. It will carry about 40 lbs., if well built.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated: A. H. D. P.—The gas is probably carburetted hydrogen. The water contains a large percentage of chloride of sodium. This might be recovered by evaporation.—W. J. C.—Your specimens have been mislaid. Minerals should be sent in a separate package, labeled with the name and address of the sender.—W. W. K.—It is magnesium limestone.—E. E. H.—It is a variety of white pipe clay.

COMMUNICATIONS RECEIVED.

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

- On Crime and its Cause. By T. D.
On the Potato Bug. By E. S. G.
On a Check-Mark. By H. S.
On Logwood. By L. S.
On the Baroscope. By D. M.
On Propelling Ships. By D. H. McC.
On the Glacial Period. By C. C. F.
On a Mirror. By M. McG.
On Flax Growing in the West. By S. E. W.

Also inquiries and answers from the following: W. M. A.—D. M.—I. S.—W. J. B.—J. C. D.—J. L. B.—R. B.—B. A. A. B.—H. McM.—W. B. W.—P. H. W.—N. P.—F. W.—W. A. R.—P. E. A.—C. E.

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 an ash felt covering for steam boilers? Who makes steam traps? Whose is the best theodolite? Why do not makers of malleable glass advertise in the SCIENTIFIC AMERICAN?" 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, May 30, 1876, 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.

Table of inventions including: Acid powder, J. V. Hecker; Air or stretch trap, C. W. Garland; Alarm, burglar, J. H. P. Insee; Amalgamator, L. Hinckley; Animal weaving bit, McGee et al.; Annunciator, electric, Axthelm & Pease; Annunciator, electric, A. S. Wetmore; Auger, earth, C. W. Twigg; Auricle, J. H. Batchelder; Bale tie, J. L. Randolph; Bale tie, J. H. Snyder; Bale tie wire, bending, H. W. Putnam; Barrels, protector in tapping, B. Brown; Baskets, making, L. Porter; Battery, galvanic, R. Einbigler; Battery, galvanic, J. E. Watson; Bed bottom, spring, W. I. Winne; Bed dusting rack, J. Foster; Bed frame, adjustment, W. J. Myers; Bed lounge, W. E. Buser; Bed lounge, J. Hocy (r); Bedstead, sofa, J. Reich; Bedstead, wardrobe, J. H. Horsfall; Bedstead, wardrobe, J. W. Post; Bell, door, J. M. Hinchey; Billiard tables, lighting, H. C. Hayt; Bird cage, G. F. J. Colburn; Bird cage, G. Günther; Bird cage, O. W. Taft; Bolt, Robinson & Ferris; Bolt for trunk, tray, G. Crouch; Bone black, reactivating, J. Gandolfo; Book case, revolving, J. J. Crandall; Book-stabbing machine, Hickok & Cooper; Boot and shoe heel, J. W. Jones; Boot spring shank, S. P. Littlefield; Bottle stopper, M. J. Hinden; Bottle stopper, P. Miles; Boxforbottles, J. Matthews; Bridal bit, E. Lillenthal; Broom, Kellogg & Bunker; Bucket and cooker, dinner, F. Zugr.; Buckle, A. B. Shaw (r); Buckle, L. A. Sprague; Buildings, metal cover for, Belt & Perkins; Burners, shade for gas, W. F. Bonnell, Jr.; Bu ter worker, C. Plyers; Can, meat, J. A. Wilson; Can, oil, W. H. & W. J. Clark; Canister, W. T. Sherer (r); Car axle lubricator, J. M. McDonald; Car brake, J. Blanshan; Car coupling, N. Darrow; Car coupling, H. H. Brown; Car coupling, J. W. Jones; Car coupling, W. E. Leonard; Car coupling, J. F. Koehm; Car coupling, H. O. Werner; Car coupling tightener, W. B. Dunning; Car dumping, D. Manuel; Car heating apparatus, F. A. Miller; Car starter, Moschowitz & Jasper; Car trucks, shifting, R. H. Ramsey; Car wheel railway, R. N. Allen (r); Carpet stretcher, J. S. Ingham; Carpet stretcher, M. W. Knox; Carriage step, C. H. Gould (r); Cartridge, A. Hall; Chair, reclining, J. W. McDonough; Chair seats, spacing, A. P. Johnson; Chimney cowp, J. J. Dambach; Churn, Frank & Kisseling; Cisterns, water-filtering, S. E. Mosher; Clamp, jointer's, G. A. Naumann; Clasp, garment, S. M. Allen; Clay wheels, operating, W. A. & T. Ellis; Clothes pounder, E. R. Swan; Clothes sprinkler, Ballou & Woerd; Coffee polish, C. H. Nichols; Coffee pot, C. Vanderbeck; Comb, back, J. W. Fleischmann (r); Compass, mariner's, S. Bent; Connecting rod, extension, A. G. Lull; Cotton cleaner, seed, W. L. Crowson; Cultivator, tooth, J. Mitchell; Cuspador, J. Pfund; Dead centers, overcoming, T. L. Hubbard; Dental heater, L. W. Clark; Digger, potato, A. Rigby;

Table of inventions including: Door hanger, W. G. Collins; Drill, double bitted, W. H. Yarborough; Drilling machine, rock, J. B. Waring; Duster, feather, S. M. Hibbard; Ear ring, W. P. Yeoman; Ejector, steam, W. Ebbitt; Elevator, M. E. & O. T. Dozier; Engine, hydraulic, W. Smith; Engine, pumping, F. W. Kottgen; Engine, steam, C. Duecker; Engine valve gear, Sulzer & Ernst; Evaporating pan, S. S. Connor; Explosive compound, C. G. Bjorkman; Faucet, P. Skelly; Fence, barbed iron, E. Sims; Fertilizer, A. W. Rowland; Fifth wheel for vehicles, P. La Belle; Fire extinguisher, J. Block; Fire kindler, B. Bicknell; Flagstaff holder, A. Kochel; Floor, tessellated, S. P. Grocock; Flue cleaner, Hobbs & Johnston; Furnace grate, W. J. Smith; Furnaces, spark arrester, etc., for, H. Pindar; Gas distributor, J. R. Shirley; Gas engine, A. De Bisschop; Gas fixture, J. McHenry; Gas lighter, automatic, K. Vogel; Gas motor engine, N. A. Otto; Gas regulator, G. W. Hambright; Gas stoves, oven for, J. R. Shirley; Generator, lamp steam, H. Fritz; Girder, metallic, J. L. Nostrand; Governor, speed, J. M. King; Grain binder, H. H. Bridenthal, Jr.; Grain hulling machine, J. A. A. Buchholz; Grain weigher, J. T. Carmony; Grape vine support, Z. F. Mahorney; Grate, W. H. Lotz; Guns, dart for air, A. W. Gifford; Hair crimper, W. F. Drew; Hammer, drop, F. H. Richards; Harness, J. L. White; Harness clamp, J. McCormick; Harvester, J. H. Edward (r); Harvester, J. H. Edward; Harvester, A. T. Nord; Harvester rake, D. H. Kime; Heater, steam, A. Van Horn (r); Hedge, plashed, D. M. Kirkbride; Hemp and flax brake, L. E. Burdin; Hook fastening, suspension, W. H. Haines; Horse boot, H. B. Cook; Horseshoe nails trimming, A. H. Caryl; Hose goods, H. G. Hubbard; Hydrant, J. T. Davis; Hydrant, J. Farnan; Ice cream freezer, J. W. Olmsted; Ice machine, J. F. Gesner; Indicator, station, C. A. Evans; Insect powder gun, C. B. Dickinson; Iron ware, enameled, F. G. Niedringhaus et al.; Japan or varnish, base for, W. P. Jenney; Key hole guard, La Blanc & St. Pierre; Knife rack and rest, A. R. Byrkit; Knife scouring machine, H. Symonds; Knives, handle for pocket, J. W. Gardner; Knitting machine, rotary, T. Langham; Laddles, stopper for pouring, W. H. Haws; Lamp chimney, E. Tolman, Jr.; Lamp extinguisher, G. W. Martin; Lamp steam generator and boiler, H. Fritz; Latch, door, O. H. Gilbert; Leather-creasing machine, J. B. Stetson; Loom, E. B. Bigelow; Mail bags, attaching tags to, G. H. Fayman; Mangle, F. Kricklahn; Marker, land, J. Augenpurg; Meat cutter, J. Hughes; Mechanical movement, Jordan et al.; Mechanical movement, M. G. Mosher; Mechanical movement, H. Olsen; Mechanical movement, K. Vogel; Mill, bark, O. Coogan (r); Mill feeder, J. D. Mines; Mordant, F. J. Bird; Mower, R. D. Thomson; Mower, lawn, J. C. & C. J. Sturgeon; Mowing machine, C. B. Martin; Music leaf turners, C. P. Brown; Nail extractor, M. H. Frank; Nail screw, J. Gubbel; Nut lock, M. A. Spafford; Nut lock, I. Van Kuran; Oil, resinous substance from, W. P. Jenney; Organ stock, planing metal, S. C. Symonds; Organ stop action, reed, J. Florey; Organ stop action, H. Smith; Organ treadle, adjustable, J. S. Robinson; Organs, sub bass for reed, R. E. Letton; Overalls, A. R. Jeschick; Packing, asbestos, J. S. Rosenthal; Pall and stove, ash, F. G. Ford; Pall, milk, M. G. Blinn; Pan, baker's, W. H. Harris; Pan, baking, L. E. Brown; Pan shield, S. Hauck; Paper mill bed plate, W. E. Taylor; Photo-chromic prints, producing, L. Vidal; Piano action, J. W. Holmes; Picture exhibitor, pocket, C. H. Thompson; Pill-coating machine, H. C. Neer; Pipes, etc., coating for, J. McCabe; Planer-reversing motion, C. Van Haagen; Planer pressure roll, J. P. Burnham; Planter, corn, G. Lambert; Planters, check roller for corn, J. B. Gale; Plow, G. J. Overshiner; Plow, Parker & Downing; Plow, W. H. Sutton; Plow moldboards, annealing, Babcock et al.; Plow moldboard, treatment of, J. S. Robinson; Plow point, W. H. Trisler; Plow sulky, J. Warwick; Press, copying, G. C. Taft; Press, cotton, S. H. Gilman; Press, power, B. G. Martin; Privy vaults, cleaning, C. H. Voue; Propeller, steering, F. J. Ashburn; Pulley block, C. J. Herweg; Pulley, expansion, Shackle & Neptune; Pulp from wood, producing, J. T. Averill; Pump attachment, S. J. Adams; Pump, chain, E. A. Van Sant; Pump, double-acting force, G. W. Hooper; Punching and shearing metal, I. S. Van Winkle; Radiator, steam, J. O. Cope (r); Radiator, steam, J. R. Reed; Railway gate, E. P. Spahn; Railway rail joint, C. Barker; Railway switch, J. M. Buckley;

Table of inventions including: Railway switch stand, J. H. Ainsworth; Railway track crossing, Gray et al.; Rake, horse hay, G. M. L. McMillen; Refrigerator barrel, R. C. Armstrong; Register, hot air, Seavey & Storer; Registering apparatus, J. S. Elliott; Regulator, draft, W. H. Gerrish; Resinous substance, W. P. Jenney; Revolver, S. Forchard; Rope, baling, G. D. Jcwett; Sad iron holder, S. J. Ward; Sash balance, Fowler & Adam; Sash fastener, E. Stannard; Saw, jig, W. I. Winne; Sawmill dog, D. Lane; Saw tooth, insertible, T. S. Disston; Sawing machine, G. Lee; Scales, weighing, S. L. Plumb; Scissors gage, E. Wiggins; Screw nuts, tapping, S. L. Worsley (r); Screw-threading machine, S. L. Worsley; Screw, wood, C. D. Rogers; Scrubber, floor, F. A. Balch; Seeding machine, W. G. Barnes; Separator, grain, J. P. Scott; Separator, grain, J. J. West; Sewing bird, J. W. McDermott; Sewing machines, cam for, L. T. Jones; Sheet metal cap, D. H. Cowey; Shoe fastening, W. J. Vitt; Shoe tips, making, J. A. Stockwell; Show case, F. L. Stouffer; Sifter, flour and meal, F. G. Ford; Skate, J. Drucklieb; Skate, J. Lovatt (r); Skates, ankle support for, J. Drucklieb; Skate, W. J. Montgomery; Slate frame attachment, F. Arzt; Sled, harvesting, R. B. McKinney; Spark arrester, A. Mitchell; Spoons, making, L. S. White; Spring, door, J. K. Gillan; Square, try, J. E. Bonin; Stair cover fastening, A. Holbrook; Steamer, culinary, C. M. Newell; Steering apparatus, F. Gould; Stench trap, E. F. Hutchins; Stove, heating, W. D. Bartlett; Stove pipe damper, J. H. Rhamy (r); Stove heater, L. M. Madison; Stoves, oven for gas, J. R. Shirley; Straw cutter, R. N. Boren; Surcingle, P. B. Horton; Suspensors, end fastening for, J. H. Murfey; Table, ironing, N. Clark; Teeth, artificial, W. P. Hall; Telegraphs, duplex, T. A. Edison; Thill coupling, H. Dick; Tiles, making flooring, G. A. Stanbery; Tire upsetter, E. B. Rose; Tool, compound, M. Young; Tool, blank, hand, L. T. Richardson; Truck clearer, J. Madis; Truck, barrel, S. Allman; Trunk corner clamp, E. A. G. Koulstone (r); Trunks, tray bolt for, G. Crouch; Truss, sprmatic, H. A. Stephenson; Turning and planing tool, metal, T. T. Lingard; Umbrella, G. & C. Lieb; Urn, tea and coffee, A. B. Stapler; Valve gear, J. E. Giles; Valve, governor, E. Schirck; Valve, steam, J. L. Agnew; Valve, steam, R. T. Crane; Valve stems, etc., turning, Crane et al.; Valve, throttle, Beal & Andrews; Varnish, W. P. Jenney; Vehicle spring, I. W. Mead; Vehicle wheel, G. Hauck; Velocipede, R. W. Laurence; Ventilating apparatus, W. H. Mills; Ventilator for windows, T. W. Baacher; Vessels for buoys, etc., iron, T. F. Rowland; Wagon spring, P. Miller; Washer cutter, J. S. Appleton; Washing machine clamp, M. N. Lovell; Watch timing attachment, T. Ackley; Watchman's time indicator, J. A. Kutz; Weather strip, T. G. Platc; Wedges, making, J. Lennerton; Windmill, C. C. Harris; Window shade fixture, D. Griffin; Wrench, E. H. Knight; Wrench, spanner, A. F. Skinner;

DESIGNS PAT NTED.

- 9,312.—BASS RELIEF.—E. O. Frink, Indianapolis, Ind.
9,313.—STAIR PLATES.—W. H. Gould, Montrose, N. J.
9,314.—MATCH SAFE.—A. Isck, Lancaster, Pa.
9,315.—SOFA FRAME.—C. Tisch, New York city.
9,316.—PICTURE FRAME.—H. J. Brown, Troy, N. H.
9,317.—PENCIL CASE.—J. Dickcr, Newark, N. J.
9,318.—FAN.—J. Maloney, Georgetown, D. C.
9,319.—STOVE.—G. W. Robertson, Peckskill, N. Y.
9,320.—PARLOR STOVE.—W. W. Stannard, Buffalo, N. Y.
9,321, 9,322.—CARPETS.—T. J. Stearns, Boston, Mass.
9,323.—VASE.—J. H. Whitehouse, Brooklyn, N. Y.

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