

E. S. G. asks: In setting the valves on a locomotive engine in which the throw of her eccentrics had been changed from 5 to 5 1/2 inches, I could not get her valves square. I first set her at full stroke; and when hooked up she was out very badly. I laid it to the links, but do not think the fault was in them altogether. I next set her hooked up to 1 3/4 inches, and found that at full stroke, on the forward center, giving her no lead and putting her on the back center, she was blind 1/4 of an inch. This was with the reverse lever in the forward motion, with the engine cold. The valves have 1 1/2 outside lap and 1/4 inside lap. When she went out, she was square at full stroke. I told the foreman that the expansion had divided that 1/4 inch blind, and made her blind 1/4 inch on each end. Was I right, and what is the reason we can get her square only at one notch? Would the link lifters affect it any? They are very short. A. It is generally impossible to get equal action of the valve at each end, on account of the angularity of the connecting rod, etc. A valve which is right when cold is frequently very much out of adjustment when steam is turned on. A trial with the indicator is the surest test, and in general the only one that can be relied upon to ensure accuracy.

B. W. says, in reply to W. H. M. L., as to accelerating the making of good butter in warm weather: When milk is reduced to between 50° and 60° Fah., immediately after coming from the cow, the cream will rise in four hours. If the temperature is kept at 54° without variation or agitation, all the cream will come to the surface in one hour. One of the secrets of making good butter is to remove the cream before lactic acid commences to form. Hence the reason why farmers who have milkhouses situated over cool springs invariably make the best butter. A few years ago, business necessitated my remaining in the South for about two years; and feeling the want of good, fresh butter, I arranged a block tin worm in a wash tub, with funnel in upper part, the lower end protruding through the side of the tub near the bottom. I filled the tub with ice water, and as the milk came in pails from the cows, poured themilk through the worm, regulating the flow and temperature by pouring it in. I could run it off at 51°, and kept it so for one hour by setting the pan in ice water, when the cream was removed and churned, making the "Simon Pure." "Orange county" milk will keep one day longer without souring by the same process.

W. H. W. says: In your issue of July 25, F. E. T. says: "Piles driven in salt water on the Southern coast are very soon destroyed by worms. They might be protected by metal sheathing, but that is too expensive. Is there any method known, both cheap and effective, of securing wood against the attacks of these worms?" You add: "We shall be glad to receive replies to the above for publication." Thorough coating with amorphous black lead paint will effectually deter the worms; they will no more attack the carbon of that paint than they would charcoal; only by an abrasion which shall lay bare the wood, is there any danger from the worm. The paint should be carefully made, wholly with raw linseed oil. Let each coat be well worked on, and perfectly dry before a succeeding coat be put on; polish each coat gently with sand paper. Three or four coats of good paint, properly put on, will prevent any attack by the worms. This paint becomes exceedingly hard, and adheres with singular tenacity.

B. says, replying to the query of H. D. M.: "How can I clean petroleum barrels, fitting them to hold oil?" Steam the barrels by means of a pipe from a boiler introduced at the bung hole until all the glee dirt comes away, then wash once or twice with scalding vinegar. The outside is of course to be cleaned with a brush and soap and water. Petroleum barrels cleaned in this manner, and with wooden hoops and the usual plastered ends, are extensively used in Europe for shipping the finest salad oils which come to our tables.

C. B. L. says, in reply to J. A. J., who asked how to kill house flies: Fill a tumbler about half full of soapy water; cut a piece of pasteboard somewhat larger than the top of the glass; cut a hole in the middle about the size of a cent; then smear one side of the pasteboard with molasses or other sweet stuff, and turn it so that the molasses will be on the lower side, nearest the water. Be careful not to get any of the molasses on the outside of the pasteboard; and put it in the place frequented by the flies. In trying to get the molasses, they will tumble off and be drowned. You will soon have a tumbler full of flies.

B. C. asks: How can I melt steel scraps in a crucible, and have it retain the nature of steel? My experiments thus far, when the steel was melted and poured into a sand mold, have produced castings of a very poor kind of rotten white iron.—J. E. asks: How is the phosphorus light (which the Navy Department have adopted) made?—D. C. G. asks: Why is it that some of the human teeth (most frequently the cusps) have corrugations or rings around them, similar to corrugations around the horns of cattle?—C. B. F. asks: Will some one give me full instructions for making a racing boat?

COMMUNICATIONS RECEIVED.

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

- On Feathered Arrow Heads. By C. J. H.
On a Mechanics' Political Organization. By V. T.
On Davies' "Arithmetic." By L. H. S.
On an Improved Furnace. By B. T. S.
On a Mosquito Net. By L. E.
On Lightning Rods. By B. W.
On Ice Machines. By J. W. H.
On Aerial Navigation. By D. and by J. H. D.
Also enquiries and answers from the following:
A. O. L.—C. M.—G. W. R.—H. H. F.—P. & E.—W. R. T.—J. H. S.

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 pa-

tentability 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 enquiries analogous to the following are sent: "Please to inform me where I can buy sheet lead, and the price? Where can I purchase a good brick machine? Whose steam engine and boiler would you recommend? Which churn is considered the best? Who makes the best mucilage? Where can I buy the best style of windmills?" All such personal enquiries 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
July 21, 1874,
AND EACH BEARING THAT DATE.
(Those marked (r) are reissued Patents.)

Table listing inventions with names and dates, including Alloy to resemble silver, Amalgamator, ore, Kirk & Ayers, Baking mold, G. Wingate, Bale tie, cotton, W. Cooper, Bell, ca. I. S. Gevey, Bell, door, W. H. Nichols, Belt stretcher, G. E. Burt, Belts, lacing, G. E. Burt, Blower, rotary pressure, W. Pruett, Boiler and air furnace, steam, A. B. Wilson, Boiler covering, Irons & Clayton, Boiler, wash, S. Whitnum, Book rack, self-adjusting, I. Walker, Boot and shoe, J. L. Joyce, Boot and shoe heel, H. H. Bigelow, Boot heels, making, McKay & Fairfield, Boot heels, compressing, H. H. Bigelow, Boot and shoe last, F. S. Prentice, Boot tacking machine, Thompson & Bergh, Boot blacking machine, B. Palmer, Bottle stopper, F. Schlick, Box, C. F. E. Hood, Bracelet, C. E. Hayward, Brick machine, G. Boudriot, Broom, sacking, C. H. Toll, Brush, R. Ashworth, Bullets, grooving, H. Borchardt, Bung hole lock, Faubel & Kaorr, Button fastener, G. L. Robinson, Button fastening, D. Heaton, Can for oil, etc., A. C. Stoessiger, Can for shipping oils, etc., Moore & Hickey, Can, oil, Clayton & Dobbins, Can opener, A. V. M. Sprague, Cannon, making rings for, J. F. Allen, Car axle box, D. A. Hopkins, Car axle box, L. A. Perrot, Car axle, railway, H. H. Rhodes, Car brake, S. C. Taft, Car coupling, F. A. Gardner, Car coupling, S. R. & Z. M. Hibbard, Car coupling, G. W. Putnam, Car coupling, C. Schnoor, Car coupling, E. P. Terrell, Car coupling, Wilkinson et al., Car, street, W. J. Wilson, Cars, apparatus for moving, E. Hedge, Carding machine doffer, H. Holcroft, Carriage running gear, Herrinton & Irish, Carriage shaft and pole, O. F. Van Marter, Carriage wheel, T. Weaver, Cartridge shells, loading, L. A. Beardslee, Celluloid molding, R. F. Hunt, Cereals for food, L. S. Chichester, Chair fan, rocking, E. C. Hall, Chair, folding, E. A. Gould, Chair, spring rocking, S. Fallon, Children from falling, preventing, J. Konigsberg, Chocolate, etc., preparing, Evans & Dyson, Churn, J. B. F. Dowell, Churn, R. Murphy, Cigar machine, W. J. Wadsworth, Clamp, floor, J. Carllie, Clamp, joiner's, C. S. Van Wagoner, Clamp, staging, C. E. Richards, Clothes wringer, B. Smith, Clutch, E. W. Kelly, Cock, lock stop, J. Douglass, Column, wrought iron, C. H. Kellogg, Cord, etc., making, W. H. Defrees, Corset steels, etc., covering, E. Geary, Jr., Cotton, opening and cleaning, J. B. Wendel, Cotton seed huller, P. J. Martin, Crib, child's, J. W. Forsyth, Cultivator, P. P. Hill, Cultivator, Van Sickle & McConaughy, Dental engine, N. Stow, Dish, pickle, W. M. Kirchner, Door spring, C. S. Van Wagoner, Draft producing apparatus, G. Wingate, Dredging bucket, T. Symonds, Dredging apparatus, hand, R. R. Osgood, Drills, sharpening twist, C. Van Haagen, Edge plane, P. Bauer, Elevator, hay, A. J. Nellis, Elevators, safety stop for, Bavins & Wels, Enameled metal articles, G. A. Burroughs (r), Engine, compound, W. Baxter, Jr., Engine, rotary, L. W. McKenney, Eraser, E. Weissenborn, Evaporating dish, graduated, W. G. Dinwiddie, Fare box lamp ventilator, J. B. Slawson, Fats, treating, F. J. Kraft, Fence, wire, T. H. Speakman, Fifth wheel for vehicles, W. Fisher, Fire extinguisher, S. S. Lippincott,

Table listing inventions with names and dates, including Flax, cleaning, Jerome & Platt, Fluting and smoothing iron, B. F. St. John, Fruit jars, forming necks of, T. Htpwell, Furnace, hot air, J. Fridley, Jr., Furnaces, condensing fumes from, Kirk & Ayers, Fusee, safety blazing, G. C. J. Snelder, Gameboard, J. Butt, Gas making, W. Vincent, Gas motor engine, G. W. Dalmier, Gas purifier, J. R. Smedberg, Gas retort, closing, J. R. Smedberg, Gate, automatic, E. E. Chesney, Gate, farm, Molitor & Renkert, Gear cutting machine, J. A. Peer, Generator, carbonic acid, O. Zwietsch (r), Glue dryer, J. Barbanson, Grain cleaner and scourer, C. Custer, Grain cleaner and scourer, W. W. Ingraham, Grain scales, C. J. Payne, Grapple, J. B. Tosell, Handcuff, Broome & Wood, Harrow, S. Burgess, Harrow, A. B. Spies, Harvester, A. Jamison, Hatchet, R. H. Morrison, Hats, die for shaping, D. Dennis, Heel lifts, etc., compressing, J. Ellison, Heel plate, adjustable, H. W. Danforth, Hemmer, J. H. Bean, Hinge for safe doors, F. F. King, Horse detacher, A. Barker, Horse power, J. S. Schofield, Hydraulic canal lift, E. Clark, Ice house for meat, etc., D. T. Conklin, Indicator, C. H. Dunham, Inking apparatus, G. D. Morse, Iron, burning, C. P. Benoit, Ironing board, R. Collins, Jack, lifting and carrying, W. H. Godfrey, Lampblack, making, J. H. Bottenberg, Land marker, S. Phillips, Latch, knob, D. Wolf, Latch, reversible, L. Weston, Lathe, H. Bickford, Lock, W. Baldwin, Lock, H. Winn, Lock, seal, S. Wright, Lock, etc., hasp, C. F. Leopold, Locomotive chimney, G. W. Watt, Locomotive wheels, raising, J. M. Farrington, Looking glass and photo, I. N. Shatto, Looms, let-off mechanism for, J. Mason, Mandrel, expanding, H. P. King, Measure, adjustable liquid, J. P. Letzell, Meter, liquid, F. A. Morley, Mill, cider, Whiteley et al., (r), Mill, cider, H. L. Whitman (r), Mill, rolling, Chalfant & Hahn, Mitering machine, J. Jones, Mitten and glove, K. D. Burr, Molder's flask, J. McClure, Molding articles from pulp, J. R. Moffitt, Music leaf turner, W. Ellis, Nasal douche, M. F. Potter, Nozzle, E. R. Bristol, Nut lock, R. H. Doane, Oil colors, coating paper with, Goth et al., Oil, treating cotton seed, H. Goldmann, Ores, drying, R. Teats, Ores, machine for pulverizing, Kirk & Ayers, Organ, reed, H. Burdett, Overalls, H. F. Woodward, Ox yoke, J. Ernhout, Package tie, A. Miller, Paper bag machine, Appel & Mathes, Paper box, R. Ritter, Paper folding machine, C. Chambers, Jr. (r), Paper pulp wood grinder, F. A. Cushman, Paper, roller for winding, B. G. Read, Pavement, C. Pinnington, Paving tiles, etc., concrete for, T. Heap, Paving block, P. Zadig, Pen extractor, O. Evans, Photographic picture, S. F. Conant, Pickaxes, forming eyes of, W. Andrews, Pin, safety, J. Poznanski, Pipe, blow, G. W. Love, Pipe, cement lined sheet metal, P. Ball, Pipe, mold for earthen, J. H. Root, Piston, C. E. Emery, Plane, bench, G. M. Thompson, Planing machine, metal, J. L. Hewes, Planter, corn, J. Armstrong, Jr., Plow, R. I. Azbill, Plow, carriage, G. W. Hunt, Press, cider, W. S. Dyer, Press, cotton, W. H. Walker, Press, cotton and hay, G. W. Grader, Press, hay and cotton, F. L. Kirtley, Printing press, C. A. Cadwell, Pump, siphon steam, C. Rogers, Pump, steam, W. Atkinson, Pump, steam vacuum, J. R. McPherson, Pumps, operating, Smith & Jackson, Punches, etc., operating, C. H. Reynolds, Purifier, middlings, Willford et al., Radiator, steam, J. A. Miller, Rail-drilling device, J. S. Lane, Railroad rail joint, Shalters & Ray, Railroad switch, A. B. Edmonds, Railroad switch, B. Pierre, Rake, horse hay, M. K. Flory, Rake, horse hay, B. Morse, Rations, feed, W. H. Page (r), Reflector, C. F. Jacobson, Refrigerator, J. M. Blaisdell, Respiring apparatus, G. Galbert, Roofing composition, G. Steinemann (r), Sash fastener, L. Weston, Sash holder, N. B. Bates, Saw arbor, J. Torrent, Saw mill, J. Brown, Saw mills, log turner for, S. Keller, Saw-setting anvils, M. Hitchcock, Scaffold, F. H. D. Newhard, Scow, top dumping, T. Symonds, Seeder, J. F. Keller, Seeding machine, J. H. Jones, Sewing machine, T. A. Weber, Sewing machine hammer, R. Price, Shade holder, lamp, Merrill et al., Shattling, universal, T. Welham (r), Sheet metal cap die, Mason & Perry, Shirt bosom, J. H. Myers, Skate, roller, J. Fenton, Skirt protector, M. H. Chase, Slates, composition for artificial, H. W. Holly, Spike extractor, M. Biglin, Spindle, lubricating, A. M. Wade, Stalk cutter, E. P. Lynch, Stove board, A. D. McMaster (r),

Table listing inventions with names and dates, including Stove, heating, Love & Pruden, Stove, lamp or gas, W. J. Laval, Table, ironing, G. C. Payne, Tap, screw, J. Cook, Telegraph apparatus, R. K. Boyle, Temperature, regulating, O. Naumann, Thrashing, dust catch for, R. Z. Bader, Toy, J. A. Crandall, Toy whistle, J. Chaskel, Trap, fly, A. L. and W. H. Wells, Trap, mole, T. Brannan, Treadle, H. A. Manley, Treadle, J. W. Staples, Umbrella rib, A. Clarke, Valve and overflow, waste, J. Foley, Valve, check, G. R. Crans (r), Valve, steam regulator, G. Sumner, Vehicle hub, Politer & Guilmont, Vehicle spring reach, E. Grimshaw, Vehicle spring recoil arrester, J. P. Letzell, Vehicle wheel, C. T. Sleeper, Veneers, cutting, C. Munn, Vessel, iron, R. Powell, Vulcanizing disk, rubber, H. M. Edson (r), Wagon running gear, J. Ryan, Washing machine, D. C. Mitchell, Washing machine, C. C. Snow, Watch case bow, J. C. Dueber, Water closet, J. Jones, Water filter, H. T. Vaders, Water wheel, J. J. Dodson, Water wheel, W. R. Green, Wheelbarrow, S. Bingham, Winding fabrics, machine for, G. R. Babbitt, Windmill, S. E. Amant, Windmill, Jelley & Parvia, Windmill, R. Y. Rockwell, Window blind, Van Horn & Douglas, Window blinds, making, L. Duennisch, Window shade, N. Scratton, Wind wheel, G. Candee, Wire-collag machines, J. G. Smith,

APPLICATIONS FOR EXTENSIONS.

Applications have been duly filed and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned:
30,450.—RUBBER CAR SPRING.—T. F. Allen. Oct. 7.
30,451.—CLOTHES SQUEEZER.—F. Arnold. Oct. 7.
30,458.—CAR WHEEL.—G. S. Bosworth. Oct. 7.
30,517.—CAR SEAT AND COUCH.—E. Burke. Oct. 7.

EXTENSIONS GRANTED.

29,228.—MOWING MACHINE.—A. B. Allen.
29,229.—SCHOOL GLOBE.—J. R. Agnew.
29,231.—FILE CUTTING MACHINE.—E. Bernot.
29,238.—GRIDIRON.—J. S. Brooks et al.
29,261.—LOWERING BOATS.—W. Flowers et al.
29,300.—STOVE GRATE.—D. H. Nation.
29,319.—FLOUR CRIST.—I. R. Shank.
29,333.—WATER WHEEL.—J. W. Juax.
29,335.—GRAIN SEPARATOR.—A. J. Vandegrift.
29,338.—CABLE SWAGE RELIEVER.—J. Bingham.

DISCLAIMERS.

29,300.—STOVE GRATE.—D. H. Nation.
29,333.—WATER WHEEL.—J. W. Juax.

DESIGNS PATENTED.

7,564.—NUBIA.—H. Boot, Philadelphia, Pa.
7,565 to 7,567.—CARPETS.—J. H. Bromley, Philadelphia, Pa.
7,563.—BOXES.—J. Comly, Philadelphia, Pa.
7,569 to 7,571.—CARPETS.—H. F. Goetze, Boston, Mass.
7,572 to 7,574.—STAIR PLATES.—W. T. Mersereau, Orange, N. J.
7,575 and 7,576.—CHANDELIERS.—F. R. Seldensticker, W. Meriden, Conn.
7,577.—CHECKER MEN.—C. Spooner, Bridgeport, Conn.
7,578.—TWINE HOLDER.—E. J. Steele, New Britain, Ct.
7,579.—BRACKET.—A. Wunder et al., New Haven, Conn.
7,580 to 7,584.—CARPETS.—J. M. Christie, Kidderminster, England.
7,585.—SPOON HANDLE, ETC.—J. Polhamus, N. Y. city.
7,586 to 7,588.—CARPETS.—C. A. Righter, Philadelphia, Pa.

TRADE MARKS REGISTERED.

1,883.—CARPET SWEEPER.—Haley & Co., Boston, Mass.
1,884.—DYE STUFF.—W. H. Place, Providence, R. I.
1,885.—POWDER.—J. W. Willard, San Francisco, Cal.
1,886.—SOAP.—C. E. Willetts, Chicago, Ill.
1,887.—WINES, ETC.—A. D. Findlay, Brooklyn, N. Y.
1,883.—KID GLOVES.—F. Hagle, New York city.
1,888.—ELECTRIC APPARATUS.—S. Kidder, New York city.
1,890.—OLIVE OIL.—H. K. Thurber & Co., New York city.
1,891.—PACKED FRUITS, ETC.—South Jersey Packing Co., Cedarville, N. J.
1,892.—SPICES, ETC.—Warren & Bidwell, Toledo, O.
1,893.—SPECTACLES, ETC.—T. A. Willson & Co., Reading, Pa.
1,894.—IRON AND STEEL.—W. Barrows & Co., Tipton, Eng.
1,895.—KID GLOVES.—F. Hagle, New York city.
1,896.—CURE FOR CORNS.—Lawrence & Co., London, Eng.
1,897.—BITTERS.—Sloat & Powell, Peekskill, N. Y.
1,898.—FILES AND STEEL.—W. Spencer & Co., Masbrough, England.

SCHEDULE OF PATENT FEES.

Table with 2 columns: Fee description and Amount.
On each Caveat \$10
On each Trade Mark \$25
On filing each application for a Patent (17 years) \$15
On issuing each original Patent \$20
On appeal to Examiners-in-Chief \$10
On appeal to Commissioner of Patents \$20
On application for Reissue \$30
On application for Extension of Patent \$50
On granting the Extension \$50
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

JULY 21 TO 25, 1874.

Table listing Canadian patents with names and dates, including 3,690.—W. E. Wright, Rome, Oneida county, N. Y., U. S. Improvements in evaporating moisture from drying peat, brick, lumber, fruit, vegetables, and other substances, called "Wright's Drying Arrangement," July 21, 1874.
3,691.—G. Doane and B. L. Harris, Grosse Isle, Wayne county, Mich. Improvements on hinges, called "Doane's Improved Hinge," July 21, 1874.
3,692.—C. E. Seal, Winchester, Frederick county, Va., U. S. Improvements on cut-off and regulating cocks, called "Seal's Gas Cut-off and Regulator," July 21, 1874.
3,693.—I. K. Macaulay, Kingston, Frontenac county, Ont., assignee of C. H. Williams, Matteawan, Dutchess county, N. Y., U. S. Improvements on brick machines, called "The Star Brick Machine," July 25 1874.