one would be better, as the friction of the steam in the pipe would be sufficiently less to compensate for the loss of heat by radiation, etc., by the saving in fuel, if it costs as much as it does generally. A quarter of a pound friction in a pipe amounts to considerable in time, as it is constant; for instance, a cent per minute for ten hours will amount to six dollars. The greatest trouble with engineers in general is that they overlook these seemingly trifling matters for the sake of saving in cost; while, if they were attended to, a vast amount of money might be saved.—A. L., of Mass.

CUTTING BEVELS.—C. H. S. asks for a rule for mitering bevels or "flaring boxes." I submit two methods, original as far as I know. 1st. Draw a rectangular parallelogram the shortest side corresponding with the thickness of the board to be mitered, the other side with a line cutting the board horizontally when set at the required flare. Draw the diagonal line and the angle formed by the diagonal, and the shortest side is the required miter. If different sides of the box or seat flare unequally, each side must be treated by the same rule separately. 2d. Add half as many degrees to the miter angle (forty-five degrees) as the side of the box deflects from the perpendicular. For instance, if the side of the box flares at an angle of forty-five degrees, an angle of sixty-seven and a half degrees will miter the corner.—J. S. O., of N. J.

CASE HARDENING.—If E. N. G. will make a paste of prussiate of potash, and cover his screws and nuts with it, and then heat until red hot, he will have them case hardened. Any quantity can be heated at a time provided he has a furnace large enough.—E. O. McC., of S. C.

Queries.

[We present herewith a series of inquiries embracing a variety of topics of greater or less general interest. The questions are simple, it is true, but we prefer to elicit practical answers from our readers.]

1.—LIQUID GLUE.—M. M., Havana, Cuba, asks:—Can any of your correspondents inform me through your scientific paper, how to prepare a good liquid glue for banks, commercial offices, and general use?

2.—MARKING FLUID.—Will some of your many readers inform me how to make a good marking fluid, for marking boxes, barrels, etc?—R. W. R.

3.—VENTILATING ICE HOUSES.—Can any of your correspondents tell me the best way to ventilate ice houses?—J. M. D.

4.—BINIODIDE OF MERCURY IN SOLUTION.—I often have prescriptions calling for bichloride of mercury with potass iodide, combining which I have the biniodide of mercury (HgI_2) as a precipitate. I wish to inquire through your columns how to retain the salts in solution.—H. G. I.

5.—SOLDERING CAST IRON.—Will you inform us what preparation has been most successfully used for putting solder on to cast iron?—G. D. & S.

6.—DECAY OF INDIA RUBBER BANDS.—Is there any manner of rendering elastic rubber bands proof against decay? Those now in use in business houses are useless after a year or two.—W. H. S.

7.—DEOXIDISING ZINC.—Can any one inform me of any method by which I can restore oxidized zinc or spelter? I use it in a liquid state, but have a great deal of waste by over heating.—G. A.

8.—FIREPROOFING TIMBER.—Can any one inform us of any wash that can be applied to wood to make it fireproof? We have a building of easily fired timber, and would like to avert the danger.—K. K. & W.

9.—COMPOUND GEARING ON SCREW CUTTING LATHE.—I wish a simple and reliable rule for compounding gearing on screw cutting lathes, the traverse screw having four threads to the inch.—R. F. S.

10.—BATTERY POWER.—How many cups of Daniell's battery would be required to work a telegraph line 650 feet long with common sounders at each end? The wire is copper, No. 16.—E. M. D.

11.—SALT AND ICE.—Why is salt mixed with ice to freeze ice cream, while, in winter, we put salt in our pumps to keep them from freezing?—M. A.

12.—CARBON BATTERY PLATES.—I wish to know how to make carbon battery plates for voltaic batteries.—A. N.

13.—DRESSING FOR SHOES.—Can any one give me a receipt for making the best dressing for ladies' and children's shoes, waterproof, and that will not injure the leather?—M. L. K.

14.—FREEZING OF MORTAR.—Does lime mortar undergo any chemical change by freezing when in a soft state? I am informed that it is customary, upon the continent of Europe and in England, for all lime mortar which is to be used in the masonry of buildings of importance to be made up months, or perhaps longer, before it is used. Is it ever allowed to freeze, or does it injure the setting of it, or the durability after it has set, by freezing in a mass when wet?—H. D. C.

15.—RESULTANT POWER.—Does the resultant equal the power applied, in that class of machinery where the power is applied at the axle (as in reapers), no account being taken of friction or the power required to draw the weight of the machine? If any power is lost, how can it be accounted for, or, in other words, what becomes of it?—C. A. B. of Ill.

16.—LAND AND SEA BREEZES.—I would like to inquire what causes the wind to moderate at sun setting, and then a breeze to get up after dark? I have often noticed the same at sea, and on land in heavy gales.—B. R., Jr.

17.—JEWELLER'S LAP.—Can any one give me directions for making a lap, such as is used generally by jewellers in polishing? I want to know what the different kinds of metals are, and their proportions, so that I may cast one.—O. B. F.

18.—REVOLUTION OF BODIES.—The following question has given rise to a good deal of discussion in this place, and both parties have agreed to leave the matter for your readers to decide: A man starts to go around a squirrel that is on the trunk of a tree, and, as the man goes round, the squirrel travels around the tree, and remains in the same position to the man until both arrive at the point whence they started. Does the man go round the squirrel?—R. O. H.

19.—HYGROMETER.—I wish to know what to do with my hygrometer, that is, the wet bulb thermometer, when it is so cold that water freezes, so that I can find the relative humidity of the air? Is there an instrument made called a hygrodeik?—T. M., Jr.

20.—ANNEALING LAMP CHIMNEY.—Every person who has used a "German Study Lamp" one season, knows that the glass chimneys of the kerosene lamps in common use are an imposition on the public. Can any of your readers give a simple process to anneal or temper them, so that they, with judicious care and careful usage, will not be broken by the heat of its burning wick?—R. L. B.

21.—MARKING INK.—How can I make a good marking ink, suitable for marking boxes and barrels, etc?—T. L. S.

22.—RESTORING BUFFALO ROBES.—What can be applied to buffalo robes to make them soft and pliable after having been wet?—T. L. S.

23.—SOFTENING LEAD.—Will some one please give me, through your paper, a receipt for softening lead, that has become hard by repeated melting and using?—C. W. L.

24.—BRONZING.—Can any one give me some information about bronzing? And where can I obtain a work on bronzing, and which is he best work to get?—C. R.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

CUTTING AND ASSORTING PLAYING CARDS AND STRIPS.—Victor E. Mauger, of New York city.—This invention has for its object to produce simple and effective means for assorting—that is to say, putting upon one another in regular order—the several strips or pieces cut from strips. The invention is to be more particularly applicable in the manufacture of playing cards, but may also be advantageously used for other work. Playing cards are by rotary knives, cut from large sheets, each sheet containing about thirty or more cards. Every sheet is first printed, and then, by parallel incisions, cut into strips, each strip being subsequently cut up into as many cards as it contains. When thus cut rapidly, the cards of several sheets are apt to become mixed, and those of each sheet are liable to be indiscriminately arranged, making it difficult and laborious to assort them into "packs;" but by this invention the cards of each sheet are regularly arranged and placed one upon another in desired succession, so that the entire labor of subsequent assorting is dispensed with. The invention consists chiefly in the use of a graduated plate, upon which the strips cut from sheets or the cards cut from strips are deposited, and in the use thereon of a sliding carriage or belt, which conveys each higher strip or card to the one next below it and places it on top, so that finally all pieces will be one above another in regular succession. The invention also consists in the combination, with the graduated plate, of guide chutes, which convey the several pieces, respectively, to the several steps of the plate.

WATCH ESCAPEMENT.—Don J. Mozart, of New York city.—The ordinary escapement has a projecting pin or ruby on the staff, which receives an impulse from the double pronged anchor alternately in opposite directions. The impulse for either movement is given when the ruby pin is in one—the central—position, and exerts its influence to the very end of its extent—or, in other words, until the power of the hair spring exceeds that of the impulse. The hair spring will then, in attempting to adjust itself, carry the staff back until the ruby pin is again in the central position, where it receives an impulse in the opposite direction, and so forth, every stroke using the entire force of the impulse as against that of the hair spring. This arrangement although satisfactory in a limited degree, is nevertheless unreliable as to exactness, since too much reliance is placed upon the slender hair spring, whose slight power varies under the least change of temperature and atmosphere. The division of the movements of the second hand, which is, more than any other part of the watch, dependent upon the exactitude of escapement, becomes difficult by the use of the old mechanism, and has, whenever effected, added greatly to the complication and expense of the watch. By a double regulating and impelling mechanism the inventor is enabled to give the impulse at the end of each swing of the balance wheel between certain definite limits. A beautiful precision is thus produced by simple means, and the subdivision of the second movement made easy by the mere application of detent arms to the arbor.

BORING MACHINE.—Frank S. Allen and Charles F. Ritchel, of New York city.—This improved boring machine is designed more especially for use in boring holes upon a flare and at different inclinations, and is so constructed and arranged that all the holes, whatever or however different their inclination, may be bored at the same time and at one operation; and it consists in the construction and combination of various parts, which can not well be described in such a notice as the present, but which constitute a very ingenious invention.

KEY FOR SEWING MACHINE LOCK.—Edward L. Gaylord, of Bridgeport, Conn.—This invention has for its object to furnish an improved key for locks to be attached to sewing machine covers and other articles that are turned up or over so that the key is liable to fall out and be lost, and which shall be so constructed as to retain its place in the key hole however much the article to which the lock is attached may be turned up. The key is made in two parts, secured to each other at the handle end by rivets. The forward ends of the parts or pieces of the key are made square, and are beveled or slightly bent inward at their extreme ends, to enable them to be conveniently inserted in the square key hole of the lock. The parts of the key are made elastic and their forward parts are set out, so as to be pressed inward or toward each other when the key is pressed into the key hole, where the key will be retained by the elasticity of said parts.

ASH PANS FOR STEAM BOILERS.—John Gates, of Portland, Oregon.—This invention consists in certain improvements in connection with the ash pans of steam boilers. A surrounding pan, within which the ash pan is placed, is so adjusted that a water space will be formed between the two. Stays of proper strength are interposed for holding them the requisite distance apart and supporting the ash pan. A water supply leads to the water space. An adjusted pipe extending from the side of the outer pan is bent upward, and its upper end is bent down to discharge water into a funnel held on a discharge pipe. The water entering the space through the supply pipe circulates around the ash pan and escapes through the discharge pipe. The engineer can, at the end of the latter, always observe whether the circulation of water is interrupted or not. Air is admitted to the ash pan in front through an opening. A hinged door or damper is applied to the front of the boiler for the purpose of more or less closing the opening, and thereby regulating the draught. A rope or chain is connected with the damper, and extends thence to the engineer's room, passing over friction rollers. Its other end is, or may be, weighted to balance the door in any desired position, or is otherwise secured or connected in such manner that the engineer can readily control the position of the damper, and increase, reduce, or extinguish the fire.

ROCK DRILLING APPARATUS.—Lycurgus Nelson, of Smyrna, Tenn.—This invention has for its object to so combine the necessary shafts and devices of a power drill that either of the processes of drilling, extracting tools, and sand pumping may be carried on without much preparation or difficult change or gearing. The arrangement consists in a general new arrangement of parts, which appears to be admirably adapted to the purpose intended, but the nature of which cannot be well described without engravings.

COMBINED WASHER AND BOILER.—George C. Taylor and John B. Chrisman, Port Jervis, N. Y.—This invention furnishes an improved washing machine, claimed to be very effective in operation, washing the clothes quickly, thoroughly, and without injuring them, and, at the same time, so constructed that the water may be heated and the clothes boiled in the machine. A heater is placed below the water chamber, in which the clothes are agitated by suitable mechanism, and provision is made for the circulation of the water to and from the chamber or heater through pipes.

SKATE FASTENINGS.—Edward Lawson Fenerty, Halifax, Canada.—This invention has for its object to furnish an improved skate fastening which shall be light, strong, simple, and inexpensive, and so constructed that it may be firmly secured to the boot by a single motion. When the fastenings have been adjusted to the boot, the skate is placed upon the boot sole with the rear side of the boot heel resting against the fixed jaws. A lever is then brought up to its catch. This forces a jaw back against the forward side of the boot heel, and draws the forward fastening back from a narrower to a wider part of the boot sole, so as to clamp the edges of the sole and hold it firmly.

APPARATUS FOR TESTING CANS, BARRELS, ETC.—William D. Brooks, Baltimore, Md.—In this case, an apparatus is constructed for testing cans, barrels, and other vessels, by forcing air into the same, so that, if the vessel is not perfectly tight, the condensed air therein will leak out and indicate the spot where the hole is, the fact of leakage being revealed by the backward rotation of the index of a pressure gage that is connected with the force pump.

FIRE PLACE FENDERS.—Charles C. Algeo, Pittsburgh, Pa.—This invention consists in having an inwardly projecting flange at the base of the fender with the spindle or pivot of the caster passing through said flange up to the under side of the top of the fender, where a cavity is made for the reception of the top of the spindle, and the latter is confined against falling out by a pin passing through it above the aforesaid flange. This plan is very simple in construction, and is claimed to afford a more durable arrangement than any other in use.

FLUTING SAD IRONS.—Edward A. Franklin, of Brenham, Texas.—This invention relates to a new combination of fluting and sad iron, of such kind that the upper fluting roller will serve as handle for the sad iron, there being thus no loose or separate parts required for the two functions. The body of the sad iron has a projecting stem. The lower roller hangs in a cavity which is provided in the top of the iron, while the projecting axle of the upper roller is fitted through a hole in the stem which thus constitutes the support for said roller. The operating crank is screwed to a left-handed thread of the axle of the lower roller, and will thus, when used for fluting, so turn the rollers that they take the cloth from the operator when the crank is turned. When not used for fluting, the crank is unscrewed and the roller transferred to the upper part of the stem where there is a hole for the reception of the axle. After the crank is re-applied, the roller is in position to constitute the handle of the sad iron.

LIFTING JACKS.—Walter S. Burgin, of Washington, Vt.—This invention relates to a new arrangement of parts constituting a lifting mechanism for a wagon jack. The case or main frame of the jack is made in form of a rectangular narrow box, standing on a stout base or board, and open on top for the reception of a lifting slide. The slide has its upper edge made in the form of steps, to be originally applicable to articles of different hights. The lower end of the slide rests, with a small rounded point which is formed on it, upon a lever pivoted to the case. The free end of the lever projects through a slot in the case, and is, by a link, connected with the short arm of a lever handle, which is pivoted to ears projecting from the side of the case. By swinging the handle down, the lever will be swung up and the slide elevated, the connecting hinge or pivot between the link and handle being carried beyond the line drawn through the lower hinge or pivot of the link and the pivot of the handle, so as thereby to lock the parts and prevent the weight on the slide from crowding it down. By swinging the handle up the slide will be let down. The combined leverage gives great power and facilitates the raising of heavy weights.

SASH HOLDERS.—Charles T. Tessier, of New York city.—This invention consists of a T headed lever, a sliding locking bolt with a retracting spring, a flexible locking roller, and a shifting inclined plate in connection with said roller, all arranged in a case adapted to be applied to the stile of the sash, and to lock the sash by the bolt, and free it from the flexible roller by a down movement of the lever, the bolt being employed for locking the sash when down. By an upward movement of the lever the bolt is freed so as to be withdrawn by its spring, and the shifting inclined plate behind the flexible roller is actuated to press the roller against the window frame, so that it will jam between said plate and frame to hold the sash up.

STONE CRUSHER.—Peter Wood, Jersey City, N. J.—This is a powerful machine, the principle of which may be briefly described as follows: A fly wheel shaft receives power from a belt, and, through a crank of short radius and a stout pitman, actuates a powerful lever, which, through a bar, applies the force thus multiplied to toggle levers which actuate a pivoted jaw which, moving to and from a fixed jaw, crushes the stones as they are fed in between the jaws.

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121,447.—CUTTER.—E. Benjamin, Chicago, Ill.
121,448.—FENCE.—C. E. Brown, Pamelia, N. Y.
121,449.—MOLD.—G. Carnell, Philadelphia, Pa.
121,450.—BRICK MACHINE.—J. Cooke, Muncy, Pa.
121,451.—STEAM ENGINE.—C. P. Deane, Springfield, Mass.
121,452.—FASTENING.—J. C. Desumeur, C. & E. Dudin, L. Delacourt, Guise, France.
121,453.—CARRIAGE.—E. Falkingham, San Francisco, Cal.
121,454.—SAFE.—D. Fitzgerald, New York city.
121,455.—ORDNANCE.—D. Fitzgerald, New York city.
121,456.—LAMP POST.—S. W. France, Brooklyn, N.Y.
121,457.—ENGINE.—A. Goulding, Worcester, Mass.
121,458.—BRUSH, ETC.—S. G. Groff, Vogansville, Pa.
121,459.—WAGON.—A. Iske, Lancaster, Pa.
121,460.—SEWING MACHINE.—M. H. Kernaul, Berlin, Prussia
121,461.—WASHER.—C. Larrabee, Haywood, Cal.
121,462.—HUB.—J. Monk, Norwich, Conn.
121,463.—HOIST.—J. Nicholson, Monticello, Ind.
121,464.—DRAFT HOOK.—J. Nicholson, Monticello, Ind.
121,465.—EDGE PLANE.—A. J. Parker, Lynn, Mass.
121,466.—SAW MILL.—L. C. Pattee, Lebanon, N. H.
121,467.—COMPOUND.—P. Paul, Black Earth, Wis.
121,468.—TRAP.—H. Polley, San Francisco, Cal.
121,469.—BOAT.—W. E. Prall, J. D. Defrees, Washington, D.C.
121,470.—DESK, ETC.—J. S. Rankin, Minneapolis, Minn.
121,471.—DESK, ETC.—J. S. Rankin, Minneapolis, Minn.
121,472.—WATER WHEEL.—B. Redding, Kentville, Canada.
121,473.—BED BOTTOM.—R. A. Smith, East Weare, N. H.
121,474.—WATCH CASE.—C. L. Thiery, Boston, Mass.
121,475.—TINTING.—H. Vander Weyde, New York city.
121,476.—INDICATOR.—F. F. Warner, J. W. Benham, Chicago, Ill.
121,477.—SEWING MACHINE.—J. N. Wilkins, Chicago, Ill.
121,478.—PAINT.—D. R. Averill, New Centerville, N. Y.
121,479.—ENGINE.—J. S. Baldwin, Newark, N. J.
121,480.—ENGINE.—J. S. Baldwin, Newark, N. J.
121,481.—ENGINE.—J. S. Baldwin, Newark, N. J.
121,482.—FORCING LIQUIDS.—J. S. Baldwin, Newark, N. J.
121,483.—PIPE HOLDER.—V. A. Bond, Cotton Gin, Tex.
121,484.—CULTIVATOR.—D. W. Bowman, Tippecanoe, Ohio.
121,485.—SAFETY PIN.—W. H. Brock, Bridgeport, Conn.
121,486.—CAR SEAT.—G. Buntin, Boston, Mass.
121,487.—FAUCET.—M. Burnett, Boston, Mass.
121,488.—SEWING MACHINE.—R. G. Bush, Jamestown, N.Y.
121,489.—EARTH CLOSET.—D. B. Collins, Richmond, Va.
121,490.—CAN HEAD.—E. T. Covell, Brooklyn, N. Y.
121,491.—PIN PACKAGE.—C. O. Crosby, Milford, Conn.

121,492.—PIN PACKAGE.—C. O. Crosby, Milford, Conn.
121,493.—STICKING PINS.—C. O. Crosby, Milford, Conn.
121,494.—CHUCK.—A. F. Cushman, Hartford, Conn.
121,495.—EYELET.—A. Delkescamp, New York city.
121,496.—MOLD.—A. J. Derrick, Sheridan, Nev.
121,497.—BURNER.—T. B. Doane, New York city.
121,498.—KNUCKLE PROTECTOR.—G. W. Doty, Wooster, O.
121,499.—FIRE ARM.—W. H. Elliot, New York city.
121,500.—PITCHER.—C. Englebert, J. S.Von Nieda, Phila., Pa.
121,501.—BROOM.—T. R. Evans, Blacksburg, Va.
121,502.—TOY.—J. Fallows, Philadelphia, Pa.
121,503.—SAFE.—D. Fitzgerald, New York city.
121,504.—DESK.—D. Fitzgerald, New York city.
121,505.—FINISHING SILK.—C. L. Frink, Vernon, Conn.
121,506.—STOVE.—J. H. Goodfellow, Troy, N. Y.
121,507.—DOOR SPRING.—W. M. Gray, Brooklyn, N. Y.
121,508.—DOOR SPRING.—W. M. Gray, Brooklyn, N. Y.
121,509.—SUSPENDER.—H. C. Griggs, Waterbury, Conn.
121,510.—GLUING TABLE.—S. P. Groocock, Clifton, N. J., W. J. Brassington, Brooklyn, N. Y.
121,511.—NAIL.—G. L. Hall, Boston, Mass.
121,512.—SWAGE TOOL.—I. S. Hamilton, Hamilton, Ohio.
121,513.—TOOL.—I. S. Hamilton, Hamilton, Ohio.
121,514.—FLUE EXPANDER.—I. S. Hamilton, Hamilton, O.
121,515.—EJECTOR.—J. T. Hancock, West Roxbury, Mass.
121,516.—HEMMER, ETC.—M. Harris, Jamestown, N. Y.
121,517.—SPINNING MACHINE.—G. H. Hathorn, Bangor, Me.
121,518.—PACKING SUGAR.—C. E. Haynes, Boston, Mass.
121,519.—WAGON SEAT.—G. G. Heermance, Claverack, N.Y.
121,520.—CUTTING WHALEBONE.—F.E.Hibbard, Boston, Mass.
121,521.—LAMP.—M. W. House, Cleveland, Ohio.
121,522.—DENTAL PLATE.—J. W., Jr., I.S.Hyatt, Albany, N.Y.
121,523.—COMPOUND.—C. L. Jones, Pedler, Va.
121,524.—PAVEMENT.—J. S. Kelly, New York city.
121,525.—FOOT POWER.—G. B. Kirkham, New York city.
121,526.—TREATING ORE.—S. R. Krom, New York city.
121,527.—AMMONIA ENGINE.—E. Lamm, New Orleans, La.
121,528.—BLINDER.—J. B. Low, Homerville, Ohio.
121,529.—BAG HOLDER, ETC.—W. F. Lum, Waterloo, Wis.
121,530.—REFRIGERATING CAR.—A.S.Lyman, New York city.
121,531.—SASH HOLDER.—W. W. Lyman, West Meriden, Ct.
121,532.—MOTOR.—J. A. Macauley, Wheeling, W. Va.
121,533.—ELEVATOR.—P. W. Mackenzie, Blauveltville, N. Y.
121,534.—COMPOUND.—N. McKelfresh, Elizabeth, Ind.
121,535.—PLOW.—T. Meikle, Louisville, Ky.
121,536.—COMPOUND.—A. Miles, Toledo, Ohio.
121,537.—SEWING MACHINE.—R. S. Morse, East Dixfield, Me.
121,538.—RAILWAY.—J. B. Newbrough, New York city.
121,539.—CAR.—J. B. Newbrough, New York city.
121,540.—CAR STARTER.—J. North, New York city.
121,541.—PLANT STAND.—B. B. Nourse, Westborough, Mass.
121,542.—VALVE.—S. J. Peet, J. W. Willis, Boston, Mass.
121,543.—DESK.—I. N. Peirce, Philadelphia, Pa.
121,544.—PAVEMENT.—R. C. Phillips, Cincinnati, Ohio.
121,545.—OIL CAN.—G. S. Prior, Boston, Mass.
121,546.—NUT LOCK.—H. L. Purdie, Buffalo, N. Y.
121,547.—NUT LOCK.—H. L. Purdie, Buffalo, N. Y.
121,548.—NUT LOCK.—H. L. Purdie, Buffalo, N. Y.
121,549.—NUT LOCK.—H. L. Purdie, Buffalo, N. Y.
121,550.—BURNER.—F. S. Robinson, Boston, Mass.
121,551.—MORTISE.—E. J. Rowe, Eureka, Cal.
121,552.—WAGON.—L. B. Snow, Cleveland, Ohio.
121,553.—CAMERA.—J. J. Stock, New York city.
121,554.—TREATING ORE.—P. T. G. Stockman, Brooklyn, N.Y.
121,555.—WATER WHEEL.—J. S. Teed, Guilford, N. Y.
121,556.—BRIDGE.—J. B. Tracy, Lincoln, Del.
121,557.—LUBRICATOR.—S. Ustick, Philadelphia, Pa.
121,558.—STEAMER.—C. E. Wahlgren, Galesburg, Ill.
121,559.—BUTTER WORKER.—E. L. Walker, Twin Grove, Wis.
121,560.—CHURN.—J. S. Ward, Plattsburg, Mo.
121,561.—SIGNAL.—W. H. Ward, Auburn, N. Y.
121,562.—RIVETING.—C. P. S. Wardwell, Lake Village, N.H.
121,563.—SEAT.—N. Warren, T. Underwood, Wilmington, Del.
121,564.—BLEACHING WOOL.—J. Watteau, Antwerp, Belgium.
121,565.—PULLING WOOL.—J. Watteau, Antwerp, Belgium.
121,566.—STOVE.—J. A. Weakley, Indianapolis, Ind.
121,567.—PLOW.—W. Yost, Goshen, Ohio.
121,568.—WHIP SOCKET.—F. Adams, Middlebury, Ohio.
121,569.—DRYING, ETC.—C. Alden, Newburgh, N. Y.
121,570.—SPRING.—T. H. Allen, Corry, Pa.
121,571.—WAGON BOX.—A. R. Ambrose, Chicago, Ill.
121,572.—AXLE BOX.—W. S. Auchincloss, Wilmington, Del.
121,573.—OVEN.—G. E. Bailey, Mansfield, Mass.
121,574.—AXLE.—E. Ball, Jr. Canton, O.
121,575.—LUBRICATOR.—J. Barber, Bridesburg, Pa.
121,576.—SCRAPER.—G. W. Bayly, Stuyvesant, N. Y.
121,577.—PRESERVING BEER.—F. Blueher, Mascoutah, Ill.
121,578.—BROOM HEAD.—C. Blom, Jr., J. Aling, Holland, Mich.
121,579.—TAP.—J. A. Bostwick, New York city.
121,580.—FOUNTAIN.—H. Broezel, Mauston, Wis.
121,581.—TESTING CANS, ETC.—W. D. Brooks, Baltimore, Md.
121,582.—PLOW.—J. Butler, Huff. Ind.
121,583.—SUPPORT.—H. Campbell, San Francisco, Cal.
121,584.—TICKET HOLDER.—W. J. Campbell, St. Louis, Mo.
121,585.—VIBRATOR.—C. E. Canan, Coldwater, Mich.
121,586.—PURIFYING ACID.—J. F. Cavarly, Flushing, N. Y.
121,587.—INDICATOR.—J. C. Chapman, Waltham, Mass.
121,588.—DRYER.—C, F. Chichester, Brooklyn, N. Y.
121,589.—WRINGER.—J. M. Clark, Lancaster, Pa.
121,590.—ROCK DRILL.—T.H.Coate, L.A.John, Pleasant Hill, O.
121,591.—PRESS.—E. S. Collins, Trenton, Tenn.
121,592.—CHERRY STONER.—A. M. Comstock, Galesburg, Ill.
121,593.—THILL.—H. S. Cox, Franklin, Mich.
121,594.—HAIR NET.—J. Dalton, New York city.
121,595.—BLEACHING POWDER, ETC.—H.Deacon, Widnes, Eng.
121,596.—FURNITURE.—J. M. Dennis, Galesburg, Ill.
121,597.—BEE HIVE.—A. F. Dickey, Benford's Store, Pa.
121,598.—WASHER.—O. L. Dorr, South Walpole, Mass.
121,599.—FORCEPS.—N. A. Durham, Duquoin, Ill.
121,600.—SUSPENDER.—R. H. Eddy, Boston, Mass.
121,601.—PERFORATING PAPER.—T. A. Edison, Newark, N.J.
121,602.—PRINTING TAGS.—G. H. Fayman, Washington, D.C.
121,603.—FIFTH WHEEL.—A. Finley, Bainbridge, Ind.
121,604.—CHURN.—M. Fisk, Adrian, Mich.
121,605.—RAILWAY.—D. Fitzgerald, New York city.
121,606.—CARTRIDGE.—S. Forehand, H. C. Wadsworth, Worcester, Mass.
121,607.—BUNG.—V. Fountain, Jr., New Brighton, N. Y.
121,608.—TRAP.—D. M. Francisco, Three Rivers, Mich.
121,609.—TREMOLO.—L. K. Fuller, Brattleborough, Vt.
121,610.—TREMOLO.—L. K. Fuller, Brattleborough, Vt.
121,611.—LUBRICATOR.—W. T. Garratt, San Francisco, Cal.
121,612.—GRAIN CAR.—A. E. Gordon, New Brunswick, N. J.
121,613.—CULTIVATOR.—M. L. Gorham, Rockford, Ill.
121,614.—SIGN.—W. Graham, W. Snyder, P. O'Brien, Pittsburgh, Pa.
121,615.—PAPER FOLDER.—R. R. Gribbins, West Troy, N. Y.
121,616.—BURIAL CASE.—J. Hackett, Louisville, Ky.
121,617.—COUPLING.—A. S. & H.H. Hallett, E. Abington, Mass.
121,618.—BEE HIVE.—J. N. Hieronymus, Fairbury, Ill.
121,619.—SELF OPERATING GATE.—A.N.Holmes, Tyrone, Mich.
121,620.—INDICATOR.—E. Holmes, Brooklyn, N. Y.
121,621.—HARROW.—C. Hood, Seneca Falls, N. Y.
121,622.—SEWING MACHINE.—G. M. Hopkins, Albion, Conn.
121,623.—WAGON BODY.—I. N. Hoyt, Wayland, Mich.
121,624.—TILE.—J. B. Hughes, Terre Haute, Ind.
121,625.—PARASOL.—J. L. Jacquin, New York City.
121,626.—MOTOR.—T. B. Jeffery, Chicago, Ill.
121,627.—PENCIL CASE.—E. S. Johnson, Jersey City, N. J.
121,628.—ENAMELING.—J. Johnson, Boston, Mass.
121,629.—PULVERIZER.—T. B. Jones, Hiawatha, Kan.
121,630.—GLOVE.—H. Z. & A. J. Kasson, Gloversville, N. Y.
121,631.—EXTRACT.—S. H. Kennedy, Johnstown, N. Y.
121,632.—POINTING WIRE.—R. Kent, Brooklyn, N. Y.
121,633.—CHIMNEY TOP.—T. Ketchen, New York city.
121,634.—STENCIL.—H. Kimball, Poughkeepsie, N. Y.
121,635.—CAR STARTER.—J. P. Leavitt, New York city.
121,636.—SEWING MACHINE.—I. B. Lewis, Belvidere, Ill.
121,637.—ELEVATOR.—T. J. Lovegrove, Phila., Pa.
121,638.—SEWING MACHINE.—G. W. Manson, New York city.
121,639.—VENTILATOR.—A. Marriott, St. Louis, Mo.
121,640.—PRESERVING EGGS.—W. S. Marsh, Raymond, Wis.
121,641.—STAIR ROD.—H. C. Marston, New York city.
121,642.—FITTING, ETC.—W. H. Mayer, Newark, N. J.
121,643.—TRAVELER.—G. M. McClain, Rockport, Mass.
121,644.—STIRRUP.—W. B. McClure, Alexandria, Va.
121,645.—COMPOUND.—J. McDonald, Kankakee, Ill.
121,646.—FASTENING.—T. McGrane, New York city.
121,647.—BED BOTTOM.—A. D. McMaster, Rochester, N. Y.
121,648.—GRAIN DRILL.—D.E.McSherry, J.H.Landis, Dayton, O.
121,649.—CORN PLANTER.—E. J. Myers, Onawa, Iowa.
121,650.—WINDOW AWNING.—C. C. Moore, New York city.
121,651.—PAVEMENT.—G. H. Moore, Norwich, Conn.
121,652.—HOLDER.—C. H. Moulton, Des Moines, Iowa.
121,653.—HARROW TEETH.—S. C. Murdoch, Pittsburgh, Pa.
121,654.—GATE.—V. C. Newland, Sparta, Wis.
121,655.—REFRIGERATOR.—J. P. Oeth, Canton, Mo.
121,656.—DRAFT POLE.—S. A. Otis, Boston, Mass.
121,657.—WRINGER.—S. W. & J. F. Palmer, Auburn, N.Y.
121,658.—PUMP.—A. Perry, New Phila., G. W. Perry, Mahanoy City, Pa.
121,659.—SAFETY VALVE.—A. J. Prescott, Catawissa, Pa.
121,660.—COUPLING.—G. W. Putnam, South Glens Falls, N.Y.
121,661.—GAGE.—J. E. Richard, Columbia, S. C.
121,662.—SPRING.—L. Righter, Salem, Ohio.
121,663.—TIRE.—L. Righter, Salem, Ohio.
121,664.—SAW MILL.—T. H. Russell, Lebanon, N. H.
121,665.—COMPOUND.—E. D. de H. St. Cyr, Lowell, Mass.
121,666.—DETECTOR.—T.A.Schroeder, H.Wuest, Hoboken, N.J.
121,667.—STOVE.—D. Schuyler, Titusville, Pa.
121,668.—HAT.—D. Scrymgeour, Foxborough, Mass.
121,669.—FRUIT PARER.—T. Searing, South Norwalk, Conn.
121,670.—CULTIVATOR.—T. C. Sebring, Milford, Mich.
121,671.—PAPER FILE.—J. A. Shannon, Perrysburg, Ohio.
121,672.—WASHER.—T. P. Shaw, J. Bringman, Tiffin, Ohio.
121,673.—SLED KNEE.—A. L. Shears, Flint, Mich.
121,674.—HAIR CLOTH.—C. Sherriff. Newark, N. J.
121,675.—COUPLING.—L. C. Sims, Martinsburg, Ohio.
121,676.—PLOW.—J. M. Smith, Haddam Neck, Conn.
121,677.—VALVE.—D. Snowhill, J. D. Bown, Spottswood, N.J.
121,678.—BELLOWS.—J. Snyder, Rockford, Ill.
121,679.—GAS.—T. G. Springer, Fayette City, Pa.
121,680.—LOCK.—T. Stewart, Phila., Pa.
121,681.—FLOUR BOLT.—R. H. St. John, Bellefontaine, Ohio.
121,682.—NAIL HAMMER.—H. M. Stocum, Painted Post, N. Y.
121,683.—UNWINDER.—G. Storm, New York city.
121,684.—GIVING PILLS.—J. Sullivan, Thornton, Can.
121,685.—WRENCH.—G. C. Taft, Worcester, Mass.
121,686.—SOUNDING BOARD.—E. L. Taylor, Jersey City., N.J.
121,687.—CALCULATOR.—R. Teasdale, Alberton, Ga.
121,688.—LOWERING COFFINS.—C. A. Thompson, J. O. Coleman, Hopkinsville, Ky.
121,689.—PADDLE WHEEL.—W. Thomson, Madison, Wis.
121,690.—COUPLING.—T. B. Tremper, Rockland Lake, N. Y.
121,691.—HOE.—F. Trigalet, Astoria, N. Y.
121,692.—TRUSS BRACE.—●. Vanorman, Fond du Lac, Wis.
121,693.—CANOPY.—F. H. & W. H. Vick, Rochester, N. Y.
121,694.—HUB.—H. E. Vick, Alliance, Ohio.
121,695.—SASH HOLDER.—F. Walker, New Orleans, La.
121,696.—GLASS.—W. G. Webb, Wordsley, Great Britain.
121,697.—EXHAUST.—W. H. Wheatland, Newark, N. J.
121,698.—SHINGLE MACHINE.—J.P. Wilder, Tonawanda, N.Y.
121,699.—SEWING MACHINE.—O. D., E. C. Woodbury, New York city.
121,700.—ORGAN.—G. W. Woodruff, Hartford, Conn.

REISSUES.

4,654.—CORK MACHINE.—M.F. Crocker, West Winsted, Conn.—Patent No. 13,714, dated October 30, 1855.
4,655.—GOVERNOR.—J. Judson, Rochester, N. Y.—Patent No. 33,743, dated November 19, 1861.
4,656.—DIVISION A.—REVOLVING CASTER.—C. H. Latham, J. S. Lugg, Lowell, Mass.—Patent No. 116,722, dated July 4, 1871
4,657.—DIVISION B.—REVOLVING CASTER.—C. H. Latham, J. S. Lugg, Lowell, Mass.—Patent No. 116,722, dated July 4, 1871.
4,658.—LUBRICATOR.—J. B. Wickersham, Phila., Pa.—Patent No. 70,058, dated October 22, 1867.
4,659.—MAKING CANS.—E. W. Bliss, Brooklyn, N. Y.—Patent No. 82,431, dated September 29, 1868.
4,660.—LAMP.—H. Halvorson, Nashua, N. H.—Patent No. 25,506, dated September 20, 1859; reissue No. 4,413, dated June 6, 1871.
4,661.—TENDER FRAME.—B. W. Healey, Providence, R. I.—Patent No. 103,878, dated June 7, 1870.
4,662.—FINISHING BELTINGS.—C. McBurney, Boston, Mass.—Patent No. 115,880, dated June 13 1871.
4,663.—NEEDLE.—C. H. Wilcox, New York city —Patent dated March 19, 1861.

DESIGNS.

5,396.—COMB.—W. O. Capron, New York city.
5,397.—HARNESS.—J. L. Jackson, New York city
5,398.—MANGER.—J. L. Jackson, New York city
5,399 and 5,400.—HARNESS.—J. L. Jackson, New York city.
5,401.—BOTTLE.—N. Sleeper, Burlington, N. J.
5,402.—CARPET PATTERN.—J. E. Stone, Kidderminster, Eng.
5,403.—BUCKLE.—A. T. Thayer, New York city.
5,404.—TOY.—R. G. Britton, Springfield, Vt.
5,405.—DOOR HANDLE.—G. Munson, P. & C. H. Bradford, New Haven, Conn.
5,406.—HANGING VASE.—J. Runey, Somerville, Mass.
5,407.—FRAME.—J. B. Secor, Chicago, Ill.

TRADE-MARKS

565.—BOOTS, ETC.—Francis & Mallon Boston, Mass.
566.—OIL CANS.—J. P. Haines, Irvington, N. Y.
567.—HARNESS.—J. R. Hill & Co., Concord, N. H.
568.—SHAWLS. ETC.—Home Woolen Co., Hartford, Conn.
569.—LUNG PROTECTOR.—P. Lear, Boston, Mass.
570.—TOBACCO.—C. R. Messinger, Toledo, Ohio.
571.—HARVESTERS, ETC.—Barnes & Co., Syracuse, N. Y.
572.—FLOUR.—W. H. Tenney & Sons, Georgetown, D. C.