

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address correspondents by mail.

SPECIAL NOTE.—This column is destined for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1.00 a line, under the head of "Business and Personal."

All reference to back numbers should be by volume and page.

L. L., of Ohio.—The notation given in Silliman's Physics with reference to pitch of sounds is rather puzzling. You will understand it, however, by the explanation that C is identical with C, and C with C, etc., also bearing in mind that the vibrations spoken of are simple vibrations, that is, from center line out and back again to central line. The number of vibrations constituting the fundamental C, or C, varies in different countries. The accepted meaning of the term vibration also varies in different countries. In France the term is accepted as the excursion of the vibrating body in one direction only. In England and Germany it means an excursion in both directions. The French vibrations are therefore only halves of the English and German, and twice as many are required to produce the same pitch. See "Tynall on Sound," page 69.

O. L. L., of Me.—Having lately discussed the question of saw filing at length in our columns, we prefer not to re-open the subject at present.

C. T., of Mass.—From your description we do not think the blister on the boiler you describe renders it dangerous at the present time. It is, however, a subject upon which we do not like to give advice at this distance. The advice of experts who can see the boiler is the best guide for you.

G. V. P., of —.—Directions for obtaining the true sidereal time and computing the solar time, cannot be given in the space we can allot to your query. You will find the subject simply and concisely treated in "Norton's Astronomy," published by John Wiley & Son, New York.

T. C., of Ky.—The edges of spectacle glasses may be smoothed and polished after grinding by using a wooden wheel fed with pumice stone and water for smoothing, and putty and water for polishing.

C. D., of —.—Gum shellac is a good cement for broken queensware. It should be melted, and applied thinly to the heated broken edges, which should then be pressed together and allowed to cool.

J. O. B., of —.—A shallow stratum of fluid will evaporate under a given heat applied at the bottom, faster than a deep one.

C. H. C., of Mass.—Paint over the interior of your water tank with asphaltum. It will not injure your boiler.

O. S. M., of Va.—In so much as the oxide of zinc enters the human system it is hurtful. Of course care and cleanliness reduces the liability of poisoning in the manufacture and use of any kind of paint. Zinc is not as directly injurious as lead paint. The device you name would be effective as a protection, but we doubt if you could get workmen to wear it.

S. T. S., of Ohio.—We published in our last issue the specification of Dr. Adams' patent for electro-plating with nickel. Ornamental articles are made of brass, and being gilt, are colored by first rubbing the articles with a scratch brush—but not so hard as when it is intended to burnish them—exposing them to a moderate heat, and when partially cooled, brushing them over with a mixture of pulverized hematite, alum, and common salt, leaving the burnished parts untouched. The pieces are then heated upon burning charcoal till they are hissing hot, and the color begins to change to brown. They are then plunged into cold water, washed and rubbed with a brush wet with vinegar, or if the work is chased, with dilute nitric acid. They are then thoroughly washed with pure water, and dried by a moderate fire.

J. C. K., of Pa.—The distance to which sound will travel depends upon the original intensity and the density of the medium which conveys it. Two voices pitched upon the same key and each producing a sound of given intensity, will unite to produce a sound of double the intensity of that produced by either voice alone, provided they are so placed with reference to each other that the sound waves do not interfere with each other. Silliman's Physics contains some observations upon this subject, which are not noticed in Tynall's Lectures on Sound.

H. H. T., of Pa.—We think superheating your steam after carrying it five or six hundred feet in pipe, must prove beneficial. Unless such a pipe was felled, or covered by some other non-conducting material, considerable condensation must inevitably ensue. We think by proper clothing you might remove the necessity for superheating, and if so, it would be the most economical plan.

J. T. S.—There is no work specially on silvering glass in the English language that we know of. You will find articles on the subject in Dr. Ure's "Dictionary of Arts and Manufactures," Muspratt's Chemistry, and other technical works. You will find the subject of gilding well treated in the "Painter, Gilder, and Varnisher's Companion," published by Henry Carey Baird, 406 Walnut street, Philadelphia.

M. H. K.—The positions taken in the pamphlet you send us on the subject of steam boiler explosions, are, as you say, queer, so queer that we do not think it worth while to burden our columns with further criticism upon them.

Official List of Patents.

Issued by the United States Patent Office.

FOR THE WEEK ENDING May 3, 1870.

Reported Officially for the Scientific American

Table with 2 columns: Fee description and Amount. Includes SCHEDULE OF PATENT OFFICE FEES: On each caveat \$10, On filing each application for a Patent (seventeen years) \$15, On issuing each original Patent \$20, On appeal to Commissioner of Patents \$30, 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 (three and a half years) \$10, On an application for Design (seven years) \$10, On an application for Design (fourteen years) \$30, In addition to which there are some small revenue stamp taxes. Residents of Canada and Nova Scotia pay \$50 on application.

For copy of Claim of any Patent issued within 30 years... \$1. A sketch from the model or drawing, relating to such portion of a machine as the Claim covers, from... \$1 upward, but usually at the price above named. The full specification of any patent issued since Nov. 20, 1866, at which time the Patent Office commenced printing them... \$1.25. Official Copies of Drawings of any patent issued since 1836, we can supply at a reasonable cost, the price depending upon the amount of labor involved and the number of views. Full information, as to price of drawings, in each case, may be had by addressing MUNN & CO., Patent Solicitors, No. 37 Park Row, New York.

- 102,465.—TIN GUTTER MACHINE.—Jas. N. Adams, Chillicothe, Mo.
102,466.—TIN TUBING MACHINE.—Jas. N. Adams, Chillicothe, Mo.
102,467.—STAVE DRESSING MACHINE.—M. Pascal Adams, Pittsburgh, Pa.
102,468.—DIE FOR DRAWING WIRE.—J. D. Alvord, Bridgeport, Conn.

- 102,469.—GUIDE FOR SEWING MACHINE.—J. S. Alter, Leavenworth, Kansas.
102,470.—STRAW CUTTER.—Julius Ambrun, Leavenworth, Kansas. Antedated April 28, 1870.
102,471.—NEEDLE CASE.—Wm. Avery and Albert Fenton, Hudditch, England, assignors to William Avery.
102,472.—WASHING MACHINE.—William Badger, Hastings-on-Hudson, N. Y.
102,473.—FASTENER FOR BEDSTEDS, TABLES, ETC.—Jas. M. Baird, Wheeling, West Va., assignor to himself, John McLure, Jas. W. Ward, and John B. McLure. Antedated April 20, 1870.
102,474.—SANDPAPER HOLDER.—Joseph Barker, Chicago, Ill.
102,475.—DEVICE FOR ATTACHING PICKER TO PICKER STAFF.—John D. Barrie, Lawrence, Mass.
102,476.—ORE SEPARATOR.—Thomas Bates, Pinos Altos, New Mexico Territory.
102,477.—WASHING MACHINE.—Charles Bean and Suel Loeger, East Douglass, Mass.
102,478.—VENTILATOR FOR WINDOWS.—William C. Betts, Brooklyn, N. Y.
102,479.—POTATO DIGGER.—Joseph H. Billmeyer, Raisin, Mich.
102,480.—EARTH CHAMBER VESSEL.—Wm. H. Bliss, Newport, R. I.
102,481.—CHURN.—Charles A. Boone, Slickshinny, Pa.
102,482.—RACK FOR CARS.—Albert Bridges, New York city.
102,483.—WORKING AND LOCKING RAILWAY SWITCH AND SIGNAL.—John Brunton, Kensington, England.
102,484.—PREPARING THE PITH OF CORNSTALKS FOR USE IN THE ARTS.—William M. Bryant, Alexandria, Va.
102,485.—FEED CUTTER.—Cornelius H. Cain, Dayton, Ohio.
102,486.—DIRECT ACTING ENGINE.—Adam Scott Cameron, New York city.
102,487.—CLAMP.—Charles B. Canfield, Oriskany, N. Y.
102,488.—FRUIT BASKET.—Lauren Carpenter, St. Joseph, Mich.
102,489.—DRAWER SLIDE.—John L. Chapman, West Roxbury, Mass.
102,490.—DEVICE FOR SECURING THE FEATURES OF A CORPSE IN PLACE.—Amos S. Chesebrough, Hartford, Conn.
102,491.—HORSE POWER.—Philo W. Clark, Oblong, N. Y.
102,492.—EXCAVATING APPARATUS.—Philo W. Clark, Oblong, N. Y.
102,493.—LIFTING JACK.—William Clark, Decatur, Ill.
102,494.—EARTH CLOSET.—Wm. R. C. Clark, New Orleans, La.
102,495.—EARTH CLOSET.—Wm. R. C. Clark, New Orleans, La.
102,496.—LIME KILN.—James Clarkson and Geo. W. Decker, Washington, D. C.
102,497.—CATTLE POKE.—Samuel P. Clemons, Dansville, N. Y. Antedated April 22, 1870.
102,498.—REVERSIBLE SEAT FOR RAILWAY CARS.—Thos. J. Close, Philadelphia, Pa.
102,499.—MATCH CASE.—Frank B. Coleman, Southampton, Mass.
102,500.—CAR COUPLING.—John Coleman, Lynchburg, Va.
102,501.—MANUFACTURE OF MALLEABLE IRON.—John J. G. Collins, Philadelphia, Pa.
102,502.—POT FOR SMELTING GLASS.—Roy Combs and Henry J. Leasure, Wheeling, West Va.
102,503.—APPARATUS FOR BLASTING LOGS.—Matthew Cooke, Sacramento City, Cal. Antedated April 27, 1870.
102,504.—HORSESHOE.—George Copeland, Denver, Colorado Territory.
102,505.—TAILORS' SCALE.—Wm. G. Cummins, Civil District No. 10, Tenn.
102,506.—LET-OFF MECHANISM FOR LOOM.—John Day, Paterson, N. J.
102,507.—COVER FOR KETTLES AND OTHER VESSELS.—E. K. Dean, Bangor, Me., assignor to Wm. C. Lovering, Taunton, Mass.
102,508.—PLOW GRINDER AND POLISHER.—Michael Devault, Charleston, Ill.
102,509.—CHURN.—J. L. Devol, Parkersburg, West Va. Antedated April 29, 1870.
102,510.—PUNCHING APPARATUS.—Thomas De Witt, Detroit, Mich., assignor to John T. Maxson, De Witt, Iowa.
102,511.—PUMP.—Thomas De Witt, Detroit, Mich., assignor to John T. Maxson, De Witt, Iowa.
102,512.—WASHING MACHINE.—Thomas De Witt, Detroit, Mich., assignor to John T. Maxson, De Witt, Iowa.
102,513.—PRUNING HOOK.—Andrew Downer, Hammondsville, Ohio.
102,514.—SPINDLE STEP CAP.—William F. Draper and Jos. B. Bancroft, Hopdale, Mass.
102,515.—SHAFT OR POLE COUPLING FOR CARRIAGES.—C. G. Dudley and Jacob Gulden, Key Port, N. J.
102,516.—STUMP EXTRACTOR.—James M. Eason, Charleston, S. C.
102,517.—MANSRING BARREL ATTACHMENT FOR WATCHES.—Ola L. Eliason, Salt Lake city, Utah Territory.
102,518.—CHURN.—Arthur H. Elliott, Albion, Mich.
102,519.—COFFEE CLEANING MACHINE.—William H. Elton, Baltimore, Md.
102,520.—SAW.—James E. Emerson, Trenton, N. J.
102,521.—STEAM BOILER FOR COOKING FOOD FOR STOCK.—William J. Estes, Penn township, Ill.
102,522.—SECTIONAL STEAM GENERATOR.—H. W. Evans, Philadelphia, Pa.
102,523.—CHURN.—Francis T. Fairchild, Sheboygan, Wis.
102,524.—COMBINED HAY AND PRUNING KNIFE.—John Fasig, West Salem, Ohio.
102,525.—HARVESTER RAKE.—V. H. Felt, Kendall, N. Y.
102,526.—BEEHIVE.—Charles Finn, Des Moines, Iowa.
102,527.—DUST RING FOR WATCH FRAME.—Jas. H. Flint, South Bend, Ind.
102,528.—TABLE LEAF SUPPORT.—Asa Forrest (assignor to himself and O. L. French), Moingona, Iowa.
102,529.—SETTING UP DEVICE FOR CIRCULAR KNITTING MACHINES.—William Franz and William Pope, Crestline, Ohio.
102,530.—LAP BOARD.—W. F. Gammel (assignor to himself and Jacob A. Wetble), Elizabeth, N. J.
102,531.—FASTENING TUBE IN GRAIN DRILLS.—Franklin Gardner, Carlisle, Pa. Antedated April 18, 1870.
102,532.—CORN HARVESTER.—M. A. Getzenaner, Polo, Ill.
102,533.—COOKING STOVE.—Henry G. Giles, Troy, N. Y.
102,534.—WORK HOLDER.—Jane E. Gilman, Hartford, Conn.
102,535.—SEEDING MACHINE.—M. L. Gorham, Rockford, Ill. Antedated April 29, 1870.
102,536.—EMBROIDERY HOLDER.—Henry Gundaker, Lancaster, Pa.
102,537.—SELF-ACTING MULE FOR SPINNING.—Wm. Hackley (assignor to himself and Charles T. Almy), Moosup, Conn. Antedated April 25, 1870.
102,538.—REVERSIBLE BUTT HINGE.—D. F. Hale, Chicopee, Mass.
102,539.—STOVE PIPE DAMPER.—Rich. M. Hermance, Halj Moon, assignor to Joseph B. Wilkinson, Troy, N. Y.
102,540.—SHOE BRUSH.—F. D. Holland (assignor to Henry J. Holland), Lewiston, Me.
102,541.—COTTON CHOPPER.—Wilson Holt, Dawson, Ga.
102,542.—SCAFFOLD.—E. R. Holzer, Philadelphia, Pa. Antedated April 29, 1870.
102,543.—CULTIVATOR PLOW.—Louis Homrighouse, Baltimore, Ohio.
102,544.—STUMP EXTRACTOR.—George L. Howland and Wm. M. Howland, Topsham, Me.
102,545.—WASHBOARD.—Saunders Hubbell, Jr., West Salem, Ohio.
102,546.—MANUFACTURE OF SOAP.—Charles Wager Hull, New York city.
102,547.—WEATHER STRIP.—J. H. Hull, Irasburg, Vt.
102,548.—CLOTHES-LINE HOLDER.—A. L. Hurtt, Monticello, Ind.
102,549.—TOBACCO ROLLER.—Chas. A. Jackson, Petersburg, Va.
102,550.—PROCESS FOR TEMPERING STEEL.—Jabez Jenkins, Philadelphia, Pa.
102,551.—LANTERN.—J. M. Jenness (assignor to himself, J. D. Jenness, and S. D. Jenness), Boston, Mass.
102,552.—LAMP BURNER.—J. H. Johnson, Newark, N. J., assignor to Holmes, Booth & Haydens, Waterbury, Conn.

- 102,553.—CAUL FOR LAYING VENEERS.—L. A. Johnson, New York city.
102,554.—DRY DOCK.—William Jones, New York city.
102,555.—SOLDERING FIRE-POT.—Elias W. Kimball, Hudson, N. Y.
102,556.—SUBMARINE TORPEDO.—W. R. King, Washington, D. C.
102,557.—SHOE FASTENING.—A. E. Kroger, Norwalk, Conn.
102,558.—COAL STOVE.—Joel Laforge and Jonathan T. Crane, Rahway, N. J. Antedated April 18, 1870.
102,559.—BOAT RUDDER.—Wm. C. Law, New York city.
102,560.—MACHINE FOR GRANULATING TOBACCO.—C. H. Lilienthal, Yorkers, N. Y.
102,561.—PRINTING-TELEGRAPH INSTRUMENT.—L. T. Lindsey, Jackson, Tenn.
102,562.—ELECTRO-MAGNETIC MOTOR.—L. T. Lindsey, Jackson, Tenn.
102,563.—POLICEMEN'S NIPPERS.—George Lutz, D. H. Rice, Michael Trenor, and Robert Chadwick, Columbus, Ohio.
102,564.—CORN PLANTER.—James W. Magers, Reinersville, Ohio.
102,565.—COMPOSITION FOR FINISHING WAX-LEATHER.—Patrick Maguire, New Boston, Mass.
102,566.—MANUFACTURE OF BOLTS.—Alexander Mailer (as assignor to G. C. Bell and R. H. Plumb), Buffalo, N. Y.
102,567.—STREET MOISTENING COMPOUND.—Moritz Marcus, New York city.
102,568.—MACHINE FOR FOLDING POWDERS.—J. W. Maxwell, Louisville, Ky.
102,569.—FARM GATE.—John Mayben, Milroy, Pa. Antedated April 23, 1870.
102,570.—COMPOUND FOR DRESSING TEXTILE FABRICS.—John McGill, Boston, assignor to Benjamin S. Goodwin, Boston, and Hiram Whitney, Watertown, Mass.
102,571.—WATER MOTOR.—William McGinniss, Auburn township, Ohio.
102,572.—TUBE WELL.—James McMillan, Fairport, N. Y. Antedated February 15, 1870.
102,573.—BIRD HOUSE.—Henry Miller, Johnston, R. I.
102,574.—DOOR CLAMP.—Benjamin Moore, Hart, Mich.
102,575.—CORD-CATCH.—C. C. Moore, New York city.
102,576.—FENCE AND GATE.—Enoch Muirheid, Greenfield, Ohio.
102,577.—PLANING CHUCK.—Augustus Newell and Wm. Pim, Chicago, Ill.
102,578.—HORSE HAY RAKE.—George Notman, Deerfield, Ohio.
102,579.—ROSETTE FOR BRIDLES.—J. O. Brien, Geneseo, Ill.
102,580.—CARRIAGE HUB.—James O'Connor, Jackson, Mo.
102,581.—BOILER FURNACE.—J. A. T. Overend, San Francisco, Cal. Antedated April 23, 1870.
102,582.—FIRE EXTINGUISHER.—W. M. Parker, Boston, Mass. Antedated April 19, 1870.
102,583.—ANCHOR.—Gurney C. Pattison, Baltimore, Md.
102,584.—ANCHOR.—G. C. Pattison, Baltimore, Md.
102,585.—FLY TRAP.—Max Patzauer, New York city.
102,586.—SEWING MACHINE.—Rufus H. Peabody, Chelsea, Mass.
102,587.—BOBBIN FOR SPINNING, ETC.—Oliver Pearl, Lawrence, Mass.
102,588.—GRINDING MILL.—Walter Peck, Rockford, Ill.
102,589.—AUTOMATIC WAGON BRAKE.—Frank M. Pickerill, Indianapolis, Ind.
102,590.—HEATING AND VENTILATING ATTACHMENT FOR STOVES AND FIREPLACES.—Emily S. Potter and B. R. Potter, Boston, Mass.
102,591.—APPARATUS FOR POLISHING COFFEE, ETC.—J. T. Randall (assignor to F. W. Elder & Co.), Baltimore, Md.
102,592.—OFFICE-REGISTER AND DIRECTORY.—Henry Rentchler, Belleville, Ill.
102,593.—CORN SHELLER.—J. W. Ricker, Chelsea, Mass.
102,594.—BALL TOY GUN.—Charles Robinson, Boston, Mass.
102,595.—WATER COOLER.—John Rutter, West Chester, Pa.
102,596.—HEMP BRAKE.—George Rymel, Paris, Ky.
102,597.—HOISTING APPARATUS.—Hans A. Schneekloth, New York city.
102,598.—BARLEY OR GAVEL FORK.—D. P. Sharp, Ithaca, N. Y.
102,599.—DITCHING PLOW.—I. S. Sheets, Troy, Ohio.
102,600.—LOCK NUT.—E. R. Shepard, Scranton, Pa.
102,601.—RAILWAY RAIL.—E. R. Shepard, Scranton, Pa.
102,602.—COMPOUND RAILWAY RAIL.—E. R. Shepard, Scranton, Pa.
102,603.—BOB-SLED.—S. C. Shepard, Richfield, Ohio.
102,604.—SASH HOLDER.—R. L. Sibbet, New Kingston, Pa. Antedated April 29, 1870.
102,605.—CLAMP FOR SETTING RIGGING.—J. W. Slight and J. W. Androvatt, Prince's Bay, N. Y.
102,606.—SAWING MACHINE.—Addison Smith, Perysburg, Ohio. Antedated April 23, 1870.
102,607.—COMBINED CORN SHELLER AND VEGETABLE SLICER.—J. P. Smith, Hummelstown, Pa.
102,608.—CULINARY VESSEL.—J. C. Smith (assignor to himself and J. H. Poppy), Rochester, N. Y.
102,609.—ROLL FOR MAKING RAILS FOR STREET RAILWAYS.—G. A. Springer, Chicago, Ill.
102,610.—ROCK-BORING APPARATUS.—Thomas St. John, Dunbar, Pa.
102,611.—HAND CORN PLANTER.—Wm. D. Stroud, Oskosh, Wis.
102,612.—SHIRT.—S. H. Strouse and Joseph Strouse, New York city.
102,613.—HAT-BLOCKING MACHINE.—Jacob Surerus and W. H. Behrens (assignor to A. T. Finn), Newark, N. J.
102,614.—OVEN.—Charles Swain, Laconia, N. H.
102,615.—MOLD FOR ARTIFICIAL TEETH.—Eli Sweet, Whitney's Point, N. Y.
102,616.—BAG-HOLDER.—Geo. D. Sweigert (assignor to himself and Samuel Eshleman), Martic township, Pa.
102,617.—CARVING KNIFE.—O. W. Taft, New York, assignor to himself and Ernest Mitchell, Flushing, N. Y.
102,618.—CORN PLANTER.—L. B. Tarbox, Colliersville, N. Y.
102,619.—APPARATUS FOR THE COMBUSTION OF PETROLEUM AND OTHER HYDROCARBON LIQUIDS.—Homer Taylor, Montreal Canada.
102,620.—COMBINATION PADLOCK.—George Thompson (assignor to himself and J. H. Cogill), Trenton, N. J.
102,621.—WASHING MACHINE.—H. N. Thompson, Auburn, N. Y.
102,622.—SASH FASTENER.—Theodore R. Timby, Saratoga, N. Y.
102,623.—DRAIN AND WATER PIPE.—G. H. Titcomb and J. P. Culver, Jersey city, N. J.
102,624.—FAUCET.—W. H. Triscler, Cleveland, Ohio.
102,625.—MACHINE FOR BORING HUBS.—Abraham Troup (assignor to himself and Herman Kirk), Lewisberry, Pa.
102,626.—BLOWER FOR BLACKSMITHS' FORGE.—J. G. Tschelin, Baltimore, Md.
102,627.—ELASTIC TIP FOR LEGS OF CHAIRS, ETC.—Silas Van Patten, Albany, N. Y.
102,628.—WASHING AND WRINGING MACHINE.—J. B. Wake-man and A. R. Field, Hamden, N. Y.
102,629.—STONE PAVEMENT.—Chas. G. Waterbury, New York city.
102,630.—ATTACHING HANDLE TO JOINERS' PLOW.—C. H. Wetzel, York, Pa.
102,631.—CULTIVATOR.—Nicholas Werts, Magnolia, Ill.
102,632.—APPARATUS FOR DISTILLING.—J. M. Weyand, St. Louis, Mo.
102,633.—EVAPORATING AND DISTILLING BY SOLAR HEAT.—Norman W. Wheeler, Brooklyn, and Walton W. Evans, New Rochelle, N. Y.
102,634.—PUMP.—J. T. Whipple, Chicago, Ill.
102,635.—SAFETY SOCKET FOR WHIPS, UMBRELLAS, BILLIARD CUES, ETC.—J. W. Whiteman, Christiansa, Del.
102,636.—WATER-COCK FILTER.—Nahum C. Wilder, Hartford, Conn.
102,637.—MACHINE FOR BENDING WOOD.—W. D. Williams, Raleigh, N. C.
102,638.—FORMER FOR HOOP SKIRTS.—C. C. Wilson, Baltimore, Md. Antedated April 18, 1870.
102,639.—COAL HOD.—William Wilson, Boston, Mass. Antedated April 18, 1870.

U. S. Patent Office.

How to Obtain Letters Patent FOR NEW INVENTIONS.

Information about Caveats, Extensions, Interferences, Designs, Trade Marks; also, Foreign Patents.

For a period of nearly twenty-five years, MUNN & CO. have occupied the position of leading Solicitors of American and European Patents, and during this extended experience of nearly a quarter of a century, they have examined not less than fifty thousand alleged new inventions, and have prosecuted upward of thirty thousand applications for patents, and, in addition to this, they have made, at the Patent Office, over twenty thousand preliminary examinations into the novelty of inventions, with a careful report on the same.

The important advantages of MUNN & CO.'S Agency are, that their practice has been ten-fold greater than that of any other Agency in existence, with the additional advantage of having the assistance of the best professional skill in every department, and a Branch Office at Washington, which watches and supervises, when necessary, cases as they pass through official examination.

CONSULTATIONS AND OPINIONS FREE.

Those who have made inventions and desire a consultation are cordially invited to advise with MUNN & CO. who will be happy to see them in person at the office, or to advise them by letter. In all cases, they may expect an honest opinion. For such consultations, opinion, and advice, no charge is made. A pen-and-ink sketch and a description of the invention should be sent.

TO APPLY FOR A PATENT,

A model must be furnished, not over a foot in any dimension. Send model to MUNN & CO., 37 Park Row, New York, by express, charges paid, also, a description of the improvement, and remit \$16 to cover first Government fee, and revenue and postage stamps.

The models should be neatly made, of any suitable materials, strongly fastened, without glue, and neatly painted. The name of the inventor should be engraved or painted upon it. When the invention consists of an improvement upon some other machine, a full working model of the whole machine will not be necessary. But the model must be sufficiently perfect to show with clearness the nature and operation of the improvement.

PRELIMINARY EXAMINATION

Is made into the patentability of an invention by persons searched at the Patent Office, among the models of the patents pertaining to the class to which the improvement relates. For this special search and a report in writing, a fee of \$5 is charged. This search is made by a corps of examiners of long experience.

Inventors who employ us are not required to incur the cost of a preliminary examination. But it is advised in doubtful cases.

COST OF APPLICATIONS.

When the model is received, and first Government fee paid, the drawings and specification are carefully prepared and forwarded to the applicant for his signature and oath, at which time the agency fee is called for. This fee is generally not over \$25. The cases are exceptionally complex if a higher fee than \$25 is called for, and upon the return of the papers, they are filed at the Patent Office to await Official examination. If the case should be rejected for any cause, or objections made to a claim, the reasons are inquired into and communicated to the applicant, with sketches and explanations of the references; and should it appear that the reasons given are insufficient, the claims are prosecuted immediately, and the rejection set aside, and usually without extra charge to the applicant.

MUNN & CO. are determined to place within the reach of those who confide to them their business, the best facilities and the highest professional skill and experience.

The only cases of this character, in which MUNN & CO. expect an extra fee, are those wherein appeals are taken from the decision of the Examiner after a second rejection; and MUNN & CO. wish to state very distinctly, that they have but few cases which can not be settled without the necessity of an appeal; and before an appeal is taken, in any case, the applicant is fully advised of all facts and charges, and no proceedings are had without his sanction; so that all inventors who employ MUNN & CO. know in advance what their applications and patents are to cost.

MUNN & CO. make no charge for prosecuting the rejected claims of their own clients before the Examiners and when their patents are granted, the invention is noticed editorially in the SCIENTIFIC AMERICAN.

REJECTED CASES.

MUNN & CO. give very special attention to the examination and prosecution of rejected cases filed by inventors and other attorneys. In such cases a fee of \$5 is required for special examination and report, and in case of probable success by further prosecution, and the papers are found tolerably well prepared, MUNN & CO. will take up the case and endeavor to get it through for a reasonable fee, to be agreed upon in advance of prosecution.

CAVEATS

Are desirable if an inventor is not fully prepared to apply for a Patent. Caveat affords protection, for one year, against the issue of a patent to another for the same invention. Caveat papers should be carefully prepared.

The Government fee on filing a Caveat is \$10, and MUNN & CO.'S charges for preparing the necessary papers are usually from \$10 to \$12.

REISSUES.

A patent when discovered to be defective, may be reissued by the surrender of the original patent, and the filing of amended papers. This proceeding should be taken with great care.

DESIGNS, TRADE MARKS, AND COMPOSITIONS

Can be patented for a term of years, also, new medicines or medical compounds, and useful mixtures of all kinds. When the invention consists of a medicine or compound, or a new article of manufacture, or a new composition, samples of the article must be furnished, neatly put up. Also, send a full statement of the ingredients, proportions, mode of preparation, uses, and merits.

PATENTS CAN BE EXTENDED.

All patents issued prior to 1861, and now in force, may be extended for a period of seven years upon the presentation of proper testimony. The extended term of a patent is frequently of much greater value than the first term; but an application for an extension, to be successful, must be carefully prepared. MUNN & CO. have had a large experience in obtaining extensions, and are prepared to give reliable advice.

INTERFERENCES

Between pending applications before the Commissioners are managed and testimony taken; also, Assignments, Agreements, and Licenses prepared. In fact, there is no branch of the Patent Business which MUNN & CO. are not fully prepared to undertake and manage with fidelity and dispatch.

FOREIGN PATENTS.

American inventors should bear in mind that five Patents—American, English, French, Belgian, and Prussian—will secure an inventor exclusive monopoly to his discovery among ONE HUNDRED AND THIRTY MILLIONS of the most intelligent people in the world. The facilities of business and steam communication are such, that patents can be obtained abroad by our citizens almost as easily as at home. MUNN & CO. have prepared and taken a large number of European Patents than any other American Agency. They have Agents of great experience in London, Paris, Berlin, and other Capitals.

A Pamphlet, containing a synopsis of the Foreign Patent Laws, sent free. Address MUNN & CO., 37 Park Row, New York.

- 102,640.—STRAP FASTENER.—William R. Wing, Newark, Ohio.
102,641.—BENDING MACHINE.—Henry Winter, Honesdale, Pa., assignor to himself and T. W. Ball, New York city.
102,642.—ADJUSTABLE AWNING FRAME.—Louis Yenne, New York city.
102,643.—EVAPORATING APPARATUS.—Alanson Youngs, Berlin Mich.
102,644.—SUBSTITUTE FOR JAM NUT.—Theodore B. Young, Louisville, Ky.
102,645.—SCREW PROPELLER.—Chas. Arlan and Chas. Gautsch, New York city.
102,646.—STOVE-BLACKING BOX.—William W. Armington (assignor to himself, Stephen L. Usher, and Fred A. Welton), New Haven, Conn.
102,647.—WELL TUBE.—Isaac Ayres, Elkhart, Ind., and D. C. Payne, Delavan, Wis. Antedated April 25, 1870.
102,648.—DRYING GUANO.—Edwin P. Baugh, Philadelphia, Pa.
102,649.—CLAPBOARD GAGE.—Joab S. Biddlecom, Macedon, N. Y.
102,650.—LIQUID METER.—N. L. Blanchard, Spuyten Duyvil, N. Y. Antedated April 25, 1870.
102,651.—HAY CARRIER.—C. S. Boothby, Saco, Me.
102,652.—PLOW CLEVIS.—Thomas E. C. Brinly, Louisville, Ky.
102,653.—SAW.—Henry Broomell and A. W. Wilson, Christiana, Pa.
102,654.—PYROMETER.—Edward Brown, Philadelphia, Pa.
102,655.—WATER ELEVATOR.—Geo. C. Canfield, Mechanicsburg, Ohio.
102,656.—SLATE-FRAME CLAMP.—J. H. Coffin, Danielsville, Pa. Antedated March 17, 1870.
102,657.—CARRIAGE WHEEL HUB.—A. F. Cooper, San Francisco, Cal.
102,658.—SASH BALANCE.—William Damerel, Brooklyn, N. Y.
102,659.—STAPLE MACHINE.—J. T. Darnell, Florence, N. J. Antedated April 22, 1870.
102,660.—COMPOSITION FOR AND MODE OF ORNAMENTS WOOD.—T. H. Davis (assignor to Cheney Kilburn and J. H. Gates), Philadelphia, Pa.
102,661.—PADLOCK.—J. M. A. Dew, Chicago, Ill.
102,662.—PROCESS AND APPARATUS FOR USING LIQUID FUEL FOR PRODUCING HEAT AND LIGHT.—T. S. Dickerson and R. M. Whipple, Chicago, Ill.
102,663.—SAFETY DERRICK LAMP.—Jonathan Dillen, Petroleum Center, Pa.
102,664.—PUMP VALVE.—J. W. Douglas (assignor to W. & B. Douglas), Middletown, Conn.
102,665.—SEASONING WOOD.—Richard A. Douglas, Philadelphia, Pa.
102,666.—MACHINE FOR CUTTING VEGETABLES.—W. R. Dunn, Alton, Ind.
102,667.—SASH HOLDER.—W. A. Eisenhower, Friedensburg, Pa. Antedated April 29, 1870.
102,668.—PIANOFORTE.—Geo. Ely, New York city.
102,669.—BOTTLE STOPPER.—William Ely, New York city.
102,670.—ROUGHING ROLL.—David Eynon (assignor to Tredegar Co.), Richmond, Va.
102,671.—AGRICULTURAL BOILER.—Francis Farquhar, Richmond, Ind.
102,672.—WASHING MACHINE.—Benjamin F. Fellman, Sellersville, Pa.
102,673.—SPRING SEAT FOR WAGONS.—H. E. Foster (assignor to himself, D. J. Block, and J. T. Gates), Decatur, Ill.
102,674.—LAMP BURNER.—S. W. Fowler, Brooklyn, N. Y., assignor to A. C. Hodgman.
102,675.—METALLIC CARTRIDGE.—Richard J. Gatling, Hartford, Conn.
102,676.—MATCH SAFE.—Geo. Geer (assignor to Chas. Parker), Meriden, Conn.
102,677.—COMBINATION TOOL.—Geo. W. Gregory, New York city.
102,678.—SPRING SEAT.—D. F. Haasz (assignor to himself and E. N. Scherr, Jr.), Philadelphia, Pa.
102,679.—COAL SCUTTLE AND SIFTER.—Wm. Hazlet and W. H. Flanigan, Philadelphia, Pa.
102,680.—REFRIGERATOR.—W. G. Holden, Jr., Covington, Ky. Antedated Feb. 2, 1870.
102,681.—VENTILATOR FOR MINES.—Jenkin B. Jones, Laure Run, Pa.
102,682.—BASE-BURNING STOVE.—Wm. J. Keep, Troy, N. Y.
102,683.—COOKING STOVE.—Edward Kirk, Sharon, Pa.
102,684.—SEEDING MACHINE.—Hermann Koeller, Adams County, Ill.
102,685.—BOTTLE STOPPER.—G. W. Ladd and F. W. Copcutt, New York city.
102,686.—COMPOUND FOR TREATING RHEUMATISM.—Wm. Landert and John Degeuer, Chicago, Ill.
102,687.—PLOW.—W. M. Lanham, Noblesville, Ind.
102,688.—BARBER AND DENTAL CHAIR.—Michael Leidecker, Rochester, N. Y.
102,689.—MANUFACTURE OF FERTILIZER AND OIL FROM FISH.—Orazio Lazo, Baltimore, Md.
102,690.—PIPE TONGS.—Stephen Lynch, New York city.
102,691.—SHADE HOLDER FOR LAMPS.—J. W. Lyon (assignor to himself and John Fellows), Brooklyn, N. Y.
102,692.—LANTERN GLASS.—L. C. Mayo (assignor to himself and J. J. Currier), Gloucester, Mass.
102,693.—MACHINE FOR SPLITTING GRINDSTONES.—Jas. McDermott, Cleveland, Ohio.
102,694.—SHOE FASTENER.—A. McKenney, Portland, Me.
102,695.—ATTACHMENT OF POLE OR SHAFTS TO WHEELS VEHICLES.—James McMillin, Ripley, Ohio.
102,696.—SEAL LOCK.—D. A. McNair, Washington, D. C.
102,697.—TRANSMITTING POWER.—A. W. Morton, Morrisania, N. Y.
102,698.—HYDRANT.—John Myers, Cincinnati, Ohio.
102,699.—WELL TUBE.—Simon Neff, Plymouth, Ind.
102,700.—SASH MARKER.—Gouverneur M. Nickason, Ellenville, N. Y.
102,701.—ROCKING AND RECLINING CHAIR.—T. J. Palmer, New York city.
102,702.—SOFA BED.—F. C. Payne, New York city.
102,703.—PISTON CONNECTION.—Hart F. Pease, Brooklyn, N. Y.
102,704.—SMITHS' BELLOWS.—Geo. H. Peek, East Hamburg, N. Y.
102,705.—WASHING MACHINE.—S. B. Peugh, Salem, Ind.
102,706.—GRADING MACHINE.—James Preston, Atchison, Kansas.
102,707.—DIE FOR FORMING KING BOLTS.—F. B. Prindle, Southington, Conn.
102,708.—DIE FOR TRIMMING KING BOLTS.—F. B. Prindle, Southington, Conn.
102,709.—HUBS OF ROAD CARRIAGES.—John Radwin, Lynn, Mass.
102,710.—SEWING MACHINE.—George Rehfuss, Philadelphia, Pa., assignor to American Button-hole Over-seaming and Sewing Machine Co., Pa.
102,711.—MACHINE FOR MAKING CHAIN LINKS.—Henry Reynolds, Aurora, N. Y.
102,712.—WASH BOILER APPARATUS.—Jacob Ringle, Jersey City, N. J.
102,713.—SCHOOL DESK.—Charles Hamilton Roberts, Geneva, Ohio.
102,714.—WASHING MACHINE.—W. T. C. Runnalls, Searsport, Me.
102,715.—COMPOUND FOR REFINING CIDER, WINE, ETC.—Oliver Schaffer, Dayton, Ohio.
102,716.—CASK FOR LAGER BEER.—John J. Schillinger, New York city.
102,717.—CLOTHES DRYER.—Henry Schryver (assignor to himself and J. D. Chipp), Kingston, N. Y.
102,718.—TEA AND COFFEE STRAINER.—A. B. Searles, Providence, R. I.
102,719.—HOISTING GEAR.—Henry F. Shaw, West Roxbury, Mass.
102,720.—HEEL STIFFENER FOR BOOTS AND SHOES.—G. V. Sheffield, Northbridge, Mass.
102,721.—SHANK-PIECE FOR BOOTS AND SHOES.—George V. Sheffield, Northbridge, Mass.

- 102,722.—MACHINE FOR COVERING REEDS FOR HAT TRIMMING.—G. A. Shepard, Bethel, Conn.
102,723.—REVERSIBLE LATCH.—Wm. E. Sparks (assignor to Sargent & Co.), New Haven, Conn.
102,724.—RAILWAY SWITCH.—William H. Staats, Crescent, N. Y.
102,725.—APPARATUS FOR PRESERVING WOOD.—Francis A. Stevens, Chicago, Ill.
102,726.—HEATING STOVE.—David L. Stiles, Rochester, N. Y.
102,727.—KNIFE SHARPENER.—Septimus C. Stokes, Manchester, N. H.
102,728.—LAMP BURNER.—Alvin Taplin, Forestville, assignor to Bristol Brass and Clock Co., Bristol, Conn.
102,729.—HAY AND LIME ELEVATOR.—Abraham Thomas and G. D. Thomas, St. Thomas, Pa.
102,730.—COMBINED THREAD AND NEEDLE CASE.—Theodore R. Timby, Saratoga, N. Y.
102,731.—MACHINE FOR MAKING PLOWS.—J. Urie, Evansville, Ind.
102,732.—COPY BOOKS.—Philip F. Van Everen, Brooklyn, N. Y.
102,733.—BOOK COVER PROTECTOR.—Philip F. Van Everen, Brooklyn, N. Y.
102,734.—HAND STAMP CANCELER.—L. B. Van Kleeck, New York city. Antedated March 16, 1870.
102,735.—REFRIGERATOR.—G. W. Walker, Malden, Mass.
102,736.—STRAW CUTTER.—Columbus M. Weathers, Rockport, Mo.
102,737.—LAVATORY APPARATUS.—Darius Wellington, Boston, Mass.
102,738.—WATER-CLOSET BOWL.—Darius Wellington, Boston, Mass.
102,739.—LUBRICATOR FOR LOOSE PULLEYS.—I. P. Wendell and S. P. M. Tasker, Philadelphia, Pa.
102,740.—MANUFACTURE OF WROUGHT IRON FROM ORE, CINDER, OR SLAG.—James D. Whipple and Jacob J. Storer, Boston, Mass.
102,741.—AUTOMATIC GATE.—Samuel Whitaker, Bel Air, Md.
102,742.—DRYER.—G. W. White, Malden, and L. E. Wentworth, Melrose, Mass.
102,743.—PUMP.—F. C. Wilson, Watkins, N. Y.
102,744.—HAY RAKE AND LOADER.—Geo. A. Wing, Albany, N. Y.
102,745.—APPARATUS FOR DISTILLING SPIRITS.—Francis M. Young, Nashville, Tenn.
102,746.—UMBRELLA.—S. W. Young, Providence, R. I.
102,747.—PROPELLING WHEEL.—A. C. Loud, San Francisco, Cal.

REISSUES.

- 3,945.—CULTIVATOR.—A. R. Blood, Alexander Hathaway, and V. R. Beach, Independence, Iowa.—Patent No. 19,304, dated June 30, 1868.
3,946.—BREECH LOADING FIREARMS.—W. N. Ely, Stratford, Conn., trustee and assignee of J. C. Symmes.—Patent No. 22,094, dated November 16, 1858.
3,947.—MOWING MACHINE.—John P. Groely, Boston, and Levi W. Buxton, Lynn, for themselves and Thomas H. Dodge (assignee of one third interest), Worcester, Mass.—Patent No. 39,288, dated July 21, 1863.
3,948.—ORE CRUSHER.—John Hamilton, George W. Hamilton, and Joseph Hamilton, for themselves and Joseph Hamilton, assignee of L. E. Hanson, Wheeling, West Va.—Patent No. 90,532, dated May 25, 1869.
3,949.—EXTENSION TABLE.—C. P. Lenz, Poughkeepsie, N. Y.—Patent No. 94,617, dated September 7, 1869.
3,950.—STEAM GAS GENERATOR.—H. S. Maxim, New York city.—Patent No. 71,400, dated Nov. 26, 1867.
3,951.—BREECH-LOADING FIREARM.—B. S. Roberts, U. S. Army.—Patent No. 35,531, dated Sept. 23, 1862; reissue 2,067, dated Sept. 5, 1865.
3,952.—DIVISION 2.—BREECH-LOADING FIREARM.—B. S. Roberts, U. S. A.—Patent No. 35,531, dated Sept. 23, 1862; reissue 2,067, dated Sept. 5, 1865.
3,953.—BREECH-LOADING FIREARM.—B. S. Roberts, U. S. A.—Patent No. 35,531, dated September 23, 1862; reissue 2,067, dated Sept. 5, 1865.
3,954.—RAILWAY CAR WHEEL.—J. K. Sax and G. W. Kear, Kingston, Pa.—Patent No. 88,743, dated April 6, 1869.
3,955.—DIVISION A.—HARVESTER.—John F. Seiberling, Akron, Ohio, assignee of George Esterly.—Patent No. 23,666, dated April 19, 1859.
3,956.—DIVISION B.—HARVESTER.—J. F. Seiberling, Akron, Ohio, assignee of George Esterly.—Patent No. 23,666, dated April 19, 1859.
3,957.—DIVISION C.—HARVESTER.—J. F. Seiberling, Akron, Ohio, assignee of George Esterly.—Patent No. 23,666, dated April 19, 1859.
3,958.—HARVESTER.—Richard M. Williams, Rockville, Md.—Patent No. 95,864, dated Oct. 12, 1869.
3,959.—MANUFACTURE OF YEAST FOR DISTILLERS.—Joseph Wolff, Cincinnati, Ohio.—Patent No. 99,615, dated Feb. 8, 1870.
3,960.—HORSE HAY RAKE.—Alzirus Brown, Worcester, Mass., assignee by mesne assignments, of Mathias Raezer.—Patent No. 16,294, dated Nov. 29, 1859.
3,961.—CONSTRUCTION OF SEWING MACHINE COVER.—John Johnson, Hartford, Conn.—Patent No. 72,739, dated December 31, 1867.
3,962.—BRONZING AND GILDING.—John L. Duffee, Washington, D. C., for himself and John H. Johnston, assignee of one third interest.—Patent No. 102,198, dated April 19, 1870.

DESIGNS.

- 4,002.—GLASS COLUMN FOR COACH LAMPS.—Thos. Boudren, Bridgeport, Conn.
4,003.—STOCKING FABRIC.—Thomas Dolan, Philadelphia, Pa.
4,004.—BRAND.—Max Hoffheimer, Cincinnati, Ohio.
4,005.—TRADE MARK.—Otto Kornemann and Julius Jungbluth, New York city.
4,006.—BURIAL CASKET.—Philipp J. Marchal, Hartford, Conn.
4,007.—FLOOR CLOTH PATTERN.—James Patterson, Elizabeth, assignor to R. H. and B. C. Reeve, Camden, N. J.
4,008.—TYPE.—Richard Smith (assignor to Mackellar, Smiths and Jordan), Philadelphia, Pa.
4,009.—CROSS-CUT SAW.—W. G. Tuttle, Chelsea, Mich.
4,010.—TRUNK LOCK.—Cornelius Walsh, Newark, N. J.

EXTENSION.

SEAMLESS METAL TUBES.—W. F. Brooks, New York city.—Letters Patent No. 14,551, dated April 1, 1856.

Inventions Patented in England by Americans.

[Compiled from the "Journal of the Commissioners of Patents."] PROVISIONAL PROTECTION FOR SIX MONTHS.

- 806.—CRIMPING MACHINE.—S. W. Jamison, New York city. March 18, 1870.
816.—MACHINES FOR SEWING STRAW.—S. S. Turner, Westborough, Mass. March 22, 1870.
906.—PRINTING PRESSES.—Charles Parker, Meriden, Conn. March 17, 1870.
834.—MANUFACTURING BARRELS, AND OTHER ROUND VESSELS OF WOOD.—D. H. Howard, Grand Rapids, Mich. March 21, 1870.
837.—WHEELS.—J. A. Woodbury, Boston, Mass. March 21, 1870.
872.—AMMONIATED SULPHURIC ACID.—C. U. Shepard, Jr., Charleston, S. C. March 24, 1870.
856.—IRON AND STEEL WORKING.—John Absterdam, New York city. March 25, 1870.
870.—TURBINE WATER WHEELS.—E. A. Chadwick, Burnet, Texas. March 24, 1870.
885.—STEAM ENGINE VALVES.—G. E. Noyes, Washington, D. C. March 25, 1870.
882.—VALVES.—G. Sicksel and J. H. Thorndike, Boston, Mass. March 25, 1870.
896.—MACHINERY FOR COMPRESSING PEAT, ETC.—T. Ellis and W. A. Ellis, Philadelphia, Pa. March 25, 1870.
904.—WRENCH.—G. C. Taft, Worcester, Mass. March 28, 1870.
905.—ANCHOR.—G. C. Pattison, Baltimore, Md. March 28, 1870.
923.—ARTIFICIAL FUEL AND APPARATUS EMPLOYED IN ITS MANUFACTURE.—Anthracite Fuel Manufacturing Company, Philadelphia, Pa. March 30, 1870.
962.—MACHINES FOR REAPING AND MOWING.—C. H. McCormick, Chicago, Ill. March 30, 1870.