

these that from Porthmawr in Wales is about an average specimen. Its constitution is as follows:—

Silica.....	34.21
Alumina and oxide of iron.....	52.00
Lime.....	6.199
Magnesia.....	0.659
Sulphuric acid.....	4.12
Phosphoric acid.....	6.633
Total.....	97.821

The other samples are formed wholly of these same substances, but in different proportions. The silica and alumina would doubtless be combined as silicate of alumina, which is clay.

The lime would be combined first with the phosphoric acid which in this specimen would take it all. The compound formed would be phosphate of lime. This is commonly said to be insoluble and worthless, the biphosphate or super-phosphate being the soluble and highly prized fertilizer which produces such magical effects. The phosphate is, however, soluble to some extent, and is not wholly worthless as a fertilizer.

In other samples of coal ashes which have been analyzed, the quantity of phosphoric acid was not sufficient to take up all the lime, and in these cases the remainder of the lime would enter into combination with the sulphuric acid, forming sulphate of lime. This is known under the names of gypsum and plaster of Paris, as a very valuable fertilizer.

It may be that the ashes of English coals contain these two substances, phosphate of lime and sulphate of lime, in sufficient quantities to make them valuable as manures. It would be a little surprising, however, if their value for this purpose should be so great as to make the privilege of collecting them in a single district for six months worth \$9,000. This circumstance suggests the possibility that some rare metal or other valuable substance may have been discovered in them. It also suggests the desirableness of a more thorough examination of the ashes of American coals. The constitution of these is, however, so different from that of the ashes of English coals, that it by no means follows that any substance occurring in one will be found in the other.

MICROSCOPIC OBJECTS.

"All that tread
The earth are but a handful to the tribes
That slumber in its bosom."

says Bryant, speaking of the human race. With equal truth it may be said that all the hosts of mankind who have been born into the world since the creation, are but a handful to the countless myriads of beings that swarm in that invisible world which has been revealed to us by the magical power of the microscope. When we reflect that each one of these beings has his own needs and desires, his loves and battles, his career from life to death; and that every drop of every stagnant pool has been teeming with them for immeasurable ages before the existence of the human race, the mind is overwhelmed in the effort to conceive the vastness of this creation. It is an impressive thought that mankind should have lived on the same planet with this world of sentient beings for so many thousands of years without any suspicion of its existence.

It is not strange therefore, that when the discovery was made, the minds of men should be turned to the examination of their minute, strange and curious contemporaries, and that this study should be prosecuted with ever-widening interest. That this is the case we are very frequently reminded by some improvement in the microscope, by some discovery through its aid, or by some work upon its use.

We have now before us a book of 140 pages on "The Preparation and Mounting of Microscopic Objects," devoted exclusively to this department of microscopic observation. The various methods of attaching the minute specks to glass slides, so that they may be brought under the focus of the instrument, as well as the balsams and cements employed, and the different modes of preparing the objects, are very fully and intelligently discussed.

The work is by Thomas Davies, and is published by William Wood & Co., 61 Walker street, New York.

A PINE tree was lately cut in Colebrook, Conn. for the shaft of a big wheel for a Manufacturing company, which worked thirty-six inches in diameter and twenty-six feet in length. The stump was six feet through.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Protector for Baskets.—This invention consists in applying a metallic frame to baskets in order to protect the same or preserve them from wear or injury. The invention is chiefly designed to be applied to large baskets or those in which weighty substances are conveyed or carried, such, for instance, as bushel baskets used by farmers and others, coal baskets for carrying coal, &c. Baskets of this kind are soon worn, cut, broken or destroyed, in consequence of the weighty substances carried in them, and a metallic frame renders them durable, serving as a support to the basket in holding its contents and likewise protecting it from external injuries, such as blows, concussions, &c. Philip Eley, of New York city, is the inventor.

Means for Raising Oil from Wells.—This invention relates to a new and improved means for raising petroleum in wells through the medium of air injected into them. The invention has for its object, first, the keeping of the air passage free from mud, sand, etc., which are liable, in the old plans, to choke all said passage; second, in having the air passage so arranged that it will not interfere in the least with the ascent of the oil in the oil tube, nor the oil interfere with the current of air—due provision being also made for the difference in the exhaustion of the oil tube and well pipe, as well as for the ready connecting and disconnecting of the several parts. The above invention is by Messrs. L. W. Turrell, Samuel Stanton, and L. C. Ward, Newburgh, Orange Co., N. Y.

Winding up Watches.—This invention consists of a main spring barrel composed of two barrels, one inside the other, the outer barrel being rigidly connected with the main gear wheel, and the inner barrel carrying the winding arbor, the main-spring and the maintaining ratchet, or its equivalent, in combination with two stops or dogs, one applied to the inner, and one to the outer barrel, in such a manner that, when the spring is wound up the inner barrel turns independent of the outer barrel until the two stops are in contact, and when the main spring breaks the inner barrel flies back and completes a full revolution, or nearly so before its stop strikes the dog of the outer barrel, and thus the force of the spring is spent, and injury to the mechanism of the watch is prevented. Invented and patented by G. C. Martin, Cleveland, Cuyahoga Co., Ohio.

Roller Cleat for Trunks.—This invention consists in the arrangement of mortises or cavities in the cleat of a trunk, in combination with rollers, the axles of which have their bearings in the sides of said mortises or cavities in such a manner that the rollers can be secured to the cleat without the use of a metal bracket, and a simple, cheap and durable fastening for said roller is produced. The ends of the cleat are made thin and turned up over the edge of the trunk in such a manner that, by the cleat, the edge and ends of the trunk are protected, as well as its bottom, and the cleat is less liable to be knocked off than it is when attached to the bottom in the ordinary manner. John A. Lieb and John Schmadel, of 69 Prince st., Newark, N. J., are the inventors of this improvement.

PURIFYING WATER.—A Mr. H. A. Sheldon sends the following account of an experiment to purify water:—"Having occasion to purify river water which was colored by passing through swamps containing muck, peat, and other decayed vegetable matter, I tried the usual method with alum, which deposited the mechanical impurities but left the water the color of pale sherry wine. I then mixed 1 oz. powdered alum and 2 oz. clean white clay together, for one barrel of water, made a thin paste and stirred it with the water, which, in twelve hours, was perfectly transparent and colorless. The precipitate in the latter case was of a dark chocolate, in the former a pale ashen color."

MESSRS. DAVISON, STILES & WOOLSEY, 229 Broadway, are the agents for the traveling and steam cranes illustrated on page 190 of the current volume. All letters should be addressed to them.



ISSUED FROM THE UNITED STATES PATENT-OFFICE
FOR THE WEEK ENDING APRIL 4, 1865.

Reported Officially or the Scientific American.

Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

47,080.—Cigarette.—L. L. Arnold, New York City: I claim, First, A new article of manufacture, a cigarette, constructed and combined in the manner described, and, Second, The method herein described of making the same.

47,081.—Cabinet Organ or Harmonium.—Thomas Atkins, Cincinnati, Ohio: I claim so arranging the stops or swells of an organ or harmonium with regard to a common lifting piece, F, operated by a foot or knee pedal, as that they may all, or any one, two or more of them, be opened or closed by said pedal, without raising the hands from the keys, substantially as herein described.

47,082.—Manufacture of Blacking, Etc.—Roberts Bartholow, Cincinnati, Ohio:

I claim the manufacture, compounding and preparation of a new and improved kind of oil blacking for leather, boots, shoes, harness and other articles manufactured, in whole or in part, of leather, composed of the ingredients above named, and manufactured, compounded and prepared in the manner and for the purposes substantially as set forth at large above. I also claim, as a new manufacture, oil blacking for leather and other articles, made by combining petroleum or any of its products, or other hydro-carbon oils, treated substantially as hereinbefore set forth, with any suitable acids, oxides, gums or resins, substantially in the manner specified.

47,083.—Oil for Paint.—Roberts Bartholow, Cincinnati, Ohio:

I claim the manufacture and preparation of a new and improved kind of oil for mixing and compounding with white lead, zinc, white and other mineral pigments, in lieu of linseed oil and other paint oils, and for other purposes, composed of the ingredients above named, and compounded, manufactured and prepared in the manner and for the purposes substantially as set forth above.

47,084.—Process for Preparing Petroleum for the Manufacture of Paint, Etc.—Roberts Bartholow, Cincinnati, Ohio:

I claim the manufacture, compounding and preparation of paints for common purposes, of various colors and shades of color, and embracing a colors and shades of color, from crude petroleum and refined petroleum, in combination with sulphuric acid, nitric acid, acetic acid, common glue, dry white lead, or otherwise known as carbonate of lead, dry white zinc, or otherwise known as oxide of zinc, and other white pigments, and pigments of various colors, combined in the proportions and in the manner substantially as set forth above.

47,085.—Machine for Securing Soles to Boots and Shoes.—John Blakeney, Philadelphia, Pa.:

I claim, First, The screw, rod, I, and its internal wire, x, and the nut, composed of the arms, G and G', or their equivalents, in combination with the system of gear wheels herein described, or the equivalent to the same, whereby the said screw rod is caused to revolve at a faster speed than the nut, for the purpose specified.

Second, Two or more cutters, 4 and 7, arranged in the projection, m, of the rocking frame, in respect to the wire x, in combination with the slotted plates 10, or their equivalents, for adjusting the said cutters, as set forth.

Third, The support, 24, adapted to the last, in combination with the movable plate, Y, and the device herein described, or the equivalent to the same, whereby the said support can be adjusted vertically and laterally, in the manner described.

Fourth, The combination of the plate, Y, adjustable plate, 14, rocking frame, 19, adjustable support, 24, and sliding support, 15, the whole being arranged and operating substantially as and for the purpose herein set forth.

47,086.—Spring Bed Bottom.—J. Blair Bowditch, New Haven, Conn.:

I claim the combination of the slats, B B, with the wooden springs, D D, as herein described, for the purpose specified.

47,087.—Lamp Cone.—Charles H. Buckalew, Jersey City, N. J.:

I claim the construction of the cone frame with a metallic base and bifurcated connecting arch, with a filling or dome of glass blown or cast within the said frame, substantially as herein described and represented.

[This improvement relates to the construction of the air cone or flame deflector which surrounds or covers the upper part of the ordinary kerosene or petroleum oil lamps. The improvement consists in forming the cone of glass and metal combined. A frame of metal is first made, corresponding to the shape of the cone; this frame is then filled with glass, when hot, by pressure. A transparent cone is thus produced, the use of which results in obtaining probably twenty per cent more light from lamps to which the improvement is applied.]

47,088.—Breech-loading Fire-arm.—John W. Cochran, New York City:

I claim, First, So constructing and applying a breech block, having a movement such as is herein described, as to provide for the insertion of the cartridge into the barrel from the under side of the stock of a fire-arm, substantially as herein specified.

Second, Providing a cavity, c, substantially as herein described, in the under side of such a breech block for the reception of the cartridge when the gun is in the inverted position shown in Fig. 3, whereby the movement of the said block which is necessary for the insertion of the cartridge into the chamber of the barrel is greatly reduced, and the discharged cartridge shells are steadied while being withdrawn from the barrel.

Third, The construction and arrangement of the rear end of the breech-operating lever, e, substantially as herein described, whereby an opening between the said end of the breech block and the stock is avoided.

47,089.—Railroad Switch.—J. W. Colwell, Macedonia, Ohio:

First, I claim the guards, C C' d d', and guard rails, D D', in combination with the switch rails, when arranged as and for the purpose set forth.

Second, I claim placing the main track, A A', on a tangent with and at the junction of the side track, B B', in combination with the guards and guard rails, substantially as and for the purpose specified.

47,090.—Harrow and Roller Combined.—Wm. H. Converse, New Castle, Maine:

I claim the harrow, E, fitted in or to the frame, A, substantially as shown, in combination with the beat bar, F, provided with the plate.

Second, A chamber, D, with a valvular bottom and escape pipe, d, arranged over the coal supply cylinder or magazine of a base burning stove substantially as described.

47,137.—Manufacture of Propellers.—James Sutherland, New York City: I claim constructing a propeller out of two parts by forming the hub of each part substantially as herein shown and described and fitting the two parts together as and for the purposes set forth.

47,138.—Machine for Distributing Fertilizers.—J. H. Thomas and P. P. Mast, Springfield, Ohio: First, We claim the slats or strips, C, suspended from the bar, B, and projecting down through the opening in the bottom of the hopper, A, when connected at the bottom by bar, d, substantially as and for the purposes set forth.

47,139.—Device for Raising and Lowering Lock Gates.—William Thomas, Ottawa, Ill.: I claim the combination of the block and tackle, the roller levers, ratchet wheels, the pawls, the springs and frame of the machine being operated and used as herein before set forth for the uses and purposes aforesaid.

47,140.—Medical Compound.—John Thurmon, Pike County, Mo.: I claim the medical compound prepared as described.

47,141.—Insulator for Telegraph.—S. F. Van Choate, New York City: I claim, first, the combination of the cavity, A, face plate, D, and pin hook, C, for the purposes set forth.

47,142.—Addressing Machine.—N. E. Warren, Cleveland, Ohio, and G. W. Warren, Hillsdale, Mich.: We claim, first, The curved lever, C, operated by the bent spring, G, in combination with the adjustable head, B, when arranged and operating as herein set forth.

47,143.—Railway Carriage.—True West, Roxbury, Mass.: I claim the combination and arrangement of the four struts, E E E E, the four pendulous rods or hangers, F F F F, and the two semi elliptic springs, G G, disposed on each side of the truck frame, B, with the axle box, C, the axle, D, the platform or carriage body, A, the whole being substantially as represented in Figure 1, of the drawings a hereinafter explained.

47,144.—Electro-magnetic Musical Instrument.—Lorenzo Wesson, Chillicothe, Ohio: First, I claim an electro-magnetic apparatus for playing music with variable power or expression, by automatically varying the battery power exerted on the magnets to accord with the number of magnets in use or with the strength of sound required, in any manner, substantially as set forth.

47,145.—Churn.—Henry P. Westcott, Seneca Falls, N. Y.: I claim, first, The employment, in combination with the arm, E, lever, D, and arc, g, of a spring, f, substantially as and for the purpose set forth.

47,146.—Pump.—Joseph F. White, Keene, N. H.: I claim the combination in a double-acting pump of a valve chest, W, provided with triangular valve chambers, A, with a rotating pump tube, carrying hollow radial arms, E, which have partial rotary motion, in horizontal directions, and are provided with double-acting valves, substantially as above described.

47,147.—Apparatus for Dividing Sugar in Blocks.—Wm. H. Whitmore, Boston, Mass.: I claim the combination of the conduit, one or more saws, and the separators, arranged substantially in manner and so as to operate as specified.

47,148.—Oil Ejector.—George L. Witsel and Edward Burke, Philadelphia, Pa.: We claim the combination of condensing and exhausting pumps, in conjunction with induction and suction pipes, arranged within an oil well, substantially as and for the purposes described.

47,149.—Bow Pin for Ox Yoke.—Orville O. Woodruff, Killingworth, Conn.: I claim the combination of the two levers, A A, constructed with pins, D D, substantially as and so as to operate in the manner and for the purpose specified.

47,150.—Window Cord Pulley.—Wm. C. Ames, Hartford, Conn., assignor to Landers & Smith Manufacturing Co., New Britain, Conn.: I claim as a new and improved article of manufacture, viz.: a window or each cord pulley case, having the face plate, a, midway, or nearly so, of the case, a, to be attached to the back side of the jamb casing of the window frame, substantially as described.

47,151.—Mode of Weaving Fabrics with Button Holes therein.—John Conner (assignor to himself and Henry A. Ayling), Boston, Mass.: I claim the improvement in weaving suspender webbing, etc., to form button or other similar holes therein, by the employment of a reed having a construction, and operating in the manner substantially as set forth.

47,152.—Mangle.—Josiah Johnson, New York City, assignor to John Ward, Jr., Brooklyn, N. Y. Antedated March 30, 1865: I claim the combination and arrangement of the screw, Q, the spring, O, and the links, N, with the rollers, P and B, and the frame, A, substantially as and for the purpose set forth.

47,153.—Seed Drill.—Griffith M. Murphy (assignor to Lyman S. Paine), Lewistown, Pa.: I claim, first, A sliding or transferable spring, g, whereby the power required to throw the drill tube out of working position may, at the will of the operator, be increased or diminished, substantially as described.

47,154.—Shaft Coupling for Carriage.—Francis B. Morse, New Haven, Conn., assignor to Frederick C. Dayton, Jr.: I claim as a new article of manufacture a shaft coupling composed of a jack or stationary part, forged with two eyes, and a cavity for receiving an elastic presser, an elastic process, and a plain head with one eye, when constructed, combined and fitted for use, substantially as herein described.

47,155.—Forming Skeleton Skirt.—Datus E. Rugg, New York City, assignor to himself, F. S. Otis, Joseph I. and J. O. West, Jedediah Wilco & Co., and Henry Richardson: I claim the method herein specified of shaping or forming ladies' skirted on skirts by sustaining the hoops in the proper position relatively, while being connected together by tapes, galloons, or their equivalent, for the purposes specified.

47,156.—Railway Car.—Signor Vallo (assignor to himself and Joseph Chapman), Philadelphia, Pa.: I claim, first, Connecting the foot pieces, E E E E, with the springs, J, by means of the legs, F F F F, bars, G G, and spring seats, H H H H, substantially in the manner and for the purpose above described.

47,157.—Brush.—Albert M. White (assignor to himself and Bernard Larvey), Port Chester, N. Y.: I claim the mode of securing the several bunches of bristles in the solid back of a brush by means of separate staple like wires, C, applied substantially as herein described.

47,158.—Apparatus for Concentrating Liquids.—Chas. A. Wood, Dorchester, Mass., assignor to Daniel C. Hood, of the same place, and W. H. S. Jordan, West Roxbury, Mass.: I claim as an improvement in vacuum pans the pan, A, in combination with a steam jacket, D, of wood or other non-conducting material, operating substantially as set forth for the purpose specified.

47,159.—Buckle.—Charles E. Woodman and Charles B. Hatfield (Assignors to Charles E. Woodman), Boston, Mass.: We claim the combination and arrangement of the holding bar, b, and the straight-edged tongue, C, with the bar, a, the overlapping tongue, B, and the buckle frame, A.

47,160.—Preparation of Materials to be Used in the Purification of Gas.—Alexander A. Croll, London, Eng.: I claim, first, The combining the neutral salts referred to, or as nearly neutral as convenient, with wood, sawdust, or other slightly absorbent or cellular matter, in the manner stated, and employing such mixture in the purifying apparatus, for the purification of gas, substantially as described.

47,161.—Cork Pull.—Frans Gustavus Bielefeld, Berlin, Prussia, and Charles C. E. Schwartz, Hamburg: We claim the combination of the rod, B, the metallic spring, C, and the button, D, substantially as and for the purpose specified.

47,162.—Drying and Charring Peat.—Fred'k Ludewig Hahn Danchell, London, Eng.: I claim, first, The improved arrangement of the apparatus for drying blocks of peat, as shown and described in reference to sheet 1, particularly the arrangement of the endless bands and rollers, by which the blocks are turned over in passing from one set to another.

47,163.—Breech-Loading Fire Arms.—Cyprien Chabot, Philadelphia, Pa.: I claim, in combination with the hinged breech block swinging upward and forward, the lever, H, and its latch hung thereto, but so as to have a degree of motion independent thereof, and the spring bolt, e, for the purpose of locking the breech block when down, and for unlocking it by the same motion that raises up again, as herein described and represented.

47,164.—Windlass for Tightening Ship's Standing Rigging.—Jasper G. Codrus, Port Richmond, N. Y.: I claim the frame, d, suspended by the eye, e, from the rope or shroud, and the combination in the frame of the barrel, f, and a hand spike or lever to turn said winch barrel, as and for the purposes specified.

47,165.—Platform Scales.—James H. Conklin, Yorktown, N. Y.: I claim the combination of the lever, A, with the other parts, C and F, of a scale, in the manner and for the purpose substantially as set forth.

47,166.—Steam Pressure Indicator.—W. M. Davie and Charles T. Webber, Janesville, Wis.: We claim the arrangement of the scroll spring, e, the cylindrical box or chest, a, shaft, c, pulley, i, chain, k, connecting rod, d, cross bar, f, and hand wheel, g, substantially as and for the purposes set forth.

47,167.—Washing Machine.—John H. Duck and Erwin S. Gould, Elgin, Ill.: We claim the pinion, N, and wheel, T, in combination with the shaft, C, and rubbers, O' O' O', constructed and operated substantially in the manner and for the purpose described.

47,168.—Mining and Tunneling Machine.—Herman Haupt, Cambridge, Mass., and J. Y. Smith, Alexandria, Va.: First, We claim the pick or series of picks in combination with a mechanism for imparting rotary motion thereto, to operate in the manner and for the purpose substantially as herein set forth.

47,169.—Beehives.—William Henschen, Hennepin Co., Minn.: I claim the arrangement in the construction of a straw beehive of a straw rope, or layers of rope, with the splints, I, top frame, C, and bottom frame, D, substantially as and for the purposes herein described.

47,170.—Lubricating the Packing of Stuffing Boxes, etc.—Iron Bruce Miller and William Hartley Miller, Philadelphia, Pa.: We claim the application of the substance, mode and material above described to the stuffing boxes or other joints of engines or other machinery, or any other substantially the same mode and material.

47,171.—Braiding Guide for Sewing Machines.—Louis Planer, New York: I claim, first, Providing the groove, J, with a concave bottom, and a spring, L, to operate in the manner and for the purpose herein specified.

47,172.—Ground Augur.—David Ring, Damariscotta, Me. Antedated March 26, 1865: I claim, first, The disks, D and E, provided with the top and bottom cutters, h and j, substantially as set forth, and for the purpose described.

47,173.—Lamp for Burning Oil.—Thomas S. Speakman, Camden, N. J.: I claim, first, The use, in combination with lamps for burning animal, vegetable or mineral oils or fatty matters, of a wick, or its equivalent, for conveying to the flame a supply of water substantially as and for the purpose herein set forth.

47,174.—Oil Ejector.—L. W. Turrell, Saml. Stanton and L. C. Ward, New York City: We claim, first, A contrivance for raising oil like that hereinbefore described, that is to say, one wherein the oil is drawn up through a central passage or tube, around which is an annular passage or tube through which the compressed air is made to act upon the oil, substantially in the manner and for the purpose described.

47,175.—Writing Tablet.—Thomas Weaver, Harrisburg, Pa.: I claim, first, The construction of a tablet attachment for the hand that moves with it and under it, and presents a continuous writing surface under the pen or pencil, whose parts are so proportioned and arranged as to form, when folded, a pocket vade mecum.

47,176.—Movable Fire-place with Gridiron Attachment.—S. W. Wetmore, Erie, Pa.: I claim the movable fire-place, constructed with narrow sides, to be placed in the nature of a false door, in the doorway of the cooking stove, and to be used in connection with the adjustable folding grid iron suspended before it.

DESIGN.

2,011.—Show Case.—George Q. Pragnell, New York City: I claim the design above described for the rails of a show case.

REISSUES.

1,926.—Shirt Collar.—Wm. E. Lockwood, Philadelphia, Pa., assignee by mesne assignments of Walter Hunt. Patented July 25, 1854: I claim so indenting shirt collars made of a fabric composed of paper and muslin, or an equivalent fabric, that the indentations will represent the stitches of an ordinary dressed linen collar.

1,927.—Shirt Collar.—Wm. E. Lockwood, Philadelphia, Pa., assignee by mesne assignments of Walter Hunt. Patented July 25, 1854: I claim a shirt collar made of a fabric composed of paper and

muslin, or an equivalent fabric, having a smooth white surface coated with transparent varnish, for the purpose specified.

1,928.—Revolving Fire-arm.—Rollin White, Springfield, Mass. Patented April 13, 1858 :

I claim in that class of arms consisting of a fixed barrel with a rotating cylinder having a series of parallel chambers, which are brought in succession in line with the barrel to be fired, making a recess or aperture through the breech, and communicating with, but of less area than the rear end of the chamber, and of a form, substantially as described, suited to and in combination with the hammer, or the equivalent thereof, to strike through such recess against the rear end of the cased cartridge which contains the fulminate priming, as set forth.

1,929.—Tobacco Pipe.—The Tobacco Pipe Company, Baltimore, Md., assignees by mesne assignment of Andrew J. Bowen. Patented June 10, 1862 :

We claim, First, The two tubes or channels, a and b, in the stem, in combination with the bowl, c, and cup or receptacle, d, as herein set forth.

Second, The device by which the cup or receptacle, d, is attached to the bowl, c; i. e., the male screw in the latter and the female screw in the former, or their equivalents, in combination with the channels, a and b, bowl, c, and cup, d, substantially as shown and described and for the purposes set forth.



PATENTS

GRANTED

FOR SEVENTEEN YEARS.

MUNN & COMPANY,

In connection with the publication of the SCIENTIFIC AMERICAN, have acted as Solicitors and Attorneys for procuring "Letters Patent" for new inventions in the United States and in all foreign countries during the past seventeen years. Statistics show that nearly ONE-THIRD of all the applications made for patents in the United States are solicited through this office; while nearly THREE-FOURTHS of all the patents taken in foreign countries are procured through the same source. It is almost needless to add that, after seventeen years' experience in preparing specifications and drawings for the United States Patent Office, the proprietors of the SCIENTIFIC AMERICAN are perfectly conversant with the preparation of applications in the best manner, and the transaction of all business before the Patent Office; but they take pleasure in presenting the annexed testimonials from the three last ex-Commissioners of Patents.

Messrs. MUNN & Co.—I take pleasure in stating that, while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours very truly,
CHAS. MASON.

Judge Mason was succeeded by that eminent patriot and statesman, Hon. Joseph Holt, whose administration of the Patent Office was so distinguished that, upon the death of Gov. Brown, he was appointed to the office of Postmaster-General of the United States. Soon after entering upon his new duties, in March, 1859, he addressed to us the following very gratifying letter.

Messrs. MUNN & Co.—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents, while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and I doubt not justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements.

Very respectfully, your obedient servant,
J. HOLT.

Hon. Wm. D. Bishop, late Member of Congress from Connecticut, succeeded Mr. Holt as Commissioner of Patents. Upon resigning the office he wrote to us as follows:

Messrs. MUNN & Co.—It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency; and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy.

Very respectfully, your obedient servant,
WM. D. BISHOP.

THE EXAMINATION OF INVENTIONS.

Persons having conceived an idea which they think may be patentable, are advised to make a sketch or model of their invention, and submit it to us, with a full description, for advice. The points of novelty are carefully examined, and a written reply, corresponding with the facts, is promptly sent, free of charge. Address MUNN & CO., No. 37 Park Row, New York.

As an evidence of the confidence reposed in their Agency by inventors throughout the country, Messrs. MUNN & CO. would state that they have acted as agents for more than TWENTY THOUSAND inventors! In fact, the publishers of this paper have become identified with the whole brotherhood of inventors and patentees, at home and abroad. Thousands of inventors for whom they have taken out patents have addressed to them most flattering testimonials for the services rendered them; and the wealth which has inured to the individuals whose patents were secured through this office, and afterwards illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! Messrs. MUNN & CO. would state that they never had a more efficient corps of Draughtsmen and Specification Writers than those employed at present in their extensive offices, and that they are prepared to attend to patent business of all kinds in the quickest time and on the most liberal terms.

PRELIMINARY EXAMINATIONS AT THE PATENT OFFICE.

The service which Messrs. MUNN & CO. render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there; but is an opinion based upon what knowledge they may acquire of a similar invention from the records in their Home Office. But for a fee of \$5, accompanied with a model, or drawing and description, they have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a patent, &c., made up and mailed to the inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through the Branch Office of Messrs. MUNN & CO., corner of F and Seventh streets, Washington, by experienced and competent persons. Many thousands of such examinations have been made through this office, and it is a very wise course for every inventor to pursue. Address MUNN & CO., No. 37 Park Row, New York.

THE VALIDITY OF PATENTS.

Persons who are about purchasing patent property, or patentees who are about erecting extensive works for manufacturing under their patents, should have their claims examined carefully by com-

petent attorneys, to see if they are not likely to infringe some existing patent, before making large investments. Written opinions on the validity of patents, after careful examination into the facts, can be had for a reasonable remuneration. The price for such services is always settled upon in advance, after knowing the nature of the invention and being informed of the points on which an opinion is solicited. For further particulars address MUNN & CO., No. 37 Park Row, New York.

The Patent Laws, enacted by Congress on the 2d of March, 1811 are now in full force, and prove to be of great benefit to all parties who are concerned in new inventions.

The law abolishes discrimination in fees required of foreigners, excepting natives of such countries as discriminate against citizens of the United States—thus allowing Austrian, French, Belgian, English, Russian, Spanish and all other foreigners, except the Canadians, to enjoy all the privileges of our patent system (except in cases of designs) on the above terms. Foreigners cannot secure their inventions by filing a caveat; to citizens only is this privilege accorded.

CAVEATS.

Persons desiring to file a caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention. The Government fee for a caveat is \$10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & CO., No. 37 Park Row, New York.

REJECTED APPLICATIONS.

Messrs. MUNN & CO. are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of their Washington Agency to the Patent Office affords them rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Their success in the prosecution of rejected cases has been very great. The principal portion of their charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted, are invited to correspond with MUNN & CO., on the subject giving a brief history of the case, inclosing the official letters, &c.

HOW TO MAKE AN APPLICATION FOR A PATENT.

Every applicant for a patent must furnish a model of his invention if susceptible of one; or, if the invention is a chemical production, he must furnish samples of the ingredients of which his composition consists, for the Patent Office. These should be securely packed, the inventor's name marked on them, and sent, with the Government fees, by express. The express charge should be pre-paid. Small models from a distance can often be sent cheaper by mail. The safest way to remit money is by a draft on New York, payable to the order of Messrs. MUNN & CO. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents; but, if not convenient to do so, there is but little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & CO., No. 37 Park Row, New York.

Patents are now granted for SEVENTEEN years, and the Government fee required on filing an application for a patent is \$15. Other changes in the fees are also made as follows:—

On filing each Caveat.....	\$10
On filing each application for a Patent, except for a design.....	\$15
On issuing each original Patent.....	\$20
On appeal to Commissioner of Patents.....	\$20
On application for Re-issue.....	\$30
On application for Extension of Patent.....	\$50
On granting the Extension.....	\$50
On filing a Disclaimer.....	\$10
On filing application for Design (three and a half years).....	\$10
On filing application for Design (seven years).....	\$15
On filing application for Design (fourteen years).....	\$30

SEARCHES OF THE RECORDS.

Having access to all the official records at Washington, pertaining to the sale and transfer of patents, MESSRS. MUNN & CO., are at all times ready to make examinations as to titles, ownership, or assignments of patents. Fees moderate.

ASSIGNMENTS OF PATENTS.

The assignment of patents, and agreements between patentees and manufacturers, carefully prepared and placed upon the records at the Patent Office. Address MUNN & CO., at the Scientific American Patent Agency, No. 37 Park Row, New York.

FOREIGN PATENTS.

Messrs. MUNN & CO., are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business they have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St. Martin, Paris; and 26 Rue des Eperonniers, Brussels. They thing they can safely say that THREE-FOURTHS of all the European Patents secured to American citizens are procured through their agency.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

Circulars of information concerning the proper course to be pursued in obtaining patents in foreign countries through MUNN & CO.'s Agency, the requirements of different Government Patent Offices, &c. may be had, gratis, upon application at the principal office, No. 37 Park Row, New York, or any of the branch offices.

INVITATION TO INVENTORS.

Inventors who come to New York should not fail to pay a visit to the extensive offices of MUNN & CO. They will find a large collection of models (several hundred) of various inventions, which will afford them much interest. The whole establishment is one of great interest to inventors, and is undoubtedly the most spacious and best arranged in the world.

MUNN & CO. wish it to be distinctly understood that they do not speculate or traffic in patents, under any circumstances; but that they devote their whole time and energies to the interests of their clients.

COPIES OF PATENT CLAIMS.

MESSRS. MUNN & CO., having access to all the patents granted since the rebuilding of the Patent Office, after the fire of 1836, can furnish the claims of any patent granted since that date, for \$1.

EXTENSION OF PATENTS.

Many valuable patents are annually expiring which might readily be extended, and if extended, might prove the source of wealth to their fortunate possessors. Messrs. MUNN & CO. are persuaded that very many patents are suffered to expire without any effort at extension, owing to want of proper information on the part of the patentees, their relatives or assigns, as to the law and the mode of procedure in order to obtain a renewed grant. Some of the most valuable grants now existing are *extended patents*. Patentees, or, if deceased, their heirs, may apply for the extension of patents, but should give *plenty days' notice* of their intention.

Patents may be extended and preliminary advice obtained, by consulting, or writing to, MUNN & CO., No. 37 Park Row, New York.

UNCLAIMED MODELS.

Parties sending models to this office on which they decide not to apply for Letters Patent and which they wish preserved, will please to order them returned as early as possible. We cannot engage to retain models more than one year after their receipt, owing to their vast accumulation, and our lack of storage room. Parties, therefore, who wish to preserve their models should order them returned within one year after sending them to us, to insure their obtaining them. In case an application has been made for a patent the model is in deposit at the Patent Office, and cannot be withdrawn.

It would require many columns to detail all the ways in which the Inventor or Patentee may be served at our offices. We cordially invite all who have anything to do with patent property or inventions to call at our extensive offices, No. 37 Park Row, New York, where any questions regarding the rights of Patentees, will be cheerfully answered.

Communications and remittances by mail, and models by express (prepaid) should be addressed to MUNN & CO., No. 37 Park Row, New York.



Correspondents who wish information from us through this column must, as an evidence of good faith, sign their names to their letters. We throw aside all anonymous communications.

W. C., of N. J.—We don't know what the "trap process" of tempering springs is. One way to temper them is to make them hard first and then draw the temper in hot sand heated to 550 or 570 degrees, at which temperature they are dark purple to blue. Oil or tallow smokes at 470 degrees, and takes fire when a light is presented. At 570 degrees it goes out when the light is withdrawn.

R. B. C., of Mass.—It is not new to make a ratchet drill with vertical teeth; such drills were made and sold fifteen years ago.

E. W. D., of Conn.—The wisest and the most learned men are always the most ready to admit their errors, while the greatest fools and ignoramuses are the ones to insist most strongly that they never make mistakes. In the case referred to, all that was said was that the boat with the pulley engine ran faster than the one with the crank engine, but you must know that it is very easy for interested parties to conduct such experiments so as to show any result they please.

T. W. D., of Cal.—Petroleum is composed of the same elements as India-rubber, viz.: hydrogen and carbon. It is probable that by the destructive distillation of India-rubber part of it might be converted into oil closely resembling some portions of petroleum, but we know of no fact that would suggest the possibility of converting petroleum into India-rubber.

Horace, of Pa.—To calculate the power of a steam engine multiply the area of the piston in inches by the pressure per inch in pounds, the product by the length of the stroke in feet, this product by the number of strokes in a minute, and divide by 33,000.

J. S., of N. S.—For cotton machinery of all kinds address Whiting & Sons, Northbridge, Mass.

Nassau, of N. J.—It is rather a complicated problem, but it seems to us that the oscillations must be continuous.

Critic, of R. I.—The earth in its rotation on its axis turns one degree in four minutes; bodies, therefore, at the equator are carried along about seventeen miles in a minute from west to east. Portions of the earth nearer the center are also moving around from west to east, but with less velocity. If a hole were made through the center of the earth at the equator and a stone were dropped into it the stone would continue its eastward motion at the rate of seventeen miles a minute till it came to portions of the earth moving in the same direction but with less velocity, when it would overtake them and strike the eastern side of the hole.

B. H. M., of N. H.—India-rubber varnish for cloth should be of vulcanized rubber.

L. W. S., of Mo.—You can procure a newspaper file suitable for the SCIENTIFIC AMERICAN from Alfred Goulding, Worcester, Mass.

J. P. V., of Cooksville.—Your improvement seems to be new, and we should think a patent could be obtained for it. In what State do you reside?

F. G. F., of Ohio.—You have the right spirit. An inventor can never succeed if he allow a single failure to discourage him.

J. S. E., of Wis.—We cannot admit to our columns a communication that prejudices a case that may involve litigation in court.

C. C., of D. C.—We cannot publish your letter, for the reason that it might prejudice the rights of the patentees in advance of a judicial decision. The patent must stand on its own merits, without any interference on our part.

J. S., of Ind.—We have credited you \$1 on account of your subscription. The article to which you refer was prepared expressly for our paper or we should not have published it, as we dislike long communications. We do not think your proposed article on natural and mental philosophy would be acceptable.

J. W. H., of N. Y.—You can procure soluble glass of Lewis Feuchtwanger, No. 55 Cedar street, this city. We believe the emery wheels made with it are rendered insoluble by having the least possible excess of alkali, so that hot water is required for the solution.

O. D. M., of N. H.—The sample which you send us we take to be very thin tin foil pasted upon paper.