EARTH CLOSET.—Henry Clark, Baltimore, Md.—The invention consists first, in providing the vibratory shaft of an earth closet hopper valve with a spring-retracted horizontal rod. It consists, secondly, in the peculiar construction and arrangement of a lock bar and catch in connection with the hopper. The case of the earth closet is made in the form of a washstand or oureau. The lower part of the front of the case is made in one piece, is hinged at its lower edge to the forward edge of the bottom of said case, and has cleats attached to its inner side to serve as ways or guides to the receiver when being drawn out and pushed in. The lower or small hopper is supported from the case in such a position that its bottom may be just above the receiver when said receiver is pushed in, and the discharge-opening of the said hopper directly above the opening in the top of said receiver, so that the earth from the said hopper may pass directly into the said receiver. The discharge opening of the hopper is closed by the door or valve, which may be closed and opened by turning a shaft. This shaft is connected with a rod which projects at the forward side of the case in such a position that the door, when closed, will strike against it and force it back, opening the valve and allowing the earth in the hopper to fall into the receiver. The discharge-opening in the bottom of the upper hopper is closed by a door or plate, so that when the said hopper is fully pushed back the said discharge opening will be closed, and when the hopper is drawn forward a little way the discharge-opening will be opened sufficiently to allow a small quantity of earth to pass down into the small hopper. The hopper has a bar so arranged as to draw it forward to supply the small hopper with earth by opening the door.

EYE GLASS.—Lucius B. Winslow, of New York city.—This invention consists in so forming the joints of the glass bows and arranging the connecting spring therewith that the screw for fastening the ends of the bow and securing the glass also fastens the spring to the bow, and holds it so that it can be adjusted to lengthen or shorten it and thereby vary its tension.

CAR COUPLING.—Robert Neisch and Charles G. Hirner, of Allentown, Pa.—This invention has for its object to furnish an improved car coupling so constructed as to couple automatically as the cars are run together, even though the cars to be coupled should differ in height, and which may readily be so adjusted that the cars will uncouple as they are drawn apart. A block or heavy plate is inserted in a seat in the frame work of the car, to which it is secured by bolts which pass through slots. Rubber springs, inserted between the inner edge of the block and the edge or shoulder of the frame work, are designed to diminish the shock when the cars are run together. As the cars are run together, the end of the coupling link enters one or other of the spaces between the plates, according to the hight of the adjacent car, and pushes back a lever, which allows the coupling pin to drop into place. By pressing down one end of a lever the movable parts of the coupling may be raised into place, and by pressing upon the other end the said parts may be lowered, releasing the lower end of the coupling pin so that the coupling link may be drawn from said pin as the cars are drawn apart, the hole in the block through which the pin passes being elongated into a slot to allow the lower end of the said coupling pin to be drawn outward. The pin is held in place in the forward end of said slot by a spring, placed in its inner end, and which is so formed as to be compressed and allow the pin to take an inclined position when its lower end is released and drawn outward. The lever may be placed beneath the frame if desired, in which case it should have rods pivoted to its ends and passing up through the said frame, so that the lever may be conveniently operated by the brakeman with his foot.

SMUT MACHINE.—George W. Grant, Middleport, Ohio.—This invention consists of certain novel combinations and arrangements of screening, separating, scouring, and fan-blowing apparatus. The hopper has a bottom composed of wires extending from the rear to the front, and diverging so that the spaces increase in width toward the front. Said spaces at the rear are too close together to let the grain fall, for allowing the sand and other small matters to escape to the spout below and be discharged through it, the coarse matters passing off at the front escape through a spout. The rear end of the hopper is arranged in the concave form shown, for breaking the force of the grain discharged against it, and a short distance in front of this back is a valve, which is swung up by the flowing grain in passing along the wires. This valve has longitudinal grooves in the side against which the grain comes, which grooves are designed to so act on the straws, sticks, and other matters having considerable length, as to turn them at right angles to the wires before letting them pass, to prevent them from falling through the wires. Along the middle portion of the bottom the grain falls through, between adjustable gates, into the hopper below, At the lower end of the bottom of this hopper is a gate which checks the descent of the grain and causes it to fall in a thin even stream through the space of the upper portion of the separator to the space below, to be exposed in such fall to a blast of air by a fan, to deflect the lighter grains and other matters inward to be separated into two grades by gates, which may be shifted to vary or regulate the separation. The first grade, consisting of the heavy grain, falls on the deflector, and is thereby chuted into the sides and bottom of the hopper, from which it is conducted to the scouring frame. The second grade falling between the gates passes into the oats and cockle separator, consisting of the concave metal plate and the wire brush or cushion wheel. The brush will have a slow rotary motion. From between the scouring devices the grain passes out into the case, between the blades, to the scouring action of which it is subjected for a considerable time, and is then forced up by them to the deflectors, where it is again subjected to a blast to have the scoured off light matters blown away; thence it passes out through the spout.

ENGRAVING AND CARVING MACHINE.—Thomas W. Minter, New York city.—This invention relates to a new machine for engraving and carving, die sinking, cameo and intaglio cutting, and similar fine and delicate work, in stone, steel, or other material, with the object of enabling the exact and artistic imitation of suitable designs. It consists, first, in fastening the engraving or carving tool in a spindle which hangs on a vibrating beam, said beam being also provided with the feeling or pattern pin. The chief novelty in this feature is in fastening the tool in a spindle which hangs horizontally on the beam, and in revolving said spindle by belt connection the same as a lathe spindle, so that the tool can be used to the very same advantage as that to which it is at present used on the lathe only. The next feature of novelty consists in fastening the pattern and the article to be cut upon platforms which can be tilted into a suitable inclined position. The tool can thereby be made to work at any suitable angle on the material to be cut, and consequently to incisions of all kinds, not only straight up and down, as in the present engraving machines, but also inclined, rounded, etc., as may be necessary for the making of reliefs for cameos or depressions for intaglios. The mechanism for thus inclining the pattern and the work is so united that both will be moved in exactly the same degree and offer the same angle of surface to the feeling pin and cutter respectively. This tilting motion is effected by worm wheel segments applied to the supporting platforms of the pattern and work, and matching both into the thread of a screw, which, when turned, inclines them. Furthermore, the invention consists in making and applying disks to the aforementioned platform which are jointly rotating and longitudinally adjustable in equal degree, and in providing the nuts that embrace the longitudinally adjusting screw, jointed to permit their being placed at suitable distances apart. Finally, the invention consists in hanging the screw which causes the joint rotation of the platforms in vertically sliding boxes, so that it will accommodate itself automatically to the greater or less hight of the platforms during their tilting motions.

PAPER CUTTING MACHINE.—Edwin R. Sheridan and Theodore W. Sheridan, New York city.—This invention has for its object to improve the construction of paper cutting machines. The knife bar and knife are moved up and down by the movements of the lever, which is connected with said knife bar by an adjustable connecting rod. The lever is pivoted and works in a guide slot in the lower part of the frame. To the end of the lever is attached the lower end of a chain, the upper end of which is attached to the shaft or to a drum placed upon and secured to said shaft. In the shaft or drum is formed a spiral groove into which the chain is wound as the shaft or drum is revolved in one direction, so as to raise the lever and draw the knife bar and knife down upon the paper to make a cut. The spiral groove in the shaft or drum keeps the coils of the chain parallel with each other, and thus prevents the coils overlapping and the chain from kinking while being wound and unwound, so that the movement of the knife may be steady and uniform. A block moves up and down loosely in grooves or ways in the frame and guide block, and is so formed that as the lever approaches the upper limit of its stroke it may strike against and raise the said block. The upper end of the block is inclined so that, as it is raised by the lever, it may move the free end of the lever outward, and thus allow the lever to descend by its own weight, raising the knife bar and knife to make another cut. The lever should have an adjustable weight attached to it, to enable its rapidity of descent to be regulated as desired. As the lever approaches the limit of its downward movement it strikes a spring attached to the lower part of the lever, which checks it, prevents rebound, and at the same time moves a second lever which is pivoted to the frame, and its upper end is connected with one end of the brake band or strap, which passes over the hub of the gear wheel, or a brake wheel attached to said gear wheel, so that the first lever as it reaches the lowest point of its descent, may apply the brake, and stop the movement of the gear wheels, until motion is again given by throwing a clutch into gear.

GANG PLOW.—Joseph Lane, Eugene, Ind.—This invention consists in certain improvements in gang plows in which the plows are adjustably pivoted to the supporting frame, and connecting rods are used for connecting the plow beams with the evener, so that the draft on the evener forces the points in the ground and keeps them in; and one or more of the plows may be kept out of work while the others are at work, or some may be worked deeper than others, and all may be adjusted higher or lower; and in which rolling colters for cutting the sod, and a gage wheel for regulating the depth of cut and for supporting the weight at the front of the axle so as to take it off the horses, is used.

POTATO DIGGER.—Robert G. Dayton, North Granville, N. Y.—By suitable mechanism a shaft is actuated by the wheels, which revolve upon the journals of the axle. To the shaft are attached spur or chain wheels, around which passes the endless carrier, which also passes around spur or chain wheels attached to another shaft, that revolves in bearings in the lower forward part of the scoop flanges a little below and in the rear of the rear edge of the scoop. The carrier is formed of slats hinged to each other at their edges, and having flanges formed upon their lower edges to carry up the soil and potatoes more surely. From the carrier the potatoes and soil fall upon the shaker, through which the soil passes, and from the rear end of which the potatoes fall to the ground. By suitable construction the shaker is moved both laterally and longitudinally as the machine is drawn forward. A plate or apron is placed upon the forward part of the shaker in such a position as to receive the soil and potatoes from the carrier. The apron is held in position by rods, the lower ends of which are attached to the ends of the said apron, and the upper ends of which are connected with the carrier shaft, so as to keep the said apron always in the same position with respect to the rear end of the carrier.

EARTH AUGER.—Thomas C. Harris, Dresden Deep River, Iowa, assignor to himself and Amos Taylor, of same place.—This invention comprises certain improvements in the construction of the augers of well boring apparatus. The inventor proposes to make a large portion of the disk in front of each lip of thin spring steel plate, and attach said parts to the thicker parts rigidly, by riveting them or otherwise, by which a much more efficient and durable, as well as cheaper, arrangement is obtained than that in which the corresponding parts of thick and strong metal are hinged to the parts. In this case the spring plates yield sufficiently to allow the large stones to pass up with the earth raised by the bits, and they return to and retain their position for holding the earth when the auger is lifted out of the well much better than the hinged parts. These plates are curved inward and attached to the inner sides of the braces, so that the earth forced back on the auger will pass and not obstruct the turning of the auger, as it would if allowed to come against the front of said braces. These braces are made of gas tube or other like tubing, and the disk has holes where they are attached, so that air can flow down under the auger to prevent the forming of a vacuum below when the auger is raised; and below these holes the bow shaped spring cap plates are placed, so that they can slide back and forth as said caps spring up to the disk, when the auger is boring, to close the holes and protect them from clogging, and spring away again to open the holes and admit the air as soon as the auger is slightly lifted.

BRIDGE.—Hamlin G. Russell, of Lincoln, Ill.—The invention consists in arranging the bridge floor so as to leave a space between it and the lower chords, and so as to be below, or in the same horizontal plane with, the under side of said chords. It also consists in the arrangement of vertical tie bolts or rods, with the braces, cross beams, and chords, whereby a strong and durable yet comparatively light and inexpensive bridge skeleton is formed.

LATHE DOG.—Lorenzo P. Whiting, of Poughkeepsie, N. Y.—The object of this invention is to provide convenient means for holding bolts which it is necessary to turn, as in steam engine work, locomotives, and other nice pieces of machinery; and it consists in an adjustable dog in which each jaw is acted upon by a separate rib or scroll, and the ribs are placed at an angle which moves the jaws very quickly and saves time. The scroll plate is held to its place by the center plate, which is fastened to a stationary plate. The scroll plate is rabbeted for the center plate. By means of screws the dog is attached to the face-plate of the lathe, and by suitable means it may be adjusted to any distance from the face or side of the face plate, according to the length of the center in the lathe spindle. An orifice is provided through the plate, through which the center passes, and is allowed to come in contact with the bolt head with the point or center of the lathe.

[OFFICIAL.]

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On each Trade-Mark	$25
On filing each application for a Patent (seventeen years)	$15
On issuing each original Patent	$20
On appeal to Examiners-in-Chief	$10
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APPLICATIONS FOR EXTENSIONS.

Applications have been duly filed and are now pending for the extension of the following Letters Patent. Hearings upon the respective applications are appointed for the days hereinafter named.

23,011.—WATER WHEEL.—N. F. Burnham. February 5, 1873.
23,022.—MOLDING STOVE COVER.—G. W. Gardner. February 5, 1873.
23,032.—STEAM PRESSURE GAGE.—T. W. Lane. February 5, 1873.
23,033.—HOSE COUPLING.—R. B. Lawton, W. H. Bliss. February 5, 1873.
23,040.—LOCKS.—L. F. Munger. February 5, 1873.
23,172.—TICKET PRINTING MACHINE.—R. M. Hoe. February 19, 1873.
23,792.—GAS PIPE CUTTERS.—J. E. Stanwood. April 9, 1873.

EXTENSIONS GRANTED.

1,946.—BARREL MACHINERY.—W. Trapp.
1,947.—BARREL MACHINERY.—W. Trapp.
22,129.—BOTTLE MOLD.—J. L. Mason.
29,152.—KETTLE FOR TRYING OIL.—J. L. Alberger.
22,157.—PIPE TONGS.—J. R. Brown.
22,166.—HOSE COUPLING.—J. C. Cooke.
22,174.—DEVICE TO PREVENT RUPTURE OF MAINSPRING.—D. B. Bitts.
22,185.—PRESERVATION OF FLESH.—N. B. Marsh.
22,186.—SCREW NECK BOTTLE.—J. L. Mason.

DISCLAIMERS.

22,129.—BLOWING BOTTLES.—T. L. Mason.

DESIGNS PATENTED.

6,249 & 6,250.—CARPETS.—A. Heald, Philadelphia, Pa.
6,251 to 6,258.—CARPETS.—H. Horan, Newark, N. J.
6,259.—CARPET.—A. M. King, Kidderminster, England.
6,260.—CARPET.—W. Mallinson, Halifax, England.
6,261.—CARPET.—A. Martin, Paris, France.
6,262.—CARPET.—W. McCallum, New York city.
6,263.—CARPET.—E. J. Ney, New York city.
6,264.—SHOE.—D. P. Brown, Reading, Mass.
6,265 to 6,267.—PRINTING TYPES.—James M. Conner, New York city.
6,268.—SLEIGH BODY.—J. C. Goold, Albany, N. Y.

TRADEMARKS REGISTERED.

1,062.—WATCH KEY.—L. F. English, Springfield, Mass.
1,063.—SHIRT BOSOMS.—S. Sibley, Boston, Mass.
1,064.—COMPOUND OXYGEN WATER.—G. R. Starkey, Philadelphia. Pa.
1,065.—HARMONICAS.—Strasburger & Pfeiffer, New York city.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]
From November 8 to November 14, 1872, inclusive.

AIR-HEATING FURNACE.—S. J. Gold, Cornwall, Conn.
BALING PRESS.—P. K. Dederick, New York city.
BOLT AND NUT MACHINERY.—F. S. Allen, C. F. Ritchel, New York city.
BORING AND DRILLING MACHINE.—C. F. Ritchel, F. S. Allen, New York city.
CLEANSING COTTON WASTE.—J. H. Post, New York city.
CLEANSING GRAIN, ETC.—J. F. Wood, Boston, Mass., F. F. Skinner, Detroit, Mich.
ELECTRIC TELEGRAPH.—J. B. Stearns, Boston, Mass.
FASTENING WINDOW SASHES.—J. M. Crossman, South Orange, N. J., G. S. Rice, Tarrytown, N. Y.
FLUID MOTOR.—W. C. Dodge, J. H., E. P., & R. W. Welch, Washington, D. C.
KALEIDOSCOPE.—W. Woodbury, New York city.
LOOM.—J. Lyall, New York city.
PIPE JOINT.—J. F. Ward, Jersey city, N. J.
PRINTING TELEGRAPH.—T. M. Foote, New York city

Value of Patents,

AND HOW TO OBTAIN THEM.

Practical Hints to Inventors.

PROBABLY no investment of a small sum of money brings a greater return than the expense incurred in obtaining a patent even when the invention is but a small one. Larger inventions are found to pay correspondingly well. The names of Blanchard, Morse, Bigelow, Colt, Ericsson, Howe, McCormick, Hoe, and others, who have amassed immense fortunes from their inventions, are well known. And there are thousands of others who have realized large sums from their patents.

More than FIFTY THOUSAND inventors have availed themselves of the services of MUNN & Co. during the TWENTY-SIX years they have acted as solicitors and Publishers of the SCIENTIFIC AMERICAN. They stand at the head in this class of business; and their large corps of assistants, mostly selected from the ranks of the Patent Office: men capable of rendering the best service to the inventor, from the experience practically obtained while examiners in the Patent Office: enables MUNN & Co. to do everything appertaining to patents BETTER and CHEAPER than any other reliable agency.

HOW TO OBTAIN *Patents.*

This is the closing inquiry in nearly everyletter, describing some invention which comes to this office. A *positive* answer canonly be had by presenting a complete application for a patent to the Commissioner of Patents. An application consists of a Model, Drawings, Petition, Oath, and full Specification. Various official rules and formalities must also be observed. The efforts of the inventor to do all this business himself are generally without success. After great perplexity and delay, he is usually glad to seek the aid of persons experienced in patent business, and have all the work done over again. The best plan is to solicit proper advice at the beginning. If the parties consulted are honorable men, the inventor may safely confide his ideas to them; they will advise whether the improvement is probably patentable, and will give him all the directions needful to protect his rights.

How Can I Best Secure My Invention?

This is an inquiry which one inventor naturally asks another, who has had some experience in obtaining patents. His answer generally is as follows, and correct

Construct a neat model, not over a foot in any dimension—smaller if possible—and send by express, prepaid, addressed to MUNN & Co., 37 Park Row, New York, together with a description of its operation and merits. On receipt thereof, they will examine the invention carefully, and advise you as to its patentability, free of charge. Or, if you have not time, or the means at hand, to construct a model, make as good a pen and ink sketch of the improvement as possible and send by mail. An answer as to the prospect of a patent will be received, usually, by return of mail. It is sometimes best to have a search made at the Patent Office; such a measure often saves the cost of an application for a patent.

Preliminary Examination.

In order to have such search, make out a written description of the invention, in your own words, and a pencil, or pen and ink, sketch. Send these, with the fee of $5, by mail, addressed to MUNN & Co., 37 Park Row, and in due time you will receive an acknowledgment thereof, followed by a written report in regard to the patentability of your improvement. This special search is made with great care, among the models and patents at Washington, to ascertain whether the improvement presented is patentable.

To Make an Application for a Patent.

The applicant for a patent should furnish a model of his invention if susceptible of one, although sometimes it may be dispensed with; or, if the invention be a chemical production, he must furnish samples of the ingredients of which his composition consists. These should be securely packed, the inventor's name marked on them, and sent by express, prepaid. Small models, from a distance, can often be sent cheaper by mail. The safest way to remit money is by a draft, or postal order, on New York, payable to the order of MUNN & Co. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents.

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., 37 Park Row, New York.

Reissues.

A reissue is granted to the original patentee, his heirs, or the assignees of the entire interest, when, by reason of an insufficient or defective specification, the original patent is invalid, provided the error has arisen from inadvertence, accident, or mistake, without any fraudulent or deceptive intention.

A patentee may, at his option, have in his reissue a separate patent for each distinct part of the invention comprehended in his original application by paying the required fee in each case, and complying with the other requirements of the law, as in original applications. Address MUNN & Co. 37 Park Row, for full particulars.

Rejected Cases.

Rejected cases, or defective papers, remodeled for parties who have made applications for themselves, or through other agents. Terms moderate. Address MUNN & Co., stating particulars.

Trademarks.

Any person or firm domiciled in the United States, or any firm or corporation residing in any foreign country where similar privileges are extended to citizens of the United States, may register their designs and obtain protection. This is very important to manufacturers in this country, and equally so to foreigners. For full particulars address MUNN & Co., 37 Park Row New York.

Design Patents.

Foreign designers and manufacturers, who send goods to this country may secure patents here upon their new patterns, and thus prevent others from fabricating or selling the same goods in this market.

A patent for a design may be granted to any person, whether citizen or alien, for any new and original design for a manufacture, bust, statue, alto relievo, or bas relief; any new and original design for the printing of woolen, silk, cotton, or other fabrics; any new and original impression, ornament, pattern, print, or picture, to be printed, painted, cast, or otherwise placed on or worked into any article of manufacture.

Design patents are equally as important to citizens as to foreigners. For full particulars send for pamphlet to MUNN & Co., 37 Park Row, New York.

Canadian Patents.

On the first of September, 1872, the new patent law of Canada went into force, and patents are now granted to citizens of the United States on the same favorable terms as to citizens of the Dominion.

In order to apply for a patent in Canada, the applicant must furnish a model, specification and duplicate drawings, substantially the same as in applying for an American patent.

The patent may be taken out either for five years (government fee or $20) for ten years (government fee $40) or for fifteen years (government fee $60) The five and ten year patents may be extended to the term of fifteen years The formalities for extension are simple and not expensive.

American inventions, even if already patented in this country, can be patented in Canada provided the American patent is not more than one year old.

All persons who desire to take out patents in Canada are requested to communicate with MUNN & Co., 37 Park Row, N. Y., who will give prompt attention to the business and furnish full instruction.

Foreign Patents.

The population of Great Britain is 31,000,000; of France, 37,000,000; Belgium, 5,000,000; Austria, 36,000,000; Prussia, 40,000,000; and Russia, 70,000,000. Patents may be secured by American citizens in all of these countries. Now is the time, while business is dull at home, to take advantage of these immense foreign fields. Mechanical improvements of all kinds are always in demand in Europe. There will never be a better time than the present to take patents abroad. We have reliable business connections with the principal capitals of Europe. A large share of all the patents secured in foreign countries by Americans are obtained through our Agency. Address MUNN & Co., 37 Park Row, New York. Circulars with full information on foreign patents, furnished free.

Value of Extended Patents.

Did patentees realize the fact that their inventions are likely to be more productive of profit during the seven years of extension than the first full term for which their patents were granted, we think more would avail themselves of the extension privilege. Patents granted prior to 1861 may be extended for seven years, for the benefit of the inventor, or of his heirs in case of the decease of the former, by due application to the Patent Office, ninety days before the termination of the patent. The extended time inures to the benefit of the inventor, the assignees under the first term having no rights under the extension, except by special agreement. The Government fee for an extension is $100, and it is necessary that good professional service be obtained to conduct the business before the Patent Office. Full information as to extensions may be had by addressing MUNN & Co., 37 Park Row.

Copies of Patents.

Persons desiring any patent issued from 1836 to November 26, 1867, can be supplied with official copies at a reasonable cost, the price depending upon the extent of drawings and length of specification.

Any patent issued since November 27, 1867, at which time the Patent Office commenced printing the drawings and specifications, may be had by remitting to this office $1.

A copy of the claims of any patent issued since 1836 will be furnished for $1.

When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent. Address MUNN & Co., Patent Solicitors, 37 Park Row, New York city.

MUNN & Co. will be happy to see inventors in person, at their office, or to advise them by letter. In all cases, they may expect an *honest opinion*. For such consultations, opinions and advice, *no charge is made*. Write plain; do not use pencil, nor pale ink be brief.

All business committed to our care, and all consultations, are kept *secret and strictly confidential*.

In all matters pertaining to patents, such as conducting interferences, procuring extensions, drawing assignments, examinations into the validity of patents, etc., special care and attention is given. For information, and for pamphlets of instruction and advice

Address

MUNN & CO.,
PUBLISHERS SCIENTIFIC AMERICAN,
37 Park Row, New York.

OFFICE IN WASHINGTON—Corner F and 7th streets, opposite Patent Office.