

## SCIENTIFIC AND PRACTICAL INFORMATION.

## THE COMPANION OF PROCYON.

We noticed some time ago that Struve had discovered, by the aid of the magnificent refractor of the Pulkowa Observatory, a small star near Procyon, which he regarded as being the probable cause of the irregularities of the movements of the latter body. Dr. Andrews has since repeated his calculations regarding the proper motion of Procyon, which appears to be circular, in a period of a little less than forty years, around some invisible center. He does not now definitely conclude that to Struve's star should be ascribed this peculiar movement, but considers that the question will be decided next spring, if the new star is then visible. In such case, Struve's star should be at a considerable distance from the common center of gravity of both bodies, and a mass must be attributed to Procyon equal to eighty times that of our sun, and to his companion, a mass equal to six and two-thirds of the same body.

## THE PURIFICATION OF TALLOW AND LARD.

Dr. Dotch states that tallow and lard can be kept from getting rancid by the following process: The tallow or lard is first treated with carbonate of soda in the proportion of 2 pounds of soda to every 1,000 pounds of lard, and is then subjected to a digestion with alum in the following manner: 10 pounds of alum are dissolved in 500 pounds of water, and 1 pound slaked lime added to the solution and boiled. This solution is stirred well with 1,000 pounds of lard at a temperature of 150° or 200° Fah. for about half an hour. The liquor is then separated from the lard, and the lard is treated with the same amount of pure water again. This lard will keep for an exceedingly long time. The fact is that the alumina in the alum applied acts very readily in a disinfecting manner upon those compounds which are liable to give rise to rancidity. The lime is added to the alum in order to render the alumina more active by its giving up some of the acid to the lime. This treatment has also the advantages of restoring the original flavor and of producing a lard of a greater whiteness.

## ANILINE COLORS.

Professor Kopp, who has recently made a careful study of the aniline colors at the Vienna Exposition, says that the manufacture of these pigments from coal tar products is making most remarkable progress. Fuchsin, constituted by a salt of rosanilin, is obtained exclusively by the reaction of arsenic acid on commercial aniline. In order to afford an idea of the enormous consumption of this violent poison in the manufacture of fuchsin, it is stated that in Germany alone the same is estimated at 3,300,000 pounds a year. It is only lately that the residues have been treated to regain the arsenic in commercial form. M. Kopp mentions as a novelty a beautiful rose red coloring matter called saffronin, which upon silk is a very brilliant dye.

## A NEW TEXTILE PLANT.

The ordinary wood nettle, as is well known to many of our readers, is found in profusion on the Alleghany mountains, often at a level of over 5,000 feet above the sea. A short time since, M. Rozel succeeded in transporting to Europe a number of living specimens of the plant, some of which he dispatched to the Prussian Minister of Agriculture, in order that the value of the weed, if any it had, might be determined. It appears that quite favorable results have been obtained in using the plant for textile purposes, and for such employment it is now attracting considerable attention in Germany. It is known botanically as the *laportea pustulata*, and is perennial. As it is, therefore, unnecessary to sow the seed each year, the plant has in this respect an advantage over hemp or flax, while it is stated to necessitate less labor and expense in preparing the fiber. In a wild state, the nettle attains a height of two or three feet, but we learn that such as has been cultivated in Berlin has already exceeded this limit, and it appears possible that, by care and proper soil, even a still greater altitude may be gained. Experiments thus far made point to the fact that the plant will prove a not unimportant addition to our textile materials.

## DECISIONS OF THE COURTS.

## United States Circuit Court--District of California.

WATER CLOSET PATENT.—WY. SMITH vs. J. O'CONNOR et al.

[In equity.—Before Sawyer, Judge.—Decision September 1, 1873.]

A claim for "a receiver for pan water closets formed and constructed so that the side into which the pan swings for emptying will conform to the shape of the pan, etc., held, on comparing it with the specification, to be a claim not merely for a conformity, but for a conformity attained by specified means, and to be valid.

Held, also, on a like comparison with the specification, that the claim was not too broad.

A patent held not to be void for want of utility in the invention upon its appearing that it possessed certain advantages over others.

Although a third party had conceived of the invention before the plaintiff, and had made some progress toward completing a model, yet, if he then suspended his labors, and before he resumed them, the plaintiff had perfected the invention and had embodied it in a practical working machine, his patent will be sustained.

An invention will not be held forfeited in consequence of its having been on sale more than two years before the application was filed on which the patent is issued, if within the two years the inventor had filed a previous application which described the invention, and was intended to cover it, although it was not specified in the claim in express terms. The second application will be considered a continuation of the first.

## Supreme Court--District of Columbia.

PAPER FILE PATENT.—SMITH et al. vs. WOODRUFF.

[In Equity.—Before Humphreys, Justice.—Opinion del. Sept. 13, 1873.]

Where two patents have been granted for articles which resemble each other, a presumption arises from the action of the Office that there is such a difference between them that the use of one constitutes no infringement of the patent for the other.

If one paper file holds the paper better than another which is patented, and has driven it out of market, that is *prima facie* evidence that the mechanism is different, and is a new invention, and that the use of it does not violate the patentee's monopoly.

A patented combination may be used without infringing the patent if one of the elements of the combination is omitted, although another is substituted in its place which is new, or performs a substantially different function, or if it was not known as a proper substitute when the patent issued.

Although a bill for restraining the infringement of a patent is dismissed, the fact that it will be allowed no rests if the rights of the parties are thereby affected, and a bill may be brought to him as well as the public.

W. D. Munsey, attorney for plaintiff.

R. D. Munsey, attorney for defendant.

## United States Circuit Court--Eastern District of Missouri.

TRUSS BRIDGE PATENT.—JAMES V. WESTLAKE vs. M. S. &amp; H. B. CARTER.

[Before Treat, Judge.—Decided October 11, 1873.]

It is not sufficient to give notice of special matter of defense in an action upon a patent thirty days before the trial: it must be given thirty days before the first use of the term.

Such notice need not specify the particular portion of the plaintiff's patent to which the evidence applies.

Patents may be given in evidence to show the state of the art without such notice; but printed publications cannot be.

The proceedings in the Patent Office upon the plaintiff's application for the patent are not admissible for the purpose of giving it a different construction.

If the defendant claims that the patent is void for uncertainty, it rests with him to establish the charge.

The patent is not void for want of utility, if the invention possesses it in any measure, however slight.

A combination may be patentable on account of the novelty of the arrangement, although all the elements are old.

A patent for a combination is not infringed unless all the elements enumerated are used, or the equivalents of those which are omitted are substituted for them.

To show that the parts omitted by the defendant from a patented combination are unessential, will not render him liable as an infringer for the use of the rest.

A device is the equivalent of one that is patented if it performs substantially the same function in the same way and produces the same result, though it may be of a different form and bear a different name; and the use of it will be an infringement.

If the defendant has a patent, it is evidence of the opinion of official experts that it does not conflict with the plaintiff's patent, and that in working under it he is guilty of no infringement.

Such evidence will be submitted to the jury; the court will not compare the patents.

If the patentee is engaged in manufacturing the patented article for sale, his damages will be manufacturer's profits.

Verdict for defendants.

M. Kinealy for plaintiff.

Samuel S. Boyd, for defendants.

## NEW BOOKS AND PUBLICATIONS.

THE OVERLAND MONTHLY for January has, among other interesting papers, an article by Professor George Davidson on the "Abrasion of Our North Western Coast," in which the remarkable table lands or *mesas*, in that portion of the country, are described. As an explanation of the origin of these peculiar formations, the writer thinks we can appeal to the "action of ice moving slowly but surely as a great planing or molding machine. If we accept an ice sheet over the continent, or a part thereof, and an ice belt contiguous to the continental shores, we can readily understand that it moved as a great stream, or, more likely, in currents, from the north." The second of these papers, on "New Zealand," contains some fresh information regarding that little known country. The "Japanese Merchant at Rome" and "Summering in the Sierras" are pleasing descriptions, entertaining and readable. The usual selections of poetry, editorial miscellany etc., complete a table of quite varied and interesting contents. Published by John H. Carmany & Co., 409 Washington street, San Francisco, Cal. \$4 a year.

# Value of Patents,

## AND HOW TO OBTAIN THEM.

### Practical Hints to Inventors.

**P**ROBABLY 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 every letter describing some invention which comes to this office. A positive answer can only be had by presenting a complete application for a patent to the Commissioner of Patents. An application consists of a Model, Drawing, 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.

**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.

**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.

**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.

## 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.

## 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.

## 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.

## 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 of 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 plainly: 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 of F and 7th streets, opposite Patent Office.

## Recent American and Foreign Patents.

## Improved Track Clearer.

Frederick Buse, Fergus Falls, Minn.—This invention consists in two wheels arranged in front of the cowcatcher of a locomotive: and in a plane perpendicular to the direction of the track. By suitable gearing, these are connected with the forward axle so that the wheels are swiftly rotated, causing radial wings or shovels attached thereto to throw and blow the snow from the track, and thus work their way rapidly through the snow even should it be greatly drifted.

## Improved Hoop Lock.

Thomas E. Lucas, Chesterfield, S. C.—The object of this invention is to provide a way for fastening or tying the ends of wooden hoops together for barrels, tubs, and other cooper work, and for other purposes, and it consists in a metallic tie having two sockets connected together, in which sockets the ends of the hoops are wedged.

## Improved Cherry Stoner.

Elm Buck and Edgar W. Kirk, Cincinnati, Iowa.—By suitable construction, as punches descend upon the cherries in tapering holes, the stones are punched out of the fruit and through the holes, and fall into a dish placed beneath the said holes. As the punches ascend they carry the fruit with them up to a plate having holes in it, through which the punches pass but not the fruit, so that the latter is pushed or stripped from the said punches. As the punches ascend, the pan moves back so as to pass beneath the punches and receive the fruit as it falls from the plate. The fruit slides down the pan into a dish placed beneath the lower end of said pan. The descent of the cherries in the pan is regulated with one hand, while the crank is turned with the other.

## Improved Cotton Gin.

Nicholas W. Gaddy, Nichols, S. C.—This invention is an improvement in the class of gins having auxiliary bars or fingers applied to the ordinary bars or fingers between which the saws revolve; and the invention consists in the arrangement of short secondary fingers so as to be readily attached and detached, and to be shifted or moved toward the saws from time to time, as they wear smooth at the corners, thus exposing new and sharp edges.

## Improved Ticket and Delivery Holder.

Leonard J. Blades, Harrington, Del.—This invention relates to fare boxes, and consists in providing a lock case with sliding drawers which are partitioned off, inclined, and caused to allow the exit of the tickets one by one.

**Improved Door Spring.**

Henry Cody, New York city.—There is a casing of cast iron which contains the springs and jaws. The ends of the jaws clasp a central stud and a transverse plate on top of the stud which holds the jaws in place. The lower end of a shaft turns on a pivot on the bottom of the case, and has a roller on the end of an arm. The end of the shaft extends up above the top plate, and is rigidly attached to a lever. The jaws are forced toward each other by a circular spring which exerts a constant pressure. The lower end of the door is rigidly connected with the lever. When the door is swung open, it carries the lever and arm with its friction roll, which spreads the jaws one from the other. The jaw becomes a lever of constantly increasing power, the fulcrum being the stud and the spring the resisting point. When the door has made a quarter circle or is wide open, the roller will be carried to near the outer end of the jaw, and the arm will be parallel with the door. In this position the spring will bear directly against the axis, and the door will remain stationary. Should the door be left at any intermediate point, it would be closed by the spring. By means of this apparatus the ordinary butt hinges are dispensed with. The door is held open when desired, and is self-closing at all times when not wide open.

**Improved Hand Corn Planter.**

Ell Rogers, Rochester, N. Y.—A cap is placed upon the lower part of the seed box, where it is secured in place by two spring catches which pass up on the opposite sides of the lower part of the hopper and catch in notches formed in the sides. The lower part of the cap is formed by two parallel plates, one of which is stationary and the other pivoted. To the upper part of the pivoted plate is attached a hook which hooks upon a crank. Upon the crank shaft is formed an arm, to the outer end of which is pivoted the lower end of a connecting rod. With this arrangement the plates, which are pressed close together by the action of the spring, are forced into the soil, and the rear end of a lever is drawn upward or toward the handle. This movement operates the slide and drops the seed and plaster by spreading the plates apart. As the lever is released the spring moves the various parts of the machine back to their former position.

**Improved Fertilizer Distributer.**

James Lytle, Laurinburg, N. C.—This invention is a machine for opening a furrow and distributing guano in it preparatory to planting cotton or other seed, simple in construction, convenient in use, and reliable in operation. The invention consists in the shoe provided with a spout held in pivoted suspension bars, so as to allow the shoe to have a backward and forward movement. In the shoe is formed a hole, through which the guano escapes to the ground through the spout, which is designed to guide the guano into the furrow, and prevent it from being blown about by the wind. The rear part of the shoe is supported by a cord, so that the inclination of the shoe, and consequently the rapidity of discharge, may be increased and diminished by unwinding the cord from and winding it upon a knob. A wheel is placed directly in the rear of the conduction spout and is made with a deep V-shaped groove in its face, and with a number of rods crossing said grooves near the periphery of the wheel. As the wheel revolves, each rod pushes the lower end of a spring forward, which end, as it escapes from said rod, springs back against the next rod, thus jarring the shoe, and insuring the constant and regular discharge of the guano. The amount of guano escaping from the hopper is also regulated by a slide. By suitable construction, by operating a lever, the lower part of the spring is thrown forward away from the rods of the wheel, to allow the shoe to stand still, and thus enable the distribution of guano to be stopped when desired.

**Improved Door Check.**

Jacob Bader, Olath, Kansas.—This invention consists of a pair of legs jointed together and to a slide on the door or gate, so as to be shoved down on the floor or ground, and at the same time extended from each other in both directions in which the gate or door swings, so that by bearing on the floor or entering the ground they will hold the door or gate from swinging. In the case of a door, the legs and slide will be arranged in a recess in the edge extending upward a suitable distance from the lower corner, so as to be worked up and down by hand, and will have a set screw to fasten it; but in a gate the legs, being similarly arranged in a recess on the end post of the gate frame, may be worked by a lever, with which buttons are arranged to hold it in the position for keeping the legs in the ground or out of it.

**Propelling Canal Boats and Other Vessels.**

Louis Baetel, New York city.—This invention consists in propeller wheels combined with close channels inclined downwardly from bow to stern, and receiving the water from the surface in front of the boat and discharging it at the rear, whereby the surface waves from the front of the boat, that tend to cause the washing of the banks, are prevented.

**Improved Hand Corn Planter.**

Michael P. Nemmers, St. Donatus, Iowa.—The outer case of the corn planter is of oblong shape, and the remainder half prism, base upward. A vertically sliding plunger extends through the full length of case along the rear side of the same. The plunger has at its upper end a handle, and at its lower end a metallic piece with sharp edge to enter the soil and carry the seed before it. On it there is a spring plate, placed diagonally to act with a cam movement on the teeth of a horizontal revolving seed cup disk. Above the latter another cam spring, diagonally placed in the contrary direction, completes the distributor. The corn chamber is arranged in the upper part of case. A vertical slide piece has an inclined end for the purpose of admitting a smaller quantity of corn to the revolving disk, and taking off the weight of the corn from the same, making thereby its motion easier and quicker. The revolving distributing disk is perforated by a certain number of holes of such size as to admit freely the seed or corn. A double row of vertical brushes is arranged to allow the seed to fill the holes to the rim, and to brush off the other seed to drop into the other holes when the same are approaching toward them by the revolving of the disk. By suitable adjustment the amount of seed passing to the distributor disk may be regulated. The seeds pass down as each hole discharges its contents into the lower part of the planter, dropping on an inclined band spring. The seed is then carried into the ground by the descending plunger end. The spring action of the band presses the end firmly against the plunger, so that no seed can escape. It serves, also, on the upward motion of plunger, as a scraper to clean the same from the adhering dirt. The depth to which the plunger is intended to penetrate the ground and deposit the seed can be adjusted as the different soils require it.

**Improved Knife Cleaner and Polisher.**

Cleveland B. Sheldon, New York city.—This invention consists in the improvement of knife cleaners by the introduction of a spring-pressed holder provided with a horizontally slotted top piece, and combined with a lever having a side pivot working in slot. By this improvement, a knife drawn back and forth a few times not only comes out perfectly clean but beautifully polished.

**Improved Car Axle Lubricator.**

James E. Berling, Newburgh, N. Y.—This invention relates to means for lubricating the parts of a car axle journal, whereby the surface of the flange and the body of journal are automatically provided with a graduated supply of oil or lubricating substance.

**Improved Adjustable Bench Vise.**

Jeremy B. Wardwell, Lawrence, Mass.—This invention is a bench jack for carpenters' and cabinet makers' use, for holding boards while being jointed. A bar is slotted to receive the jaw, and has notches to receive the pawl, by which the jaw is supported when adjusted. The jaw has ratchet teeth formed upon its upper side. The shank also passes through the frame, the forward end of which is so formed as to fit and slide upon ways formed upon the rear side of the ratchet bar. By suitable construction the shank of the jaw holds a piece in place in the frame, which forms a rest and also holds the frame in place upon the rear side of the ratchet bar. To the forward end of the piece is pivoted a pawl, which is so formed that its own weight may hold it lower or engaging end against the notched forward side of the bar. The pawl thus supports the rest, the frame, and the jaw, in any position into which they may be adjusted, the said parts all moving together. There is also other mechanism which allows the jaw to be more accurately adjusted to the thickness of the board to be held. In using the device, the ratchet bar is secured to the bench at a proper distance from the vise, and the jaw is adjusted at the proper height to receive the board. The board is then arranged in place and the jaw pushed in against the side of the said board.

**Improved Grain Hulling Machine.**

Oren F. Cook, Grand Island, Cal.—This invention relates to a process for removing from grain its outer husk or bran, and it consists, first, in subjecting the grain after the ordinary cleaning to the action of water or steam, to soften the husk, then passing it between two roughened metallic surfaces, one revolving within the other.

**Improved Boat Gripe and Crane Keeper.**

Francis M. Howes, Somerville, Mass.—This invention relates to the grips and cranes used on board of a vessel for the purpose of handling the boats, and consists in combining a lever having clamp and hook chain with a single chuck to hold the boat in position on deck, and allow it to be easily detached, swung out, and let down into the water.

**Improved Match Box.**

Morris L. Orum, Philadelphia, Pa.—The object of this invention is to provide a safe and convenient receptacle for matches, connected with the gas burner bracket, and it consists in the match safe combined with the bracket, which was described and illustrated on page 342 of our last volume.

**Improved Corn Planter.**

Andrew Springsteen, Oklawaha, Ill.—By suitable arrangement a plate not only serves as a guide for the corn, but at the same time the alternating movement of a roller gives to the said plate an up and down movement, so that it may push out any dirt that may enter the interior of the standard. A stirrer passes through a hole in the side of the hopper, so that the stirrer may move back and forth in the hopper above the discharge opening, and thus keep the corn stirred up, so that it cannot clog and will pass out freely. The stirrer moves back and forth close to the upper side of the dropping roller, so as to operate as a cut off to prevent any more seed than enough to fill the dropping recesses from being carried out by said roller. Covering plows or wings, which are attached to the sides of the lower end of the standard, are formed to guide the soil into the furrow at the rear of said standard and cover the seed.

**Improved Middlings Purifier.**

George Parker, Poughkeepsie, N. Y.—On the top of a rectangular case, near one end, is a funnel-shaped receiver, which is to be placed directly under the floor on which the pile of middlings lies, the floor having a hole as large as the top of the funnel, or thereabout. In the opening of the funnel is a revolving cone feeder nearly filling the opening. This cone, which is adjustable vertically to open the passage more or less, is provided with grooves in the sides, which facilitate the feeding by scraping off the mass lying upon the cone regularly, and producing an even stream. It is revolved by gearing at the lower end, connected with the main driving shaft. Immediately under the cone is a flat shaking sieve hung by hooks at the upper end to the wall of the case, and at the lower end resting on the eams, which lift it and let it fall at each revolution. At the lower end the coarse matters escape, to be blown out of the case by the blast from the fan, but the finer portions fall through the sieve on the returning chute attached to the under side of the sieve, and descending toward the upper end of the next sieve below, on which it discharges. This sieve is like the one above, except it is a little finer. The coarse light matters from the lower sieve also escape off the end, and are blown out of the case. These are again separated into two grades by the plates and a passage which turn the heavier portions downward, while the lighter portions pass over and beyond.

**Improved Rotary Engine.**

Peter Worrall, Sugartown, Pa.—The steam enters successively into two cylinders both fast to the main shaft and in each of which is a piston wheel. Each wheel has three pistons, so that two are always under steam pressure when the third one is taking steam. The pistons are of peculiar construction, being longitudinal sections of a cylinder, with a circular head at each end, upon which are journals, to the latter of which a crank is attached. When the pistons reach the abutments, they are turned so as to fit into the cavities. As they leave the cavity, they are directly turned so that the broad and more flattened sides take steam, thus making the steam surface or area of the piston greater than the area of the cylinder. The steam is introduced into the first cylinder from below, the valve being operated by means of a lever, which is held in position by means of a spring lever and circle. The exhaust aperture opens from the second cylinder. The intermediate valves between cylinders are placed back of the abutments, and are operated by means of the ribs on the plates of the piston wheels. The ends of the valves project inward, and are triangular in cross section. As the wheels revolve, the end of the ribs strikes one of the angles, and turns the valve so that the ports admit and exhaust steam. It will be seen that the steam, after doing work, and, consequently, losing a portion of heat and pressure in the first cylinder, is exhausted into the second cylinder, where it acts upon the pistons in the same manner, doing more work, and parting with a large portion of its remaining heat and pressure.

**Improved Fire Place.**

William Hoyland, Newcastle, Pa.—A couple of side plates are set upright in a groove in a cast metal bed plate, said plates being curved to correspond with the said groove. They are arranged on opposite sides of the bed piece, to rest at the back against the partition wall, being about as wide as the thickness of the wall, and as high as the fire place is to be. They are fastened in the groove, at the lower end, by a flange. The fire grate is a round basket fitting the side plates, and mounted on a pivot so as to turn freely. It has a partition of fire brick dividing it as high as the back plates, of which there is one for each room. The grate, together with its partition can be turned so that one fire in one part of the grate will warm both rooms or it can be turned half way around, and thus change the fire from one room to the other, which may be desirable when only a little heat is required for ventilating the rooms, or when the temperature is not very low.

**Improved Nut Lock.**

Charles A. Howard, Pontiac, Mich.—Four nuts are locked by this invention. This is the number of bolts usually employed for securing fish plates to rail joints. The end of the plate locks the first nut. The second nut is inclosed by a square hole in the plate. The third nut is locked by a lock plate, and the fourth nut by the end of the lock plate, or by both. The end of the spring plate extends sufficiently far to form a spring, and is reduced in width, so that it passes through a slot or hole in the locking plate. By raising the end of the lock plate to a right angle, the third nut is unlocked and the spring plate can be removed without difficulty. The tension of the spring of the spring plate holds the locking plate in place.

**Button Hole Stitching Attachment for Sewing Machines.**

Carl A. Hansen and George Harley, Guelph, Canada.—This invention consists of apparatus mounted on a frame arranged to be attached to the head of a sewing machine, and connected to the needle bar to be operated. The device is arranged to cause a hook to pass down through the throat plate, and engage the thread immediately after the shuttle has passed through the loop, draw it up through the button hole, and present it to a pusher, which, by a portion of said apparatus, is caused to carry the loop beyond the needle, and hold it until the needle goes down through it and completes the stitch.

**Improved Clothes Wringer.**

John Seaman, Groton, N. Y.—The journals of the rolls work in slots in the standards, and upon the journals of the upper roll are placed half bearings, upon which rest the ends of the curved spring, the middle part of which is attached to the top bar. To one journal of each roll is attached a gear wheel, the teeth of which mesh upon a circle of pins or cogs attached to the side of a disk or wheel attached to the other journals of the rolls. The gearing, thus constructed, gives greater capacity to the machine, or allows the rolls to work closer together or farther apart without binding or getting out of gear. Upon the edge of the gear wheel of the lower roll is formed an outwardly projecting flange upon the inner surface of which are formed gear teeth, into which mesh the teeth of the small pinion wheel, attached to the crankshaft, which works in a long bearing in a bracket attached to the standard. This construction is claimed to give a greatly increased power to the wringer.

**Improved Bird Cage.**

Edward Hutchinson, New York city.—This invention consists of a perch for bird cages, constructed in two parts, which are tongued and grooved together so as to form a very narrow crack along each side, such as insects and vermin, which infest birds, like to hide in, and so that the two parts of the perch can be readily taken apart to destroy the insects, when the perch is removed from the cage.

**Improved Garden Cultivating Implement.**

David Mack, Barnesville, Kan.—This invention is an improved implement for use of gardeners, nursery men, etc., for cultivating various plants by hand. It includes a shovel or plow, rake, weed cutter, clod-breaking roller, and an adjustable transporting wheel. The plow is made double, one end being made small and the other large, so that one or the other end may be used, according as the work to be done may require. The forked shank of the rake is bolted to the standard. The blade of the weed cutter is made V shaped, and is secured to the ends of the arms of the shank, which is, in turn, secured to the standard by the same bolt that secures the plow. The same means secure the roller by its shank. The function of the rake is to clear the surface of vines, weeds, etc., whose roots or stems may have been severed by the cutter. The roller is used by the weed cutter and rake, principally for the purpose of preventing the former entering the earth too far or sustaining too much of the weight of the frame of the implement. The shovel is detached when the weed cutter is used, or else turned so as to be crosswise of the standard. Similarly the weed cutter is detached when the shovel is used.

**Improved Machine for Drawing Wire.**

Joseph Woods and Edwin Woods, Warrington, Great Britain.—The apertures in the plates or dies are of successively decreasing diameters, the last being of the proper size for bringing the wire to the intended gage, and the numbers of teeth in the pinions are so proportioned as to cause the pulleys and block to rotate at an increased surface speed in proportion to the attenuation of the wire. Motion being now communicated to the main shaft, the wire is drawn by the pulley successively through the different dies, the numbers of teeth in the pinions being, as explained, in such proportions as to enable the pulleys to take up the increasing length of wire. Instead of the pulleys being of the same diameter, arranged to be driven at different speeds as regards their revolutions, they might be of diameters increasing toward the block, in which case the series of bevel pinions might be furnished with equal numbers of teeth; further, instead of one pulley being used for each draw plate or die and the wire wound around such pulley, a series of small pulleys (say, three) might be employed, the wire passing alternately under and over them, so as to provide sufficient surface for holding contact with the wire. The surface speeds of the pulleys and block will be required to be varied in practice for obvious reasons, such as when drawing wire of iron, steel, or brass; but the adjustment of the said pulleys and block, so as to provide a correct surface velocity will be simple to practical wire drawers.

**Improved Door Spring.**

Francis H. Richards, New Britain, Conn.—A tube is pivoted to a bracket attached to the casing, and supported by a second bracket passing through a slot in its bottom and secured to the door. In the rear part of the tube is placed a coiled spring of sufficient strength to shut the door quickly and with a slam, if allowed to act freely. The forward end of the spring rests against a piston, which is attached to the end of the door bracket, so as to move back and forth through the tube. The piston is made of such a size as to slide freely through the tube, and to its forward end is attached a cupped packing, made of leather or other suitable material, and which moves freely through the tube as the piston moves toward the rear end of the said tube, and which, when the piston moves forward, serves as a valve to push the air forward, and thus cushion the piston upon compressed air, so as to check the door just before it closes, and thus prevent it from slamming. The air escapes through the forward end of the tube, where its escape is regulated by a grooved screw.

**Improved Steam Engine.**

Abram Beekman, of New York city.—Part of the boiler constitutes a wheel case, in which there is a wheel to which the steam is delivered to the boiler through a passage on one side of the vertical center of the wheel, to give the steam that direction at starting by the lesser weight of the water on that side, due to the lesser height of the water column. There is another passage from the boiler to the other side of the wheel into which the steam is directed by a valve. When it is desired to stop the wheel, said valve closes the passage. The steam rises against the wheel, and impels it with a force governed by the height of the water column and the amount of steam generated. In the upper part of water chamber, the steam condenses and flows back into the boiler.

**Improved Road Scraper.**

James W. Weston, Windsor, Ill., assignor to Turner M. Johnson, of same place.—This invention is a machine for grading roads. The forward ends of a mold board and land side are securely attached to a cast point which is made somewhat like a plow. The lower part of the mold board is faced with a steel plate, which projects beneath the lower edge of the said moldboard. By suitable construction, by bearing down upon the rear end of a lever, the forward end of the machine will be raised from the ground for convenience in turning. By lowering the free end of another lever, the rear end of the machine will be raised and supported upon a rear caster wheel. By means of a sharp rimmed guide wheel, the machine may be guided as desired.

**Improved Rotary Engine.**

Leonard H. Woods, Syracuse, N. Y.—The object of this invention is to produce a rotary engine, which overcomes some of the defects of that class of engines by being built very compactly, having no dead centers, and reversing with perfect ease. The invention consists of the arrangement in an outer steam cylinder with abutments, of a rotating drum on a stationary hollow shaft with steam ports, by which the steam is alternately applied to vibrating gates placed at right angles in the two sections of the drum, and exhausted by suitable ports.

**Improved Coffee Pot.**

John E. Weber and Peter Knutson, La Crosse, Wis.—The pot is composed of three different sections—the upper or water receptacle, the middle one, into which the gas, alcohol, or coal oil lamps are placed, and the lower receptacle, for the coffee or other articles which are intended to be boiled. The lower part is detachable, and the coffee, tea, etc., placed therein. The upper receptacles is filled with water, closed tightly, and the lamp then lighted. The generation of the steam forces the boiling water up through a tube to a glass bulb, and then, through a smaller tube and strainer, to the lower part, extracting the strength of the coffee. The lamp is then extinguished, and the liquid slowly drawn up again into the water receptacle. The process is repeated, if the coffee is desired to be very strong. The glass bulb or tube indicates, by the passage of the liquid through it, the different stages of the cooking process. The coffee is then drawn off for use.

**Improved Heater and Feeder for Boilers.**

Garner C. Williams, Catskill, N. Y.—To the feed water pipe, and a certain distance apart, are connected tubes leading from the lower rear portion and from the middle of the under side of the boiler. The water forced along the feed pipe past the junctions with the tubes naturally induces currents from the boiler by the friction of its particles with the particles of the water coming in at the other pipes, which, uniting with the feed water, re-enters the boiler again along with it. To increase this action, a contrivance similar to the head of a steam siphon or injector is arranged in the feed pipe at the point of entry therein of each tube. By this plan, it is claimed that the feed water will be heated nearly to the degree of the water in the boiler, which is much greater than it can be heated by the ordinary feed water heaters.

**Improved Steam and Vapor Generator.**

Richard Brereton, Easton, Pa., assignor to Benjamin Douglass, Montrose, N. J.—This invention relates to the instantaneous development of steam or vapor from fluid substances by application of the substances to highly heated surfaces in expanders. The essential feature of the invention is a series of hollow spherical balls or expanders, with a feed pipe and jet bulb to each, so arranged that each receives its due measure of feed in such small quantity that the force of the instantaneous expansion is controlled by the balls, and the vapor produced is sent therefrom, along with that from the other balls, to the pipe which conducts it to the engine, in such manner that there is no accumulation anywhere larger than the conducting passage. By this means, it is claimed, the great pressure attainable by the direct contact of the fluid with the red hot metal can be controlled as it could not be in large chambers affording any considerable accumulation. Another feature of the invention is an arrangement of the expansion balls in the furnace so as to be directly surrounded by the fire, to bring the fluid into the most direct contact with the highest heat of the fire.