

terminated result, which was obtained in the open air, without the aid of a flue or draft, and which will enable you to form an approximate idea of the value of these fuels used in this manner. A quart of oil, the cost of which was a little under one cent, was put into the vessel along with water, and lighted, and, by means of the steam jets, was caused to produce a flame 3 feet long by 2 feet 3 inches wide, and 3 feet high, which continued to burn fiercely, at those proportions, for very nearly thirteen minutes. Now you will readily form a notion of the amount of flame, and the length of time it will burn, which can be derived from the combustion of a quantity of coal purchasable by one cent.

Useful Recipes for the Shop, the Household, and the Farm.

In hardening and tempering steel, a clean charcoal, anthracite, or coked bituminous coal fire is required; such as is fit for taking a welding heat on iron is entirely unfit for hardening purposes. The sulphur contained in the coal combines with the steel to form sulphuret of iron, and ruins its texture.

The employment of cyanide of potassium in electroplating and other arts often results in painful ulcers on the hands of the workmen. Protosulphate of iron in fine powder, rubbed up with raw linseed oil, is the best remedial application.

When a cork gets pushed down into the neck of a bottle, insert a loop of strong twine and engage the cork in any direction most convenient. Then give a strong pull, and the cork will generally yield sufficiently to be withdrawn.

In case a finger ring becomes too tight to pass the joint of the finger, the finger should first be held in cold water to reduce any swelling or inflammation. Then wrap a rag soaked in hot water around the ring to expand the metal, and lastly soap the finger. A needle threaded with strong silk can then be passed between the ring and finger, and a person holding the two ends and pulling the silk, while sliding it around the periphery of the ring, will readily remove the latter. Another method is to pass a piece of sewing silk under the ring, and wind the thread in pretty close spirals and closely around the finger to the end—that below the ring—and begin unwinding.

The easiest way to hold pearls, in order to drill or otherwise cut them, is to fit them loosely in holes bored in a piece of wood. A few drops of water sprinkled about the aperture cause the wood fibers to swell and hold the gems firmly. When the wood dries, the pearls fall out.

The best mode of oiling a belt is to take it from the pulleys and immerse it in a warm solution of tallow and oil; after allowing it to remain a few moments the belt should be immersed in water heated to 100° Fah., and instantly removed. This will drive the oil and allow all in, and at the same time properly temper the leather.

A simple and usually successful mode of extracting a needle or any piece of steel or iron broken off in the flesh is accomplished by the application of a simple pocket magnet. An acquaintance of ours had a little daughter who recently broke a needle off in her hand. A surgeon was called, who made several efforts to find the needle by probing and incision, but without success. After the surgeon had left, he mother conceived the idea of trying a magnet; one was procured, and after one or two applications of it the broken fragment of needle was discovered attached to the magnet. This idea will be of especial utility to workers in iron. Machine shop surgery is not the most delicate nor least painful, though men heroically undergo it rather than stand the loss of time due to an inflamed eye or festering finger. Iron filings have a way of imbedding themselves in the eye, which defies almost every ordinary means for their extraction. For their removal, a small, blunt, pointed bar of steel, well magnetized, will be found excellent, and we should recommend that workmen liable to such injuries keep such an instrument about them. It would be a good plan to insert such a bar in a penknife, in a manner similar to a blade.

An easy method of breaking glass to any required form is by making a small notch, by means of a file, on the edge of a piece of glass; then make the end of a tobacco pipe, or a rod of iron about the same size, red hot in the fire, apply the hot iron to the notch, and draw it slowly along the surface of the glass, in any direction you please; a crack will be made in the glass and will follow the direction of the iron. Round glass bottles and flasks may be cut in the middle by wrapping round them a worsted thread dipped in spirits of turpentine, and setting it on fire when fastened on the glass.

To clean and restore the elasticity of cane chair bottoms: Turn the chair bottom upward, and with hot water and a sponge wash the cane: work well, so that it is well soaked; should it be dirty, use soap, let it dry in the air, and it will be as tight and firm as new, provided none of the canes are broken.

Guns and rifles may be easily cleaned from lead by the following: If a muzzle-loader, stop up the nipple or communication hole with a little wax, or if a breech-loader insert a cork in the breech rather tightly; next pour some quicksilver into the barrel, and put another cork in the muzzle, then proceed to roll it up and down the barrel, shaking it about for a few minutes. The mercury and the lead will form an amalgam, and leave the barrel clean and free from lead as the first day it came out of the shop. The same quicksilver can be used repeatedly by straining it through wash-leather; for the lead will be left behind in the leather, and the quicksilver will be again fit for use.

All light woods may be dyed by immersion. A fine crimson is made as follows: Take 1 lb. of ground Brazil, boil in 3 quarts of water, add ½ oz. of cochineal, and boil another half hour; may be improved by washing the wood previously with ½ oz. saffron to 1 quart of water; the wood should

be pear wood or sycamore. Purple satin: 1 lb. logwood chips, soak in three quarts of water, boil well an hour; add 4 ozs. pearl ash, 2 ozs. powdered indigo. Black may be produced by copperas and nutgalls, or by japanning with two coats of black japan, after which varnish or polish, or use size and lamblack previous to laying on japan. A blue stain: 1 lb. of oil of vitriol put in glass bottle with 4 ozs. indigo; lay on the same as black. A fine green: 3 pints of the strongest vinegar, 4 ozs. best powdered verdigris (poison), ½ oz. sap green, ½ oz. indigo. A bright yellow may be stained with aloe; the whole may be varnished or polished.

A good way to clean black kid gloves is to take a teaspoonful of salad oil, drop a few drops of ink in it, and rub it over the gloves with the tip of a feather; then let them dry in the sun.

The White Streak in Silk.

For a number of years the silk manufacturers of this country have been troubled by the appearance of what is commonly called a "white streak" in dyed silk. This name describes the appearance about as well as any other term we can apply, and has been adopted for lack of any more positive information respecting it. It makes its appearance, principally, on black silk after it has been wound on the spools ready for use on the sewing machines. It is not however confined to black machine twist, but is visible in many of the other dark colors.

It has the appearance of a slight roughness or fuzz on the side of the thread as it lies on the spool. It is invariably white and easily recognized, especially when it occurs in the black silk. We, as manufacturers, have not been exempt from this troublesome difficulty. The combined talents of the silk manufacturers and dyers in this country have been employed during the last few years to discover some method of overcoming the white streak, either by varying the process of manufacture, or by covering it in the dye. As yet all efforts have failed to be completely successful. Various theories have been proposed to account for its appearance; much time and money have been spent in the study of the question, without arriving at any certain knowledge concerning it.

Some manufacturers believe that it is due to carelessness during the process of dyeing: that the silk is not thoroughly washed from the soap suds in which it is boiled, leaving particles of soap adhering to the silk. Others stoutly affirm that it is due to the dead wood which the silk takes on as it passes over the wooden rollers of a machine known as the stretcher.

The Nonotuck Silk Company's present theory is that the streak is due in some way to the process of adulteration to which the silk is subjected as it is wound on to the reel from the cocoon. They think it possible that the cocoons when wound may be soaked in warm water to which a quantity of rice starch has been added, thus making a kind of rice water or thin paste, which the silk takes up as it is wound, thus adding a cheap weighting material to the silk.

That this theory does not account for the appearance of the streak is evident; since some of our brands of silk, we are confident, are perfectly free from any adulteration, but yet the streak occurs abundantly in them. A careful examination with the microscope and chemical reagents, for the purpose of obtaining some definite idea of its nature, soon settled the fact that it is a vegetable substance of some kind; but exactly of what nature, I was unable at once to determine. This slight clue enabled our dyer to apply a dye that would partly cover it. This new process of dyeing, however, was attended with many objections. It was more expensive, while it took a much longer time to dye the silk. Our greatest objection to this method of dyeing was that it increased the weight of the silk with the dye stuff, thus injuring its quality, and affecting its strength. We could ill afford to sacrifice the strength of the silk for the sake of covering the streak, so we sought to avoid the difficulty by using another brand of silk. I finally became convinced by careful examination that it was of the nature of a parasite, or a fungus growth on the raw silk. All of my researches tended to confirm this theory.

I have lately submitted samples of the streak, which were found both in the raw silk and in the dyed silk, to Professors Verrill, Eaton, and Johnson, of Yale College, New Haven, who all confirmed the theory of its being a fungus growth on the silk. An eminent naturalist of Boston, whom I consulted on the subject, also confirms the theory, and thinks that we may find that this growth is connected with the disease with which the silk worms of Europe have been troubled for so long a time.—*C. A. Burt, Oneida Circular.*

DECISIONS OF THE COURTS.

United States Circuit Court.—District of Massachusetts.

PATENT LATHES.—SPRING *et al.* vs. PACKARD.—SAME vs. HOWARD. [In equity.—Before LOWELL, J.—October, 1874.]

LOWELL, J.: The plaintiffs are the inventors and owners of a valuable and ingenious improvement in Lathes for Turning Irregular Forms, for which a patent was issued to them in May, 1859, but which they testify was completed in the summer of 1857. They describe the machine with fullness and accuracy in their specification. Its principal application was intended to be, and is, for turning sewing machine needles and similar articles, which are to be brought to a point; and the claim is for— The combination of a gripping chuck, by which an article can be so held at one end as to present the other free to be operated upon, with a rest preceding the cutting tool, when it is combined with a guide cam, or its equivalent, which modifies the movement of the cutting tool, all operating together, for the purpose set forth. There is no doubt, upon the testimony, that the plaintiffs were original and meritorious inventors of an improvement over the machines then in general use for turning sewing machine needles. But a machine was brought forward by the defendants, which one Pernot swears he made in New York in 1853, and operated there for thirteen consecutive years in turning needles in great quantities, for several of the principal manufacturers of sewing machines, and which appears to contain all the elements of the plaintiffs' combination, working together in the same way, and producing the same results. The dates are proved by Pernot and by another witness, and corroborated by circumstantial evidence, and might have been disproved if untrue, because the manufacturers could have testified concerning the needles which they are said to have bought of Pernot. No such contradiction is

given. This machine has the gripping chuck, the rest, the cutting tool, and instead of a guide cam, a pattern, which, so far as this case is concerned, appears to be an equivalent; and, as we understand the testimony, it is that a fixed pattern was, generally speaking, a well known equivalent for a cam pattern or guide in machines of this kind, at the date of the patent. (Waters, p. 110.)

It has been argued that Pernot's machine had no adjusting screw. It had a screw which it is insisted should be called a set screw, and which was no doubt less useful, in some respects, than the adjusting screw of the plaintiffs' machine. The plaintiffs however, do not claim the adjusting screw as part of their combination. Mr. Waters, being asked whether it is part of the combination, says—

"Hardly that—that is to say, hardly an element. I regard as essential that the organization should be such as to admit of the convenient use of a screw; and that that screw should make a part of the organization I regard as essential as an adjunct to the combination—so essential that, as I have said, I would not give a sixpence for any one of them, for the purpose of turning sewing machine needles, without it."

It is then an important adjunct, rather than an essential element, and Pernot's screw was a sufficiently good adjunct to enable his combination to work successfully in making needles in the way of his business; and the difference in the screw would have been no defence if his machine had been later in date than the patented one.

It is further said that Pernot did not turn his needles to a point in the machine. He gives reasons for not doing this work, but says that he did turn points for a carding machine; and that his lathe needed only a change of pattern to make it applicable to turning the points of needles. This is obviously true, and as the particular form of pattern used was not of the essence of the invention, we are of opinion that Pernot's machine contains the whole patented combination.

It is not denied that all the elements of the combination were old and well known before 1857; it is only contended that the precise combination was new, as it undoubtedly was to the trade generally, and to the patentees themselves; but we are obliged to say that Pernot's machine, which was not patented, and was somewhat guarded from view, perhaps for the very purpose that its mode of operation might not be generally known, was yet, by the law, such an anticipation of the plaintiffs' combination that they were not the first, though they were original, inventors thereof.

Bill dismissed with costs. [George E. Betton, for complainants. James B. Robb, for defendants.]

United States Circuit Court.—District of Connecticut.

PATENT LOCK.—THE RUSSELL AND ERWIN MANUFACTURING COMPANY vs. THE P. & F. CORBIN MANUFACTURING COMPANY AND FREDERICK H. NORTH.

[In equity.—Before WOODRUFF and SHIPMAN, J. J.—April, 1874.] The claim of the letters patent granted to Rodolphus L. Webb, December 31, 1867, for an "Improvement in Reversible Locks and Latches"—namely, "The combination of a lock and latch when the latch bolt and its operative mechanism are arranged in a case or frame independent of the main case, and constructed so that the latch bolt may be reversed, substantially as described, without removing the said independent case from the main case," is infringed by the combination of a lock and latch in which the latch bolt and its operative mechanism are arranged in a skeleton frame within an outer or lock case, which operates to preserve the proper relations of the yoke and tumbler while being moved forward and backward, although it does so operate when the latch and latch mechanism are removed from the outer or lock case.

Infringement is not avoided by the fact that, when the patentee's latch bolt is drawn forward for the purpose of reversing it, the case or frame moves forward with it in a straight line, and that the defendants' frame, when the latch bolt is drawn forward, moves in a curved line.

The word "independent" in the claim does not mean that the latch and its mechanism operate without any contributory aid from the main case or adjuncts thereto. All that it imports is that there is an outer case and a separate inner frame or case in which the latch mechanism is arranged and held in position.

A decree must be entered for the complainant, agreeably to the prayer of the bill of complaint, with costs to the complainant.

[The patent of William Bessing, December 13, of 1859, for complainant. Charles E. Ingersoll and Charles F. Blake, for defendants.]

United States Circuit Court.—Southern District of Ohio.

JAMES F. TRADER, SAMUEL R. COLLIER, AND GEORGE VLEREBOME, PARTNERS, vs. TRADER, COLLIER, & VLEREBOME, DE A. L. MESSMORE AND JAMES COLLIS, PARTNERS, AS MESSMORE, COLLIS & CO., ROBERT M. BOWMAN, AND W. H. BOWMAN.—PATENT SEED PLANTER.

[In equity.—Before SWING, J.: January, 1875.] Where complainants had used their device for thirteen years without ascertaining that their patent covered such a device as that which formed the alleged infringement, and this latter had become the subject of a patent and possessed superior utility to that of complainants: Held, that the patent sued on should be interpreted strictly.

It becomes important, in interpreting the language of a patent, to know what construction the patentee himself placed upon it; and to this end recourse may be had to the files of the application, to ascertain what changes were made in the original specification and claims, and the significance of those changes as revealed by the history of the case.

The patent of William Bessing, December 13, of 1859, for "an improvement in seed planters," must, in view of the application record, be narrowly interpreted, so as to limit the invention to a particular arrangement of a particular top with particular openings, so that the chaff may be removed in a particular way.

Thus constructed, it does not control a device in which there are no lateral chaff openings in the periphery of the distributor, through which the chaff is worked by the vibration of the feed bar, but in which, instead, the chaff falls directly to the ground.

While patents are to be construed liberally, they should not be so construed as to enable patentees to reach out and cover every improvement of invention which, after seeing the same, they conclude they might have embraced within their patent, but which was not so embraced and included.

Complaint dismissed. [Wood and Boyd for complainants. Fisher and Duncan, for defendants.]

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From March 1 to March 6, 1875, inclusive.

ARTIFICIAL FUEL.—D. F. Packer, Mystic River, Conn.
BOTTLE STOPPER, ETC.—N. Thompson (of Brooklyn, N. Y.), London, Eng.
CARTRIDGE HOLDER.—H. Metcalf, Springfield, Mass.
FURNITURE CASTER.—J. Crist, New York city.
GAS, ETC., REGULATOR.—H. W. Shepard, Brooklyn, N. Y., *et al.*
GENERATING STEAM, ETC.—D. F. Mosman, Chelsea, Mass.
MULE AND SHUTTLE SPINDLE.—J. H. Le Moyne, Boston, Mass.
MUSICAL MOUTHPIECE.—C. G. Conn, Elkhart, Ind.
PUMP.—G. G. Hartwick, Jersey City, N. J., *et al.*
SMELTING COPPER, ETC.—S. L. Crocker, Mass.
SNAP HOOK.—F. C. Nye, New York city. (Two patents.)
SPOOLING THREAD, ETC.—J. W. West, Boston, Mass.
TREATING FARINACEOUS MATTERS.—W. Adamson, Philadelphia, Pa.
VALVE.—T. Shaw, Philadelphia, Pa.
WATER CLOSET.—W. S. Cooper, Philadelphia, Pa.

Recent American and Foreign Patents.

Improved Car Spring.

Andrew Jackson Culbertson, San Andreas, Cal.—The centers of bent metal bars are connected with the body frame by king bolts. The ends of the bars are attached to blocks, which are placed in recesses in the truck frames. To the blocks are attached rods, the upper ends of which are attached to springs. The lower parts of the springs rest upon seats attached to the truck frames. To the cross spring are attached the longitudinal springs, which are interposed between the cross bars of the frames and the truck frames, and diminish the rocking of the car body.

Improved Apparatus for Stamping Embroidery Patterns.

John McGavin, New York city, assignor to Isaac S. Van Deusen, Passaic, N. J.—The essential feature of this invention consists of a rotary and traversing brush for printing the patterns on the cloth through the perforations of the pattern sheet or plate; also, mechanism for revolving it, and at the same time moving it over the pattern and the cloth; and also a carriage for the roller, and the operating mechanism, combined with the pattern and cloth-holding table. Another feature of the invention is the table for holding the pattern and the cloth, provided with adjusting supports, having inclines by which the table can be raised readily from time to time, as the cloths to be printed (of which a number are put together, one above another) are removed; and another feature consists of an extension table for holding long or short cloths. There is also an extension frame for long or short patterns, and contrivances for detachably fastening and unfastening the patterns and the cloths readily.

Die for Forming Spring Shanks for Shoes.

Emil Briner, New York city.—At the uppermost part of the main casing is arranged rigidly a steel cutting plate, which has above the cutting edge a vertical guide frame, through which the piece of sheet metal from which the shank blanks are made is fed along the face of the cutting plate to projecting guide plates arranged at one side of the main casing, at such a depth below the cutting plate that the exact width of the shank is cut off therefrom by a plunger. The plunger is constructed with a top cutting plate, for the purpose of shearing off the blank gradually without cutting across its whole width at the same time. A sliding spring-acted bolt comes in contact with the punched-off blank on each stroke of the plunger, pressing the same, while receding against the face of the cutting plate of the plunger, and preventing the dropping of the blank. The shaping die of the plunger corresponds to the form of the spring shank to be produced, the curved part of the same being, however, curved to a greater extent than the shape of the finished shank, for the purpose of allowing for the elasticity of the metal. The correspondingly curved convex shaping die imparts the required degree of spring to the shank. When the shank is released by the return motion of the plunger from the shaping dies, the same springs forward toward a slotted recess for assuming its permanent curved shape, and drops through the same to the pan below.

Improved Device for Baling Cotton.

William Her, Shreveport, La., assignor to himself and John W. Her, of same place.—A lever has attached to its end a clamp which turns freely on a bolt. An arm comes in contact with the end of the lever, so that when the end of the band is between it and the end it may be securely clamped and held when the lever is operated. The draft bar passes through a mortise in the lever, so that it will turn freely on a pivot pin. At the other end of the draft bar is another clamp for clamping and holding the other end of the band.

Improved Car Coupling.

Albert A. Kellogg, Montgomery, Mich., assignor to himself and Miles E. Cartwright, of same place.—This is a drawhead with longitudinal top slot and swinging coupling hook, that is seated, when carried into downward position, into a bottom hole of the drawhead, locking thereby the coupling link. The coupling hook is attached to a lateral shaft, and swung, by a spring-acted lever frame provided with handles at the sides of the car, into raised position, being retained therein by the action of a bell-crank lever, with hook end, pivoted at the outside of the drawhead. A spring rod with broad front head slides in a guide recess of the drawhead, and connects with the other end of the dog, so that by the concussion of the drawheads the shaft of the coupling hook is released, and the hook carried down by the spring power of the lever frame for coupling the link.

Improved Sleeve Button.

Herbert N. Mason and Orville P. Richardson, Attleborough, Mass., said Richardson assignor to said Mason.—The shank which connects the shoe to the front portion of the button is attached to the back of the front, and also to the disk of the shoe, by fitting a tenon on the end through the plate, and heading it down.

Improved Thill Coupling.

Ephraim Soper, Brooklyn, N. Y.—A clamp is bolted to the shaft, and has a stud going through a mortise, and a pivoted cam lever, so as to force the clamp together and hold it fast. The safety trap is connected to the cam lever instead of the eye plate, so that, besides serving the purpose of the strap itself, it prevents the cam from working loose. An elastic cushion is made with a wide groove, and the eye in the eye strap clamp is contracted along the middle portion, so that the collars of the cushion are interposed between the ears and the eye strap, and thereby prevented from striking against the ears and rattling.

Improved Car Coupling.

George W. E. Row, Steele's Tavern, Va.—When any car is thrown off the track, so that thereby the relative position of the link and drawbars is changed, a retaining spring is arranged to give way and release the link, so as to uncouple thereby the cars.

Improved Dressing of Millstones.

John Williams, Dresden, assignor to himself and George J. Stonebreaker, Fayetteville, Tenn.—This consists of a metallic frame, having slides which run in grooves, moved by racks and pinions, and two guides which connect the slides, between which is confined the marker, which is moved in the guides at right angles with the slides. The object of the device is to cut the face strictly with the staffed face of the stone, and by so doing retain the true face.

Improved Miter Box.

Herman Hempel, Syracuse, N. Y.—The guide block of a miter box is constructed with a rotary base plate and sectional blocks, made right-angled in front and formed circular in the rear. The rapid adjustment of the clamps to the required mitering angle and the molding is effected by the simple pressure on the treadle.

Improved Process of Coloring Tobacco.

Oscar Knab, Newark, N. J.—This consists in treating tobacco leaves for imparting or restoring a dark color to the same by passing the leaves, in a soft and moistened state, through a solution of sesquichloride of iron.

Improved Method of Tubing Wells.

William T. Dobbs, Pana, Ill.—This invention consists of plastic tubing formed of cements to shut off caves, slides, or other formations of the earth that give way and slip down, causing a break in the walls of wells or other deep borings in the earth. The compound with which the cave in the wall is filled and crammed is perfectly soft and plastic, adjusting itself to the cavity. It undergoes a chemical change and hardens under water at any depth in a few hours, completely binding and securing all fragments and loose particles, so that being subsequently drilled through it will leave a solid and strong wall. The compound used is a mixture of gypsum, hydraulic cement, and fine sharp sand, in any proportion that will form a solid cement.

Improved Adjustable Cut-Off for Steam Engines.

Henry Webster, Cassville, Wis.—An oscillating toe piece works in the regular manner when rack pieces do not touch raised top rails; but as soon as the top rails are set to engage them, pawls are instantly released thereby from the shoulders of the toe piece, and produce, by the weight of the levers thereon, the dropping of the respective toe and lever, and the cutting-off of the steam. The nearer the top rails of the rack pieces are placed to the pivoted arms of the toe piece, the shorter will be the cutting-off action, and the quicker the speed of the engine.

Improved Folding Store-Shelf.

Minter P. Key, Waxahachie, Tex.—This store shelving is so constructed that it may be readily folded for convenience in removing it from the store, and for transportation. Each section of the shelving is divided into three equal parts. The lower part is occupied by drawers and a closet. The middle part is hinged to the lower part, so that it may be turned down. The upper part is hinged to the middle part, so that, as the middle part is turned back and down, the upper part may descend without changing from a vertical position. To the upper part are attached castor wheels, upon which the said upper part rests when the shelving is folded. The castor wheels, when the shelving is arranged for use, enter recesses.

Improved Corn Sheller.

William Smith Broyles, NolaChucky, Tenn.—A shelling cylinder is provided with teeth and made tapering in form, and is rotated either fast or slow by a crank. The teeth of said cylinder come in contact with the ears of corn, remove the kernels, and at the same time move the ears longitudinally through an adjustable shield. As the cobs reach the farther end of the shield, they enter an inclined spout, down which they slide into a receiver. The shelled corn falls upon the inclined screen and then upon an apron, hinged at its lower edge, so that it can be turned up into a vertical position when the corn is to be measured, to allow the corn to fall into the measuring pit, which is provided with a sliding top, which, when the pit is full, may be pushed in to prevent the entrance of any more corn until its contents have been drawn out.

Improved Cotton Harvester.

La Fayette K. Miller, Austin, Tex.—This invention consists in a system of revolving rods, so arranged as to be continually going down into and emerging from the cotton branches while in a vertical position. The whirling motion of the rods causes the fibers of the cotton, as soon as they come in contact with the rods, to take hold of said rods or pickers, wind round them, and remain attached till stripped off by clasps or strippers that slide down the rods after they come up from among the branches of cotton stalks, and scrape the cotton into a receiver below. The pickers are caused to turn by friction against broad bands that pass across the frame of machine. These bands are corrugated, so as to increase the friction, and are broad enough to act on the pickers and turn them during their descent from the top to bottom of cotton stalks. The bands work on rollers, each pair standing about forty-five degrees from a perpendicular, with base journals near each other, but at top standing inclined in opposite directions, giving the form of a trough. The strippers are cuffs that fit around the pickers loosely enough to slide upon them easily and work in two grooves, one on each side of the pickers, by which provision the cotton is the more easily removed. Presser levers or bars are arranged on each side of frame, arranged and connected so as to throw the strippers to points of pickers one or more times while passing the receiver. These levers are to work rapidly and with long strokes, causing two or three strippings to take place while the pickers are passing over the cotton box.

Improved Self-Regulating Gas Burner.

Duncan D. McMillan, La Crosse, Wis.—The invention consists of a gas burner with flexible diaphragm and valve. The lower chamber of the same is connected by suitable perforations with an annular channel concentric to the diaphragm, which channel conducts the gas to the delivery tube in any position of the tip section by means of two or more channels, the flow being regulated in the customary manner by the pressure of the gas on the diaphragm and the corresponding opening and closing of the valve.

Improved Thrashing Machine.

Theophilus Harrison and William C. Buchanan, Belleville, Ill.—A fan has a tapering blast channel, the latter under the thrashing concave. The blast thus strikes the wheat, chaff, and straw as they pass from the thrasher, hoisting the chaff through an opening. A hinged door at the outlet of the thrasher is made adjustable by a rod fastened to the top by a pin passing through one of its holes. This deflects the grain, and causes it to fall on the ordinary vibrator. A plate is hinged and pendent from the frame, for the purpose of preventing the ejection of loose grain. A trap door covers the chaff escape.

Improved Draft Equalizer.

Liberty J. Seely, Waldron, Ind.—This invention consists of a slotted clevis, secured by supporting braces and bars at the front end of the plow beam, at suitable distance toward the landside of the same. The clevis carries, in a sliding and adjustable draft eye, a draft rod with the usual three horse doubletree, being strengthened by draft and stay rods attached to a lateral cross bar and the rear and front part of the plow beam.

Improved Miter Machine.

Daniel A. Fisher, Allegheny, Pa., assignor to himself and O. Chambers, of same place.—This invention consists of a circular saw with mechanism for dropping it below the table, shifting it from one bevel to the other, and lifting it up through the table in regular succession for utilizing it to saw right and left bevels for miters without shifting the stick to be sawn.

Improved Saddle Horse Apparatus.

Adrian Hitt, Flora, Ill.—This invention consists in a stay strap extending from the crupper on each side of the horse, and connecting with the strap which supports the breast pulleys. The stay straps counteract the forward pull of the forked strap when the rider draws upon the reins, and prevents folding or wrinkling of the girth, or its being drawn forward toward or between the fore legs of the horse, as happens when the ordinary martingale attachment is used.

Improved Registering Machine.

Charles E. Rand and John T. Dupont, New York city.—This invention consists of two or more ranges of counters for special objects, combined with another range which counts the totals of the special counters, all so contrived that any one of the special ranges may be worked together with the range for totals independently of the others.

Improved Car Axle Box.

Charles A. Hussey, New York city.—The main feature of this invention is the provision made for keeping the bearing cool by means of a circulation of water or other liquid, or of air through the bearing in any direction. It will be found fully described and illustrated on page 166, vol. xxxii.

Improved Apron for Stock Cars.

Chapman R. Jones, Berlin, Ill.—This invention consists in the combination of the balls and the hooks with the apron, to enable it to be readily secured to and released from the door posts of a car, so that it cannot be displaced by the tramping of stock in passing into and out of the cars, or by the moving out and in, handling freight.

Improved Revolving Rack for Holding Stockings.

Daniel K. Wertman, Shenandoah, Pa.—This invention consists of an improved device for suspending socks, stockings, or other goods from a revolving rack. The stockings may be suspended in pairs or clusters of a dozen, with their size, quality, and price marked for the accommodation of purchasers. The said rack revolves on an iron pin in the base, and stands on the counter, or in any suitable position, for exhibiting the goods.

Improved Lamp for Lighting and Heating.

Edward A. Ripplingille, Holborn, England.—The oil reservoir and cone plate can be slid into and out of position. The cone plate is formed to fit the body of the lamp, and thereby shut off air communication between the upper and lower sides thereof, except through the cone. The top of the lamp stove is formed of two plates in the lower one of which is fixed a short metal tube, while in the upper one is formed a hole to serve as a seat for a kettle or other article; and at one side is fixed a chimney. A space is left between the two top plates to allow the heat and products of combustion to circulate around the kettle. Openings are formed in the sides of the lamp to admit air freely to the under side of the cone plate, and to enable the wick to be regulated without disturbing any part of the lamp.

Improved Machine for Tinning Sheet Copper.

William Jenkins, Newark, N. J.—Sheet copper and other soft metals (as sheet brass and other composition metals) are usually tinned by "wiping" the fused tin or tin and lead with cloths or waste, no machinery being employed for the purpose. To spread the melted tin evenly by this hand process requires much care and skill, and a great waste of time. The present invention is a combination with a vat of two rolls, the former running in the molten metal within said vat, and provided with a surface that will cause the adhesion thereto of said metal, while the latter has a dead surface, or one that will not permit the adhesion of said metal, so that a sheet of copper may be tinned on one side.

Improved Spring Bolt Fastening for Tongues, etc.

Ethan H. Pettit, Twin Lake, Mich., assignor to himself and Delamar Wade, of same place.—A semicircular plate on the end of the tongue has circular portions to receive a tongue yoke, which consists of a hook part and spring-held straight part combined, and their ends meeting, so as to form a flush joint. This leaves an open space for the introduction of the trace or other article to be secured.

Improved Whiffletree Hook.

Othniel J. Smith, Wauwatosa, Wis.—A hook is formed of a stationary part, having a downward extension at the end, and a pivoted correspondingly curved part is arranged to fold or lap thereon. The trace is first placed over the lower part, and carried back toward its rear end; the upper part is then brought down, and the trace placed over both, so as to lock them tightly together and prevent their opening. The trace is thereby not liable to be detached in going down hill, or by other causes, but is retained in the hook, without the use of a spring, in a strong and secure manner.

Improved Milk-Cooling Apparatus.

Orrin J. Stickle, Canton, N. Y.—In this device any desired number of pans and tubes may be arranged in a series, and connected by the same water pipe. Cold water or ice is allowed to flow into and stand in an inner tank. The milk in contact with the cold walls of the tank will become cold, will sink and be replaced by the warmer particles, thus establishing a circulation that will soon cool the entire mass of the milk, however large the tank may be.

Improved Carriage Curtain Fastening.

Henry Foster, Westery, R. I.—That portion of the fastening which is attached to the curtain is a wedge-shaped slide having a shank extending through the curtain. On the under side of the wedge is a pin, forming the lock. The slide travels in a socket plate, which has a series of holes, into which the pin will rest when the curtain is drawn to the desired tension. When it is desired to unfasten or adjust the curtain, the operation is performed by tilting the wedge sufficiently to release the pin from its hold in the plate. This being done, the said wedge may be moved backward or forward.

Improved Step Ladder.

Robert S. Van Zandt, Williamsburgh, N. Y.—The standards of the ladder are made of the same width, and the adjacent ends of the side bars are hinged to each other, so that they may be turned into line with each other to form a ladder, turned at an angle with each other to form a step ladder, and turned parallel with each other for storage and transportation.

Improved Alarm Lock.

Jonathan Walton, Brooklyn, N. Y.—This device may be used as a lock, a latch, a bolt, and an alarm, as may be required. When the pin is held forward and a bolt pushed outward, the end of the bolt strikes against the head of the pin and pushes the catch outward, allowing the door to be opened. When the pin is left free, the outward movement of the bolt simply pushes the pin outward, and does not move the catch. A button is pivoted to the catch, so that it may be turned down over the pin to hold it, so that the outward movement of the bolt may push back the catch and allow the door to open. When the button is turned back, its free end strikes upon a projection, so that the catch cannot be pushed back, thus forming a double lock. The bolt is thrown into or out of gear with the knob spindle by means of a key. A gong, which serves also as a cap for the clock, is sounded by turning the knob.

Improved Car Coupling.

John B. Winters, Attica, Mich.—In this coupling a pivoted hook is arranged within a drawhead, and acted upon by a spring, which enables it to operate automatically for connecting with the coupling link. The lever for car coupling is connected with a cranked lever on the platform. Said lever is pushed to the left to uncouple, is held back by a pin when the hook is coupled, and is held forward to keep the hook raised for the escape of the link by like means.

Improved Check Box.

Somers Van Gilder, Knoxville, Tenn.—This is a contrivance of apparatus whereby the cash receiver of a store or other business place will exhibit to the customer the amount of his bill by means of checks presented to his view from the inside of a case, where they are placed by the operator by means of slides. The checks prevent the withdrawal of the slides after so exhibiting the bill, and fall into locked receptacles, where they record the amount for which the receiver is responsible.

Improved Reversing Link for Steam Engines.

John Simpson, of Meadville, Pa., assignor to Dick & Church, of same place.—This invention relates generally to valve gearing, but particularly to that shown in the patent No. 125,769. Two slotted links, having a large circular recess at each end of the slot, are bolted to a block, and also together at each end. One of the notched pivots of the eccentric rods is fitted in each end of the link, and a collar in the middle of each pivot is fitted between the two plates to hold the pivots in place, making a simple and cheap contrivance, well adapted for durability. The wrist pin of the valve rod works in the notched pivots.

Improved Cranberry Separator.

Daniel T. Staniford, New Egypt, N. J.—As the cranberries fall upon inclines, such of the perfect berries as are unobstructed bound upon the upper inclines and roll down aprons into a receiver, and are the marketable berries. The imperfect berries do not bound, but slide, down one incline to another, and, falling from the last incline into a receiver, are thrown away. The berries that fall from the last upper incline fall into a receiver, are called middlings, and are again passed through the separator.

Improved Compound Engine.

Jackson W. Bell, McKinney, Tex.—This invention consists of a series of engines for working the steam over by exhausting it from the first into the second, and so on, for utilizing the pressure lost when the steam is exhausted from a single engine into the air. The engines are all connected to one driving shaft at different points around the axis, and all connected by a revolving tube, which serves for supply and exhaust pipes and valves to all.

Improved Water Wheel.

William J. Thompson, Springfield, Mo., assignor of one half his right to Springfield Iron Works.—This invention applies more especially to a water wheel for which letters patent have already been granted to the same inventor; and the improvement consists in an improved mode of operating the gates; in a spring for each gate, to insure the simultaneous closing thereof; and in a three-chamber box around the main shaft, having an arm, which extends over the sector gears and supports the pinion shaft.