ted to a journey in the wet or exposure to a draft of cold air; but these ordinary influences can only have the effect of determining the location of the disease, the necessary conditions for the development of which must have existed previously.

Symptoms of rheumatism vary according to the severity of the attack. In the acute form of the affection, there are loss of appetite, quick full pulse, rapid breathing, stiffness of movement, and sometimes incapacity to move at all. Cattle, when attacked with acute rheumatism of the muscles of the back and quarters, will often lie down and refuse to rise; and, if not got up by force, they may remain in that position until they die from exhaustion, or from failure of the heart's action owing to the extension of the disease to that organ.

Horses when similarly affected remain in the standing position, with the hind legs drawn under the body, presenting something of the appearance which is apparent in acute inflammation of the fore feet; in fact, we have known this disease to be mistaken for rheumatism of the muscles of the back, and we have heard of the opposite error being made, an attack of rheumatism in the back having been treated as inflammation of the fore feet. The symptoms of rheumatism, however, are sufficiently marked to enable an acute observer to distinguish it from any other affection.

When the inflammation attacks the joints of the extremities, one peculiarity is sufficient to indicate the nature of the malady—we refer to the tendency to shift from one part of the limb to another; the right fetlock may be swollen one day, and the left knee on the following day; and again in a short time the disease may quit the fore limbs altogether, and appear in the hind joints.

In the sub-acute form of rheumatic disease, the frequent change of position is a characteristic symptom; but in the most acute form, when the constitutional disturbance is most severe, the tendency to shift from one part to another is not so commonly noticed.

One variety of rheumatism is especially annoying as a sequel to febrile diseases. A horse, which has recovered from an attack of influenza or bronchitis, suddenly becomes excessively lame from inflammatory swellings above the fetlocks, probably of the forelegs. The disease may yield to treatment to some extent, but, almost as soon as any improvement occurs in one part, the disease assumes a more active form in another; and many weeks may be occupied in trying various forms of treatment with more or less success. In the majority of cases soundness is ultimately restored, and it does not appear that the acute or chronic form of rheumatism leaves behind it any tendency to the malady.

Treatment of rheumatism is generally based on the assumption that the disease is due, in a great degree, to the presence of an excess of acid in the blood and secretions. It is undoubtedly true that there is an excess of fibrinous material in that fluid; and there is also, in most cases, considerable constitutional debility. These conditions point to a consistent plan of treatment; it is necessary to eliminate morbid materials from the system, and to support the vital powers at the same time by generous diet.

Nitrate of potash and also carbonate of potash are valuable remedies in rheumatism, the former especially from its influence on the fibrin of the blood, while, at the same time, it excites the secretive action of the kidneys. Laxative medicines are required in the febrile stage of the disease; and when the fever has subsided, tonics may be necessary, particularly if the animal's appetite is not very good.

Local treatment is indispensable in cases where the joints, or the synovial capsules connected with joints, are involved, and experience is decidedly in favor of blistering the parts at once, in preference to fomenting with warm water or apply a stimulating liniment. The relief which is afforded by a blister is commonly very marked immediately after the remedy has taken effect, and in all instances the repetition of the dressing may be expected to produce satisfactory results. —*London Field.*

ASTRONOMICAL NOTES.

OBSERVATORY OF VASSAR COLLEGE.

For the computations of the following notes (which are approximate only) and for most of the observations, I am indebted to students. M.M.

Positions of Planets for May, 1875.

Mercury.

Mercury cannot be seen before the latter half of the month. On the 22d it passes the meridian an hour after the sun, and should be looked for after sunset, farther north than the point of disappearance of the sun. It sets later and later every evening, and on the 31st it does not go below the horizon until after 9 in the evening.

Venus.

Venus, although less brilliant, can still be seen in the morning, as it rises at 3h. 30m. on the 1st of May, and comes to meridian 19m. before 10 A. M. On the 31st Venus rises at 3h. 8m. in the morning, and sets at 4h. 44m. P. M.

Mars.

Mars is increasing in apparent diameter, but is also moving farther south in declination, and is not well situated for observation. It rises on the 1st at 11h. 9m. P. M., and can be known by its ruddy light. On the 30th, Mars rises at 9h 25m. P. M., and sets on the 31st at 5h. 59m. A. M.

Jupiter.

Jupiter is now the most conspicuous planet in our evening skies. It rises on the 1st at 5h. 35m. P. M., and sets at 4h. 26m. the next morning. On the 31st Jupiter rises at 3h 14m. P. M., and sets at 2h. 21m. A. M. of the next day.

Jupiter has four moons, and they can be seen with a small glass, generally in a line nearly parallel with the equator of the planet. But sometimes they are invisible by being behind the planet, as in occultations, by being in the planet's shadow, as in an eclipse, sometimes by being in front of the planet, between us and the planets, as in transits.

The occultations and the eclipses can be seen with small instruments, but the transits cannot be seen without good glasses, the little moon being generally so much like Jupiter in color as to be undistinguishable from the planet. On the 7th, the third satellite, which is the largest, will disappear (to be seen with a glass of low power) at 7h. 11m. 41s. (Washington time) by coming between the Earth and Jupiter, in transit. On the 18th, the same satellite will disappear, by going into the shadow of Jupiter, at 7h. 59m.8s. (Washington time), or by eclipse. On the 25th the same satellite will disappear at 8h. 18m. by being behind the planet, or by occultation

Saturn.

Saturn does not rise until after 2 in the morning of the 1st, and sets a little after noon. On the 31st it rises a few minutes after midnight and sets at 10h. 30m. A. M. It is far south in declination, and, although coming into better position, is still very unfavorably situated for observation.

Uranus.

Uranus rises on the 1st at 11h. 10m. A. M., and sets at 1h. 26m. the next morning. On the 31st Uranus rises at 9h. 16m. A. M., and sets at 11h. 29m. P. M.

It may be found by sweeping with a small telescope in the region east of the Beehive in *Cancer*.

Neptune.

The diurnal path of Neptune is so nearly that of the sun that it cannot be observed at this time.

Sun Spots.

The large spot mentioned in the last report, as having appeared a second time, made its passage across the disk with no noticeable change in appearance. It was last seen on the western limb, March 29, and did not return again at the time when (by the sun's revolution) it was expected, about April 14. Two clearly defined spots of good size appeared within the eastern limb on April 10, and the photograph of the 14th (none having been taken since the 10th) shows them to be preceded by another of nearly equal size. These three are still on the disk (April 18), the pair having completed about two thirds of their passage. Besides those mentioned, spots have been few and very small during the last few weeks, and no faculæ have been observed. A little group, which was first seen on March 29, was of interest, as it was well defined and passed the center of the disk, yet not visible in the last picture taken, that of the 27th.

Silas Henry Hodges.

Ex-Commissioner of Patents Hodges, who was appointed to that office by President Fillmore, and who, for the last fourteen years, has been one of the board of three examiners-in-chief appointed by Congress to hear appeals from the decisions of the examiners, died in Washington, D. C., on April 20. He was a native of Clarendon, Vt., born in 1804, and for some years practiced as a lawyer in Rutland, in the same State. A natural predilection for mechanical science gave him great success in patent cases, and enlisted him in the service of the Patent Office, in which he acquired a high reputation for learning, acuteness, and accuracy. For some years he had been suffering from a painful internal disease, which he bore with patience, continuing his labors with great courage and fidelity. His removal from this life has caused widespread regret, and elicited many indications of the universal respect in which he was held.

Patent Office Changes.

General William H. Brown, the present examiner of trade marks, resigns his position from the 30th of April, in order to resume the practice of the law. He will be succeeded by Mr. J. E. M. Bowen, for several years connected with the interference division of the Patent Office, and now first assistant examiner in the class of mechanical engineering.

A GOOD LOCOMOTIVE.—Passenger engine J. S. Taylor, No. 105, Daniel Kenyon, engineer, running between Paterson, Newark, and Jersey City, has accomplished the remarkable feat of running 80,473 miles without repairs. The main rod brasses during the period have not been filed, and the driving brasses are still in excellent condition for further work.

DECISIONS OF THE COURTS.

United States Circuit Court---Southern District of Ohio.

PATENT BUNG.—PHILIP GEIER *vs.* AUGUST GOETINGER.

[In equity.—Before SWING, J.—October term 1874.]

Letters patent to Philip Geier, of February 23, 1869, for "Improved Method of rendering Wooden Bungs Impervious to Liquids and Gases," construed and sustained.

SWING, J.:

The patent recites that Philip Geier alleges that he invented a "new and useful improved mode of rendering wooden bungs impervious to liquids and gases." In the schedule the patentee says he has invented "a new and useful improvement in wooden bungs," and says: "My invention consists in rendering wooden bungs impervious to the passage of gases, or beer or other liquor, through the pores of the wood by means of any suitable substance." The drawing shows a bung with a coat of the impervious material. Then the substance used is described, as also its manner of application. This claim is: "A wooden bung rendered impervious to the passage of fluids through the pores of the wood by means of the described or other suitable substance."

I think, from the patent, specifications, and drawings, that the invention of the patentee consisted in a wooden bung rendered impervious to the passage of gases or beer or other liquids. This is the thing he has produced. This is the end he has accomplished, and a fair interpretation and application of the language used cannot well bear any other construction.

The patentee points out the method by which his invention is produced, and the material used—to wit, by the application of impervious material to the end of the wooden bung. He also describes a particular material, which he regards as most suitable, but claims the use of any suitable substance for accomplishing the result.

The presumptions of the law are in favor of the patent and the utility of the invention; but, aside from that, the testimony establishes clearly the utility of the invention. The testimony shows that many experiments had been made, prior to complainant's invention, to produce such a thing; but they had failed to produce one adapted to the use for which they were designed.

So far as the prior use of the respondent is concerned the testimony does not show that his experiments were more successful than many others, for it shows that the bungs which he manufactured did not answer the purpose, and the use thereof was abandoned.

It is attempted to be shown in the testimony, however, that the invention had been used by other parties than those set up in answer; and it is also attempted to be shown that the invention had been described in printed publications. If the testimony clearly established either of these propositions, we might, perhaps, grant the respondent leave to amend; but they do not so clearly establish either point as to warrant the court to permit such an amendment at the hearing of the case. Such testimony cannot, therefore, be considered by the court, except for the purpose of showing the state of the art at the time of complainant's invention, and such knowledge would in nowise affect the construction which I have given to the patent.

If the pleadings properly raised the issue, I should not think the patent void by reason of the claim being to broad.

The respondent having admitted the manufacture of the invention of the complainant, by the use of substances which are within complainant's patent, is, therefore guilty of an infringment; and, as no reference is desired, and the damage shown is but fifteen cents, a decree for an injunction will be granted without costs.

[*Dunham and Forake*r, for complainant.
Shouter & Smith, for defendant.]

Recent American and Foreign Patents.

Improved Side Hill Plow.

Charles Henry Stratton, Monroeton, Pa.—This is an improved reversible or side hill plow, so constructed as to turn the furrow perfectly, and to work equally well upon inclined and level land, so as to do away with all dead furrows. The mold board is made in two parts, and so arranged that the one part may swing or turn below, and the other above, the landside of said plow.

Improved Seed Dropper.

Elias M. Morgan, Belleville, Ill., assignor to Henry Rentchler, of same place.—This invention consists of an improved piston and aperture for the distribution of seed or grain. By the revolving of a shaft, the piston works up and down through the cup. The piston is made in two sections, so put together as to form the adjustable seed openings by means of recesses in their edges. The cup, through which the piston works, is provided on either side with a groove, headed by a V-shaped recess, which strikes off the seed as it is measured at each motion of the piston, and also said recesses gather the grain or seed in toward the center or groove, and the seed thus driven to the center is held in a position to escape breakage, as the plane surface on the upper part of the piston enters the aperture.

Improved Horse Hay Rake.

James E. Taylor, Westminster, Md.—The invention relates to novel means whereby a horse rake may be conveniently operated with the foot of driver, no matter what may be his size or length of leg. It consists in an adjustable foot piece very advantageously arranged on a vertical rod, so that it can be graduated at pleasure, while the rod itself also subserves another purpose.

Improved Piano Stool.

Charles A. A. Düring and John Leck, New York city.—This invention consists of an inwardly curved or convex back support, attached in an adjustable manner to a piano stool or other seat, to be set exactly to the hight of the small of the back.

Improved Car Coupler.

James S. Hagerty, Baltimore, Md.—This invention relates to certain improvements in coupling the pole to a horse car so as to enable it to be held up by the car, and thus take the continuous strain from the necks of the horses; also in a bent rod affixed to the pole and serving the double purpose as a retainer for the coupling pin and a handle wherewith the driver may manipulate the tongue in reversing his team.

Improved Manufacture of Sheet Wax for Flowers.

Mary Jane McColl, Hohokus, N. J.—Sheets of wax are prepared by cutting out of a cake of suitable color the parts or grounding of the leaf to be produced—as, for instance, in the case of a geranium leaf, from a cake of green wax, the shape of the dark green part of the leaf. This leaf-shaped piece is introduced into a cake of wax having the color of the surrounding part or fringe of the leaf, which cake has previously been heated to such a temperature that it is near the melting point, so that the differently colored cake leaf may readily sink therein, and be fully surrounded or embedded by the heated wax. The whole is then allowed to cool off, when the cake is cut into the sheets in the usual manner, said sheets exhibiting, at uniform thickness, the various differently colored leaf patterns or imitations embodied therein. These sheets are lined or backed by a sheet of wax, to give the required degree of strength, and are thus supplied to the trade.

Improved Gang Plow.

James B. Hunter, Ashley, Ill.—To the right hand plow beam the draft is attached. The left hand plow beam is bent inward and bolted to the side of the other beam. A U-shaped bar is secured to the axle, and to its bend is secured the lower end of a standard, the upper end of which passes up through the tongue, and is secured to said tongue by a bolt, several holes being formed in said standard to receive the said bolt, so that the tongue can be conveniently raised and lowered upon the standard to adjust the plows to work deeper or shallower in the ground.

Improved Brick Kiln.

Peter Edward Smith, Liscomb, Iowa.—This invention relates to certain improvements in brick kilns, and it consists in the combination of a transverse wall having dampers, with a central longitudinal hollow wall containing flues which lead to a common chimney. It also consists in the combination of detachable fire boxes with the stationary fire boxes in the outer wall, and with the flues in the hollow wall.

Improved Plow.

Albert Hampe, Staunton, Ill.—The plowshare is produced of four sections, which fit closely at the joints, and are of such shape and size as to correspond to the degree of work and strain bearing on them. A plate extends laterally and parallel to the lower edge of plowshare, being curved in similar shape and welded to the landside. The point has a horizontal base and a dovetailed recess or notch to receive the forward end of the landside and of the plate. This causes the landside and share to be supported rigidly in position, and to safely endure comparatively great strain and leverage.

Improved Seed Drill and Planter.

Lysander L. Haworth, London, Ohio.—By this peculiar plow a narrow channel is formed in the soil to receive the seed, which is dropped into the said channel through the cavity between the side parts of the plow, and is covered by the falling of the soil as the plow advances, the soil being pressed down upon the seed by the wheel. For working in sod land, a curved runner with a sharp forward edge is attached to the plow, or is used instead of said plow.

Improved Chimney Cowl.

Andrew J. Robinson, Troy, N. Y.—In the revolving section of the exhaust pipe, through which ventilation is to be effected, a partition is placed obliquely, for causing the stream of air passing through to traverse the upper part, to afford greater space for the air coming out of the exhaust pipe.

Improved Truss.

Delancy King, Salamanca, N. Y.—This consists of a pad formed of four, more or less, hinged fingers the position of which is controlled by an adjustable ring.

Improved Latch and Knob Lock.

Charles Seymour, Charlottesville, Va.—The object of this invention is to provide a simple and effective lock for all kinds of doors, without the use of springs; and it consists in the peculiar construction of a bolt operated by its own weight, and in the combination with the same of a tumbler contained within a concentric barrel, whereby the bolt is locked at night with greater security.

Improved Machine for Rolling Tapered Bars.

Thomas R. Venners and Richard Rowley, Cumberland, Md.—This is an improved roll train, by which bars of iron or other metal of any section may be rolled to any gage, length, or taper. It consists in the combination, with a lower stationary roll, of an upper sliding roll, that is governed by the action of the eccentrics of a revolving top shaft on the steel pins of the roll bearings, in connection with the arched top straps bolted to their guide carriages. The roll train may be readily set, by the removal of the lower gear wheel, to perform the functions of the common rolls, provided that a suitable stop is attached to the eccentric shaft of the top wheel for securing the exact distance of the rolls.

Improved Pocket Book Safety Attachment.

Edwin G. Wheeler, Winona, Min.—A couple of arms are arranged on the side of the book, to be thrust out at one end by a spring against the pocket, and spread apart, so as to prevent the book from being picked out of the pocket. The arms are arranged on fixed joints, and a bar serves, in connection with a lever, to lock them open.

Improved Piano Stringing and Tuning Device.

William F. Kearsing, New York city.—This invention consists in connecting the strings to stationary rest pins by a U-shaped staple, one leg of which is screw-threaded to receive a nut, and the other is parallel thereto and passing through the rest pin, thus serving to prevent the device from turning with the adjusting nut when the tension of the strings is being regulated.

Improved Wrought Iron Column.

John B. Cornell, New York city.—This invention consists in a fender for a supporting column connected to the foundation plate, to form a lateral support to the column.

Improved Railroad Pinch Bar.

Cornelius Ragan, Waterloo, Iowa.—The base piece of the pinch bar is connected with the plate which covers the rail by a swivel pin. This base piece extends upward and has two jaws, through which passes the fulcrum pin of a lever. A tenon on the under side of the lever fills the space between the jaws, and receives the fulcrum pin. The base of the pinch bar being swiveled to the plate, the lever may be used quartering beneath the wheel, if desired. As the wheel moves along on the rail, the pinch bar and plate are pushed after it, being confined to the rail by the bended edges of the plate, which inclose the rail.

Improved Car Coupling.

Charles C. Garrett, Calvert, Tex., assignor to himself and Louis M. Openheimer, same place.—When the cars are run together, the end of the entering link pushes back the lower end of a pin and passes it, which allows the pin to swing forward into the link to couple the cars. To adjust the coupling, so that the cars can be run together without coupling, certain portions are raised sufficiently to raise the pin out of the slot in the drawhead. The lower end of the pin is then swung out, and bars are lowered, leaving the end of the pin resting upon the top of the drawhead.

Improved Feed Cutter.

Johann A. Schwerdt, New York city.—This invention consists in an arrangement of feed rollers, pawl levers, connecting rods, a treadle lever, and a wheel carrying two blades or cutters, and mounted on a crank shaft, said parts being so connected that the rollers are simultaneously operated at each half revolution of the wheel, and the straw or other material fed forward just previous to the cutting stroke of each blade.

Improved Stove-Lid Lifter.

Robert R. Ball, West Meriden, Conn.—The lifter, from near the toe to the handle, is made concave on the under side and convex on the upper side, the concavo-convex portion terminating on a disk, but extending from the other side of the disk to a handle, forming a cap. The ferrule is slipped on next the disk and the handle is driven in, and a holding nail inserted.

Improved Hay and Cotton Press.

Benjamin J. Day, Evansville, Ind.—This is a press having a horizontal case and a horizontal follower, which is worked by a train or reducing gears working into toothed bars connected to the follower, to press the hay or other matter. The essential feature consists of a novel contrivance of the train in a simple and cheap way, for giving a quicker speed to the follower during the fore part of the operation, when the resistance is not so great as in the latter part, and for giving a slower speed in the latter part, when the resistance is greatest.

Improved Machine for Forming Gear Wheel Molds.

James Clayton, Portsmouth, Ohio.—The mode of forming the mold is as follows: The bottom is first formed by a mold board on the bed of the machine, the marker is then placed on the outer division of the flange ring, and the guide arms firmly fixed thereon. The tooth pattern is then lowered, and the sand firmly rammed in between it and the flange ring. The pattern is then raised, and the marker and guide arms adjusted for the next tooth, and the space rammed with sand, as before. This operation is continued until all the teeth of the gear wheel are molded.

Improved Neck-Tie Fastening.

Emile Berliner, New York city.—This is a metallic or wire hoop, adapted to fit upon the neck or shank of a collar button, and thus suspend the tie in a simple and permanent manner.

Improved Grain Drill Teeth.

Isaac B. Sandusky, Lexington, Ky.—This invention consists in the construction of the drill tooth and seed spout in two corresponding parts, which, when secured together, furnish bearings for a cutter wheel that revolves between them and enters the ground in advance of the tooth.

Improved Automatic Cradle.

William Kindermann, Troutville, Pa.—The cradle is set in motion by a gentle push, and keeps up the rocking by the action of a clock train and pendulum rod. The cradle may be stopped when the baby is asleep, being again set to rock by the impatient and restless motions of the awakening child, forming a complete self-acting baby tender.

Improved Nail Plate Feeder.

William H. Field, Taunton, Mass.—The forked and slotted feeder bar or rear extending standard is attached to the main yoke standard and provided with adjustable stops, in combination with a sliding and weighted feeder head, which has pivoted and spring-acted jaws for taking hold of the flanged sleeve end of the nipper rod. The sliding feeding head is also provided with a rear extending latch hook and vertically sliding pin, acting on the opposite arm of the same, for raising the latch from the rear stop, and detaching the feeder head on the insertion of the nipper rod and on the consequent depression of the pin.

Improved Combined Try Square and Bevel.

John L. Larrison, Schooley's Mountain, N. J., and Henry Leigh, Wurtsborough, N. Y.—To the semicircular end of this tool an adjustable and graduated rule, with a longitudinal slot, is applied in such a manner that it may be moved along a pivot pin to any point of the slot, and also be swung thereon, to form any suitable angle with the main piece. The rule may thus be carried to the end of its slot in either direction from the main piece, so as form a square or bevel with the same, and also in the exact protraction of the same, by sliding with its end into a recess of the main piece, producing one straight rule therewith. The exact position of the rule to the required angle may be quickly adjusted by means of a sliding rod, which is guided in a longitudinal groove, being provided with a pointer, which is set to a graduation of the main piece, while a pin at the end of the rod passes through the slot of the rule and swings the same into the exact angle indicated by the pointer.

Improved Clothes Frame.

Chester F. Smith Torrington, Conn.—The drying frame is suspended from the ceiling of the room by brackets on the ends of the side pieces. These brackets are attached by joint pins, and swing freely in either direction thereon. A stud on the brackets, the end of which bears against the ceiling, throws the frame into an inclined position.

Improved Car Coupling.

Owen T. Baker, Wamego, Kan.—The cavity of the bumper head is made large, to receive two valves, which are pivoted to the bottom and top of the bumper. The lower part of the valves is beveled or inclined to press against the end of the link and hold it horizontal, and to form flanges upon their upper edges to operate upon the coupling pin. The upper pivots of the valve project into a chamber formed upon the top of the bumper, and to these are rigidly attached levers, with which are connected the ends of a spring. To adjust the coupling to connect the cars as they run together, the lower end of the pin is set upon the upper edge of the valves; then, as the cars are run together, the entering link pushes back the valve, and the pin drops through the link.

Improved Hog Trap.

James F. Cooper and William W. Hiatt, Frankton, Ind.—This is an improved trap for catching and holding hogs while ringing, marking, castrating, or spaying them, or performing any other desired operation upon them, holding the hogs securely and in such a way that they cannot injure themselves. In using the trap, one or more of the hogs is driven into it, and the door is closed. The lower end of a board is swung outward sufficiently to allow one of the hogs to put his head through the opening in seeking to escape, and the lower end of said board is then pushed inward so far as to prevent him from withdrawing his head. The hog is then thrown upon his side.

Improved Stove Pipe Coupling.

Robert R. Ball, West Meriden, Conn.—Beads are made near the ends of the pipe, and the parts are slipped over the ends and down to the beads, where the ends of the pipe are turned down with the pene end of a hammer. Slots are made in one part, and directly over the slots and above a shoulder on the other part are hooks. The two parts of the coupling are held together by hooks over a flange. Inclined planes, as one part is turned around, pass under the hooks and draw the parts of the coupling tightly together, thus making the two joints of pipe rigid and strong. This coupling utilizes the entire length of the stove pipe, saving about three inches in each joint.

Improved Protractor.

Alvin H. Dodd, New York city.—The graduated arc has a fixed arm, whose base is a true line from the center, and extending through the zero point. On the said arc are one or more movable arms which travel thereon, and the outer periphery of the arc is made with an incline, which bears against a similar incline in the recess on the arm. When a plate is clamped by turning a thumb screw, it will bear down on the arc, and thus cause the arm to be drawn closely to the inner periphery of the same.

Improved Photographic Picture Exhibitor.

A. Luquince High, Mount Holly, N. J.—An outer inclosing frame has a glass-covered face plate provided with one or more apertures, and a central spindle on which revolving picture-supporting frames turn. The revolving frames have suitable apertures and slides for inserting the photographs, and are set in motion by means of a circumferential cog wheel of the last frame, in connection with a pinion turned by a crank or key. The revolving frames are turned one after the other by lugs engaging the adjoining pictures, and suitable spring brakes.

Improved Combined Horse Hoe and Plow.

Albert D. Simons, Windsor, Conn.—In this invention a horse hoe and plow are combined with and attached to a beam of peculiar adaptation to be mounted on a wheel truck for joint or independent action, and so as to be conveniently raised out of or let down into the ground. The machine is intended for plowing and hoeing corn, cotton, and other plants growing in rows, simultaneously on both sides by straddling them, so that the plows and hoes of opposite sides of the machine dress opposite sides of the rows.

Improved Windlass.

Fletcher S. Rowland, Chaplin, Ky.—This improved windlass or hoisting apparatus consists of such an arrangement of the loose and sliding ratchet box with the windlass shaft, and a separate crank shaft and clutch, that the windlass is turned for hoisting in the usual manner; while, for lowering, the clutch connection is released and the descent controlled by the brake action of the ratchet box.

Improved Pantaloons Stretcher.

John D. Ryan, New York city.—This is a device for application to pantaloons, to remove the knee folds and wrinkles that have been formed in them by use, leaving them straight and smooth. In using the device, clamps are secured in the pantaloons. An extension rod is adjusted to the proper length, and its ends are inserted in holes in the bars of the clamps. A swiveled screw is then turned to put the pantaloons under the necessary tension.

Improved Apparatus for Stamping Patterns.

Isidore Rosenthal, New York city.—This stamping apparatus is composed of a cloth-supporting table, with guide pins, and a balanced suspended transfer frame, having the perforated pattern paper stretched thereon, and adapted to be raised and lowered by suitable mechanism. The transfer frame is provided with adjustable intermediate pieces, and clamping top strips, for adjusting and stretching the transfer paper to any width of pattern.

Improved Match Box.

John Knox, Auburn, N. Y.—A slotted shell receives a head which has a groove in one end, and at the other a head, open in the center, to receive an internal cylinder. There is also a side notch to receive a pusher. The cylinder has longitudinal grooves for the matches, and is attached to a swiveled pin in one end, and fastened at the other on an internal projection of the cap. It also has a ratchet, in which works the fixed spring pawl, to prevent it from turning backward. The caps may be removed and the grooves filled with matches, while a further supply may be kept inside the cylinder. A friction spring ignites the match as it is thrown out by the pusher.

Improved Ironing Board.

Eli J. Wolfran, Washingtonville, Ohio.—This invention relates to certain improvements in ironing boards; and it consists in the combination with an encompassing elastic band, of solid incompressible border strips adapted to be forced into grooves in the edges of the ironing board, by means of the said elastic band, for the purpose of holding the cover on more securely, the said solid strips affording three sides which engage with the edge of the cover in the groove with a frictional contact, thereby holding the cover on more securely, and without allowing it to wrinkle, as would be the case with an elastic band alone.

Improved Station Indicator.

James D. Smith, Gregg, N. Y.—A series of flaps are hinged on transverse wires in the middle of the case. By means of stops they are arranged in an inclined position, so that, when released by moving the bar at the upper end of the case, they will fall over by their own gravity, aided by a spring. The bar is attached to a slide, which is confined to the case. By pressing on the long end of a spring lever, the bar will be raised sufficiently to allow the first leaf to drop and admit the next one to the notch, and so on, as the stations are passed.

Improved Chain Propeller.

Clark Smith, Cornwall on the Hudson, N. Y., assignor to himself and William H. Clark, of same place.—This is an improved endless chain paddle wheel, which is so constructed that the paddles may move back and forth between the wheels in straight lines, and this without any sag, and at the same time with very little friction. A series of paddle blocks are jointed together and provided with side flanges, and upper and lower ways provided with top, bottom, and side rows of friction rolls.

Improved Folding Table.

James W. Howland and Della Howland, New Haven, Conn.—Two sections of the table are hinged together at the joint by treble jointed hinges, which are fitted in recesses in the edges of the top below the upper surface, so that the hinges will be hidden when the table is extended. The legs are pivoted to the table in a socketed block, having one wall of the socket removed, so that they can fold down against the table top; and a detachable fastening pin is substituted for the said side, and so contrived that it will fasten the leg both when extended and when folded, thus serving both for a brace and a fastener for holding the leg in the folded condition.

Improved Fumigator for Greenhouses.

Thomas Shaw, Danville, Pa.—In using the machine, the tobacco or other substance to make the smoke is placed in a hopper, and a live coal is placed upon it. A wheel is then turned in such a direction that the fans will draw the air in through the hopper and discharge it, loaded with smoke, through a pipe. In this way the entire greenhouse can be entirely filled with smoke in a very short time. With this construction the device can be placed and operated upon the outside of the greenhouse, the pipe being inserted in a hole formed in the door for that purpose.

Method of Hoisting and Conveying Coal, etc.

George Stancliff and Joseph Green, New York city.—This invention consists of a carriage moving on an inclined railway, and provided with fulcrumed lever hooks and cross pin for suspending the bucket thereon. An arrow-shaped suspension rod of the pulley blocks locks over the cross pin of the levers, and is released therefrom by slightly hoisting the hook till it engages a guard plate, which carries the hook below the cross pin without engaging the same. The bucket is tripped for discharging its contents by detaching a latch hook pivoted to its bail, and binding on the rear edge, by means of an adjustable and sliding trip hook, which is pivoted to the carriage, and governed by the hoisting cord of the bucket. The fulcrumed lever hooks are arranged at both ends of the supporting carriage, and constructed with arrow-shaped ends, that lock on pins at end stations that define the length of the way. A sliding weighted cross pin of the station serves to lock the upper hook of the fulcrumed levers on the arrival of the bucket, while the lower hook, arranged nearer to the end of the lever, locks over a lower fixed pin on the detaching of the bucket, being released by the weight of the resuspended bucket, and detached from the station as the upper hook raises the sliding pin, without engaging the same.

Improved Grain Separator.

Wenzel Toepfer, Milwaukee, Wis.—This consists in the combination of an inner brush, its adjustable supporting arms and binding screws, and the vibrating sieve contained with the cylinder, whereby the motion of the sieve is imparted to the brush to give it a longitudinally reciprocating motion. It also consists in an inclined adjustable blade, attached to and moving with a trough for receiving the impurities and conducting them away. A longitudinal brush, with blade and trough, is attached to and moves with the sieves, and is placed along the inner side wall of the cylinder for cleaning the indentations from the impurities gathered therein and carrying them off.

Improved Envelope Opener.

John La Blanc and Xavier St. Pierre, Ophir City, Utah Ter.—This consists of a pair of guides projecting from one end of a metal socket piece, adapted to fit over the end of a pencil to form a V groove. At the bottom a little cutting blade projects to cut open the edge of the envelope, which is guided against the blade when the envelope is drawn along between the said guides, or the latter forced along the envelope.

Improved Mowing Machine.

Jason P. Lord, Francis E. Lord, and Orrin E. Lord, Readsborough, Vt.—This mowing machine is so constructed as to greatly diminish the friction in operating it, has no side draft, and will allow the cutters to be taken off one at a time to be ground, or to be replaced with new ones when broken.

Improved Drop-Chute Reverser.

Joseph B. Crowthers, Monongahela City, and William R. Wilkins, Pike Run, Pa.—This invention improves the construction of the drop chutes in common use for loading coal into boats, barges, and other vessels, so as to enable them to be more quickly and more easily reversed than when constructed in the ordinary way, and so as to be conveniently adjusted to correspond with the rise and fall of the water in the river.

Improved Bill File.

Richard H. Hoffman, Keyser, W. Va.—The bottom has three cups, in which are placed conical spiral springs, which bear upward against the table with a constant pressure. The bed is bent upward at right angles with the cups, and then is bent forward and forms the top plate of the file, against which the table bears when the file is empty. Ordinarily the file will rest upon the desk or writing table, standing on the cups. A piece corresponding in form with the lower portion of the bed is attached to the under side of the table, having shallow cups for confining the upper ends of the springs. This plate carries on its back a cross, which works in a slot and holds the table in position.

Improved Fire Tongs.

Lucian Holmes, Tullahana, Tenn.—The invention is an improvement in the class of fire tongs, whose legs are provided with a guide to prevent their passing each other when opened. The means employed consist of bars pivoted together and to ears or flanges formed on the legs of the tongs.