NEW BOOKS AND PUBLICATIONS.

ANIMAL PHYSIOLOGY; the Structure and Functions of the Human Body. By John Cleland, M.D., F.R.S. With 158 Engravings. Price \$1.50. New York: G. P. Putnam's Sons, corner Fourth avenue & 23d street.

An elementary work on the science, designed as an introduction to more extended treatises. It is also well adapted to interest the general reader in that most fascinating of studies—one's self-and is sufficiently free from technical verbiage to render the perusal of its pages pleasant course, instructive. We note no especial difference in the plan of the book from the similar work prepared for collegiate uses by Professor Huxley and it is necessarily a compilation from various sources. The illustrations are both excellent and numerous, and a valuable glossary occupies the concluding pages. The volume is a reprint from the English edition, and forms a part of Putnam's Advanced Science Series.

HYDRAULICS OF GREAT RIVERS: The Paraná, the Uruguay, and the La Plata Estuary. By J. J. Révy, C. E. New York: E. & F. N. Spon, 446 Broome street.

Thegovernment of the Argentine Confederation, three year since autho rized an investigation into the que tion of the watershed of their territory, extending from the Rio Vermejo to the Rio Negro, and from the South Atlantic to the Andes. This work was most thoroughly done by M. Révy, of London, England, and the result is before us in an exceedingly handsome volume, illustrated with maps, pians, and sections. The book will be valuable to engineers generally, and especially to those engaged in similar work, as the author's analysis of his results treats the subject of fluvial drainage in the broadest manner; and he gives due commendation to the Argentine Republic for contributing this volume to our libraries of

PATENT OFFICE DECISIONS.

SPLINT MACHINE.-RUSSELL AND SCOW.-INTERFERENCE

It is a well established principle that an inventor has the right to employ the mechanical skill of others to carry out his ideas without forfeiting his

the mechanical skill of others to carry out his meas without tribulation.

In an interference, one who is shown not to have been an original inventor can derive no advantage from having obtained a patent.

Abandonment of an invention is not favored; it can only be established by positive proof, and not by mere presumption or inference.

THACHER, Acting Commissioner;

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Thacher, Acting Commissioner;
This case, as developed by the evidence, presents for determination the question of originality rather than priority of invention.

The Examiner of Interferences and the majority of the Examiners-Inchief have found in favor of the applicant Russell. The rule of practice in such cases has been stated by the Commissioner in Fawcett vs. Graham. (C. D., 1869, p. 118.)

In this appeal it is not shown that the tribunal below erred in the finding of facts in the case; but the most that can be claimed is that the Board erred in deciding the weight of testimony to be with Russell. This judgment of two tribunals ought not to be set aside except upon the clearest showing that it is contrary to evidence. This, in my opinion, has not been done; on the contrary, after carefully reading the testimony of both parties, I have no hesitation in concurring in the decision of the Board and Examiner that, although the testimony is conflicting, the weight of evidence is with the applicant.

What Mr. Scow uniderstands by invention may be gathered from a portion of nis "answer 4," where, after stating that Russell suggested putting on an eccentric, he says he invented it as described in his patent. It appears that he believes the person who carries out the ideas and suggestions of another to be a true and original inventor. This may furnish an explanation of his claim to the invention patented. Russell was the emplayer: Scow was the foreman of one of his shops. Now, it is shown that Russell was in the habit of giving general instructions to bis foreman, who proceeded to embody them in suitable form, and in doing so gave the necessary instructions to the workmen under him. From my reading of the testionny, I am tolerably well satisfied that this is the wayin which Scow got up the new splint machine. But it is a well established principle that an invention has the right to empl

DECISIONS OF THE COURTS.

United States Circuit Court --- District of New Jersey,

CHARLES GUIDET vs. SAMUEL BARBER .- PATENT STONE PAVEMENT [In equity.-Before Nixon, Judge.-Decided December 30, 1873].

NIXON, District Judge:

This bill is filed by the complainant for an injunction and an account for the infringement of reissued letters batent granted to complainant August 23, 1876, for 'Improvement in Stone Pavement.'

The single claim in the reissue is for "a pavement composed of stone blocks made in the form of parallelopipelis, having their narrowends or edges cut smooth and their broad sides purposely cut rugged or uneven, when the blocks are arranged with their rugged surfaces transversely to the street, substantially as described."

The answer to the defendant alleges...

the street, substantially as described."

The answer to the defendant alleges—
1. That the reissue to the conplainant was fraudulent and void, because the surrender was not made for the purpose of correcting any errors or imperications in the description or sweetheaton of the original patent, but of cover and claim as complainant's invention many things in the art known and used long prior to his alleged invention or discovery, and because the said reissued letters patent coveredand included many things of which 'he complainant was not the original and first inventor, and which were not described or claimed in the original letters patent.

As it is the duty of the Commissioner of Patents to see that the reissue does not cover more than the original patent, the presumption of law always is that the reissue is for the same invention until the contrary is shown.

always is that the reissue is for the same invention until the contrary is shown.

No attempt is made by the defendant, upon whom the hurden rests to prove the allegation of fraud in the reissue, and the court can hardly be expected to presume it. (Sec. 53, act of July 8, 1870, Judan vs. Dobson, 2 Abb. U. S. Rep., 404 Curt. on Pat., Sec. 281.)

2. The defendant also "leges prior use, and abandonment to the public by the complainant; but he gives no notice and offers no evidence to sustain the charges.

The only matter put in issue by the answer and the proof is the question of infringement. The defendant denies the allegations of the bill in this respect, and the burden is upon the complainant to show it.

The laying of a stone pavement on South Broad street, facing Lincoln Park, in the city of Newark is admitted by the defendant, and the expert winess. J. Boyd Ellot, is called to testify in reference to its construction. He states that he has made an examination of said pavement; that he understands the principle of its construction, and that it corresponds

winess. J. Boyd Ellot, is called to testify in reference to its construction. He states that he has made an examination of said pavement; that he understands the principle of its construction, and that it corresponds substantially with the invention described in the complainant's reissued letters patent:

1. Because it is composed of blocks of stone made in the form shown and described in the said natent, consisting of parallelopipeds or solid figurer, whose sides are narallelograms; said blocks being provided with ends or edges formed sufficiently smooth, that when they are abutted to ther in position to form a pavement, the joints or seams between the said blocks are closed, or substantially so, in a longitudinal direction, or parallel with the sides of the street, or in the direction of the line of travel along the street, so that the wheels of the vehicles passing over it will meet with a comparatively smooth surface, or be prevented from sinking into crevices or openings between said blocks.

2. Because said blocks are so selected and laid with their broad sides abutting against each other as to produce open joints in a direction transversely to the street, in such a manner that a firm foothold is provided for the draft animal traveling along the street, substantially as described in the said patent. He expresses the opinion that the combination of these blocks of stone to form a pavement is of such a character as to perform the functions set forth in the complainant's reissued patent, and the advantages to be gained in the formation of such a pavement, recited in said patent, exists to a substantial degree in the pavement constructed and laid by the detendant.

This testimony stands without material contradiction, and there must be a decree against the defendant upon the argument took the ground that there was nothing patentable in the complainant's alleged invention. It was objected in reply that, as no such defence was set up in the answer, it was then too late to urget.

Whether the objection of the de

But if he meant that the invention was not a patentable subject—that is, did not come within the description of "any new and "asful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof not known or used before the application" for the patent, as required by the 2th section,—such a defence is aurhorized by the general pleadings, because the oill of complaint necessarily imports that the patentee has invented a patentable subject.

Assum ng, therefore, that he meant the latter, the remaining question is whether the improvement claimed by the complainant is an improvement in "any new and useful art."

The patentee, in the specification of his letters patent, describes his invention as relating to a pavement composed of stone blocks, which are so prepared that the blocks, when nisced together, will form close clonts in the direction parallel with the sides of the streets of n a longitudinal direction, while the clonts running transversiy to the street remain open at the top, and thereby a pavement is obtained which offers a good foothold for the draft animals, and at the same times as moothsurface for the wheels passing over the same. over the same.
The edges of the blocks adjacent to the transverse open joints are to be chamfered off so as to insure a good foothold for the draft animals.

over the same.

The edgrs of the blocks adjacent to the transverse open joints are to be chamfered off so as to insure a good foothold for the draft animals.

To exhibit its superiority over other forms of stone pavement, he further states that if a street is paved with truncated pyramids, as used in the Russ or Belgian pavement, close joints are formed at the surface off the pavement, both in a longitudinal and transverse direction, and said surface offers no foothold to the dark animals passing over the same; but by placing a series of blocks together, as exhibited in Fig. 2 of this reissue, close joints are formed in a longitudinal drection, and open joints in a transverse direction, and as tone pavement is obtained which offers a firm foothold to the draft animals; while it presents comparatively smoothauface to the wheels of vehicles passing over 11, and at the same time each block is firmly retained in position by the adjoining blocks without requiring any intermediate layers of stone or other material.

Such an improvement in the mode of constructing a stone pavement is a patentable invention, and must be held to be new in the absence of proof to the contrary from the defendant, and it is doubtless useful in the sense in which that term is used in the act, to what degree or extent is wholly unimportant, as it is not a question in the case.

Let there be a decree for the complainant for an injunction and an account.

Edmonds & Field and George Harding, for complainants.

ecount. Edmonds & Field and George Harding, for complainants. George Foske, fordefendants.

Inventions Patented in England by Americans, [Compiled from the Commissioners of Patents' Journal.]

From February 2 to February 7, 1874, inclusive. Gum Extraction. -D. D. Cattanach, Providence, R. 1. HOEING, ETC.-R. McKinley, Hyde Park, N. Y. Iron Shears.-W. X. Stevens, East Brookfield, Mass. LIQUID METER. - F. W. Brooks. New York city. METAL TUBE. - E. P. Wilbur, Bethlehem, Pa. Moldings .- J. Gochwind, Union, N. J., et al. PIPE TONGS AND CUTTER. - F. T. Ferguson, Boston, Mass.

ROCK DRILLING.-W. W. Dunn (San Francisco, Cal.), London, England. SEWING MACHINE-W. G. Beckwith, Newark, N. J.

SPINIDE BOLSTER, ETC.-C. F. Wilson et al., Brooklyn, N. Y. STEAM BOILER, ETC.-B. T. Babbitt, New York city. STEEL Frog.-J. Patterson. Horneilsville, N. Y. STOVE, ETC.-J. E. Sherman, Bucksport, Me.

WELDING COPPER. - W. G. Rehbein et al., Baltimore, Md.

IMPORTANCE OF ADVERTISING.

The value of advertising is so well understood by old established business firms that a hint to them is unnecessary; but to persons establishing ane w business, or having for sale a new article, or wishing to sell a patent, or find a manufacturer to work it: upon such a class, we would impress the importance of advertising. The next thing to be considered is the medium through which to do it.

In this matter, discretion is to be used at first; but experience will soon determine that papers or magazines having the largest circulation, among the class of persons most likely to be interested in the article for sale, will be the cheapest, and bring the quickest returns. To the manufacturer of all kinds of machinery, and to the vendors of any new article in the mechanical line, we believe there is no other source from which the advertiser can get as speedy returns as through the advertising columns of the SCIENTIFIC AMERICAN.

We do not make these suggestions merely to increase our advertising oatronage, but to direct persons how to increase their own business

The Scientific American has a circulation of more than 42,000 copies per week, which is probably greater than the combined circulation of all theother papers of its kind published in the World.

Recent American and Loreign Latents.

Improved Washing Machine

Theophilus C. Eberhardt, Hochheim, Tex .- The box of the machine and rubbing boards are made semicircular in form. The faces of the latter are corrugated and perforated. They are supported and oscillated by the square shafts, which pass out through square holes of sockets, and have handles. The outer surface of the sockets is made cylindrical in form. Therubbing boardsare forced forward by bent springs secured to the inner ends of the sockets, which slide upon the boards, when the same are drawn outward or apart. By suitable construction, the rubbing boards, shafts, sockets, and springs all move together, so as to always retain their proper relative positions. To the outer ends of the sockets are rigidly attached levers. These are pivoted to connecting rods, which connect with cranks formed upon a shaft. The shaft carries on its ends fly wheels, which may be arranged to rest upon the floor for convenience in moving the machine.

Device to be Attached to Fences for Turning Stock Jacob Haish, De Kalb, Ill .- This invention relates to modes of effectually urning stock with hoop band or other light railed fences, and consists in peculiarly formed barbs for deterring the animals from rubbing against the fence, or otherwise bringing to bear their weight, so as to break down, injure, or impair the same.

Improved Chest for Tea, Coffee, Rice, etc.

George Lillibridge, Little Cooley, Pa.-A vertical slide is arranged to egulate the size of the opening between the chest proper and a trough applied exteriorly, and thereby control the exit of the Contents of the chest into the trough, from which they are removed by a scoop or other convenient device. The trough has a lid or cover as well as the chest, and thus the tea or other substance is kept from deterioration by the action of the atmosphere.

Improved Vault or Safe Door Restening.

John B. Cornell, 139 Center Sreet, New York city.-This invention consists of auxiliary bolts connecting the locking bolt frame to the door, so that, when the primary bolts which hold the frame and door in intimate contact have been broken by an explosion, the auxiliary bolts, first allow ing the door to be opened far enough to give vent to the force of the explosives, then arrest the further movement, and hold the door so nearly closed that access to the safe cannot be gained without cutting or breaking the door or bolts with tools. A second plan proposed consists of slots from the locking bolt, holes in the frame extending obliquely unward or lownward toward the inside of the frame a certain distance; these slots are so made that, while they will secure the locking bolts with ample security against the efforts of the burglars to pry and wrench the door off, yet the tremendous force of an explosive inside of the safe will force the frame along the bolts to the ends of the slots, and thus afford the necessary vent to dissipate the force of the explosion and still hold the door so as to de mund too much labor for gaining access to be performed with safety after the noise.

Attachment to Self Raking Reapers for Carrying Binders. Allen Elijah, Clarence, Iowa.-This invention relates to the stands employed upon that class of reapers wherein the grain is bound up into bundles pefore it is dropped, and the novel means for accommodating the binders These means consist in a frame with a rear projection a non-revolving haft having end stirrups, and a stand connected with a stirrup by a chain at one f ont corner ,and at the other with the projection of the arme.

Improved Stud and Button Fastening.

Philip H. Long, Newark, N. J.-This invention relates to the construction of stud and button fastenings for shirt bosoms, collars, wristbands, etc., and consists in a stud or button and base, so constructed that the two are securely fastened together by turning the stud or button as part of a revolution, and unfastened by a reverse movement.

Improved Fire and Water Proof Roof.

Tobias New, New York city.—The object of this invention is to provide means for protecting buildings (having interior wooden timbers) from fire as well as from water; and consists of a roof made of a stratum of fireproof material laid on felt or planking to about two inches in thickness. A piece of timber is bedded in the fireproof substance, and has its upper side flush with the surface thereof. On this is placed a water-repellent covering and over this an ordinary gravel, slate, tin, or other roof.

Improved Toy Gun.

John Alexander, New York city, and Hiram W. Gordon, Lynn, Mass .-This invention consists of a toy gun, in which a rod or pusher is thrown forward in the barrel by a spring, for expelling marbles and the like. The barrel has a funnel-shaped muzzle, in which marbles, peas, or other round bodies of different sizes can be held, by friction, in front of the pusher to be expelled, the said marbles and other objects being gently pressed in to

Improved Wind Mill.

William C. Nelson, Kentland, Ind.—The wheel is made in two sections, eachhaving a separate portion of the hub, which is hinged to a middle portion which comprises a T head to the shaft. Each section of the wheel has a spring attached to the middle portion of the hub, and arranged to hold the section up to the wind when the latter is not too strong, and to yield when the latter is the case, and, by allowing the section to swing around toward the plane of the shaft, relieve the wheel, and thus protect it from damage. The wheel is arranged to receive the wind from behind the standard, on which its shaft is supported, and to dispense with a tail vane, which is required for keeping it in the winds, when arranged to take it in advance of the post.

Improved Animal Trap.

John M. Marberry, Johnsonville, Tenn., assignor to himself and John M. Palmer, of same place.-The wire cage has the usual entrances, and is atached to a bottom board. A small bait box, having wire sides and a ninged top, is secured to the bottom board by hooks and staples. The peningin the cage for the insertion of the bait box is closed by a prison box, which is attached to the cage by wire hooks. The box has a vertically sliding door which is held either closed or elevated by a sliding bolt. When the trap is to be put in readiness for catching animals, the prison box is detached from the cage, and the bait box removed through the opening thus uncovered. When bait has been put in the box, it is replaced and secured. The prison box is then attached to cover the opening in the side of the cage. The animal enters the cage, and thence passes naturally into the prison box with a view to concealment. The gate being lowered and secured by the bolt, the box may be removed to a place convenient for dispatching the animal.

Improved Brick Kiln.

Nelson Sickels, Newell, Iowa.-The walls inclosing the kiln are perma ent. The lower portion of the bricks to be burned, in which arches are formed. These bricks are arranged close together in the direction at right angles to the arch, but with spaces between them the otherway; and long bricks are placed across the arches a short distance above the bottom suitable forburning coal. The bricks above the arch bricks to be burned are arranged with spaces in both directions to be filled or partly filled with Wider spaces are made between the stack of green brick and the walls, also for containing coal to be burned. They are divided vertically into several compartments by rows of bricks extending against the walls to separate the coal and keep it from falling to the bottom of the spaces as it burns. The arches extend through the kiln from side to side, and have the coalplaced in them throughout their whole length to be burned throughout alike. The fires are started at the mouths of the arches, and kept burning moderately until the bricks get dry; then they are allowed to advance throughout the kiln in all the spaces as fast as necessary.

Improved Trumpet for Railway Heads, etc. Frye, Manchester, N. H.—The upper part to the lower side of the mouth is beveled, and a slide gate or valve is arranged under clips or guides forward and back over the beveled portion, to expand or contract

the mouth, as may be required, the upper wall of the mouth being formed in the end of the slide. To adjust and secure the slide is a screw-threaded rod passing through an eye stud on the top of the trumpet, and having adjusting and binding nuts arrangedon each side.

Improved Grate Cleaner Attachment.

Adolph Tieusch, Memphis, Tenn.—The object of this invention is to provide fire place and other grates to which it may be applicable with a permanent attachment for cleaning them, or removing the ashes and cinders that accumulate in the bottom thereof. To this end a shaft is pivoted beneath the grate, and provided with laterally projecting arms or fingers that will work up between the grate bars as the shaft is rocked by a foot lever or other suitable device.

Improved Fire Extinguisher.

John Dillon, 424 Fourth avenue, New York city.—By suitable construc-cion access may be obtained to the interior of the case, which is fastened to the wall of the room, by turning back the cover and turning down the upper part of the front, or both the upper and lower parts of said front may be turned down. A reel shaft revolves in the interior of the case, and is made with shoulders, to prevent it from having a longitudinal movement. One end of the shaft is tubular, and with its cavity is connected, close to the reel disk, the end of the wire-lined rubber hose, to the other end of which is secured a nozzle. The wire of the hose enables the water to pass through it freely, even when wound upon the reel. When the hose ound upon the reel, the nozzle is inserted in a hole in the bracket. The tubular end of the shaft projects beyond the bracket, and is made conical to fit into the tapering hole in the globular end of the short ingress pipe, the other end of which is connected with the water pipe of the house. The short pipe is provided with a stop cock, which, by suitable mechanism, may be opened and closed by lowering and raising the said lower part of the front of the case. By other arrangements the front of the case may be lowered and raised without disturbing the stop cock, allowing the same to be closed while the front is lowered to shut off the water when about to wind the hose upon the reel. The latter operation causes the water to run from the said hose, so that it may be free from water when wound up. A ring groove is formed around the tapering part of the end of the shaft, so that the water may pass constantly from the pipe to the interior of the shaft, and thence to the hose, even when the said shaft is revolving

Improved Curtain Fixture.

Edward M. Davies, Allegheny, Pa., assignor of one haif his right to Fran is J. Rebbeck. of same place.—The axle of a wheel is extended suitably beyond the brackets in which the roller turns, provided at its outer end vith a screw thread, and produced with a square or triangular cross section. A spring is placed between washers, either inside or outside of the racket, as desired. The washer adjacent to the bracket is provided with a ound hole in the center, while the other washer has a square or triangular ole to fit on the axle trunnion and prevent the spring from getting worn. A check nut binds washers and spring together, and is prevented, by its washer, from becoming unscrewed. The check nut is used to regulate the tension of the spring on the bracket, so that the curtain is held in place in any position, in case the cord should stretch, break, or get off the roller.

Improved Pipe Joint.

William P. Valentine, New York city .- The object of this invention is to produce an improved pipe joint for water, steam, gas, and other pipes, by which they may be connected at any sultable point and under any angle without the use of fire or solder, by simple mechanical means. The inven tion consists of sockets made of two semi-shells, and fitted, by means of a projecting shoulder, to the recessed ends of the adjoining pipes. The sockets are cut with an outer screw thread, and firmly connected when placed on the pipes by a sleeve with right and left hand thread, which is screwed over it without altering the position of the pipes, while a leather or rubber washer in the sleeve secures the tight communication.

Improved Machine for Soldering Cans.

William D. Brooks, Baltimore, Md.-This invention consists in severa improvements which have been tested by many practical experiments, and which greatly lessen the average expense of soldering the tops, caps, and sides of cans and have made it possible for unskilled hands to do the worl rapidiy and well.

Machine for Marking Letters and Canceling Stamps.

Chas. J. Goff and Elmer B. Hursy, Clarksburgh, W. Va.-This invention relates to mechanical means whereby stamped letter envelopes in the Post Office Department may be conveniently and rapidly canceled. The inven tion consists in a series of improvements by which a single person can, in a comparatively short space of time, do all the canceling required at any post office, thereby not only securing uniformity and thoroughness in the work, but great economy of time and cost.

Base Burning Stove for Anthracite Screenings.

Henry R. Robbins, Baltimore, Md.—This invention relates to an improved magazine stove, especially adapted for burning anthracite coal screenings. and thereby utilizing what has been generally regarded as a waste product of the coal yard. The magazine, or cylinder for holding the coal, has a conical terminus formed of a narrow ring and vertical bars, the latter arranged at such distance apart as to prevent escape of the bulk of screenings between them, while allowing free access of flame and heat from the pody of incandescent coal in the fire pot immediately below. Thus a degree or extent of combustion which would be difficult or impossible to produce and maintain, by means of the ordinary form of cylinder in magazine stoves is assured, while the area or surface of burning coal is largely increased and thereby a correspondingly greater degree of heat produced The gas formed in the cylinder is fed down into the flame or burning coal by tubes, which are arranged directly over the fire pot so that the g comes highly heated before reaching the coal, and thus has its inflammable and combustible property increased. The invention also includes an arrangement of two annular registering slides with a fire pot open on the sides, whereby the combustion may be increased at the base or top, or both, of the body of screenings contained in the pot, as occasion or necessity

Improved Transplanter.

Ara Race, Cheraw, S. C .- This invention relates generally to transplant ers, but particularly to those which are used for the removal and trans portation of cotton plants. The invention consists in combining a con caved plate with a reciprocating spade; in the construction of the spade with a convexity on the inner side and opposite the convexity of plate and in combining a crooked slotted rod with the spade handle.

Improved Watch.

Louis Evans, Pittsburgh, Pa.—This invention consists in combining the winder post with the wheels and barrel, and also in the application of levers in connection with the wheel post and the dial wheel.

Water Heater, Warming Closet, etc., for Cook Stoves. John O. Shriner and John Taylor, New Castle, Ind.—The object of this invention is to provide for household use an attachment for the ordinary cook stove which is adapted for heating a large or small quantity of water by means of a reservoir and a hollow cylinder placed in the stove pipe or drum, the two being connected by branched circulating pipes arranged in a peculiar manner. The invention also includes a warming closet which is arranged to slide on the cover and slide of reservoir.

Improved Fire and Water Proof Roof.
Toblas New, New York city—This invention relates to a peculiar con struction of the roofs of buildings so that they may be always preserved in waterproof condition, and yet allow the same to serve as a walk over which families or servants may travel in order to utilize the same for drying ciothes and other useful purposes.

Improved Binding Attachment for Harvesters.

William M. and George H. Howe, Lausing, Minn.—This invention consists in combining a straw rope twister, a binding arm, a tucker and a cutter so that the rope is made and delivered automatically; also in certain subsidiary features of improvement which greatly add to the efficiency and utility of the binding attachment.

Improved Water and Gas Cut Oft.

Eugene M. Morris, Battimore, Md.-This invention relates to means for locking and operating the valve of a gas or water cock. It consists in combining with a valve rod connection a ratchet-flanged drum, a thumbpieced detent slide, and a spring.

Improved Perspectograph.

Anderson R East, Selma, Ind.—The object of this invention is to provide a simple and efficient mechanical apparatus by which to take the points or boundary lines of all visible stationary objects accurately and transfer them to paper on a sketch board. Two perpendicular bars extend from a bed picce. On one bar are two sleeves, the lower of which carries a horizontal arm, the further extremity of which is slotted to receive the second perpendicular bar. On the horizontal arm slides a vertical rod through which. at its upper end, passes another horizontal arm, which is attached to the upper silding piece on the bar first mentioned. Pivoted to either sliding piece at will is a converging arm which carries one eye plate on a vertica staff. On all these portions except the swinging arm are marked scales. A single example of the mode of using the instrument will suffice to show its application. To operate by the use of the perpendicular scale and the horizontal scale on the upper sliding piece, or, in other words, to take field notes by latitude and departure, using the sliding scales, slide the horizon tal scale to the top of the meridian, and move the scale of latitude (the vertical rod on the lower horizontal arm) to the extreme right. An objec in the foreground to the extreme left and nearest to the observer is select ed and regarded through the eye plate. The scale of latitude on the base is next moved till it comes in direct line with the eye and the said point Then the horizontal scale at the top of the meridian is loosened and move down till it also comes in direct line from the eye to the object, and the angle of incidence or the latitude and departure of the said point of the object is found at the intersection of the two scales. A horizontal scale on the plat board is moved until it cuts the degree of latitude of said point in the object, and a dotter is fixed to the angle of longitude or departure. By a gentle pressure on the dotter the point is carried on the paper. In this way the operation is carried on from object to object, and from point to point, until the entire field is gone over.

Improved Breast Pad.
Frederick Cox, Brooklyn, N. Y.—This invention consists of infistable india rubber breast pads so constructed as to fit over the breast and not bear directly upon it. There is an annular cushion to bear around the base of the natural breast, and also a ventilating opening from the cavity. The device improves the form of the natural breasts by keeping them in the natural shape, instead of flattening and depressing them, as the common pads do: and they are more healthful, and retain their own proper shape

Improved Lard Cooler.
William J. Wilcox, Paterson, N. J.—To make a strictly prime article of ard, it is necessary to stir or agitate it to a certain extent while it is cooling after having been rendered or melted by heat. To this end it is proposed to employ two revolving agitators, turning on their own axes. while at the same time rotacing around the axis of the tank. The agitators being on opposite sides of the axis of the tank, their action is rendered very nearly equal throughout all parts of the latter. Four of said agitators may be used as well, two being in a line at right angles to the line of the other two: but generally two only will be sufficient.

Improved Medicinal Capsule.

Peter Cauhape, New York city.—This method of making the capsule sacks of gelatin consists of dipping a ball in the gelatin in a liquid state, of such low temperature that a thin film will adhere to and solidify on the ball when lifted out, sufficiently to form an elastic envelope. This is pulled off the ball by the fingers, and placed in a mold, with the mouth upward, to be filled with the medicine, after which it is sealed up. By flattening the ball to a certain extent at the bottom, the accumulation of the material thereat will make the sack round, forming an article which is much better in respect of appearance, and is more acceptable to the public than the old

Improved Medical Compound.

Edmund C. Lippincott, Estontown, N. J., and Thomas R. C. West and James West, Brooklyn, N. Y.-This improved compound is for the cure of cancers, and is made of the juice of sheep sorrel, turpentine, and muriatio acid. The whole mass is reduced by evaporation to a thick, pasty state, when it is complete, and ready for use. It is applied to toe parts affected in the ordinary way of using such remedies.

Improved Iron Pavement.

John Vandercar, Brooklyn, assignor to Martin Van Buren, New York city, On the bottom of each section which is placed on the roadway is a flange, which is embedded in the foundation and prevents the section from getting displaced by the wear upon it. The sections, each with a tight bottom have a broad surface, and may be made to lock together so as to support each other. The intermediate chambers are filled with concrete, which will harden by exposure to the air, or may be filled with sand or gravel so as to give a good foothold for horses. The chambers are eight or ten inches indepth. Apavement thus formed of sections, it is claimed, may be readily taken up for putting down water or gas pipes without injury.

Improved Kitchen Safe.

John B. Harrison and Josiah M. Harrison, St. Joseph, Mo.-This invention is an improvement in kitchen safes of the class in which spice drawers dough kneading boards, and flour sifters are arranged conveniently for use There are spice drawers, and a space provided with shelves, closed by a hinged door. A bracket supports a kneading roller and other articles The hinged dough-kneading board may be adjusted at various angles to the front of the safe, thereby adapting it for convenient use. The top of the safe has a hinged lid which forms the cover of the conical hopper. The latter is designed to be a permanent receptacle for flour or meal, and has a sieve applied to its apex in such a manner as to be readily detached for cleaning, etc. Within the sifter is a rotary stirrer, the shaft of which is provided with a crank handle outside the safe. To control the descent of flour or meal into the sifter, a slide which forms the true bottom of the hopper is employed.

Improved Locomotive Drawbridge.

George Sicklesteel, Lapeer, Mich.-This invention consists of a strong frame, about as long as two spaces and two abutments of an ordinary bridge, mounted on wheels. The latter are so arranged and connected to gether that, the locomotive being run on the bridge and rested with each of its driving wheels on two wheels of thebridge and set in motion, its wheels will actuate the wheels of the bridge, and cause it to cross on the abut ments. The bridge is always supported by two of the abutments, or more if made longer, so as to prevent it from tilting down between them. A movable bridge is thus provided which itself crosses with the cars, and leaves the spaces between the abutments free for the passage of vessels. The invention is intended to take the place of the drawbridges now used for navigable streams, and is calculated to save much time, both to the cars and vessels.

Improved Gang Plow

Allison G. Cummins and John R. Cummins, McKinney, Tex.-The king bolt is extended upward and curved forward, and to its upper end is piv oted a lever, to which, at a little distance from its pivoted end, is pivoted the end of a connecting rod, the other end of which is pivoted to the tongue. By this construction, by moving the free end of the lever to the rearward, so as to lie along the curved upper part of the king bolt, the plows will be raised and locked away from the ground. When breaking up, or when bedding or ridging cotton or other land, or when doing other plowing that requires a rigid plow beam, a brace is used, the forward end of which is connected with the forward bolster, and its rear end is hooked into the hinged plow

Improved Car Coupling.

George D. Spielman, Lancaster, Ohio. - This invention consists of a hori zontal bar, arranged transversely to the car in a horizontal slot in the end of the drawhead, and pivoted at its middle to the latter. A hook on one end engages the end of a similar car on the drawhead of the other car to be coupled. The second bar similarly engages the end of the first men tioned bar. The slots in the drawhead are shaped so that the coupling bar can be raised at the ends having the hooks, and depressed at the other ends to allow the hook ends to rise up over the other ends for coupling. The hook ends of the bars are provided with chains to lift them up. The draw heads are also chambered out above and below the slots, for the coupling bars to receive the ordinary coupling links, and pin holes are provided for the ordinary coupling pins, so that cars with this improved coupling car be attached to others having the ordinary couplings. The hook of one ba encounters the end of the other bar not provided with a hook, and rise up on it because of its curved end, while, at the same time, the said end swings down in consequence of the hook at the other end rising on the end of the other bar. The bars extend into the slots far enough to receive the pivots behind the ordinary coupling pins, and they are slotted sufficiently fer both of said pivots to allow them to swing upward and down, as needed for engaging and disengaging with each other. The coupling is very strong and durable, and will couple self-actingly, as well on curves as on straight lines, and will uncouple in case the cars run offor shift.

Improved Bag Fastener.

Scott Wellington, East Saginaw, Mich.—A strap of leather is made of such a length as to allow the gathered mouth of the bag to be readily passed through it, and its ends are riveted to a small metallic plate. Upon the side, edges, and center of the middle part of the plate, are formed lug connected by two rods. To the outer rod are pivoted two pointed plates of such a length that they cannot pass the inner rod, and which are designed to press the fastening strap down against the said inner red. A narrow strap has its middle part sewed to the middle part of the strap first men tioned. The end parts of this strap are passed through staples attached to the main strap, and their ends are passed through the spaces between the lugs and rods. In using the tie, it is extended, and is passed over the gathered mouth of the bag to be fastened. The narrowstrap is then drawn tight, and is held securely by the tongues.

Improved Window Screen.

John H. Thompson, Flemington, N. J.-This invention relates to the construction of screens for windows, and consists in an adjustable frame by means of which the screen is adapted to windows of different sizes. The frame is made in two parts, the sides being constructed so that the parts lap past and slide on each other, so as to keep the edges of the screen cloth tightly inclosed when the frame is extended. Strips are inclosed by the sides, forming a part thereof, to which the screen cloth is attached Each piece consists of two parts, which are fastened together with the screen cloth between them, the end pieces only being grooved. The depth of the grouves in the ends of the frame determines the extent to which the frame may be extended without leaving an opening. The screen cloth i preferably made of wire, but ordinary mosquito netting may be used.

Improved Bridge.

Richard Long, Stelapolis, Iowa. - This invention relates to improvement in railroad and other bridges of shorter spans, with wooden arches, and consists in the use of stirrups suspended from the arches which carry the cross beams, together with longitudinal stay rods, which connect the ende

Improved Reversing Valve for Steam Engines

Philip T. Browneil, Elmira, N. Y.-Steam is admitted through an aper ture, in a cup which fits on the receiving chamber. Pipes connected with this chamber convey the steam to the several cylinders. The valve receives a rotating motion from the crank shaft, and the latter is supported by spider, which is fitted to the upper edge of the chamber. Upon the lower end of the shaft is a cross bar, with a toe at the end, which takes hold of lugs on the top of the valve for revolving the same. The valve is a hollow shell, having partitions and a hollow tubular center. The cylinder slides in the center, and has a horizontal partition which separates the live from the exhaust steam. The center has two long slot ports, and the sliding cylinder has two corresponding therewith in size and position. The cylin der is given a slight sliding motion, which allows either pair of these ports toregisterfor admitting steam and exhausting it. The sliding cylinder revolves with the valve. When one pair of ports are admitting steam, the opposite pair areexhaustingit; and this action is instantly reversed by a slight movement of the sliding cylinder.

Improved Folding Satchel or Box.

Lorenzo M. Gillet, New York city .- This invention is a small satchel or hox for travelers that can be folded up in a small, compact package when empty. The bottom, sides, ends and top, may be cut in one piece from pasteboard, leather, or other suitable material, or said parts may be made separately with joints to bend at the angles of the box for adjusting it or setting it up for use. The sides and top fold against the edges of the ends and project a little beyond them, so that staples on said ends will project through slots to fasten the ends and sides together by pins through them, or any other equivalent arrangement. The top will overlap one of the sides and form a lid for opening and closing the box or satchel. Any ordinary trunk or satchel handle may be attached, or a shawl strap may be buckled around the box for carrying it.

Improved Combined Ash Box and Sifter.

John D. Heins, New York city.-This invention consists in the arrange ment of a sieveand close ash box in a large inclosing box, whereby wood may be conveniently removed, and also ashes may be sifted without allowing any portion to escape. The wood and coal are supplied to cham bers by raising the hingedcover, and the former may be removed without disturbing said cover by turning down a door which is hinged at the front and is of a width less than the depth of the box. The sleve is worked by a detachable handle, ro be introduced through the holes in the case. After the ashes have been sifted out, the sieve can be taken out when the handle has been detached, and emptied into the coal chamber, and the ash box can be withdrawn from time to time to carry the ashes away.

Improved Ditching Machine.

John M. Dunn and Murdoch M. Dunn. Erin, Miss.—This invention has for its object to improve the construction of the machine for which letters patent No. 119,334 were granted to John M. Dunn. The frame may be slid to adjust the machine laterally to work in any desired part of the excavation. The wheels and axle may be swung forward to lower the machine into working position, or swung back to raise the machine for passing from place to place. The device may be readily secured in place when adjusted, and is raised or lowered by suitable mechanism connected with the wheels. The plow may also be raised and lowered and adjusted. A wheel made with a wide tread projects upon one side of its body. In the angle petween the body and rim of the wheel are secureds mall plates, arranged radially, and which serve as buckets to carry up the soil thrown into the cavity of the wheel by the plow. A guard plate keeps the earth from falling from the ascending buckets. As the buckets reach the upper part of the wheel, the soilfalls from them into an inclined spout attached to the frame, where it is received upon the wings of a wheel, by which it is projected upward and outward to fall upon the ground at the side of the ditch. The earth from the wheel is caused to fall at the desired distance from the wide wheel by a shield against which it strikes. The winged wheel is so arranged that it may be driven by the advance of the machine.

Improved Pantaloons.

William O. Linthicum, New York city.—The object of this invention is to render pantaloons more clastic, and the fastening more durable than they have hitherto been; and it consists in an adjustable clastic strap attached to the waistband or top of the pantaloons behind, and in a plate fastening in front. By means of this elastic strap, the pants are made selfadjusting to the waist or abdomen, and are rendered easy and comfortable

Improved Heating Stove.

Edwin Λ. Osborne, Charlotte, N. C.—The ash pit is deeper at the back than at the front part, to prevent the ashes rolling forward, and there is an opening in the bottom at the front, with a collar cast around it for receiving the pipe through which the air is admitted to support combustion in the stove. The supply of air is regulated by a damper. which has an elevation, to prevent the falling of ashes into its vent, and a thin narrow handle, which extends from the inside of the ash pit through a narrow opening in the front. This is all cast in one piece. The pipe extends hrough an opening in the floor corresponding with the position of the front of the stove, and at the lower end below the floor is a wicker work of wire, with a tin or sheet iron bottom, as a spark arrester. The covering for the ash pit is a common movable cover. The object of the invention is to obtain the supply of air outside the room to be heated, thus preventing currents, preserving the uniformity of the temperature, and requiring

Improved Middlings Purifier.

Morris Sower, Princeton, Ill., assignor to Sower Brothers, same place. An inclined frame is placed within the main frame, and is made a little shorter than the latter, so that it may have a longitudinal movement. It is actuated by an eccentric in one or both directions, supporting springs always bringing it back promptly when released. The frame to which the bolt cloth is attached is suspended within the vibrating frame by flexible straps. By this arrangement each movement gives a sudden jar to the cloth frame, which keeps the cloth clean without the use of brushes. The middlings are fed to the cloth frame by a roller or other suitable feed from a hopper, which is placed above the upper endof the frame. Below the discharge opening of the Loppera spout leads into an expansion chamber, from the lower part of which a short spout leads out through the rear end of the box, which is provided with a trap door. From the expansion chamber an opening is formed into the fan chamber. The airis so directed that it passes up through as well as along above the bolt cloth, while a third current goes through the middlings as they fall from the hopper. By this construction the air drawn through the machine by the fan carries the light impurities with it. Any of the middlings that may pass through the spout with the air settles in the expansion chamber, and may be drawn off when desired.

Improved Plow.

Isaac M. Fork, Belton, Tex.—This invention has for its object to fu: nish an improved plow, so constructed that it will scour and keep bright in the stiffest and most sticky prairie soil, and will thus work without clogging where ordinary plows cannot work. The invention consists in an improved plow plate, formed of a single piece of iron or steel, with its point in the form of an isosceles triangle with a rearwardly inclined land side flange. The angular line between the land side flange and the mold board is concaved upon the arc of a circle about six feet in diameter. The mold board is convexed, so that a line drawn from its rear corner to the point of intersection of the said angular line and the point may be upon the arc ofa circle of about twelve feet in diameter.

Improved Sash Holder.

John X. Miller, Chester, Pa.—This invention consists in proving the windowsash at both sides with triangular recesses, into which strong band springs are placed, with forward projecting rollers attached thereto These rollers bear against one guide strip of the window frame, so as to hold the sash by its friction on the other guide strip in any position in which it is placed. For locking the sash in closed position, so as to prevent its opening from the outside, small catches are attached to the lower parts of the outer guide strips, which catches engage a corresponding recess of the sash, while the necessary play of the sash for engaging and disengaging it from the catches is obtained by recesses at both sides.

Improved Gear Button for Flour Packers. Lewis Creveling, Akron, O.—The object of this invention is to supply. in the place of the button at present in use, one which controls more exactly the throwing out of gear of the machine, and packing the barrels and sacks more evenly as to weight. This invention consists in the application of a T rail to the upright frame piece of the platform on which the barrels and sacks are placed, with a button slotted to correspond, which may be setfirmly thereon by means of a thumb screw in the position required to pack the barrels or sacks, and then throw the machine out of

Improved Corn Husking Implement.

Jacob F. Schmeitzer, Manteno, Ill.—The object of this invention is to furnish to farmers an improved corn husker, which is made easily adjustable, to be used in cold weather with or without mittens or gloves, and be adapted for different sizes of hands. The invention consists in making the handle plates sliding in each other, and fastening them rigidly, by a set screw, in the position desired to fit the hand.