family of ten or twelve persons, ought not, with thorough economy, to consume more than one sixth of a tun of coals in the year. Count Rumford shows in his treatise that 25 lbs. of Great West; with an Essay on Forest Planting on the the year. Count Rumford shows in his treatise that 25 lbs. of bread ought to be baked with one pound of coal, and that 100 lbs. of meat should be cooked with 21 lbs. of coal. If therefore we fully utilized our fuel, it is clear that, in the preparation of our food and hot water for domestic purposes, $\frac{1}{2}$ lb, of coal per head of the population ought to be a sufficient daily allowance, which would be equivalent to one twelfth of a tun per annum; and in large households even less than that quantity ought to suffice. I do not suppose that we shall ever attain to this minimum of consumption, but it is well to consider what the standard is, so that we may not rest satisfied till it has been much more nearly approached than hitherto.

The three main parts of the ordinary cooking apparatus are the oven for baking and roasting, and the boiler, and the hot plate. If the boiler is to be of the form most effectual THE SPECTROSCOPE AND ITS APPLICATIONS. By J. Norman in saving fuel, the flame and gases from the fire should play Lockyer, F.R.S. Price \$1.80. New York and London: under and round every part of it.

Then, as regards the oven. The baker's oven of firebrick, in which the fire is made inside the oven and the whole heat retained in and reflected back from the sides and top and intended as an introduction to the whole science of spectroscopy, which has bottom, is a very economical instrument when in continual | been exhaustively treated in the large work of Professor Roscoe. With iron ovens, attached to a kitchen range, the case is different. An oven which roasts requires a temperature of from 400° to 450° at least. Therefore, to maintain this temperature, the gases must pass off into the flue at a tem- PR perature even higher; when the oven is a roaster, a considerable volume of air is being continually passed through it to carry off the steam from the meat. This air, if admitted cold, as is the case with many ranges, acts so as to cool down the interior, and therefore additional fuel has to be consumed to counteract this cooling down process. Hence, it is desirable to utilize some of the heat, which passes off, at above 450°, into the flue, for the purpose of raising the temperature of the air to be admitted into the oven.

The hot plate is the third of the most important parts of the modern close cooking range. In its present shape, the hot plate wastes an enormous amount of heat. It is wasteful, because it radiates the heat largely; because the application of heat to the saucepans is only through the bottom of the saucepans, and the bottom of the saucepan is not always in immediate contact with the flame, but is frequently allowed to receive the heat through the medium of the cast iron hot plate, which is a very moderate conductor of heat. Just consider what the difference of effect is. The heat of the flame, if directly acting on the bottom of the saucepan, would be 1,200° Fahr.; but, unless the hot plate is red hot, probably not above 450° will pass through, but the heat in the flue which heats the hot plate will be at 1,200°, and the spare heat from the flame will be wasted up the chimney.

It is evident from the foregoing that, although hundreds of stove and range inventions have been made, there is still room for a new and better series of devices whose merits are to consist in their economy of fuel.

A NEW THERMO-ELECTRIC BATTERY.

When a bar of bismuth is soldered to one of antimony in the form of a < and the point of junction warmed, an electric current is set up, which may be increased by augmenting the pairs of the combined metals.

A new form of this battery, recently invented by Mure and Clamond, consists of 60 pairs, made of iron and lead, and the electro-motive power is equal to two Bunsen elements. By the use of 39 gallons of gas, about 2 drams of copper were precipitated in an hour, the surface of the electrodes being 11 square inches, and their separation from one another 0.4 inch. The cost of depositing $2\frac{2}{5}$ lbs. of copper by this battery, in Paris, where gas is sold at 3 cents per 35 cubic feet, would be \$2.36.

The largest battery which has been as yet constructed upon this plan consists of 150 large pairs, and has an intensity equivalent to 5 Bunsen cells of medium size. A battery of 560 small pairs arranged for tension have an intensity equal to 60 Daniell cells. In both cases, the gas consumed is about 210 gallons per hour.

THE SOUTHERN CANAL.

A correspondent, P. K. McM., alludes to Professor Colton's ecture on a proposed canal to connect the Mississippi with the Atlantic, printed on page 376 of our volume XXVIII, and asks:

"Has your attention ever been called to the fact that the head waters of the Tombigbee are only 8 miles from Bear Creek, a large stream that runs into the Tennessee?

From Fulton, Atawamba county, Miss., to Bear Creek is only 8 miles, over an undulating country; from thence to the Tennessee river is 15 miles, down a creek that is nowhere less than 50 feet wide, with from 2 to 3 feet of water in the summer time and no fall worth mentioning.

Please look at it. We are agitating it now down here; and if the West wants as great a market for her productions as the Georgia canal would give her, at one tenth the cost, let her turn her eyes this way. By this route, too, corn could be laid down in Montgomery for 16 cents a bushel. All the advantages that would accrue to Alabama by the other route would also be afforded by this.

This canal would supply the richest part of Alabama (the cane brake belt) with a direct line to the West. It is also to be noticed that Bear Creek enters the Tennessee below Mus cle Shoals."

NEW BOOKS AND PUBLICATIONS.

Great Plains. By H. W. S. Cleveland, Landscape Archi-Price \$1.50. Chicago: Jansen, McClurg & Co., 117 State Street.

We have here an excellent treatise on an interesting and important subject, which may be read with profit by all who are building, planting, and laying out gardens and parks. The second part of the work, on the subject of forestplanting, is especially valuable, the question of the effect of forests on the humidity of the climate being well explained and commented upon

COMETS AND METEORS, their Phenomena in All Ages, their Mutual Relation, and the Theory of their Origin. By Daniel Kirkwood, LL.D., Professor of Mathematics in Indiana University, and Author of "Meteoric Astronomy."

The author, well known to all readers of the Scientific American Nature, and many other contemporary journals, has here given the world some light on the vexed question of the origin of comets, which, coming from an undoubted authority, will be welcomed by all students of astronomy.

Macmillan & Co.

This elegant little volume contains three lectures, delivered by Mr. Lock er, in 1869, before the Society of Arts, and carried down, by considerable additions, to the present time. The book is copiously illustrated, and is

DECISIONS OF THE COURTS.

United States Circuit Court--District of Maine.

ESERVED GREEN CORN PATENT.—JOHN W. JONES et al. vs. R. K. SEWALL Administrator.

Inventions lawfully secured by letters patent are the property of the inventors, and as such the franchise and the patented product are as much entitled to legal protection as any other species of property, real or personal. They are, indeed, property, even before they are patented, and continue to be such, even without that protection, until the inventor abandons the same to the public, unless he suffers the patented product to be in public use or on sale, with his consent and allowance, for more than two years before he files his application for a patent. (5 Stat. at Large, 123; 5 Ibid., 354.)

the same to the public, unless as surers she patency product to be in public use or on sale, with his consent and allowance, for more than two years before he files his application for a patent. (5 Stat. at Large, 123; 5 Ibid., 354.)

On the 8th of March, 1853, Isaac Winslow, of Philadelphia, filed in the Patent Office an application for a patent for "a new and improved mode of preserving green corn. The application was rejected by the Patent Office, which for his years persisted in its erroneous decision."

On the 18th of February, 1872, the inventor filed in the Patent Office a new application for a patent, referring to the fact that his prior application, as modified, was rejected, and renewing the prayer that letters patent might be granted to him for the entire improvement.

Four severalletters patent were granted *as follows: 1. No. 34,928, dated April S, 1862, for a new and useful improvement in preserving Indian corn in the green state. 2. No. 55,274, dated May 13, 1862, for a new and useful improvement in preserving green corn. 3. No. 53,346, dated May 20, 1862, for a new and useful improvement in preserving green corn. 4. No. 55,326, dated August 26, 1822, for a new and useful improvement in the process of preserving green corn. 4. No. 55,326, dated August 26, 1822, for a new and useful improvement in the process of preserving green corn. 4. No. 55,326, dated August 26, 1822, for a new and useful improvement in the process of preserving green corn. 4. No. 55,326, dated August 26, 1822, for a new and useful improvement in the process of preserving green corn. 4. No. 55,326, dated August 26, 1822, for a new and useful improvement in the process of preserving seal the latter so as to prevent evaporation under heat or the escape of the aroma of the corn. When packed the cans of corn are to be exposed to steam or boiling heat for an hour and a half, then puncture the cans, and immediately seal the same while hot, and continue the heat for two hours and a half longer. Afterward the cans may be slowly cooled

The described new arche of manufacture, to wit, inflain corn, when preserved in the green state without arring the same, the kernels being removed from the cob and packed in cans hermetically sealed and treated substantially in the manner and for the purpose set forth in the specification.

The second patent purports to embody an invention for a new and useful improvement in preserving green corn, or, in other words, the patented in the first mentioned letters patent.

Two other patents are set forth in the bill of complaint, but it is clear that the patents are each for the new and useful improvement in the process of preserving green corn, and that they severally embody substantially the same invention as that described in the second patent.

The initial and fourth patents described in the bill of complaint are void. More than one patent for the same invention cannot be legally issued by the Commissioner, but the irregular issuing of the second patent, cannot impair the right of the patentee under the first patent, if it was valid at the time it was granted. associated the patentee of the second patent, cannot impair the right of the patentee under the first patent, if it was valid at the time it was granted. associated to the patentee of the second patent, and the patentee of the second patent, and the patentee of the second patent, and the patentee of the second patents, unless the defenses, or some one of them set up by the respondent, are sustained. The first defense is that the patentee is not the original and first inventor of the respective improvements.

Evidence was introduced by the complainants of the most satisfactory character, showing that the patentee, Isaac Winslow, of Philadelphia, discovered the patented process of preserving green corn early in the year 182, and that he made successful experiments in reducing his invention to practice at Westbrook, in the State of Maine, during the later part of the summer or in the searly part of autumn of that year, leaving no doubt that the process done

isome time been the employees of the inventor and had assisted in his experiments. *

Next the respondent unsists that the process described in the English patent to Peter Durand supersedes the invention of the assignor of the complainant as a prior discovery and for the same improvement. Vegetable substances intended to be subjected to that process, the specification states, are to be put into the vessels selected for the purpose, in the raw or crude state; but the paten tee, in enumerating the articles to be preserved, does not mention green corn, nor does he state whether the kernels are or are not to be removed from the cob, or, if to be removed, whether the removal is to be effected in a manner to leave the kernels unbroken or by means of a gaged knife, as in the mode of operation described in the complainant's patent, nor is any mention made of preserving green corn or any other vegetable substance in the natural juices of the article, as in the mode of operation set forth in the patent mentioned in the bill of complaint. *

laint. *
It is guite clear that a careful comparison of the descriptions given of the

plaint. It is quite clear that a careful comparison of the descriptions given of the frecritions in the respective specifications, fully justifies the opinion of the learned expert examinate by the combination; that the two patents are essentially and substantially unlike, to which may be added that personshaving no other knowledge of the complainant's process than what they derive from perusing the specification of the other patent, would never be able to preserve green corn by that mode of operation. *

Patents otherwise valid may be avoided in a suit for infringement by proof that the invention was in public use and on sale more than two years, with the consent and allowance of the patentee, before he filed his application for a patent, which is the next defense presented by the respondent. *

Nothing short of proof that the invention was on sale or in public use, with the consent and allowance of the inventor, for a period exceeding two years, will support such a defense, as the party charged with infringing the rights of an inventor must bring him self fairly within the words of the act of Congress, which justify the acts charged as an infringement. *

If the sale or use is without the consent or allowance of the inventor, or if the use is merely experimental, to ascertain the value, utility, or success of the invention by putting it in practice, that is not such a sale or use as will deprive the inventor of his title.

Tested by those rules, as the case must be, it is quite clear that the dense under consideration must be overruled, as there is no evidence in the record to show that the inventions, or either of them, werein public use or for any shorter period, with the consent and allowance of the patentee, or for any shorter period, with the consent and allowance of the test time it was made. *

Inventors have a right to employ all means necessary and proper to en-

made. *
Inventors have a right to employ all means necessary and proper to enable them to perfect their inventions and to reduce the same to practice, and it is clear that no such experimental act can justly be viewed as legitimate evidence to support the defense of a priorunauthorized public sale or use of the invention, or a use inconsistent with the right to apply for a patent to secure the exclusive authority to make and use the invention, and to vend it to others to be used, as provided in the patent act. *

As pleaded, the defense is that the inventor abandoned the invention to the public before he filed his application for a patent. His first application was filed on the 8th of March, 1833, and he filed the second application on the 18th of February, 1862, which it is conceded is substantially the same as the first one, which is still on file in the Patent Office. Evidence of an inframtive character to show that the inventor ever uttered a word or did an act signifying his intention to abandon his invention to the public before he filed his first application for a patent is entirely wanting, nor is there are circumstance introduced in evidence to support that theory, except the mere lapse of time from the discovery of the invention to the filing of the application, and it is settled law that the mere forbearance to apply for a patent during the progress of experiments, and until the party has perfected his invention and tested its value by actual practice, affords no just grounds for any such presumption.

a patent during the pregress of experiments, and until the party has perfected his invention and tested its value by actual practice, affords no just grounds for any such presumption.

Apply that rule to the present case, and it is clear that the proofs furnish no ground for such a presumption before his first application was improperly rejected by the Patent Office. Such an adverse decision operates as agreat discouragement to an indigent inventor, as was strikingly illustrated in the case of the inventor of the improved mode of manufacturing wool, who, in consequence of such a decision, was kept out of the enjoyment of the fruits of his genius for forty years.

Abandonment or dedication of an invention to the public, being in the nature of a forfeiture of a right, is not favored in law, and Mr. Justice Nelson decided that such a defense could not be sustained, unless the acts of the party invoked for the purpose were corroborated by some declarations manifesting such an intention; but it is not necessary to apply that rule in this case, as the evidence fails to disclose either any act or declaration a patent at the time his first application was rejected is unnecessary, as the preposition stands confessed by the Fatent office. Nothing beyond the decision of the Office reversing their former action would seem to be required to establ'sh that proposition. * Truth was crushed for the moment, but, happly for the cause of justice, the reasons given for the erroneous decision remained on file, which pnabled the Office, at a later period, to correct the error and to do justice to a meritorious inventor. * Delays in the Patent Office, which an inventor cannot prevent, will not impair his title to his invention, nor can any use of the invention to the public. * All must agree that he did not intend to dedicate it to the public, as his application for a patent was then pending in the Patent Office, as his

applies the issue that the did not intend to dedicate it to the public. *
All must agree that he did not intend to dedicate it to the public, as his application for a patent was then pending in the Patent Office, and the evidence shows that he continued to press it, with confident hopes of success, until the adverse decision was announced. Nor does the record exhibit any evidence to show that the invention got into public use with the consent and allowance of the inventor, or through any negligence or improvidence on his part, as it appears that he visited the Patent Office as often as it was necessary, to ascertain whether the opinion of the Commissionerbad undergone any change, and that he presented his second application for a patent as soon as he could obtain any hope of receiving a decision in his favor. **

avor. * [Wm. Henry Clifford, for complainants. R. K. Sewall, Bradbury & Bradbury, A. A. Strout, for respondent.

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

From June 6 to June 11, 1873, inclusive. CASTING ROLLS .- G. G. Lobdell, Wilmington, Del. HYDRAULIC HOIST.—T. Stebins et al., San Francisco, Cal. ENGRAVING MACHINE, ETC .- H. D. Sedgwick, New York city. GAS BURNER.-T. Clough, New York city.

IRON FURNACE.—G. E. Harding, New York city. Locomotive Engine.—H. Fairbanks, St. Johnsbury, Vt. Preserving Iron.—W. H. Sterling, San Francisco, Cal. Raising Coal, etc.—A. Lawton, Elizabeth, N. J., et al. REFINER.—W. Neil, San Francisco, Cal.

REFRIGERATOR .- T. D. Kingan, Indianapolis, Ind. ROLLING MILL.-W. Sellers, Philadelphia, Pa., et. al. IMBRELLA FRAME ETC. - A. and I. Herzberg, Philadelphia, Pa. Washing Dishes, etc.—A. Fischer, New Yorkcity.

Recent American and Loreign Latents.

Improved Sewing Machine.

Lebbeus W. Lathrop, Philadelphia, Pa., assignor to Lathrop Combination Sewing Machine Company, of New York city.—This invention, which was fully described and illustrated in the Scientific American for October 26, 1872, relates to improvements in sewing machines, and it consists, first, in a combination of a rotary looper and an oscillating looper with a spool carrier and needle, the rotary looper being so constructed that the loop will not only be extended so that a commercial spool may be employed for introducing the locking thread to avoid the winding of bobbins for shuttles, now necessary in the common lock stitch machines, also much of the friction due to shuttle machines, but it is also so contrived that a chain stitch, also a combined lock and chain stitch, can be made. The second part of the invention consists in an adaptation of the revolving loop opener, and appli-cation of a shiftingpin thereto, for so adjusting the loop, as it is opened for passing the locking thread spool through it, that a chain stitch will be formed by the upper thread, the lower thread being dispensed with; also so that a combined chain and lock stitch can be made, the lower thread being included. The third part of the invention consists in an arrangement of operating gearfor working the loopers; also the feed, the revolving looper, together with the bulged palate for holding the discharged loop to avoid kinking. The fourth part of the invention consists in a construction of the metal case of the machine or cover for the working parts in sections, and jointing them together in such manner thatby swinging the jointed parts the work below may be exposed readily at any time for inspection, oiling, and adjusting, while the plate on which the sewing is done remains stationary.

Improved Offal Drier.

Matthew Anderson, Chicago, Ill.—Fordrying and deodorizing the offal of packing houses rapidly and efficiently, it is proposed to have ajacketed cylinder, to be heated with steam, in which the offal will be inclosed, the said cylinder containing an agitator to stir the offal rapidly, and having airpipes for discharging heated air throughout the mass at the same time. The air is heated in a coil surrounding the steam jacket, which connects with the shaft of the agitator, which is hollow, and conducts the air, which is to be forced in by a pump or blower, to perforated tubes on the agitating blades, from which it is distributed so as to circulate thoroughly through the substance to be dried, and then allowed to escape through a pipe to carry off the odor to a fire, if preferred, where it may be burned.

Improved Apparatus for Freezing Liquids.

Francesco Sajno, of Milan, Italy.—This invention is an improvement in the class of apparatus for freezing liquids wherein a horizontally arranged hollow rotating cylinder is employed. An outer cylinder is jacketed with a non-conducting material to protect the freezing mixture from the heat of the atmosphere. It has contracted ends, which are provided with screw caps, which close the openings so that the water of the freezing mixture will be held in the space below the joints as the cylinder is revolved, so that it cannot leak out. The inner cylinder, for holding the liquid to be frozen, is permanently attached to one end of the outer cylinder, so that the cap of that end opens and closes the passage to it only; also so that, in case the shigh in th liquid to be frozen. Longitudinal plates divide the space between the cylinders into several compartments to confine the freezing mixture equally. A stationary rod in the axis of the inner cylinder has a scraper and kneader on it to scrape the frozen liquid off the surface where it freezes before the middle portion, and stir and knead the mass to facilitate the equal and uniform action. This rod can be removed with the cylinders when taken out o the bearings

Improved Revolving Cotton Lint Room.

William T. Crenshaw, Burton, Texas. - This invention consists of a lint receiver of two or more compartments or rooms arranged so as to revolve on a vertical axis. Each compartment is provided with inlet passages for lint and doors for taking out the same, so arranged that while the inlet passage of one room is at the gin stand, where the lint will be delivered into it as it comes from the gin, the door of another room will be at the press, whereby the ginning and pressing may be carried on continuously without the hands being exposed to the dust.

Improved Axle and Axle Box for Vehicles. Friederich Hunsinger, Morrisania, N. Y.—This invention consists in the

improvement of axle boxes. Grooves or recesses are made in the bearing surface of the box, which operate as reservoirs for the lubricating material. The box is fitted to a collar, and a nut is so fitted to the axle that when turned up it makes a joint with the end of the box, and confines the oil or other lubricating material. The ends of the box will become wornafter a while so that more or less of the material will escape, but the axle will still be lubricated from the material retained in the grooves and retarded by a Shoulder or offset.

Improved Ribbon Block William Obrist, New York city.-The object of this invention is to furnish to manufacturers and importers of silk and other ribbons an improved ribbon

block. This invention consists of a cylindrical tube, rolled of a cylindrical strip of cheap straw or other paper, the layers of which adhere by the application of some cheap mucilage or paste. This tube is strengthened sidewise by wooden disks, forming therewith a strong cylindrical ribbon block.

Improved Wardrobe Bedstead.

Edward Hunter and Daniel Van Sickle, Chicago, Ill.—This invention be longs to the class of folding beadsteads designed to form, when folded or not in use, a compact ornamental article of furniture; and it consists in the arrangement of the foot legs to serve as an upper side finish of the imitation bureau formed by the bedstead when folded, and also to lock or secure the two parts thereof together.

Improved Combined Umbrella and Cane.

T. R. Lambert Chevers, Hoboken, N. J.-This invention has for its object to furnish an improved device which shall be so constructed that it may be readily adjusted for use as an umbrella or a cane, as may be desired, and which, when adjusted for use in either capacity, shall show no indication of any other use. The invention consists in the hollow handle provided with a detachable cap and a detachable ferrule to adapt it for use as a cane.

Improved Mortar Mixer and Grinder.

Edward Spaulding, Keene, N. H.—This invention consists of a series of rotary mixers suspended in a mixing vat from a reciprocating carriage, on which they are moved forward and back across the vat, and, at the same time, revolved for mixing the lime and sand. The invention also consists of another vat by the side of the mixing vat, with a grinding mechanism at one end, into which the lime and sand, after being mixed, are discharged to be worked through the grinder, while another batch is being prepared in the mixer. The machine is designed to be arranged on wheels, to be moved from place to place conveniently, and will be arranged for being worked by horse power or in any preferred way,

Improved Sole Channeling and Heel Burnishing Machines

Caroline Vrooman, Boston, Mass., administratrix of Henry S. Vrooman, deceased.—The first invention consists in the improvement of machines for channeling the soles of boots and shoes. The pattern upon which the leather sole is laid to be channeled approximates nearly to the shape of the sole so that soles varying somewhat in size and shape may be channeled on the same pattern. The edge of the pattern is a cogged rack, which gears with two small spur wheels, and is held in gear by means of a roll which bears against its inside. The roll revolves on a pin in a slide, which is forced up by a spiral spring, and the spur wheels are revolved by suitable means. For the removal of the pattern the roll and slide are forced back by means of a lever. A movable arm which projects over the bed may be moved later ally. A suitably arranged lever on the side of the arm carries a roller on its front end which bears upon the sole and keeps it down firm on the pattern. Attached to the back of the movable arm, by means of a hinge, is the adjust able guide, which is forced outward from the arm by a spiral spring, and bears against the edge of the sole as the pattern is revolved. By the pressure of the foot communicating motion to a cord, the arm is swung back for the removal of the pattern and placing the sole. The knife or channeler and the groover are also adjustably attached to the end of the roll lever. The knife and groover partake of the movement of the roller, and are raised and lowered by means of a cam lever. To operate with the machine the cam lever, which lifts the knife, grooverand roll, is pressed down. Then by pressing with the foot on the treadle, the arm is swung back, or to one side. The sole is then placed on the pattern and the treadlereleased, which allows the guide to press the sole. Then the lever, which throws down the roll and knife, is lifted, and by turning the crank the sole is revolved, and the channeling is completed. The top of the pattern is cross serrated, with spurs therein to hold the sole. The same inventor has also devised an im proved machine for burnishing and polishing the heels of boots and shoes The frame or bench consists of two stands and connecting plate. A spindle is hinge jointed, and slides in a threaded tube. The latter is adjustable in the socket of the stand, and clamped at any point of adjustment by a screw passing down through said socket. The apindle is in two parts, hinged together, so that one part can be turned one side to facilitate the putting in and taking out the shoe. A hand wheel nut works over the externally threaded tube, and against a shoulder on the spindle, to force the latter forward into the shoe and the shoe against the heel piece. When the shoe is placed in the machine it is given a revolving motion of about two thirds of a revolution by turning a crank, which can be increased or diminished, and the shoe turned more or less, as may be desired. The burnisher is adjustably attached to the end of a beam, to which is given a longitudinal motion. By bearing down on a suitably arranged treadle the outer end of the box and burnishing beam are tipped down, which raises the burnisher from the heel. A cavity in the burnisher is connected by means of a hole with a gas burner for heating the burnisher, if a high temperature is desired, but the burnisher is readily removed and heated and replaced, if required.

Improved Lamp Bracket.

George Jones, Peekskill, assignor to Thomas J. Fisher, New York city. This invention consists in forming on the ring a projecting ϵ ar with double steps, and a similar projecting ear on the arm, so that, when the two ears are placed together, with their steps overlapping each other, a pin may be placed through the two ears to firmly lock the parts of the bracket together

Improved Fireproof Roof.

Niels Poulson, New York city.-The object of this invention is to con struct a strong, durable, and fireproof French roof of cast metal, for the purpose of avoiding the combustible material of which they are built at present. The invention consists of cast iron plates of suitable size, joined firmly together by means of outside ribs or caps and interior bolt arrange ment, representing an elegant front, impervious to atmospheric influences and absolutely fireproof.

Improved Fly Protector.

Isaiah Daugherty, Rocky Station, Va.-The invention consists in a box like case of suitable dimensions, with common or wire gauze for the admission of air and light, an entrance door, and a lounge or bed, book case table, chair, and other pieces of furniture placed therein, the whole, movable on casters, forming a safe retreat against flies, mosquitoes, or other

Improved Machine for Moving Logs.

George M. Hinkley, Milwaukee, Wis., and Alexander Rodgers, Muskegon Mich .- This invention is an improvement upon the log turning machine patented to A. Rodgers on March 19, 1872, and consists in the application of a jointed push bar and certain actuating devices to the turning apparatu heretofore used for turning logs on the carriage, and whereby the logs may be rolled from the log way on to the carriage of a saw mill by power.

Improved Machine for Cutting Webbing,

William A. Rice, Bristol, N. H.-This invention consists of a shears for cutting webbing mounted on a stand with one blade fixed and the other movable, and worked by a foot motion, the stationary blade being provided with small nicks across the edge to prevent the webbing from slipping, the movable blade being held against the stationary one by an elastic washer surrounding the pivot bolt, and compressed against the blade by it.

Improved Instrument for Cleaning Gun Barrels.

William E. Turner, Fort Sneiling, Minn.—The object of this invention is to provide ready and efficient means for cleaning and burnishing the inside of gun barrels; and it consists in an instrument formed of a tube and movable central rod, and an expansible cluster of wire or similar material, the latter being expanded and adjusted to fit barrels of different caliber, or to give more or less friction to barrels of the same caliber by means of a screw thread and nut on the rod.

Improved Eye Glass.

Arthur D. Ausell, Hartford, Conn., assignor to Lazarus, Moses & Co., New York city.—The object of this invention is to improve the arrangement of springs on an eve glass so as to obtain a firm hold on the nose and bring the diameters of the lenses in line with each other when they are worn. invention consists in connecting the glass frames with the bridge by suspension springs, so that the use of pillars, clasps, or spiral springs will be dispensed with, and so that the points of said springs will hug the glass frames when the latter are closed.

Improved Grain Drill. George A. Pursley, Pittsfield, Ill.—This invention relates to a combination of springs and adjusting devices for graduating the force with which the flakes or seed tubes are pressed into the earth. By suitable arrangement the downward movement of a bar compresses springs and causes them to press upon the draft rods, and thus hold the flukes down to their work with a yielding pressure, so that said flukes may be held down with a greater or less pressure by moving the bar down orup. Intriangular plates, which are pivoted at their angles to the side bars of the frame, are formed cam slots to receive pins attached to the bar so that the said bar may be drawn down by moving the said plates upon their pivots. The plates are connected and

Scientific American.

caused to move together by a pivoted bar.

Improved Soldering Compound. Cary Cox, Covington, Ga.—The object of this invention is to improve and simplify the cost of soldering tin, copper, and similar wares; and it consists in a compound for soldering, composed by combining muriatic acid, sal ammoniac, sulphate of copper, zinc, and water. The solder is preferably used in the form of wire, the end of which is dipped in the compound, and applied to the heated surface of the article to be soldered. By this process no soldering iron is required. The heatis applied by means of the fiame of a lamp or heated iron upon the opposite side.

Improved Carriage Spring.

Thomas H. Wood, New York city, assignor to J. B. Brewster & Co., of same place.-This invention relates to an improved arrangement of transverse springs on light wagons, and has for its object to combine, in a wagon supported on single transverse springs and side bars, the advantage of elasticity, double elliptic transverse springs, and of the deep setting of the body obtained at present by using the single springs. Upon the axles are fastened the middle portions of transverse springs, the ends of which are secured to side bars. These side bars are made of hickory wood or other material, and aid, with whatever elasticity they may possess, in making the support of the body yielding. To the under side of the carriage body are ecured transverse springs, the ends of which connect by suitable couplings with the side bars. The springs can be made of metal or wood or other material, and are semi-elliptic or flat springs, in contradistinction to the full elliptic springs heretofore used as direct supports for carriage bodies on

Improved Children's Photograph Chair.

Mark H. Prescott, Jr., La Crosse, Wis .- This invention consists of a vertically adjustable head rest at the back of a child's chair, in combination with an adjustable back and band for waist, for supporting small children steadily, so that they can be photographed clearly and accurately.

Improved Blast Furnace Alarm Apparatus.

Edwin Davis, Millerton, N. Y.—This invention has for its object to improve the construction of hot blast furnaces, to enable the escaping gases to be more effectually utilized for heating the air before it is driven into the furnace, and to indicate when the furnace is ready for another charge The invention consists in the employment of a cover for closing the part of the furnace top outside of the air-heating chamber. To the forward edge of the cover is attached a chain, which passes over a guide pulley pivoted in the upper part of the flue, and to its other end is attached a weight, which so nearly balances the cover that said cover may be readily raised and lowered. A small weight is attached to the lower end of another chain, which chain passes up through a hole in the cover, passes over a guide pulley, pivoted in the upper part of the flue, and its other end is attached to weight, so that, as the weight descends when raising the cover, the other weight may be drawn upward out of the way when charging the furnace The small weight is designed to rest upon the ore in the furnace, and descends with said ore, straightening out another set of chains, so as, when the ore has descended so low that the furnace requires another charge, said charge will sound a gong to notify the attendant.

Improved Automatic Fire Alarm.

Henry L. Brown, Middletown, Conn.-It is proposed to have a small tube of lead, or other substance easily destroyed by fire, running throughout the building, where it will be exposed and burn off in case of fire in the building, and connecting with a collapsible air holder, inflated and connected with a lever and a spring, so that when the tube is burned and the air escapes the springwill move the lever and cause it to release a bell hammer of an alarm mechanism to allow it to be set in motion by its actuating spring to sound an alarm.

Improved Automatic Fan.

Jacob Lehner, Galena, Ill.—The object of this invention is to furnish an adjustable fan attachment for bedsteads, cradles, etc., by which the fanning is accomplished by the motion of a rocking chair, which may communicate to a cradle also the rocking motion. By attaching the fan arrangement to a cradle and placing the same on a bottom frame with lateral grooves, connecting the rocking chair by a rod with the cradle, the operation of fanning and rocking is accomplished at the same time, without the least inconvenience to the attendant.

Improved Grain Raker and Loader.

George S. Dudley, Dixon, Cal.—This invention consists in the improve ment of harvester rakes. To the rear end of the machine is attached a series of parallel inclined bars, which at their lower end are slotted longitudinally to receive rake teeth. The teeth are pivoted to a cross bar attached to the bottom of the rear end of the frame, and are rounded off upon their forward lower sides to enable them to pass readily over any obstruction or unevenness of surface. By pressing a suitably arranged loop down into a vertical position, the rear ends of the teeth will be depressed, raising their forward ends away from the ground for convenience in turning or passing from place to place. Guide rods are inserted in the upper forward part of the teeth, and work up and down freely as the teeth move upon their pivots. The forward part of the machine is supported upon caster wheels, and its rear part upon wheels, one of which revolves loosely upon one jourcylinder or drum and the other is rigidly connected journal of said cylinder, so as tocarrysaid cylinderwith it in its revolution. Tothe cylinder are attached rows of radial arms which are made of such a length that their outer ends, as the cylinder revolves, will sweep through the spaces between the teeth and guide rods without coming in contact with the ground or the framework of the machine. The cylinder has ring grooves formed in it, midway between the arms, for the passage of the prongs of the endless belts which pass around rollers pivoted in bars, which ride upon the cylinder, and the under sides of which have longitudinal grooves formed in them, which, in connection with the ring grooves in the cylinder, allow the pronged belts to pass, while the said ends rest upon the A shaft revolving in the forward part of the top of the frame is actuated by a band from the wheel that drives the cylinder. To the otherend of the shaft is attached a pulley, with belting which connects with a shaft to the inclined carrier frame. The upper end of the carrier frame rises so high, and projects so far, that the grain may readily pass from it to the wagon. To the upper end of the carrier frame is pivoted a shaft around which passes an endless apron to which cross slats are attached to prevent the grainfrom slipping upon said endless apron. By this construction the grain is raised from the ground by the teeth, and said teeth by the radial arms, the guard rods keeping it from slipping from said arms while being raised. As the arms pass a vertical position the grain falls upon the pronged belts, by which it is carried to the carrier, by which it is deposited upon the wagon.

Improved Sewing Machine Caster.

John H. Plank, Bloomfield, Iowa.—This invention consists of two pairs of bars having a foot rest for a sewing or other machine leg and two casters at one end and lapping each other at the other ends, where they are con nected by a clamp screw, so that said foot rests can be adjusted to or from each other for machines of different sizes. These bars are to receive the machine in the said foot rests, so that it can be rolled about and the machine taken off and its legs set on the floor, when it is to sit firmly for use.

Improved Treadle Movement.

John Evans, Rosenhayn, N. J .-- This invention consists in causing a spring, slotted at the upper end and applied to the treadle and crank pin, to act as a brake, to prevent the wheel from running backward and bring it always into such a position that it will start forward when turned, without being carried some distance with the hand.

Improved Liquid-Sealed Valve Louis Winterbauer, New York city.-This invention relates to barrels or asks of fermented liquors on draft; and consists in allowing the ingress of air to fill the vacuum made by the withdrawal of liquid while the egress of the gases is prevented. A plug or spigot is designed to be driven into a hole in the upper side of the cask or vessel, and which is made with a projection or arm upon each side for convenience in drawing it out when required. A channel leads up from the inner end and out through one of the arms of the said plug, which arm is so formed as to receive the end of a small rubber tube. The other end of the tube is connected with the case of the valve, which case is made with a detachable bottom which is secured air and water tight. A small tube is connected with a hole in the bottom and extends up to a convenient hightalong the side of the body of the case, and its upper end is left open. The hole in the bottom is covered with a small rubberfiap, upon which is placed a weight and which is madeexactly flat upon its lowerside. In using the valve the case is half filled, more orless, with water, orother suitable liquid, so as to closely seal

Improvement in Coloring Metals.

Joseph Kintz, West Meriden, Conn., assignor to himself and J. P. Clark, of same place.-For coloring cast iron and other metals a dark brown color, the iron is first blacked, then coated with a sizing substance, which is par-tially dried. Then pulverized black lead is put on and brushed to produce a polish. The succeeding operations are to coat the lead with lacquer, and, lastly, to heat the iron, which produces the desired dark brown color. The blacking is mainly to hold the size.

Improved Beer Cask.

Michael Seitz, Williamsburgh, N. Y.—This invention has for its object to prevent the heads of large beer casks or tuns from being started or sprung by the pressure of the beer in working, and thus prevent the consequent leakage and loss. The invention consists in the combination of the rod having a head upon one end, a nut upon the other end, and screw threads of the same pitch and running in the same direction upon both ends with the cross bars and the heads of the casks. By this construction the threads of the said rod sinking into the wood of the said heads and bars prevent any peer from leaking out around the rod.

Improved Automatic Vent Opener for Air Springs.

John Walther, Brooklyn, E. D., N. Y., assignor to Calvert B. Cottrell, Westerly, R. I.-It is desirable to have a vent, in connection with the air springs used on printing presses, to stop the table, by which the air may be allowed to escape from and enter the cylinder freely when the press is runningslow at starting and stopping: also when it is being turned over by handfor adjusting, cleaning, or any other purpose; so that the moving of the press will not be obstructed by the compression of the air in front of the pistons in entering the cylinders, or by the partial vacuum formed behind in withdrawing from the cylinders in consequence of the leakage past the pistons in compressing the air. It is also desirable to have the vent so arranged that it be opened automatically when the press stops running, and closed in the same mannerwhen it starts, to avoid the attention and labor necessary to do it by hand. This invention consists of a valve which is automatically opened by either gravitation or by the suction of the piston of theairsprings, or by the same and gravitation, and closed by the air compressed to form the spring, without the aid of intervention of any appara-

Improved Oil Can.

Henry Keller, Sauk Center, Minn.-This invention consists of a cylindr cal body with flat ends, arranged horizontally on legs, with a filling tube the top, the spout on one side and a stationary handle on the other, and wing handle on the top side of the cylinder. The object is to have a can which will not be subject to the wear, as the ordinary cans are, on the bottom, and will be less liable to turn over when full m consequence of being top heavy, and will not cause its contents to spurt out on the ground.

Improved Journal Box.

John A. Althouse, New Harmony, Ind .- This invention relates to the construction of journal boxes for shafting and similar purposes; and consistsin the mode of tightening the box to the journal when, from wear or other cause, it has become loose. It consists of the base, the cap, and two adjustable side sections. The base may be the plate of the pillow block, or it may be a separate plate. The cap fits on to the top of the pillow block and journal in the ordinary manner. The adjustable side sections are made with the back of each section recessed or cut away, with rianges which fit on the ends of the pillow block, and with the projecting lips which inclose and hold the adjusting screw. The back side of the section is cut on an incline. The adjusting screw is attached to a movable block withinclined face, and is provided with a collar. The block is allowed play up and down; and the inclined surfaces of the section and block being reversed and placed in contact with each other, and the screw stationary longitudinally, it will be seen that, as the screw is turned, the block will be moved up or down, according to the direction in which the screw is turned, and will act as a wedge.

Improved Furniture Caster.

CevedraB. Sheldon, New York city.—This invention consists of a collar on the under side of the horn which is formed on punching the pin hole, which gives the requisite thickness and strength to the horn at that point, and enables the stomping or striking out the horn from sheet metal. It also consists in a flanged socket, stamped or struck up.

Improved Stop Cock.

George W. Eddy, Waterford, N. Y .- This invention consists in the improvement of stop valves. It is proposed to pivot the two valves by ears o a cross head, which screws up and down the valve stem, and to arrange the pivot pins in inclined slotted round holes, which are so inclined that when the disks cease their downward movement the further down movement of the crosshead will force the disks against their seats, and at the beginning of the up movement draw them away from the seats. Cams or dogs are also pivoted to the crosshead on the same pins that are used for pivoting the disks, and have an eccentric face acting on the back of the disks, and a projection extending to within a short distance of the valve stem so as to be acted on by a collar on its lower end. By this arrangement, when the crosshead is screwed down on the stem till the stems of the cams are brought against the collar, it will, by its action on said stems, force the camfaces powerfully against the disks, and thus greatly aid the pivotpins and the slots in pressing the disks against their seats, both to close them tightly and to strongly resist any impulses of the water against them. The cams are arranged in slots in the crosshead, by which they are placed in the plane of theaxis of the disks and the valve stem. The right hand threaded part of the stem screws through a nut in the cap below the stuffing box when the stem has endwise motion, to raise the lower end of the stem above the water way when the valves are open, and returnit to the working position when the valves are closed, while the raising and lowering of the disks with the cross head are effected by the steam, by reason of a reversely threaded part which moves the crosshead down by the same movement that screws the stem down, and up by the same movement that raises

Improved Apparatus for Assorting Nails.

John Coyne, Pittsburgh, assignor to himself and Robert Chessman, Etna, Pa.—This invention has for its object to provide a simple device for assorting cut nails. This apparatus is constructed somewhat on the plan of certain screw feeders in use in this country and in England-that is to say, of inclined plates so arranged with a central angle plate as to form slotted or onen channels or gutters between them, through which the refuse metal and headless nails will pass, and thus be ready for removal for economic nurnoses. To adapt the apparatus for separating pails of different sizes. as carpet tacks from shingle nails, etc., or for analogous purposes, the inclined side plates are made laterally adjustable.

Improved Breech Loading Fire Arm.

John Sidney Heath, of Thomas Street, London, England.—These improve ments are exclusively applicable to breech loading fire arms, more especially those in which fixed ammunition is employed. The object of the invention is, principally, to prevent the premature or accidental discharge of fire arms; and it consists in the provision of sliding bolts for locking the firing pins, the same being operated by a thumb lever arranged to project through

Improved Washing Machine.

Elias M. Hodgson, Stanhope, N. J .- This invention is an improvement in the class of washing machines having a fixed and swinging or vibrating presser board. The improvement relates to the construction of the face of the presser boards, the same being grooved longitudinally and transversely to form rectangular projections or blocks, and perforations being formed in the grooves in such a manner that, when the boards come together, the blocks of one board will strike against those of the other, and the horizon tal and vertical grooves in one board will come opposite those in the other and the water be expressed through the holes.

Improved Loom for Weaving Piled Fabrics.

Edward Pickford, New Brunswick, N. J.-For withdrawing the wires use in weaving pile fabrics, a hook is provided with a guard on one side of it to wear against the side of the wire head, to which the wire is attached, to pre vent the hook from shifting so far over as to engage the next wire at the same time, and to insure the hook against shifting in the other direction, so as to slip off from the head of the wire. The face of the hook, and also the face of the shoulder of the plate or head of the wire with which the hook engages, is made like a half dovetail, beveled, and relatively arranged with the guard so that they are locked together, and all liability to discon nect during the operation of withdrawing the wire is avoided.

Improved Rotary Churn.

George Walker, Whitley's Point, Ill.-In this invention, the dasher shaft the vertical ribs and inversely inclined arms. By this arrangement, as it is ravolved forward, the tendency is to force downward the milk, which, by the bottom and sides of the churn and by the angles between said bottom the sides, is thrown into violent agitation, bringing the butter in a very short time. The churn body can be readily detached and set in a tub of cold water to cool the milk in warm weather, and in cold weather it can be set in a tub of warm water, or upon the stove, to warm the milk, thus enabling the milk to be readily brought to the proper temperature.

Improved Lubricator.

Henry V. Aiken, Gibsonburg, Pa.-In this invention, a large drip cup is arranged on the standard of the lubricator, below the middle oil chamber to secure the drip from above, whether escaping from the blow-off cock leaking or overflowing from the reservoir; the object being to economize the oil and prevent it from soiling the engine. For packing the cocks, a flexible packing jacket is provided, arranged with a tubular follower which is pressed firmly against a washer by a cap to pack it oil tight against the cock; and inside the follower is a spring, to press it snugly into its seat, but not so as to bind.

Improved Musical Instrument.

Marsena Cannon, Salt Lake City, Utah Territory.-This invention is an improvement in the class of musical instruments provided with coiled wires arranged to be struck by hammers, and thus act as substitutes for the wire strings usually employed in pianos. The improvement consists, mainly in the arrangement of keys and coiled wires, so that the former act on the latter directly, or without the aid of intermediate mechanism.

Improved Hatchway.

George Follett and Adolphus Brummel, Brooklyn, N. Y.—This invention consists of an arrangement of gearing, in connection with sliding hatchway covers, whereby the elevator carriage is caused to automatically open the way for passing through and to close it after passing, so that all danger of accidents by falling through open hatchways will be avoided, and the keeping of them closed to prevent draft in case of fire will be insured. The essential feature of the invention is one or more toothed wheels on oppo site sides of the elevator way next to the guides in which the elevator runs. gearing with the sliding door by a rack or racks, and a rack or racks on the top of the elevator carriage, which connect with said wheel or wheels sufficiently in advance of the carriage to throw the door or doors open by the time the carriage rises to the passage, and corresponding rack or racks on the lower end of the carriage connecting with the wheel or wheels, as soon as the carriage arrives above the passage, in such manner as to reverse the action and shut the way.

Improved Water Wheel.

Samuel T. Teachout, Troy, N. Y., assignor to himself and Joel C. Peck, of same elace. This invention consists in a guide rim with annular recess, and in combining flaring flanges with the buckets. An annular flange or rim projects downward from the under side of the top plate as far from the periphery of the disk as the width of the upper part of the buckets. At a point about half way from top to bottom, this fiange turns from the vertical line, forming an inverted frustrum of a hollow cone. The buckets are attached there to this flange and flare outward to the lower ends, making a considerable increase in the width. The upper parts of these buckets are so inclined to the radial lines of the wheel as to range at right angles to the line in which the water moves, in passing through the spaces between the the guides so as to get the best results from the impact; and, as to width, they are in such proportion to the spaces between the guides that the water does not spread laterally in coming against them, by which no loss is incurred on that account. By the widening of the lower parts of the buckets, a greater \mathbf{q} uantity of water can be \mathbf{d} ischarged with buckets of the same pitch or angle than could otherwise be, by which the capacity of any wheel will be considerably increased after the limit in the width of the buckets has been reached, said limit being about one seventh of the diameter.

Improved Carriage Spring.

Thomas Murgatroyd, Hiawatha, Kansas.-This invention consists in improved means for re-enforcing carriage springs. The frame of the carriage is composed of two longitudinal curved rods, laterally connected by metallic cross pieces. The mainsprings, consisting of three or more pairs, are placed longitudinally between the parallel rods and connected with the cross pieces by loops and links. Every pair of springs is applied to wooden seat rests, on which the body of the wagon rests. For the purpose of strengthening and stiffening mainsprings, every corresponding pair is connected about half way between the links and rests by horizontal brace springs, which are applied to the mainsprings by means of buckles and pins. The buckles are fastened to the mainsprings in such a manner that the larger part of the same is placed on the upper side of the springs, and perforated ears are bent under at right angles downward for the reception of links or pins. Into the latter are linked the brace springs by means of upturned loop-like bends. Resting centrally on the brace springs and fastened to them is the cross piece, of wood or other material, which furnishes. by means of vertical rods applied to the outer seat rests, additional supports to the body of the carriage, and by brace rods to the middle rest piece of the same. The foot rest of the body of the carriage is furthermore braced by two or more metal rods, which are applied by screws or otherwise to the lower side of the cross piece, and are adjustable thereon.

Improved Breech Loading Fire Arm.

Agostino Marelli, Milan, Italy, assignor of one half his right to Sante Marelli, of same place.-This invention refers to a breech loading fire arm The operator places his finger on a guard lever under the piece, bringing it down, when the breech block is moved so as to open the breech of the barrel, thus permitting the extraction of the exploded cartridge and the insertion of a new one. The hammer being caught by a tooth on a projecting stationary appendage is turned on a pivot, thereby compressing a spring, when it is caught by the nose of the trigger: thus the downward motion of the guard cocks the gun, and consequently, after a slide forward. As soon as the slide is released from the pin it is moved fresh cartridge is introduced and the guard replaced, the trigger may be back by a spring. By suitable arrangement of shafts and gear wheels or pulled, when the firing of the gun takes place. By the former of these equivalent cranks, the two wheels will be made to revolve exactly alike, so movements, the breech block is place dagain behind the barrel breech; and by the latter the hammer, being freed from the trigger stop, is thrown forard by the spring and strikes the fulminate in the cartridge. The exploded cartridge is extracted by the down motion of the guard through two angular levers placed in grooves of the box sides and capable of turning on a pivot. In order to ascertain at any time from a mere outside inspection whether the arm contains the cartridge and the hammer is cocked, two indicative pointers are used.

Improved Bed Bottom.

Edwin L. Brockett, Nelson, Ohio, - This invention consists in constructing a compound slat without any additional spring, and supporting it upon a continuous crank wire at the head and foot so as to form a neat cheap, and

Improved Shoe Last.

Jno. A. Hechenbach & Anton Haertle, Mayville, Wis .- This invention elates to the spring lock bolt that fastens together two sections of a last and consists in the application thereto of two plates and a hook whereby it becomes unnecessary to cut so near to the upper surface of the last, to make the bolt so long, or to use the ordinary transverse pin by which the last hook is enabled to unlock the sections.

Improved Tin Roof.

Patrick Wall, Allegheny, Pa.-This invention consists in corrugated tin heeting for roofs, with a plain and smooth portion near each edge, whereby the lap and joints between adjacent sheets may be easily and conveniently made, while the corrugations give the desired stiffness and strength, allow for contraction and expansion, and avoid the tendency of the metal to

Improved Boot and Shoe Packing Case.

Matthew Euhler, La Moille, Ill.—This invention consists of a case, rectanor partitions placed at such distances apart as will form a series of compartments adapted to accommodate medium or large size books. Each of the compartments thus formed is subdivided into two compartments by neans of an inclined partition which is so arranged that the cubical spac of the compartments on one side of it equals in the aggregate that of the compartments on the other side. On one side of the partition, the smallest or shortest compartment is at the bottom of the case and the largest at the top, while on the other side the arrangement is reversed, the smallest com partment being at the top and the largest at the bottom. Thus constructed, the box answers as a shipping and packing case in which the boots or shoes cannot become disarranged or abraded by friction against each other, and in which the sales man can select the size he requires without the loss of a moment's time.

Improved Tanning Compound.

John B. Hite, Guyandotte, West Va.-This invention relates to means for preventing the formation of an incrustation upon the surface of leather which is being tanned, whereby it is often rendered hard, inflexible, and, to agreat extent, impermeable to the tannic acid. This invention causes the hide to become rapidly saturated with the tanning liquid, thoroughly soft ened, and also rendered tough.

Compound for Destroying the Cotton Worm. im B. Royall, Brenham, Texas.—This invention relates to com-

pounds for killing bugs and insects that infest, eat and damage the leaves of growing vegetation. It consists in combining a poisoned adhesive and diffusive ingredient in one and the same compound

Improved Electro-Magnetic Telegraph.

George D'Infreville, New York city.-The invention consists mainly in so connecting a telegraph apparatus at two stations that messages may be sent simultaneously from opposite directions over the same wire, and also at different times. There is one main wire between two stations, connected with similar poles of the two batteries. When one of these batteries alone is set in action by the depression of the key near it the current pass es from it over the wire; when the other battery only is brought into play the current will pass in the opposite direction over the same wire. Thus far all is plain. Now comes into play the invention, which allows the transmission of messages simultaneously in opposite directions over the same wire-not the transmission of simultaneous opposite currents, but of messages. This object is obtained by so connecting the local battery with the relay at each station that it will be set to work and give an impulse to the sounder by the cessation of the current over the main wire. The operator will thereby be enabled to receive a message partly by the main current, if uninterrupted, partly by the induced current when the main is interrupted. Thus, if two parties, A B, telegraph each other, at once, over the same wire, and both depress the keys at once, A will, by B's tocal induced current, re ceive a signal as long as B depresses his key; as soon as A raises his key, B's being still depressed, the main current from B's station will go to A and continue the signal, the same as the local gave it to him before. The same iments are filled from a tank in any convenient manner by means of a tube will be the effect on B's side. While both keys were depressed, B too re ceived a signal by his local, which was put in action by the very absence of the main current toward him; and he too will receive signals, via main cur rent, when B raises his key from the main wire. In other words, the local current is in action when the main wire is interrupted, and gives, therefore, a sort of negative message-that is to say, it records at one station the interruptions of the main current produced by the attempt to send a main current from the other station, but only records such interruptions when the same are occasioned by a simultaneous depressfon of both main keys Thus simultaneous messages can be sent in opposite directions over the same wire. When the main current only is started at one station, both re lays will be magnetized so as not to allow the local batteries to come into

Improved Trunk Catch.

Henry C. Faber, Utica, N. Y .- This invention has for its object to furnish an improved catch to take the place of straps usually employed for hold ing the cover or lid down to the body of the trunk to relieve the lock from having to sustain the strain. It consists of an improved trunk catch formed by the combination with each other of a top plate provided with a tongue having a slot formed in it, a bottom plate having a wide transverse slot into which is fitted a bar which is hinged at one end, and is provided with a spring at said hinged end to throw it open when unfastened, a spring, and a latch with a spring attached. Upon the inner side of the free end of the hinged bar is formed a catch hook, to enter a notch in the latch and fasten the said bar when closed down. The latch is bent to pass around the lower end of the tongue, and its lower end is pivoted to the lower plate. It is held up by a spring attached to the plate. A stem which passes through a slot in the side flange of the plate is attached to or formed upon the up per end of the latch and has a thumb piece formed upon its outer end for convenience in operating the latch to release the bar. Upon the inner side of the hinged bar is formed a lug to pass through the tongue and thus fasten the parts together.

Improved Corn Planter.

Daniel F. Taft, New Bedford, Mass.-This invention consists in the improvement of corn planters The seed hopper is secured to the rearside of theaxle. To the bottom of the hopper is pivoted or hinged the forward end of the spout, which is curved downward and rearward, and in which is formed the hole through which the seed escapes to the ground. To the spout, a little in front of the discharge opening, is attached the standard of blanks or pieces of wood to be dressed are carried between the face plate the plow for opening a furrow to receive the seed. The rear side of the standard of the plow is concaved, to adapt it to serve as a channel to guide the seed to the furrow. The standards of the covering plows are attached adjustably to the sides of the rear end of the spout, so that they may be adjusted to cover the seed to a greater or less depth, as may be desired. Arm are attached to the rear end of the spout to which are pivoted the wheel by which the soil is pressed down upon the seed. One part of the face of the wheel is so formed as to mark the hills. The dropping slide moves back and forth in the rear part of the spout to drop the seed. The rear part of the slide, made with an offset, is connected with the arm, so that the said arm may serve as a guide to the slide in its movements. A pin at each revolution of the wheel strikes against this offset and moves the that the hills will be planted directly opposite each other, enabling the planting to be done in accurate check rows.

Improved Wheel Plow.

Isaac B. Green, Gillespie. Ill.—This invention consists in the improvement of wheel plows. In connection with the usual mechanism, a pendent stand ard and guide are arranged under the axle and combined with a two barred plow beam. By this construction, by operating a lever, the plow may be easily raised from the ground for convenience in turning or passing from place to place. The lower end of the standard passes through a slot in the frame, and is secured in place by a wedge key driven through it below the said frame. All the parts by which the plow is connected with the frame may be moved laterally toward or from the furrow wheel to adapt the machine to be used with a two three or four horse team, as may be required.

Improved Hub Band for Vehicle Wheel.

George H. Johnson, Bridgeport, Conn .- This invention consists in the improvement of trimming bands for wheel hubs. The iron band of the outer end of the hub of the carriage wheel, to which the ornamental trimming band of ductile metal is to be applied, is cylindrical, or it may be of flaring or bell shaped form. A cylindrical band of brass or other soft fine metal capable of being spun and of being polished brightly is formed so as to fit in the iron band, and is provided with a collar at the innerend, the collar being made to fit against the end of the hub. At the outer end of this band it is provided with a flange, bending back parallel with the part to fit on the outside of the iron band, making a deep annular groove. To attach the band $^{
m t}$ he inner surface of the main part, also the $\,$ outer surface of the flange, is coated with a solution of Spanish whiting to protect it from the solder or other composition for uniting the bands, and then dipped in a bath of melted tin metal, to coat the surfaces to be united with the iron band. A coat of solder is next applied. The two parts are then placed together, melted solder is poured into the cavity, which fills the said cavity and rises up begular and oblong in form, and provided with a series of transverse shelves | tween the flange and the iron band, and unites with the coated surfaces of each, and secures them firmly together.

Improved Railroad Frog.

James Brahn, Jersey City, N. J.—This invention has $f \bullet r$ its object to further than the second of the second contract of the second co nish an improved railway frog, made of ordinary rails. Bars, which extend along the sides of the point and between said sides and blocks of wood or metal, are secured in place by bolts, that pass through the said point. its supporting blocks and the guard rails and also by rivets. At or near the extreme end of the point the ends of the bars are bent outward, are bolted to the guard rails that connect the rails of the track with the rails of the frog, and are made U shaped, their bend being toward the frog. Each of the U shaped bars is secured in place by one long bolt that passes through it near its bend, through the rails of the frog, and through the outer bars of the joints. The arms of the U shaped bars are secured to the rails and to the outer bars. The U shaped bars thus act as fish plates in forming the joints, and they also act as braces to hold the rails in their proper relative

Improved Stock for Drilling or Tapping Instruments.

George Bunch, Bonnot's Mill, Mo.-The object of this invention is to fur nish a convenient device by which nuts may be rigidly placed on and taken off the bolts; also for the purpose of threading nuts and bolts, and for similar purposes. The invention consists of a forked handle frame, having applied between its prongs a cog wheel set in motion by a crank, and mesh ing into a pinion placed on a hollow cylindrical shaft, with two projecting trunnion heads which are applied to the nuts or, by insertion in dies, thread the nuts or bolts. By setting the crank in motion in the direction required, the nuts may be loosened or tightened, or the bolts or nuts

Improved Running Gear for Carriages.

Rufus Kline and Robert M. Jack, Pottstown, Pa., assignors of one third their right to Fortunato G. Pompeji, of same place .- In this invention, the nain part of the axle is formed of the inverted U shaped bar, arched in the middle. Spindles or journals, made of separate short bars, with a shank behind a collar, are adapted to fit in the ends of the bar. A thin plate extends from collar to collar under the part, and is either welded to the banks of the spindles or fastened by a stud pin and socket and a clip. This bar or plate is so adjusted as to length that it holds the collars firmly against the ends of the main part of the axle, and its tensile strength is brought to the aid of the main part of the axle in support of the load. The bars of the perch or reach, of which there may be one or more, are made in the same form in cross section as the part of the axle, employing filling pieces at the ends, welded in to attach the clips for connecting the bars to the axle and the bolster. The bolster is also made of an inverted U-shaped bar of the same kind as employed for the axle and the reach, with a thin flat plate upon the bottom fastened to it by clips.

Improved Self-measuring Oil Tank.

Jacob Schalk, Jr., Guttenberg, N. J.—The invention consists in the improvement of self-measuring oil tanks. A number of measuring compartor tubes, or the liquid may be discharged into one compartment and run from that into the others. When any one of the compartments is emptied or drawn off, a suitably arranged valve may be raised to fill it, so that they may all be keptfull and ready at all times. By this arrangement the exact quantity required is always measured out and ready for being drawn off, and may be drawn into measuring vessels or directly into the vessel of the customer. In the bottom of the opening is a drip pan, the cover of which is perforated. The tank is made preferably of wood lined with metal, and presents a neat and handsome appearance.

Improved Knife Cleaner.

Timothy Gingras and Louis Gingras, Enfalo, N. Y. — The object of this invention is to furnish a practical instrument for families, boarding houses, and hotels, by the use of which knives and forks may be quickly cleaned without dust. An outercase is connected by screws and suitable brackets to the wall. An inner box is made movable therein and may be taken out to be used on a table. A drawer and button contains the polishing powder. Above the drawer is a horizontal board divided into two parts by a projecting piece, to which are applied lids fitting exactly into the parts of the board. The inner sides of the lids as well as of the board are lined with strong buff leather pieces glued and riveted to them, so as to adhere rigidlythereto. The polishing powder, with moistening material, is placed on one side and dry polishing powder on the other. The knives are placed between the leather surfaces and first rubbed in the moistened powder slightly, then in the drypowder till perfectly clean and polished. The box is slightly drawn open, so that the escaping powder may drop therein. The lids are not closed when forks are polished, the rubbing of their prongs being sufficient.

Improved Turning Lathe for Wood.

Anderson R. Park, Columbia, Texas,-This invention consists in the improvement of machines for turning saddle trees. The work and pattern arryingspindles are mounted in the beads of a slide, and they are coupled, detachably, with the shaft, which is splined in and slides lengthwise through its driving wheel to move forward and back with the slide, also to turn the spindle. Between the housings the said spindle carries the different patterns used for controlling the action of the cutter wheel through the medium of the guide wheel, the said guide wheel and cutter disk being both mounted on the shaft, which is mounted in the swinging end of the frame which is mounted at the lower end in the axis of the driving shaft. The and the tail center on suitable carrier plates or forms, either attached to the said face plate or fitted on an elongation of the spindle, and differing in form according to the different kinds of work to be done.

Improved Sample Holder for Displaying Boots, etc. Jacob Closs, Decatur, Ind.-The object of this invention is to supply to the trade a sample holder by which shoes and other samples may be exhibitedon the outside of the boxes containing the goods, to be easily attached and detached, and holding the samples firmly thereon. The invention con sists of a spring holder of strong wire, bent in such a manner that the same can be rigidly connected to the box, and at the same time the samples quickly be placed on the holder or be taken off, the spring action preventing any accidental detaching of the samples.

Improved Breech Loading Fire Arm.

James Aston, of Hythe, England.—This invention relates to that class of breechloading fire arms which are provided with vertically sliding breech blocks; and the principal feature consists in the provision of devices for cocking the hammer ready for firing simultaneously with the descent of the breech block. The devices employed for accomplishing this result consist of a bifurcated claw lever, located within the breech chamber, and provided with a swivel or forked stirrup at its rear end, which engages with a hooked rear prolongation of the hammer, so that, when said claw lever is depressed by means of an external lever handle applied to its fulcrum pin he breech block will be lowered for exposing the rear of the barrel, and the hammer brought to a full cock by means of the stirrup on the claw lever, in which position it is retained until the breech block is elevated when it is disengaged for exploding the charge by means of the ordinary