

Butterine—Artificial Butter.

J. Campbell Brown, D. Sc., says that a chemist, seeing the word butterine, would be apt to suppose that it is a misprint for butyric, but it is not so; it is the registered name under which substitute for butter is introduced in this country from New York. [Known in New York as artificial or suet butter]. Its general appearance, taste, and consistence are very similar to those of ordinary butter; but notwithstanding that its solidifying point is lower than that of some butters, it retains much of the peculiar crumbly texture and fracture of dripping.

Examined, it gives the following results: It softens at 78° Fah., and melts at 86°; when heated and slowly cooled, it obscures the thermometer at 62°, and solidifies at 60°: It contains:

Water.....	11.25 to 8.5
Salt.....	1.03 to 5.5
Curd.....	0.57 to 0.6
Fat.....	87.15 to 0.6
Coloring matter.....	—

100.00

The fat consists of olein, palmitin, margaric (?), a trace of stearin, and about 5 or 6 per cent of butter. When dissolved in about four times its weight of ether, and allowed to evaporate spontaneously, it does not deposit any fat until more than half of the ether has passed off, and, if the temperature is not below 60°, the deposit is not solid. The first deposit, when dried, fuses at 108°; the second deposit fuses at 88°, and solidifies at 64°.

Under the microscope, butterine does not appear to consist of acicular crystals of fat, but of irregular masses containing a few butter globules, particles of curd, and crystals of salt. With polarized light, the irregular crystalline structure is beautifully seen, and is clearly distinguishable from butter which has been melted and recongealed. When old and rancid, it acquires the odor and taste of dripping, but it keeps longer undecomposed than butter. When fresh, it is a wholesome substitute for real butter; and if not brought into the market as butter, no one can reasonably take exception to its sale.

Butterine may be selected by the following characters:

1. Its crumbly fracture.
2. Its loss of color when kept melted for a short time at 212°.
3. The behavior of its ethereal solution.
4. Its action on polarized light.

Wheelerite, a new Fossil Resin.

During the past season's field work of the explorations and surveys west of the 100th meridian, under the command of Lieutenant George M. Wheeler, to which expedition I was attached as chemist, many interesting chemical facts were observed. Among these may be mentioned the occurrence of a new fossil resin, whose name heads this article. This resin, which is yellowish in color, was frequently found in the cretaceous lignite beds of northern New Mexico, filling the fissures of the lignite, and even interstratified in thin layers with the same. More of this substance was seen in the vicinity of Nacimiento than in any other locality. The strata of lignite, slate and clay, in the numerous sandstone mesas of this region, are plainly to be seen in passing by. The behavior of this resin with reagents and the analysis made proves this to be a new compound, heretofore undescribed.

On treating the resin with alcohol, the principal portion is readily dissolved, while a small part remains insoluble. The hot alcoholic extract of the resin deposits, on cooling, a few yellow flocculi. After the separation of the solution from these flocculi, there remains, after evaporation, a yellowish resin, which is very brittle and becomes strongly electric on friction. This resin melts at 309° Fah. At a higher temperature it emits an aromatic odor, burns with a smoky flame, and leaves a voluminous coal behind.

It is soluble in ether, less so in bisulphide of carbon. It dissolves readily in concentrated sulphuric acid, producing a dark brown solution. From this solution water precipitates it. It forms a compound with potassa in aqueous solution, and is precipitated by acids unchanged. Strong nitric acid readily oxidizes it, with the evolution of nitrous fumes.

0.106 grm. gave 0.284 carbonic acid and 0.076 water.
0.101 grm. gave 0.270 carbonic acid and 0.071 water.

The data give the formula C₅H₆O.

	Theory.	Experiment.	
		I.	II.
Carbon,	73.11	73.07	72.87
Hydrogen,	7.31	7.95	7.88
Oxygen,	19.58		

The true molecule of the resin is probably 5-6 times larger than the above formula expresses. Many fossil resins have been investigated; but none identical with the above, so far as known, has been described.

The retinic acid of Johnson, which he obtained by extracting the retinasphalt of Bovey with alcohol, is the only combination that bears a resemblance to the substance under discussion. This has the formula C₄₀H₄₅O₆, is slightly soluble in alcohol, readily so in ether, and melts at 248° Fah.

I have taken the liberty of naming this new mineral after Lieutenant George M. Wheeler, Corps of Engineers, U. S. Army, the honored and energetic leader of the expedition to which I am attached.—O. Loew.—*American Journal of Science and Arts.*

GILDING ON ZINC.—C. D. Braun dissolves sulphide of gold in sulphide of ammonium, and deposits a layer of gold upon pieces of clean zinc plunged into it, the air being excluded as far as possible.

Acoustics in Public Buildings.

A. W. C. states the inability to hear distinctly in our public buildings is due to the architects, and that those gentlemen should remember that an ounce of prevention is worth more than a ton of cure. "Please advise any of your friends who contemplate building a church, hall, lecture room, or other public building, to observe the following rule, and they will find the principles thereof to be true:

"Let the whole structure be held in entire subserviency to the auditorium, regardless of needless ornamentation, and let the clear inside lines thereof be as follows: Make or take the whole length as one sum in feet, make the whole width one half that sum, and the whole height, to the center of the ceiling, one half of the latter sum."

Interesting Legal Decision.

A St. Louis court, says *The Trade Bureau*, recently made the following decision as to how far an employer is answerable for injuries received by an employee in his service. The court said: While an employer is an insurer of the safety of his employee, as far as the apparatus and machinery are concerned, and for injuries received when the employee is unconscious of the defects in the apparatus, yet if the employee knows of the defects, and continues to work and incur the risk, he must take the consequence of his own negligence. This view is sustained by recent decisions of the Supreme Court, and by the General Term of the Circuit Court. In a case where a laborer was injured by the breaking of a worn out rope, it was decided that he could not recover, as he knew the condition of the rope, and continued to use it at his peril.

A MADEIRA correspondent of *Nature* writes concerning the damage caused to objects of natural history from cedar wood cases. A naturalist in Madeira, to do his collection of the remarkable land shells of the island more honor, had made for them a case of this wood. Unobserved for a month, the shells were found drenched with the turpentine resin exhaling from the wood. Shells covered with a rough epidermis seemed to have attracted the oil less. *Craspedopoma* and the smooth fresh water shells had especially suffered; semi-fossils full of sand had escaped; all others, whether recent or semi-fossil, had suffered to such an extent that the cardboard to which they were attached was in many cases soaked. This occurred, however, only when the affixed shells offered the needful point of attraction and condensation.

DECISIONS OF THE COURTS.

United States Circuit Court.—District of Massachusetts.

PATENT RUBBER DENTAL PLATES.—THE GOODYEAR DENTAL VULCANITE COMPANY et al. vs DANIEL H. SMITH.
[In equity.—Before Shepley, Judge.—Decided May 8, 1874.]

This is the famous patent which covers the manufacture of dental plates of rubber. It has for a long time been habitually resisted by the dental profession, as the holders of the patent impose a high tariff upon practitioners who use it. Nearly all dentists find it necessary to employ the rubber plates, and the patent monopoly is considered burdensome and unjust. It will be seen that the Court again sustains the patent, and this decision will stand, unless reversed on appeal to the Supreme Court of the United States.

The original letters patent of the United States were issued June 7, 1854, to John A. Cummings for improvement in artificial gums and plates. The bill in equity in this case is filed against the defendant, alleging infringement of the letters patent which, upon a surrender of that patent in accordance with law, were reassigned to the Dental Vulcanite Company, the assignees of the title in and to the letters patent, upon the 21st of March, 1865. This reassigned patent, in the opinion of Judge Shepley, is for a new article of manufacture, consisting of a plate of hard rubber or vulcanite with teeth, or teeth and gums, secured thereto in the manner described in the patent. The patent is not for a process or art, but for the new product resulting from the manipulation by the described new process. It is one of those products, as will be seen by examination of the specifications describing the process of manufacture, in which the process is in essence that the described product can only be made by the described process. The patent is not for a dental plate of vulcanite or hard rubber alone; it is not the substitution of the old material, vulcanite, in place of the gold and other materials which have been before used in the same way; it is not, as claimed by defendant, for a dental plate of hard rubber vulcanized in molten in the manner described in the patent; but it is for a set of artificial teeth as a new article of manufacture, consisting of a plate of hard rubber or vulcanite, with teeth, or teeth and gums, secured thereto in the manner described in the patent, by imbedding the teeth and pins in the vulcanizable compound, so that it shall surround the teeth and pins while the compound is in a soft state before it is vulcanized, so that when the compound is vulcanized the teeth are firmly secured by the pins imbedded in the vulcanite, and there is a tight joint between the vulcanite and the teeth. This manufacture is a new and useful manufacture, as made by the process described in the process of making it, considering that process as a whole. The invention is not like that of a machine, but is one in which the process by which it is made is a part of the substance of the thing made, the manufacture, and a characteristic feature of its construction. It is evident from an examination of the very brief and imperfect description of the invention given by Cummings in his caveat filed as early as May 14, 1852, that he fully appreciated the fact that the importance of his invention consisted not merely in the substitution of a material "rigid enough for the purposes of mastication, and pliable enough to yield a little to the mouth," in place of the "hard, unyielding" metals previously used, and not merely in the substitution of a material light and inexpensive in place of the expensive and heavy materials before used for the plate, but also in the additional fact, which he states, that "by this improvement the teeth can be easily baked into the gums, which form one piece with the plate." This statement at that early period sufficiently suggests that he fully appreciated the advantages of the material which he used, and which was capable of being so used in the process as to ensure that cleanliness and purity resulting from the absolutely perfect joint formed between the teeth and the plate, and the consequent absence of any crevices for the retention of food.

Upon a careful review of all the evidence in the record, I have no hesitation in coming to the conclusion that the invention of Dr. Cummings was a new and useful manufacture, that nothing appears in evidence to show that he was not the original and first inventor of the thing claimed by him, that the reassigned patent in suit is a good and valid patent, and that the defendant has infringed the same, as alleged in the bill.

Decree for complainant for injunction and account, as prayed for in the bill.

NEW BOOKS AND PUBLICATIONS.

TABLES FOR QUALITATIVE CHEMICAL ANALYSIS. With an Introductory Chapter on the Course of Analysis. By Professor Heinrich Will, of Giessen, Germany. Edited by Charles F. Himes, Ph. D., Professor of Natural Science, Dickinson College, Carlisle, Pa. Price \$1.50. Philadelphia: Henry Carey Baird, 406 Walnut street.

A concise statement of the characteristic results of all the tests in ordinary use for the purpose of qualitative analysis, which deserves, both on account of its authorship and the reputation of its editor, a place in every scientific library. It will be found useful to students as a manual, as well as for constant reference by experts in the laboratory.

AMERICAN NEWSPAPER DIRECTORY, containing Accurate Lists of all the Newspapers and Periodicals published in the United States and Territories, and in the Dominion of Canada and British Colonies of North America. New York: George P. Rowell & Co., Publishers, 41 Park Row.

The value of this elaborate volume is well known to the whole newspaper press and the advertisers of the country; and the new issue is the most complete manual of the subject yet published. It appears that there are published in the United States 654 daily and 5,626 semi-weekly, tri-weekly, and weekly journals; making, together with 1,577 monthly and

quarterly publications, 7,203 issues open to advertisers. In the British Possessions, there are 46 daily, 848 weekly, etc., and 51 monthly, papers and magazines issued, being a total for the English-speaking portions of North America of 7,784. Most of this large number are separately described in detail; so that advertisers can find, in the pages of the *Directory*, the fullest information as to the circulation, politics, etc., of the various claimants for the title of "the best means of publicity."

THEORY OF ARCHES. By Professor W. Allan, formerly of Washington and Lee University, Lexington, Va. No. 11 of Science Series. Price 50 cents. New York: D. Van Nostrand, 22 Murray and 27 Warren streets.

These handbooks are uniformly excellent and valuable.

THE CONSTRUCTION OF MILL DAMS, comprising also the Building of Race and Reservoir Embankments and Head Gates, the Measurement of Streams, etc. Illustrated. Springfield, Ohio: James Leffel & Co., Authors and Publishers.

This thoroughly practical treatise will be accepted as an authority by all persons using water power or occupied in constructing apparatus for that purpose. The authors have dealt with all the difficult circumstances amid which dams have to be built, and the information, derived from practical experience, has been gathered from all parts of the country, its compilation having taken more than three years. Messrs. Leffel are the manufacturers of the well known Leffel turbine, and are also editors of the *Leffel Mechanical News*, a journal devoted to the flour mill and water power interests.

Inventions Patented in England by Americans.
[Compiled from the Commissioners of Patents' Journal.]
From May 8 to May 21, 1874, inclusive.

- BALE TR.—S. Parilly et al., New Orleans, La.
- BURNING PETROLEUM.—O. Sweeney (of Philadelphia, Pa.), Liverpool, Eng
- BUTTONS, ETC.—R. H. Isbell, New Milford, Conn.
- CENTRIFUGAL MACHINE.—S. S. Hepworth, New York city, et al.
- COOLING DRINKS.—C. L. Ridgway, Boston, Mass.
- DOG COLLAR.—W. T. Mersereau, Orange, N. J.
- ELECTROMAGNETIC ANNUNCIATOR.—L. Finger, Boston, Mass.
- FURNACE.—J. M. Ayer, Chicago, Ill.
- GAME CARDS.—M. H. Cowell, Buffalo, N. Y.
- IRONING MACHINE.—G. W. Cottingham, St. Mary's, Texas.
- MAKING MAGNESIA HYDRATE.—C. H. Phillips, New York city.
- PAPER PULP BOX.—S. Wheeler et al., Albany, N. Y.
- PLANE.—J. F. Baldwin, Boston, Mass.
- PORTABLE FORGE.—D. W. C. Baxter, Philadelphia, Pa.
- ROCK DRILL.—J. B. Waring, New York city.
- ROTARY ENGINE.—A. C. Gallahue, Morrisania, N. Y.
- SEWING AND MACHINE.—F. Curtis, Boston, Mass.
- SEWING MACHINE FEED.—D. M. Smith, Lynn, Mass.
- SHIP, ETC.—J. T. Parlour (of Brooklyn, N. Y.), London, England.
- STEAM AND OTHER ENGINES.—W. Wallace, Brooklyn, N. Y.
- STEAM INJECTOR.—Tube Works Company, Boston, Mass.
- STOPPER FOR DRAWING LIQUIDS.—E. R. Wilbur, New York city.
- SUSPENDING CROCKERY IN KILNS.—B. Jackson, Geddes, N. Y.
- TELEGRAPH SIGNAL.—W. A. Camp (of New York city), London, England.
- TICKET PUNCH.—Cauceling Punch Company, Buffalo, N. Y.
- TORPEDO BOAT.—J. L. Lay, Buffalo, N. Y.
- TOY PISTOL.—C. B. Stephens, Plainfield, Conn., et al.
- WIRE TUBING AND MACHINE.—H. O. Lothrop, Milford, Mass.

Recent American and Foreign Patents.

Improved Car Coupling.

John E. Stevenson, Wilton, Iowa.—A block is pivoted to the upper part of the drawhead, from which pivot its suspended and swings in the cavity. A spring is attached to the pivot of the block, which serves to force the block downward. The pin is supported on the shoulder of the block, and the end of the link strikes the block and allows the pin to drop. The inner surface of the lower part of the drawhead is provided with stops, which receive the end of the link where it is supported by the block when the cars differ in height. The drawhead is so constructed that the coupling pin may be supported when in the upper part by inclining it forward, the pin mortise allowing sufficient play for that purpose, while the end rests on a shoulder.

Improved Cotton Press.

William B. Hollowell, Nashville, Tenn.—This is a powerful hand press, adapted to be constructed and used on plantations without very skilled labor. The essential features of this invention are a lever and windlass for forcing the follower down by a vertically moving follower stem. The operation is accomplished by several movements of the lever, each one forcing it a certain distance, thus dividing the labor and increasing the power, so that the bales may be made as small and dense as by the ordinary power presses.

Improved Press.

John Gramelspacher, Jasper, Indiana.—This invention consists of a brake lever pivoted at the middle in the top of the follower stem, and having a fulcrum on each side of it on a rod working up and down through a guiding and supporting beam. The rod also works through a gripping pawl, which allows it to descend freely, but grips and holds it against rising, so that the fulcrum of one side descends while the other is holding the lever for pressing the follower down. This causes the follower to be forced down quickly by the vibrations of the levers.

Improved Sewing Machine Table.

Michael W. Murphy, Louisville, Ky.—This invention consists in supporting the hinged portion of the table by a section of the adjacent case. It is believed to be cheaper than the ordinary folding enclosing top.

Improved Composition for Cleaning and Polishing Metals.

Rosea Burrill, Lynn, Mass.—This is a composition for cleaning and polishing knives, forks, and all articles of cutlery, as well as all other articles for which it may be adapted, as surgical instruments, arms, and military equipments. It consists of emery, pulverized coal ashes, sawdust, and soap, molded into cakes, which become hard by exposure.

Improved Door Alarm.

Abraham Nevling, Glen Hope, Pa.—This is an improved door alarm, which in addition to striking a bell when the door is opened, as an ordinary or day alarm, maybe set to sound a continuous alarm when the door is opened, and thus serve as a night alarm.

Improved Hay Knife.

Harrison R. Brown, Rochelle, Ill.—This invention is a hay knife having a triangular blade with smooth cutting edges, standing at an angle to the handle, and having a reversible stirrup attached by means of a tube surrounding the handle.

Improved Sash Balance.

William D. Goodnow, Rutland, Vt.—This invention consists in a case let into the top bar of the lower sash, flush with its surface, and provided with a pivoted bar, inclined block, and knob, whereby the cord that enters the weight grooves may be cramped, so as to connect and balance the sashes.

Improved Cattle Poke.

Warren L. Battle, of Geneva, Ga.—This cattle poke consists of a wood or metal bow, fitted and secured close to the head by a face and nose strap around the neck of the animal. The lower ends of the bow are connected together by a couple of pins, from the lower of which hangs a long curved rod of wood, whose upper end rises above and behind the upper pin. This causes the lower end, which is curved forward to some extent, to project still farther forward, so as to catch in the fence when the animal tries to jump. The pivot allows the rod to lie on the ground while the animal feeds, and said rod rises high enough above the ground when the animal holds his head up to clear it, so that he can walk about freely.

Improved Hand Corn Planter.

James Riebe, Cedar Lake, Ind.—A box is divided into two small compartments, and a seed bag is made long so as to come up under the arms of the operator. The lower end of the bag is attached to a short tube, which is secured in the upper part of the inner compartment of the box. From this point the corn passes into a cavity in a sliding bar, which fits into and slides up and down in the outer compartment of the box. A brush acts as a cut-off to prevent any more corn than enough to fill the cavity in said dropping slide from being carried out by said slide in its downward movement. The size of the dropping cavity of the slide is adjusted according to the amount of seed required for a hill by a plate, the upper part of which extends up along the inner side of the slide. The lower part of the plate is bent twice at right angles, so as to pass through the cavity of the slide, and extends down along the outer side of the lower end of the said slide. The plate is secured in place, when adjusted, by a clamping screw. To the dropping slide is pivoted a rod, to which is attached a block of such a size that when the dropping slide is pushed downward the block will push back a spring and allow the corn to drop into the ground.

Improved Lifting Jack.

Charles D. Aylsworth, Alton, N. Y.—In operating with the jack, the lever rests upon the ground, and its long end is lifted. The jack is raised in raising the axle of the wagon, the fulcrum being the floor or surface of the ground. When the lever is turned up, the weight is directly over the lower end of the lever, and the latter, with the jack, is maintained in an upright position. In bringing the lever to this position, its short end and a bar act as the members of a toggle joint, and with constantly increasing power, until the bearing points are in line with each other.

Improved Follower for Brine Barrels.

George Enoch Webber, Hinckley, O.—The object of this invention is to construct, for the purpose of holding meat, fish, vegetables, and other articles under brine, a follower which may be readily and securely adjusted in higher or lower position in the barrel. The invention consists of a follower which is attached to the side of the barrel by slotted arms with spike ends, which arms are guided by suitable pins and carried forward and back by being pivoted with their inside ends to a collar applied to and turned by a central shaft of the follower.

Improved Step Ladder.

Charles F. Barnard, New York city.—The side boards of the step ladder are connected with each other by steps, which are hinged to one side, so that the pivots of the said hinges may be a little below the under surface of the steps. The other ends of the steps are hinged to the other side. The arrangement is such that all the screws that hold the hinges enter across the grain of the wood, and thus take a firmer hold. The legs are pivoted, near their upper ends, to the outer sides of the stiles, and are made of such a length as to hold the ladder in proper position when extended. Their lower ends may be spread apart to brace the ladder when extended. To the legs are pivoted bars, which are made with a bend near said lower ends, and which are slotted longitudinally to receive a screw attached to the sides, the said slots being made so narrow that the heads of the said screws cannot pass through. In the bars, at the upper edge of the forward ends of their slots, is formed a notch to receive the screws, and thus lock the legs in place when extended. To the legs are pivoted braces, which, when the ladder is extended, cross each other, and their lower ends are secured to the legs by pivoted catches, the heads of which pass through slots in the plates, and, when turned one quarter around, securely lock said braces and legs together. These catches are so formed that they may be conveniently turned to fasten and unfasten the braces. To the inner surface of one of the sides, just below one of the steps, is attached a plate, which is bent at right angles, so as to lie along the under side of said step, and its end edge is notched to receive a screw, so that it may be secured by a hand nut. By this construction, the sides and steps of the step ladder will be held rigidly in place when said ladder is extended.

Improved Car Coupling.

John Stevens, New York city, and George J. Cave, Elizabeth, N. J., assignors to George J. Cave.—Two convex grooved jaws receive a link. Said jaws are connected, at the inner end, to a cross bar of a rod which slides forward and back and has a long coiled spring on it to throw the jaws forward, and allow them to be pushed back out of the way of the drawhead of the car to be coupled on. Said rod also has a short strong coiled spring on it to ease the shock on the drawhead when the cars couple. The drawhead is arranged to go back a little when the cars meet. The spring latch for engaging the link by its hook is curved at the front, so that the link will force it up, pass under it, and couple automatically when the cars meet. Over the front end of the latch is a lever, to raise it up for uncoupling. To this lever a spring catch is provided, which is thrown back by the lever when pressed down against it, and springs forward after the lever has passed, and locks it to lock the coupling latch. It leaves the latch unlocked in case it is wanted to allow the cars to uncouple if one is thrown off the track. The jaws are curved outward considerably near the outer ends, to receive the link from either side of the center, as it will be presented when the cars are on a curved track.

Improved Isinglass in the Liquid Form.

Isaac Stanwood, Gloucester, Mass.—In preparing this liquid isinglass the sounds are steeped in the usual way, but the scum, instead of being taken off, is stirred in. The isinglass is then carefully strained through sieves and cloths. The effect of the scum upon the isinglass, when treated in this way, is to make it more limber than when it is skimmed off in the old way. In soaking the sounds, washing soda is added to each barrel of the cold water in which they are soaked, which removes the oil and gives the isinglass a better color and quality. The soda solution, after standing several hours, is poured off and thrown away; the sounds are then steeped in new clear water, after which the liquid is strained, has a small quantity of alcohol added to it, and is poured, while still hot, into tin cans, which are then sealed airtight.

Improved Dumping Car.

John E. Bemis, Chicago, Ill.—This invention consists of a movable platform, which is supported and firmly attached to trucks in such a manner that by turning a longitudinal rod with spiral shoulders the connection of platform and trucks is separated, and sliding cog wheel segments thrown into gear with pinton driven in connection with the truck axles. The motion of the trucks in either direction carries the platform sideways till it tips by the weight of the load thereon for unloading, being carried back over the trucks by moving them in opposite directions, and locked automatically thereon by suitable mechanism, which releases the sliding segments and bolts.

Improved Steam Radiator.

Charles S. Smith, Westfield, Mass., assignor to the Novelty Steam Heating Company, same place.—The radiators are made in sections, each section consisting of two horizontal tubes connected at their ends by two short tubes. Upon the upper end of the outer side of the end tube of each lower section is formed a rabbet, into which fits a lug formed upon the lower end of the outer side of the end tube of each upper section; so that when the said upper section has been screwed down upon a nipple, the free ends of said sections may be secured to each other by a screw passing through the lug of the upper section, and screwing into the tube of the lower section.

Improved Hand Power Circular Saw.

Ole T. Gronner, Baltimore, Md.—This invention consists in combining the parts of a hand power circular saw frame so that the same is rendered readily portable, can be quickly thrown into working condition, and requires but little actuating force.

Improved Mortising Machine.

Harbert K. Forbis, Danville, Ky., assignor to himself and John W. Proctor, same place.—The mortising tool mandrel is fitted in bearings on a bar pivoted on the slide and pivoted near the other end by a slotted hole. The bar is pivoted at the rear on a stud, so as to have an endwise movement, to accommodate the movements at the other end on the slide, which works in a straight way parallel to the edge of the work, and thus causes the tool to cut the mortise the same depth throughout its length. The work table frame is pivoted to the tool frame, and arc-slotted, to be held to the latter at different points by a clamp screw.

Improved Cutting Pliers.

Van Allen Pugsley, New York city.—This invention consists in an improved cutting pliers formed of two parts or handles, having enlargements formed upon them at the bases of their jaws. A circular recess and a slot are made in the enlargement of the one part, and a cylindrical projection and a slot in the enlargement of the other part, and the parts are kept in place upon each other by a guard bar or plate.

Improved Nut Lock.

Loftus Sykes and Joseph Sykes, Philadelphia, Pa.—This invention relates to improved means for preventing the nuts of bolts from turning off by means of jar or concussion, more especially designed for fish plates at rail joints. When the nut is screwed down, the blocks are tightly compressed between the ends of strips of rubber, one end of the blocks being in the V shaped grooves of the nut. The other ends are held by ratchet teeth, which effectually prevent a backward movement of the nut; and a rib on the washer being fast in a groove of the fish plate, the connection is rendered permanent and safe.

Improved Cutter Bar Machine for Harvesters.

William M. and George H. Howe, Lansing, Minn.—This invention consists in providing a harvester wheel with studs and spokes arranged alternately, and entering near opposite edges of the rim, and combining therewith a bar and oppositely inclined plate.

Improved Tobacco Bag Attachment.

James Wright Chambers, Baltimore, Md.—This invention consists in a tobacco bag attachment formed of a metallic case having centrally apertured circular bottom with upper and lower outwardly obliqued flange, to receive an elastic stopper and allow the edge of bag to be conveniently tied.

Improved Hydrant.

Joseph V. Miskelly, Baltimore, Md.—This invention consists in combining the parts of a hydrant, so that not only is all drainage water excluded, but the working elements are easily and conveniently reached for examination or repair.

Improved Cutter Head for Moldings.

William Smith, Baltimore, Md.—This invention relates to molding cutters for bringing piano legs or other woodwork into some definite shape. The invention consists in combining, with the cutter shanks, the faces, and the flanges of stock, a series of plates and bolts for fastening the molding cutters to their stocks.

Improved Lard Lamp.

Charles A. Gabe, Sr., and Charles A. Gabe, Jr., Boonsboro, Md.—This invention relates to that class of lamps which are adapted to the burning of lard, and consists in a new and improved arrangement by means of which the lard is better reduced to a condition to be affected by capillary attraction and the manipulation of the wick facilitated.

Process of Making Calendering Rollers from Paper Pulp.

John O'Neill, West New Brighton, N. Y.—This is a novel method of manufacturing calendering rolls of paper pulp and other stock, whereby the operation of forming the roller is expedited, and a more perfect article is produced. The invention consists in molding the mass around a heated core and simultaneously applying external pressure to the same.

Improved Apparatus for Evaporating and Cooling Liquids.

Archibald Rogers, Hyde Park, N. Y.—This is an improved device for evaporating liquids, so constructed as to bring a very large heated surface in contact with the liquid to be evaporated, and which may be used with equal facility as a cooler for cooling liquids. The steam is introduced through a hollow hub, and passes through large pipes and out of smaller tubes radially attached to them. It thus enters a large drum, whence it escapes through a hollow hub. The water of condensation, as it forms, flows out of the pipes into the drum, where it is received upon a spout, and flows out through the hub. By shutting off the steam and forcing cold air or water through the device, it may be used as a cooler.

Improved Sawing Machine.

Winfield S. Gerrish, Hersey, Mich.—The object of this invention is to furnish a crosscut sawing machine which may be worked by one man with great rapidity, saving time and hands thereby. The invention consists of a crosscut saw which moves in a suitable stirrup, and connects by two curved plates with the rear of a carriage sliding on the supporting frame. A wheel with curved cams or wings is rotated by a hand crank, and acts on elastic rollers of the sliding carriage, producing thereby the rapid reciprocating motion of the sliding carriage and saw.

Improved Measuring Can.

Marshall M. Barney and S. L. Dally, Leon, Iowa.—Liquid is admitted from the cask to one of the chambers of the measure while being discharged from the other, by means of valves so arranged as to open the inlet orifice and close the discharge orifice simultaneously, and vice versa. The vent openings are closed and opened, as required, by a float which rises and falls with the liquid in either chamber.

Improved Machine for Bending Wood.

Barnabas A. Higgins, New Portland, Me.—This is an improved machine for forming the tops of shovel and fork handles, etc., which forms the tops rapidly, and at the same time so gently as not to break or split the handle, and will hold said tops in perfect shape until seasoned. The wood, being previously steamed, is by suitable mechanism forced into forms.

Improved Still for Refining Oils.

Cornelius J. Cronin, Rouseville, Pa.—This is an improved still, in which the process of evaporating and distilling of crude oil or petroleum may be carried on with a considerable saving of fuel, and with greater rapidity, and also the formation of sediment on the bottom of the still be effectually prevented. The cleaning of the still is greatly facilitated, and not required as frequently as in the common stills in use. The still is provided with end chambers extending below the bottom of the still, into which the sediments are carried by a lateral traveling piece with adjustable scrapers moving along a longitudinal guide screw turned by reciprocating gear.

Improved Carriage Curtain Knob.

Aaron T. Rice, Reaville, N. J.—This invention relates to the construction of carriage curtain knobs, and consists in a cross piece and spiral spring, and grooved button on the shank. When it is desired to turn the button, it is forced on the spring by pressure, and over a shoulder, which disengages grooves on the button from a cross piece, and allows it to be turned in either direction. When released, the spring reacts and throws the button outward; and when it is turned for fastening the curtain, the groove engages with a cross, and the button is securely held in position. When it is turned for unfastening, or given a quarter of a revolution, another groove engages with the cross piece, and the button is held in that position.

Improved Washing Machine.

Thomas Stumm, Ada, O.—By suitable construction, by sliding a rubbing board up or down, a presser board will be adjusted to leave more or less space between it and the dasher board, as the quantity of clothes to be washed may require. The clothes rest upon a curved perforated board while being operated upon, which slides back and forth beneath the said clothes as the frame is oscillated upon its shaft. In using the machine, the frame and its attachments are lowered into the suds box, and the clothes are placed in the space between the presser board and the dasher board, and the frame is oscillated, alternately pressing the suds from the clothes and allowing them to be again saturated. When the clothes have been sufficiently washed, the frame and its attachments are raised out of the suds and the water is pressed out of them. Suitable mechanism then furnishes a powerful leverage for pressing the water out of the clothes, and enables it to be done so thoroughly that said clothes may be hung upon the line directly from the machine.

Improved Combined Stock Feed Boiler and Trough.

Henry H. Smith, Smithborough, Ill.—A trough is attached to each side of the boiler. These troughs communicate with the boiler by means of apertures, which are closed by valves. The apertures are long slots at the bottom of the troughs, so arranged that the cooked meal or food, which is in a semi-fluid state, may flow from the boiler into the troughs, and thus come within reach of the stock.

Improved Washing Machine.

James King, Suckasunny, N. J.—The tub of the machine is made with a flat bottom, vertical ends, and rear side and inclined forward side. The dasher, which, when swung forward, raises the clothes from the bottom of the box, is rectangular. A corrugated angle block is fitted into the angle at the bottom of the inclined forward side of the box, and against it the lower horizontal bar of the beater strikes when swung forward. The rubber board is corrugated, and upon the lower parts of the end edges are formed pivots which enter grooves in the box, so that the said rubbing board can be removed and inserted at will. When washing, the corrugated board is turned back, and is secured in place by a button. The corrugated board and the beater, when swung forward, form a triangular space, into which the clothes are compressed by the forward movement of the beater, to fall back into the water, and be again saturated as the beater moves back. The beater may be operated from either side of the machine.

Improved Wrought Iron Grating.

Daniel D. Boyce, New York city.—This is an improved grating to cover openings in the sidewalk in front of stores and other places where they will be walked upon, which shall be so constructed as to prevent people from slipping upon them. The invention consists in an improved wrought iron grating, having the upper edges of its bars roughened by having projections and depressions formed upon them.

Improved Temporary Binder.

Charles W. Baird, Rye, N. Y.—This consists of two flanged strips—one on each side of the papers or pamphlets filed, or on the covers when the papers or pamphlets are bound—and two or more metallic fastening strips or wires. The flanges of these strips turn over on and hold the back. The broad portion of the angle strips rests on the papers when the file is being filed. The papers as well as the strips are perforated to allow the fastenings to pass through, when the ends are bent down to keep the angle strips securely fastened to the papers or covers.

Improved Churn Cover.

David M. Pease, Concord, Ohio.—This churn cover is locked on its seat by means of a set screw or spring, and is provided with a flaring cup to receive a dasher rod. It prevents spattering of the cream.

Improved Skirt Protector.

Richard H. Gardner, Troy, N. Y.—Rubber cloth, leather, or other material is attached so as to inclose the extreme edge of the skirt, and envelopes a cord, which gives a broad bearing surface and adds to the durability of the device. The upper edge of the protector is stitched to the skirt or skirt lining.

Improved Manufacture of Jewelry.

Charles A. Gamwell, Providence, R. I., assignor to American Enamel Company, same place.—This invention consists in producing the body of the jewelry of wood, clay, horn, papier mache, or other cheap plastic material, and preparing the outer surface of the same by sizing, and varnishing in bronze, gold, silver, aniline, or other colors, or producing by the use of emery, fine sand, or other material, and a second sizing, a frosted gold, silver, or other colored surface and finished appearance of the goods. Varied and neat effects are thus obtained by very simple means, especially as, by painting and varnishing the bronzed or other surfaces in aniline and other colors, any desired shade may be produced.

Improved Shirt Bosom.

Jonathan Ramey, Jr., Middletown, Conn., assignor to himself and Middletown Shirt Company, same place.—This is an improved shirt bosom for shirts opening at the back, which is made of one continuous piece, and folded into regular plaits, so as to produce a neat outside appearance, retain its stiffness, and save material thereby. The invention consists of a shirt bosom folded of one piece, with side plaits and re-enforced middle plaits overlapping narrower plaits at the under side, and secured to the shirt by the stitching that defines the middle plait, and at each side of the bosom.

Improved Shingle Machine.

Spencer B. Peugh, Salem, Ind.—The shingle blocks are cut from the log in the size of the shingles required, firmly attached to a block fastening frame, and fed, by the motion of the carriage, to the saw. Each trip of the carriage cuts off a shingle from each block. The inclination of the block is then changed for the next trip by a lever, so that shingles with alternating butt and point ends are cut from the blocks. The regular size of the shingles is then produced from the sections so cut by ripping them to proper width by a smaller saw.

Improved Extension Table Slide.

Wilhelm Valentini, College Point, N. Y.—The rails are provided with small rectangular recesses along the edges, and to the middle of each rail are screwed metallic bands in such a manner that the outer edges of the same project over the recesses, while the space between their inner edges forms a groove. The connection of the rails is produced by one or more L-shaped guide plates, which are screwed to both sides of the rails, running with their projecting parts along the band, and serving also as stops for the rails when extending the table. The guide plates form also the bearings for small rollers, which run, with their conical ends, in similar recesses of plates.

Improved Bush for Mill Spindles.

Edward Deeds, Brighton, Iowa.—The bush is made with recesses, in which are fitted the bearing pieces, the faces of which bear against the spindle and support it. On each of the sides of these pieces is a rib, forming the bearing points of the sides, which come in contact with the sides of the recesses in the bush. A wedge-shaped piece is placed in the back of the recess, in rear of each of the box pieces. Set screws pass through the upper ends of these pieces, by turning which screws the boxes are forced up to the spindle, while at the same time they readily adjust themselves to the spindle. By this arrangement, the boxing is adjusted to the spindle-bearing in an accurate manner, while any looseness caused from friction and wear is easily taken up by turning the set screws.

Improved Machine for Making Metallic Shoe Shanks.

John Hyslop, Jr., Abington, assignor to himself and Otis M. Holbrook Franklin, Mass.—This invention consists of a movable die for cutting the shank of the metal strip and shaping the edges, contrived also in suitable form on the bottom end to form one of the dies for producing the middle bend, and also the reverse bend, and combined with a stationary counter-part die. The cutting, shaping, and bending may thus all be accomplished at one operation, considerably simplifying and cheapening the machine and facilitating the work. There is also a peculiar arrangement of dischargers in connection with the cutting dies for throwing off the waste pieces. The invention also consists of a novel arrangement of dischargers in combination with the stationary bending die, for throwing the completed shanks off from it.

Improved Dish Washer.

John M. McKeesson, Lincoln, Neb.—A lever is connected to a rod by a block having a hole through which the rod passes, and a slotted key wrench and locking spring, the slot of the key wrench being somewhat narrower than the rod, the rod being notched in the sides to allow the key wrench to slide on it, and the spring having a notch which engages the rod when the wrench is slipped on and holds the wrench from slipping off. The key wrench holds the rod so that the lever will lift a basket and let it fall; and it also serves for turning the basket forward and backward, at the same time the lever is worked, to increase the action of the water. When the dishes have been sufficiently washed, the cover and lever are taken off and the key wrench is again applied, and is used for a handle for lifting the basket out of the washing vessel.

Improved Buggy Top.

Johnville F. Fowier, Carrollton, Ohio.—This top folds neatly and easily together, and carries the back into such shape between the stays that it is not exposed to the dust and wear by hanging over the body of the carriage. The invention consists of two bow sections or frames, which are pivoted to the main supporting stays, and folded toward the same. Horizontal jointed stays stiffen them in upright position, while inclined side stays, pivoted to the main stays, and gearing, by mutilated end pintons, with the rear top stays, similarly pivoted thereto, carry the top up or down on raising or lowering the main stays for instant adjustment, and support the same strongly and firmly thereon.