

**The New York Academy of Sciences.**

The chemical section of this society met on March 27, Professor A. R. Leeds in the chair.

Mr. C. Chamberlain exhibited several magnificent specimens of

**AMAZON STONE,**

from the collection of Professor A. E. Foote, of St. Louis, Mo., who is now in Philadelphia preparing to exhibit the minerals of the New World to our foreign guests at the Centennial. Amazon stone is a variety of orthoclase or potassa felspar, of a bright verdigris green color, and quite rare. These specimens were brought by Professor Foote from Pike's Peak, Col. The crystals were remarkably large and perfect, while the color was unusually brilliant. The same gentleman exhibited a crystal of beryl found by himself in 56th street in this city. Also a perfect crystal of datholite,  $\frac{3}{4}$  inch long, from Bergen tunnel, and a specimen of petzite or telluride of silver, brought from Colorado by Professor Foote.

Dr. H. Endemann exhibited and described a new form of apparatus for the

**QUANTITATIVE DETERMINATION OF ACETIC ACID**

in crude acetate of lime. It consisted of four glass flasks connected by glass tubes, the first and last being provided with safety tubes. The first flask is filled with water; the substance to be analysed is placed in the second flask along with a sufficient quantity of phosphoric or sulphuric acid. The third and fourth flasks, which are at some distance from the second, and at a lower level, contain a known volume of a standard soda solution. A gentle heat is applied to No. 2, steam is generated in No. 1 and passed into No. 2, and drives out all the acetic acid, which distills over into No. 3 and is absorbed by the soda. The distillation is complete in 15 minutes, and it is only necessary to triturate the soda solution with the standard acid to ascertain how much of it was neutralized by the acetic acid, and then from this to calculate the quantity of acetic acid.

Dr. Elwyn Waller, E. M., read a paper on

**MILK AND THE LACTOMETER,**

in which were embraced most of the facts contained in the editorial on "Milk and its Adulterations" in our issue of April 1. Dr. Waller has analysed a large number of samples of milk for the Board of Health, and in almost every case found that the only adulterant employed was water. The speaker detailed his experience, and gave figures to prove the unreliability of the method, once strongly advocated by a city chemist, which was to shake the milk with a given volume of caustic potash, add acetic acid, heat, allow to cool, and read off the amount of coagulum formed, from which the quality of the milk is calculated by means of tables prepared for the purpose.

An animated debate took place at the close of the paper, between Drs. Waller, Doremus, Falks and others, during which the hour for adjournment arrived, and further discussion was postponed till Monday evening, April 10, at which time Mr. Mott's paper, on a comparison of the milk of the African and Caucasian races, will also be discussed.

**The Odors of Coal Oil.**

The refinement of crude petroleum is extensively carried on in the vicinity of Hunter's Point, N. Y., a locality situated opposite the center of New York city, directly across the East river. The distance of the oil works is a little over a mile in a direct line from this metropolis. For a long time the inhabitants of the northerly portion of the city have complained of bad health, due, as they allege, to foul odors that swept across the river from these works. A bill is now before the legislature, intended to effect an abatement of the nuisance. Professor Charles F. Chandler, President of the Board of Health, a well known chemist, is of opinion that, at a trifling expense, chemistry can furnish means for the removal of the odor, if persons complained of will only take the trouble of using them. That the men at work in these factories do not mind the smell does not prove that sensitive women, young children, feeble convalescents, and prostrate invalids do not suffer from it. In a civilized community, the principal, as it is the most beneficent, purpose of law is to protect and help those whose struggle for existence is hard. As for the objection that persons living near the factories do not complain of the smell, it is well known that such odors ascend perhaps one hundred feet from their source before they begin to diffuse themselves; and that great condensation or compression of odors often lessens their power—a bag of musk, for example, is not nearly so fragrant as it is in the handkerchief that has lain beside it.

The cause of this nuisance, said Professor Chandler, is simple enough. Crude petroleum is a liquid of dark, greenish brown color, and of an offensive odor, and must be refined before it is suitable for household use. The process of refining is threefold: First, the lighter oils, which are dangerously inflammable, and the heavier oils, which are not inflammable enough, are distilled; secondly, the product remaining after distillation is agitated with sulphuric acid in order to remove a portion of its color, and all its disagreeable odor; thirdly, the oil thus refined is again agitated with an alkali, either caustic soda or ammonia, in order to neutralize all traces of the sulphuric acid. After the second of these processes there is left a dark, tarry sediment called sludge acid, of an exceedingly disagreeable odor, and it is of this odor that the people of a large part of the city are now complaining.

The effects of inhaling it, said Professor Chandler, are not different from those following the inhaling of any odor which produces or tends to produce nausea. The appetite is impaired, and the general tone of the system injured. It can

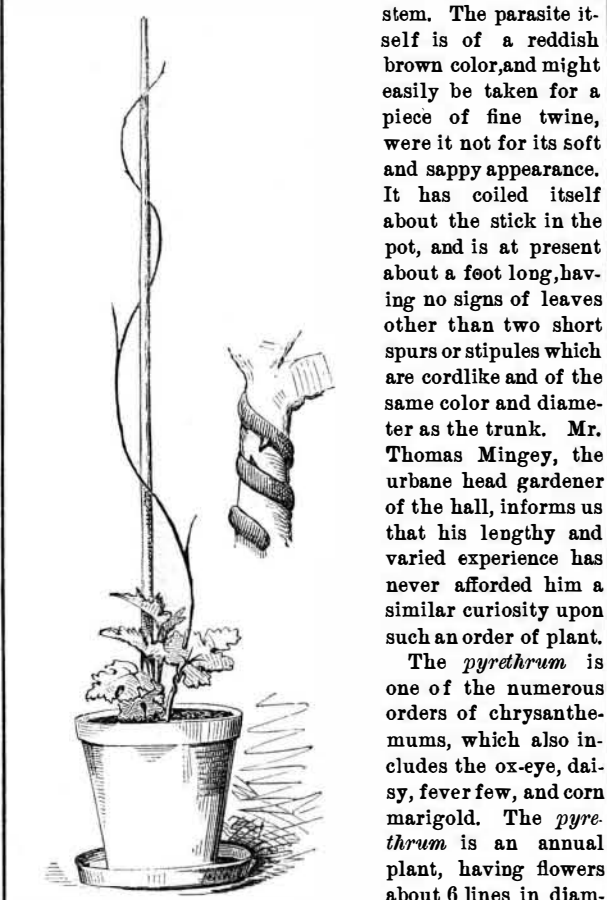
rarely be proved that any particular odor causes any particular disease. But the body becomes degenerated, and the scale is turned against convalescence.

It is not quite certain whether the nuisance originates with the petroleum factory or with the fertilizer factory near it. The sludge acid which is made in the former is sold to the latter, where it is poured over spent bone black and other refuse animal matter in order to produce various sorts of artificial fertilizers. "In any case," said Professor Chandler, "either party can entirely prevent the disagreeable odor, were they so inclined."

[For the Scientific American.]

**THE HORTICULTURAL HALL AT THE CENTENNIAL EXHIBITION.**

The interior of Horticultural Hall greets the artistic eye very pleasantly, and promises to be, so far as architectural beauty is concerned, one of the most attractive parts of the Centennial Exhibition. The four forcing houses, two on the north and two on the south side, are already partially stocked with trees, shrubs, ferns, and plants, the smallest plant among which is most notable for its rarity. It is a parasite which has attached itself to the petiole on a *pyrethrum*. Our engraving represents the plant and parasite, the latter having two coils wound closely around the petiole or stem just below the leaf, sustaining itself by several small spurs with which it has pierced the petiole, and which are plainly visible from the semi-transparent nature of the stem. The parasite itself is of a reddish brown color, and might easily be taken for a piece of fine twine, were it not for its soft and sappy appearance. It has coiled itself about the stick in the pot, and is at present about a foot long, having no signs of leaves other than two short spurs or stipules which are cordlike and of the same color and diameter as the trunk. Mr. Thomas Mingey, the urbane head gardener of the hall, informs us that his lengthy and varied experience has never afforded him a similar curiosity upon such an order of plant.



The *pyrethrum* is one of the numerous orders of chrysanthemums, which also includes the ox-eye, daisy, fever few, and corn marigold. The *pyrethrum* is an annual plant, having flowers about 6 lines in diameter, with a white ray: others of the same class, however, vary from a golden yellow to the various shades of red. It is indigenous to Europe, Asia, and North Africa; it was introduced into England as a medicinal herb, and has become naturalized in some parts of that country. It runs from one to three feet high, with leaves pennately divided into broad-lobed segments.

The parasite is, we think, of the genus *cuscuta*, or, as it is called in England, "dodder," of which there are in that country five native species, which grow upon hops, flax, and nettles. They appropriate the sap of the plants on which they live, and frequently kill them. They belong to the second order of the fourth class.

Botany affords us no more interesting order of plants than the parasites. In tropical climates, they grow in great profusion, and attain large proportions; in cold climates, the classes are few and the sizes diminutive. Among the most remarkable is the genus *epidendron* (in the 20th class, *gynandria*, of Linnæus) one species of which, called *flos aeris*, or flower of the air, is found in abundance in the East Indies beyond the river Ganges, and it grows and even blossoms in the air, when hung up, without attaching itself to any solid body. The perfume of the flowers is so delightful that the inhabitants suspend it from the ceilings of their rooms, where it will vegetate for years.

Mirbel, the French botanist, says that in North America there are parasitical trees which grow on other trees; the long roots of the *clusia rosea* (rose colored balsam), a parasite of this kind, descend from the summit of the trees upon which they grow to the ground, and then sometimes become engrafted into each other, and are then covered with the same bark, so as to form an immense case in which the trunk of the stranger tree, supporting the *clusia* in the air, is enclosed.

Among the other plants and trees already in Horticultural Hall is a fine specimen of *monstera deliciosa*, bearing a fruit similar in flavor to the pineapple. Nearly all other trees of its class bear poisonous fruit. A large mango tree is bearing fruit, which is a somewhat rare occurrence in a hot-house. A South American mahogany tree is noticeable for having an unusually clean stem. There is a very fine specimen of the camphor tree in one of the forcing houses on the south side of the hall. Joseph Lovering, of Philadel-

phia, exhibits a collection of orange and lemon trees, so full of fine fruit that the boughs bend from its weight. The lemon trees have ripe and green fruit in profusion, and of a size rarely seen upon them. The trees bearing them have also new blooms, side by side with the fruit. The gardener says that he never saw such fine specimens, even at Hampton Court in England.

Two excellent specimens of the *cybotium*, from the Sandwich Islands, are noteworthy, both for their size and healthy appearance. The mat-like bark contains a profusion of pockets filled with the delicate golden colored and silky fiber for which this tree is famous. One of the hot-houses on the north side of the hall is pervaded with the delicious perfume exhaled by four specimens of the *malurina odorata*, whose small, yellow, buttercup-like flowers gracefully hang their heads as if at their orisons.

Among the trees and plants most notable on account of their size are a cocoa tree, a cinchona or Peruvian bark tree, a camphor tree, an *araucaria Braziliensis*, a Japanese *mespilus japonica* (bearing an edible fruit), and a Dicksonia or tree fern.

JOSHUA ROSE.

THE government of Newfoundland has a characteristic emblem upon its postal stamps, a hungry-looking fish swimming in the sea, its mouth open, eyes expanded, anxiously searching for prey.

**Recent American and Foreign Patents.****NEW CHEMICAL AND MISCELLANEOUS INVENTIONS.****IMPROVED ROWLOCK.**

Francesco Roseti, New York city.—This consists in combining a ball with the oar shaft, so that a ball and socket joint can be employed in the rowlocks. It also consists of a contrivance of the socket to turn the oar around to the line of the gunwale of the boat and to lock it in that position; also, to lock the oar in the socket, so as to hold it while not in use.

**IMPROVED SKATE SHARPENER.**

William H. Fisher, Selin's Grove, Pa., assignor of one half his right to Charles K. Fisher, same place.—This is a device for sharpening skate runners, which may be readily carried in the pocket. A fine crosscut steel file is placed in the body of the implement, and secured rigidly in position. The file is made flat on one side for sharpening flat runners, and convex on the other for sharpening runners with a groove or gutter. A second crosscut file of coarser grain serves to remove the rough edge, while the finer grained file gives the fine edge or finish to the runner. There is a suitable guide flange and adjustable gage.

**IMPROVED BOOT JACK.**

George W. Phenix, New Brunswick, N. J.—This boot jack is so constructed that it may readily be folded into a small compass, and conveniently carried in the pocket or in a traveling bag. It is formed of two hinged and one pivoted parts, constructed so, as when folded, as to give no additional thickness.

**IMPROVED MACHINE FOR TRIMMING CIGARETTES.**

Andrew Montes, New York city.—This invention consists of a spurred endless belt that feeds the cigarettes from a hopper to the revolving trimming knives at the sides of the belt, and then delivers them over an inclined end plane to a suitable receptacle.

**IMPROVED SPRINKLING ATTACHMENT TO BAKING MACHINES.**

Alexander Rannie, Palmyra, N. Y.—This consists of a nozzle, arranged over the way on which the pans pass into the oven, for moistening the cakes with fine spray as they pass along, the said nozzle being constructed with very fine perforations in the lower end.

**IMPROVED CONNECTING POSTS FOR ELECTRICAL APPARATUS.**

Jerome Kidder, New York city.—This consists of a sliding collar and a spring on the post under or over the conductor to be used instead of the ordinary binding screw for binding the conductor. The spring presses the collar against the conductor. This binder has the advantage of being operated quicker than the screw, and it cannot be detached and lost, as there is a nut on the top of the post which prevents it from coming off.

**IMPROVED BOTTLE STOPPER.**

Adolph Luthy, New York city.—This stopper is easily opened and closed, and is retained when in open position in such manner that it does not interfere with the pouring out of the contents of the bottle. It is applied by an eye to an extension of the wire neck band, and closed by a yoke that slides in a curved slot of the stopper cap piece. The yoke is centrally indented or bent, to carry the stopper in position.

**IMPROVED TOY PISTOL.**

Samuel D. Goodale and Dexter C. Goodale, Du Quoin, Ill.—This invention consists of a toy gun with a slotted barrel, that guides a piece of card paper propelled by the action of a spring hammer. Said hammer is attached to a slot at the breech of the barrel, retained by a catch, and released by a trigger. A practical application of the device may be made for the purpose of throwing messages on board of passing steamships, also to the delivery of important dispatches on board of passing railroad trains.

**IMPROVED LAMP-LIGHTING DEVICE.**

Frank L. Camm, Brooklyn, N. Y.—This invention consists of a tube fitted in the burner, so as to direct the match up to the wick when inserted from the bottom of the burner. It is provided at the upper end with teeth, across which the tip of the match is forced, so as to be fired by them.

**REMEDY FOR DISEASES OF THE THROAT AND LUNGS.**

Ellen Rohrer, Monmouth, Oregon.—This remedy is composed of tinctures of consumption root and mountain balm, prepared with sirup. It is claimed to be efficacious in the maladies mentioned.

**IMPROVED STILT.**

F. Beaumont, Jr., Dallas, Texas.—This invention relates to a means by which a boy's stilt may be quickly, easily, and securely fastened at different elevations on the standard, and consists in connecting with the standard a stirrup and sliding sleeve, that together form a lever by which a rapid and convenient adjustment is made.

**IMPROVED INSTRUMENT FOR FILLING TEETH.**

Carl D. Ludwig, Houston, Texas.—After inserting a cement filling in a tooth, this inventor proposes to harden it by the use of instruments made of talc, which are heated over an alcohol flame, and are applied to the filling as soon as it is set. This process is repeated and the filling is rubbed gently until it shows a dull polish on the surface, which polish is brightened by using a polisher of agate or polished steel. The filling is said to be complete and as hard as marble when the patient leaves the operator.

## IMPROVED COAT HANGER.

Simon Scheuer, New York city.—This consists of a hanger of leather or similar material, provided with end mountings and wire bent eyes, to be attached to the coat or other article. These form a neater and a more durable device than the coat hangers generally in use, and may have the name of the tailor printed in gold letters thereon.

## IMPROVED MACHINE FOR COATING PILLS.

William N. Clark, New York city.—This machine consists of a revolving cylinder with rows of radial needles so arranged in connection with a movable pill tray that the pills are picked up by the needles by the joint revolving motion of the cylinder and the forward motion of the tray. The pills are then dipped into the coating solution, and, after being dried, stripped from the needles by sliding clearer pieces.

## IMPROVED GAS LIGHTER FOR STREET LAMPS.

James Chapman, St. John, New Brunswick, Canada.—This is a novel arrangement of a lantern on the end of a rod, so that when it is lowered over a gas burner the flame of the lamp may ignite the gas.

## IMPROVED METHOD OF PACKING MATCHES.

Joseph Kayser, New York city.—This invention consists of a strip of paper that is crimped or corrugated by suitable machinery, and provided at the upper edge with any suitable friction covering. The matches are placed into the corrugations and secured tightly by a flat closing strip, glued over the intermediate face parts of the crimped strip.

## IMPROVED PERPETUAL COUNTING HOUSE CALENDAR.

Frederick W. Luttgen, New York city.—This calendar consists of transferable monthly tablets, printed without the name of any month, and arranged in a case, having within it twelve or more compartments. There is a perforated plate with twelve or more openings for tablets, and having the name of a month formed upon the face of the plate, one adjoining each opening.

## IMPROVED HEEL SUPPORTER FOR RUBBER SHOES.

Martin Bock, Conyngham, Pa.—This is a little wire supporter for holding up the heel of an india rubber shoe, to prevent it from slipping down at the heel of the boot. Said wire is contrived to stick into the heel of the boot by points, from which it extends up along the heel of the boot a little higher than the shoe, and has a stud near the top, projecting through a hole in the shoe and holding it up.

## IMPROVED IRON-HEATING ATTACHMENT FOR STOVES.

Edwin G. Adams, Cohoes, N. Y.—This attachment for heating soldering and other irons is designed especially for oil-burning stoves, but may be used with advantage with stoves burning other fuel. A casing, made with a flaring lower part and a contracted upper part, is provided with a heating chamber made close except at its forward end, and with a smoke pipe to adapt it to be placed over the fire box of the stove. A cap is provided, made larger than the pipe, having its lower end connected with the pipe by a ring plate, and having its closed upper end perforated without the sides of the said pipe. By this construction, should a blast of air strike the cap, it will cushion itself upon the air in the ring chamber of the said cap, and will not blow into the pipe to impede the draft, but will rather increase the draft. The draft being admitted at the front of the stove, the flame will incline to the rearward, so that its greatest heat will be around the inner part of the chamber, where the point of the soldering iron is.

## IMPROVED BAILE TIE.

John M. Brandenburg, Fort Motte, S. C.—This invention consists in the baile tie provided with three slots, and with the lugs upon the ends of its side edges next the single slot. It is hardly possible to convey a clear idea of the mode of attachment, though the same is very simple and easily secured. The loop of the free end of the band is first passed into a cross slot of the tie, and then, after other adjustments, a novel brace, designed by the same inventor, tightens the whole.

## IMPROVED FARE REGISTER.

Joseph G. Moody and Edwin E. Glaskin, New York city, and Theodore Miner, Brooklyn, assignors of one half their right to Eugene F. Daly, New York city.—This invention consists of one or more sliding and revolving face buttons and dials, according to the different classes of fares to be collected. Said revolving dials are thrown by suitable cog wheel mechanism and pawl detents into gear with cog wheels mounted loose on a central bearing, operated by a swinging lever and spring pawl, in such a manner that the turning of the dials and the clicking of a bell are produced at the same time, and the gear connection of the dial cog wheels then interrupted. The device is incapable of work when the required depression of the sliding button and the swinging of the lever is not jointly attended to. The revolutions of the dials are registered by a differential gear connected therewith.

## NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

## IMPROVED TUG BUCKLE.

William J. Darr and John W. Bowman, Leon, Iowa, assignors to themselves and Alonzo Robbins, same place.—This invention consists of a buckle made with tongues, in line with each other and with the length of the buckle, and in the bail made with lugs upon the rear parts of its side bars to rest against the side bars of the buckle frame. This construction is claimed to enable the tug to bear without splitting as many times the strain that would split it with a single tongue buckle as there are tongues used.

## IMPROVED WAGON END GATES.

Samuel F. Adair and Evan K. Adair, Oasie, Iowa.—This consists of strap cleats for guiding the end gate, in connection with swinging cam hooks pivoted to the same, that enter staples of the cleats, and lock the gate securely thereby.

## IMPROVED SASH BALANCE.

Wilson E. Facer, Toronto, Ontario, Canada.—This invention relates to certain improvements in that class of sash balances, in which the tension of a coiled band spring operates through a toothed wheel and a rack bar on the window sash to balance the same; and it consists in the peculiar construction and arrangement of devices for locking the wheel, and thus holding the window sash in any desired position against the uneven tension of the spring, or the attempts of burglars.

## IMPROVED SHUTTER WORKER.

Abraham W. Seaver, 2d, Northborough, Mass.—This consists of blind hangings, which are so constructed as to enable the blind to be opened and closed to any desired extent, and locked in place when adjusted, without its being necessary to raise the sash.

## IMPROVED FASTENER FOR THE MEETING RAILS FOR SASHES.

John J. Dinnan, New Haven, Conn.—This invention consists of a pivoted locking plate, that is thrown across the sashes by a swinging and spring-acted bar that bears, by a cam, on a recess of the locking plate. The latter has a shoulder and guard to embrace and retain the handle securely in closed position.

## IMPROVED SPRING FASTENER FOR CARRIAGES.

Franklin Miller, Indianola, Ill.—This consists of a seat block and a cap plate of peculiar construction, for mounting and securing the springs of carriages on the axles. The new features are mainly bolt hole projections of both plates, which are extended beyond the faces, to prevent lateral movement of the springs.

## IMPROVED WHIFFLETREE.

Peter P. Kunz, Florence, Iowa.—This is a new device for connecting the tugs with the ends of the whiffletree. One arm of a V-shaped rod passes through a lug, and is retracted by a special spring. The other arm passes through two lugs and the eye of the tug, said tug being between the lugs. The spring can be compressed enough to enable the arm to be drawn out far enough to allow the eye to be inserted and withdrawn.

## IMPROVED COMBINED REIN HOLDER AND WHIP SOCKET.

John W. Weddel, Mount Carroll, Md.—In this device, the whip is held in a socket having one side movable, and acted on by a spring which causes it to clamp the reins. By this construction, a whip socket and rein holder are combined in one device.

## NEW AGRICULTURAL INVENTIONS.

## IMPROVED SPIKE FOR THRASHING MACHINES.

Christopher Wilde, Canton, O.—This invention consists in spikes for thrashing machines, formed of wrought iron, faced with steel upon their forward edges and heads, in order to resist wear.

## IMPROVED MIDDINGS PURIFIER.

Albert Greenleaf, Kingston, Wis.—This is a new arrangement of passages, sieves, and fans for purifying middlings by the compound actions of gravity, suction, and blast currents of air and sieves.

## IMPROVED PLOW.

Eugene R. Knight, Omaha, Neb.—This consists in the application of a colter, bent horizontally to the width of furrow, and turned up at the outer end to a mold board made of rods. This is claimed to afford a lighter draft.

## IMPROVED GANG PLOW.

Enoch C. Eaton, Pinckneyville, Ill.—This is an improvement on a device patented to same inventor. By loosening a single screw a frame may be slid laterally upon the axle to move the plows toward or from the land, or may be slid forward or back to adjust the plows longitudinally.

## NEW HOUSEHOLD ARTICLES.

## IMPROVED BOOT JACK.

John Green, Greenville, Mich.—This boot jack is composed of a base piece and standard jointed together, so that they will fold together very compactly. When being used, the standard is placed and held vertically, and the base lies inclined, one end resting on the floor, the other being supported by the standard. The base is cut out to receive the boot, and also provided with a sliding toe piece or rest, which adapts it to various sizes of boots. The toe piece readily adjusts itself to the foot.

## IMPROVED STEAM WASH BOILER.

James T. Brown, Saranac, Mich., assignor to himself and Marion Crane, same place.—The object of this is to improve the construction of the apparatus known as the Munger boiler. The water and steam pass up through pipes, are discharged upon the clothes, pass through the clothes, and pass back to the heater through another pipe, washing the clothes very quickly.

## IMPROVED FOOT REST.

Edward B. Lovett, Amherst, Mass.—This is a pivoted foot rest, supported by standards, and having a newspaper pocket and slipper-holding loops attached to its opposite faces. The base frame has a boot jack formed in it.

## IMPROVED APPARATUS FOR ADJUSTING MOSQUITO BARS.

Isaac A. Abbot, New Orleans, La.—This consists of a small pulley near each foot and corner of the tester, on the under side, through which run cords connecting with a traveling rod, running through other pulleys at the head of the bed, and terminating in a knot, which, being pulled down, will draw the traveling rod to the foot of the bed, and thus extend the mosquito netting, which is attached to the rod. Other cords terminate in a hanging knot for pulling the traveling rod up to the head of the bed, for gathering up the netting thereat when it is not required to be spread.

## IMPROVED CLOTHES DRYER.

John J. Reed, Lyons, Iowa.—The arms in this device are adjusted for use by raising them into a horizontal position, drawing them forward, passing the heads of screws through the enlarged outer ends of slots in a horizontal semicircular supporting head, and pushing them in to bring the bodies of said screws into the narrow parts of said slots. When not required for use, by reversing this operation the arms may be lowered into a vertical position against the wall and allowed to hang.

## IMPROVED QUILTING FRAME.

John H. Sheets, Hartford, Minn.—This apparatus consists of parallel rollers for holding and adjusting the quilt, together with their holding ratchets, mounted on a couple of bars, one at each end of the rolls. Said bars are suspended by cords from a traveler on an overhead rail, so that the quilt can be shifted along a sewing machine, or by a hand sewer, readily for stitching.

## READING AND WRITING DESK ATTACHMENT FOR CHAIRS.

Cevdra B. Sheldon, No. 7 State Street, New York city.—This well known inventor still finds a profitable business in working his patented inventions, of which he has a great number. His last invention is a handy and light desk attachment, to be fastened to a chair and used either for reading or writing. It consists in the peculiar form of clamping device for attachment to the chair, and in the combination therewith of a vertical standard passing through a socket in the clamping device, and carrying at its upper end a radial swinging arm or bracket which supports the desk. The desk is adjustable in inclination upon a segmental plate with binding screw, adjustable upon a slide either to or from the occupant, adjustable in horizontal planes upon the swinging arm, and adjustable vertically upon its standard. The device is readily portable, easily attached and removed, and, by reason of its varied adjustments, is applicable to beds, tables, and lounges as well as to chairs.

## NEW MECHANICAL AND ENGINEERING INVENTIONS.

## IMPROVED BAILE BAND TIGHTENER.

John L. Sheppard, Charleston, S. C.—This invention relates to improved means or devices for applying bands or hoops to bales of cotton, hay, straw, etc., the same consisting mainly of a bent or angular lever, pivoted to the top portion of the baling press, and provided with a pivoted arm carrying tongs or clamps, for holding one end of the band and drawing it firmly around the bale into position for the other or free end (which is held meanwhile by any suitable fastening) to be attached to the buckle in the usual manner.

## IMPROVED FINISHING CLOTH.

Charles E. Scrimgeour, Almonte, Canada, assignor to Rosamond Woolen Company, same place.—This invention has for its object to improve and facilitate the finishing of cloth in the process of steaming its face; and it consists in means for subjecting the face of the cloth to the action of vapor generated from water, to remove the gloss and creases resulting from the ordinary pressing process. The apparatus consists of the combination of a water tank having induction steam pipe and outlet vapor pipe connected with a perforated cylinder and boxing or other distributing device for applying the vapor.

## IMPROVED CRACKER MACHINE.

Daniel M. Holmes, New York city, assignor to J. Cutler Fuller, Orange, N. J.—This is a very ingenious machine for molding in dough the fancy crackers, jumbles, and similar articles which hitherto have been produced entirely by hand. It includes eight entirely novel devices. The dough box is made with an extension and offset, to receive the cutters and enable them to operate at right angles with the plungers. Its discharge openings are at right angles with the line of motion of the plungers that force out the dough, and it is divided by partitions into two or more compartments, each provided with a discharge opening and with a plunger. The cutters work within the dough box, and are embedded in the dough when at work. They are made with beveled edges and cutter plates having openings with beveled edges. Two endless carriers, working in line with each other, and with a space or opening between them beneath the discharge opening of the dough box, convey the material for the cutters.

## IMPROVED SAFETY VALVE APPARATUS.

Leonidas Moore, Louisville, Ky.—This is an improved safety valve arrangement for rag and straw boilers in paper mills, and for other purposes; and it consists of two valves arranged in such a manner that the pressure on the rag boiler is kept up at a uniform degree from the battery of boilers, and that the back pressure of the rag boiler assists in closing the main valve when the required pressure is established.

## IMPROVED DREDGING BUCKET.

Theodor Smith, Jersey City, N. J.—In order to improve the construction of dredging buckets, so as to make them stronger, less liable to break or get out of order, and simpler in construction, this inventor makes the arms formed of the jaws, the bearings, and the slotted upper parts, which constitute a portion of the tripping arrangement of the bucket, in one solid piece.

## IMPROVED CAR COUPLING.

Charles H. Briggs, Black Hawk, Col. Ter.—This consists of a combined link and hook-headed coupler, in combination with a catch in the drawbar behind the hole for a coupling pin, which may be used with cars only adapted for the ordinary link and pin connection. The catch is contrived to work vertically in opening and closing, so that it will fall and couple self-actingly, and can be uncoupled from the top of the car or from the side.

## IMPROVED SANDING ROLLER.

George A. Crocker, Stockton, Me.—This inventor arranges a pair of rollers inside of the roller on which the sand paper is fastened, to hold the paper on tight and smooth by receiving the ends between them through a slit in the roll. The inner rollers are extended out through one end of the large roller, so as to be operated by hand and are geared together so as to be turned alike.

## IMPROVED LEVER POWER.

Edward Fales, Edina, Mo.—This invention presents a novel construction of lever power which is especially adapted to the pulling up of stumps, but generally applicable also for other uses for which a lever power may be employed. It consists mainly in a long lever having a draft attachment at one end, and at the other two pivoted clutch arms or grippers. Between these two grippers is a foot or bearing plate, upon which this end of the lever rests, and also an attachment for a chain, which is to pass around an immovable object which holds the lever. The two grippers are held together by a spring, and are adapted, as the lever is worked back and forth, to alternately seize a chain attached to the stump and gradually pull it to one side.

## IMPROVED PLANE FOR MAKING EXCELSIOR.

Albion K. Hall, Box 1025, Jackson, Mich.—This is an improved power plane for making what is known as "excelsior," a thin shaving of wood, used for filling beds and for other upholstery purposes. The invention consists of a bit, with parallel rectangular grooves at the upper side, combined with a stock having corresponding grooves in its under side. The bit produces a two-fold cutting of the shavings, one set at the outer edges of the raised ribs, and the other at the bottom of the grooves, so that two distinct and separate shavings are formed for each groove of the plane. The inventor is desirous of disposing of State, county, and shop rights.

## IMPROVED SHAFT COUPLING.

Herman Albrecht, Philadelphia, Pa.—This shaft coupling locks the shaft securely, and has the advantage of coupling shafts of different diameters with equal facility as shafts of the same diameter. A connecting sleeve has a central partition that divides the sleeve into two sections. To each section the end of a shaft is coupled, by means of eccentric wedges, a main key with top and bottom tongues, and a longitudinal key-binding bolt. The sleeve has circumferential flanges to protect the nuts of the bolt ends. As each shaft forms an independent coupling with the sleeve, shafts of different diameter may be coupled to the sections of the sleeve, the jaws and key merely varying in size.

## IMPROVED OIL PRESS MAT.

Joseph L. Perkins and George O. Baker, Selma, Ala.—This consists of an oil press mat made of wood or metal plates, and covered with leather. The plates impart to the mat the main strength, and admit thereby of a higher degree of pressure than the hair mats while lasting longer and being more effective than the same.

## IMPROVED BOBBIN WINDER FOR SEWING MACHINE.

Charles L. Noe, Bergen Point, N. J.—This consists in hinging the guide and spring held presser roll of a bobbin winder to facilitate the putting in and taking out of the bobbin.

## IMPROVED FLOOD GATE.

Robert H. C. Rhea, Waverly (Uniontown P. O.), Ky.—This flood gate is formed of sections, hinged to each other in such a way that the lower part of each section may overlap the upper part of each lower section upon the upstream side. By this construction, as the water rises, the lowest section will float upon it; and as the water continues to rise, the following section in consecutive order will float. Any drift that may be on the water will strike against the smooth surface of one or the other of said sections, glanced down, and pass beneath it, so that there can be no obstruction of the water and no consequent damming and back flow.

## IMPROVED VIBRATING PROPELLER.

Louis Gugler, Milwaukee, Wis.—This consists of a series of vertically hinged paddles or wings that are mounted to a reciprocating frame, sliding in horizontal guides of the vessel. The position of the paddles for forward or backward motion is produced by a lever-operated rack bar, engaging pinions of the bucket standards. The inventor considers the device well suited for canal boat use.