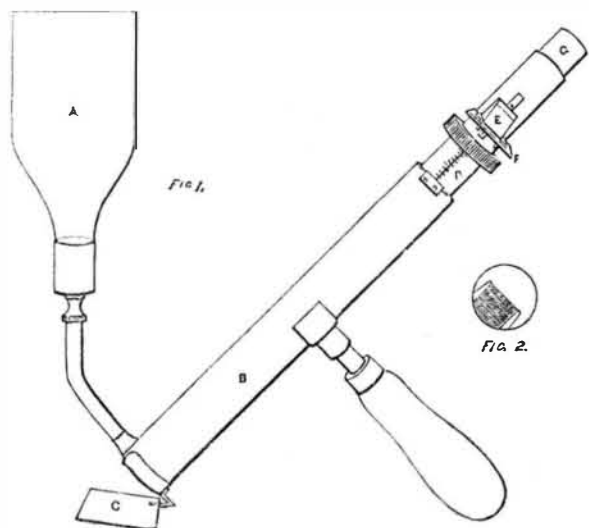


TESTING THE COLOR OF WATER.

Dr. Bowditch has recently devised an apparatus for testing the depth of color of different specimens of water, which is described in a report upon the purity of the different rivers around Boston, etc. (City Document No. 142).

The instrument consists of two tubes, B and D, sliding, watertight, one within the other, the lower end of each tube being closed with a disk of plate glass. Into the large tube, B, just above the plate glass disk, is inserted a piece of small tubing, which terminates in a funnel-shaped receiver, A. Water poured into this receiver will, therefore, pass into the space between the two glass disks, entirely filling the outer tube when the inner tube is withdrawn, and again returning to the receiver when the inner tube is passed down, so that



the glass disks come in contact with each other. Through an opening, near the upper end of the smaller tube, is inserted one end of a rhombic prism, E, in which total internal reflection takes place twice. This prism extends halfway across the inner tube, so that an eye, looking through the eyepiece, sees the field of vision nearly half filled by the surface of the prism (see Fig. 2).

The eyepiece, G, contains a single lens, which is focussed upon the upper surface of the prism. The position and angles of the prism are such that a ray of light, outside of and parallel to the tube, B, is reflected first directly into the tube, D, and then parallel to its axis, thus emerging from the prism and entering the eyepiece alongside of the rays of light which have passed through the two plate glass disks. I will thus be seen that the conditions for comparing the color and intensity of these two sources of light are as favorable as possible.

A piece of white card, C, fastened at the lower end of the larger tube, throws a uniform white light through both tubes, and also along the outside of the instrument into the prism.

In using the instrument, a piece of brownish yellow glass is placed in front of the prism, and the water whose color is to be determined is poured into the receiver.

The inner tube is then withdrawn until the column of water between the two glass disks is sufficiently long to give to the light passing through it a color equal to that imparted by the colored glass to the light passing through the prism. The length of this column of water, which will, of course, vary inversely with the depth of the color, can be determined by means of the scale on the inner tube. By this means the relative intensity of color of various specimens of water may be determined with considerable accuracy. Dr. Bowditch thinks that this instrument might also be of service in connection with chemical color tests.

Gems from the Keely Motor.

"An ordinary steamship can be run so fast with it that it would be split in two."

"With these three agents alone (air, water, and machine), unaided by any and every compound, heat, electricity, or galvanic action, I have produced, in an inappreciable time, by a simple manipulation of the machine, a vaporic substance, at one expulsion, of a volume of ten gallons, having an elastic energy of ten thousand pounds to the square inch."

"It is a vapor of so fine an order that it will penetrate metal. It is lighter than hydrogen and more powerful than steam or any explosives known."

"I found this vapor capable of exerting power infinitely."

"I once drove an engine 800 revolutions a minute, of forty horse power, with less than a thimbleful of water, and kept it running fifteen days, with the same water."

"I produced a pressure of about 28,000 lbs. to the square inch in a shell of a gallon and a half capacity and three and a half inches thick."

"I experimented with a gun. The target was a 4 inch plank placed against a steel plate. My vapor threw the ball with such tremendous force that it went through plank and steel, tearing the bullet in shreds."

"I propose, in about six months, to run a train of thirty cars from Philadelphia to New York, at the rate of a mile a minute, with one small engine, and I will draw the power all out of as much water as you can hold in the palm of your hand. Why, people have no idea of the power in water. A bucket of water has enough of this vapor to produce a power sufficient to move the world out of its course."—John W. Keely, in *Inter-Ocean*.

"You treat the alleged invention of Mr. Keely," says Charles B. Collier, "contemptuously, and speak of him and his confederates as juggling tricksters whose chief purpose appears to be the wriggling of money out of silly people."

"I have given to the development of this invention my almost undivided time, having meanwhile to beg the indulgence of clients for whom I have charge of important causes; my declared policy having been to attest by my actions the confidence I have professed in the genuineness and value of Mr. Keely's inventions, resting content to wait that moderate degree of fame and fortune which shall probably be mine, if the correctness of my judgment shall be vindicated in the future."

HOW THE MONEY WAS OBTAINED.

"The initial step was the procurement of the requisite amount of money."

"I visited your city, called together some of your best known and influential citizens, among whom was Charles H. Haswell, Esq., who himself had visited Mr. Keely's place, seen his receiver charged with this enormous vaporic pressure, and had reported upon it."

"As a result of my interview, the gentlemen present subscribed for \$10,000 of the stock. They paid me \$3,000. I returned to Philadelphia and gave this to Mr. Keely."

"Mr. Keely was obligated, before any further money was to be called for, to explain the principles of his invention. This he did, giving to me (in the presence of ten other gentlemen) an exhibition on the night of the 10th of November, 1874, the result of which I reduced to writing. This report you have evidently seen."

"Mr. Keely," says the report, "proceeded to make an 'expulsion,' that is to say, to develop a force or pressure from the multiplier sufficient to exert a pressure of 1,430.36 lbs. This he did by blowing from his lungs, for, say, thirty seconds, into the nozzle upon the multiplier. He then shut the cock and turned on the water from the hydrant. The operation was completed in about two minutes after the attachment to the hydrant was made, by simultaneously opening two cocks upon tubes connected with the first and second drums, when the lever and weight of the force register were raised. The operation of the engines now took place as follows:

"A short tube, carrying upon its end a reaction wheel or 'Barker's mill,' having two arms of about two and a half inches long each, was screwed upon the reservoir, and, at 9:03 P. M., was put into rotation at a very high velocity, by the manipulation of two cocks. At 9:05 P. M., the reaction wheel was removed, and connections applied to a small beam engine, which was rotated at 400 revolutions. At 9:08 P. M. the reaction wheel was again rotated until 9:09 P. M." The machinery was then stopped, and the gaseous fluid allowed to escape against a candle flame and blow it out. At 9:15, the engine was run again for a few turns. "At 9:17 P. M., the reaction wheel was run again, and at 9:20, the experiments being concluded, the multiplier was taken apart and inspected by those present. There was no heat perceptible in any part of the apparatus."

"After I had written the report," continues Mr. Collier, "I submitted it to Messrs. Rutherford, Boekel, and Bell. They gave it their unqualified endorsement."

J. Snowden Bell says: "I now publicly and emphatically reiterate and reaffirm my endorsement of said report."

W. H. Rutherford says: "This report being submitted to me, I carefully examined it, and gave to it, and to the conclusions therein stated, my unqualified endorsement, and I now re-affirm the same."

"With this report," continues Mr. Collier, "I proceeded again to New York, and submitted it to the parties with whom I had contracted. They paid me the balance (\$7,000) of the \$10,000 subscribed."

"Under and by virtue of the several contracts, the parties were entitled to an exhibition of this power. This has been given to them, and was witnessed by about 30 gentlemen. As the result of such exhibition, the parties have paid an aggregate of one hundred thousand dollars."

Charles H. Haswell, civil engineer of this city, says.

"I have witnessed the development, by Mr. Keely, of a cold vapor, void of pungency or of temperature in excess of the surrounding atmosphere, having an expansive energy of fully 7,800 lbs. per square inch, as tested by my measurements and computations thereon."

"I have been present when Mr. Keely has applied a like vapor to an Ashcroft gage, and the index pointed to a pressure of 10,000 lbs. per square inch."

"I have satisfied myself fully and conclusively that the instrument of Mr. Keely was operated wholly independent of any external attachment, other than that of a chain suspension and a flexible connection with a water service pipe."

"I have seen a double cylinder engine, 3 by 3 inches, operated by a like vapor from a reservoir, through a conducting pipe eight feet in length, and having a bore of but one tenth of an inch diameter, although it was resisted by a friction load equal to 2,250 lbs. per square inch, and which engine I individually operated for a period of 15 minutes without any visible reduction in its speed, or indication of the exhaustion of the intensity of the vapor in the reservoir from which the supply was drawn."

[Capacity of the above reservoir not stated by Mr. Haswell, but fixed by Mr. Collier at 3½ gallons.]

H. C. Sergeant says: "One of the remarkable things about the Keely motor is that it (the new vapor) cannot be transmitted at a lower pressure than 1,000 lbs. (per square inch). It can be used, of course, at a lower pressure, after it is put in action. It can be regulated like steam, but its transmission at less than 1,000 lbs. pressure causes its condensation."

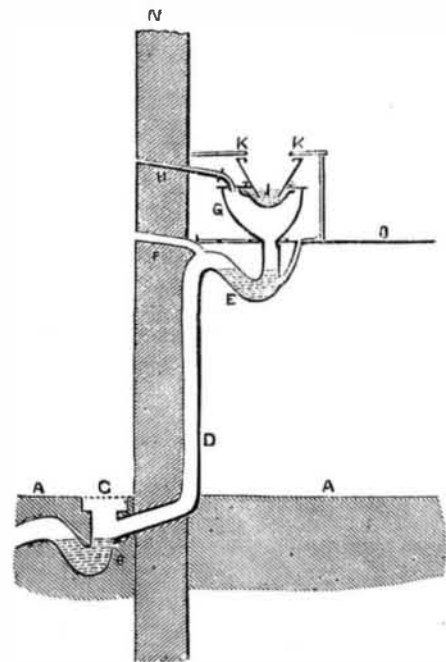
The capital stock of the Keely Motor Company is \$1,000,000. Among the New York gentlemen, believers in Keely, largely interested in the stock, and who are at pre-

sent resident directors of the concern, are J. W. Shuckers, Charles Lamson, Frank G. Green.

"An ordinary steamship can be run so fast with it that it would be split in two."

HOW TO PUT UP A WATER CLOSET.

Our engraving represents sectional views of the water closet in the upper floor of a two story house. A A is the level of the surface of the ground at the back court and of the kitchen floor. B is a 6 inch vitrified fire clay siphon trap,



with an open iron grating, C, at its top, which grating may be hinged. D is a 4 inch soil pipe from the water closet; it is here shown coming down inside the wall; in other cases it may be carried down the outside. One advantage of such pipes being carried down the inside is that they are more likely to be protected from frost. F is an ½ inch or 2 inch lead pipe for ventilating the soil pipe. In this case it is carried through the wall, in other cases it may be carried up through the roof. G is the water closet trunk, made of iron, it being a pan water closet, which is here shown. H is a ½ inch lead pipe carried through the wall and put in to ventilate the trunk, or that space between the water in the pan, I, or basin, J, and the water in the siphon trap, E. This ½ inch ventilating pipe, H, is a very important one, and its use ought to be the rule in place of the exception, as is at present the case. It works as follows: When the handle of the water closet is lifted, then any foul air lying in the trunk, in place of coming out into the apartment, is sent outside with a rush through this pipe, H; besides, being open to the air, it tends to prevent the accumulation of such foul air in the trunk.

In order to keep the outer orifices of the pipes, F and H, always open, it is a good plan to solder on one or two pieces of copper wire across them. J is the water closet basin, and the two small circles shown, underneath K K, are the india rubber pipes. L is a 3 inch zinc ventilating pipe carried up through the roof to ventilate the space or inclosure in which the water closet is situated. M is the gas bracket right below it, helping, when lighted, to cause an upward current. The empty space at N is supposed to be the water closet window. O is the surface of the floor of the upper flat. No gas can accumulate in the soil pipe, for the pressure of the atmosphere on the surface of the open grating, C, tends to send a current of fresh air through the soil pipe and out at the ventilating pipe, F.—W. P. Buchan.

Recent American and Foreign Patents.

Improved Fire Escape.

Franklin P. Berney, San Quentin, Cal., assignor to Lee B. Matthews, of same place.—A box is built upon the roof of the building, and so placed that its front door may open at the wall of the said building. The box is also provided with doors at its inner side. Within the box is a reel on which a rope or wire ladder is wound. The ladder is made of such a length that its lower end may reach to the ground, where it may be secured to hooks attached to the pavement. When the doors are swung open, an arm pushes a ball from a pin, so that the ball may fall into the street and carry down with it the end of the cord or chain, by which the ladder may be drawn from the reel. The doors are swung open when unfastened by springs. The doors are fastened, when closed, by a sliding catch bolt. The bolt is operated by a rod or chain, which passes down along the wall of the building through a guard pipe attached to said wall.

Improved Running Gear.

Henry Backer, Union Hill, N. J.—By this invention the connection between the head block and the forward axle is made firm and secure without the use of a fifth wheel. The end parts of the axle between the ends of a strengthening bar and the axle arms are strengthened by bars, placed upon them, and secured by suitable fastenings.

Improved Blacksmith's Forging Hammer.

Andrew J. Judson, Hillville, assignor of three fourths his right to Jacob Truly, Catfish, Pa.—This consists of a sledge hammer for blacksmith's use, contrived with a foot treadle for forcing it down and a spring for raising it. It will strike quite light blows, or slower heavy ones, at the will of the operator. The helve of the hammer is pivoted in a yoke of a vertical standard, which is free to turn, and has a lever for the purpose of swinging the hammer laterally along the anvil, whereby the blacksmith may cause the hammer to strike on any part of the anvil at will, and as the work requires. The springs for raising the hammer are also contrived to turn with the helve, so as not to interfere with its turning, and the helve is extensible to lengthen and shorten its range.

Improved Clamp for Grinding Watch Crystals.

Arthur C. Norton, Monona, Iowa.—This invention consists of a pair of rubber-faced clamping disks, arranged in a pair of jointed clamping jaws, having a clamping screw for fastening them to receive and hold between them a watch crystal, and revolve with it. The edge of a crystal is presented to the face of a grindstone, so as to be ground suitably for fitting in the rim of a watch case.

Improved Planing Attachment for Metal-Turning Lathes.

Axel Hoffman, New York city.—The bed plate of the attachment is made to slide on the ways of the lathe. There is an adjustable clamp, by means of which the attachment is applied to the lathe, and a lever, by means of which the slide and tool of the attachment is put in motion. The fulcrum pin passes through a slotted arm made fast in the clamp. The feed screw works in the slide of the tool holder. A spring is attached to the base which bears against the shank end of the tool, which, when the tool leaves the piece which it is cutting, the spring throws back into position for another cut. The feed of the attachment is given by means of another spring, which is attached to the bed.

Improved Combined Baby Tender and Crib.

Mrs. Arlette Baird, Riverhead, N. Y.—This invention consists of a frame work in the nature of a crib, supported detachably on corner posts, and provided with a bottom carpet, applied to the lower part of the frame, and with a stretching part attached at suitable height above the carpet, to be alternately used as a tender or crib. A canvas sheet is stretched to the upper end of the lower connecting boards, and transforms the tender into a crib, the mattress and bedding being placed thereon.

Improved Lifting Jack.

John B. Fayette and Lorenzo Meeker, Oswego, N. Y.—In using the jack, the free end of a lever is raised, and a step is adjusted to fit under the object to be raised. The jack is then placed beneath the object to be raised, and the free end of the lever is drawn down, which raises the object. When the free end of the lever has been lowered so far as to carry the pivot in the end of the said lever past the straight line connecting the fulcrum of the lever and the pivot in the end of a lifting bar, the said lever strikes a stop attached to the brace bar, and the jack is locked, holding the object raised.

Improved Furniture Casters.

Cecilia B. Sheldon, New York city.—The object of the first of these two inventions is to contrive a stamped spindle socket, so as to bear the weight of the load on the top of the spindle of the bottom of the socket, which, as ordinarily arranged, it is incapable of, because the metal is so soft, to facilitate the stamping, that it will not stand the wear. A bush or washer is secured in the socket, by the spindle end passing through and riveted above it, and a shoulder for the washer or bush is formed in the socket by a contraction of the upper end thereof, the spindle passing through and being riveted above. The second invention consists in the construction of the horn of a single piece of sheet metal with a rolled eye. The horn is much stronger and more durable than when made of cast metal, while its cost is trifling when compared with the cast articles.

Improved Brake for Hay Wagons.

William Harper, Seneca, Ohio.—This improvement in wagon brakes relates to the construction and arrangement of the operating lever, whereby it operates automatically to hold the brake bar away from the wheel, except when applied thereto by manual force.

Improved Ship's Furniture to Prevent Seasickness.

Joseph Wertheim, Frankfort-on-the-Main, Prussia.—This invention consists of a chair with supporting legs, carrying a universal joint, to which the supporting rod of the seat is connected, to retain the level position of the same during the movements of the vessel. The said parts are so constructed and arranged that the legs may be folded for storage.

Improved Machine for Turning Bobbins.

Luther Dean and James M. Butters, Stratford Hollow, N. H.—This invention consists of a revolving cutter head on a hollow mandrel, having a sliding center, in combination with another sliding center, and a sliding table, all being worked automatically, and so arranged that the blanks, being supplied to the table by hand, will be automatically introduced between the centers, and turned, and discharged rapidly and efficiently.

Improved Throttle Valve.

Reinhard Scheidler and John H. McNamar, Newark, Ohio.—This consists of a valve which is controlled by the sawyer by means of a sector lever and rack placed in the steam pipe, either in combination with or separate from a throttle valve.

Improved Sewing Machine.

George S. Darling and Augustus L. Darling, Watertown, N. Y.—This invention consists of improvements in the construction of the Davis vertical feed sewing machine. The thread tube is made by novel arrangements to serve for the pivot pin of the link, as well as for its own legitimate purpose, being firmly screwed in the top of the needle bar. The cam at the lower end of the tumbler is so shaped that, at the same time that it swings to lift the presser, it will work the take-up as it is required to operate, and there leave it at rest, to be afterward returned by the spring, which is arranged in a volute coil around the stud to which it is attached as being a better and more durable arrangement than the angular form in which it has been heretofore arranged in these machines. To take up the edge wear of the cam bar, an adjusting bar alongside of it is introduced, with adjusting screws, by which it can be shifted along against the cam bar from time to time, as may be needed.

Improved Boot and Shoe Last.

Chas. F. Hill, Baltimore, Md.—This invention relates to certain improvements in lasts for boots and shoes, and it consists in attaching, to the metallic plate upon the bottom of the last, points which receive and hold the lasting sole while the upper is being attached to the same. Said points have a sharp knife edge upon the side next the heel, so that, when the shoe is finished and the last is to be withdrawn, the said point cuts a slight gash in the sole and allows the last to be withdrawn.

Heating Stove.

Alexander Bettes, Warrensburg, Mo.—This invention is an improvement in the class of heating stoves which are circular or oval in cross section, provided with return flues on the sides, and have a damper so arranged that the products of combination may be, at will, diverted from a direct course and caused to take the circuitous one. The patentee aims to secure a maximum exterior heating surface with a cheap, compact form of stove, and to insulate the combustion chamber, at will, by means of a dead air space on the sides, bottom, and rear end of the stove.

Improved Furnace for Manufacturing Iron.

George J. and Samuel J. Skinner, Milton, Pa.—This invention consists in reducing iron ore to wrought iron in one continuous operation, consisting first in subjecting the ore in a liquid or molten condition to the deoxygenizing influence of hydrogen and carburized hydrogen gases; and secondly, in smelting the ore by the subsequent action of the same blast admitted with atmospheric air. The invention also includes the apparatus for carrying out the process.

Improved Press.

Edward Van Gosen, Forest, Ohio.—This invention consists of a press for cheese, wine, cider, and the like, in which there is a hand lever connected with the follower, and another lever carrying an eccentric lever for operating the first mentioned lever when the resistance becomes too great for the direct application of hand power.

Improved Feed Water Heater and Filter.

George F. Jasper, Freeburg, Ill.—This invention relates to improvements in the feed water heater and filter for which a patent was granted to the same inventor under date of December 1, 1874. It consists of a water box in the heating tank, from which the water is conveyed to a double filter receptacle, and back by a return pipe to the sediment pan, from which it is fed to the pump.

Improved Bog Boots for Animals.

Wilhelm Jacobs, Charleston, S. C.—This invention consists of a bog boot for horses and mules, to wear on soft boggy ground to prevent miring. The upper is made in two side and one front pieces, and a back stiffener, together with straps for buckling the boot fast on to the foot. Loop straps keep the fastening straps in place. The said side pieces are to open the top to admit the foot. The side pieces meet together behind, and are cut down on the top to fit the fetlock.

Improved Pump.

William H. Conyer, Agnew's Mills, Pa.—This improved pump consists of two cog wheels, running together in a case, to pass the water between them. Leather packing diaphragms are confined against the ends of the wheels, and also leather packings are provided for the faces of the wheels, also held by springs in a manner calculated to afford efficient packings with but little friction.

Improved Picture Exhibitor.

Julius Buechner, St. Paul, Minn.—This invention consists of a picture case with hinged back, having folding side, top, and bottom flaps, that may be closed at the front or back, for inclosing or exhibiting the picture. It is a convenient device for carrying photographs or other pictures in a safe and compact manner, and for exhibiting them at any time by changing the inclosing parts to form a stand or a picture frame.

Improved Paper Bag.

Emil Langgesser, Atlanta, Ga., assignor to Elias May & Co., same place.—This consists in so folding paper as to form a bag from one piece. The bag has a seamless or satchel bottom, and, when filled, will stand erect, and will not be liable to draw apart at its seams.

Improved Nut Lock.

Joseph C. Wright, Monocacy Station, Pa.—This invention consists of a notched block sliding in a washer against the nut, to hold it by the corners or broad side. The block is held against the nut by a spring, which is contrived to release the block readily to free the nut when it is to be screwed on or off. The block is fitted in a notch in the washer for operating in this manner by rabbit joints, which are stamped out cheaply, and the spring is a kind of yoke or bow strained against the outside of the locking block.

Improved Insect-Destroying Composition.

Joseph B. Douglass and Elijah S. Green, Columbia, Mo.—This is an improved compound for protecting trees from boring insects, consisting of sugar of lead, alcohol, spirits of turpentine, aqua ammonia, gum arabic, and camphor.

Improved Car Mover.

Milton Woodworth and Jerome B. Fredericks, Conneaut, Ohio.—This consists in a lever so constructed as to adapt it to be applied to the rim of a car wheel, for rotating the same, and thus moving the car on the track.

Improved Scraper.

Elbridge Dickinson, Marshall, Mo.—This is an improved scraper for grading roads and other purposes, so constructed as to take up the dirt without its being previously plowed or loosened. The scraper plate is slightly concaved, and its ends are turned up to act as cutters. It is strengthened and secured by bars, and has attached a grating upon which the dirt slides when the scraper is full.

Improved Former for Bending Sled Frames.

Jacob W. & Eugene W. Karu, Seneca Falls, N. Y.—This invention relates to a device for forming or bending the iron in the construction of sleds, in which a single piece of metal is so bent as to form both the runner and side frame of the sled. It consists of a base plate upon which are mounted segmental plates having dowel pins and handles, whereby the said plates are detachably fixed to the base. The segmental plates are shaped to suit the open spaces between the frame to be constructed, and, when placed upon the base, leave a space between them which constitutes a pattern around which and between which the iron is bent to the required shape.

Improved Bottle Stopper.

Michael W. Shaw, Galveston, Tex.—This invention is an improvement in the bottle stopper of West E. Hawkins, patented under date of August 4, 1874, so that the same may be used with greater ease, and without being liable to wash off the dust and fly dirt from the outer cap piece by the liquor running over the same. It consists in providing the sliding cap piece with a circumferential flange or rim to prevent the running of the liquor from the perforated extension over the outside of the cap piece.

Improved Ironing Apparatus.

J. Wright Gardner, Troy, N. Y.—This invention relates to machines for ironing collars and other special articles by power with a cylindrical iron, which is made to roll or slide on the goods and then slide back. It consists of the carriage for the roll or other contrivance by which it is connected to the working mechanism made to slide on ways parallel to the table, the object being to dispense with the overhead device heretofore employed for suspending the roller frame.

Improved Lamp Chimney.

Robert Norris, Anna, Ill.—This invention consists in side glasses tapered to slide in vertical grooves and be removable at the top, and in making an air flue between the outer shell and inner flue.

Improved Saw Gage.

O. T. Gronner, Baltimore, Md.—This invention consists in novel means for gaging the division lengths of lumber on the sawing machine, and in securing the table on which the lumber is fed, so as to take up its own wear and prevent the possibility of tilting. For this purpose, the table is provided with beveled ways, the gage made reversible by tenon and groove on each side, and the guide combined with a sliding gage.

Improved Measuring Instrument.

E. C. Roberts, Broadford, Va.—This invention consists of a pivoted plate, two notched arc plates, two direction bars, and two pointers, one of the direction bars turning in a horizontal plane, while one of the arc plates turns in a vertical plane.

Improved Nozzle for Smoke Stacks.

Wm. Stamp, Susquehanna Depot, Pa.—The invention consists in means whereby exhaust steam may be more effectually utilized in augmenting the up draft of a smoke stack.

Improved Eaves Trough.

Robert Tyhurst, Dresden, O.—The invention consists in making the eaves trough for buildings out of burnt clay, the sections being coupled by tongue and groove.

Improved Fire Escape, and Improved Combined Fireman's Ladder and Fire Escape.

David Sanford, Ashton, Ill.—The first invention is a vertical extension ladder, provided with a coiled spring arranged in connection with the windlass of one of the movable sections. The spring winds up when the section descends, and serves to counteract the weight of the moving parts, and assist in raising and lowering them. The movable sections may be swung out against the building, and are provided with a sliding extension. The ladder is in the form of a hollow square. The second invention is an improvement on the above. The ladder is pivoted to the frame of a carriage, and may be raised by a chain connected with a spur wheel. The chain is prevented from slipping off said wheel by suitable devices, no matter in what position the ladder may be placed. The ladder may be adjusted laterally; suitable braces are added for steadying the machine. Finally, the ladder may be turned down and conveniently stowed for transportation.

Improved Smoke Stack.

W. Stamp, Susquehanna Depot, Pa.—The invention relates to the smoke stacks of locomotive engines wherein means are employed to prevent the emission of sparks and cinders; and it consists in utilizing the exhaust steam in augmenting the up draft without materially impairing its force, so as to discharge the sparks and cinders through a spiral conveyer to one side of the outlet of the smoke pipe.

Process of Treating Jute for Paper Pulp.

Edward Conley, Cincinnati, O.—The patentee produces a pure white pulp from jute by a process which depends for its novelty, not upon a new combination of chemical elements, but upon the relative strength of the caustic alkali solution, the degree of pressure while boiling, and certain other conditions. The patentee seems to have discovered the proper relative proportions of chemical agents, degree of pressure, etc., necessary to produce the desired white product, although others have previously subjected jute to a process or treatment analogous in a general way, but without arriving at a like satisfactory result. The process is an economical one.

Improved Exercising Apparatus.

George W. Wood, New York city, assignor to Hetty W. Wood, of same place.—In the ends of a rubber tube are inserted conical blocks, made with rounded outer ends, around which the ends of the tube contract, so that, when the said ends are grasped by the hands, it will be impossible for the said conical plugs or handles to be drawn out. The plugs are perforated longitudinally, and through them, and through the rubber tube, is passed a cord, which has knots formed upon its ends of such a size as to prevent said ends from being drawn through the said handles. The cord is of such a length as to allow the tube to be stretched to any desired extent. With this construction, should the rubber tube break, the cord will prevent the ends of said broken tube from springing around and striking the person using the implement, or those standing near.

Improved Corn Marker.

Miles A. Throckmorton, Andersonville, O.—The side frames may be turned up over the middle frame, for convenience in passing from place to place, and to enable the machine to pass through narrow places. The standards of the plows are slotted longitudinally to receive bolts, by which they are secured to adjustable bars, so that they may be conveniently raised and lowered, to make shallower or deeper marks. To the rear parts of the bars are pivoted wheels to support and carry the machine. The faces of the wheels are made V-shaped, so that, as they follow the marking plows, they may pack the soil in the bottom and sides of the marks, and make said marks distinct, so that they can be easily seen, and permanent, so that they cannot be obliterated by storms that may occur between the marking and planting. Another device makes a small mark parallel with the marks made by the plows and wheels, to serve as a guide to the driver when using the machine, and may be extended and contracted to correspond with the adjustment of the plows and wheels.

Improved Wood Grinder for Paper Pulp.

Anna M. Zimmer, Elkhart, Ind.—The invention consists essentially of a grindstone arranged to run in an oblique plane of about 45° to the horizon, with two grinding faces and two sets of feed boxes and feed presses, both arranged obliquely to the horizon, so that the gravity of the wood will assist in feeding it, and the water for lubricating the stone will apply to both faces better than it will to one if the stone is arranged horizontally. The invention also consists of certain details of the apparatus for working the feed presses, and in the contrivances of the feed boxes and their supports.

Improved Wood Grinder for Paper Pulp.

Joseph O. Gregg, Elkhart, Ind.—The invention consists in the combination, with a double elbow lever fulcrumed on different frameposts, of a single central hollow weight, attached to all the levers to prevent jarring, shaking, or quivering of the lever. The fulcrumed double levers swing only in vertical direction, and prevent play in any other direction, while the central weight causes every piston to grind alike, as the pressure is shifted from one to the other in case the wood in one box is softer and easier cut than in the other.

Improved Blind Slat Adjuster and Improved Shutter Worker.

William M. Lanphere, Waterloo, Iowa.—The first invention consists of tubular shafts arranged on the shaft of the blind opener, to open and close the slats by wheels at the outer end gearing with racks on the blind, which operate the slats by levers and connecting rods. A set of the devices is employed for each section of slats, to work them independently of each other. The second invention consists in the provision of a hinged angle plate, which is carried by a push rod, employed for starting or dislodging the shutter when bound by frost or any slight obstruction, said plate serving to fasten the shutter, when closed, by engaging with its lower edge.

Improved Hopple.

John Shive, Center Hill, Ark.—The invention consists of a hopple formed by one unjointed arc piece with a shoulder and three links, so arranged that all liability to unfasten is removed, while facility of manipulation is still retained.

Improved Grain Drill.

James C. Daman, Elk Point, Dakota Ter.—The machine embodies an improvement in the class of grain drills having a reciprocating or shaking hopper; and the invention relates particularly to an arrangement for simultaneously elevating the seed covers and throwing the seed box or hopper out of action.

Improved Folding and Sliding Ten-Foot Pole.

Stephen W. Blatchly, Dickson City, Pa.—This rod is made of four sections of wood. The two middle sections are hinged together. To keep this hinge rigid when the rod is opened, there is a slide, which is slotted and held in place by two screws. A bar plate receives the slide when the rod is opened. When the rod is closed or folded the slide is pushed back. The outer sections are confined each by bands, and slide up to shoulders, in which condition the rod is readily carried from place to place. The rod is marked off into feet and inches in any convenient manner.

Improved Corn Sheller.

Frelinghuysen H. Hunter, Heltonville, Ind.—The invention relates particularly to a chaff box, which is formed of a sheet metal plate applied beneath the ribs or bars of the sheller.