made a few months since, the objects of which were to increase the economic efficiency of steam boilers, and also to test the effect of circulation of the water in boilers on the generation of steam. My boiler was of about three horse-power and of plain cylinder form, the fire being applied under it in a brick-work furnace in the ordinary manner. The fuel was wood, about three pounds per horse-power per hour being the maximum consumption, and the pressure averaging 60 lbs. per square inch by the steam gage. In order to make the water circulate throughout the boiler, I conceived the idea of introducing an iron plate into the boiler, placed about two inches from the bottom sheet, and slightly depressed toward the rear end, where the products of combustion passed up the chimney; the plate being about three inches shorter than the boiler, that is, there were three inches of space between each end of the plate and the ends of the boiler, so that the water could pass between. The fundamental principle being that the water between the plate and the bottom of the boiler would be heated first, and the water being lighter than the colder water above, would flow along in the direction of the highest temperature—that part just over the grate bars, and where the plate has the highest altitude; thus a revolving current would be formed of which the plate would be the focus.

When this was done the fires were started, and, by means of a man-hole at the top, I was able to note the effect on the water, which had a temperature of 50 degs. As soon as the temperature began to rise, a movement in the water became perceptible, and as the temperature increased, became more and more forcible, forming a current flowing from end to end of the boiler with tremendous rapidity, and boiling furiously. In one minute the entire mass of water had acquired an equal temperature of 200 degs. throughout the boiler. In half a minute more steam began to evolve from the end of the plate over the grate bars (the water, of course, flowing away at right angles to the direction of the steam), and in a solid mass entirely free from bubbles of steam. I now shut down the man-hole and made fast steam; pressure quickly formed; all ebullition ceased, and in five minutes the gage gave 19 lbs. pressure per square inch! By the old method fifteen minutes were required to reach the boiling point. In ten minutes more the pressure was 60 lbs. per square inch, when the safety valve was thrown wide open and the steam, transparent and perfectly dry, rushed forth to a distance of three feet.

By the old way the steam was very wet, and drenched everything around for some distance. So rapidly was steam formed, the swiftly-flowing current constantly sweeping the bubbles of steam from the highly-heated surface of the boiler, that twice the usual quantity of water was evaporated in a given time, while the consumption of fuel—dry pine—came down to one pound per indicated horse-power per hour, by night, and the same rate of economy was obtained in the use of coal, when that fuel was subsequently used.

After having made this highly-satisfactory experiment I concluded to try tubular boilers on the same plan, the plate being placed just above the tubes and slightly inclined upward toward the fire-box end of the boiler, so as to send a constant stream of water through the tubes and maintain equal temperature throughout the boiler. The results obtained were still more satisfactory, steam being formed with astonishing rapidity. Under such circumstances I consider it as conclusive that circulating water in steam boilers is in every manner advantageous, yielding the maximum of economy with the minimum of fuel.

ALBERT J. HASTY.

Waterville, Me.

Small Electric Machine Wanted.

MESSRS. EDITORS:—The Lenoir Gas Engine Company is in want of a cheaper, but equally effective, electric apparatus, than the clumsy Ruhmkorff coil and acid battery now used. If a "thimble battery" will send a spark over the cable, why will it not give our little engines, with 20 feet of wire, a good spark?

I am prepared to contract to-day for one thousand suitable electric machines for the Lenoir Gas Engines. Cannot some of your host of inventors supply them?

We are indebted to the SCIENTIFIC AMERICAN for inquiries for our Engines from every nook and corner in the United States—the result of a very modest little advertisement, carried upon the wings of your industry and enterprise.

JOHN B. MURRAY, President, New York City.

Notes and Queries

O. K. L., of N. H.—Your question is hardly appropriate for our columns, but as you failed to give your name we cannot address you by mail. Naval apprentices are appointed by the Secretary of the Navy. The candidate must be sixteen years old, pass an examination in the ordinary English branches, spend two years in the school at Annapolis, and two as a cadet in the workshop, when, if competent, he can graduate as third assistant engineer.

W. W. and N. G. H., of Texas.—The question propounded is this. "Is there any more power in an engine, the piston of which is twelve inches diameter, having four feet stroke, than in one of the same diameter having but one foot stroke, the steam pressure being the same?" The question is not one of the relative value of long or short levers, but simply one of motion from pressure exerted on the piston. If the pressure on the piston is sixty pounds to the square inch, the six-inch crank would make four revolutions while the twenty-four inch crank made one. The amount of power exerted would be the same. But even if the question was confined to a part of one revolution, thus using the cranks as simple levers, the result would be the same. In one case the short lever would exert its force through a less distance than the long lever would have to travel in performing the same work. The reason for using different lengths of stroke for cylinders of a common diameter is adaptability to the kind of work to be performed

F. D., of Pa.—You say the grate bars of your boiler, twenty feet long, by thirty-six inches diameter with one fourteen-inch flue, are only ten inches from the boiler. The space is too little. Better be fifteen or eighteen inches if you wish to utilize the combustion of your fuel. For such a boiler we think a stack thirty inches diameter is full large. Two gage cocks, if properly placed, are as good as three; but for convenience and economy you should have a water indicator. It will save the time of the engineer, and the continual wear of the gage cocks. The direction the grate bars run, relatively to the boiler, will not effect its efficiency.

M. J. S., of Ill.—Polished iron will retain heat longer than if it be rough. If the iron of your apparatus is not to be subjected to a higher temperature than 250 deg. we suggest that you paint it or varnish it of a light color.

N. C. T., of Ill.—We are not aware of any composition used to coat polished steel, giving it a blue color which will not be removed by use. The blueing of steel is effected by exposing it to a charcoal fire, or to heated plates of iron, until the requisite color is obtained. The heat required is not sufficient to soften hardened steel. A transparent varnish can be applied hot, but will not last for your purpose. One part gum copal, one oil of rosemary, and two or three of alcohol is its composition.

J. O. M., of N. Y.—Refer to our reply to W. L. F. of Ill., in our issue of Oct. 27th. Or, if you prefer a cheap process of bronzing, paint your castings of the shade required and varnish. Before the varnish is quite dry, while "sticky," dust it with a copper or bronze dust and rub it on with a linen pad or a paint brush. Then varnish. Muriate of copper dissolved in water will give a copper coating to articles of cast iron, but they must be preserved with a coat of varnish.

D. M., of Pa.—You will see in this issue that we have published an article, illustrated with a diagram, which meets your ideas on the relative positions of the crank and piston.

EXTENSION NOTICES.

John James Greenough, of New York City, having petitioned for the extension of a patent granted to him the 17th day of January, 1854, for an improvement in machines for pegging boots and shoes, and reissued the 4th day of July, 1854, and again reissued on the 16th day of April, 1859, in six divisions, numbered 698, 699, 700, 701, 702, and 703, on which divisions extension is now prayed for for seven years from the expiration of said patent, which takes place on the 17th day of January, 1868, it is ordered that the said petition be heard on Monday, the 11th day of February, 1867.

George W. Brown, of Ga esburg, Ill., having petitioned for the extension of a patent granted to him the 2d day of February, 1853, for an improvement in seed planters, and reissued Feb. 16th, 1858, and again reissued Sept. 11, 1860, in five divisions, on four of which extension is now prayed for, viz., numbers 1036, 1037, 1038, and 1039, for seven years from the expiration of said patent, which takes place on the 2d day of February, 1867, it is ordered that the said petition be heard on Monday, the 21st day of January next.

Harvey Murch, of Lebanon, N. H., having petitioned for the extension of a patent granted to him the 14th day of June, 1853, for an improvement in mop heads, for seven years from the expiration of said patent, which takes place on the 14th day of June, 1867, it is ordered that the said petition be heard on Monday, the 26th day of May next

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

BOX FOR FORMING METALLIC NUTS.—JOHN TURNER, Richmond, Va.—This invention has for its object to furnish an improved die or box for punching metallic nuts, which can be reduced or enlarged, to adapt it to nuts of different sizes; and by means of which the position of the center may be changed as desired within certain limits.

CORN PLANTER.—R. M. YORKS, Schoolcraft, Mich.—This invention relates to a portable device for planting or dropping corn, and it consists of a novel arrangement of parts, whereby two rows of corn may be dropped simultaneously, and with a greater or less number of grains or kernels in a hill, as may be desired.

COAL-OIL LANTERN.—J. O. HARRIS, Reading, Pa.—The object of this invention is to simplify the construction of the lantern render it more compact, especially as regards weight, and at the same time retain all the advantages of the original lantern.

BOOT JACK.—H. N. DEGRAW, Newburgh, N. Y.—This invention relates to a boot jack of that class which are provided with movable or pivoted jaws, and it consists in a novel and improved manner of applying the jaws to the foot piece and arranging certain parts therewith, whereby the jaws may, by the pressure of one foot on the foot piece, be made to grasp the heel of the boot on the other foot, so that it may be readily withdrawn.

INDICATOR FOR RAILWAY.—E. B. VAN WINKLE, New York City. This invention relates to an indicator for railways and is designed to indicate to the conductors of trains on arriving at a depot, or at any point on the line of the road where the invention is placed, the exact time a preceding train passed said depot or point, so that collisions which not unfrequently occur in consequence of the slow motion or delay of one train on a track and the rapid motion of a succeeding one, will be avoided.

HORSE HOLDER.—WM. B. CHAPMAN, La Salle, Ill.—This invention relates to a horse holder to be attached to the hub of a wheel of any vehicle, for the purpose of securing or making the lines or reins fast to it.

SPIKE-DRAWING MACHINE.—NATHAN ADAMS, Altoona, Pa.—This invention has for its object to improve the construction of the spike-drawing machine patented by the same inventor, September, 1865.

HOLLOW ARBORS.—JOHN BURT, Sturgis, Mich.—This invention consists in so constructing hollow arbors for rounding square sticks that only the knife or bolt which cuts the wood, shall touch the stick.

HORSE HAY FORK.—T. H. ARNOLD, Troy, Pa.—This invention relates to that class of horse hay forks which are provided with hooks or prongs connected with certain mechanism which admits of their being adjusted in line with a bar so that they may be readily thrust into the load or mats of hay to be elevated and then turned outward from the bar so as to catch into the hay and take up a quantity when the device is elevated.

DRILL.—NOTTINGHAM AND DUNCAN, Vinton, Iowa.—This invention relates to a tool or drill, for enlarging the bore of a well, at and about the lower end; for this purpose it is so connected to the lower end of a rod that by rotating which in any proper manner, the tool will be brought to bear against the sides of the well and cutting the same, produce the enlargement desired.

PULLEY SUSPENSION HOOK.—D. B. BAKER, and P. S. MILLER, Rollersville, Ohio.—This invention is designed to furnish an improved means by which the pulley of a horse hay fork may be suspended from a rafter or other support of difficult access, and for similar uses, without the inconvenience and danger of clambering to the desired point of suspension and suspending the pulley by a chain or rope.

SASH FASTENER.—DE LANCE COLE, Marshall, Ill.—This sash fastener and supporter is of such a construction that the sash can be fastened and supported at any desired hight.

GOVERNOR VALVE AND VARIABLE CUT-OFF.—J. L. DICKINSON, Dubuque, Iowa.—This invention relates to a steam engine and consists in certain improvements in governor valves and in the variable cut-off, whereby many of the obstacles which have been met with heretofore are overcome.

WRENCH.—W. EVANS, Forestville, Conn.—This invention consists in the manner employed for locking the movable jaws to the bar of the wrench which has the said movable jaw fitted to slide upon the bar, which latter has its back serrated or toothed.

TAG OR LABEL, G. W. STORER, Portland, Conn.—This invention relates to a tag or label especially intended to be used upon trees, shrubs, vines, and other plants, although it can be employed for other purposes; the invention consists in so forming the tag or label, made either of sheet metal or other suitable flexible material, that it can be secured to and around the tree, or other plant or article, without requiring the use of an additional or extra fastening device, and without the least injury to the article to which it is applied.

BEEHIVE.—MOSES GUTHRIE, Clifton, Iowa.—The nature of this invention consists in so constructing a beehive that the bees may be kept in different apartments or may be allowed to work in one apartment, as may be desired.

COMBINED STOVE AND FURNACE.—H. G. DAYTON, Maysville, Ky.—This improvement consists in the arrangement of a reverberating chamber directly above the fire box, in which the heated air is first received and wherein it serves to impart heat to the air contained in an annular surrounding chamber which is supplied with air at top, and serves in part to heat air in the main radiating chamber, which incloses both the reverberating and the secondary air heating subdivisions.

BAKING PAN.—STEPHEN WEST, Trenton, N. J.—This invention relates to an improved pan for baking fancy crackers, and it consists in forming the bottom of the pan with a series of semicircular corrugations, grooves or channels, to receive and hold the cracker material during the baking operation, thus preserving their round or cylindrical shape.

SORGHUM SKIMMER.—W. B. SEWARD, Bloomington, Ind.—This invention has for its object to furnish an improved skimmer, by the use of which the operator will be able to skim both sides of the pan with equal facility, and it consists of a skimmer open at both ends so as to permit either end to be used to lift or remove the scum.

COUPLING FOR CULTIVATORS.—SILAS M. WHITNEY, Galesburg,

Ill.—This invention consists of an adjustable rectangular frame, two eye bolts, and a connecting bar, in combination with each other and with the plow beam and frame or axletree of the cultivator, for the purpose of connecting two double or single plows to cultivate corn.

CORN PLANTER.—JOHN CONRAD, Centralia, Ill.—This invention relates to an implement for planting corn, and consists of an automatic device for dropping the seed and a novel arrangement of the shoes and parts applied thereto, whereby the shoes may be raised or lowered, to suit the depth required for the corn to be covered, and raised when not required for use.

WHEAT DRILL.—JAMES F. HARCOURT, Moscow, Ind.—This invention relates to a new and improved device for sowing wheat and other grain in drills, and it consists in a novel construction and arrangement of parts, whereby a very simple and efficient implement for the purpose is obtained, one that may be turned within a limited compass, and which will admit of having the seed planted at a greater or less depth, as may be desired.

LOCK.—E. LAWSHE, Atlanta, Ga.—By this invention a lock is produced which is especially applicable for use upon freight cars, although it can be applied to other and various purposes, the object being to combine with the lock a tablet or other suitable means in such a manner that by the locking of the lock such tablet will be so operated by the key used or through the locking mechanism, as to expose such portion of its face to view as is marked to correspond to the destination which the freight car is to have upon which the lock is used, as, for instance, whether its freight or load is "Way" or "Through," or for this or that station along the line of the railroad over which the car may be run.

MEASURE AND FUNNEL.—E. GRATTAN, Williamstown, Mich.—This invention consists in a graduated measure and ventilating funnel; the body of the funnel, which is the measure, is provided with feet on which to rest it when used as a measure, and with a nozzle when it is to be used as a funnel; it is also provided with a valve at the bottom of the nozzle operated by a valve stem rising above the top of the apparatus, the valve stem having a spiral spring applied to it for keeping the valve always closed, and also with pins or graduated marks along its length to indicate the quantity of fluid contained in the body of the device.

VEHICLE.—WILLIAM ASHLEY JONES, Dubuque, Iowa.—This invention has for its object to furnish an improved means by which the brake may be applied to the wheels with exactly the necessary amount of force; by which the wheels may be locked upon an up or down grade; and by which the horses may be disengaged from the wagon whenever necessary.

CLOTHESPIN.—GEO. F. BARDEN, Dover, N. H.—This invention consists in a novel manner of arranging a rubber spring or cushion in connection with the clothespin.

LOADING-ROPE DEVICE.—JOHN GIFFORD, JR., Watertown, N. Y.—This improvement consists of a means of gripping the loading rope and fastening it to the tubular socket which is suspended from the rope which passes to the pulley.

QUARTZ CRUSHER AND PULVERIZER.—C. W. STAFFORD, New York City.—The principal object of this invention is to avoid the danger of clogging which results from the excessive motion imparted to the upper in comparison with the lower part of the reciprocating jaw, and for this purpose the inventor avoids the use of a fixed pivot or fulcrum for the moving jaw, and mounts it upon guides and imparts to it a reciprocating rectilinear motion by means of eccentrics.

AXLE BOX.—CALEB M. OLIVER, Port Carbon, Pa.—In this case the weight of the car instead of devolving upon the lubricating axle box, is sustained directly by the axle; the axle box being thus prevented from wearing away and becoming leaky by use.

CHURN.—WM. M. COOK, Lyons, Iowa.—This improvement consists in the arrangement of the churn upon the pivoted arms which vibrate in vertical planes, a flat spring fastened to the frame and engaging with a block on the bottom of the churn, restoring the latter to its normal position after being vibrated in either direction.

WRENCH.—WM. M. OWEN, Homer, Iowa.—In this wrench the shank of the movable jaw has holes, and the handle has a spring plug, which latter engages with such one of the holes as may secure the desired relative adjustment of the jaws. A lever placed conveniently for the thumb is the means for the withdrawal of the plug for readjustment.

HIDE-FLESHING AND STONING MACHINE.—JESSE S. WHEAT, South Wheeling, West Va.—This invention has for its object to furnish an improved machine for fleshing hides, and which may also be used for stoning glazed paper.

ROLLING PIN, STEAK HACKER, ETC.—A. WILLIAMSON and A. RICHARDSON, Allegheny City, Pa.—This invention consists in the combination of a rolling pin, steak hacker, grater, beetle, and butter print into one instrument.

CURING AND PACKING CHEESE.—WM. B. NICKELSON, Lowville, N. Y.—This invention consists in curing cheese within a wooden hoop, which may be removed at will for inspection and rubbing The advantages are, that the cheese may be turned with greater ease and safety, the cost of cloth bandages is saved, the symmetry of the cheese is better preserved, and the excessive thickening and hardening of the rind on the sides and corners, by exposure to the atmosphere, is prevented, and when the cheese is cured the addition of covers to the top and bottom of the hoop completes the box for transportation to market.

WEATHER BOARDING, SPACING, AND HOLDING CLAMP.—D. M. MOURLAND, Little York, Ill.—This invention relates to an instrument or device for the use of carpenters in putting up horizontal siding or weather boarding on houses, the object of it being to gage and set the spacing of the siding, mark the ends for fitting up against the "finish" or corner plate, and hold up the siding in place while it is fastened.

PIANOFORTE.—G. C. MANNER, New York City.—This invention relates to certain improvements in the metal frame of a pianoforte, and it consists in filling the metal bridge which forms an integral part of the metal frame, with ivory from below, so that the strings bear against said ivory filling, and the disadvantages are avoided which arise if the strings bear against the bare metal. This metal frame is placed entirely in front of the tuning pins, whereby the wrest plank is firmly supported and the tuning pins are prevented from working loose. A slot in the metal frame allows of placing the damper lifters behind the point supporting the string, and the application of French damper levers over the bridge is rendered practicable. A bar extending parallel to the lower strings and under the upper strings serves to strengthen the metal frame.

LANTERN.—LEWIS F. BETTS, New York City.—This invention relates to that class of lanterns designed for being used with a coal-oil lamp, and will admit of the glass globe being detached, whenever required for cleaning purposes, or when broken or cracked, so that a new one may be adjusted in its place.

CULTIVATOR AND STALK CUTTER.—W. W. PHILLER, Port Byron, Ill.—This invention relates to a device for cutting corn-stalks, and cultivating or plowing corn, and marking the ground for planting the same. It consists in a novel construction and arrangement of parts, whereby the desired work may be done expeditiously and in a perfect manner.

BEEHIVE.—T. EISENHART, Doylestown, Pa.—This invention relates to an improved manner of hanging the comb frames in the body of the hive, whereby the frames are rendered perfectly accessible, and any one frame may be removed from the hive without disturbing the others.

FEED APPARATUS FOR THRASHING MACHINE.—GEO. W. CARPENTER, Medina, Mich.—This invention relates to improvements in a grain thrashing machine, and consists in a self-feeding apparatus to be attached to cylinder thrashing machines of ordinary construction, for the purpose of cutting the bands of the bundles and spreading the straw evenly, which is then conveyed and fed regularly to the thrashing cylinder.

WASHING MACHINE.—J. HINDMAN, Olathe, Kansas.—The object of this invention is to construct a machine by which the labor is reduced and the operation of washing clothes is made more perfect.

MANUFACTURE OF SALTPETER.—VINCENT E. KEEGAN, M. D., Roxbury, Mass.—This invention relates to a process for the manufacture of nitrate of potassa or saltpeter, wherein the process is imitated which is employed by nature in producing saltpeter in caves, and which consists in placing potassa under the influence of an abnormal condition of the atmosphere, produced by the absence of all electric power of the sun's rays.

WINDMILL.—DANIEL STRUNK, Janesville, Wis.—This invention consists in an improved mode of constructing windmills for regulating the motive power of the wings or sails, by means of self-acting apparatus connected with them, operated upon by a weight which rises and falls according to the strength of the wind, and opens and shuts the sails, thereby changing the angle at which the current of air passing through deflectors strikes them, and modifying their power of resistance.

ESCAPEMENT FOR TIMEPIECES.—S. W. ROBINSON, Detroit, Mich.—The object of this invention is to impart to the balance impulses which shall be equal to each other in the amount of force, a single impulse being given at each double vibration of the balance. This purpose is effected by a lever acted upon by a spring and applied in combination with the escape wheel, the balance, and two detents, in such a manner that the force required for unlocking the detents is derived entirely from the hair spring of the balance and lever, while the power of the hair spring acting on the lever imparts to the balance the desired impulse at each double vibration of said balance.

CHURN.—J. D. PARROT, Morristown, N. J.—This invention relates to an improvement in that class of churns in which the tub is connected to a pendulum and suspended in such a manner that an oscillating motion can be imparted to it, whereby the churning operation is effected.

INDIA-RUBBER ROLLERS.—JAMES B. FORSYTH, Roxbury, Mass.—This invention relates to a roller made of india-rubber or other vulcanizable material, the outside of which is soft and elastic, and the core or inside semi-elastic, said core being compounded of india-rubber, ground rubber rags, sulphur, oxide of zinc, calcined magnesia, and lampblack, in such a manner that the cost of the roller is reduced, and furthermore a core is obtained which will expand when warm and contract and become firm when cold, and which will give a firm hold to the roller on its shaft.

HORSE HOE.—JOHN GIFFORD, Jr., Watertown, N. Y.—This improvement consists of a pair of wings applied to and extending laterally in the rear of the share, and made adjustable as to depth and breadth of furrow by means of braces, etc., extending from the standard beam and handles to the said wings.

CARRIAGE.—G. H. and E. MORGAN, Edgeware Road, London.—The claims for this invention were published in our last number, and are embraced in two patents obtained through this office. It is an English invention relating to improvements in pleasure carriages for raising and lowering the tops by means of a system of levers, all of which are hid out of sight within the frame and lining of the vehicle, and are operated readily by the driver while remaining in his seat, instead of the old-fashioned method of outside rods and knee-joints, which not only disfigure the carriage but often cause danger to the occupants by requiring the driver to leave his box and abandon control of the horses. Messrs. R. Hoe & Co., Printing-press Builders, No. 31 Gold street, N. Y., are agents for the Patentee.

HAT-BLOCKING MACHINE.—SETH BOYDEN, Newark, N. J.—This invention relates to a machine for the blocking of hats, in which the "hat-cone," so called, is placed upon and over a block that is then of a shape or form corresponding thereto, but is so constructed that it can be changed or made to assume the ordinary form of a hat-block.

POLISHING MACHINE.—JOHN MOORE, Gardiner, Me.—This invention relates to an improved polishing machine for smoothing the faces or flat sides of doors, and consists in the combination of a carriage for supporting a table on which the door is to be laid flat for polishing, with rails and rollers for moving the table longitudinally and transversely under a revolving rubber or polisher, so that every part of the face of a door may be brought under the polisher and be made smooth.

SULKY PLOW.—J. J. REED, Polo, Ill.—The nature of this invention consists in constructing a sulky plow, so as to stride the rows of plants, and operate in such a manner that the driver can, by means of a walking beam pivoted to the rear end of the pole, impart a lateral motion to the plows, and by means of a lever can elevate the plows so as to pass over obstructions or move the machine from one place to another.

SHOE AND OTHER BRUSHES.—F. M. CARNES, New York City.—This invention relates to brushes which are used for applying to articles a substance to be polished, and afterward polishing the substance by rubbing or friction produced by the brush, such as shoe brushes, stove brushes, etc.

CIDER AND WINE MILL.—JOHN H. WILLIAMS, Sandusky, Ohio.—This invention relates to a mill for grinding or crushing fruit for the purpose of expressing the juice therefrom for the manufacture of wine. It consists of two rollers of iron, wood, or other hard material, in connection with a roller of india-rubber or other elastic material, so arranged that the juice will be expressed from the fruit, and the former separated from the crushed fruit or pomace.

SEEDING MACHINE.—HENRY THOMASON, Lafayette, Ind.—This invention relates to a seeding machine, provided with adjustable or expanding bars, to which the seed boxes are attached for the purpose of planting the seed in drills at a greater or less distance apart, as may be desired.

DOUBLE-SHOVEL CULTIVATOR.—A. F. GROVE, James Creek, Pa.—This invention consists in attaching the plow or shovel beams to the main beam of the implement, so that the plow may be moved longitudinally, and the two plows or shovels reversed in position, so that either plow may be placed foremost as occasion may require, and the implement thereby rendered capable of working back or returning in the same furrow with the foremost plow or shovel in both cases nearest the row of plants.

FIRE ALARM.—EUGENE FONTAINE and OSCAR SIMONS, Fort Wayne, Ind.—This invention relates to certain improvements in that class of fire alarms, the operation of which depends upon the expansion of a wire. This wire is stretched over a series of roller studs secured in a board or bed-plate, to which the entire mechanism is attached, and it is strained to such a degree that it retains a plunger which is exposed to the action of a spiral spring in a certain position. If the temperature rises, causing the wire to stretch, the plunger follows the action of the spring, and by pushing against a pair of toggle arms, throws them out of their balance, and allows a spring to act on a rod whereby an alarm is sounded.

REVOLVING HORSE HAY RAKE.—CURTIS SATTERLEE, Paris, Ill.—This invention has for its object to furnish an improved revolving hay rake, so constructed that the rake may be operated from the driver's seat.

MAGIC ALPHABET BLOCKS.—S. L. HILL, Williamsburgh, N. Y.—This invention consists in the use of triangular blocks, which, when properly combined, show on their faces different letters, in such a manner that when the blocks are separated and mixed up considerable skill and patience are required to put the appropriate blocks together, and when the blocks are put together they produce a novel and striking effect.

SPOKE DRIVING MACHINE.—ELI KEITH and DELL BIRD, La. Fontaine, Ind.—This invention consists of a very simple machine, in which the hub is keyed, gaged, and adjusted so that the spokes may be driven in with regularity and with any required dish.

SMOOTHING ATTACHMENT TO COMBS.—THEODORE SCHREIBER, Wheeling, W. Va.—This invention consists in the arrangement of a vertically-sliding spring pad in combination with the teeth of a comb, in such a manner that by the action of the spring pad the hair in combing is pressed down smooth and in good condition, and the use of a hair-brush after the comb can be dispensed with.

RAILROAD CAR AXLE BOX.—F. LEPPEUS, Hartford, Conn.—In axle boxes for railroad cars it is important to protect the contents of the oil chamber from dust, etc., which by this invention is secured.

RIBS FOR UMBRELLAS.—WILHELM HUGO, Celle, Hanover.—This invention consists in a T-shaped rib for umbrellas, each rib being provided with a longitudinal groove or depression on its outer surface, in such a manner that the same, on account of its peculiar shape, combines strength and lightness, and by the longitudinal groove room is obtained for the seam to lodge in, so that the rib does not injure the fabric which constitutes the covering of the umbrella or parasol.

NEEDLE PRESERVER.—G. L. TURNEY, London, England.—This invention relates to a novel mode of arranging needles for sale, the object being to dispose of them in packages of a more convenient construction than heretofore, so that the danger of spilling and loosing the needles will be removed, while at the same time said needles will be more easily accessible than at present, and they can be taken up one at a time for use without disturbing any of the other needles in the same package.

CONSTRUCTION OF BUILDINGS.—ANDREW TANNER, Hoboken, N. J.—This invention relates to a building, the outer frame of which as well as the internal partitions, is made of rough boards placed one on top of the other, in such a manner that recesses are formed on both sides of each wall, which serve to support the plaster, and suitable gutters in these recesses afford an additional hold for the plaster. The boards which compose the walls or partitions are provided with vertical and horizontal air channels, in such a manner that the air is free to circulate through said walls, and the formation of dry rot in the boards is prevented.

SOAP COMPOUND.—J. K. ANDREWS, Antrim, Ohio.—This invention relates to a soap compound which contains carbonate of ammonia, benzine, sal soda, saltpeter, ordinary soap or opodeldock, and fresh potatoes, mixed together in such a manner that a cheap soap is obtained of superior detergent qualities.

SPRING BEDSTEAD.—DANIEL PUNCHES, Plymouth, Mich.—This invention consists in a spring frame, one end of which is attached to the end of the slat, and the other to the end rail of the bedstead at both ends; the spring frame consisting in detail of a quadrilateral frame, around each of whose side strips a spiral spring is coiled, and a sliding frame working with the quadrilateral frame, and operating in such a manner that on depressing the slat of the bedstead the spiral springs will be contracted, and the slats receive the required springing motion.

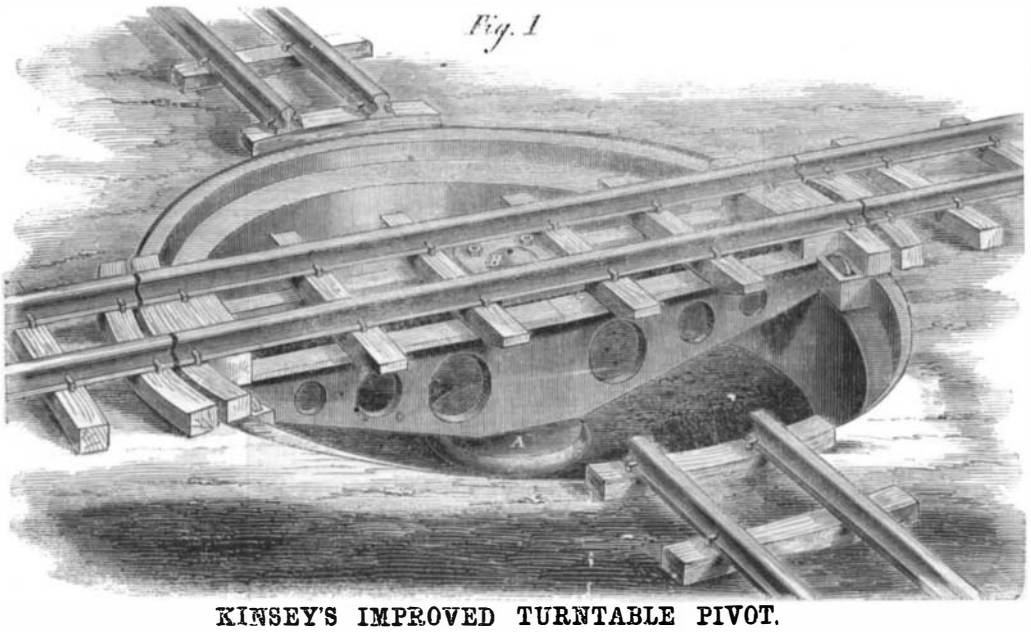
WINDOW SASH.—J. E. HCOD, Springfield, Mass.—This sash requires neither putty nor glazier, and has several important advantages. It is made in two sections, which are secured together on the inside, the glass being held firm by a thin packing of india-rubber between it and the outer half of the sash. It is but a few minutes' work to glaze an entire sash. The sash is handsomer than the old style, varnished or painted wood only being seen on the outside. The glass can readily be taken out for cleaning, or for painting or varnishing the sash, and the convenience of resetting when a pane is broken is obvious. With this sash every man may be his own glazier. It is peculiarly adapted to car windows and show cases, and in all dwelling houses making pretensions to elegance it must soon supersede the old style. Further information may be obtained of the patentee as above.

Improved Turntable Pivot.

The ordinary turntables for railroads, and the swing bridges for streams, usually have a central shaft embraced by a box, which guides the rotation of the frame, while the weight rests mainly on the circumferential trucks. Of course, when weight is on the turntable, as that of a locomotive and tender, it requires the expenditure of much power to move the mass. It is difficult, also, always to keep this central shaft properly lubricated, and to do this it is necessary to descend into the pit.

The improvement herewith illustrated is simply a device for transferring the weight from the circumference to the center, thereby greatly diminishing friction, and to insure perfect lubrication at all times. The pit for a railroad turntable is constructed in the usual manner. In the center is the pedestal, A, the top of which is hollowed to receive a sphere of solid metal. This is the pivot, and upon this rests the weight of the bridge. A cap, B, also hollowed, sits on this ball and is bolted to the bridge. Through its top is an oil hole which may be covered to keep out dirt and dust, and the under side of the cup is channeled to carry the oil to the cup-like receptacle at the top of the column, A. It will be seen that so long as any oil whatever remains in this receptacle, it occupies the proper place for effective lubrication. The weight of the bridge is concentered at the point of least resistance, and the friction is so little that the inventor states one man can turn the heaviest locomotive and tender with perfect ease. It seems to be equally applicable to swing bridges, which in many places are superseding the ordinary drawbridges. It has been in use on the Lehigh Valley Railroad two years with perfect success.

Fig. 1



KINSEY'S IMPROVED TURNTABLE PIVOT.

Patented through the Scientific American Patent Agency, Nov. 28th, 1865, by John I. Kinsey, South Easton, Pa., to whom apply for additional facts.

ERIE BASIN DRY DOCK COMPANY.

It appears from English papers that the misfortunes of the *Great Eastern* have not yet ended. Returning from her cable trip, it was necessary to have her overhauled, but no dock could be found sufficiently large for her accommodation, and at last accounts she was idly lying in the river Mersey.

The length of the dry dock at Birkenhead, where the leviathan essayed to enter, is given as 600 feet, the width and depth corresponding. The dimensions here stated, according to the best information at hand, make this superior to any dock in this country—longer by some 240 feet than the granite dock at the Brooklyn Navy-yard, hitherto considered the largest in the country. The new dry dock lately finished in Brooklyn surpasses the Government dock in its dimensions, but cannot be ranked as a rival of the Albert basin at Birkenhead.

The Erie Dry Dock Company, composed of Boston and New York capitalists, have obtained, by purchase, a large property situated on Elizabeth street, South Brooklyn, having a valuable water frontage on the Erie basin of fourteen hundred feet. The dry dock itself measures at the top 550 feet in length by 120 in width, and 476 by 61 feet at the bottom. The depth of water at the sill is eighteen feet, while inside a depth of twenty-four feet is secured. The gate is a caisson, built with keel and stern, and has all the appearance of a vessel in itself. The beveled edge is designed to fit into corresponding grooves on either side of the dock, and is sunk to close the opening by pumping water into the lower sections by a small engine on board.

The dock is emptied by two of Hibbard's centrifugal pumps driven by a horizontal engine of one hundred horse-power. The escape pipes are two in number, twenty-four inches diameter, each capable of discharging 30,000 gallons of water per minute.

When a ship needs repairing, she is warped into the dock, centered, and stayed with ropes to the shore; the caisson is then placed in position, and the donkey engine set to work. In the course of half an hour, the inclosed space is water-tight, and the water discharged by the large pumps in from two to three hours.

An inconvenience arises from having but one dock; for if several vessels, needing more or less repairs, are docked together, neither one can be discharged till all are finished. On this account the company contemplate the building of another basin, smaller in superficial area, but four feet deeper than the one just completed. The erection of an extensive range of warehouses, and other improvements are being carried forward and will add to the perfection of the enterprise. Connected with the dock-yard, the Erie Basin Iron Works furnish unsurpassed facilities for repairing and renovating disabled vessels and refitting them for active service.

WILLIAMS'S POTATO WASHER.

Devices for lightening the labors of the housewife form no insignificant part of the business of the Patent Office, and although, at times, it may seem as though the contrivance was too simple to be made the subject of a legal claim of proprietorship, yet many of our most valuable discoveries derive their merit from their simplicity.

The annexed engraving illustrates one of those simple improvements which appeal to the tidy housekeeper. Every one who has pared potatoes knows that the fingers acquire a dark tinge from contact with the tubers. This is to prevent in part the handling of the roots. A is an ordinary wooden pail, having a bar across its upper surface, with slats extending to a semi-diameter, which form a grate. In the center of the bar is an upright shaft, extending to the bottom, furnished with arms connected with a sweep that revolves by means of the crank, B.

The potatoes, or other vegetables, are placed in the pail with water enough to cover them, when the handle, B, is turned, which passes them rapidly through the water. The water is then drained off through the grating, and the potatoes can be emptied without the operator wetting his or her hands. No further description or recommendation is necessary for understanding and appreciating this improvement.

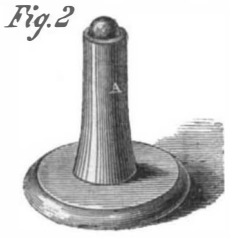
It was patented through the Scientific American Patent Agency by Joshua H. Williams, July 24, 1866. For territorial rights and other information apply as above at East Craftsbury, Vt.

"Time will Tell."

The interest, even enthusiasm, drawn forth by the predicted meteoric display of the past week, is worthy of being placed on record. The excitement was wide spread, and our local exchanges detail the arrangements universally made for witnessing the display.

The observatories had each a full corps of enthusiasts, and anxious star-gazers on watch-towers improvised on house tops and commanding points waited impatiently for the promised shower. In most of our cities the authorities had arranged for the heralding of its beginning by public signals. that all might witness the extraordinary phenomenon.

Fig. 2



That the fall was far from equalling anticipation, it is needless for us to say, but it is equally certain that the display, in the number and brilliancy of the meteors, surpassed those of previous years. Unfortunately for the astronomers, a storm gathering from the south caused some indistinctness toward the close of the second night, and in this section heavy clouds upon the following evening entirely precluded observation.

In a short time we shall know whether other lands have been favored with showers of greater magnitude, and from the data, theories and calculations may show how possible perturbations have caused unexpected variations in time and place.

Progress of the Pacific Railway.

The Central Pacific Railway, now in progress from Sacramento City to the California State line, is in course of rapid completion.

The iron horse now runs on this line a distance of 93 miles, and 10,000 laborers, chiefly Chinese, are now at work. This road has used up for their drills in this rocky path, over 100 tuns of cast steel, and have ordered 150 tuns more for this purpose. They use 250 to 300 kegs of powder per day for blasting rock—these two items show great work. There are now on the road 14 engines of the very first class, and two more of extra power now landing; they have over 200 freight cars and 100 more on the way. This company now own their road—already a good paying institution—and they own the Sacramento Valley Road, and also the adjoining roads, and by their liberal offers to purchasers of land and to shippers of freight, they are winning public favor every day.

The progress of the western divisions, which are intended to connect with the Central Pacific at the State line, are also progressing rapidly, and much sooner than many supposed it possible, the iron bands will stretch from the Atlantic to the Pacific.

A COMPANY has been organized in Milwaukee, Wis., with a capital of $100,000, for the purpose of starting a cotton mill. Several Massachusetts capitalists are interested in the enterprise. A monster woolen factory is also contemplated there.