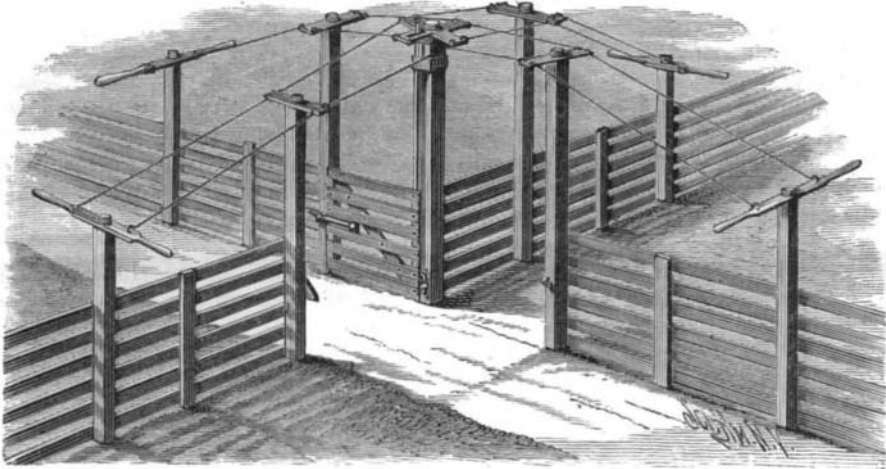


Ozokerite Railroad Ties.

A new and very important application of ozokerite has been recently discovered in Russia; it is now used for making ties in the Transcaspian railroad, which has already passed Oschat and nearly reached Merv. The process of manufacture is very simple and inexpensive. Kyra, the local name for ozokerite, is found there in thin layers of 7 in. thickness. In its primitive state it contains a certain percentage of decayed matter. To remove this the ozokerite is melted in large caldrons,

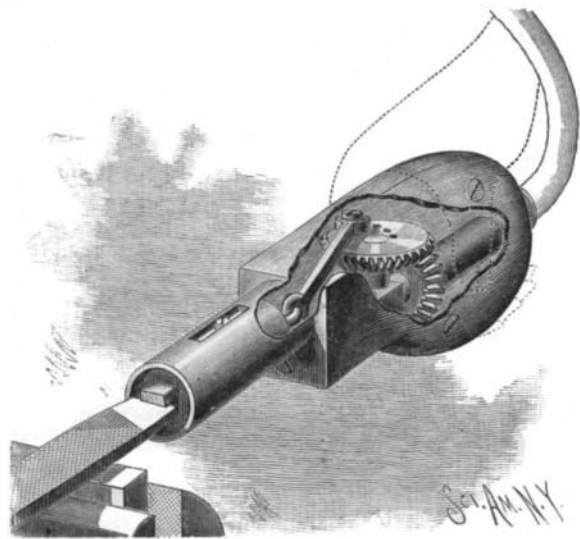


WILSON'S IMPROVED FARM GATE.

the refuse sinks to the bottom, and the pure ozokerite collects at the top. This purified ozokerite, melted and mixed with 75 per cent of limestone and 25 per cent of fine gravel, gives a very good asphalt, which is pressed in boxes shaped like railroad ties. Notwithstanding the high temperature, which reaches 48° R. (140° F.), the ties retain their shape and hardness. These asphalt ties are used all along the road, except at the ends and center of every rail, where as yet wooden ties are employed. In this way about \$800 per mile are economized.—From the Russian Monthly Journal of the Ministry of Roads.

AN IMPROVED RECIPROCATING HAND TOOL.

The file, saw, or other reciprocating tool held by this device is guided by the hand to and over any part of the work, such as in file-finishing castings, in fret-sawing, or similar work. Held in the hollow stock by screws is a bearing, to which two beveled



KRAYER'S IMPROVED RECIPROCATING HAND TOOL.

gears are so journaled as to mesh into each other. To the horizontal gear is fixed a wrist pin, to which is connected one end of a pitman, the other end of which is connected to a plunger fitted into a tube screwed into the forward end of the stock. The plunger is prevented from turning by a pin projecting into a slot in the tube. One end of a shaft is screwed to a collar on the vertically placed gear, while the other end passes through the rear end of the handle, in which it has a bearing, and is connected with a flexible rotating shaft, which allows the stock to be held in any required position for guiding the operating tool, which can be held to the plunger in any approved way. It is evident that when the shaft is turned, the tool held in the plunger will be reciprocated. The wrist pin may be set in any one of a series of holes in the upper gear, so as to lengthen or shorten the stroke. The plunger can be easily removed, to allow the tools to be more conveniently fixed to it.

This invention has been patented by Mr. J. F. Krayer, of 1542 North 11th Street, Philadelphia, Pa.

Street Cleaning and Garbage Removal in Boston.

For the article under this heading which appeared in our paper of April 3, page 216, we were indebted to *Engineering News*, for which due credit should have been given, but inadvertently was omitted.

IMPROVED FARM GATE.

Test by actual use has shown that the gate herewith illustrated is not liable to get out of order from any cause, and can be easily operated from a point at any desired distance away. This latter feature makes it especially useful for a pasture gate in a stock raising country, as the herder can drive the cattle before him to the gate, and open it while herding them, without allowing the cattle to scatter off while going round them to open it; and as the gate latches open as well as closed, there is no danger of the stock being frightened, while passing through, by any movement of the gate caused by the wind. In locations where loaded wagons are to pass under the wires leading to the operating levers—by means of which the gate can be swung in either direction—the gate post is made high, as shown in the engraving. The distance of the operating levers from the post does not in any way affect the ease with which the gate can be operated. The lever of a gate now in use is about one hundred feet from the post, and yet the gate can be easily opened and closed by a child. The construction is so simple that it can be understood at a glance. The number of levers depends upon the situation of the gate.

This invention, which has been patented by Mr. John G. Wilson, of Cameron, Texas, can be applied to a swinging gate already in use.

For Locomotive Engineers.

How to run a headlight casing without glass. A. If the glass is half broken or there is a hole in it, knock the glass entirely out, turn burner one-third higher, and rain, wind, or snow will not put it out.

When side-tracked, turn down the light, or it will smoke.

How to block a driving or engine truck box when spring is broken. A. Run forward or back wheel on a wedge, block box, and go.

Quickest way to set an eccentric. A. Let fireman catch hold of lugs on eccentric and knock key out of front end of eccentric rod where it connects to link, drop rod, turn eccentric, hold eccentric rod, and let it follow eccentric until rod will go in eye neat, put key in, tighten eccentric, and go, and it will be as true as any machinist can set it.

To explain why pipe from steam gauge to boiler is bent. A. Steam condenses in the bent part and presses against the springs in gauge and keeps steam from cutting springs; the gauge being air or steam tight will not rust. Only, backing up or standing, the gauge pipe will freeze.

Why is it that water in a boiler running for 20 years don't rust boiler or flues? If you put boiler in water, it will rust boiler out in one year. A. Boiler being air tight, it won't rust on the inside.

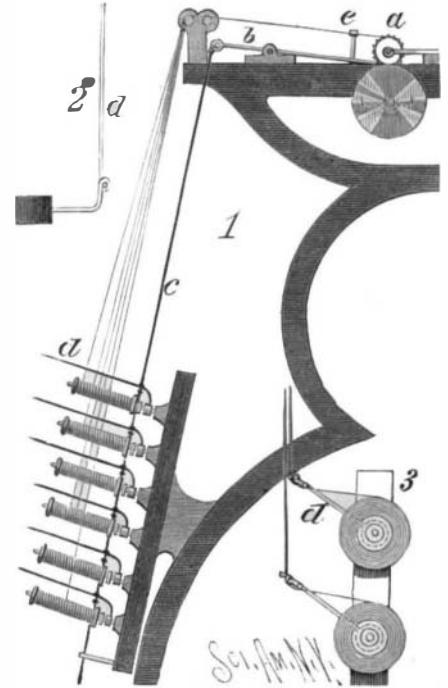
Removal of Warts.

A correspondent of the *Therapeutic Gazette* announces through its columns the virtues of castor oil in the removal of warts. Constantly applied for from two to four or six weeks each day—that is, once a day—it has not failed in my hands, says the writer, in any case of any size or long standing. The time it takes may try the patience of the user, but if faithfully used they will get their reward in the removal of the wart without leaving any scar. I have used it with some success in other growths, and had benefit enough to merit further trial. It might, he adds, be a success in the removal of certain kinds of cancer, especially scirrhous forms.

STOP MOTION FOR DOUBLING MACHINES.

The gravity take-up, shown detached in Fig. 2 and in place in Fig. 1, which represents part of a silk doubling machine, is composed of a collar to which is secured a bent wire or rod. The collar fits loosely upon the creel spindles below the spool, and the wire is bent at right angles, so that its long arm stands parallel with and a little distance from the spool. The wire is formed with an eye to receive a cord, *c*, attached to the stop lever or pawl, *b*, for stopping the revolution of the bobbin, *a*, and spindle on which it is placed in case a thread should break. The eyes in the wires prevent the cords from sliding on the take-up arms, thus rendering tangling impossible. The spindles, of any desired number, are held at an angle upon an inclined plate attached to the main frame of the machine. The spools are placed upon the creel spindles so that the threads unwind from the top, and the thread is passed

first under the wires, *d*, thence over bars and through the traversing eye, *e*, to the bobbin. In unwinding the thread from the spools, the friction of the spools upon the spindles will cause each thread to lift its take-up about to a level with the thread on the spool, as shown in Fig. 3, so that the whole weight of the take-up comes upon the thread and always holds it taut. In this way a regular tension is kept upon the threads, causing them to be wound with uniform tightness upon the bobbin. Each take-up is connected to the end of the pawl by a cord. When the weight of the take-up is upon the thread, this cord is slack; but in case a thread breaks, the weight of the take-up will come upon the cord, when the pawl will be made to engage with the ratchet wheel and instantly stop the spindle. A single cord may be passed through and knotted below each eye; or in place of a cord, a slight rod may be used.



NIGHTINGALE'S STOP MOTION FOR DOUBLING MACHINES.

This invention has been patented by Messrs. Nightingale Brothers, of Paterson, N. J.

COMBINED NEWSPAPER STAND AND FILE.

Within the tubular post of the pedestal slides a rod which can be held at any desired height by a set screw. The upper end of the rod is slotted to receive a lug formed upon a plate secured to the center bar of the frame. This lug is formed with a projection which permits the frame holding the papers only to come to a level. Passing through the slotted end of the rod and the lug is a clamping screw, by which the frame can be held at any required inclination. The main frame, at each side, is provided with a sliding extension frame, by means of which the file can be adjusted to the size of the newspaper to be filed. The cranks of crank screws, held in the upper and lower parts of the central longitudinal bar of the frame, are made with sharp ends to penetrate the papers easily, and with rounded angles, so that the papers can be readily slipped off and on. The papers are held in place by a bar having grooves formed in it to receive the cranks,



BAILEY'S COMBINED NEWSPAPER STAND AND FILE.

as shown in the sectional view, Fig. 2. These grooves are covered with metal plates having short slots formed through their lower parts for the passage of the cranks. The frame and its attached paper can be raised or lowered, and adjusted at any desired inclination to suit the convenience of the reader.

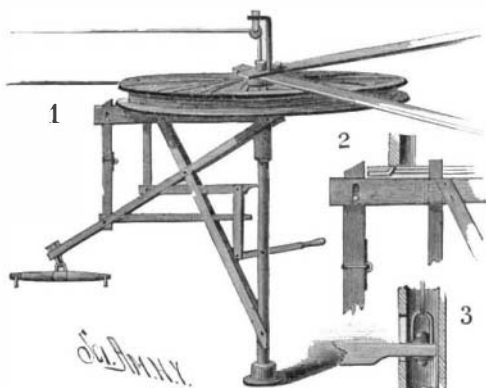
This invention has been patented by Mr. William E. Bailey, of Manchester, Md.

Mysterious Noises.

Apropos of ghosts and haunted houses, the experience of one of the members of the Seybert investigation committee is rather interesting. He is a professor at the University of Pennsylvania, and resides in the suburbs of Philadelphia. At a certain hour each day one of the windows in his house rattles quite violently, and this entirely independent of wind and weather. Naturally, the gentleman was considerably puzzled at the phenomenon, for while there was absolutely no visible cause apparent, each day brought this manifestation of activity on the part of his otherwise quiet window. He determined to discover the cause, and thought at once of the railroad which ran but a short distance from his home. He found, however, that no trains were in the vicinity at that time of day. The recurrence of the noise at precisely the same hour so far impressed him with the belief that it must have a connection with some well observed time-table, that he pushed his investigations further, and included another railroad several miles distant. On comparing his observation with the train schedule, the significant fact was discovered that a heavy train passed a spot within two or three miles of the house at about the same time that the window rattled. Following this clew, he examined the rock formations, and found that an out-cropping ledge which received the full force of the train vibrations came to an end immediately under his window. This gave a satisfactory explanation of a phenomenon which in the hands of a less investigative person would have been sufficient foundation for a mild ghost story.

IMPROVED HORSE POWER.

This horse power for hay carriers and other uses is the invention of Mr. John S. Grabill, of Hayesville, O. The lower end of the vertical shaft revolves in a socket bearing attached to the floor. Near the upper end of the shaft, which is made of gas pipe, about one inch and a half in diameter, is loosely mounted a wheel formed with a groove, in which the hoisting rope is wound. The lower hub plate rests upon the inner end of a

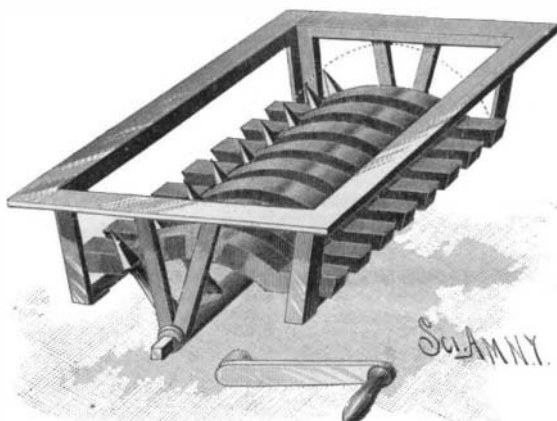


GRABILL'S HORSE POWER FOR HAY CARRIERS.

radial arm, made a little longer than the radius of the wheel. To the inner end of this arm is attached one end of the sweep, which is inclined downward and outward, to bring its outer end into proper position to receive the draught. The shaft, arm, and sweep and its brace form a firm and strong brace to receive the draught and give motion to the wheel. Two brace bars, placed over the upper end of the shaft, hold it in a vertical position. To the outer end of a lever pivoted to the brace is pivoted a vertical bar, made of such a length that when raised its upper end will enter between the spokes of the loose wheel, Fig. 2, and cause it to be carried around with the shaft. To the inner end of the lever is connected by a swivel, as shown in Fig. 3, the end of a trip cord passing up through the shaft, over a guide pulley, and thence to some place where it can be conveniently reached and operated. This lever can also be operated by a hand lever pivoted to the shaft. One end of a right angle lever pivoted to the sweep passes through a slot in the bar, uniting the two levers just described. The other arm of this lever is arranged so as to serve as a brake to check the movement of the wheel when the clutch bar is withdrawn. The weight of the levers holds the clutch bar in gear with the wheel. When the hay fork has been loaded, the trip cord is released, when the clutch bar is raised into gear with the wheel about which the hoisting rope is wound, raising the fork and drawing the hay carrier to the unloading place. After the discharge of the hay, the trip cord is pulled to withdraw the clutch bar, thereby allowing the carrier to run back and descend to be again loaded. The backward movement of the wheel can be checked by the brake.

STOVE GRATE.

The grate bars, shaped as shown in the engraving, are supported upon side bars resting on the lower edges of downwardly extending arms of the fire box. Between the ends of the bars and the bottom edge of the fire box is a space of sufficient height to allow the discharge of cinders. A shaft mounted centrally below the bars is provided with diamond shaped fingers placed in the spaces between the bars. The



BAILY'S STOVE GRATE.

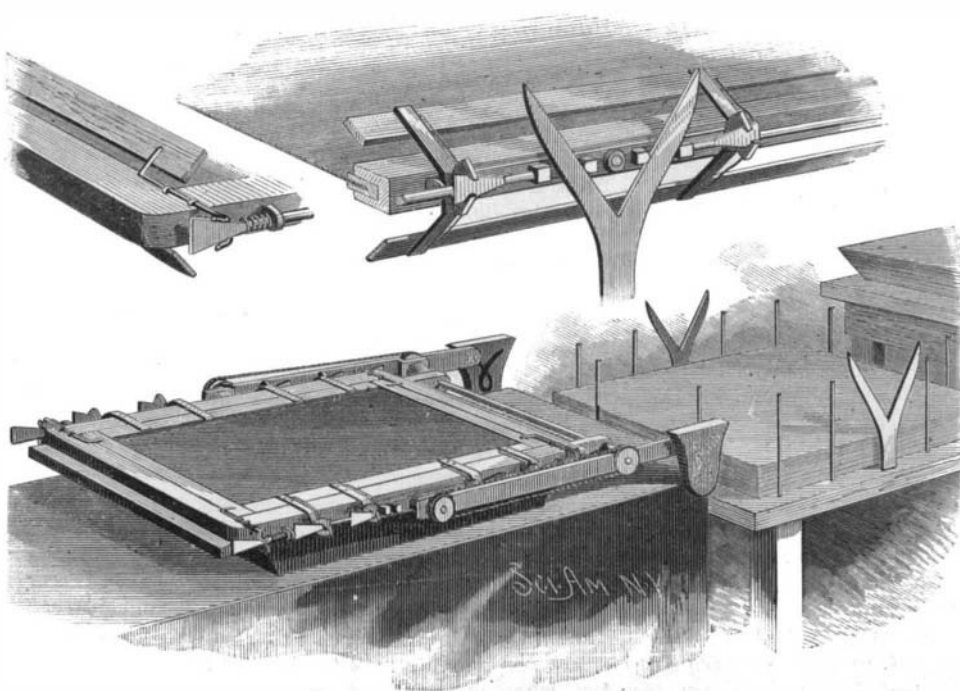
fingers can be moved from side to side by oscillating the crank arm attached to one outer end of the shaft. When resting upon the side bars, the upper ends of the fingers do not extend beyond the top edge of the bars; but when moved toward the center, the ends of the fingers project beyond the top edge of the bars, but do not quite reach to the bottom of the fire box. It will be seen that when the shaft is turned, the sharp edges of the ends of the fingers will easily cut through the fuel on top of the bars, causing the ashes and cinders to fall between the bars or be pushed through the space at the sides, and fall into the ash pit.

This invention has been patented by Mr. M. W. Baily; particulars can be obtained by addressing Messrs. Baily & Baldwin, of Pottstown, Pa.

IMPROVED TYMPAN.

Although the tympan shown in the accompanying engraving can be applied to hand cylinder presses, it is especially designed for use with the well known "Washington" hand press. The impression is made on the sheet held by the tympan when in the position shown in the lower cut, the bed plate resting on the carriage, which is on the track plate. On each end of a shaft, held in lugs on the end of the bed, is rigidly held a pulley. Between the lugs and pulleys on the shaft are loosely mounted hubs, formed on bars provided at their ends with pins carrying rollers that work in track grooves, shaped like a letter V having a loop at its bottom, formed on the inner sides of two lugs projecting upward from the end of the track.

The opposite ends of the rods turn on pivots projecting from the outer edges of the side pieces of the tympan at the middle. On the outer end of each pivot is a pulley provided with a pawl and ratchet, that permit it to turn in one direction only. An endless cord passes around the two pulleys on the same side of the frame. As the carriage moves forward, the rollers slide down the tracks in the lugs, swinging the tympan upward. This movement turns the pulleys on the ends of the pivots, and the tympan is swung in a direction contrary to that of the bars; and as the tympan is raised by the bars at the same time that it is being turned, in relation to the bars, in the inverse direc-



SQUIER'S IMPROVED TYMPAN.

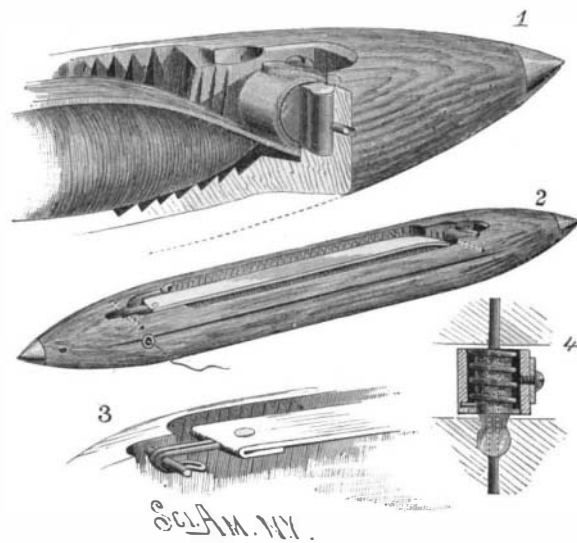
tion, it is evident that the tympan will remain in a horizontal position, and that the same surface that was presented to the bed will also be presented to the top of the table; in other words, the tympan is not reversed.

As the tympan swings down into position on the table, the prongs of the forks strike lugs of U-shaped pieces and pull them toward each other. This movement causes wedges to enter between the hook ends of levers pivoted to the edges of the side pieces and raise the clamping strips from both sides of the tympan. At the same time the end clamping strips are raised. (The construction of these parts is clearly shown in the upper views.) The printed sheet is thus released and allowed to drop on the table, when a fresh sheet is placed on top of the tympan—on the side opposite the one from which the sheet was just released. When the carriage is moved back, the wedges are withdrawn and the clamping strips are pressed upon the sheet by springs secured to the levers. During this movement, as the pawl and ratchet prevent the pulleys from turning, the tympan swings with the bars, so that that side which was top when the sheet was placed upon the tympan will be swung down upon the bed; that is, the sheet will be under the tympan.

This invention has been patented by Mr. George H. Squier, of Trempealeau, Wis.

LOOM SHUTTLE.

Formed in the shuttle is a chamber for the reception of the cop, which delivers from the end as usual, and is confined in the chamber by a cover strap, and is prevented from slipping longitudinally by the serrations. Usually, the strap consists of a web of elastic fabric secured at one end to the shuttle body, and having at the opposite end a hook to clasp a transverse rod. The



SHAND'S LOOM SHUTTLE.

objection to a strap of this kind is that it is rapidly worn out, and has a tendency to lose its elasticity in a short time. The strap here shown is made of an elastic material, like leather, and has an elastic connection at one end. This connection, shown in Figs. 1 and 4, consists of a drum mounted on a pin driven through the shuttle and acted upon by a spring. The tendency of this spring is to turn the drum, so as to impart tension to the strap and cause it to bear firmly upon the cop, the drum yielding, however, when it is desired to release the hook (Fig. 3) from the cross bar, in order to lift the strap to remove the cop or insert a fresh one.

This invention has been patented by Mr. Robert Shand, whose address is corner of Alder and Norris Streets, Philadelphia, Pa.

The Inventor of the Telescope.

A long article is contributed to *Ciel et Terre*, in which the writer maintains that the real inventor of the telescope was John Lippershey, a spectacle maker at Middleburg (Netherlands), who was born in Wesel, Germany.

James Metius, who, according to Descartes, has been regarded as the inventor, wrote on the 17th of October, 1608, to the Provinces of Holland, stating that he, as well as the spectacle maker of Middleburg, was manufacturing the instrument that brings objects near.

Another document is a petition to the same Provinces from Lippershey for a thirty years' patent. This was refused him the first time because the instrument could not be used with both eyes at once, and a second time (after he had made the instrument double) because telescopes were then being made everywhere.