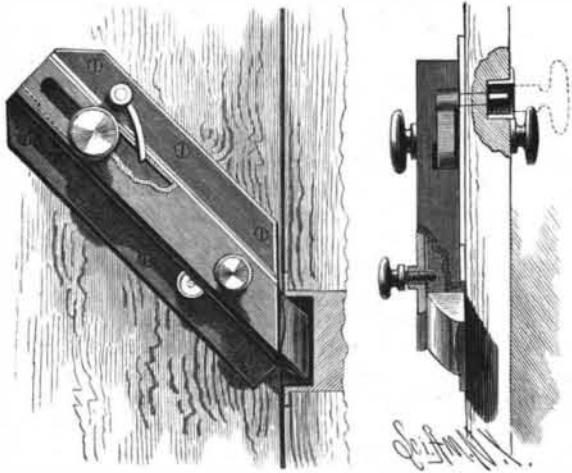


**AN IMPROVED DOOR LATCH AND LOCK.**

A door latch and lock constructed to operate entirely without the use of springs has been patented by Mr. Benjamin F. Pierce, of Chesterfield, N. H., and is shown herewith, one figure representing a broken front elevation of the lock applied to a door and frame, and the other showing a sectional edge view. The casing is formed with a central channel and side flanges, and secured in an inclined position on the door, and in the channel is held a bolt having its lower end obliquely beveled, so that when the door is closed it will ride smoothly and squarely upon a beveled striking plate attached to the door frame. The bolt is automatically locked in its lowest position by a shoulder near its

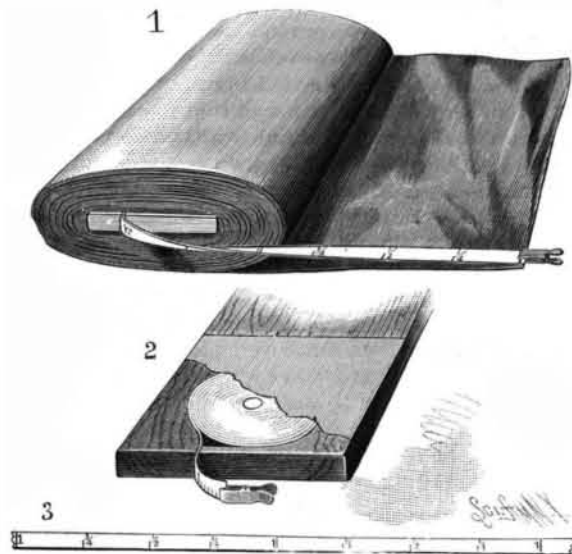


PIERCE'S GRAVITY DOOR LATCH AND LOCK.

upper end dropping into engagement with a shoulder in the channel, but the bolt may be slid upward to open the door by a spindle with a knob near the upper end of the channel. To facilitate the movement of the bolt, an anti-friction wheel, upon which the bolt rests, is fitted in the lower wall of the channel, and there is an adjacent set screw which may be turned down to prevent the bolt from being moved upward. As an additional lock for the bolt, a pawl is adapted to fall through a slot in the upper wall of the channel and engage with a notch in the bolt, the pawl being secured to a spindle of polygonal form at its outer end, which reaches into a socket in the door to receive the key, shown in dotted lines. When the bolt is not locked by the set screw or the pawl, it may be operated by a knob to open the door from the outside.

**AN IMPROVED CLOTH MEASURING DEVICE.**

A device which enables the retailer to readily measure off goods when selling them, and see at a glance the



BROWN'S CLOTH MEASURER.

length of remnants, in order to guard against cutting into full patterns, is represented herewith, and has been patented by Mr. J. Q. Brown, of Eagleville, Mo. A measuring tape is attached to the board or core on which the cloth is wound, in the manner indicated in Fig. 2, its outer end detachably connected to the outer end of the cloth by a spring clamp, and the tape is graduated on both faces into yards and parts of yards, the measures on one face, however, indicating only single yards and parts thereof, as shown in Fig. 3, while on the other face are given successive numerals to show the entire number of yards. As the cloth is reeled off or unwound, the tape is drawn out and laid along its edge, and the cloth and tape are cut together, the tape always showing on one side the precise length of the goods remaining on the bolt, while the unnumbered side of the tape facilitates the measuring off of the cloth as required. After the piece wanted is cut from the bolt, the tape is clamped at the end of the goods, with its numbered side or face out, in such way as to indicate the quantity in the roll without necessitating the removal of the goods from the shelves.

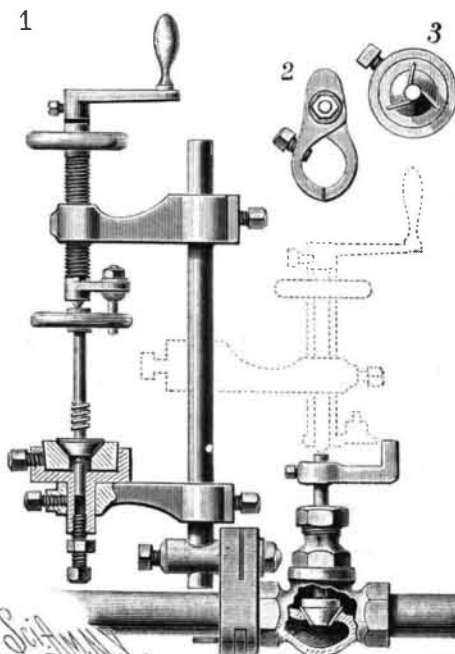
**Motion of Waterspouts.**

On the recent waterspout in Lake Geneva, M. H. Faye, in reply to M. Ch. Dufour's letter to the Academy of Sciences, Paris, stating that several persons had noticed an ascending gyratory movement in the waterspout that swept over Lake Geneva on August 19, points out that, although the movement is really descending, as he holds against most meteorologists, there is nothing remarkable in this apparent contradiction, which is due to a purely optical illusion on the part of the observers. In the same way the spirals of a vise or screw, placed vertically to a horizontal base, when turned in the reverse direction, seem to the spectator to ascend along the line of the main axis, presenting the appearance of continually retiring from the base upward, and burying themselves in the handle or top cross piece. The cause of the illusion is simple enough. Each anterior semi-spiral is successively replaced, as the screw revolves, by the posterior half, which, being at a higher level, the visible half spirals, taken separately and together, seem to ascend. So with waterspouts, which, as already repeatedly explained, never ascend, but always descend, being the result of forces having their existence in the upper atmospheric regions.

**AN IMPROVED DRILL FOR RENEWING WORN OUT VALVES AND VALVE SEATS.**

A drill especially adapted for renewing worn out valves and valve seats, without disconnecting the valve from its pipe and without disturbing the pipe, is shown herewith, and has been patented by Mr. George W. Hollingsworth, of No. 643 North Thirty-fourth Street, Philadelphia, Pa. A clamp, of which a face view is shown in Fig. 2, is adapted to be locked around the pipe carrying the valve to be renewed, the valve being shown partly in section, with the outside broken away. The jaws of the clamp are fastened by a washer and nut on a bolt which projects from a collar, the latter being adjustable by a set screw on an upright rod or post, which carries arms held to slide, and fastened by set screws to the upright. In the outer end of the upper arms screws a hollow spindle, operated by a hand wheel, and through the spindle passes a centering shaft, having on its upper end a crank arm, which rests with its hub on the upper end of the hub of the hand wheel, whereby the centering shaft is supported and may be rotated in the hollow spindle. On an enlarged portion of the centering shaft, just above its lower end, and beneath the hollow spindle, is held a dog, adapted to engage a spoke of the wheel of a valve stem, as shown at the left in Fig. 1, this dog being also adapted to engage a second dog or arm held on the stem of a seat-cutting tool placed in the seat of the valve, as shown in dotted lines to the right. On the end of the lower arm carried by the upright rod is fastened, by a set screw, a socket or holder, in which is held a valve cutter, with the usual cutting edges, formed in a central cone-shaped opening, a plan view of which is shown in Fig. 3.

This valve cutter has a central centering opening in its bottom, through which passes the upper pointed end of an arbor held to slide vertically, and resting on a rubber or other spring, which can be raised and lowered by a set screw and held in place by a jam nut. The position of the various parts for the grinding or cutting of a valve is shown at the left in Fig. 1, the centering end of the upper centering shaft fitting on the top of the valve stem, and the centering end of the arbor engaging the lower end of the valve, held in the cutter, when the operator turns the crank arm with one hand and feeds the work downward by turning the hand wheel with the other hand, the elasticity of the spring beneath the lower centering arbor permitting this downward movement. The cutting of the valve seat is represented in dotted lines, the lower arm carried by

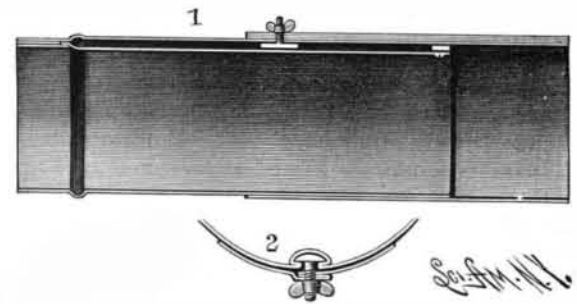


HOLLINGSWORTH'S HAND DRILL FOR VALVE WORK.

the upright rod being dispensed with, and the centering end of the shaft operated in the hollow spindle being placed on top of the seat-cutting tool, which is placed in the valve seat. The valve can also be ground into the valve seat by substituting it and its stem for the seat-cutting tool.

**AN IMPROVED TELESCOPING STOVEPIPE JOINT.**

An improved construction of stovepipe joint, by which the pipe can be easily lengthened or shortened and then held in place when adjusted, is shown herewith, and has been patented by Mr. Christian Lehman, of Elgin, Iowa. The section of pipe adapted to enter the other pipe has its edges connected with each

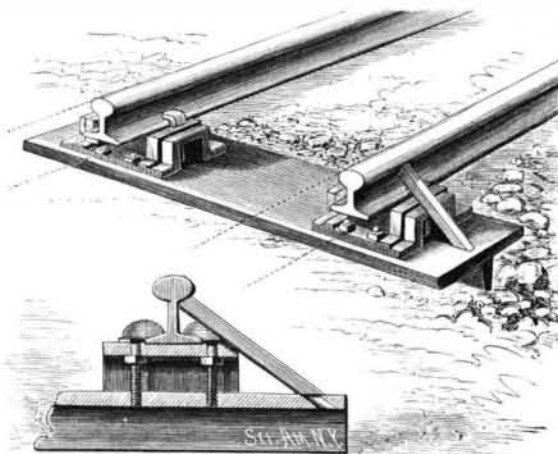


LEHMAN'S STOVEPIPE JOINT.

other by an inwardly curving piece, forming a recess in which the head of a bolt is held to slide, as shown in the sectional view, Fig. 2, the bolt extending outward through a slot and through a seam of the outer pipe, and having a winged nut on its outer threaded portion. The lower end of the recess formed by the inner curved piece, which makes a groove substantially T shaped in cross section, is closed by a stop piece and screw, the stop piece preventing the inner section of pipe from being drawn entirely out of the outer one. The two sections may be drawn out or moved in each other, when the winged nut is loosened, and after they have been adjusted to the desired length the nut is screwed up and clamps the joint.

**AN IMPROVED RAILWAY TIE.**

A metallic railway tie that is designed to be strong and durable, and one whereby the rail may be supported above the general level of the roadbed, is shown herewith, and has been patented by Messrs. John Moser and Ernst Moeckel, of Ashland, Wis. The bed plate is formed with a central downwardly projecting longitudinal flange or rib, and to its upper face are bolted or riveted two chairs, preferably made from plate metal, rolled to form a central channel, within which the rail rests, the plates being bent downward at right angles to the upper central section, and then outward to form feet. The rails are held to the



MOSER & MOECKEL'S RAILWAY TIE.

chairs by hook-headed bolts, the shanks passing downward through apertures in the chairs to engage with nuts, the lower ends of the shanks entering apertures in the bed plate, as shown in the small sectional view. In order that the rails may be held from spreading, diagonal braces are stepped in the bed plate and rest in recesses formed in the chairs, the upper ends of the braces being of proper shape to fit snugly against the under side of the rail treads. This tie not only supports the rail above the roadbed, but the height of the chairs may be varied to change the height of the rail treads at curves and other places where it is necessary that one rail should be higher than the other.

THE Boston and Lowell, Boston and Maine, and the Boston and Albany have commenced to build round roof cars with satisfactory results. The springing of the roof is a little higher than at present, and the curve is sharp at the sides and flatter on the top, the height of the roof being the same as with the old form. The interior effect is lofty and airy, giving the idea of a very high roof, and the exterior appearance is pleasing.

ON page 292, of last issue, the address of Mr. L. B. Sampson should be Rochester, New Hampshire, instead of N. Y., as stated in the article.