

**New Automatic Electric Weighing Scale.**

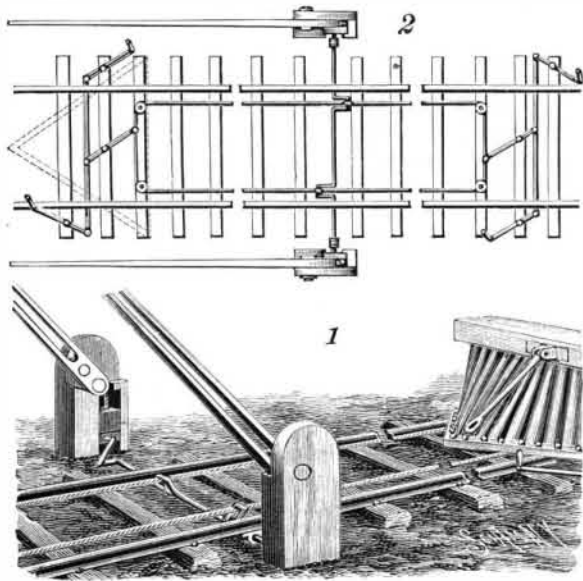
A patent has recently been issued to The Electric Scale Co., Covington, Ky., for an invention calculated to greatly facilitate the weighing of merchandise, etc., besides procuring more accurate results than are possible where the poise is manipulated by hand.

In this improved scale the counterpoise is moved lengthwise of the beam by a screw actuated by an electric motor attached to the scale beam, the motor being provided with a field magnet placed in a shunt circuit, the armature connections being furnished with a pair of contact springs for receiving the actuating current from either of two pairs of fixed contact points, the electric connections of the contact points being oppositely arranged with respect to each other, so that the current in the armature is reversed when the contact springs are shifted from one pair of points to the other, thereby causing the screw to revolve and shift the poise according to the position of the scale beam.

By means of this arrangement accurate results are quickly arrived at. The beam is provided with ticket-printing mechanism, which is capable of delivering a ticket upon which is recorded the exact weight indicated by the scale.

**AN AUTOMATIC RAILROAD GATE.**

The improvement shown in the accompanying illustration is designed to obviate the necessity of keeping watchmen to close and open gates at railroad crossings, such gates being, with this construction, closed and opened by a train passing in either direction. The barrier at each side of the track is fulcrumed in a post, the inner end of the barrier being connected with a weight sliding in the post, and the weight serving to hold the barrier in raised position. Sliding in guide-ways in the post below the weight is a block pivotally connected by a link with a crank arm on the outer end of a shaft which extends transversely under the track rails, where it is held to turn in suitable bearings. There are also two crank arms between the rails in this transverse shaft, one near each rail, arranged at right angles to each other, and both are connected with an endless rope or chain, arranged in a square, and passing over pulleys at some distance from the crossing in both directions, as shown in Fig. 2. Each end portion of this rope, between the pulleys, is connected with one end of a lever, pivoted on the ties, and the other end of the lever is connected with a transverse rod reaching to the outside of the rails, each of these rods being pivotally connected at its ends with short levers pivoted on the ties outside the track rails, and the short levers carrying each an arm or projection adapted to be engaged by the cowcatcher or other projection on the locomotive. The arrangement is such that when a train approaches, as shown in Fig. 1, the cowcatcher, engaging a short lever on one side of the crossing, shifts the transverse rod, whereby the rope is drawn upon to turn the cranks and cause the blocks to slide upward in the barrier posts, thereby allowing the barriers to swing downward and close the crossing. When the train has left the crossing, as shown in Fig. 2, the cowcatcher engages one of the short levers connected with the rope on the farther side of the roadway, shifting the cranks back to their former position, when the weights in the barrier posts slide down and the barriers are raised, opening the crossing. No matter in which way the train is passing, the barriers are thus automatically opened and closed, the improvement being designed to prevent the great number of fatalities constantly occurring at

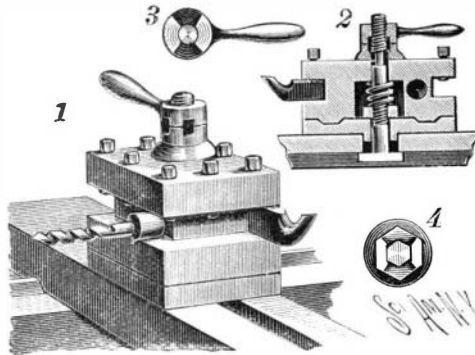
**CLOSE'S RAILROAD GATE.**

unguarded railway crossings where the travel is not sufficient to justify the employment by the companies of regular watchmen.

Further information relative to this invention may be obtained by addressing the patentee, Mr. Wilbur H. Close, in care of the Beck Steam Laundry Co., Atlanta, Ga.

**A TOOL HOLDER FOR ENGINE LATHES.**

The device herewith illustrated is designed to efficiently retain cutting tools in proper position to engage work on a lathe and facilitate the quick adjustment of a tool, or its release to substitute another tool therefor. It has been patented by Mr. Karl J. Pihl, of No. 35 Fifth Avenue, Brooklyn, N. Y. Fig. 1 shows the device in perspective, and Fig. 2 is a sectional side view. A transverse rib near the center of the base plate fits a groove in the top plate of the lathe slide rest, a standing bolt holding the parts together by an

**PIHL'S TOOL HOLDER FOR ENGINE LATHES.**

adjustable nut. The tool-holding block is centrally apertured to pass over the standing bolt, and has a recess in its lower surface around the adjusting nut, and affording a space above the nut for a stout spiral spring. On the upper surface of the base plate is a recess forming a rectangular shaped marginal channel, receiving a correspondingly shaped rib on the lower surface of the tool-holding block. There is a channel in each side wall of the tool-holding block to receive a lathe tool, held in place by set screws inserted from the upper side, there being a number of these screws provided for each side of the block, as well as an aperture to receive a drill. The upper portion of the standing bolt, where it projects from the tool-holding block, is hexagonal in form, and is loosely engaged by a locking washer, the top portion of the bolt being coarsely threaded to receive a correspondingly threaded handle bar. The engaging faces of the handle bar and washer are shown in Figs. 3 and 4, their notches being so formed relatively to the pitch of the thread on the bolt that the rotation of the handle forces the tool-holding block firmly down upon the base plate, and the entire tool rest is rendered rigid to support a tool at work. To release the block, the handle is partly revolved, when the block is forced upward by the central spiral spring, and the block may be revolved on the standing bolt to bring a different tool into position.

**Dead Sea Water as an Antiseptic.**

The *Daily News* Paris correspondent gives particulars of an interesting communication which has been made by M. de Chauveau in the name of the well known Pasteurian chemist, M. Lortel, who has long thought of turning the most accessible part of the Dead Sea into an Asiatic Runcorn, studying how, with a siphon, to bring to the top water from the bottom, which is heavily charged with calcium salts and bromide of magnesium. Another of his ideas was to export water from the Dead Sea as an antiseptic for use in hospitals, it being reputed mortal to every kind of animal life, and necessarily, as he supposed, to microbes. But a savant whom he consulted said, "Take care, there is hardly a fluid in nature in which a virulent microbe of some sort may not find a good soil." He therefore cultivated various kinds of bacilli in the densest Dead Sea water that had ever been fetched to his laboratory. The diphtheria, measles, scarlatina, small pox, and other fell creatures of the animalcular world were experimented upon. All died but two, with which in forty-eight hours the fluid was alive. The one shaped like the clapper of a bell and the other like a tack nail with a round head were the microbes of tetanus and of gangrene.

**A New Fluid for Natural History and Microscope Work.**

Mr. A. Haly, of the Colombo Museum, has been experimenting with carbolicized coconut oil as a preservative. His experience, he states, seems to show (it does not do to speak too confidently in a climate like that of Ceylon) that it is one of the most perfect preservatives known, both for form and color. Coconut oil and carbolic acid freely mix in all proportions. The mixtures at present under trial are oil raised to the specific gravity of 10° and 29° below proof spirit by the addition of acid. While the gum and glycerine process is absolutely useless for any animals except certain families of fish, this mixture is good for every kind of vertebrate. The most delicate frogs are quite uninjured by it, and snakes undergo no change. The delicate plum-like bloom on the geckoes, the fugitive

reddish tint on such snakes as *Ablabes humberti*, are beautifully preserved by it. Another most important use is in the preservation of large fish skins, which can be packed away in it for an indefinite period, and mounted when wanted. These skins do not require varnishing, neither do they turn brown, but although, of course, they do not preserve their sheen like fish in the oil itself, they always maintain a silvery and natural appearance, quiet different from that of ordinary museum specimens. Species prepared in this way would form a most effective exhibition. It appears also to be a most excellent preservative for crustacea and the higher orders of arachnids, and also for centipedes; but it has proved a failure for marine invertebrates in general. Its absolutely unevaporable nature makes it invaluable in a tropical climate, quite apart from its other qualities. The acid also enables coconut oil and turpentine to be mixed together, forming a splendid microscopic fluid, in which objects may be allowed to soak without any previous preparation, and in which they become very transparent. A minute species of crustacean, of the order Copepoda, and the leg of a fly, simply laid on a slide in a drop of this fluid, and covered with an ordinary covering glass, without any cell being made or cement employed, have lain on Mr. Haly's table unaltered for ten months.

**A PRACTICAL, DURABLE, METALLIC RAILWAY TIE.**

The improved metallic tie shown in the accompanying illustration has been patented by Mr. Ellison Saunders, of Austin, Texas. Its base plate is preferably made of wrought iron or steel, and has downwardly and outwardly turned ends, rail-supporting blocks of cast or malleable iron being secured to the base plate by rivets or bolts, as shown in Figs. 2 and 3. The two blocks of each tie are connected with each other by a tension rod, by adjusting the nut on which any desired strain may be given to the blocks and base

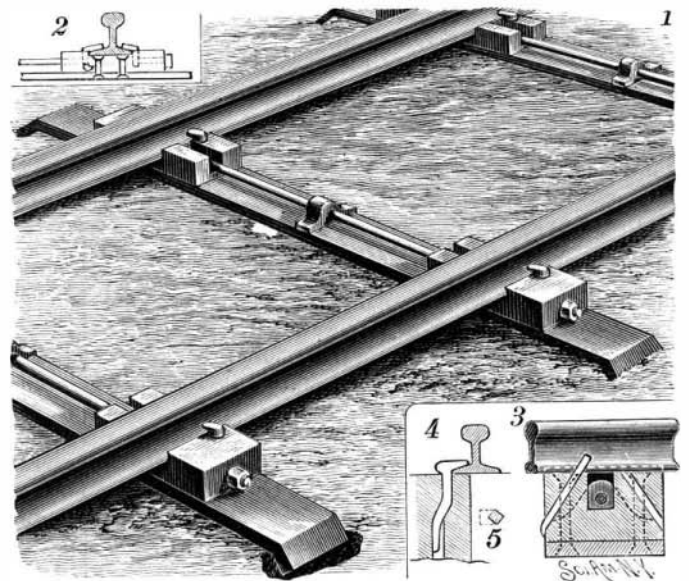
**SAUNDERS' METALLIC RAILROAD TIE.**

plate to prevent spreading of the rails, the base of each rail resting in a longitudinal recess in the block. Centrally on each base plate is a block, through which the tension rod passes, to prevent accidental displacement, the block being held in place by a rivet or bolt. The rails are secured in their seats in the blocks by spikes driven as shown in Fig. 3, the point of the spike being clinched against the outer side of the block, while another form of fastening is shown in Fig. 4. In this case the apertures for the spikes are made with a bend and twist, so that the upper half is out of alignment with the lower half of the aperture, as shown in Fig. 5. The ordinary spike, driven in such a block, follows the shape of the aperture, and is bent at the middle and twisted in for its lower half, so that the spike is not liable to get loose. On curves or switches the guard or switch rails are fastened on an extension of the block, formed with a recess under the rail for the nut or head of the tension rod.

This tie has been in practical use for five months on a portion of a trunk line railway in Texas, where the work is very heavy, and is said not to show any evidence of wear, but to be still as firm as a rock, while wooden ties at the same point have had to be retamped and respiked. A yet more comprehensive testimonial is that of Mr. Robert White, Supervisor at the Grand Central Station, New York City, who writes, under date of October 24, 1891: "I have had some of your metallic ties in use in the yard at this station for the past three months, at a point where some of the largest engines pass over them each day, with a large number of switching engines and cars. They have had no attention paid to them since being put in, and still remain in perfect order. The spikes have not started, but are the same as when put in."

THE product of tobacco in Europe is nearly equal in quantity to the average production of the United States.