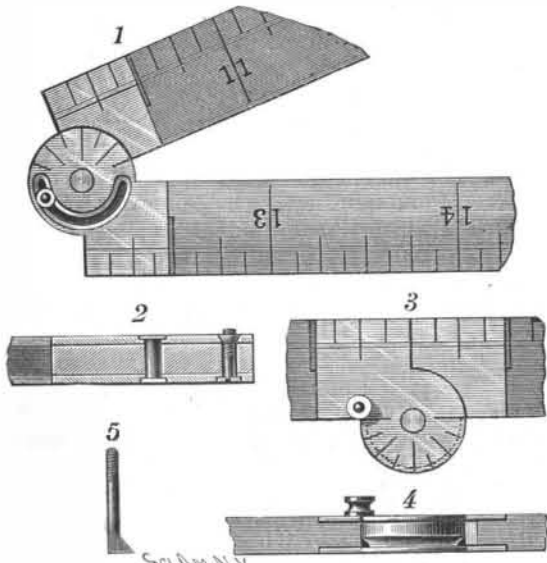


**AN IMPROVED CARPENTER'S RULE.**

A carpenter's rule so constructed that it may be used as a bevel or square as well as a rule has been patented by Mr. Michael H. Walsh, of No. 9 Gloucester Place, Boston, Mass., and is illustrated herewith, Figs. 1 and 2 showing a plan view and horizontal section. The

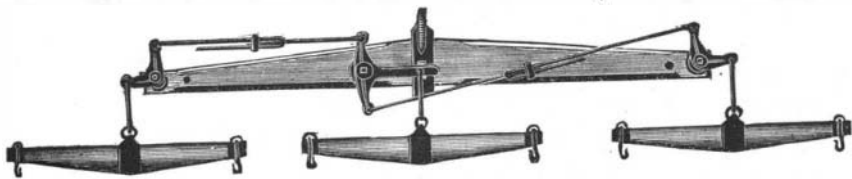


**WALSH'S CARPENTER'S RULE.**

joint consists of a circular projection on one leg of the rule centrally pivoted between two projections on the other leg, a pin or screw passing through a slot in one of the outer projections, and through the inner projection, with a countersunk nut resting in the slot, whereby the two legs of the rule may be set at any angle desired, for use as a bevel or square, according to the graduation marks on the projection. In Figs. 3, 4, and 5 a modified form of the improvement is shown, wherein the inner projection is formed with a beveled edge, and a pin with beveled projection is located in the inner end of one of the legs of the rule, the pin having a thumb nut and screw-threaded end, so that by screwing up the nut the projections are clamped together and the rule is held firmly in adjusted position.

**AN IMPROVED DRAFT EQUALIZER.**

A simple, cheap, and efficient equalizer for perfectly equalizing the draft of three or four horses is illus-

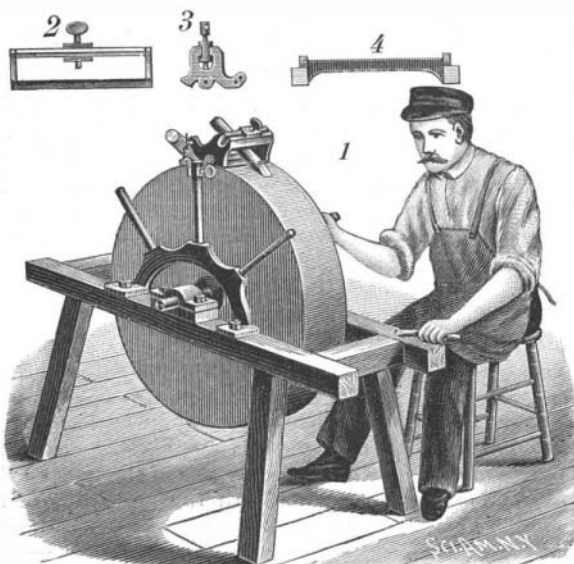


**GILLET'S THREE-HORSE EQUALIZER.**

trated herewith, and has been patented by Mr. A. F. Gillet, of Burlington Junction, Mo. It is made with a tripletree having a central draught hook, a three-armed or T-shaped lever being held by a bolt or pin to the tripletree at one side of its center, and so that the extremity of the long arm of the lever reaches about to the center of the tripletree, where it is provided with a draught hook to which the singletree for the middle horse is hitched. This equalizer does away with a great deal of cumbersome weight, admits of a short hitch, and by means of adjustable rods the equalizers may be easily and quickly adjusted to increase or decrease the draught on either of the horses, or adjusted to suit different kinds of work, such as from a plow to a lister equalizer, or to any implement having a tongue.

**AN IMPROVED TOOL HOLDER FOR GRINDSTONES.**

A holder with which a number of tools may be held at an angle to and in rigid contact with the periphery of a grindstone has been patented by Mr. James M.



**DILLON'S TOOL HOLDER FOR GRINDSTONES.**

Dillon, of No. 17 Garden Street, Poughkeepsie, N. Y., and is illustrated herewith, Figs. 2 and 4 being front views, and Fig. 3 an end view of the holder. A segmental plate, from which projects radial arms, is secured to the frame upon each side of the stone. The base of the holder, which is slightly greater than the width of the stone, is adapted to be secured to either set of the radial arms by set screws. The end pieces of the body of the holder are pivoted to end projections of the base, so that the body may have an easy rocking movement, but an essentially U-shaped spring is secured to both the base and the holder, to normally give the latter a forward inclination, there being a catch to retain the holder in horizontal position when desired. The tool clamp is a rectangular block grooved to slide on the inner faces of the upper bars of the holder, and provided with a thumb screw to engage and hold in place the tool to be ground.

**The Aeration of Sewage.**

Some correspondence recently printed by the London Metropolitan Board of Works, at the request of Dr. Dupre, possesses considerable interest in relation to the treatment of sewage by aeration. It now appears, says the *Engineer*, that Dr. Dupre addressed a letter to Sir Joseph Bazalgette as far back as 1882, suggesting that the metropolitan sewage should be mechanically aerated between the pumping stations and the reservoirs, and perhaps again between the reservoirs and the river. The proposal made thus early has remained in abeyance until now, except so far as the floating fire engines are concerned, but is once more made prominent.

In his letter of July, 1885, Dr. Dupre puts the case very clearly by saying: "The destruction of organic matters discharged into the river in the sewage is, practically, wholly accomplished by minute organisms. These organisms, however, can only work in the presence of oxygen, and the more of that you supply, the morerapid the destruction." On the reality of the effect we have the testimony of Sir H. Roscoe, in his report of December last, where he states: "The rapid purifying effects of aeration on the sewage have been repeatedly observed in my laboratory experiments." The actual nature of the process is very remarkable.

Sewage contains virtually no dissolved oxygen, and in this state serves to nourish only such organisms as are associated with putrefactive results. But where free oxygen exists, there arise a class of what may be termed "healthy" organisms, and these dispose of the organic matter in the sewage in such a manner as to render it inoffensive. Sewage poured into a river rapidly absorbs the free oxygen contained in the water, and if the quantity of sewage is in excess of a certain proportion, the dissolved oxygen is so largely absorbed that the healthy organisms perish, and the putrefactive process sets in. The use of aeration is not to oxidize the organic matter, but to supply the free dissolved oxygen needed for the respiration of the healthy organisms.

**A SAFETY SHOE FOR CAR TRUCKS.**

An invention providing means whereby, should the wheels of a car or locomotive jump the track, neither would be derailed, but would slide upon the track until the brakes could be applied and the wheels returned to their proper position, has been patented by Mr. Abram M. Woodruff, of Superior, Neb., and is illustrated herewith. To the central transverse timbers and to a longitudinal brace forming a portion of the truck frame is secured a head block positioned between the wheels, a shoe being firmly secured to the head block, as shown in the bottom plan view, Fig. 1, and the side elevation, Fig. 3. The shoes have downwardly extending side flanges, widest at their central portions and tapering toward each end, and between the flanges is a central horizontal flat bearing surface, with two inclined end surfaces, imparting to the bearing surface of the shoes the equivalent functions of a sleigh runner. The position of the shoes with relation to the rails when the wheels have jumped the track is shown in Fig. 2, the width of the shoe being enough greater than the width of the rail to assure engagement with the rail, even should the wheels be thrown a considerable distance. A modified form is made which is adapted for attachment to the locomotive. The shoes are made of metal, while the head blocks may be of any suitable material, as hard wood or metal.

**AGAINST MOSQUITOES.**—Take a small quantity of a 2 per cent carbolic acid solution, and sprinkle sheets, coverlet, pillow, and bolster, on both sides, the edges of bed curtains, and the wall next the bed. The face and neck may also be slightly wetted.

**AN IMPROVED READING DESK.**

A light and simple reading desk, which is readily adjustable to any desired position, is illustrated herewith, and has been patented by Mr. Andrew J. Williford, of Nokomis, Ill. Its principal parts are preferably made of wire, a vertically adjustable inverted U-shaped bar

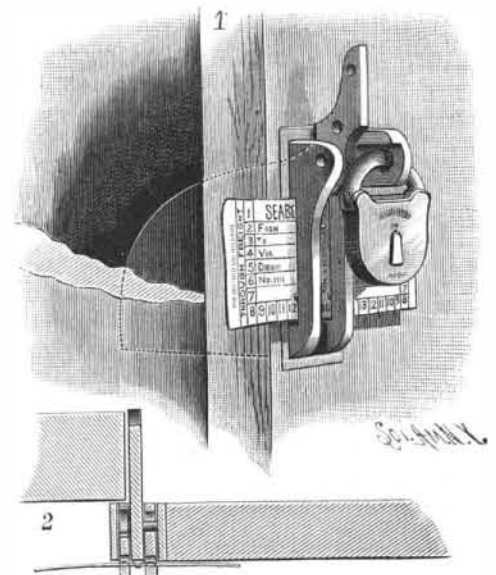


**WILLIFORD'S READING DESK.**

having its ends passed through eyes in the standards, where they are engaged by set screws, forming a support on which the book rest is mounted to turn. On the underside of the book rest, at each end, is secured a semicircular bar, these bars passing through eyes in the side supports, where they are adapted to be engaged by set screws to adjust the book rest to any desired angle.

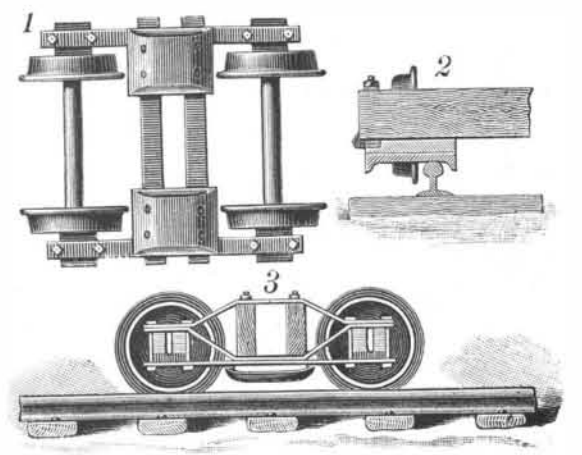
**AN IMPROVED SEAL LOCK.**

A lock especially designed to secure and seal the doors of freight cars is illustrated herewith, and has



**GODWIN'S SEAL LOCK.**

been patented by Mr. Le Roy C. Godwin, of Portsmouth, Va. A frame is held to slide in a casing secured to the car door, the frame having slots for the reception of a ticket or card, a tumbler plate being pivoted in the casing and passing through the frame. A cam turns on the pivot of the tumbler plate, and is adapted to be engaged by a lug on one side plate of the frame. The sealing card is water proof, and when locked in place in the slotted frame cannot be removed without being cut or torn in pieces. The lock is made of malleable iron, has no spring to get out of order, and is designed to be very simple and durable in its construction.



**WOODRUFF'S SAFETY SHOE FOR CAR TRUCKS.**