

THE VISE.

The vise should vary in size, form, strength and height from the floor, according to the kind of work it is required to hold, and amount of grip with which the work requires to be held. For ordinary machinists' work vises of cast-iron are sufficiently strong, and these may be made with swiveling and other motions that are a great convenience upon some kinds of work, but for work requiring heavy chipping the wrought-iron, and what may be termed the legged vise, is necessary in order to withstand, without moving or breakage, the heavy blows of the full-weighted ($1\frac{1}{2}$ lbs.) chipping hammer.

Strictly speaking, the height of the top of the vise-jaws should, for heavy filing work, be nearly equal in height to the operator's elbow, so that the lower joint of the arm may be about horizontal when filing. For light work the jaws may be higher, so that the operator may conveniently view how the filing proceeds without requiring to stoop. It is usual, however, to make the vises in a shop stand of about an equal height.

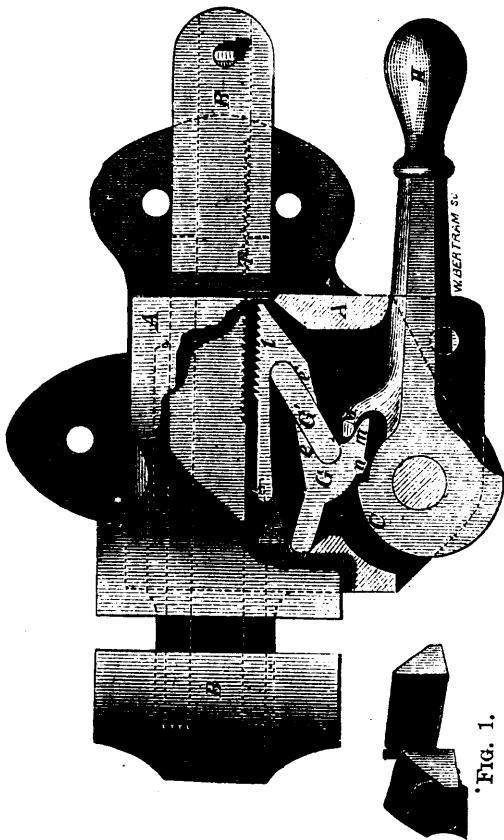


Fig. 1.

The teeth upon the gripping surface of a vise should be kept sharp, so that work receiving heavy blows may be gripped so firmly as not to move in the jaws. The jaw-gripping surfaces should, when close together, meet at the top so that they may grip their pieces close to the top and enable them to be cut off with a chisel without bedging. Usually these faces stand parallel or vertical when the vise-jaws are open to about one-quarter of their opening capacity. The top surfaces of the jaws should be quite level one with the other when the jaws are closed. The jaws are made thinner as the kind of work is lighter. Thus for wood-workers, jaws such as shown in Fig. 1, are used.

In Fig. 2 is shown a plan view, partly in section, of the Stevens Patent Swivel Vise. *A* is the fixed jaw, in one piece with the body of the vise, and *B* is the movable jaw, being the one nearest to the operator. The movable jaw is allowed to slide freely through the fixed one (being pushed or pulled by hand), or is drawn upon and grips the work by operating the handle or lever, *H*. The means of accomplishing this result are

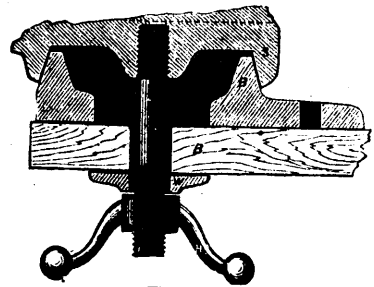


Fig. 3.

as follows:—As shown in the cut, *B* is free to be moved in or out, but if *H* be pulled away from the vise, the shoulder, *C*, meeting the shoulder, *N*, will move the toggle, *G*, and this, through the medium of *G*, moves the tooth bar, *t*, so as to engage with the teeth on the side of the movable jaw bar shown at *T*. As soon as the teeth, *t*, meet the teeth, *T*, the two travel together, to the work bench, but in others having a similar tightening mechanism the fixed jaw is so attached to the bench as to allow of being swiveled. The method of accomplishing this is shown in Fig. 3, in which *S* is the foot of the vise bored conical to receive a cone on the casting, *R*, which is fastened to the bench *B*. *W* is a washer and *H* the double arm nut. Loosening this nut permits of the vise being rotated upon *R*.

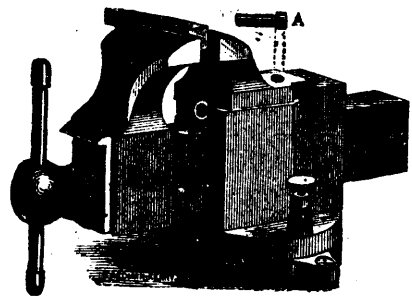


Fig. 4.

Fig. 4 represents Prentiss' Patent Adjustable Jaw Vise, which is also shown in Fig. 5 with the adjustable jaw removed. From the construction it is apparent that the groove *G*, being an arc of a circle of which *C* is the centre, the jaw is, as it were, pivoted horizontally, and can swing so as to let the plane of the jaw surfaces conform to the plane of the work; hence a wedge can be gripped all along the length enveloped by the jaws, and not at one corner or end only. When the pin, *A*, is inserted the jaw stands fixed parallel to the sliding jaw. The pin, *B*, engages in a ratchet in the base below it to secure the back vise jaw in position when it is set to any required angle.

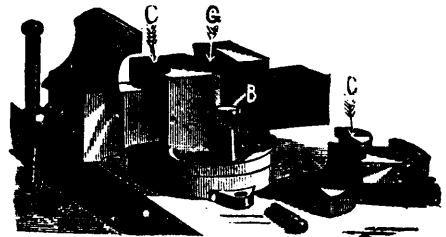


Fig. 5.

Fig. 6 represents a form of vise for heavy work, made by Fisher & Norris. In the ordinary forms of this class of vise the two gripping surfaces of the jaws only stand parallel and vertical when at one position, because the movable leg is pivoted at *P*; but in that shown in the figure the movable leg is supported by the arm, *A*, passing through the fixed leg, *L*, which carries a nut, *N*. A screw, *S*, having journal bearing in the movable leg, screws through the nut, *N*, and is connected to the upper screw by the chain, *C*, which passes around a chain wheel provided on