Oct. 8, 1929. C. C. JENSEN 1,730,510

VISE

Filed June 28, 1928

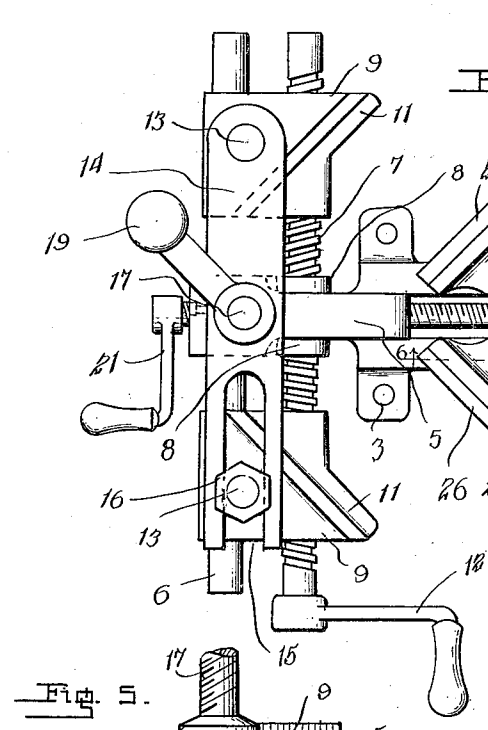


Fig. 1.

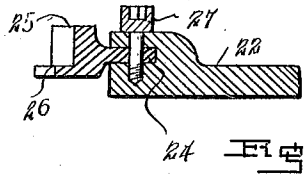


Fig. 6.

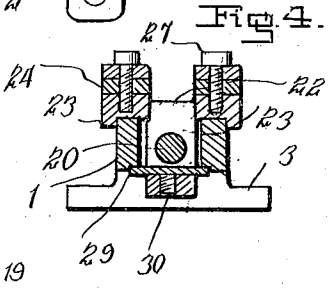


Fig. 4.

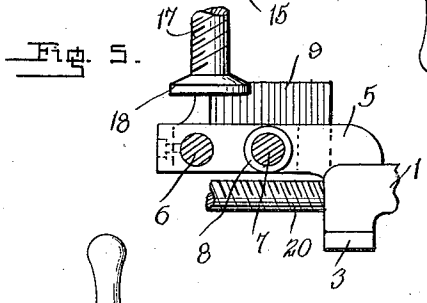


Fig. 5.

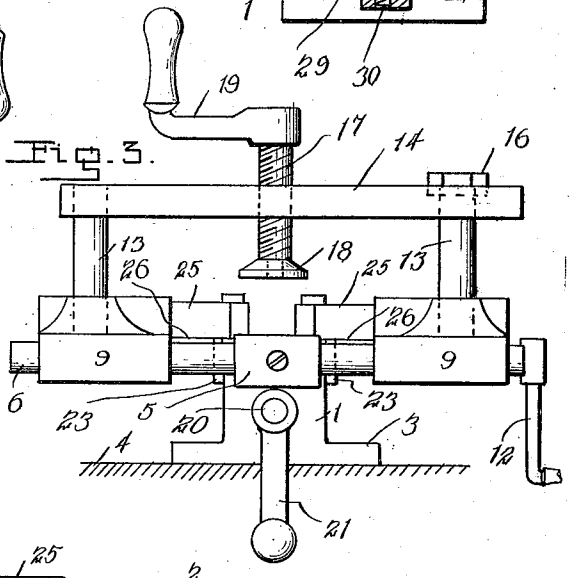


Fig. 3.

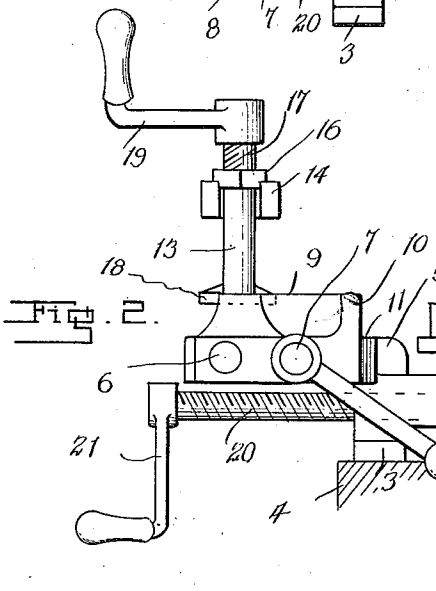


Fig. 2.

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UNITED STATES PATENT OFFICE

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VISE

Application filed June 28, 1928. Serial No. 288,998.

This invention is a bench vise designed particularly for use in closing miter joints, the object being to provide a simple structure which may be easily adjusted to firmly clamp the joint members in proper relation and hold them against spreading while a fastening device is driven into the members at their meeting edges. The invention is illustrated in the accompanying drawing and will be hereinafter fully set forth.

In the drawing:

Figure 1 is a plan view of a vise embodying the invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is a front elevation;

Fig. 4 is a detail section on the line 4—4 of Fig. 1;

Fig. 5 is a detail longitudinal section, and

Fig. 6 is a detail section through the slide which carries the rear jaws.

In carrying out the invention, there is provided a base member consisting of a substantially oblong block 1 having a longitudinal slot 2 extending approximately from end to end thereof and provided with lateral feet or lugs 3 through which fastening devices may be inserted to secure the device upon the corner of a workbench, indicated at 4. At the front end of the block 1, there is formed a forwardly projecting overhanging arm 5 through the front end of which is secured a transverse guide rod 6 and parallel with said rod an adjusting screw 7 is journaled in said arm. The screw 7 has a blank portion at its center whereby it may rotate in the arm 5 without moving through the same and at the opposite sides of the arm it has relatively reversed threads, as shown most clearly in Fig. 1. Collars 8 are fitted to the screw at opposite sides of the arm whereby to aid in holding the same in proper position. Slidably mounted upon the guide rod 6 and having threaded engagement with the adjusting screw 7 are front jaws 9, the rear faces of which are vertical, as shown at 10, and have ledges 11 projecting rearwardly therefrom, it being obvious that the joint members are intended to rest upon the ledges or shelves 11 and bear against the vertical faces 10. The adjusting screw 7 is equipped at one end with a handle 12 whereby, if the screw be rotated, the jaws 9 will be caused to approach or recede according to the direction of rotation of the screw, and the jaws are extended forwardly beyond the screw to have sliding engagement with the guide pin 6, as will be understood upon reference to Fig. 2. A stud 13 rises from each jaw 9 and has its upper end disposed within a transverse brace or bar 14, said bar being provided at one end with a longitudinal slot 15 and the corresponding stud 13 being equipped with a nut 16 on its upper end which bridges the slot and bears upon the upper side of the bar, the sides of the nut being recessed to fit within the slot and be thereby held against reverse rotation with resultant loss. This bar cooperates with the guide rod 6 when the jaws are being adjusted so that the working position of the jaws will be maintained at all times. Mounted centrally in the bar 14 is a vertical clamping screw 17 equipped with a head 18 at its lower end and with a handle 19 at its upper end, this clamping screw being so disposed that when it is turned home it will firmly clamp the corners of the joint members upon the arm 5 and effectually hold them against vertical separation. It will be noted that the beam 14 is slotted in only one end portion and that the distance between the clamping screw 17 and one jaw 9 is fixed. The work for which this vise is intended does not call for a constant adjustment of the jaws to varying material and it is not necessary that the screw be always exactly in the center of the work, but it is highly desirable that the jaws be firm and the desired firmness is attained by the construction shown. To accommodate a wider range of work, the head 18 may be removable and a plurality of heads be provided for interchangeable use, and the beam 14 may be also provided in various sizes for similar interchangeable use.

Journaled in the front and rear ends of the base 1 is an under screw 20 equipped at its front end with a handle 21 and having its intermediate portion engaged through a slide 22 which constitutes a nut and will be caused to move longitudinally of the base when the screw is rotated. This slide is provided with

overhanging flanges 23 at its sides which engage the sides of the base 1 whereby to prevent lateral or twisting movement of the slide and hold it to a rectilinear path, as will be understood upon reference to Fig. 4. The front end of the slide 22 is recessed at its upper corners and in the recesses are pivotally secured the shanks 24 of the rear jaws 25, these jaws having front vertical faces and having ledges or shelves 26, corresponding to the ledges or shelves 11 of the front jaws, and disposed substantially flush with the upper surface of the arm 5 so that the rear edges of the joint members will be supported by the rear jaws. The body of the slide fits within the slot 2 of the base, as will be understood, and its front end, at its lower portion, defines a forwardly projecting tongue 28 on which is seated a shim 29 having its ends projecting under the sides of the base, as shown in Fig. 4. A set screw 30 holds the shim on the tongue, the shim preventing rocking of the slide on the base.

In use, the vise is secured to the workbench at a corner of the same with the jaws 9 arranged approximately parallel with the respective edges of the bench. The members which are to be secured to form a miter joint are placed in position against the jaws 9 and the adjusting screw 7 then actuated so as to bring the jaws into firm engagement with the joint members and cause the joint members to firmly and closely abut. The under screw 20 is then actuated so as to bring the rear jaws 25 into firm engagement with the back edges of the joint members and firmly clamp them to the front jaws, the clamping screw 17 being set to hold the work to the arm 5. The clamp nail or miter fastening is then driven into the joint members, the arm 5 serving as an anvil to resist the force of the blows delivered to drive the fastening home if the clamp nail is to be driven across the meeting edges of the joint members. Most generally, however, the clamp nail is driven through the edges of the joint members longitudinally of the joint, and it will be seen that the jaws do not abut but leave an ample space for the insertion of the clamp nail and the operation of the driving tool, whether the clamp nail is to be driven through the outer or the inner corner of the joint. When the clamp nail is driven through the outer corner, the inner jaws serve as an anvil, and when the clamp nail is driven through the inner corner, the outer jaws serve as an anvil.

It will be readily noted that I have provided an exceedingly simple and compact vise which may be easily set to secure the members of a joint and easily manipulated to quickly release the same after the joint has been tightened. It is to be particularly noted that the vertical faces of the cooperating jaws are disposed at an angle of forty-five degrees to the longitudinal line of the base so that they are at right angles to each other, and when the joint members are placed against the jaws they will be forced into the proper relation to form a perfect miter joint. The pivotal mounting of the back jaws permits them to automatically accommodate themselves to the back edges of the joint members while the front jaws have two joints of support and consequently will be always maintained in the proper relation. It will also be noted that the pivots 27 of the back jaws are threaded into the slide 22, as shown in Fig. 6, and the jaws will be frictionally held in their pivotal adjustments.

Having thus described the invention, I claim:

1. A vise comprising a base, a slide mounted on the base and movable longitudinally thereof, work-engaging jaws carried by the slide, a transverse guide carried by the front end of the base, front jaws slidably mounted upon said guide, all the jaws having work-supporting ledges on their working faces, means for moving the front jaws toward and from each other, and means for moving the rear jaws toward or from the front jaws.

2. A vise comprising a base having an overhanging forwardly projecting arm at its front end, a slide mounted on the base in rear of said arm, jaws carried by said slide, a transverse guide pin mounted through the forwardly projecting arm, an adjusting screw also mounted through said arm at one side of and parallel with the guide pin and having relatively reversed threads at opposite sides of the arm, and front jaws at opposite sides of said arm slidably engaged with the guide pin and having threaded engagement with the adjusting screw, all of the jaws having work-engaging faces disposed obliquely relative to the base.

3. A vise comprising a base member, a slide mounted upon and adjusted longitudinally of the base member, back jaws carried by said slide, supporting and adjusting means carried by the front end of the base member, front jaws engaged with said supporting and adjusting means, and a work-clamping member mounted over the front end of the base between the front jaws and arranged to clamp work to the base.

4. A vise comprising a base, a forwardly projecting arm overhanging the front end of the base and constituting an anvil, guiding and adjusting means mounted transversely through said arm, jaws engaged with said guiding and adjusting means at opposite sides of the arm, studs rising from said jaws, a bar carried by said studs, a work-clamping element mounted in said bar over the overhanging arm, a slide mounted on the base at the rear of the arm, jaws carried by said slide, and means for adjusting said slide longitudinally of the base.

5. A vise comprising a base having an over-

hanging arm at its front end and provided with a longitudinal slot, a slide mounted on the base and having a portion depending through the slot therein, back jaws carried by the slide, an adjusting screw mounted in the slot in the base and engaged through the depending portion of the slide, the front end of said screw being disposed below and projecting beyond the overhanging arm, a shim secured on the depending portion of the slide and bridging the slot in the base below the screw, a guide rod disposed transversely through the overhanging arm, an adjusting screw mounted in said arm parallel with said guide, and front jaws engaged with and supported by said guide and screw and moved toward or from the arm by the screw.

In testimony whereof I affix my signature.

CARL C. JENSEN. [L. S.]