July 3, 1928.

1,675,389

W. E. SMITH

JOINER'S CLAMP

Filed April 21, 1927

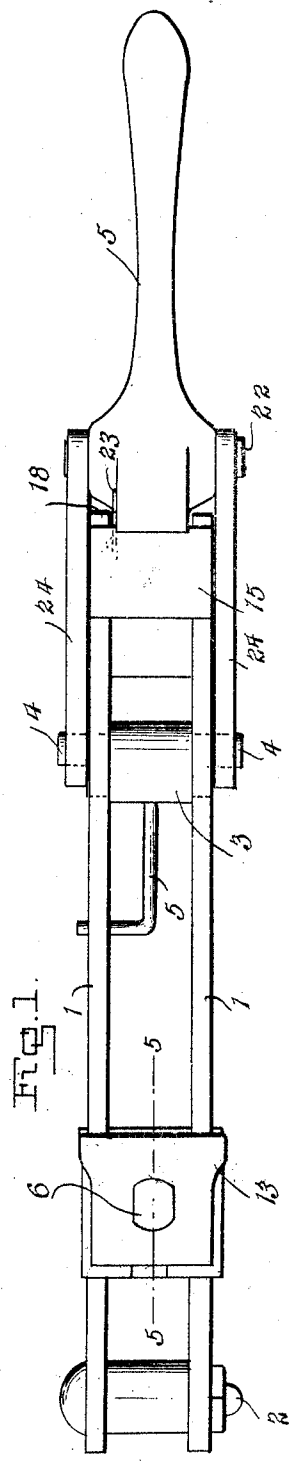


Fig. 1.

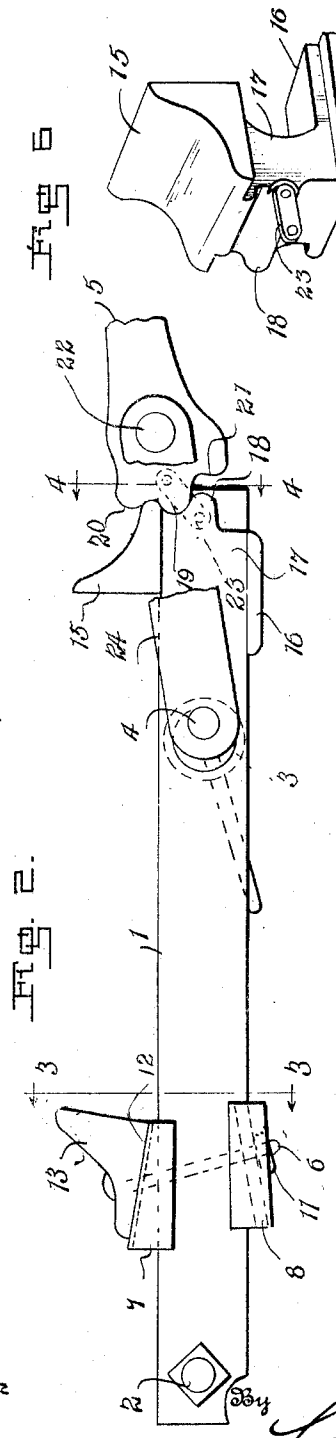


Fig. 2.

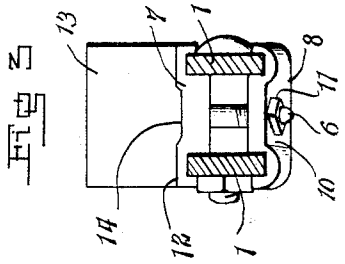


Fig. 3

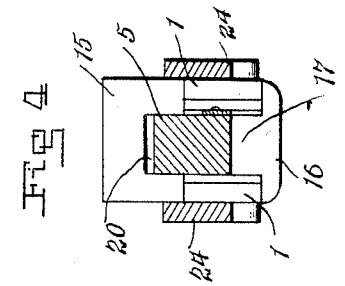


Fig. 4

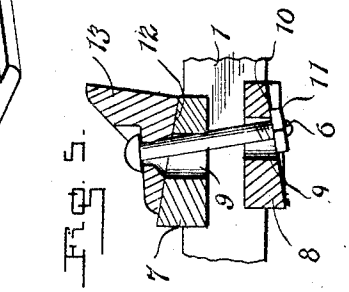


Fig. 5.



Fig. 6

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# UNITED STATES PATENT OFFICE.

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## JOINER'S CLAMP.

Application filed April 21, 1927. Serial No. 185,562.

This invention relates to clamps particularly designed for use by carpenters, cabinet makers and artisans for drawing work together when gluing or otherwise securing the parts to be held in close contact.

The invention provides a clamping embodying an elongated body, such as a bar, and jaws adjustable along the length of the body to adapt the space between them to the size of the work or article to be clamped, pressure exerting means being associated with one of the jaws to forcefully advance it to grip the work.

The invention consists of the novel formation of the jaws and the parts coacting therewith, whereby the clamp may be easily and quickly adjusted to the work and the clamping pressure exerted applied effectively, without appreciable effort and without loss or absorption of the energy expended to operate the clamp.

While the drawings illustrate a preferred embodiment of the invention, it is to be understood that in adapting the means to meet specified needs and requirements the design may be varied and such other changes in the minor details of construction may be resorted to within the scope of the invention as claimed, without departing from the spirit thereof.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and the drawings hereto attached, in which,—

Figure 1 is a top plan view of a clamp embodying the invention.

Figure 2 is a side view of the clamp, parts being broken away.

Figure 3 is a transverse sectional view on the line 3—3 of Figure 2, looking toward the left, as indicated by the arrows.

Figure 4 is a sectional view on the line 4—4 of Figure 2, looking toward the left, as indicated by the arrows.

Figure 5 is a detail sectional view on the line 5—5 of Figure 1.

Figure 6 is a detail perspective view of the head block and the link forming connecting means between it and the operating lever.

Corresponding and like parts are referred to in the following description and designated in the several views of the drawings by like reference characters.

The body 1 of the clamp is elongated and may be of any determinate length and consists of one or more members or bars. In the present instance the body of the clamp is shown as comprising two bars disposed in parallel relation and connected by suitable fastenings, such as a bolt 2 and cross piece 3, the latter having its end portions reduced and journaled in the bars 1, and having studs 4 projecting outwardly from the reduced ends and arranged eccentric thereto. A handle 5 projects outwardly from the cross piece 3 and provides convenient means for turning said cross piece in the bars 1, whereby to effect a nicety of adjustment of the operating lever, as will be explained more fully hereinafter.

Head and tail blocks are adjustably mounted upon the body of the clamp, the head block being adjusted by means of an operating lever 5, and the tail block being adjustable to various positions in the length of the body and held in the required position by means of a bolt 6, and members 7 and 8. The body of the clamp is comprised between the members 7 and 8 and the latter have their marginal side portions grooved to receive the longitudinal edge portions of the bars 1, as indicated most clearly in Figure 3 of the drawings. The members 7 and 8 preferably consist of plates in each of which is formed a longitudinal slot 9 to receive the bolt 6, thereby admitting of the parts having a limited longitudinal movement which is essential to the automatic clamping and releasing of the parts comprising the tail block. The outer side of the member 8 is longitudinally depressed to form an inclined surface 10 against which the nut 11 of the bolt 6 is seated. The outer side of the member 7 is inclined, as indicated at 12, to provide a seat for the jaw 13, which constitutes the stop of the tail block. When the parts are in the position shown in Figures 2 and 5 pressure exerted upon the jaw or stop 13 effects a clamping of the parts proportionate to the pressure exerted. Upon gripping the parts 12 and 13 and moving the same forwardly or towards the head block of the clamp the tail block is released, and may be adjusted to any required position. Lateral displacement of the jaw or stop 13 is prevented by the provision of a tongue and groove connection 14 between the parts 7 and 13, as indicated most clearly in Figure 3 of the drawings.

The head block comprises a jaw 15, a base 16 and an intermediate connecting portion

17. The marginal side portions of the jaw 15 and base 16 engage opposite edge portions of the bars 1, as indicated most clearly in Figure 4, whereas the connecting portion 17 passes through the space formed between the bars 1 and engages the inner side thereof to prevent lateral displacement of the parts 15 and 16. A transverse rib 18 projects outwardly from the connection 17 and is adapted to cooperate with a rib 19 projecting from the butt of the operating lever 5. The rib 19 is disposed intermediate the top and bottom sides of the operating lever 5 leaving projecting portions 20 and 21 above and below the rib 19 to form stops for limiting the sliding movement of the head block and the pivotal movement of the operating lever 5. The stops 20 and 21 are located at different distances from the pivot 22 of the operating lever. A link 23 connects the butt of the operating lever 5 with the intermediate portion 17 of the head block and serves to draw the head block outwardly away from the tail block 7 when the outer end of the operating lever 5 is moved downwardly. When the operating lever 5 is moved upwardly, or to a position in line with the body of the clamp, the rib 19 coacts with the rib 18, whereby to move the head block inwardly towards the tail block so as to clamp the work placed between the two blocks. When the lever 5 reaches the limit of its movement to advance the head block the stop portion 20 engages the outer end of the jaw or stop 15, as indicated most clearly in Figure 2 of the drawings, thereby limiting the movement of said lever.

Links 24 engage the eccentric studs 4 of the cross piece 3 and carry the operating lever 5, which is pivotally mounted between their outer ends. The pivot 22 supporting the lever 5 is mounted in the outer ends of the links 24 and is adapted to act jointly with the cross piece 3 to connect the links and prevent outward displacement of the bars 1. When the lever 5 is operated to advance the head block the matching ribs 18 and 19 coact to advance the head block, and in the final movement of the operating lever the pressure is applied directly to the head block to obviate any absorption of the force expended to operate the lever, thereby admitting of the force applied being approximately uniform throughout the movement of the lever. Rotation of the cross piece 3 by reason of the eccentric studs 4 thereof effect a nicety of adjustment of the operating lever and head block whereby the final gripping pressure may be regulated as required. Adjustment of the tail block adapts the clamp to the particular work in hand, as will be readily appreciated.

Having thus described the invention, I claim:

1. A clamp comprising a body, members having the body disposed therebetween, one of the members having an inclined face and formed with a slot, a jaw seated upon the inclined face of the slotted member, and means connecting the jaw and the two members.

2. A clamp comprising a body, a longitudinally slotted plate placed against a side of the member and having an inclined face, a plate disposed against the opposite side of the body and having a slot and an inturned face, a jaw seated upon the inclined face of the last mentioned plate and means connecting the jaw and plates, and passing through the slots of the latter.

3. A clamp comprising a body, a block adjustable on the body, an operating lever for actuating said block, and a link pivotally supporting the operating lever and having eccentric connection with the body whereby to admit of a nicety of adjustment of the operating lever to regulate the final pressure in the gripping action of the clamp.

4. A clamp comprising a body, a block adjustable thereon, an eccentric element adjustably mounted on the body, an operating lever, and a link carrying the operating lever and forming connecting means between it and the said eccentric element.

5. A clamp comprising a body, a block adjustable thereon and comprising a jaw and base portions disposed upon opposite sides of the body and an intermediate connecting portion, an operating lever, coacting ribs between the block and butt of the operating lever, an eccentric element mounted upon the body and a link connection between the eccentric element and the operating lever.

6. A clamp comprising spaced bars, members spanning the space formed between the bars and engaging opposite edge portions thereof, a jaw carried by one of the members, and means passing between the bars and connecting the said members and normally inclining to the length thereof to effect an automatic clamping of the bars between the said members and adjustable to a perpendicular position to effect a release of the members to permit of their adjustment on the bars.

In testimony whereof I affix my signature.

WHEELER E. SMITH. [L. S.]