My invention relates to clamps of the type in which two parallel jaws are moved toward and away from each other by two screws one of which is journaled to turn freely in an opening in one jaw and is threaded through an opening in the second jaw and the other screw being threaded through the second jaw and is positioned to thrust against the first jaw. Clamps of this type are used by drawing the jaws together upon the object to be held by turning the first screw which is positioned a short distance from the gripping ends of the jaws and then tightening the second screw to spread the rear ends of the jaws apart and thus bring the gripping ends into tighter engagement with the object.

It is customary in clamps of this type to position the handles or heads of the screws on opposite sides of the clamp, that is, one jaw of the clamp contains two thread openings while the other jaw has one bearing opening in which the front screw is journaled and also a bearing socket for the end of the rear screw.

This type of construction has two objections: first, with the screw heads on opposite sides of the clamp, it is awkward to operate the screws with one hand while holding the work piece and clamp with the other, and, secondly, in opening up the clamp, the rear screw frequently comes out of the socket on the opposite jaw, thus leaving the two jaws to swing about the front screw, and there is nothing to hold them in parallel relation.

An object of my invention is to provide a clamp which is more convenient to use than the clamps heretofore available, in that I arrange the two screws with the heads on the same side of the clamp.

Another object of my invention is to provide a clamp having a guide member which maintains the two jaws in parallel relation for all adjustments.

Still another object of my invention is to devise a form of clamp in which neither screw extends through one of the jaws.

Two forms of the invention are illustrated in the accompanying drawing in which:

Figure 1 is a plan view of a clamp in which the front screw has threaded engagement with the left-hand jaw and is journaled in the right-hand jaw;

Figure 2 is a plan view on a smaller scale of another form of my clamp in which the front screw has a left-hand thread, is journaled in the left-hand jaw and has threaded engagement with the right-hand jaw; and

Figure 3 is a sectional view of a portion of the left jaw of Figure 2 showing the manner in which the front screw is journaled in the left jaw.

In Figure 1 of the drawing 1 and 2 are the left and right jaws, respectively, and 3 and 4 are the front and rear clamping screws, respectively, having heads 10 and 11. Jaw 1 has a front internally threaded opening 5 for the screw 3, and jaw 2 has a front smooth opening 8 for the screw 3. The head of screw 3 is grooved at 3b to provide a narrow flange 1 which cooperates with the arm 8 on the jaw 2 to permit screw 3 to rotate with respect to jaw 2 but holds it in fixed position longitudinally, with respect to jaw 2. If desired, screw 3 may be provided with the usual handle 9 for rotating it.

Screw 4 is provided with a smooth, cylindrical axial bore 10 formed substantially throughout the threaded part of the screw. A guide rod 11 is secured to the jaw 1 in an opening 12 formed coaxially with screw 4 and extends into bore 10 of screw 4 for substantially the entire length of the bore. Screw 4 has threaded engagement with internally threaded opening 13 in the jaw 2 and may have a handle 14 for turning it. The heads of the two screws are located on the same side of the clamp.

The clamp of Figure 1 is operated as follows: the article to be clamped may be held in one hand, e.g., the left hand, and the clamp held and operated by the other hand. The clamp is first set to the approximate size of the article to be clamped by turning the screws 3 and 4. Jaws 1 and 2 remain practically parallel. The guide rod 11 slides in or out of the bore 10 as the screw 4 is moved endwise with respect to jaws 1 and 2. The article to be clamped is then inserted between the upper ends of the jaws and the jaw tightened on the article by turning the screw 3. Finally, screw 4 is turned so that its left-hand end pushes against jaw 1. Due to the fact that the rod 11 fits more or less loosely in the bore 10 and the fact that the rod 11 is slightly flexible, pressure of the screw 4 against the jaw 2 spreads the lower ends of the jaws slightly and correspondingly tightens the upper ends of the jaws on the article.

It will be noted that in Figure 1 the front screw 3 has threaded engagement with the left jaw and extends through that jaw to a varying extent depending on the size of the article being clamped. In Figure 2 I have illustrated a form of clamp in which the front screw does not extend through the left jaw but the end of the screw is journaled for free turning in the left jaw and is held...
against axial movement, while the screw has threaded engagement with the right jaw. In order that the front screw shall be turned in the same direction for closing the clamp, it is provided with left-hand threads instead of right-hand threads as in the case of Figure 1. Except for these differences, the clamp shown in Figure 2 is the same as described above for Figure 1.

The manner in which the end of the front screw 3 is journaled in the left jaw 1 is clearly illustrated in Figure 3 which is a sectional view of that part of jaw 1 in which the screw is journaled. As will be seen, the screw 3 is provided with an enlarged head 3b at its end positioned in a counterbore formed in the outside face of the jaw 1. The head 3b is provided with a circular groove 3b extending entirely around its periphery, and this groove receives a locking pin 15 which passes through the jaw 1 from side to side and engages the groove 3b by a close fit permitting rotation of the screw without undue friction, but restraining the screw against axial movement thereof. The arrangement of the back screw 4 and the guide rod 11 in Figure 2 is the same as that already described above for Figure 1.

The operation of Figure 2 is as follows: The clamp and work-piece are handled in the same manner as described above for Figure 1. Turning screw 3 in a clockwise direction causes the jaw 2 to travel along the screw until the front end of the jaw comes into engagement with the work-piece. As the jaw 2 moves forward, it may be necessary to back off the screw 4 to allow the jaw 2 to approach the jaw 1. As soon as the jaws have come in contact with the work-piece, the screw 4 is rotated in a clockwise direction to apply clamping pressure to the work-piece as previously described.

The advantage of the form of clamp shown in Figure 2 is that screw 3 does not extend through the jaw 1 and interferes with the left hand while holding the clamp and adjusting the work-piece therein.

It will be appreciated that guide rod 11 is operative throughout the entire span of the clamp, that it does not add to the obstruction of the clamping surfaces of the jaws, and that it does not protrude through the jaw 2 when the clamp is closed or partly closed. Being enclosed within the bore 10 in the screw 4, the guide rod does not detract in any way from the convenience and utility of the clamp.

I claim:
1. A screw clamp comprising a pair of parallel jaws, a front adjusting screw for exerting a clamping action on said jaws, a rear adjusting screw having threaded engagement with the rear end portion of one of said jaws and having the threaded end thereof arranged to exert a thrust on the rear end portion of the other jaw, said rear adjusting screw having a central bore formed therein substantially throughout the threaded portion thereof, a guide rod positioned within said bore and having one end thereof rigidly secured to the rear end portion of said other jaw, said guide rod having a length substantially equal to the length of the threaded portion of said rear screw and being freely slidable in said bore to maintain said jaws in substantially parallel relation for different spacing adjustments of said jaws.
2. A screw clamp according to claim 1 in which said front adjusting screw has screw threaded engagement with said other jaw, and is journaled in said one jaw for free turning movement, and including means for holding said front screw against axial movement with respect to said one jaw.
3. A screw clamp according to claim 1 in which said front adjusting screw has screw threaded engagement with said one jaw, and is journaled in said other jaw for free turning movement, and including means for holding said front screw against axial movement with respect to said other jaw.

MALCOLM I. HILL.

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