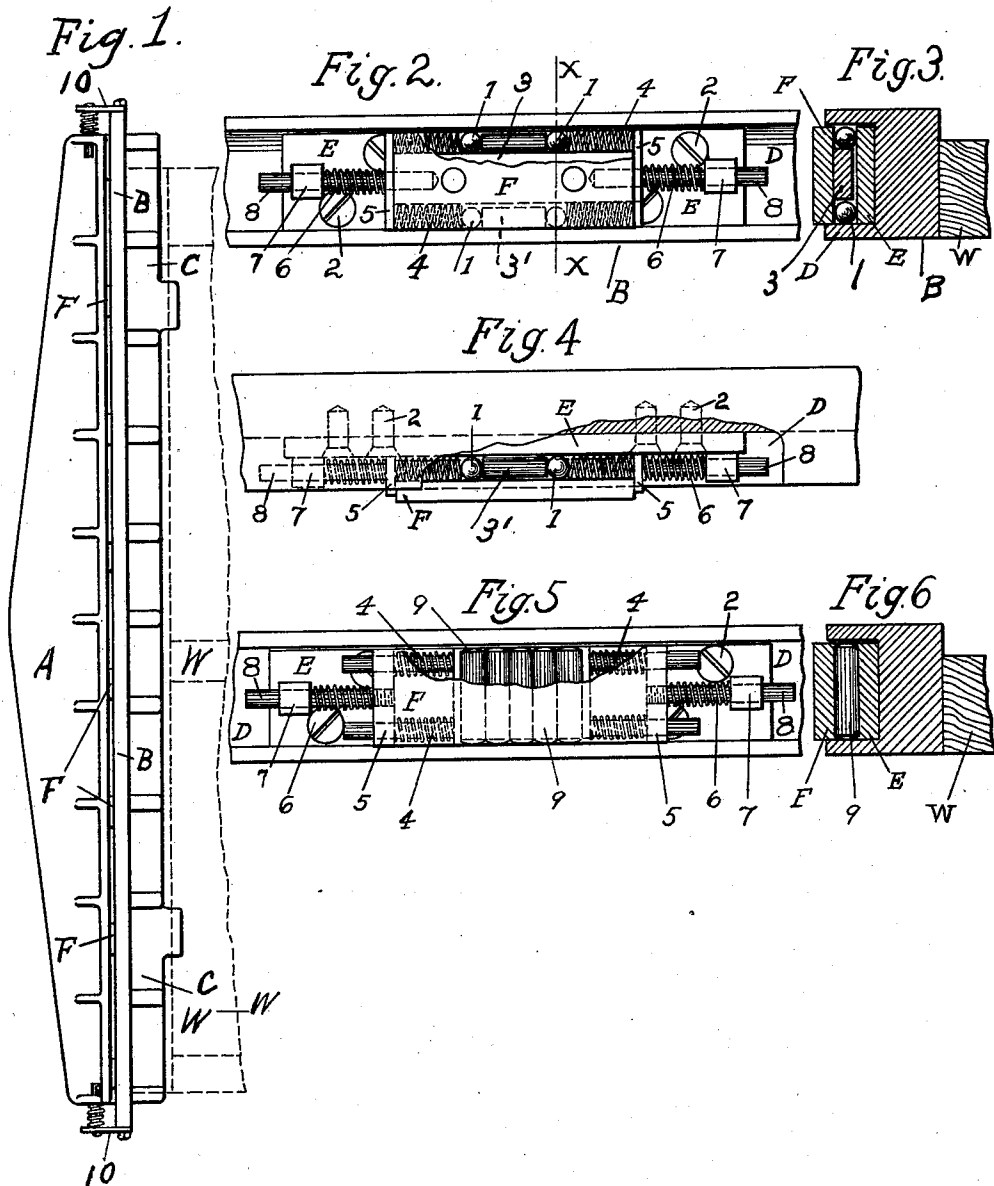


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 APPLICATION FILED FEB. 9, 1911.

1,028,923.

Patented June 11, 1912.

2 SHEETS—SHEET 1.



WITNESSES

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Fig. 7.

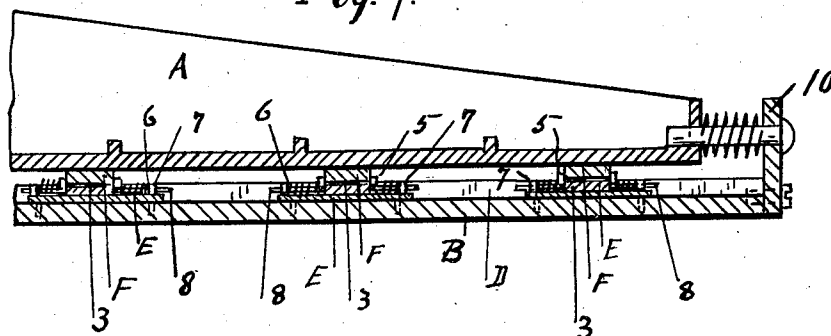


Fig. 8.

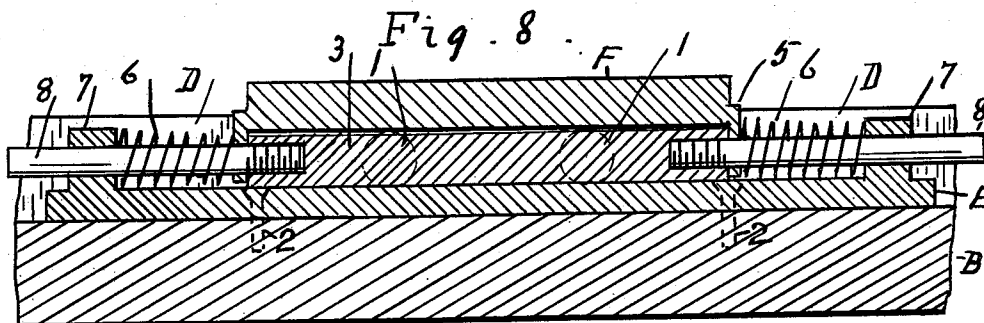
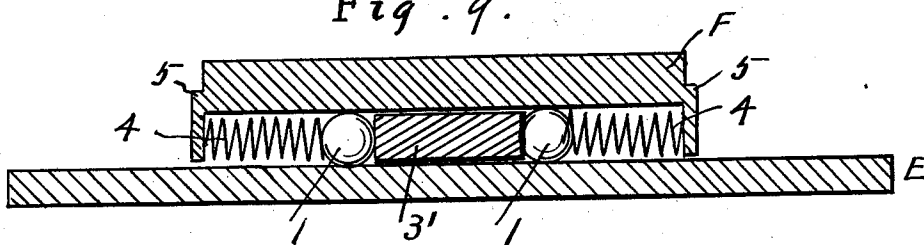


Fig. 9.



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UNITED STATES PATENT OFFICE.

FREDERICK WELKER, OF WILLIAMSPORT, PENNSYLVANIA.

SELF-ADJUSTING CLAMP-BAR FOR DOOR AND FURNITURE CLAMPS.

1,028,923.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed February 9, 1911. Serial No. 607,661.

To all whom it may concern:

Be it known that I, FREDERICK WELKER, a citizen of the United States, and a resident of Williamsport, in the county of Lycoming, State of Pennsylvania, have invented a new and useful Self-Adjusting Clamp-Bar for Door and Furniture Clamps, of which the following is a specification.

My invention relates to an independent bar which is placed between the work and one clamping slab in an ordinary door or furniture clamp, said bar being provided with means for adjusting itself longitudinally whereby the work may automatically square itself while being pressed together; and it consists mainly in applying to an ordinary door clamp a self-contained intermediate bar provided with anti-friction devices which allow it to adjust itself longitudinally, and also in various details, pertaining to such construction.

In the drawings, Figure 1 is a plan view of a clamping slab in a door clamping machine with the self adjusting bar alongside: Fig. 2 is a front elevation of the bar with portions broken away to show details: Fig. 3 is a cross section of the bar at the dotted line x Fig. 2. Fig. 4 is a sectional plan view with portions broken away. Fig. 5 is a front elevation and Fig. 6 a cross section of an equivalent construction, using rollers for the anti-friction members. Fig. 7 is a longitudinal horizontal section of a portion of the length of my device on a larger scale than on Sheet 1; Fig. 8 is on a still larger scale and is a central horizontal section showing a single anti-friction unit attached to a bar; Fig. 9 is a like section of the same unit detached from the bar, the section line being near one edge thereof.

A, Fig. 1, is one of the slabs or platens of an ordinary door or furniture clamp and may be of any length to accommodate the work to be done.

B is a bar approximately square in cross section as indicated in Figs. 3 and 6, and preferably made of steel. A longitudinal recess D, Figs. 2, 3, 4 and 5 is cut in this bar and in it are located the anti-friction devices referred to. In Figs. 2, 3 and 4 these consist of hard steel plates E and F, the first of which lies along the bottom of the recess and in close contact with it, and is held in position by screws or pins 2. Upon this hard surface the balls 1, are free to roll being held in place by separators 3 and by

springs 4. These springs are slightly compressed between the balls and flanges 5, which are rigidly attached to the movable plate F, so that the balls can roll freely when the plate F moves to right or left under the pressure of the work in the clamp, but by means of the springs 4 they are returned when the clamping pressure is removed. The balls 1 are preferably arranged in an upper and a lower row behind each plate F as shown. A separator 3 is situated between said rows, and other separators 3' between the balls of each row. In like manner the movable plate F is returned by springs 6 which are compressed between the flanges 5, and lugs 7: these latter are attached rigidly to the rear plate E, and through an opening in them rods 8 pass freely and are rigidly attached to the flanges 5 on plate F. Rods 8 thus act as guides and retainers against transverse displacement of plate F.

It will be observed that the above description applies to only one of the anti-friction elements or units provided on the bar B, but that these elements are repeated at such intervals along the bar as may be required for strength and durability as indicated in Fig. 1, and it is preferable that these plates lie next to the clamping slab A, and that the plain face of the bar B lies next to the work W. It is plain that by this construction, no special attachments to the clamping slab are required as the bar itself contains all the anti-friction members suitably secured thereto, and it may therefore be removed when not required and used on other clamping machines of a similar character.

At the ends of the bar B, I provide stops 10, Fig. 1, which act to retain the bar in working position, there being freedom sufficient between the ends of the clamping slab and the stops to permit sufficient end motion. An alternate construction is shown in Figs. 5 and 6 in which the same general arrangement is followed, except that hard steel rollers 9, are used instead of balls, flanges 5 and lugs 7 being provided to take the resistance of the springs 6 and return the movable plate F to its normal position, the springs 4 acting on the rolls in a similar way that they act on the balls. When the rollers used are substantially as long as the width of the groove D and several of them are used, as shown in Fig. 5, no special separators are used.

In this description I have stated that

springs 6, return the movable plates to their normal position. What actually occurs is that, on account of the friction of the plates F against the slab A, the bar B, moves automatically and is returned to its normal position by said springs.

The operation of this intermediate clamping bar is as follows: When the doors or similar work W to be pressed together are placed in the machine, one edge of the work comes against one plain clamping slab, and the other against the self adjusting bar B, which in turn is faced against the other slab through the plates F, Figs. 1 and 3. If the parts of the work should not be laid in exactly square, as is often the case with doors and similar wide work, the tenons will bring it square if the door stiles, or one of them, are free to move endwise while the pressure is on; in an ordinary door clamp that is impossible on account of the great friction between the stiles and the clamping slabs; by the interposition of the self adjusting bar B, with the anti-friction plates F, E and balls or rollers 1, 9, this is overcome, and the tenons or jointed surfaces on the work will move the bar longitudinally sufficiently to square up the work automatically.

I do not confine myself to the exact construction of the anti-friction elements shown in the drawings, because various modifications may be devised to accomplish the result described but:

What I claim as my invention and desire to secure by Letters Patent is:

1. An independent self-contained clamping device embracing in its construction, a

bar having a recess in one face, bearing plates located at intervals therein, anti-friction members rolling on said plates, other bearing plates freely adjustable longitudinally to the bar and acting to retain said anti-friction members and receive the pressure of the work for the purposes set forth.

2. In a door or furniture clamp, a platen, a self adjusting clamping bar having a longitudinal recess, fixed bearing plates therein, anti-friction members rolling on said plates, movable retaining plates outside said anti-friction members and extending beyond the edges of the recess, means for holding said outside plates in place, and means within the recess for returning said outside plates to normal position after the clamping operation is completed.

3. In a door or furniture clamp an intermediate self adjusting clamping bar embracing in its construction a longitudinal recess, fixed bearing plates therein, movable outside pressure plates, anti-friction members between said plates, flanges or lugs at the ends of said movable plates, studs secured in said lugs, springs embracing the studs and compressed against rigid lugs on the fixed plates, whereby each anti-friction element becomes a unit of construction for the purposes set forth.

In testimony whereof I have subscribed my name in the presence of two witnesses.

FREDERICK WELKER.

Witnesses:

HUGH GILMORE,
ALBERT T. LEHMAN.