April 15, 1958 O. J. LA ROUCHE 2,830,632

DOOR HOLDING CLAMP

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Fig. 1

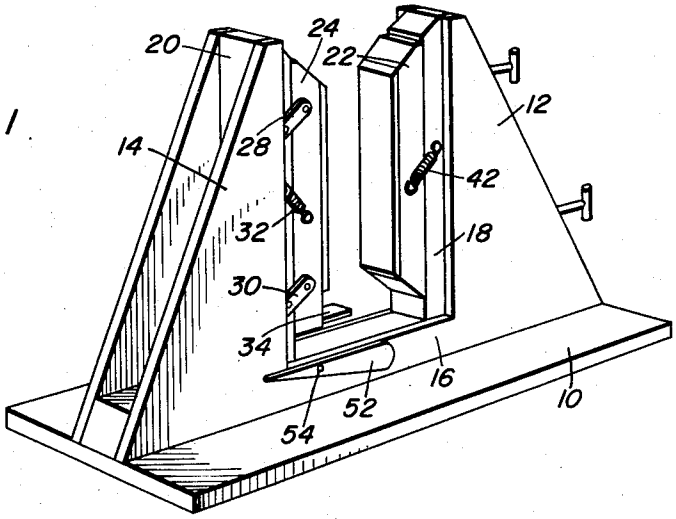
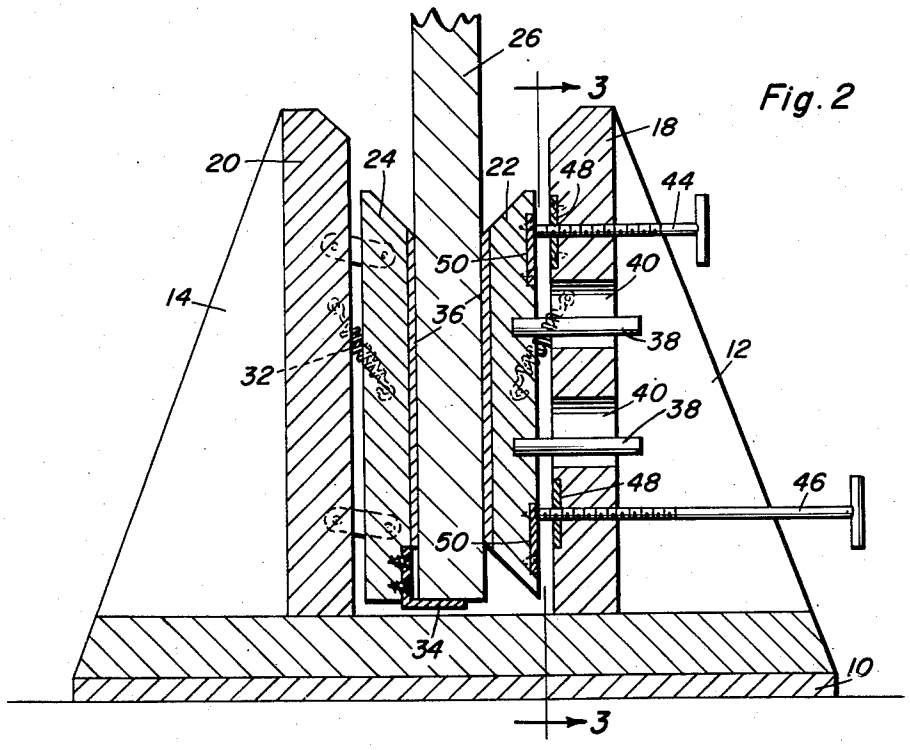


Fig. 2



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Fig. 4

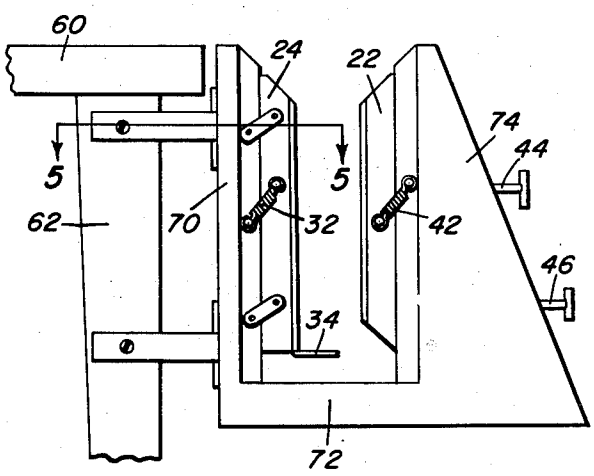


Fig. 5

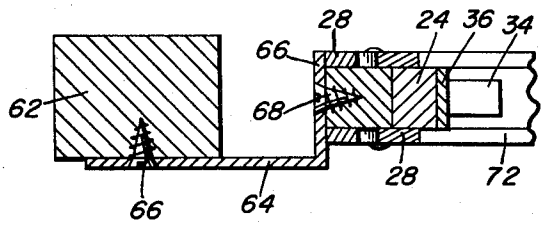
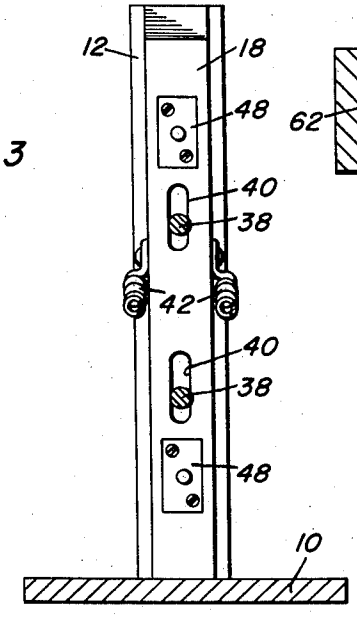


Fig. 3



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DOOR HOLDING CLAMP

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3 Claims. (Cl. 144—296)

This invention comprises novel and useful improvements in a door holding clamp and more specifically pertains to a device adapted to be mounted upon the floor or upon a work bench for holding doors or other articles of work in a vertical position.

The primary object of this invention is to provide a work holding clamp whereby doors or similar objects may be held securely in a vertical position to facilitate work thereon.

A further object of the invention is to provide a clamp in accordance with the foregoing object which shall have an improved gripping action in which the holding pressure is applied uniformly over a considerable area of the article being held.

A further object of the invention is to provide a holding device in accordance with the foregoing objects in which one holding jaw is mounted to have vertical and horizontal swinging movement, while the other jaw is adjustable horizontally towards the swinging jaw and is mounted for vertical sliding movement.

Yet another important object of the invention is to provide a holding clamp in accordance with the preceding objects wherein improved actuating mechanism is provided for the swinging jaw and the adjustable jaw.

A still further object of the invention is to provide in a holding device as aforesaid improved article engaging surfaces together with means for supporting the lower end of an article whereby the weight of the article may facilitate and secure the clamping action of the device.

Still another object of the invention is to provide a door holding clamp in conformity with the above mentioned objects which shall include resilient means tending to separate the clamping jaws to their maximum spacing, and wherein the weight of the article being lowered between the jaws shall serve to move both jaws downwardly into a locking and clamping position upon the article with a minimum of sliding motion upon the article.

A still further important object of the invention is to provide a clamping device in which the relative inclination of the jaws may be easily adjusted; and wherein there shall be provided a means for positively releasing the clamping action of the device to free the article therefrom.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of a preferred embodiment of the door holding clamp, this embodiment being adapted for use as a floor clamp for doors and the like;

Figure 2 is a vertical transverse sectional view through the device of Figure 1, showing a door or other article clamped therein;

Figure 3 is a vertical sectional view taken substantially upon the plane indicated by the section line 3—3 of Figure 2 and showing certain details of the standard for mounting the adjustable jaw for vertical horizontal movement thereon;

Figure 4 is a view similar to Figure 1 but showing the manner in which the clamp may be secured to the side of a work bench or the like; and

Figure 5 is a horizontal detail view taken substantially upon the plane indicated by the section line 5—5 of Figure 4 and showing the manner in which the clamping device is mounted upon the side of a leg of a work bench.

Referring first to the embodiment of Figures 1–3, it will be seen that the holding clamp consists of a plate-like base 10 of any desired character upon which is secured a pair of standards 12 and 14 having vertical opposed faces defining a vertical opening therebetween, the standards being preferably connected across their lower ends as by a web 16. As shown, the standards may be built up of parallel vertical plates with suitable spacers and reinforcing means disposed therebetween. Conveniently, the adjacent vertical faces of the standards 12 and 14 are provided with vertical supporting members 18 and 20, to which are mounted the adjustable jaw 22 and the swinging jaw 24 as set forth hereinafter.

As will be observed from Figures 1 and 2, the upper edges of the standards and of the jaws are beveled in order to facilitate the introduction therebetwen of a door or other work piece 26 which is to be grasped and held by the device.

As will be best apparent from Figure 1, the swinging jaw 24 is mounted for both vertical and horizontal swinging movement by sets of links 28 and 30 which are pivoted to the upper and lower portions of the swinging jaw 24 respectively and to the block 20 of the standard 14. These links are of equal length whereby during its vertical and horizontal swinging movement, the swinging jaw 23 will be retained in parallel relation to the adjacent sets of the supporting blocks 18 and 20. A pair of tension springs 32 is connected to the block 20 and to the swinging jaw to yieldingly urge the latter upwardly and into contact with the face of the supporting block 20 as shown in Figure 1. In a manner which will be subsequently apparent, when a piece of work is placed in the device, the jaw is swung downwardly and outwardly from the supporting block 20 and thus is moved into clamping engagement with the adjustable jaw 22, as will be apparent from Figure 2.

Secured to the lower portion of the swinging jaw 24 is an L-shaped bracket having a horizontally extending lateral supporting member 34 which is adapted to support the lower end of the work piece 26 and through the weight of the work piece to cause vertical and horizontal swinging movement of the swinging jaw.

Both of the jaws 22 and 24 are preferably provided with flat, smooth, work gripping surfaces 36 such as hardwood plates or the like, whereby the clamping action of the jaws will be applied to the workpiece without danger of marring the finish or surface of the same.

Referring now more specifically to Figures 2 and 3, it will be seen that the adjustable jaw 22 is provided with a pair of dowel pins 38 which extend laterally therefrom and are slidably received in vertical guide slots 40 formed in the support block 18 whereby the adjustable jaw is guided for vertical movement relative thereto. A pair of tension springs 42 is connected to the adjustable jaw and the support block 18 whereby the adjustable jaw will be yieldingly urged into retracted position upwardly of and against the vertical surface of the block 18. Upper and lower adjusting screws 44 and 46 extend through the support block 18 and through screw threaded plates 48 upon the face of the block 18 which is adjacent the adjustable jaw. A pair of wear plates 50 are secured to the adjacent

face of the adjustable jaw for engagement by the adjusting bolts.

In operation, it will be seen that the adjustable jaw may be moved towards the swinging jaw to provide the proper clearance therebetween to receive a particular article of work to be clamped by the device. When the work is placed upon the supporting member **34**, the swinging jaw will move downwardly until the work carried thereby is pressed between the surface plates **36** of the two jaws, after which both jaws will move downwardly as a unit and without sliding upon the work. This latter motion is effected by reason of the sliding action of the wear plates **50** on the adjusting bolts **44** and **46**, and by the sliding movement of the dowels **38** in the guide slots **40**.

It will be observed that adjustment of the bolts **44** and **46** may be such that the engaging surfaces **36** of the two jaws will be disposed in parallel relation, or if desired a slight inclination may be imparted to the adjustable jaw relative to the swinging jaw.

When it is desired to release the work, the releasing means in the form of a lever **52** which is pivoted as at **54** to the web portion **16** may be actuated by the foot and caused to lift the work piece **26** and thus impart upward movement to the jaws releasing the gripping engagement upon the work.

While the device of Figures 1–3 is specifically adapted for use upon a floor or similar surface for supporting a relatively large article of work such as a door or the like, the same principle may be employed in a device which will be secured to the leg of a work bench. Thus, as shown in Figure 4, the numeral **60** designates a work bench having a leg **62** to which a slightly modified construction of clamping device is attached. In this form of the invention, one or more supporting means **64** which are the equivalent of the base **10** and constitute a supporting base for the clamp, are secured to the leg **62** as by fastening screws **66**. These holding means include vertical flanges **66** which are secured by fasteners **68** to a vertical standard **70** constituting an equivalent of the standard **14**. The standard **70** is secured as by the integral web portion **72** to the other standard **74** which is equivalent to the standard **12**. As in the preceding form, adjustable and movable jaws **22** and **24** are provided having the same construction as that previously mentioned. Since the construction of the two jaws and of their supporting and adjusting means are identical to that previously described, the same numerals have been em-

ployed to designate the same parts in this form of the invention and further description is believed to be unnecessary. In this form, however, it is deemed unnecessary to provide the releasing means **52** previously mentioned and the same has been omitted therefrom.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A work holding clamp comprising a supporting base having a pair of stationary vertical standards fixedly secured thereon for receiving a vertically disposed piece of work therebetween said standards having parallel, vertical opposed faces, swinging and adjustable work engaging jaws positioned between said standards, sets of links connecting the swinging jaw to one of said standards in permanent parallel relation to one of said faces for combined vertical and horizontal movement, means mounting the adjustable jaw upon the other standard for vertical movement in parallel relation to the other face and adjusting means for imparting horizontal movement to said adjustable jaw.

2. The combination of claim 1 including a laterally extending work supporting member on the lower end of said swinging jaw and extending toward said adjustable jaw, the latter being cut away at its lower end to provide a clearance opposite said member.

3. The combination of claim 1 including a jaw and work releasing means pivoted upon said base and movable into engagement with the work placed between said jaws.

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