Oct. 17, 1944. R. S. WALDRUP 2,360,602

PLATE CLAMP

Filed Feb. 19, 1944

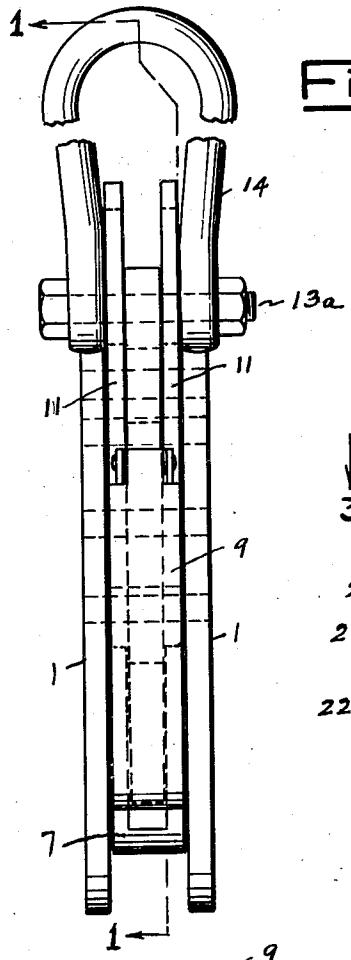


Fig. 2.

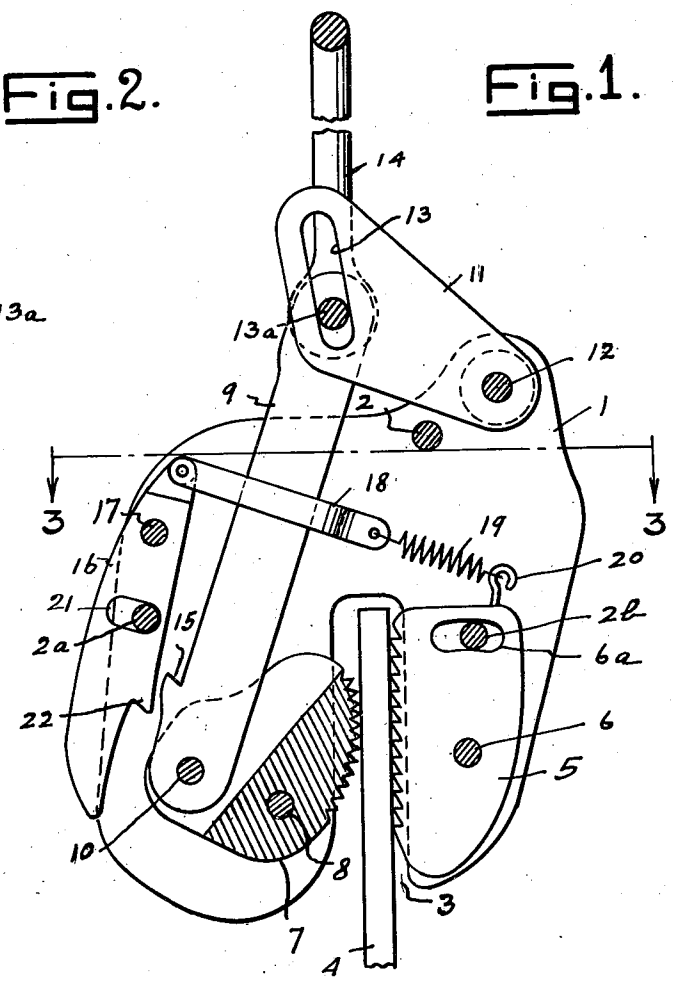


Fig. 1.

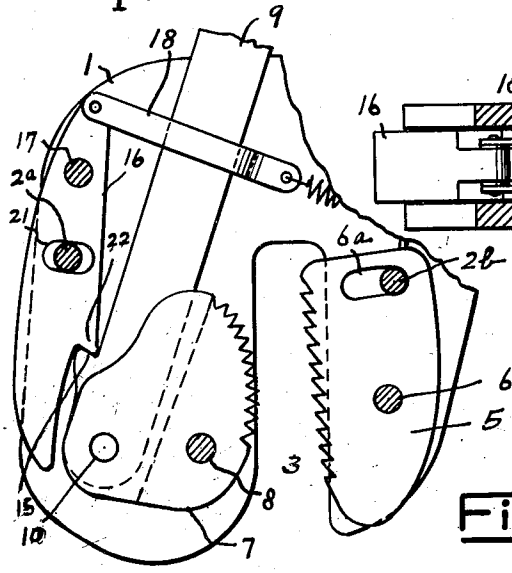


Fig. 4.

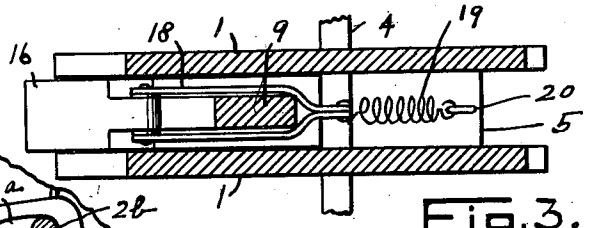


Fig. 3.

Inventor

Rodney S. Waldrup.

By

E. V. Hardway.

Attorney

Patented Oct. 17, 1944

2,360,602

UNITED STATES PATENT OFFICE

2,360,602

PLATE CLAMP

Rodney S. Waldrup, Houston, Tex.

Application February 19, 1944, Serial No. 523,147

2 Claims. (Cl. 294—104)

This invention relates to a clamp and has particular relation to that type of clamp specially designed for handling heavy metal plates and the like.

The invention herein described embodies certain improvements over that type of clamp disclosed in my copending application filed in the United States Patent Office on November 15, 1943 under Serial No. 510,414.

An object of the invention is to provide a clamp composed of a frame having opposing pivotally mounted jaws for gripping the plate to be lifted with means for temporarily latching one of said jaws in inactive position to permit the release of the clamp from the plate when the plate has been landed at its destination.

A further object of the invention is to provide a clamp of the character described wherein the jaws are normally in active position ready to engage with the plate to be lifted with means for temporarily latching one of the jaws inactive when the clamp is ready to be disengaged from the load.

With the above and other objects in view the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawing, wherein:

Figure 1 shows a sectional view of the clamp taken on the line 1—1 of Figure 2.

Figure 2 shows an edge view.

Figure 3 shows a cross sectional view taken on the line 3—3 of Figure 1.

Figure 4 shows a fragmentary sectional view taken on the line 1—1 of Figure 2 and showing one of the clamp jaws latched inactive to permit the release of the clamp from the plate.

Referring now more particularly to the drawing wherein like numerals of reference designate similar parts in each of the figures the numerals 1, 1 designate side plates of the frame which are anchored together by suitable cross rods as 2, 2*a* and 2*b* which space the side plates apart.

The lower ends of the side plates have the deep slots 3, 3 to receive the edge of the plate 4 to be lifted. On one side of the slot there is a jaw 5 pivoted on the cross pin 6 and whose upper end has a transverse arcuate slot 6*a* through which the bolt 2*b* extends.

The inner margin of this jaw extends into the slots 3 and has a series of teeth arranged in the same plane.

On the other side of the slots 3 there is a jaw 7 which is pivoted on the eccentric pin 8 and its operative face is arcuate and serrated and may be swung into the slots to grip the plate as shown in Figure 1 or may be retracted as shown in Figure 4.

There is a control link 9 between the plates. Outwardly of the pivot 8, the jaw 7 is slotted and one end of the link 9 is pivoted in this slot on the pin 10 which extends through said jaw and link. At the opposite side of the frame there are the toggle levers 11, 11 which are pivoted, at one end, on the pin 12, connecting said plates and the other ends of which are provided with opposing slots as 13. A cross bolt 13*a* extends through said slots and through the other end of the link 9.

A clevis 14 embraces the toggle levers and the ends of its side arms have bearings on the bolt 13*a*, said bolt being retained in position by the usual head on one end and nut on the other end.

Near its lower end the outer margin of the link 9 has a notch 15 therein and there is a latch 16 pivoted between said cross plates on the pin 17. The latch is normally held disengaged from the notch by means of a yoke 18, one end of which is pivoted to the upper end of the margin and whose other end is connected to one end of a pull spring 19. The other end of this pull spring is attached to an anchor 20 carried by the upper end of the jaw 5.

The latch 16 has a transverse slot 21 through which the bolt 2*a* extends and which limits the range of movement of said latch.

In operation the jaw 7 is free to move. A lifting cable is connected to the clevis 14. The clamp may be applied to the plate 4 which is usually, but not always, in horizontal position and an upward pull on the cable will cause a corresponding longitudinal movement of the link 9 which will swing the jaw 7 into engagement with the plate and the jaw 5, being pivotally mounted, will adjust itself in accordance with the position of the plate so as to take a firm hold thereof. The plate will be thus securely gripped between the jaws.

When the plate is landed, at destination, and the cable is slacked off, the link 9 will move downwardly carrying the notch 15 beneath the active end 22 of the latch 16 and said latch may then be forced inwardly into engagement with the notch to hold the jaw 7 retracted, as shown in Figure 4, so that it will not re-engage the plate when it is desired to disengage the clamp from the plate. Usually this will be done automatically for the reason that the plates are usually de-

livered one by one to form a stack of plates which extend vertically and as each plate is landed in position alongside the stack and is leaned against the stack, the link 9 will move downwardly and the latch 16 will rest against the stack and be pressed inwardly until its end 22 engages in the notch 15 and upon upward pull of the cable the jaw 7 will be held retracted and the clamp will release the plate.

When the plate is released and the clamp is swung into position to be engaged with another plate, the slack on the cable will permit the latch to be disengaged from said notch, by the pull of spring 19 thus leaving the jaw 7 free to move as before.

As herein above stated the plate to be lifted will often lie in horizontal position while the clamp is attached thereto. If the jaw 5 is underneath the plate when an upward pull is taken on the cable, the bolt 13*a* will move upwardly along the slots 13 causing the toggle levers to move downwardly until they are stopped by the rod 2 and the bolt 13*a* will move on up along the slots 13 thus imparting a tension to the link 9 and moving the jaw 7 into engagement with the plate. If the slots were not provided, no tension should be exerted through the link 9 until the plate had been moved to approximately vertical position and in such case the clamp might slip-off the plate before the jaw 7 came into action.

What I claim is:

1. A plate clamp comprising a frame, opposed jaws pivoted on the frame, each of said jaws having a plate-gripping surface, lifting means for the clamp including a link connected to one of the jaws and effective to actuate said jaw into gripping relation with an object between the jaws upon elevation of the clamp by said means, a latch, means normally holding the latch inactive, interengaging means carried by the latch and link, respectively, adapted to be interengaged, upon movement of the link to release its jaw, whereby said jaw will be temporarily retained in inactive position.

2. A plate clamp comprising a frame having confronting, plate gripping, jaws, one of said jaws being pivoted to move into and out of gripping relation with an object between the jaws, a link pivoted at one end to the pivoted jaw, a toggle lever pivoted at one end to the frame and whose other end is provided with a slot, a cable attaching means movable in said slot and to which the other end of the link is connected, said link being connected to the pivoted jaw at a point such that upon elevation of the clamp by the cable the pivoted jaw will be actuated into gripping relation with an object between the jaws, a latch, interengaging means carried by the latch and link, respectively, and arranged to be interengaged when said pivoted jaw is moved to inactive position to temporarily retain said pivoted jaw in said inactive position.

RODNEY S. WALDRUP.