Sept. 11, 1945. L. NELSON 2,384,636

PLATE TONG

Filed Sept. 8, 1944

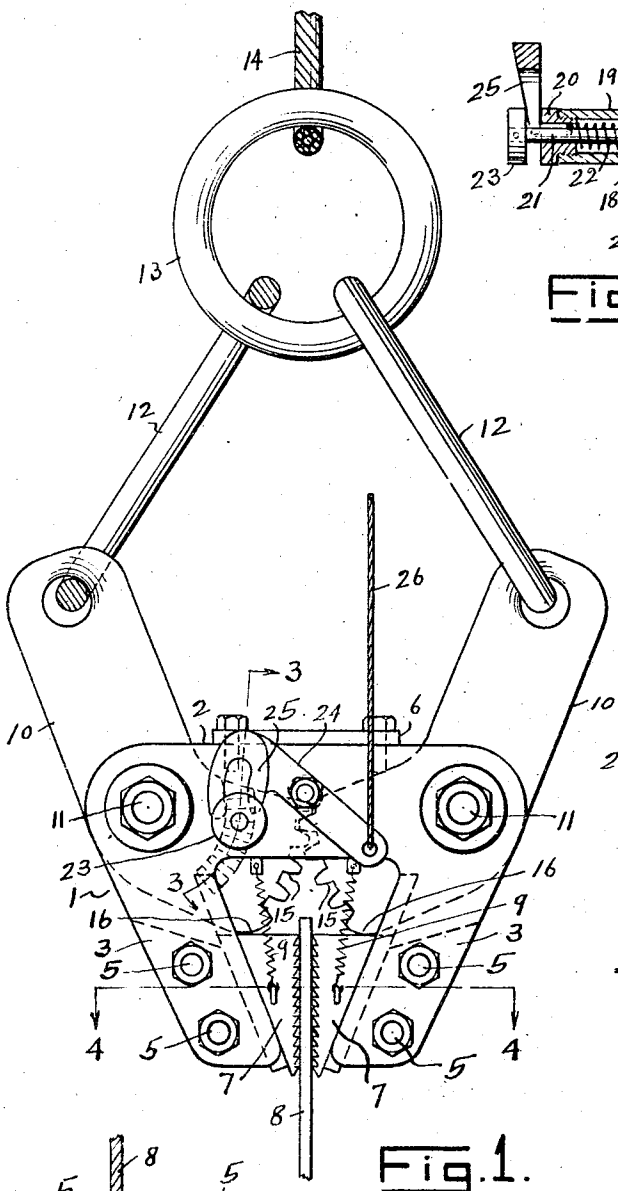


Fig. 1.

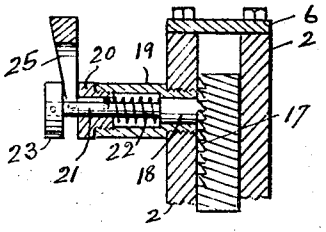


Fig. 3.

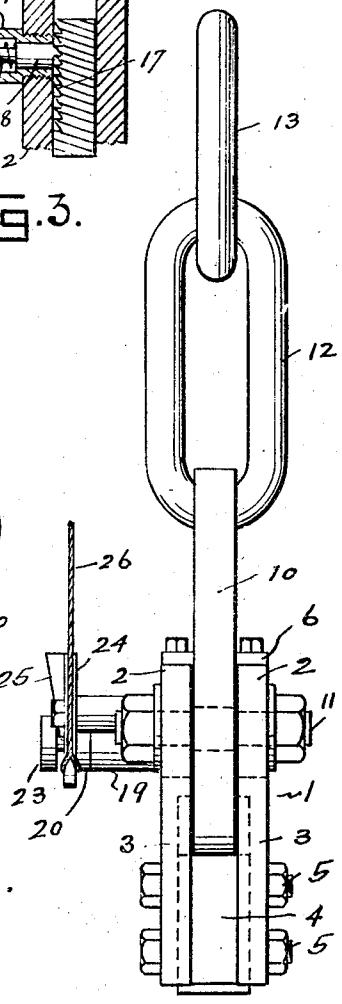


Fig. 2.

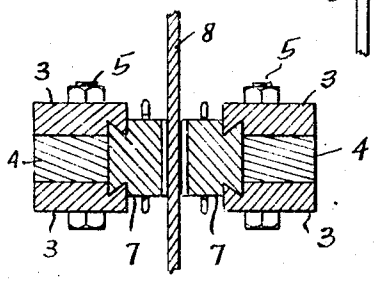


Fig. 4.

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PLATE TONG

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2 Claims. (Cl. 294—86)

This invention relates to a tong and has particular relation to a tong designed for lifting heavy plates of metal and other similar objects.

An object of the invention is to provide a tong of the character described having slidably mounted engaging jaws for gripping the object to be lifted with means for forcing the jaws into gripping relation with the load.

It is another object to provide a tong wherein equal force will be applied to both of the jaws so that they will be maintained in opposite relation to each other and will equally grip the load.

Another object is to provide a tong of the character described equipped with releasable locking means for locking the jaws in engagement with 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 side view of the tong, partly in section.

Figure 2 shows an edge view.

Figure 3 shows a fragmentary, sectional view taken on the line 3—3 of Figure 1; and

Figure 4 shows a cross, sectional view taken on the line 4—4 of Figure 1.

Referring now more particularly to the drawing wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates the frame as a whole. This frame includes two similar cross bars 2, 2, each having the converging side bars 3, 3 which are formed integrally with the corresponding cross bars 2, 2. These cross bars and converging side bars are spaced apart by the spacers 4, 4, between the ends of the side bars, and the bolts 5, 5 pass through said side bars and spacers to secure them together. The frame is further reinforced and strengthened by the plate 6 which is bolted to the cross bars 2 as shown more accurately in Figures 2 and 3.

Slidable on the outwardly converging inside faces of the side bars 3, 3 and having a dovetail connection therewith are the wedge shaped jaws 7, 7 whose inner faces are toothed to grip the plate 8, or other load inserted between said jaws.

On each side of the frame are the pull springs 9, 9, each being attached, at one end, to the cross bar 2 and at its other end to the corresponding side of a jaw 7. There are the lifting levers 10, 10 which are pivotly mounted, on the bolts 11, 11, between the respective ends of the cross bars 2.

Links 12, 12 are linked to the free ends of said arms 10, 10 and these links are connected by a ring 13 provided to receive a lifting cable 14.

The inner ends of the arms 10 are extended inwardly and formed into intermeshing gear faces 15, 15 and they are also provided with cam faces 16, 16 which bear against the inner, or wide ends of the jaws 7, 7.

Accordingly when the plate 8 is inserted between the jaws 7 and the tong is lifted the weight of the load will cause the arms 10 to swing inwardly toward each other and the inner ends of said arms being geared together the cam 16 will exert an equal force against the opposing ends of the jaws causing them to move, in unison, into gripping relation with said plate so that the plate will be firmly held as it is lifted.

In order to lock the jaws in engagement with the load and so as to prevent accidental release, locking means have been provided which are shown more accurately in Figures 1 and 3. The outer side of the inner end of one of the arms 10 is formed with rack teeth 17 which are arranged to be engaged by the locking dog 18. This dog is mounted in a tubular housing 19 which is attached to one of the bars 2 and whose outer end is provided with a gland 20 through which the shank 21 of the dog slides. The dog is normally held inwardly in position to engage the ratchet teeth 17 by a coil spring 22 within the housing 19 and surrounding said shank and bearing against said gland 20 and the dog. The interengaging teeth are pitched so that they will pass each other as the jaws 7 are moved to engaging position and will then interlock to hold said dogs in said engaging position.

On the outer end of the shank 21 there is a head 23.

Pivoted on the frame there is a release lever 24, one end of which is formed with spaced wedges 25 positioned to wedge between the gland 20 and the head 23.

Attached to the other end of the lever 24 there is a cable 26, accessible to the operator.

When the load is landed at the desired location and the jaws 7 are relieved of its weight the operator may pull the cable 26 and force the wedges 25 inwardly between the head 23 and the gland 20 and may thus force the dog 18 outwardly and release it from the ratchet teeth 17 and upon slacking off of the cable 14 the arms 10 will move outwardly thus releasing the cams

16 from the jaws 7 permitting them to move along the converging faces and to release the load between them. The springs 9 will assist in moving the jaws 7 to released position but they are provided mainly for holding the jaws in said position after they have been released.

What I claim is:

1. A lifting tong comprising a frame having end bars spaced apart and formed with bearing faces which converge toward their free ends, wedge shaped gripping jaws mounted to slide on said faces to grip a load between them, arms pivoted on the frame whose inner ends are geared together and also formed with cams which bear against the wide ends of the gripping jaws, lifting means which connect the other ends of said arms and releasable interlocking means carried by said frame and one of the jaws whereby said jaws may be locked in gripping engagement.

2. A lifting tong comprising a frame having end bars spaced apart and formed with bearing faces which converge toward their free ends, wedge shaped gripping jaws mounted to slide on said faces to grip a load between them, arms pivoted on the frame whose inner ends are geared together and also formed with cams which bear against the wide ends of the gripping jaws, lifting means which connect the other ends of said arms and releasable interlocking means carried by said frame and one of the jaws whereby said jaws may be locked in gripping engagement and means for manually releasing said interlocking means.

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