Feb. 9, 1943. J. J. RACZ 2,310,869

GRAB

Filed April 13, 1942

Fig. 1.

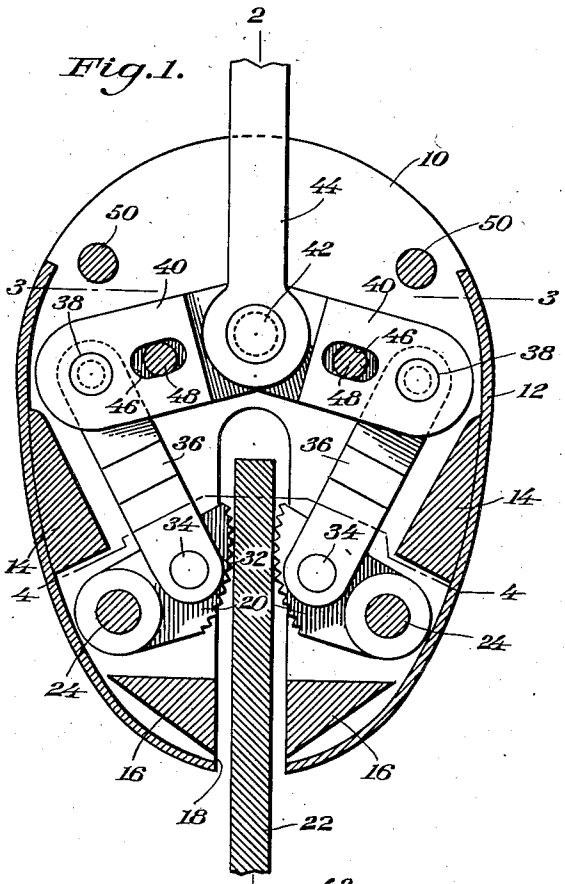


Fig. 2.

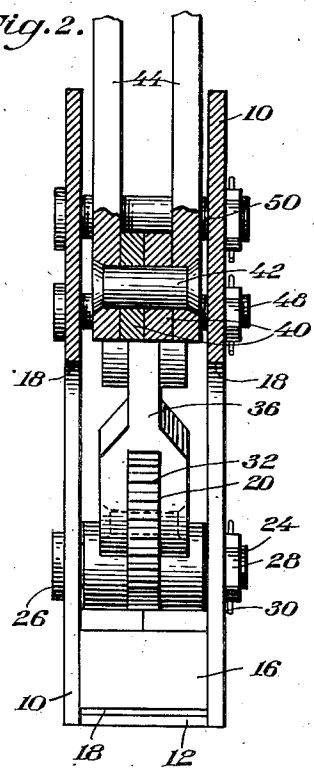


Fig. 3.

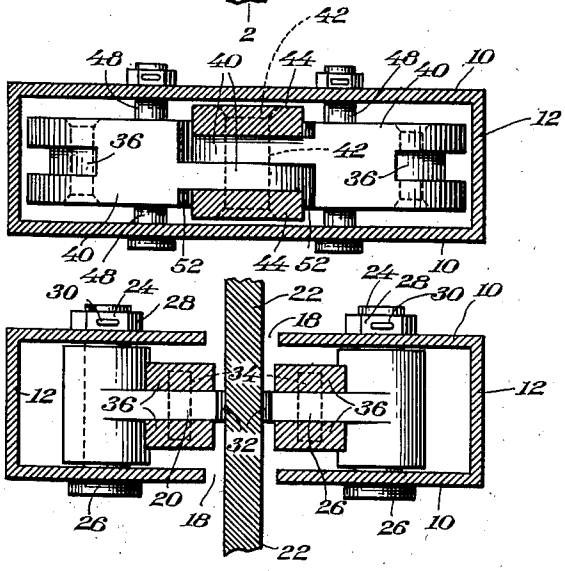


Fig. 4.

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UNITED STATES PATENT OFFICE

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GRAB

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Application April 13, 1942, Serial No. 438,826

5 Claims. (Cl. 294—114)

My invention relates to the handling of parts such as heavy metal plates, and has among its objects and advantages the provision of an improved grab for clutching such parts, wherein the grab includes a unit housing and operating mechanism therein so constructed and arranged as to permit removal thereof without separation or destruction of the housing.

In the accompanying drawing:

Figure 1 is an elevational view with one side removed;

Figure 2 is a view taken along the line 2—2 of Figure 1;

Figure 3 is a view taken along the line 3—3 of Figure 1; and

Figure 4 is a view taken along the line 4—4 of Figure 1.

In the embodiment selected for illustration, I make use of two generally oval-shaped plates or side walls 10 held in spaced and parallel relationship by two metal strips 12. These strips are arranged edgewise to the walls 10 and welded to the walls. Reinforcing spacer bodies 14 and 16 are also welded to the walls 10. Both walls 10 are slotted at 18 for the entry of heavy plates or other material to be lifted. The walls 10 and the strips 12 are arranged to provide a housing for the clamping mechanism, and the spacers 16 are spaced the same distance as the width of the slots 18 and are located at the lower ends of the walls 10 to afford ample protection for the housing, as when a lateral pull is exerted on the housing with respect to the article being lifted.

Figure 1 illustrates two jaws 20 arranged inside the housing and lying in a common plane to engage the plate or work 22 when inserted between the jaws. Each jaw is pivotally mounted on a bolt 24 passing through openings in the walls 10. Thin heads 26 are formed on the bolts 24 for engagement with one of the walls 10, and the other ends of the bolts are threaded for the reception of thin nuts 28 secured against accidental unloosening by the usual cotter pin fastener 30.

Both jaws 20 have convexed and toothed plate-engaging faces 32 and each jaw is pivotally connected at 34 with the lower end of a link 36. The links 36 are pivotally connected at 38 with links 40 pivotally connected at 42 with a clevis 44 to which the hoist cable or other lifting device (not shown) may be attached.

A slot 46 is provided in each link 40 intermediate its ends for loosely receiving a fulcrum bolt 48 passed through openings in the walls 10. These bolts are of the same construction as the bolts 24. An upward pull on the clevis 44 imparts pivotal movement to the links 40 and downward movement to the links 36 for pivoting the jaws 20 into clamping engagement with the plate 22. The curvature of the work-engaging faces of the jaws 20 is such as to provide effective gripping engagement between the jaws and plates or work of variable thickness.

Slightly above the links 40 are located two bolts 50 extending through openings in the walls 10 and of the same type as the bolts 24. The links 40 are arranged in overlapping relationship and have shoulders 52 engageable one with the other when pivoted to predetermined relative positions, as in case of failure of the bolts 48. With the bolts 50 spaced in accordance with Figure 1, the links 40 would lock and engage the bolts 50 to prevent the link and jaw mechanism from pulling out of the housing. The upper ends of the strips 12 terminate some distance beneath the upper ends of the walls 10 to provide an opening into which the link mechanism may be inserted and to facilitate removal when repairing damaged or worn parts. The entire link mechanism may be withdrawn by removing the bolts 24, 48 and 50.

In operation, the gripping action of the jaws 20 is increased in proportion to the load lifted by the grab. When removing the grab from the plate, the load is removed from the clevis 44 and the housing is lifted off the plate. The opening in the upper end of the housing is such as to permit the clevis 44 to pivot throughout a considerable part to facilitate handling of plates when being stacked horizontally.

Without further elaboration, the foregoing will so fully illustrate my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A lifting grab comprising a housing having two spaced walls, connecting walls secured to the spaced walls at their perimeters, said spaced walls each having a slot passing through an edge thereof and said connecting walls being spaced at the slots for the entrance of work to be lifted, said connecting walls being spaced one from the other opposite the slots to provide an opening in the housing, opposed work-grabbing jaws pivoted to the spaced walls to pivot across the slots for engagement with the work, first links pivoted intermediate their ends on the spaced walls, second links each having a pivotal connection with one end of one first link and with one jaw, and lifting means extending through said opening and having the remaining ends of said first links pivotally connected therewith.

2. The invention described in claim 1 wherein said jaws are mounted on pivot bolts extending through openings in said spaced walls.

3. The invention described in claim 1 wherein said jaws are mounted on pivot bolts extending through openings in said spaced walls and in which said first links are provided with slots for the reception of pivot bolts extending through openings in said spaced walls.

4. The invention described in claim 1 wherein said jaws are mounted on pivot bolts extending through openings in said spaced walls and in which said first links are provided with slots for the reception of pivot bolts extending through openings in said spaced walls, said first links having shoulders limiting their relative pivotal movement, and bolts extending through said spaced walls and spaced to have engagement with said first links in the event of rupture of the bolts passing through the first links.

5. The invention described in claim 1 wherein said spaced walls are welded to said connecting walls and in which brace members are welded to the spaced walls.

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