March 2, 1948. C. A. CRANE 2,437,078

LIFTING JACK

Filed April 17, 1946 2 Sheets-Sheet 1

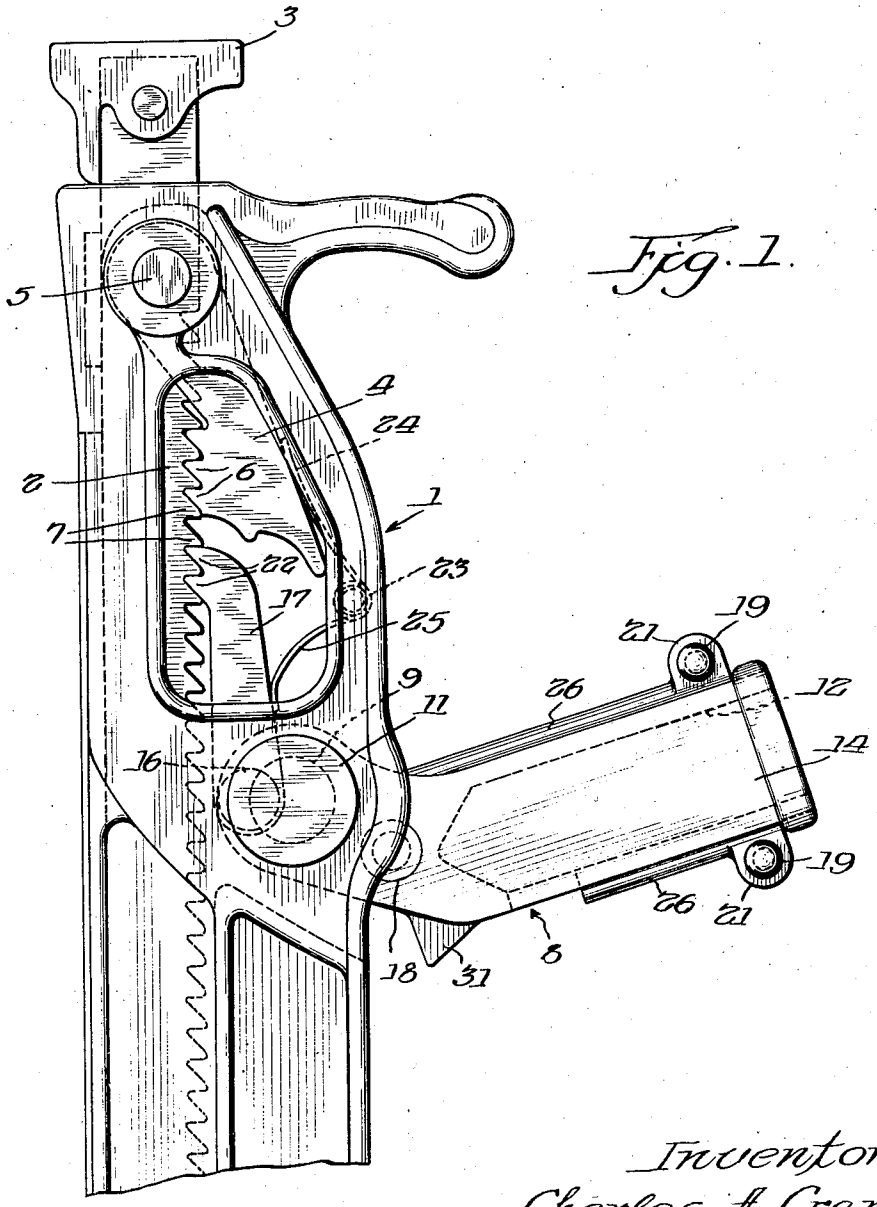


Fig. 1.

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Fig. 2.

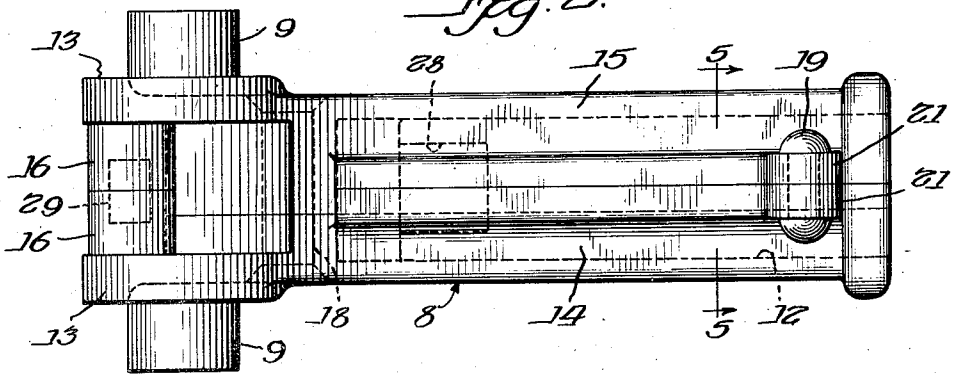


Fig. 3.

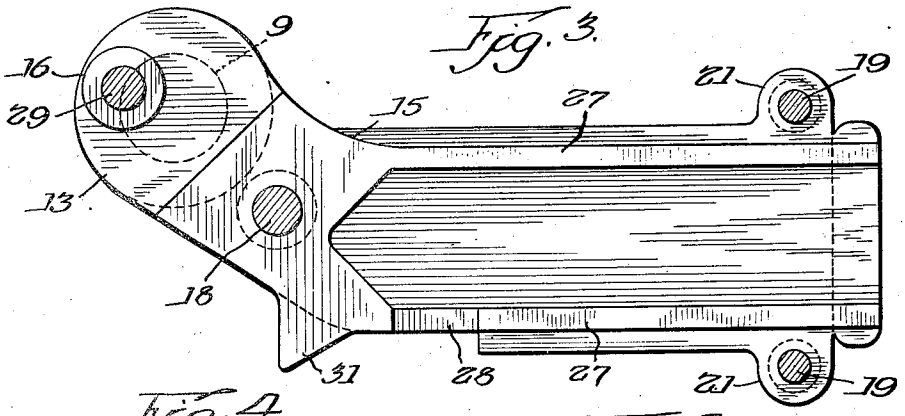


Fig. 4.

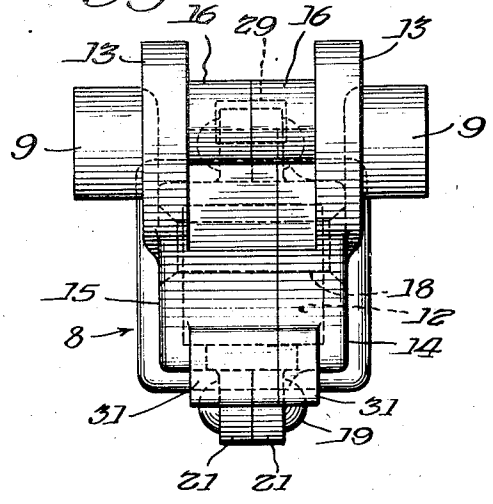
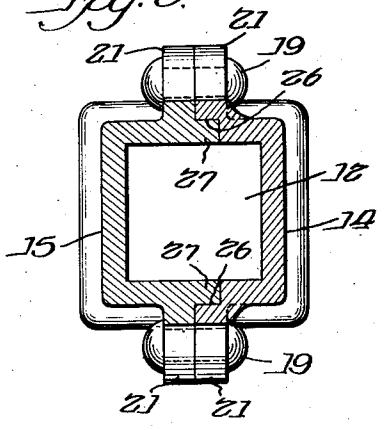


Fig. 5.



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LIFTING JACK

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3 Claims. (Cl. 74—523)

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The invention relates generally to lifting jacks and more particularly to a novel pawl carrier for a pawl and ratchet type jack or the like.

The invention has among its objects the production of a pawl carrier which is stronger and more durable than prior devices and which may be constructed to provide any desired leverage.

Another object of the invention is the production of such a device which is relatively inexpensive to manufacture and which may be used as a replacement in jacks of this type now in use.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

In the drawings where like reference characters indicate like or corresponding parts:

Fig. 1 is a side elevational view of a portion of a ratchet type jack embodying the present invention;

Fig. 2 is a top plan view of a pawl carrier embodying the present invention;

Fig. 3 is a side elevational view of one section of the carrier illustrated in Fig. 2;

Fig. 4 is an end elevational view of the carrier illustrated in Fig. 2; and

Fig. 5 is a sectional view taken approximately on the line 5—5 of Fig. 2.

Referring to Fig. 1, the present invention is illustrated in combination with a ratchet type jack of the type presently in use which comprises a housing designated generally by the numeral 1 of which only the upper portion is shown in the figure, the lower portion terminating in a suitable base.

Slidably mounted in the housing 1 is a toothed rack member 2, the latter being movable vertically in a suitable channel formed in the housing 1, the upper end of the member 2 terminating in a suitable work engaging cap 3. The member 2 is held in an extended position by a detent pawl 4 pivotally supported by the housing 1, as indicated at 5, the pawl 4 having teeth 6 thereon engageable with similar teeth 7 on the member 2. Thus as the latter is extended upwardly, the detent pawl 4 will maintain the member 2 in its extended position.

Pivotally supported in the housing 1 is a pawl carrier indicated generally by the numeral 8, the latter having oppositely disposed trunnions 9 journaled in suitable bushings 11 (only one of which is shown in Fig. 1). The bushings 11, in the present instance, are closed at their outer ends to seal the ends of the trunnions, and may be held in position by any suitable means.

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Referring to Figs. 2 to 5, the pawl carrier 8 is provided with a handle receiving socket 12 at one end and is forked at the opposite end to provide a pair of ears 13 from the outer face of which extend the trunnions 9. It will be noted that the carrier 8 is longitudinally divided into two sections or halves 14 and 15 respectively, one of the ears 13 extending from each of the respective halves. If desired, the member 8 may be divided otherwise than longitudinally with one of the ears 13 on each section. Extending inwardly from the inner faces of the respective ears 13 is a pair of cylindrically shaped pawl supporting members 16, the members 16 being axially aligned with respect to one another to form in effect a single cylindrical pawl support.

Referring again to Fig. 1, the movable pawl 17 is pivotally supported by the members 16, the pawl 17 being of slightly less thickness than the distance between the ears 13, and having a bore therein of approximately a slightly larger diameter than that of the members 16, whereby the two halves 14 and 15 of the member 8 may be assembled with the members 16 positioned within the bore of the pawl 17, after which the two sections may be permanently secured together by any suitable means, as for example, the rivet 18, and the rivets 19 passing through the lugs 21 formed on the respective halves. It will be noted that the axis of the members 16 is offset from the axis of the trunnions 9, so that considerable leverage may be applied to the pawl 17 by means of a suitable handle inserted in the socket 12. The pawl 17 is provided with teeth 22 at its upper end engageable with the teeth 7 on the rack member 2 so that as the socket portion of the member 8 is rotated downwardly about the axis of the trunnions 9, the pawl 17 will be moved upwardly, thus carrying the rack member 2 with it, the detent pawl, as previously mentioned, preventing the rack from moving downwardly after pressure is released on the member 8. The pawls 4 and 17 may be urged into engagement with the teeth 7 on the rack 2 by any suitable means, as for example, a spring 23 having an upper portion 24 engageable with the pawl 4 and a lower portion 25 engageable with the pawl 17.

It has been customary in the past to utilize a separate pin for pivotally securing the movable pawl to its one piece carrier, consequently such constructions require that the ears of the carrier be provided with apertures through which the pin may pass to fasten the pawl to the carrier. As it is necessary in the case of heavy duty jacks to employ a very high ratio between the handle

and the pawl to obtain sufficient lifting power, the axis of the pin must necessarily be positioned quite close to the axis of the trunnions, this distance normally being less than the sum of the radius of the trunnions and the radius of the pin. As a result thereof it has been necessary to cut away a portion of the trunnion to permit the insertion of the pin between the ears, thereby weakening the structure and placing a definite minimum upon the distance between the axes. In the present construction the two sections 14 and 15 are each constructed with their respective member 16 and trunnion 9 as an integral part of the respective section, this being accomplished, for example, by casting or forging and as no holes are required in the carrier adjacent the trunnions 9, the members 16 may be positioned with their axes as close to the axis of the trunnions as desired to obtain any desired amount of leverage.

As illustrated in Figs. 3 and 5, the portions of sections 14 and 15, adjacent the handle receiving socket 12, are provided with interlocking flanges 26 and 27 respectively along their meeting edges so that stresses in the two sections resulting from the application of pressure to the handle in the socket 12 will tend to be distributed between the two sections 14 and 15. Obviously, if desired, the socket 12 may be circular or oval instead of rectangular as illustrated in the drawings, depending upon the type of handle to be used therewith. Likewise the member 8 may be provided with a suitable opening 28 adjacent the inner end of the socket 12 to provide means for preventing dirt and other matter from accumulating in the socket.

In some cases it may be desirable to provide a reinforcing pin 29 connecting the members 16, the pin merely being inserted in suitable recesses formed in the ends of the members 16 so that stresses will tend to be applied equally to both of the members 16. The pin 29 may be formed separately as illustrated or formed as an integral part of one of the members 16; likewise the member 8 may be provided with a stop 31, engageable with the housing 1 to limit the downward movement of the member 8.

It will be apparent from the above description that I have provided a pawl carrier for use on jacks of the type described in which the pivotal axis of the pawl may be positioned as close as desired to the axis of the trunnions without any sacrificing of strength or efficiency of the device. Likewise it will be apparent that by suitably proportioning the dimensions of the member 8 it may be readily used as a replacement for other prior types of pawl carriers without any changes in the remaining elements of such jacks and obviously as there are no apertures or the like in my improved carrier, maximum strength and efficiency is achieved.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence, I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

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

1. In a pawl carrier of the type described, the combination of an elongated member divided into two separable sections, one end of said member being provided with handle engaging means thereon, the opposite end of said member being forked to provide two spaced opposed ears, one ear being carried by each section of said member, axially aligned trunnions extending outwardly from the respective ears, a pair of axially aligned abutting pawl supporting members inwardly extending from the opposed faces of the respective ears and integrally formed with the latter, the axis of said pawl supporting members being spaced from the axis of said trunnions, and means for securing said sections together.

2. In a pawl carrier of the type described, the combination of an elongated member longitudinally divided into two separable halves, one end of said member being hollow to form a handle receiving socket, the adjoining edges of said halves adjacent said socket having interlocking flanges thereon, the opposite end of said member being forked to provide two spaced parallel ears, one ear being carried by each half of said member, axially aligned cylindrically shaped trunnions extending outwardly from the respective ears and integrally formed therewith, a pair of axially aligned cylindrically shaped pawl supporting members inwardly extending from the opposed faces of the respective ears and integrally formed with the latter, said supporting members adapted to be positioned in abutting relation within a bore extending through a movable pawl for pivotally supporting the pawl thereon, the axis of said pawl supporting members being spaced from the axis of said trunnions a distance less than the sum of the radii of the cylindrical trunnions and respective pawl supporting members, and means for securing said halves together.

3. In a pawl carrier of the type described, the combination of an elongated member longitudinally divided into two separable halves, one end of said member being hollow to form a handle receiving socket, the adjoining edges of said halves adjacent said socket having interlocking flanges thereon, the opposite end of said member being forked to provide two spaced parallel ears, one ear being carried by each half of said member, axially aligned trunnions extending outwardly from the respective ears and integrally formed therewith, a pair of axially aligned pawl supporting members inwardly extending from the opposed faces of the respective ears and integrally formed with the latter, the axis of said pawl supporting members being parallel to and spaced from the axis of said trunnions, both of said axes being spaced from the longitudinal axis of said socket, reinforcing means connecting said supporting members, and means for securing said halves together including a plurality of lugs on one of said halves cooperable with similar lugs on the other of said halves, fastening means connecting each pair of cooperable lugs, and additional fastening means passing through said halves adjacent the inner end of said socket.

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