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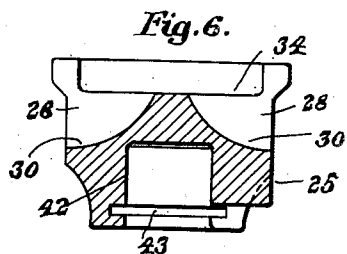
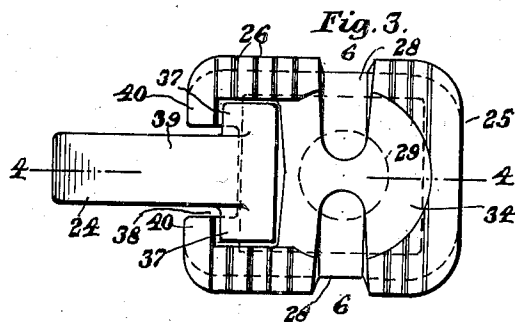
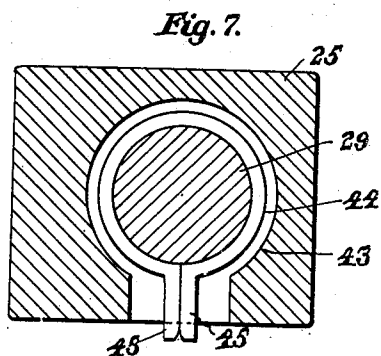
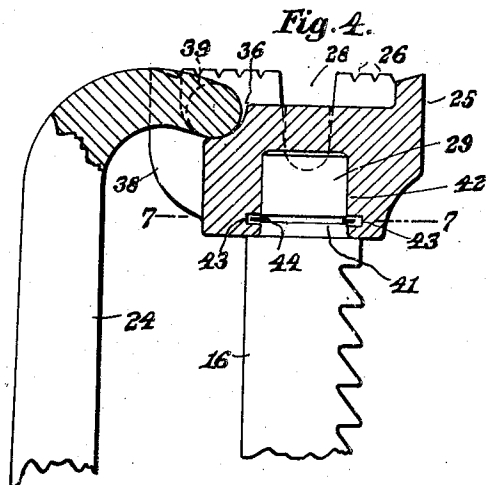
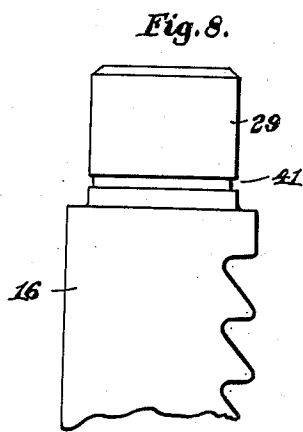
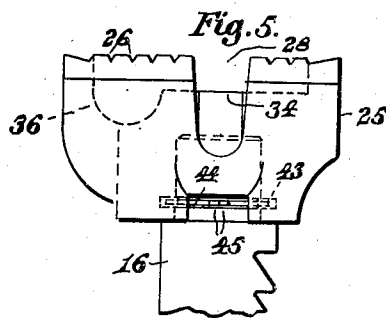
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2,165,366

SWIVEL CAP FOR LIFTING JACKS

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2 Sheets-Sheet 2



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2,165,366

SWIVEL CAP FOR LIFTING JACKS

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6 Claims. (Cl. 254-133)

This invention relates to lifting jacks and particularly to the caps superimposed on the upper ends of the vertically movable rack bars.

The object of the present invention is to provide the upper end of the rack bar with a removable cap rotatable about a vertical axis and provided with supports for either a chain or a lifting hook.

This and other desired objects are attained by the mechanism illustrated in the accompanying drawings.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawings, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings

Figure 1 represents an elevation of a lifting jack embodying the principles of the present invention.

Figure 2 represents an elevation of a portion of a chain with a hook thereon, said chain being adapted to be supported on the cap of the rack bar of said jack.

Figure 3 represents a plan of the cap and a hook supported thereon.

Figure 4 represents a vertical section of same on line 4, 4 on Fig. 3.

Figure 5 represents a side elevation of the same.

Figure 6 represents a vertical section of the cap on line 6, 6 on Fig. 3.

Figure 7 represents a horizontal section of the cap on line 7, 7 on Fig. 4, and

Figure 8 represents an elevation of the upper end of the rack bar of the jack.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10 is a base member to which an arm 11 of the jack casing 12 is pivoted at 13.

At the upper end of the casing 12 is a handle 14 by which the jack may be moved from place to place.

Extending from one side of the casing 12 is a lever socket 15 adapted to be operated to actuate the mechanism within the casing 12 and adapted to raise the rack bar 16.

As this operating mechanism within the casing 12 is the general construction shown in U. S.

Patent No. 2,135,938, issued to applicant, November 8, 1938, it is deemed to be unnecessary to illustrate the same in detail.

The lower end of the rack bar 16 has a lifting foot 17 extending outwardly therefrom.

Opposite the foot 17 the arm 11 is provided with a notch 18 with which coacts a pawl 19 pivoted at 20 to the base 10.

This pawl has an extension 21 between which and the base 10 is a spring 22 normally forcing the pawl 19 in the direction of the arrow *a* on Fig. 1 of the drawings.

When it is desired to retain the casing 12 vertical, the said casing is moved into its vertical position and the toe 23 of the pawl will enter the notch 18 and hold the casing in vertical position.

When it is desired to have the casing 12 inclined as shown in Fig. 1, the operator with his foot depresses the extension 21 against the tension of the spring 22 and this will allow the casing to be moved into such inclined position.

This is preferably the position when the shoe 24 is to be supported upon the cap 25 mounted on the upper end of the rack bar 16.

It will be noted that when in this position the shoe 24 will depend vertically from the cap 25.

The upper face of the cap 25 is notched as indicated at 26 to prevent slipping of any load placed upon said notched upper face.

The cap 25 has depressions 28 formed in the upper end thereof, these depressions being oppositely disposed and diametrical to the axis of the cylindrical portion 29 formed on the upper end of the rack bar 16.

The lower walls of the depressions 28 are curved as indicated at 30 in Fig. 6 of the drawings.

These depressions are adapted to receive two links 31 of the chain 32 shown in Fig. 2 of the drawings, the intermediate link 33 connecting the links 31 resting on the bottom of the depression 34 in the upper end of the cap 25.

The chain 32 may have secured to one end thereof a hook member 35 adapted to be connected to a load to be lifted.

This cap is slightly elongated as shown in Fig. 3 and at its elongated end it has a semi-cylindrical depression 36 to receive the trunnions 37 forming a part of the shoe 24.

This end of the cap 25 is cut away at 38 to receive the upper end 39 of the shoe 24 and permit free movement thereof about the axis of the trunnions 37.

The ends of these trunnions 37 coact with the

inwardly extending flanges 40 to prevent the accidental displacement of the shoe when in use.

It is obvious that when the shoe 24 is not to be used it may be easily lifted and removed from the cap 25.

The cylindrical portion 29 of the rack 16 has an annular groove 41 cut therein and the cylindrical socket 42 formed in the under side of the cap 25 has an annular groove 43 formed therein.

When the cap 25 is positioned on the cylindrical portion 29 of the rack bar 16 the grooves 41 and 43 are in the same plane.

The depth of the groove 43 is greater than the depth of the groove 41.

In these grooves 41, 43 is disposed a spring snap ring 44, the ends 45 of which radiate from the axis of the cylindrical portion 29, as shown in Fig. 7 of the drawings.

In order to prevent friction when the cap 25 is rotated on the cylindrical end 29, it is made of a thickness considerably less than the width of the grooves 41 and 43.

The inner diameter of this snap ring 44 snugly fits the inner cylindrical wall of the groove 41 in the cylindrical portion 29.

Between the outer cylindrical wall of the snap ring 44 and the inner cylindrical wall of the groove 43 there is ample space as shown in Fig. 7 to permit the spring snap ring to be expanded when it is desired to remove the cap from the rack bar or secure such cap to said rack bar.

While inserting the cylindrical portion 29 of the rack bar 16 into the cap or removing the same from said cap, the snap ring 44 will remain in the groove 43 and will not be displaced therefrom.

When it is desired to remove the cap 25 from the rack bar 16, the jack is placed on its side and then the cap is turned until the ends 45 of the snap ring 44 point upwards.

The operator then, with some such tool as a screw driver inserted between the ends 45, may then cause the snap ring 44 to expand sufficiently in the groove 43 to permit the cap 25 to be removed from the rack bar 16.

When replacing the cap 25 on the end of the rack bar 16 it is only necessary to open the ends of the snap ring and then force the end 29 through the snap ring, the extreme end of the cylindrical portion 29 of the rack bar being beveled to assist in this operation.

As soon as the grooves 41, 43 are in the same plane the snap ring 44 will move into the groove 41 of the cylindrical portion 29.

By mounting the cap member 25 upon the cylindrical end 29 of the rack bar 16 in the manner herein described, it is obvious that the cap 25 may be readily moved about the axis of the cylindrical portion 29 of the rack bar 16 so that the shoe 24 may be utilized on any one of three sides of the casing, and the same is true when the chain 33 is secured to the cap member as heretofore described.

It is always necessary that the cap 25 should swivel on the end of the rack bar but it has been found very desirable to provide some means whereby this cap 25 may be fastened to the end

of the rack bar 16 in such a manner that it may be removed easily and this result is obtained by the construction herein shown and described.

Heretofore, manufacturers have mounted a cap on the end of the rack bar by permitting the rounded end of the rack bar to be inserted through the cap and then upsetting the end, allowing only such clearance as will permit the cap to turn freely.

This has been found to be very unsatisfactory as in order to remove the cap from the rack bar, it has been found necessary to chip away the heading on the rack bar in order to remove the cap.

This is a very difficult job to do in view of the fact that the rack bar has been heat treated and hardened.

Once a cap 25 mounted as just described has been removed from the cylindrical portion 29 of a rack bar, it is almost impossible to replace the cap and securely fasten the same to the rack bar.

By the means herein shown and described the difficulty of mounting and demounting the cap on the cylindrical end of the rack bar is entirely eliminated.

It is believed that the operation and many advantages of the invention will be understood without further description.

Having thus described my invention, I claim:

1. A lifting jack comprising a vertically movable and non-rotatable bar having a cylindrical upper end provided with an annular flat sided groove in the periphery thereof, a rotatable cap therefor having in the bottom thereof a socket fitting said cylindrical upper end and provided with a deep annular flat sided groove in the inner wall thereof, and a flat sided snap ring positioned in said grooves and preventing displacement of said cap, said ring being free from contact with the side walls of the groove in said cap.
2. A lifting jack as set forth in claim 1, in which the depth of the groove in the cap is much greater than the depth of the groove in the cylindrical upper end of the non-rotatable bar.
3. A lifting jack as set forth in claim 1, in which means is provided whereby the snap ring while in the groove of the cap may be expanded and removed from the annular groove in the cylindrical upper end of the non-rotatable bar.
4. A lifting jack as set forth in claim 1, in which the opposite ends of the snap ring are substantially radial to the center of said ring, extend beyond the periphery of said cap, and are normally in contact.
5. A lifting jack as set forth in claim 1, in which the thickness of said snap ring is considerably less than the width of the outer of said grooves, and the diameter of said outer groove is considerably greater than that of said snap ring.
6. A lifting jack as set forth in claim 1, in which the snap ring is flat sided and normally impinges only on the inner wall of the groove in the cylindrical end of the vertically movable bar with its outer edge extending slightly into the deep groove of said cap.

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