April 3, 1928. 1,664,579

B W. TWYMAN

LIFTING JACK

Filed June 8, 1925 2 Sheets-Sheet 1

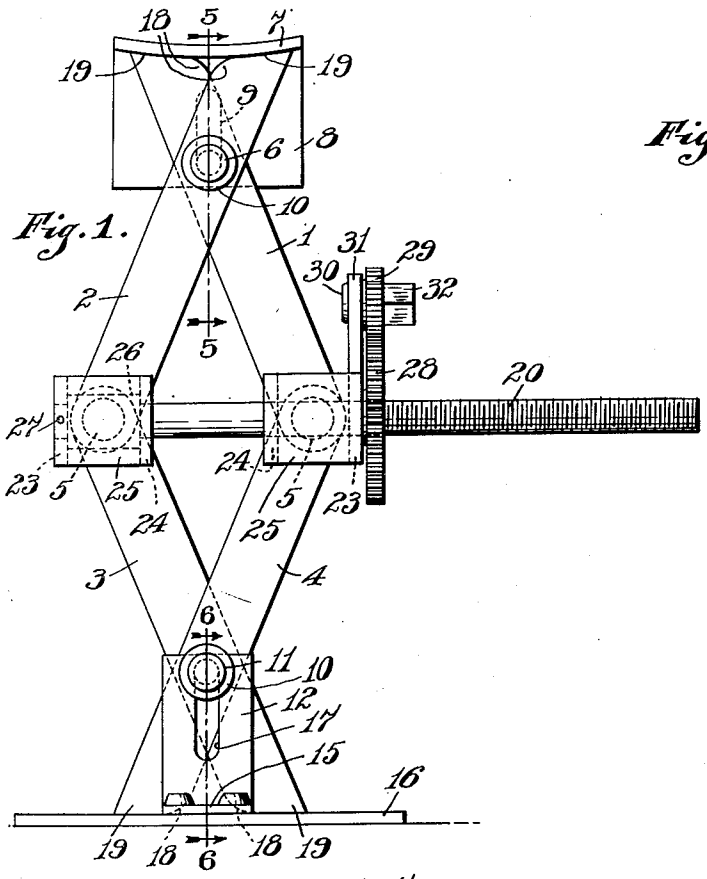


Fig. 1.

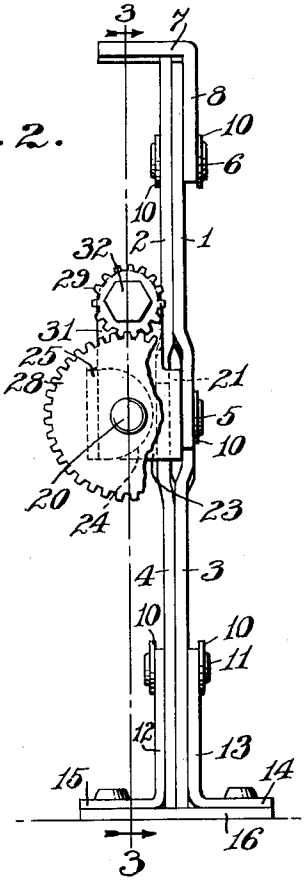


Fig. 2.

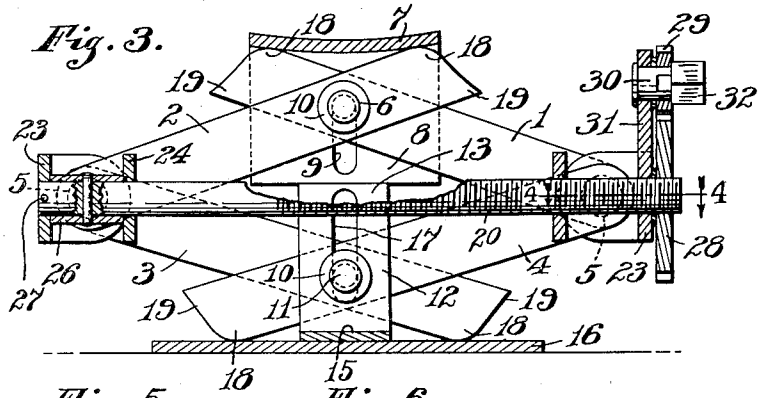


Fig. 3.

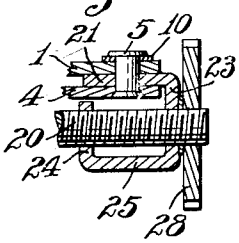


Fig. 4.

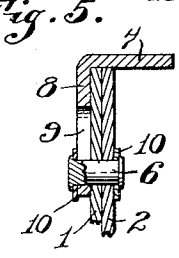


Fig. 5.

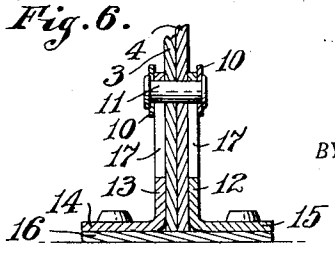


Fig. 6.

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B W. TWYMAN

LIFTING JACK

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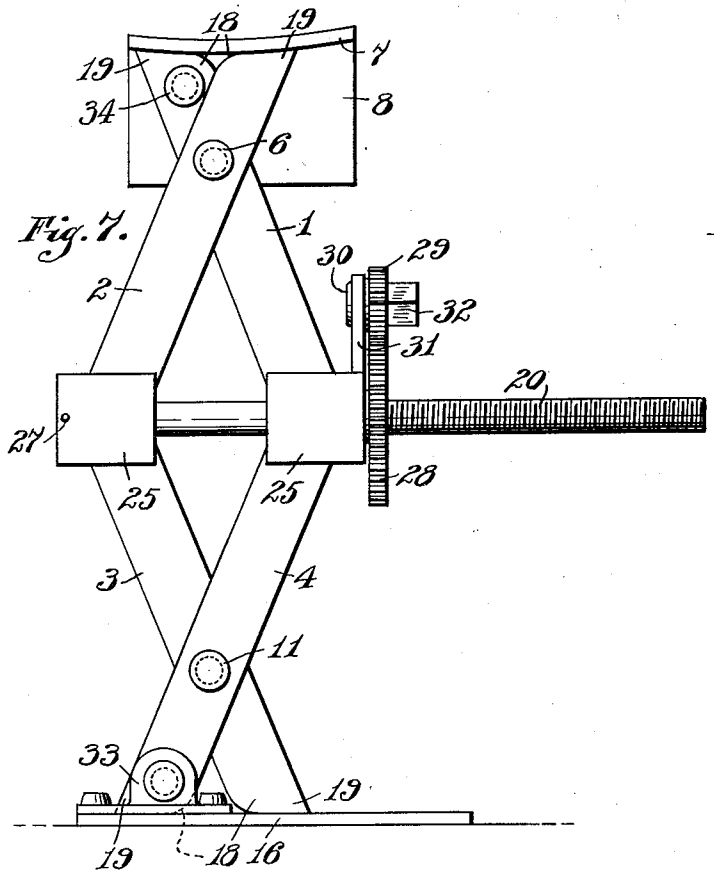


Fig. 7.

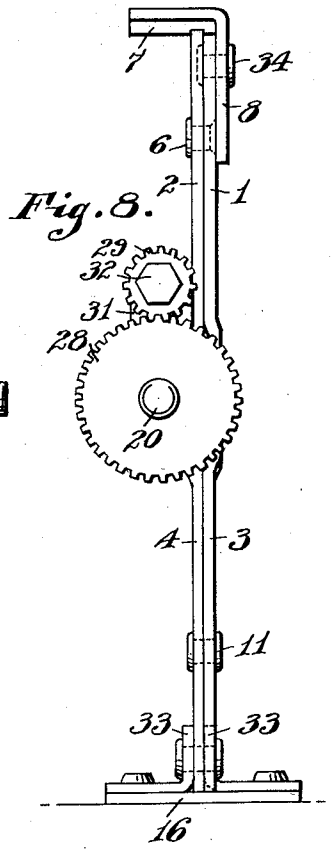


Fig. 8.

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Patented Apr. 3, 1928. 1,664,579

UNITED STATES PATENT OFFICE.

B WICKLIFFE TWYMAN, OF MARYSVILLE, MICHIGAN.

LIFTING JACK.

Application filed June 8, 1925. Serial No. 35,694.

My invention relates to improvements in lifting jacks and particularly to lifting jacks for automobiles.

My jack is especially designed for use in connection with automobiles equipped with the "balloon" tire, and one of the objects of my invention is to provide a jack which may be lowered to be readily slipped under an automobile when the "balloon" tire is deflated and which will give sufficient lift to fully clear the tire from the ground.

Another object of my invention is to provide a jack of the lazy tong or toggle type which may be cheaply manufactured and which at the same time will possess sufficient rigidity to prevent tilting.

For the purpose of disclosing my invention I have illustrated certain embodiments thereof in the accompanying drawings in which

Fig. 1 is a side elevation of a jack embodying my invention;

Fig. 2 is an end elevation thereof;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a detail section on the line 4—4 of Fig. 3;

Fig. 5 is a detail section on the line 5—5 of Fig. 1;

Fig. 6 is a detail section on the line 6—6 of Fig. 1;

Fig. 7 is a side elevation of a modification, and

Fig. 8 is an end elevation thereof.

In the structure illustrated I provide a toggle structure comprising the upper toggles 1 and 2 and the lower toggles 3 and 4 which are jointed at their knuckles by pivot pins 5.

The upper ends of the toggles 1 and 2 cross one another and at the point of crossing are pivoted together by a pivot pin 6. Resting on the tops of the crossed toggles 1 and 2 is a saddle 7 provided with a downwardly extending vertical guide plate 8 which is provided with an elongated slot 9 and through which passes the pivot pin 6. Suitable washers 10 are provided on each end of the pivot pin for preventing the separation of the parts.

The ends of the lower toggles 3 and 4 are likewise crossed and pivoted together at the crossing point by a pivot pin 11. These toggles work between a pair of vertical standards 12 and 13 which are provided with horizontally disposed arms 14 and 15 riveted to the flat base plate 16. The arms are provided with longitudinally extending slots 17 in which vertically moves the pivot pin 11 of the lower toggles and it will be noted that the bottom wall of the slot 9 and the top wall of the slot 17 form stops against which the pins 6 and 11 abut to limit the raising movement of the jack. Due to the fact that the ends of the upper toggles 1 and 2 and the ends of the lower toggles 3 and 4, respectively, engage the top saddle 7 and the base 16 when the pins 6 and 11 reach the limits of the slots 9 and 17, further movement of the jack in raising direction is prevented so that the toggles will be maintained slightly spread apart and in a position to be lowered. This prevents the toggles from getting on dead center. It will also be noted that that portion of the ends of the toggles, both upper and lower, which engage respectively the saddle 7 and the base 16 are rounded on their inner corners as at 18 to permit them to readily rotate and slide on their saddle and base and when the jack is raised the straight portion 19 on the top and bottom of the toggles provides a wide bearing surface.

The toggles are expanded and collapsed by means of a screw 20 having one end stationarily secured with respect to one of the knuckles of the toggle and the other operating in a nut connected to the opposite knuckle. For mounting the screw I provide a substantially rectangular sheet metal trunnion member one side 21 of which fits between the knuckle ends of the toggles 1 and 4, the pivot 5 securing the same in position. Extending at right angles to the side 21 is an end plate 23 having an opening to receive the screw 20 and an opposite end plate 24 is connected to the end plate 23 by a side 25. This end plate is also provided with an opening to receive the screw 20. This arrangement provides for a sheet metal bearing which, while being secured only by the pivot 5 is prevented from tilting and thereby tending to bind on the screw. The opposite trunnion member is substantially like that illustrated in Fig. 4 with the exception that a bushing or collar 26 is secured between the two end walls 23 and 24 to receive the end of the screw and this end is pinned by a pin 27 against rotation.

Operating on the screw 20 is a nut 28 in the form of a gear which meshes with a pinion 29 mounted on a stub shaft 30 rotatable

in an extension arm 31 of the end wall 23. This stub shaft 30 is provided with a squared end 32 to receive a suitable driving wrench and it will be noted that as the pinion 29 is rotated it in turn rotates the gear 28 expanding and collapsing the toggle.

In the structure illustrated in Figs. 7 and 8 one of the lower toggles is pivotally connected to the base 16 between a pair of ears 33 extending upwardly from the base and one of the upper toggles is pivotally connected to the plate 8 by a pin 34, thereby dispensing with the slots 9 and 17 as in the structure illustrated in Figs. 1 to 6.

I claim as my invention:

In a lifting jack the combination with a flat base plate having a vertically disposed lug thereon, of a pair of crossed arms having their lower ends pivotally connected at their crossing point and having their lower ends rounded and bearing on said base plate, said vertically extending lug preventing said arms from tilting from the vertical, a pair of upper crossed arms pivotally connected at their crossing point and having their upper ends rounded and pivoted at their lower ends to the upper ends of the lower crossed arms, a collapsing and expanding screw connected at the pivotal juncture of one of each pair of arms and having a threaded connection at the pivotal juncture of the opposite arms, a saddle block resting upon the free ends of the upper crossed arms and having a down turned side member provided with connecting means for connecting the same with the crossed arms while permitting the block to move vertically.

In witness whereof, I, B WICKLIFFE TWYMAN, have hereunto set my hand at Indianapolis, Indiana, this 4th day of June, A. D. one thousand nine hundred and twenty five.

B WICKLIFFE TWYMAN.