(No Model.)

2 Sheets—Sheet 1.

G. W. TURNER.

LIFTING JACK.

No. 591,793. Patented Oct. 12, 1897.

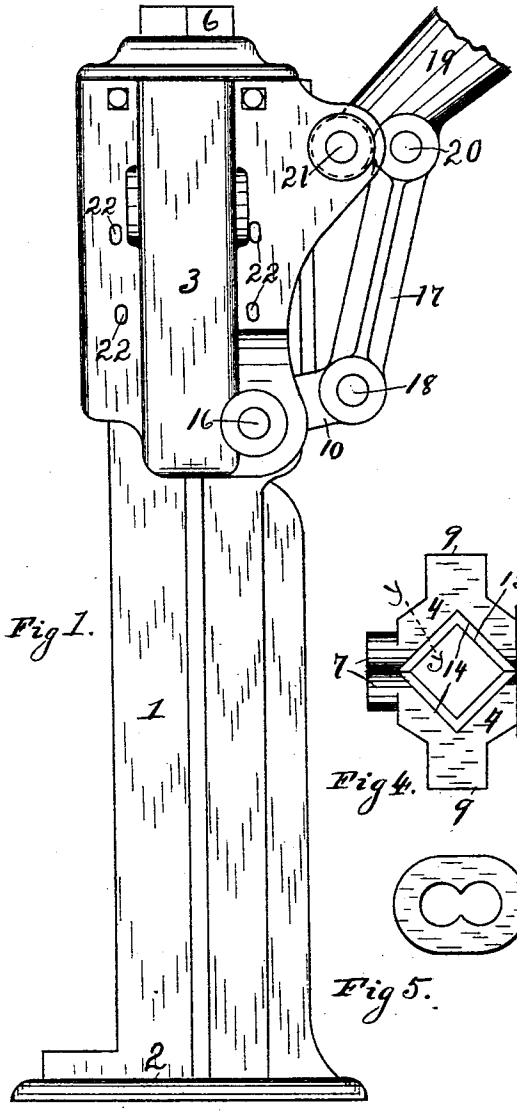


Fig 1.

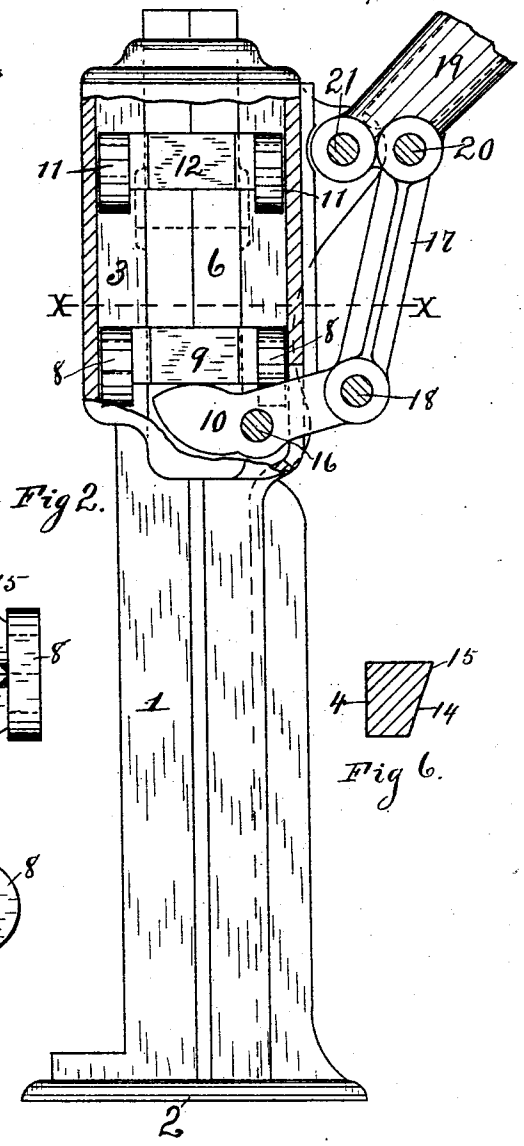


Fig 2.

Fig 4.

Fig 5.

Fig 6.

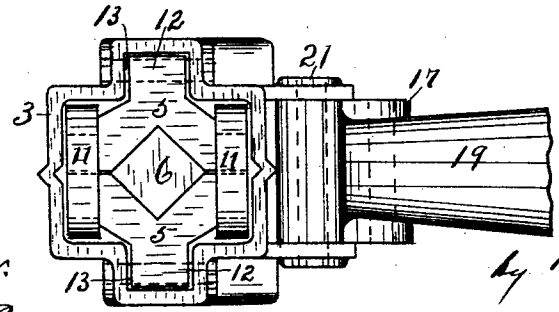


Fig 3.

WITNESSES:

L. L. Allen.

C. L. McCrea

J. W. Turner.

INVENTOR:

by A. J. McCarty.

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

G. W. TURNER.

LIFTING JACK.

No. 591,793. Patented Oct. 12, 1897.

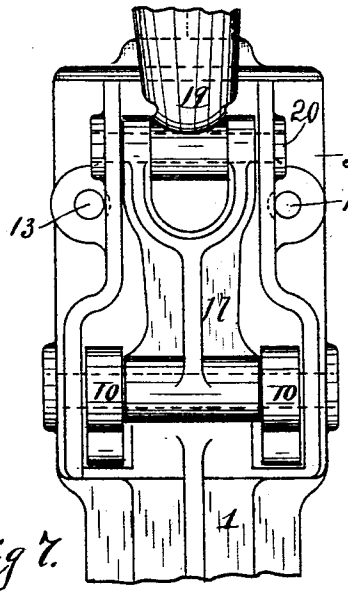


Fig 7.

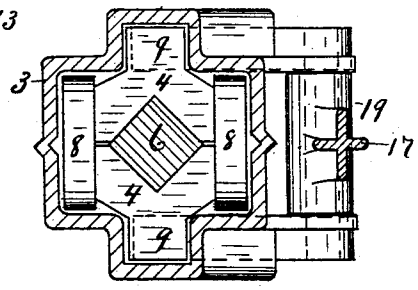


Fig 8.

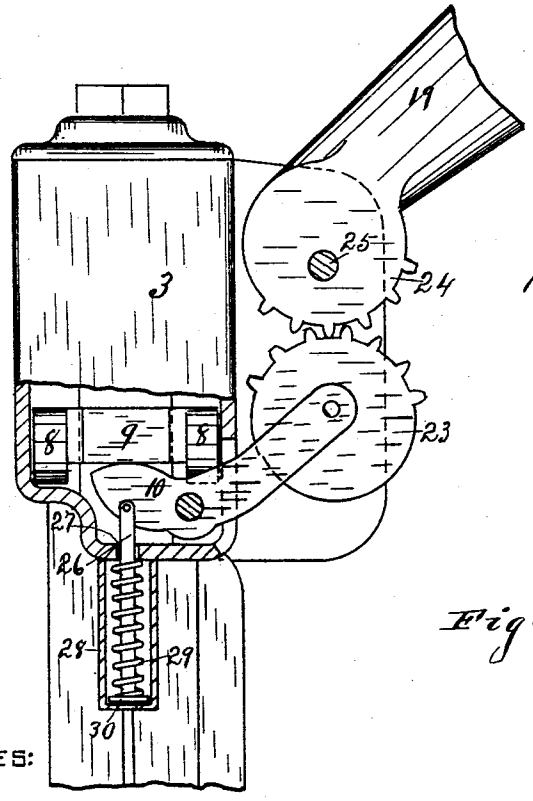


Fig 9.

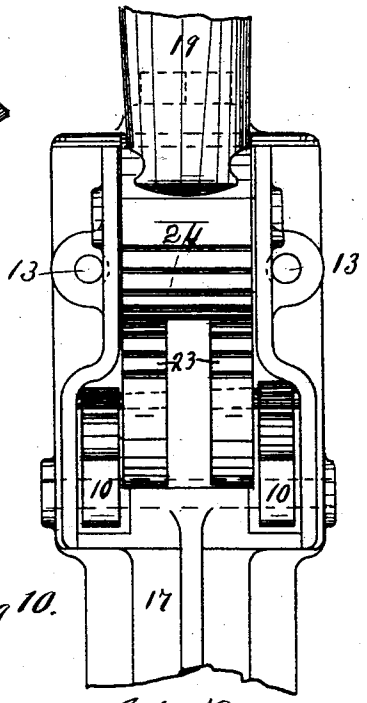


Fig 10.

WITNESSES:

L. L. Allen.

C. L. McLean

G. W. Turner.
INVENTOR:

By J. Wm. Hart.
ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE W. TURNER, OF DAYTON, OHIO, ASSIGNOR OF ONE-HALF TO JOHN H. ROGGE, OF SAME PLACE.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 591,793, dated October 12, 1897.

Application filed April 30, 1897. Serial No. 634,549. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. TURNER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Lifting-Jacks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

The invention hereinafter described relates to improvements in lifting-jacks.

In general terms the object of the invention is to provide a toothless lifting-jack in which means are provided for gripping the four sides of the lifting-bar by two independent sets of grippers, one set of which is operated to lift said bar step by step and the other set adapted to hold said bar at the elevated point.

To these ends the invention appertains to the structural features hereinafter described and claimed.

In a detailed description of the invention reference is made to the accompanying drawings, of which—

Figure 1 is a side elevation of my improved lifting-jack. Fig. 2 is a similar elevation with one side of the casing broken away. Fig. 3 is a top view with the cap removed. Fig. 4 is a detached lower plan view of one pair of the grippers. Fig. 5 is a plan view of one of the gripper-yokes detached from the journals of the grippers shown in Fig. 4. Fig. 6 is a section on the line *y y* of Fig. 4. Fig. 7 is a rear elevation of the upper part of the jack. Fig. 8 is a cross-sectional view on the line *x x* of Fig. 2. Figs. 9 and 10 are side and rear elevations, respectively, of modified means for actuating the lifting-grippers. The first-named view is part in section.

Throughout the specification similar reference-characters indicate corresponding parts.

The casing consists of the usual standard 1, with foot-piece or base 2 and upper inclosing part 3, the latter being designed in any suitable manner to inclose and support the lifting mechanism. This lifting mechanism comprises two independent sets of grippers, each set consisting of two members 4 4 and 5 5, which when placed together form a rectangular opening conforming to the cross-sectional shape of the lifting-bar 6 and in which said bar is inclosed. Each member of said grippers is provided with journals 7, the inner adjacent faces of which are round and over which is fitted a connecting-yoke 8, that holds said members together. The lower members 4 4 constitute the lifting-grippers, which are supported in the lower part of the case 3, with the ends 9 9 resting on the inner ends of the actuating-levers 10 10. The inner ends of said lower grippers are allowed to yield somewhat, owing to the flexible connection of their journals 7, when said grippers are being lowered by the downward movement of the inner ends of the levers 10 10. This yielding of the two members of the grippers increases the opening between them, so that the grippers readily move downward. The upper members 5 5 constitute the holding-grippers and are substantially the same in construction as the lifting-grippers. Yokes 11 connect the members, and their projecting portions 12 are supported on pins 13, that are rigidly supported in the case 3. As shown in the sectional views, Figs. 4 and 6, the inner or engaging sides 14 of said grippers are essentially of a tapering form, so as to allow of the downward movement of the lower grippers and the lifting-bar to move upwardly through the upper grippers without any binding of said grippers. The edges 15 are the engaging parts thereof.

The two lifting-levers 10 are mounted on the interior of the case 3, adjacent to the sides thereof, on fulcrum-pins 16, suitably journaled. The inner ends of these levers project under the ends 9 of the lower or lifting grippers, as before stated. 17 designates a link connecting with the outer ends of said levers 10 10 through a pin 18, which is journaled in the rear part of the case. (See Fig. 7.) The upper end of this link 17 is connected to the socket-piece 19 of the operating-lever by a crank-pin 20. The fulcrum of the socket-piece 19 is on a pin 21 in advance of crank-pin 20. In lifting the bar 6 the downward movement of the operating-lever lowers the inner ends of the side levers 10, which

permits the lower grippers 4 4 to descend to engage with the lifting-bar at the lowest point of the movement of said grippers. While the lower grippers are thus descending the upper grippers 5 5 are holding the bar 6 at the point to which it was previously raised. In lifting said bar the pressure of the inner ends of levers 10 10 on the projecting parts 9 9 of the lower grippers causes the two parts of said grippers to bind on the lifting-bar and to hold it firmly as long as said pressure is maintained. This upward movement of the lifting-bar causes the upper or holding grippers to relax their hold on said bar, which condition is maintained while said bar is being moved upwardly. As soon as the limit of said upward movement of the bar is reached the upper grippers close against the sides of said bar and hold it rigidly, the weight of the bar being sufficient to cause said grippers to bind firmly against the sides thereof.

In Fig. 1, 22 designates openings through a side of the case 3, through which a lever or rod may be inserted to relax said grippers. This is done by pressing upwardly the inner end of such lever or rod against one of the yokes 8 or 11 that couple the two members of the grippers together. The said grippers may be thus easily relaxed, so as to permit the lifting-bar to drop instantly from an elevated position. They yield readily to the pressure thus exerted upon them.

The mechanism for actuating the side levers 10 10, as shown in Figs. 9 and 10, is suitable for jacks that are designed for specially heavy work. In this construction the link 17 is dispensed with and the outer ends of the levers 10 10 are eccentrically pivoted to wheels 23 23. These wheels are supported by the said levers and have teeth on a portion of their peripheries to give them a one-quarter rotation. Meshing with said teeth is a segment-gear 24 on the inner end of the socket-piece 19, which also has an eccentric fulcrum on a shaft 25.

26 designates a rod pivoted to the inner end of each of the levers 10 10 and passing downwardly through an opening 27 in the case 3 and inclosed in a housing 28 integral with said case. Surrounding this rod is a coil-spring 29, which is confined between the top of the housing 28 and a washer 30 on the bottom of said rod. The function of these rods and springs is to maintain the gears 23 23 in mesh with the gear 24 on the socket-piece of the operating-lever. By this construction the operating-lever has greater leverage than is otherwise obtainable, which is due, as will be readily seen, to the fulcrum of the socket-piece being close to the inner end thereof.

I have shown the lifting-bar square in cross-section and the opening in the grippers of a corresponding shape. This shape may, however, be deviated from without departing from the invention. For example, the bar may be round or hexagonal in cross-section and the openings of corresponding shape.

Having fully described my invention, I claim—

1. In a lifting-jack, a lifting-bar, in combination with two sets of grippers surrounding said bar, each of said sets consisting of two members flexibly connected one set of said grippers being adapted to bind said bar when said bar is not in motion, and the other set of said grippers being adapted to bind said bar to elevate it, a lever under each side of the latter set of grippers, disconnected from but adapted to actuate said grippers, and an operating-lever adapted to simultaneously and correspondingly actuate said levers to raise the lifting-bar, substantially as described.

2. In a lifting-jack, a lifting-bar, in combination with lifting and holding grippers, each of said grippers consisting of two angular members flexibly connected and when so connected providing a rectangular opening for the lifting-bar, levers upon which the lifting-grippers are supported, an operating-lever, and a link connecting said operating-lever with the levers under said lifting-grippers, substantially as described.

3. In a lifting-jack, the combination with a casing having openings 22 in a side thereof, of a toothless lifting-bar, two sets of grippers, each set of grippers consisting of two angular members flexibly connected and inclosing when united, all sides of the lifting-bar, the upper set of said grippers being adapted to engage with said bar on the completion of each elevation thereof and the lower set of said grippers being adapted to engage with said bar to lift it, side levers upon which the latter set of grippers are supported, and by which they are lowered and raised, an operating-lever, and a connection between said operating-lever and the side levers, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. TURNER.

Witnesses:
JOHN H. ROGGE,
L. L. ALLEN.