

UNITED STATES PATENT OFFICE.

CHARLES ALBERT OMEN, OF PRINCETON, ILLINOIS.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 648,284, dated April 24, 1900.

Application filed June 12, 1899. Serial No. 720,232. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ALBERT OMEN, a citizen of the United States, residing at Princeton, in the county of Bureau and State of Illinois, have invented certain new and useful Improvements in Lifting-Jacks; and I do hereby 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.

This invention relates to certain new and useful improvements in lifting-jacks of that type embodying a standard or standards in or between which a lifting bar or block is slidably mounted, a bifurcated lifting-lever, and links connecting the bar and lever, the bar being raised and lowered through the medium of said links upon the movement of the lever in one direction or the other. In this class of jacks it has been customary to mount the lever at a point adjacent to the center of the standards and to pivotally connect the links at their upper ends to the lifting bar or block and at their lower ends to the bifurcated portion of the lever in order to secure a toggle action of the parts, and thereby increase the lifting power of the jack. The advantages in point of great power and simplicity of construction of these jacks are, however, more than overcome by the great strain thrown upon the operative parts, resulting in the bending or breakage of the same and prohibiting an extensive sale of a form of jack that in all other respects possesses desirable qualities. The objections to the arrangement of the parts above stated are, first, that as the lifting bar or block is raised by means of a pushing action of the links thereon the opposing forces exerted—namely, the lifting strain and weight of the load—are thrown directly upon the opposite ends of the links, which are liable to break or buckle in raising heavy loads; second, great torsional strain is also thrown upon the pivot-pins connecting the lower ends of the links to the lever in the movement of said links when raising a load, and as it is impracticable to reinforce the pivot-pins at this point the same are often twisted off and the jack rendered temporarily inoperative, and, third, the connection of the bifurcated or short end of the lever to the lower ends of the links necessarily

throws the long arm thereof so close to the standard as to render the operation of grasping and depressing it inconvenient and difficult at the outset, when it is desirable that the weight of the operator should be thrown thereon to secure a steady, easy, and even movement of the parts.

The object of my invention is to provide a lifting-jack of the type specified, wherein the parts are so combined and arranged as to avoid the above-noted objections to former devices in a simple and efficient manner; and to this end the invention consists of certain improved features of construction, combination, and arrangement of parts, which will be hereinafter fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, illustrating the invention, Figure 1 is a side elevation of my improved lifting-jack, showing the lifting-bar lowered. Fig. 2 is a similar view showing the lifting-bar raised and one of the lever-plates broken away to show the stop-shoulders. Fig. 3 is a vertical transverse section. Fig. 4 is an end elevation.

Referring now more particularly to the drawings, wherein like reference characters designate corresponding parts throughout the several views, 1 represents a base or support, to which is suitably secured a standard or upright 2, recessed centrally to form opposite guide-bars 3 and a guideway 4, in which the shank 5 of the stepped lifting bar or block 6 is slidably mounted. The upper ends of the guide-bars 3 are connected by straps or transverse plates 7, secured to the sides thereof and adapted to brace the same and prevent lateral or sidewise movement of the shank 5 at that point. The lower end of the shank is held from lateral movement by stop and wear plates 8, secured to the opposite sides thereof and overlapping upon said guide-bars, and these plates serve also to stay or reinforce a pin 10, passing through the shank, so as to prevent the same from moving under the action of the links and enlarging the opening through which it passes. The plates 8 are further adapted to abut against the upper plates 7 and prevent the shank from dropping out of the guideway before the application or after the removal of the operating-lever and connecting-links.

The operating-lever 11 comprises in its construction a handle 12 and a pair of elbow-shaped metallic straps or plates 13, having their curved inner ends 14 upturned and straddling one of the guide-bars 3 of the standard and pivotally mounted upon a pin 15, passing through said guide-bar above the center of the standard and at a point adjacent to the plates 7. By this means the lever is mounted to swing in the arc of a circle of small radius, so that it may be conveniently grasped and great power applied. The inner end of handle 12 fits between and is secured to the elbow-plates and is made somewhat wider than the thickness of the standard, so as to hold the plates properly spaced apart and prevent them from frictionally engaging and wearing away the standard and setting up a resistance to the free movement of the lever. The inner end of the handle thus comes close up to the standard and is adapted to form a stop, its upper and lower sides being reversely beveled and constituting shoulders 16 and 16' to abut against the guide-bar 3, to which the lever is pivoted, and steady the lever at the ends of its stroke. The arrangement of these shoulders is such that the lever is maintained at each end of its stroke at a diagonal angle to the beam, so that it may be conveniently grasped and full power applied at each movement, in which position the curved ends 14 of the plates 13 are brought to a substantially-horizontal position when the handle is at the end of its upstroke and to a nearly-vertical position when the handle is at the end of its downstroke, whereby a direct pull on the links 17 begins as soon as the lever is operated in a downward direction, and lost motion, due to a preliminary movement of the handle to bring the curved ends of the plates 13 to the proper position for action on the links in the elevation of the lifting-bar, is altogether avoided. The lower shoulder 16' thus acts as a guide and stop to arrest the motion of the lever when the pivot connection of the upper ends of the links 17 passes far enough beyond the pivot 15 to form a locking connection, while the upper shoulder 16 prevents the lever from being moved so far inward on its upstroke as to require any such preliminary movement on the downstroke or render it inconvenient for the operator to grasp and exert his full strength upon the lever at the outset. The construction and arrangement of the parts 12 and 13 also provide a lever of great strength and durability. Motion is communicated from the lever to the lift-

ing bar or block through the medium of the links 17. These links are journaled at their lower ends upon the projecting ends 9 of the pin 10 and at their upper ends upon wrist-pins 18 on the curved or upturned ends 14 of the lever-plates 13, and stand normally—that is, when the lifting-block is lowered and the lever raised—on an angle a little to the right of the vertical or to the axis of the shank of the lifting-bar. When the lever is depressed, however, the lower ends of the links will draw or pull on the shank of the lifting-bar and elevate said bar, when the upper ends thereof will move in the arc of a circle described by the said upturned ends of the lever-plates, and thereby bring the links to a position obliquely or at a diagonal angle to the axis of said shank. When the links are in this position, the point of connection of the upper ends of the links to the curved extremities of the lever-plates 14 will be so far removed from the center that an upward movement of the lever under the pressure exerted by the weight of the load cannot occur. The plates 8 serve to prevent wear and abrasion of the shank by the action of the links.

Having thus described the invention, what is claimed as new is—

A lifting-jack, comprising a bifurcated standard, a lifting bar or block having a shank movable in the recess of the standard, guide and wear plates secured to the lower end of the shank and overlapping the standard, a pin passed through corresponding openings in the shank and guide-plates with its ends projecting beyond the latter, links having their lower ends pivoted upon the said projecting ends of the pin and bearing against the guide and wear plates, and a lever consisting of a pair of elbow-plates having their inner ends straddling the standard and pivoted thereto and to the upper ends of the links, and a handle fitted between and secured to the outer ends of the plates with its inner end approaching close to the standard and adapted to abut directly thereagainst and form stop-shoulders limiting the movement of the lever in both directions, and being wider than the standard to hold said plates properly spaced, substantially as described.

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

CHARLES ALBERT OMEN. [L. S.]

Witnesses:

ORRIN WILKINSON,
R. W. PHELPS.