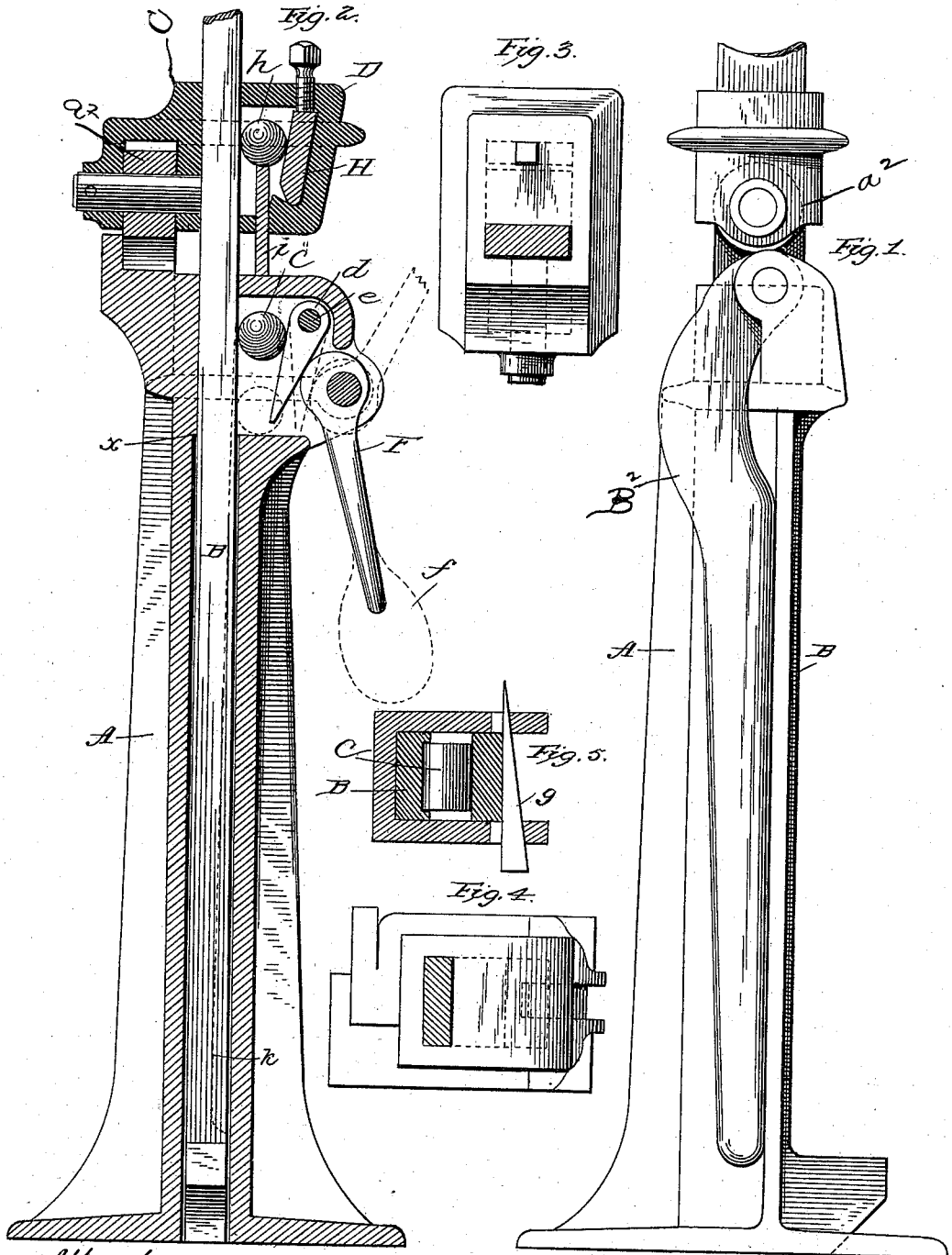
(No Model.)

L. J. CRECELIUS.

LIFTING AND LOWERING JACK.

No. 383,710. Patented May 29, 1888.



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UNITED STATES PATENT OFFICE.

LOUIS J. CRECELIUS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO ANDREW WARREN, OF SAME PLACE.

LIFTING AND LOWERING JACK.

SPECIFICATION forming part of Letters Patent No. 383,710, dated May 29, 1888.

Application filed November 25, 1887. Serial No. 256,134. (No model.)

To all whom it may concern:

Be it known that I, LOUIS J. CRECELIUS, of the city of St. Louis, in the State of Missouri, have invented a new and useful Improvement in Lifting and Lowering Jacks; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention which is the subject of the foregoing petition is an improved lifting-jack. In this invention are included parts which are the subject of an application for patent filed by me in the Patent Office of the United States of even date herewith, Serial No. 256,133. The parts herein claimed are designed to render the jack described in my aforesaid application more effective for heavy work and for lowering, and are embodied in a larger size of implement than that shown in said application; but, though thus applicable and designed, these parts are equally capable of use in any size of jack.

The invention in this application relates more particularly to devices for lowering the weight lifted by the jack and for arresting and holding it at any point.

The improved jack is shown in the accompanying drawings, in which—

Figure 1 shows a side elevation of the jack; Fig. 2, a central vertical section, taken transversely, of the cam-lever. Fig. 3 is a top view of the standard with the head in place, and Fig. 4 is a top view of the cap. Fig. 5 shows a modified form of plate-holder.

In the drawings, the standard A of the jack is formed, preferably, of cast-iron, with the usual strengthening ribs or flanges and a broad base, which I prefer to make circular in plan. It has the vertical channel for the lifting-bar B, this channel being from the bottom to the point *x*, just below the gripping-chamber, larger than the lifting-bar, so that whatever warping or springing may occur in the casting the channel will require no fitting. From the point *x* upward in the standard the channel is fitted closely to the bar.

The gripping-head is shown at C′ and may be of the construction shown, having a chamber with a rear inclined wall and a gripping-roller therein bearing against the face of the lifting-bar, or of the construction in my application referred to above. In the present case I have shown the gripping-chamber as provided with a roller, a^2, journaled on a pin, with the lifting-lever B^2 pivoted upon the standard and having an eccentric lifting-face engaging with the roller on the gripping-head, and through the action of this lever the gripping-head and lifting-bar may be raised. I do not herein claim, broadly, these parts, as they form the subject of my aforesaid application.

The lifting-bar (marked B) is in its general characteristics of the ordinary form. It is a straight bar, preferably rectangular in cross-section, having a lifting offset on its lower end. The special feature of this bar is the tapered form, this taper being from the upper end (which is of the full thickness) down to the lower end, which is the thinnest part of the bar. The inclined side of the bar bears against the rollers and acts with a wedging effect, as hereinafter described.

The chamber, as in my said application, opens directly into the channel of the standard, and the roller C, which is preferably cylindrical, bears directly upon the face of the lifting-bar. The rear inclined face, which is shown as fixed in the chamber in my said application, is, in the form now shown, made movable, so that it may be allowed to recede from the roller and face of the lifting-bar. So long as this rear wall is held fixed in place the roller will bind upon the lifting-bar and hold it suspended in the standard. Any yielding of the rear wall will manifestly permit the lifting-bar to slip. In order to permit this slipping motion, and at the same time to hold the lifting-bar under perfect control, so that the load may be lowered gradually, I have made the rear inclined wall of the chamber movable from front to rear, and the reverse, and have arranged in rear of it a holder for this movable wall. The wall in this construction is practically a hardened-steel plate, and the most convenient way of making it movable is to pivot it in the chamber. As shown, this plate (marked *d*) is pivoted on a transverse pin, *e*, having its bearings in the side walls of the chamber. So long as the lower part of the plate is held in an advanced position the roller will grip the bar, and to so hold it and allow it to retreat any required distance and there arrest its

movement I have provided as the most convenient means for this purpose a cam-lever, F. It is pivoted in ears on one side of the standard. The cam-face is the periphery of the pivoted end of the lever, and when the lever is turned down, as shown in Fig. 2, the high part of the cam bears on the rear face of the movable plate. As the free end of the lever is raised the lower face of the cam rides on the bearing-point of the plate, and when the lever is up in the position shown in dotted lines in Fig. 2 the low face of the cam is against the plate, and the lower edge thereof is back to its rear limit.

In order that the cam-lever may hold in whatever position it happens to be left, and may at the same time be readily moved, I particularly arrange the bearing-faces of the movable plate forming this rear wall in its relation to the cam-face so that the point of contact of the cam-face with the rear face of the plate shall be in line with the center of the grip-roller and center of the pivot of the cam-lever. For this purpose the cam-lever is pivoted low, and the face of the cam is formed to correspond with the shape and position of the pivoted plate. When so adjusted, the parts maintain always the same relative position, the roller falling and the plate swinging back as the cam turns. I prefer to weight the lever, as shown at *f*, to render certain the grip when the lever is left in place.

Although the cam-lever is the best device to serve as a plate holder, other equivalent devices may be used, such as a wedge, *g*. (Shown in Fig. 5.) An ordinary form of screw may also be used, set in the standard-wall in a hole tapped opposite the rear face of the movable plate.

Supposing a weight to have been raised by means of the lifting-lever and head, and that it be required to lower the bar and weight gradually and to arrest and hold it at any point, the lifting-head D is provided with a gripping-chamber, roller *h*, and rear inclined wall, H, and a lifting-pin, *i*, set in the standard, raises the roller *h* out of grip, when the head is lowered, as explained in my said application. The head therefore being lowered, the lifting-bar is released therefrom, and, with its load, is supported wholly by the gripping-roller and plate in the standard-chamber. The strain of the grip is all thrown back upon the plate. If then the holder be turned or withdrawn to any extent and the plate be allowed to retreat, the roller will yield and move down, and with it the bar and load; but the descent may be arrested at any point by holding the cam-lever or ceasing to move it.

In the foregoing description the wedging action of the grip has been referred to solely as applying to the rear inclined plate. For increased and better effect I supplement this by an incline or taper on the lifting-bar. This is on the face of the bar which is toward the grip-roller, and is preferably formed in a channel in that face. The taper is from top to bottom, as shown in dotted lines at *k* in Fig. 2, and as the inclined face of the lifting-bar bears on the grip-roller the grip is rendered more secure. This increased security arises from the double-wedging effect of the incline of the bar and the incline of the rear wall of the chamber, and this is specially advantageous in connection with the movable rear wall of the chamber, as the incline on the lifting-bar always remains the same and aids in the grip, while the inclination of the hinged rear wall becomes less as it is moved back in lowering. Thus the inclination of the tapering bar supplements the changeable incline of the movable rear wall and under all circumstances insures an inclination necessary for the grip.

I claim—

1. In a lifting-jack, a gripping mechanism consisting of a movable plate in the gripping-chamber, arranged opposite the face of the lifting-bar, a roller interposed between said plate and the bar, and a holder in rear of said movable plate, whereby the plate may be caused to move and the bar and its weight be lowered, substantially as described.

2. In combination, in a lifting-jack, the lifting-bar, the hinged plate, the interposed roller, and a holder for said plate, all substantially as described.

3. In combination, in a lifting-jack, the lifting-bar, the movable plate, the interposed roller, and holder consisting of the cam-lever bearing on the rear of the movable plate, forming a holder therefor, all substantially as described.

4. In combination, in a lifting-jack, the lifting-bar, the movable plate, the interposed roller, and the cam-lever forming a holder for the movable plate, the parts being arranged, as described, with the bearing-point of the cam on the rear face of plate in line with the center of the roller and that of the pivot of the cam-lever.

5. In combination, in a lifting-jack, a grip and a lifting-bar having a taper from upper to lower part, substantially as described.

6. The combination, in a lifting-jack, of a lifting-bar, B, having a tapered channel, the movable plate *d*, the interposed roller C, the holding-lever for the movable plate, and a lifting-head provided with a stationary plate, H, having an inclined front face, with a roller interposed between it and the lifting-bar, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS J. CRECELIUS.

Witnesses:

ANDREW WARREN,

C. D. GREENE, Jr.