J. B. SMITH.
Lifting-Jack.

No. 207,909. Patented Sept. 10, 1878.

Fig. 1.

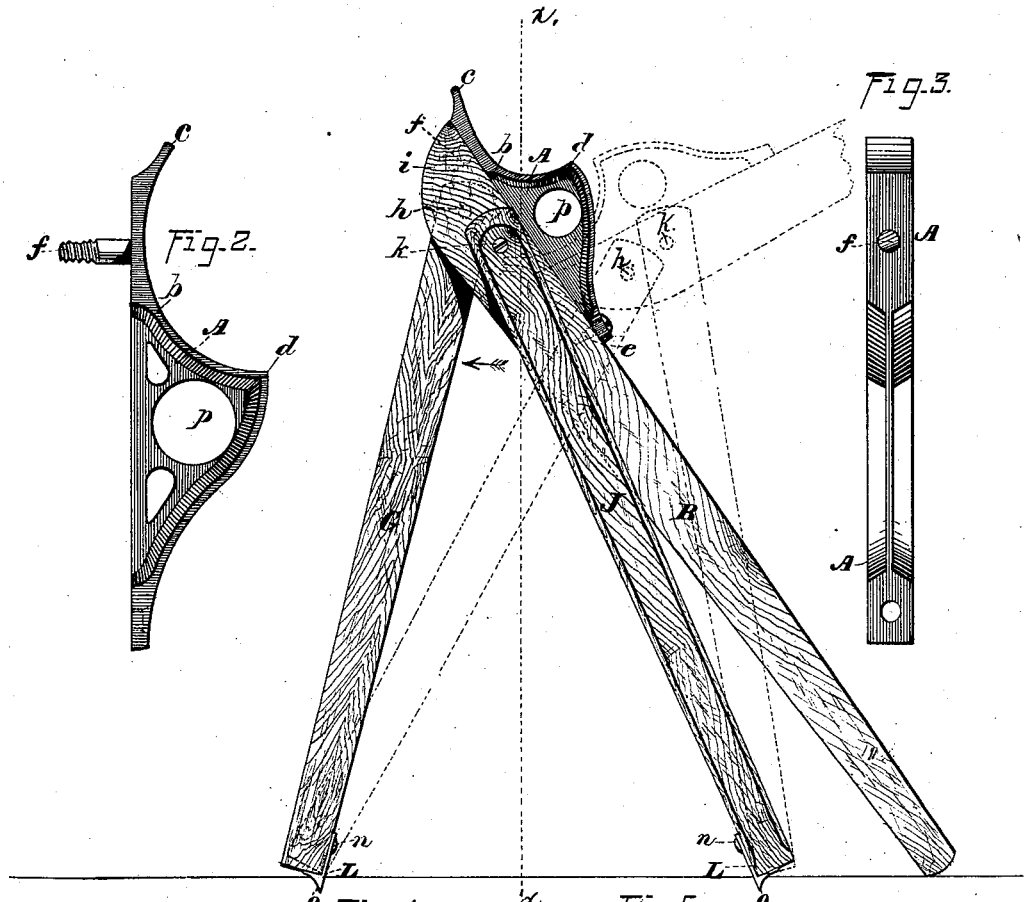


Fig. 2.

Fig. 3.

Fig. 4.

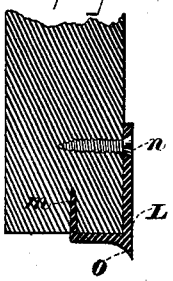
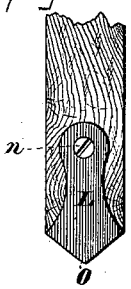


Fig. 5.



WITNESSES=

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UNITED STATES PATENT OFFICE.

JOHN BLUNT SMITH, OF PLEASANT MOUNT, PENNSYLVANIA.

IMPROVEMENT IN LIFTING-JACKS.

Specification forming part of Letters Patent No. **207,909**, dated September 10, 1878; application filed August 6, 1878.

To all whom it may concern:

Be it known that I, JOHN BLUNT SMITH, of Pleasant Mount, in the county of Wayne and State of Pennsylvania, have invented certain new and useful Improvements in Lifting-Jacks; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 letters of reference marked thereon, which form a part of this specification.

My improvements belong to that class or variety of lifting-jacks which is composed of legs or levers pivoted together; and they consist, mainly, in projecting the lifting-lever beyond its fulcrum, and applying to that end of it which constitutes this shorter and lifting arm a peculiar head piece or plate, which is so shaped as to be readily passed under the axle of the wheel or other article to be raised, and to so receive and hold it that, as the lever is operated for lifting, the axle will be raised in practically a vertical line, notwithstanding the lever moves in an arc, the connection of the lever with the supporting-legs permitting this movement; and it further consists in such a construction that when the axle is raised, the lifting-lever, by carrying the weight to the opposite side of its fulcrum, becomes self-locked or held to place; and it further consists in peculiarly-spurred shoes or tips, with which the ends of the legs are supplied, to insure their hold on the ground or upon stones or pavements.

Figure 1 shows my improved jack complete, the dotted lines indicating the positions of the parts just before commencing to lift, and the solid lines indicating their positions after the lifting has been effected. Fig. 2 is a side view, and Fig. 3 an under-side edge view, of the head-piece; and Figs. 4 and 5 views of the foot-spurs or shoes detached.

The metallic head-piece A is cast with a concave or cam-like bearing-surface, *b*, extending from its tip *c* to *d*, and when applied to a wooden lever, B, it is firmly secured thereto by screws *e* and *f*, the outer one, *f*, of which may be integral with the head-piece, as shown. To the lever B is a pivoted a leg or arm, G, at a point, *h*, far enough from the lifting end *i* of the lever to permit such shorter end and the projecting tip *c* of the piece A to be passed under the object or axle to be lifted, and the other leg or arm, J, is pivoted at a lower point, *k*, to the opposite side of the lever, as shown. These arms or legs G and J are of unequal lengths, and each is shod at its bottom and at its inner edge with a peculiarly-shaped metallic shoe, L, which is inserted at *m* into the bottom of the leg, and secured by a screw, *n*, to the inner edge of the leg, these shoes being each provided at their outer angle with a downwardly-projecting spur, *o*, to enable the legs to take a secure hold upon the ground or stones on which the jack may rest, and so prevent any slipping when the legs are spread while it is being used.

The large hole *p* in the cam or lifting plate A is designed to be utilized as a convenience for hanging the jack upon a nail or hook when not in use.

In Fig. 1, line *x x* indicates substantially the line of lift, or rather the line in which the article to be raised rises, the object to be lifted being taken hold of by the tip *c*, when the latter is in the position shown in dotted lines, and the longer arm of the lever raised, as also shown in dotted lines when the longer arm is then pressed down. Its action (working as it does on the two fulcra *h* and *k*, which constitute a double or compound fulcrum) is to produce, in conjunction with the unequal arms G and J, a forward and upward movement of the piece A, and, consequently, a forward movement of the tops of the legs G and J in the direction indicated by the arrow, the cam-piece taking a curved upward path, and its curved form during such path causing the lifted body, as the result of these compound movements, to rise about vertically as the tip of the cam moves away from it, the point of bearing of the lifted body being continually shifting as the cam-piece is moved, and being always kept at the lowermost portion of the cam.

When the lifting commences the weight is outside of or to the left of the pivot or fulcrum *h*. As it progresses the leverage changes, and the weight is carried to the right of said fulcrum as the movement continues, and then

the leverage changes still further, and the weight is carried beyond or to the right of the fulcrum *k*, as shown in Fig. 1; or, to express it otherwise, the leverage is changed by pressing down the handle of the lever from the front or near support or leg to the rear one, causing the handle itself, when at its lowermost point, to become a point of support, so that in this position there is a support or rest on either side of the resisting force, and the device holds itself to place, and becomes self-sustaining, and supports the lifted body without need of further aid from the operator.

Of course the device may be made of any material preferred.

It will now be seen that it is simple and cheaply constructed, and yet made in accordance with true mechanical principles, and there is but little outlay of stock or labor in its manufacture, while it is very strong and compact, and may be reduced in breadth to the compass of the lever alone, by bringing the legs into line with the lever, and may then be hung up out of the way upon any convenient nail.

I claim—

1. The described metallic attachment adapted to be applied to the lifting-lever of a lifting-jack, consisting in the cam-piece A, as made with a projecting upturned tip, *c*, to project beyond the lever, the curved bearing-surface *b*, the fixed screw *f* at one end, and a screw-hole at its other end.

2. In combination with the legs G and J, of unequal length and pivoted to the lifting-lever B, as described, and jointly serving to support the lifted body, the cam-piece A, made and applied as set forth, the combination permitting the leverage to be shifted and the supported weight to be raised vertically, and also to be transferred from one side of the two fulcra to their other side, thus making the lever self-sustaining.

3. In combination with the legs of a lifting-jack, the shoes L, as made with the spur *o*, and also provided with a projection, *m*, entering the end of the leg, and fastened by a screw, *n*, entering the edge of the leg at right angles to such projection, as shown and described.

JOHN BLUNT SMITH.

Witnesses:

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THEODORE ENNIS.