(No Model.)

J. CHASE.

LIFTING JACK.

No. 306,581. Patented Oct. 14, 1884.

Fig. 1.

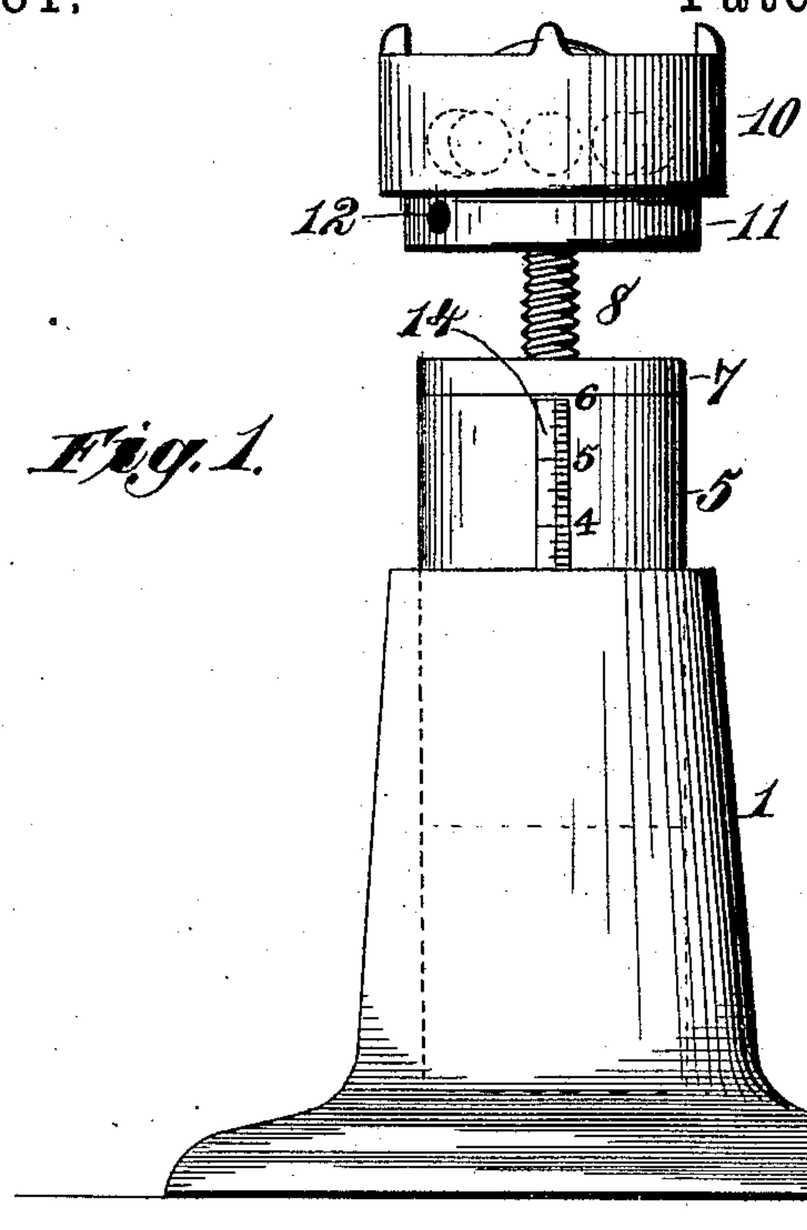
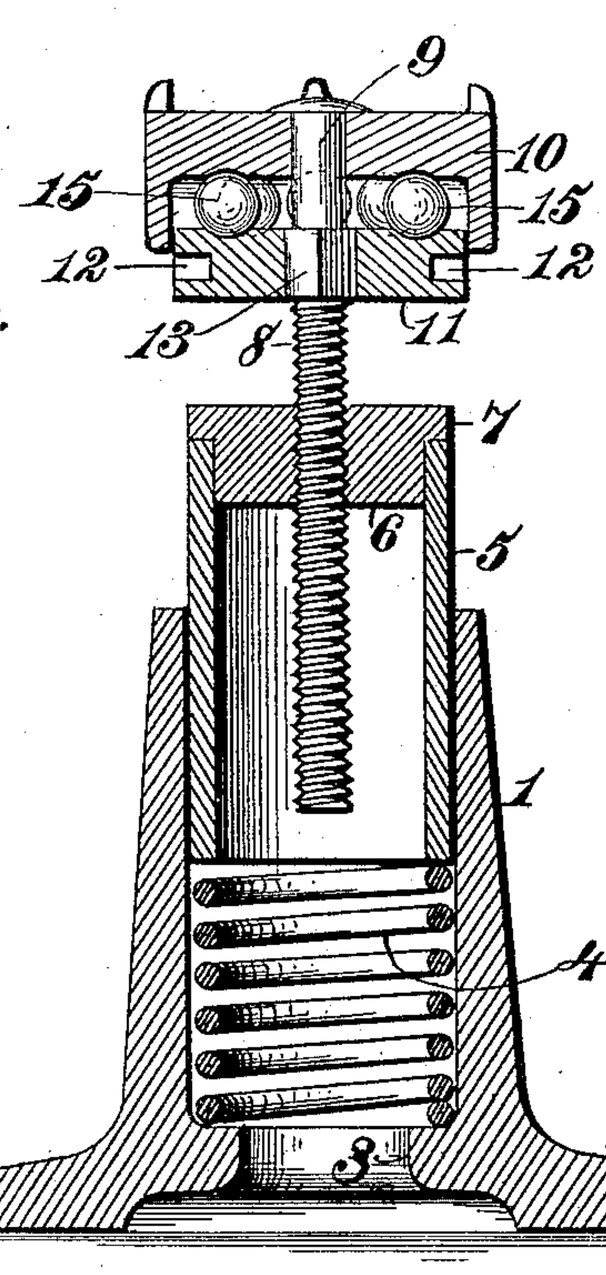


Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES CHASE, OF ROCHESTER, NEW YORK.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 306,581, dated October 14, 1884.

Application filed May 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES CHASE, a citizen of the United States, residing at Rochester, New York, have invented new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention has for its object to provide a novel and efficient lifting-jack for raising buildings and other objects, whereby it is possible to determine if all the jacks are performing their proper share of the work, where a large number of jacks are employed in raising a heavy building or other object, and also whereby the jacks can be successively adjusted until the weight is suspended, which is impossible in lifting-jacks of the ordinary construction.

To such ends the invention consists in the devices hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a jack constructed in accordance with my invention, and Fig. 2 a vertical central sectional view of the same.

Referring to the drawings, the number 1 indicates a tubular stand having a base, 2, by which it is supported in an upright position, the lower end of the tube being provided with an interior shoulder or flange, 3, serving as a supporting-bearing for the lower end of a powerful coiled or other equivalent spring, 4, on the upper end of which rests and is sustained the lower end of a tube, 5, having in its upper end a rigidly-fixed nut, 6, provided with a lateral flange, 7, resting upon the end of the said tube. A lifting-bar, 8, in the form of a screw, passes through and engages with the screw-threaded opening in the nut 6, and at its upper end is provided with a cylindrical journal, 9, carrying a loosely-journaled cap-piece, 10, in such manner that the journal end of the screw can revolve in the cap-piece, if the latter be held stationary, while directly beneath the cap-piece the screw is provided with an angular head, 11, for the purpose of rotating the screw through the medium of handles or rods inserted in sockets 12 in the outer edge of the head. This head may be a rigid and permanent attachment of the screw; but I prefer to construct the screw with an angular portion, 13, fitting a correspondingly-shaped socket in the head to permit the latter to be conveniently placed in position, or renewed, if desired. A series of anti-friction balls, rollers, or wheels, 15, are arranged between the cap-piece and the head for sustaining the weight, avoiding undue friction, and lessening the power necessary to turn the screw in the screw-nut. The outer surface of the inner tube, 5, is provided with a scale, 14, and the upper edge of the tubular stand constitutes an indicator to the scale; but I do not confine myself to the particular construction of scale and indicator shown, as various modifications will readily suggest themselves to those skilled in the art.

In practice, when the screw-head 11 is turned to move the screw outward and a weight resting on the cap-piece, the inner tube carrying the screw-nut will move inward and contract the spring, so that the indicator and scale will expose the amount the jack is lifting. The spring and the screw are proportionally strong—that is to say, for example, if the spring is sufficiently powerful to support ten tons, the screw must be capable of supporting the same pressure. Where many screw-jacks are employed in raising a large building or similar object, it is very desirable to learn if all the jacks are performing their proportion of the work, and this is readily ascertained by my invention through the medium of the scale and indicator. In ordinary screw-jacks the screws are rigid as regards any longitudinal yielding movement, and consequently it is almost impossible to raise one screw without relieving the adjacent ones of the weight to a great extent, and therefore it is necessary in practice to simultaneously turn the screws of all the jacks, whereas by my invention each screw can be raised up to or nearly up to all the pressure it is adapted to stand before raising the adjacent screw out to sustain its proportion of the weight.

It frequently occurs in ordinary jacks that the screws of some work tighter or with more friction than others, and as the attendant can only judge by the force required to turn them those working the easiest perform the greatest work, and hence the screw-threads are often stripped. This serious objection is avoided by my invention, as the scale and indicator

readily show the work each jack is performing. By my invention, if the total weight to be raised is known, the number of jacks necessary to effect the work is readily determined, and the pressure can be uniformly distributed throughout all the jacks, if desirable.

The invention will be found useful in determining if freight-cars are overloaded, as the car can be jacked up and the total sum of the pressure on all the jacks will be the weight of the car, by which means the expense of erecting track-scales in many rural and other districts can be avoided, as the jacks can be placed under the empty car, and then the allotted ten tons loaded on the car, if the jacks are constructed to sustain ten tons, as hereinbefore explained. In the construction shown the screw is sustained by the spring through the medium of the screw-nut and the inner tube, while the screw can be easily adjusted outward to act on and lift the load.

I have shown and described the lifting-bar S as a screw working in a screw-nut; but said bar may be provided with some other means by which to extend it—such, for example, as hydraulic power or rack and pinion—that is, the spring sustaining the lifting-bar may be used in hydraulic and other jacks, and therefore I do not confine myself to the screw lifting-bar and nut.

When the screw lifting-bar is used, I may use any means for turning it, such as a ratchet, collar, pawls, and lever; but as such means are well known in jacks I do not consider it necessary to illustrate the same.

Having thus described my invention, what I claim is—

1. The combination, with the lifting-bar of a jack, of a spring sustaining the bar under the weight of the object to be raised, substantially as described.

2. The combination of a supporting-stand, a screw to act on the weight or load, and a spring sustaining the screw under the weight of the object to be raised, substantially as described.

3. The combination of a supporting-stand, a screw having a cap-piece at one end to bear against the weight or load, and a spring sustaining the screw under the weight of the object to be raised, substantially as described.

4. The combination of a supporting-stand, a screw to act on the weight or load, a spring sustaining the screw, a scale, and an indicator, substantially as described.

5. The combination of a supporting-stand, a screw having a loosely-supported cap-piece at one end to bear against the weight or load, a spring sustaining the screw, a scale, and an indicator, substantially as described.

6. The combination of a tubular stand, a spring therein, a tube supported by the spring, a screw-nut on the tube, a screw in the nut, a head by which to rotate the screw, and a cap-piece loose on the end of the screw, substantially as described.

7. The combination of a tubular stand, a spring therein, a tube supported by the spring, a screw-nut on the tube, a screw in the nut provided with a cylindrical journal, and a cap-piece loosely mounted on said journal, substantially as described.

8. The combination of a tubular stand, a spring therein, a tube supported by the spring, a screw-nut on the tube, a screw in the nut, a scale, and an indicator, substantially as described.

9. The combination of a tubular stand, a spring therein, a tube supported by the spring, a screw-nut on the tube, a screw in the nut, a loose cap-piece on the screw, a scale, and an indicator, substantially as described.

10. The combination of a tubular stand, a spring therein, a tube supported by the spring, a screw-nut on the tube, a screw in the nut, and a scale on the outside of the tube, substantially as described.

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

JAMES CHASE.

Witnesses:
L. MERK,
WM. H. FARRAND.