No. 615,105. Patented Nov. 29, 1898.

A. RHODES.

LIFTING JACK.

(Application filed May 13, 1898.)

(No Model.) 2 Sheets—Sheet 1.

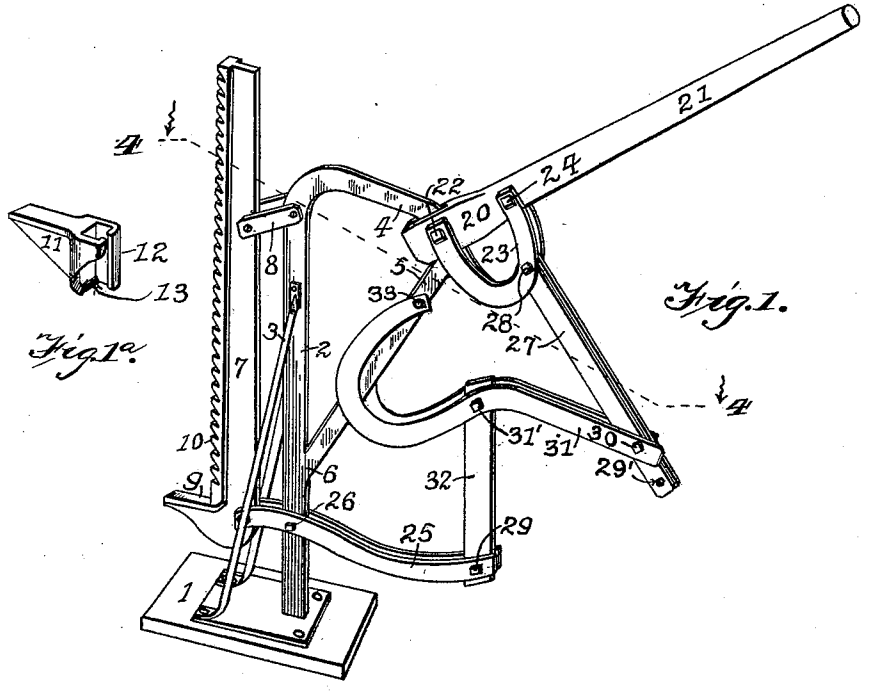

Fig. 1a.

Fig. 1.

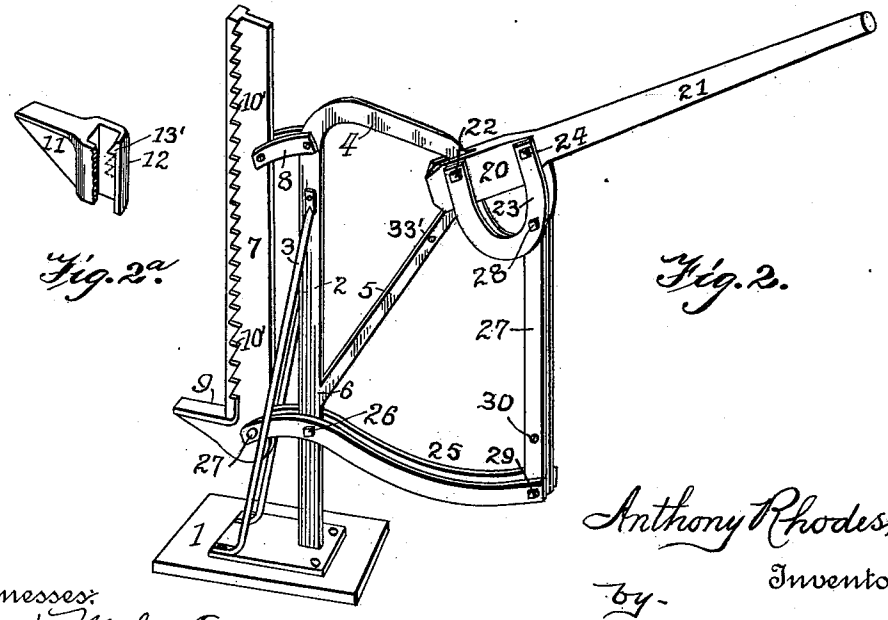

Fig. 2a.

Fig. 2.

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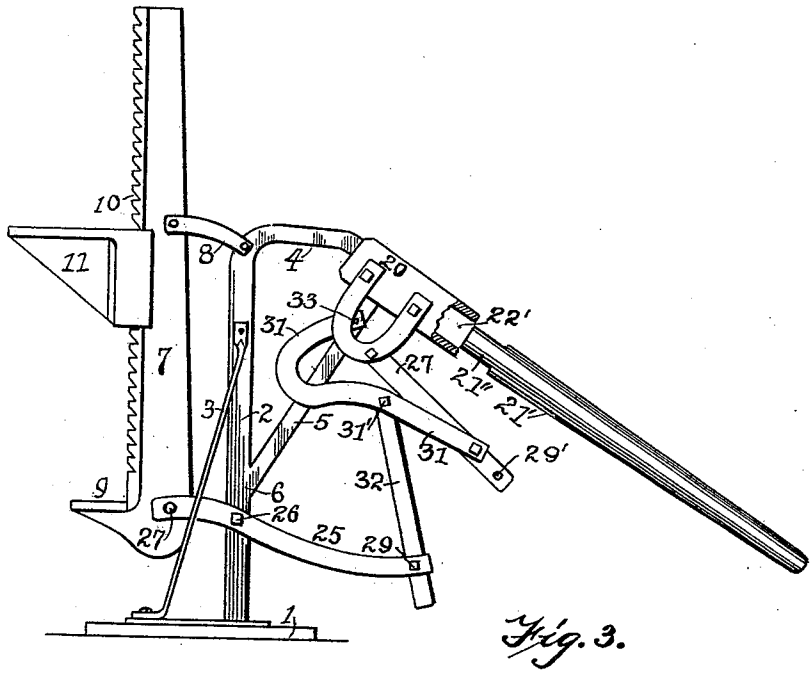

Fig. 3.

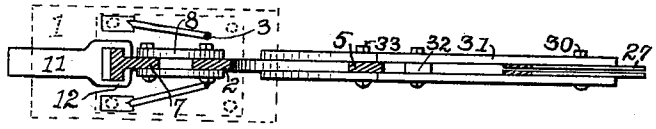

Fig. 4.

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UNITED STATES PATENT OFFICE.

ANTHONY RHODES, OF SHENANDOAH, IOWA.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 615,105, dated November 29, 1898.

Application filed May 13, 1898. Serial No. 680,549. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY RHODES, a citizen of the United States, and a resident of Shenandoah, Page county, State of Iowa, have invented certain new and useful Improvements in Lifting-Jacks; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to lifting-jacks, and more especially to that class thereof employing a lever; and the object of the same is to produce a jack readily convertible, so as to possess greater or less power.

To this end the invention consists in the construction hereinafter described for carrying out this object, as well as for accomplishing other desired ends which will appear in the specification.

In the drawings hereunto attached, Figure 1 is a perspective view of this jack arranged to exert quadruple power, showing its handle raised and its nose removed and illustrated in detail in Fig. 1ª. Figs. 1ª and 2ª are perspective detail views of the nose in slightly different forms adapted for use on the lifting-bars shown in Figs. 1 and 2. Fig. 2 is a similar view of the jack arranged to exert triple power, the handle herein being also raised, the nose removed and shown in detail in Fig. 2ª, and the ratchet being illustrated in slightly-modified form. Fig. 3 is a side elevation of the parts of Figs. 1 and 1ª assembled and with the handle lowered. Fig. 4 is a horizontal section on the line 4 4 of Fig. 1.

Referring to the said drawings, 1 designates a suitable base to which is riveted an upright 2, properly braced, as at 3, and whose upper extremity 4 is curved over to the rear, then extends downward, as at 5, to form a loop, and finally merges, as at 6, into the vertical portion of the upright, thus constituting a light and yet strong support for the operative portions of this jack.

7 is a substantially upright lifting-bar pivotally connected by tie-links 8 with the upper end of the upright and having a rigid projection 9 extending forward from its front side at its lower end for the purpose of being passed under extremely low articles which it is desired to raise. In cross-section the body of this bar 7 is substantially T-shaped, as best seen in Fig. 4, and its broad front face is provided with ratchet-teeth 10, as seen in Figs. 1 and 3, or the teeth may be located on the rear face of the transverse portion of the bar alongside its flat upright web, as at 10′ in Fig. 2.

11 designates the nose, which is of substantially triangular form in side elevation and which at its rear has lugs 12, adapted to pass around the transverse portion of the bar 7 and stand astride its web, whereby the entire nose can be adjusted vertically on the lifting-bar or can be removed entirely from its upper end. When the ratchet-teeth 10 are on the front of the bar 7, the lower edge of the front wall of the opening through the nose is provided with a tooth 13, as seen in Fig. 1ª, or several, as dotted in Fig. 2ª; but when said teeth 10′ are arranged as seen in Fig. 2 this tooth or teeth 13′ stands at the upper end of the rear wall of the opening through the nose, as seen in Fig. 2ª. In either case downward pressure on the projecting end of the nose will throw the single tooth forcibly into engagement with the ratchet-teeth by reason of the fact that the opening through the nose, as seen in Fig. 4, is somewhat deeper than the transverse portion of the lifting-bar 7, and when the teeth are so engaged it will be obvious that the nose is held at the desired height. In order to adjust its position or to remove it entirely, it is only necessary to cant it backward until its tooth disengages the ratchet-teeth on the bar.

As above mentioned, my present lifting-jack contemplates a construction wherein it will have either "triple" or "quadruple" power, so-called—*i. e.*, three or four times the power of a simple lever—although it will be obvious that both degrees of power may be greater or less than the proportions mentioned.

Fig. 2 illustrates what I call the "triple-power" arrangement.

20 is the hand-lever, here continued into a handle 21, and the inner end of this lever is pivoted on a bolt 22, passing through the rear side of the loop of the upright.

23 designates a pair of arcs rigidly secured to the inner end of the hand-lever, as by the bolt 22 and by additional bolts 24, and these

arcs move astride the rear portion 5 of the loop and stand at considerable distance from each other by reason of the thickness of the hand-lever 20.

25 designates a pair of main levers pivoted near one extremity at 26 astride the upright 2 and with their forward ends passing astride of and pivoted at 27 to the lower end of the lifting-bar 7. The rear and longer arms of these levers stand beneath the arcs 23, and 27 designates a pair of push-bars (although there need not necessarily be two of them) which are pivoted at their upper ends at 28 to the rear portion of the arcs, are pivoted at their lower ends at 29 to the rear ends of the main levers, and have alined holes 30 through their bodies just above their lower ends, for a purpose to appear below. The parts of this form of my lifting-jack standing as seen in Fig. 1 it is obvious that downward movement on the handle 21 will swing the bolt 28 around the pivot 22 as a center and pass it inward beyond a straight line between the pivot 22 and the bolt 29. In doing so the push-bars will be borne downward, the rear longer arms of the main levers 25 will descend, these levers will turn on their pivot 26, and their forward pivot 27 will rise, thus lifting the bar 7, which is retained in substantial alinement with the upright 22 by means of the tie-links 8. The fact that the bolt 28 passes between the points 22 and 29 and comes to rest against the rear portion 5 of the loop prevents knuckling of the lifting-jack, which would permit the load to descend, and yet when it is desired to again lower the load the handle 21 is raised, so as to bring the bolt 28 back to the position shown in Fig. 2. The parts being proportioned about as seen in this view, I calculate that a downward pressure of one pound on the handle will lift a load of sixty pounds.

The construction of my lifting-jack in its so-called "quadruple" form is best seen in Figs. 1 and 3. It involves the use of all the parts hereinbefore described, with certain additions.

31 designates a pair of what I call "cam-levers," which in side elevation approximate the shape of the upper portion of a question-mark (?), their lower ends in this instance being bolted astride the push-bars 27 and preferably in the hole 30 instead of in the hole 29'. Their bends are pivoted by a bolt 31' to a connecting-link 32, whose lower end in turn passes between the rear ends of the main levers 25 and is pivoted on the bolt 29. Their curved bodies stand astride the rear portion 5 of the loop and their upper ends are pivoted astride this portion on a bolt 33, passing through a hole 33', which is unused in the triple form of jack. (Shown in Fig. 2.) The parts being proportioned about as seen in this view, I calculate that a downward pressure of one pound on the handle will lift a load of one hundred and twenty pounds, the handle being 3 feet in length. The parts of the jack when thus constructed standing as seen in Fig. 1, downward pressure on the handle 21 turns the arcs 23 around the pivot-bolt 22, moves the push-bars 27 downward, depresses the rear ends of the cam-levers 31, which causes their bends to move slightly downward, and the latter movement in turn depresses the connecting-link 32 and operates the main levers in the manner described. During this movement the bolt 28 passes across a straight line between the pivot-bolt 22 and the bolt 30, so that the parts assume the position shown in Fig. 3, and here again knuckling is prevented and the load is sustained against danger of dropping.

All parts of this device are preferably of metal, excepting, possibly, the base and in some instances the handle. The latter is shown of wood at 21' in Fig. 3, and its reduced and shouldered lower end 21'' removably enters a socket 22' in the rear end of the hand-lever 20. This, however, is but one of many changes in details of construction which may be adopted without departing from the principle of my invention.

When it is desired to use this jack, the face of the lifting-bar 7 is brought against the load to be raised, and if the projection 9 does not come in proper position to engage the load the nose 11 is moved vertically over the ratchet 10, its tooth 13 engaged with the proper ratchet-tooth to bring its projecting end in operative position. The proper manipulation of the handle 21, as above described, then raises the load and the work is done in the usual manner, the load again lowered, and the jack removed. It is obvious that the adjustability and removability of the nose 11 permits the proper cleansing and repair of parts, as well as the substitution of a larger or smaller nose or one of different shape, and it also permits the operator to dispense with the nose entirely when the projection 9 will answer.

What I claim as new is—

1. In a lifting-jack, the combination with a base-plate, an upright rising vertically therefrom, thence curving to the rear, thence curving downward and forward, and finally merging into the vertical portion so as to form a loop, braces rising from the base of this upright, a substantially upright lifting-bar forward of the vertical portion of the upright, and a pair of links pivotally connecting the lifting-bar with the head of the upright; of a hand-lever pivoted at its inner end to the rear of said loop, a pair of main levers spanning said upright and lifting-bar and pivoted to each with their longer arms projecting to the rear of the upright, and connections substantially as described between the hand-lever and main levers, as and for the purpose set forth.

2. In a lifting-jack, the combination with a thin upright suitably braced, a lifting-bar forward of and parallel with the same, a link pivotally connecting the bar with the upper

end of the upright, and a pair of main levers spanning the upright and lower end of the bar, pivoted to both, and having their longer arms extending to the rear; of a hand-lever pivoted astride the rear portion of the upright, a pair of arcs bolted to opposite sides of the hand-lever near its pivot and separated by the thickness of this lever, and a push-bar pivoted at one end between the arcs and connected at the other end to the rear extremities of the main levers, as and for the purpose set forth.

3. In a lifting-jack, the combination with an upright, a pair of main levers pivoted between their ends to opposite sides thereof, a lifting device connected with their forward arms, and a hand-lever pivoted at its inner end to the upright; of a pair of cam-levers pivoted at one end to the upright, their bodies thence making sweeping curves astride said upright to about the centers of their lengths and thence extending straight to the rear, a push-bar pivotally connecting their rear ends with the hand-lever, and a connecting-link with its lower end pivoted between the rear extremities of the main levers and its upper end pivoted between the cam-levers at the junction of their curved and straight portions, as and for the purpose set forth.

4. In a lifting-jack, the combination with an upright, a main lever pivoted thereto, a lifting device carried by this lever, and a link pivoted to this lever; of a pair of cam-levers pivoted at one extremity astride the upright, the upper end of said link being pivoted between these cam-levers between their extremities, a hand-lever pivoted astride the upright, a pair of arcs secured to opposite sides of this lever and separated by its thickness so that they can pass astride the cam-levers, and a push-bar pivoted at one extremity between the rear sides of the arcs and near the other extremity between the rear ends of the cam-levers, as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my signature on this the 10th day of May, A. D. 1898.

ANTHONY RHODES.

Witnesses:
JOHN W. MATTOX,
GEO. L. SMITH.