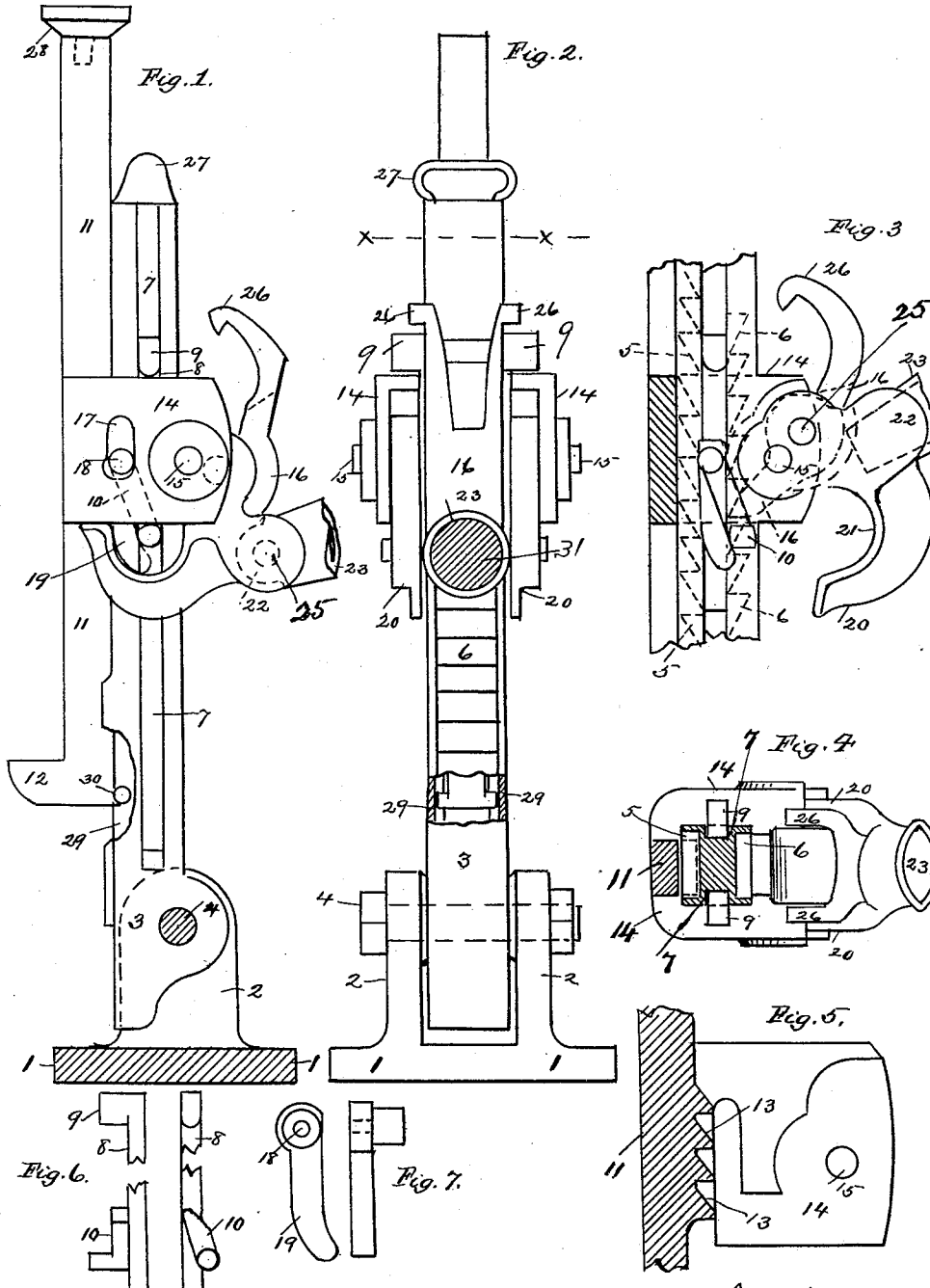


(No Model.)

A. P. AIKEN.
LIFTING JACK.

No. 480,685.

Patented Aug. 9, 1892.



Witnessed:
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UNITED STATES PATENT OFFICE.

ALBION P. AIKEN, OF PORT PERRY, PENNSYLVANIA.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 480,685, dated August 9, 1892.

Application filed June 11, 1891. Serial No. 395,926. (No model.)

To all whom it may concern:

Be it known that I, ALBION P. AIKEN, a citizen of the United States, residing at Port Perry, in the county of Allegheny and State of Pennsylvania, 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved lifting-jack; and it consists in certain peculiarities in the construction, arrangement, and combination of the several parts, substantially as hereinafter described, and particularly pointed out in the subjoined claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved lifting-jack, which is constructed in accordance with my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a side sectional elevation of the jack, showing the position of the parts when the lever is elevated. Fig. 4 is a sectional plan view taken on the line *x x*. Fig. 5 is an enlarged sectional elevation taken through the bearing-box. Fig. 6 is a front and side elevation of one of the sliding bars used to disengage the two rack-bars. Fig. 7 is a front and side elevation of one of the pawls used in connection with the above-described sliding bars.

To construct a lifting-jack in accordance with my invention, I provide a base-plate 1, having two upwardly-projecting lugs 2, in which is journaled a rack-bar 3 by means of a short shaft 4 in a manner that the same may be free to vibrate from and toward the object being lifted. This rack-bar 3 is provided with two racks 5 6 on opposite sides to each other, and the teeth arranged so that the face of the one is opposite the middle of the other. On opposite sides from each other on this rack-bar 3 are grooves 7, extending from a point near the base to the top of the same. Fitted in these grooves are two sliding bars 8, each having an outward projection 9 at the top and an angularly-arranged portion 10, integral with one edge thereof. I now provide another bar 11, having an ordi-

nary foot-lift 12, and provided with four teeth 13 at or about the center of the same and on the inner side next to the rear rack 5 of the said bar 3. Formed integral with the rear bar 11, which I term the "lifting-bar," are two outwardly-projecting flanges 14, which inclose the vibrating rack-bar 3 and form a bearing for the frame of a large pawl 16, which operates on the front rack 6 of the jack. Formed on each of these flanges 14 in a vertical position are slots 17, in each of which a pin 18 is placed and connected to two downwardly-projecting pawls or short levers 19, which occupy a position at the rear of the angularly-projecting portions 10, formed on the sliding bars 8. These short levers 19 project a short distance below the lower edges of the flanges 14, and are capable of being moved vertically a limited distance, and also moved back and forth on their pivots or pins 18. These levers are bent slightly outward at their lower extremities and are operated by two curved arms 20, having recesses 21 formed on the lower portion of the frame 22 of the pawl 16. This frame 22 is provided with a socket 23 for the reception of a suitable lever 31 to operate the lifting-bar and by means of short pin 15 is pivoted to the flanges 14, as indicated in Figs. 3 and 5. The pawl 16 is pivoted to this frame by means of a transverse shaft 25, placed a short distance from the pivotal point 15 of the said frame 22. The distance separating these two pivotal points may be varied according to the length of teeth in the several racks and the amount of leverage required. Formed integral with the pawl 16 and extending upward, capable of spanning the rack 3, are two hooks 26, which, when the lever and frame are elevated to sufficient height, engage with the upper portion 9 of the sliding bars 8 and hold the large pawl 16 away from the rack. These hooks are used when it is desired to lower the lifting-bar 11 rapidly. A handle 27 is formed on the upper portion of the vibrating bar 3 and a swivel-plate 28 on the head of the other.

Guide plates or strips 29 are placed on the rear of the vibrating bar 3 and short pins 30 on the inner lower extremities of the lift-bar 11, which will hold these portions of these bars together and at the same time permit the top portions of the same to be separated

sufficiently to disengage the teeth of the two adjoining racks 5 6. The teeth of these two racks are shrouded to give the same greater strength.

- 5 In operation the rear bar 11 is lowered and the swivel-plate 28 or the foot 12 is placed beneath the object to be elevated. A lever 31 is placed in the socket 23 and the same given a vertical up-and-down movement. At each
10 upward movement of the said lever the pawl 16 is carried up and engaged with the next tooth of the rack 6, and at the same time the recessed edge of the frame, operating on the pawls or levers 19, draws the said levers forward, thereby engaging with the sliding bars
15 8 to separate the teeth of the two engaged racks 5 13. This separating of the two racks does not take place until the pawl 16 has been engaged with the rack, as above described. At each downward stroke of the lever the lifting-bar 11 is moved upward the space of one tooth, and the teeth 13 on the lifting-bar 11 engage with the rack 5 as the short levers 19 are brought in contact with the bent parts of the frame 22, elevating the said
25 levers 19 until the same may freely enter the recess 21 of the frame 22. This operation is continued until the object has been elevated to the desired height. To lower the bar 11 slowly, the lever is raised to its highest point, which permits the two adjoining racks to come together, and when the pawl is relieved of its weight the same may be released and entered into the tooth below, and a downward
35 movement of the lever will rearrange the parts for the further lowering of the lifting-bar 11. Should it be desired to lower the bar rapidly, it is only necessary to engage the hooks 26 with the upper portion 9 of the sliding bar 8, which when the hand-lever is operated separates the racks 5 6 and prevents the pawl 16 from operating on the rack 6 of the vibrating bar 3 and leaves the rear bar 11 free to move down.
- 45 This jack may be placed vertically beneath its load or in an inclined position, as the pivoted bar 3 may be inclined to any desired angle.

Having thus described my invention, I
50 claim—

1. In a lifting-jack, the combination, with a double-faced rack-bar having grooves formed on two of its sides, slidable bars fitted in said grooves and having angular projections, and a lifting-bar arranged at one side
55 of said rack-bar and having teeth adapted to engage those on the adjacent side thereof, of pawls or levers 19, adapted to engage the angular projections of said slidable bars, and
60 operating-pawl 16 for engaging the teeth on one side of the rack-bar, and a means for operating said pawls 16 and 19, substantially as described, and for the purposes specified.

2. In a lifting-jack, the combination, with
65 a double-faced rack-bar having grooves formed on two of its sides, slidable bars fitted in said grooves and provided with angular pro-

jections at points intermediate of their lengths, and a lifting-bar arranged at one side of said rack-bar and having teeth adapted to engage
70 those of the adjacent side thereof, of pawls or levers 19, adapted to engage the angular projections of said slidable bars, an operating-pawl 16 for engaging the teeth on one side of the rack-bar, and a pivoted frame 22, hav-
75 ing a lever attached thereto and formed with recessed curved arms 20, adapted to engage said pawls 19, substantially as described, and for the purposes specified.

3. In a lifting-jack, the combination, with
80 a pivoted double-faced rack-bar having grooves formed on two of its sides, slidable bars fitted in said grooves and provided with outwardly-extending projections at their upper ends, and a lifting-bar arranged at one
85 side of said rack-bar and having teeth adapted to engage those on the adjacent side thereof, of pawls 16, adapted to engage the teeth on the opposite side of said rack-bar and provided with hooks for engaging the projections of the slidable bars, all substantially as shown
90 and described.

4. In a lifting-jack, the combination, with a double-faced rack-bar pivoted at its lower end and having grooves formed in the other
95 sides of said rack-bar, slidable bars fitted in said grooves and provided with outwardly-extending lugs at their upper ends and angular projections at intermediate points of their lengths, of a lifting-bar arranged at one side
100 of the rack-bar, flanges carried by said lifting-bar and inclosing the rack-bar, and an operating-pawl pivoted to said flanges, and provided with hooks adapted to be engaged with the lugs on the upper ends of the sliding
105 bars on the rack-bar, substantially as shown and described, for the purpose specified.

5. The combination, with a double-faced rack-bar, and a lifting-bar provided with a series of teeth which engage with one set of
110 teeth on the rack-bar, of slidable bars fitted in grooves in the sides of the rack-bar and provided with intermediate angular portions and outwardly-extending projections at their upper ends, flanges attached to the lifting-bar
115 and surrounding the rack-bar, the pawls fulcrumed between said flanges and lying in rear of the angular projections on the slidable bars, a pawl also fulcrumed between said flanges and engaging with the rack-bar, hooks
120 carried by said latter pawl and adapted to take over the projection at the upper ends of the slidable bars, and curved hooks 20, arranged below the main pawl, substantially as shown and described, for the purpose specified. 125

6. In a lifting-jack, the combination, with the double-faced rack-bar having grooves on two of its sides, a lifting-bar arranged at one side of said rack-bar and having teeth adapted to engage the teeth on the adjacent side there-
130 of, flanges projecting from said lifting-bar and inclosing the rack-bar, slidable bars fitted in the grooves in the rack-bar, and having angular projections and pawls or levers ad-

5 jacent to said angular projections, of a frame 22, pivoted to said casting and having curved recessed arms adapted to engage said pawls or levers, said frame also being adapted to have an operating-lever secured to it, and a pawl pivoted to said frame and adapted to engage the teeth on the adjacent side of the rack-bar.

10 7. The combination, in a lifting-jack, of the base-piece, a rack-bar pivoted thereto at its lower end and having guide-strips, a lifting-bar having at its lower end a pin engaging said guide-strips, so as to hold the lower end of the lifting-bar to the rack-bar while per- 15 mitting said lifting-bar to be raised or lowered, said lifting-bar also having intermediate of its length teeth engaging those of the rack-bar, and means for separating the teeth of the rack-bar and lifting-bar and for raising and lowering the latter, substantially as 20 described.

8. The combination, in a lifting-jack, of a base-piece, a rack-bar pivoted at its lower end thereto, a lifting-bar loosely connected at 25 its lower end to said rack-bar, so as to be held in engagement therewith, but permitted to move up and down thereon, said lifting-bar

also having intermediate of its length teeth engaging those of the rack-bar, and means for separating the teeth of the rack-bar and 30 lifting-bar and for raising and lowering the latter, substantially as described.

9. The combination, in a lifting-jack, of a base-piece, a double-faced rack-bar pivoted at its lower end thereto, a lifting-bar loosely 35 connected at its lower end to said rack-bar, so as to be held in engagement therewith, but permitted to move up and down thereon, said lifting-bar also having intermediate of its length teeth engaging those on one side of 40 the rack-bar, a pawl engaging the teeth on the adjacent side of the rack-bar, and a means for forcing the teeth of the lifting-bar out of engagement with those of the rack-bar, so as to permit said lifting-bar to be raised or low- 45 ered.

In testimony that I claim the foregoing I hereunto affix my signature this 21st day of March, A. D. 1891.

ALBION P. AIKEN. [L. S.]

In presence of—

CHARLES LARGE,
M. E. HARRISON.