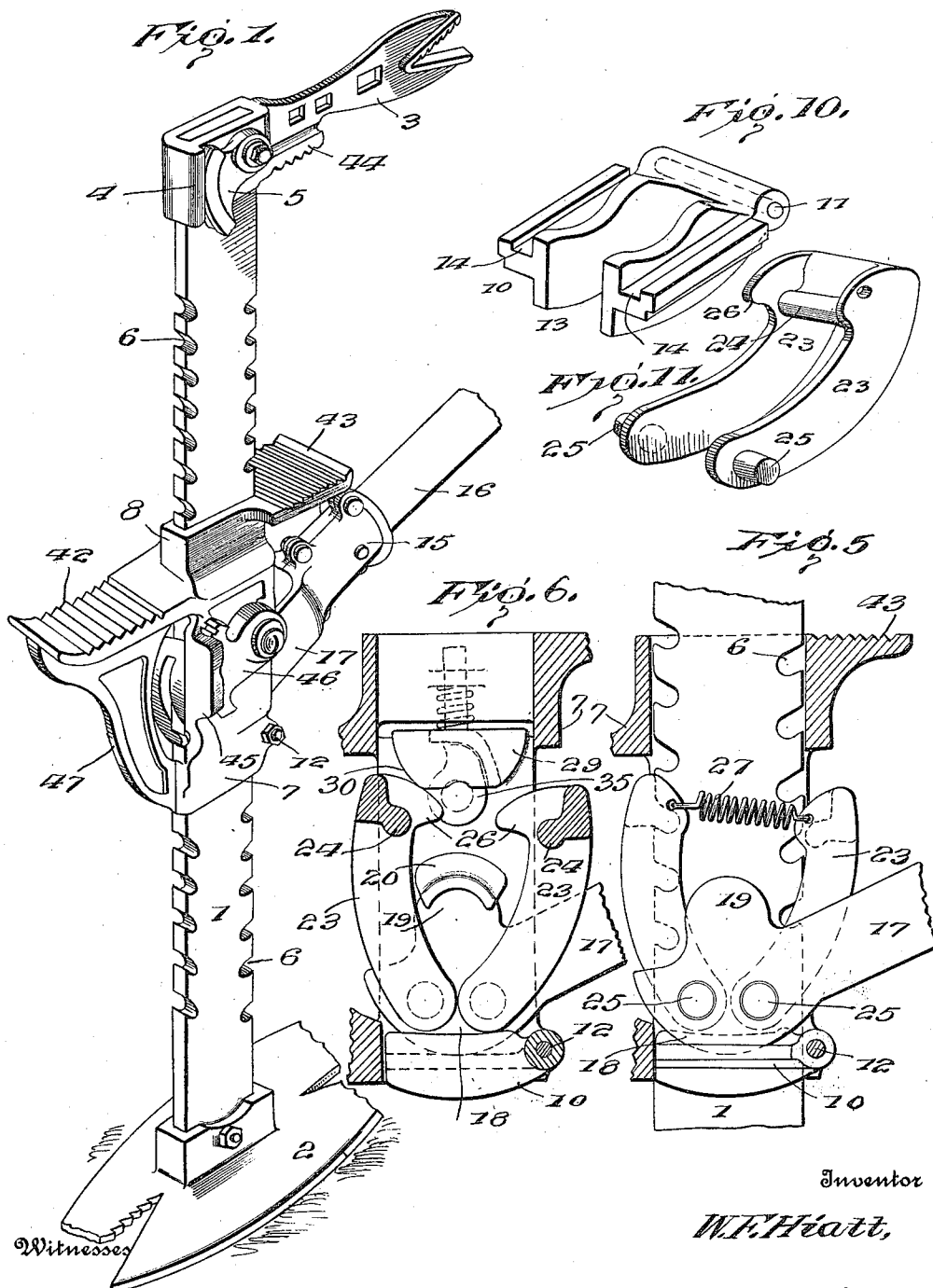


W. F. HIATT.
LIFTING JACK.
APPLICATION FILED JAN. 4, 1915

1,159,938.

Patented Nov. 9, 1915.
2 SHEETS—SHEET 1.



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By

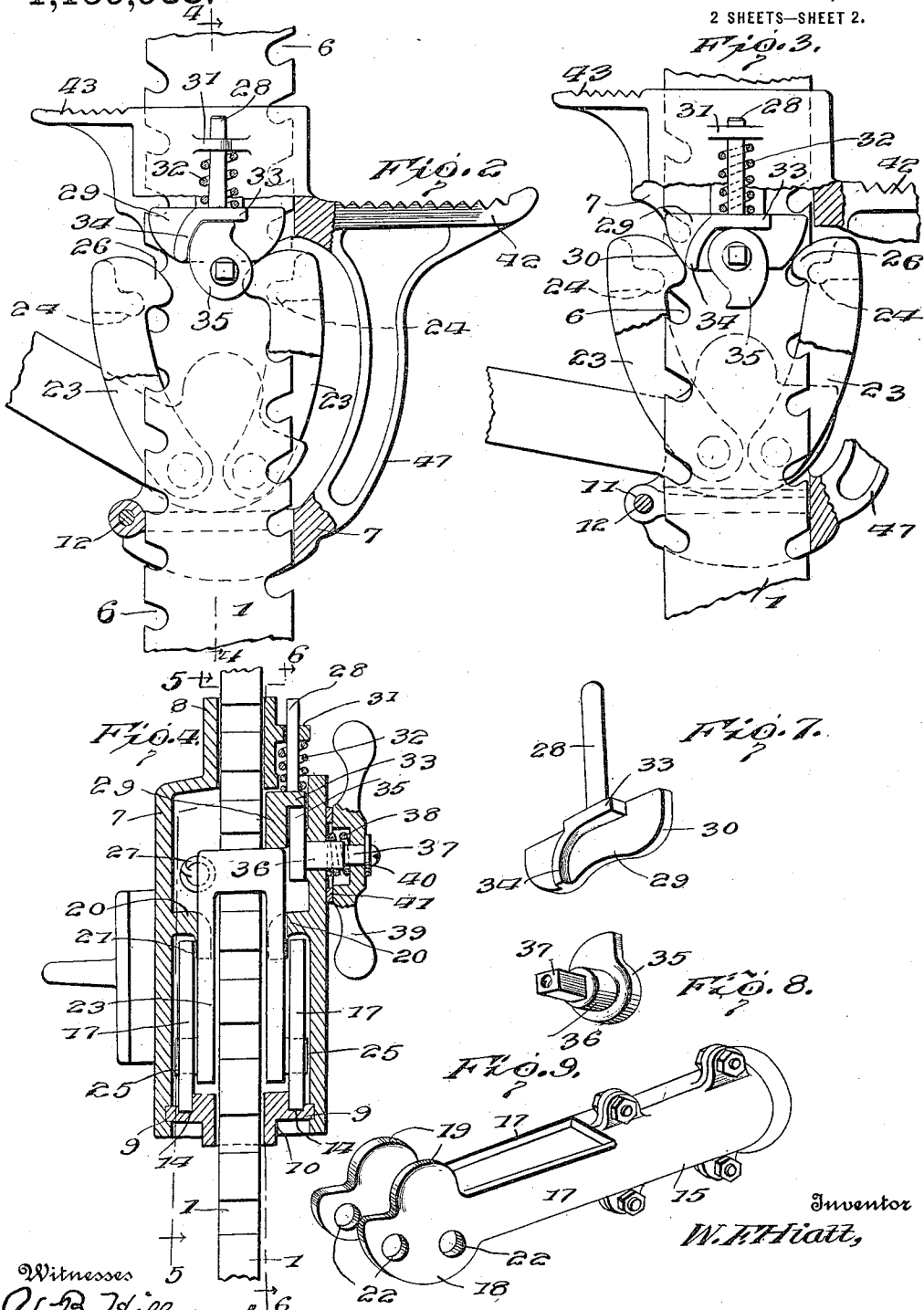
[Signature], Attorneys

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Witnesses
U. B. Hillyard.

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UNITED STATES PATENT OFFICE.

WILLIAM F. HIATT, OF INDIANAPOLIS, INDIANA.

LIFTING-JACK.

1,159,938.

Specification of Letters Patent.

Patented Nov. 9, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM FRANK HIATT, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

The invention relates to the type of devices particularly designed for lifting the axles of vehicles to raise the wheels from the ground to admit of applying grease to the axle arm, to make repairs to tires or for any purpose requiring the wheel to be lifted from the ground.

The invention relates to the variety of lifting jacks which embody a toothed standard, a slide head mounted upon the standard and adapted to sustain the load, an operating lever mounted upon the slide head, oppositely disposed dogs connected to the operating lever and adapted to alternately engage the toothed portions of the standard to effect a step by step movement of the slide head thereon and means for reversing the action of the dogs so that the slide head may be lowered by an intermittent movement.

The invention aims to provide a slide head of peculiar form embodying inner projections to make positive engagement with parts of the operating levers thereby preventing interference between the dogs and parts of the operating lever extending along the sides of the dogs and between them and the sides of the slide head.

The invention also aims to provide a rest for the operating lever having detachable connection with the slide head to admit of the ready assembling of the parts; said rest having seats for the separated end portions of the operating lever so disposed as to prevent engagement of the parts of the operating lever with the sides of the slide head or the sides of the dogs.

The invention further aims to provide a jack reverse of novel formation and arrangement and actuating means, therefor, which at all times insures the parts occupying a position for certain operation when required, the construction being such as to prevent any play thereby insuring the parts remaining in the required position when adjusted.

A further purpose of the invention is the

provision of teeth upon the standard of such form as to insure positive engagement of the dogs therewith whereby casual disengagement of the dogs from the standard is guarded against, the dogs being provided with engaging portions of a form corresponding with the outline of the teeth of the standard so as to insure positive engagement therewith.

The invention also has for its object to provide a lifting jack of the character hereinbefore stated which is easy of manipulation and which may be quickly set to assure a positive movement of the slide head either in an upward or downward direction upon the standard according as may be required, to admit of the parts being readily assembled or taken apart and to provide an article which is susceptible of a variety of work such as a wrench, wire stretcher and the like.

The drawings hereto attached illustrate the preferred embodiment of the invention but it is to be understood that within the scope of the invention as claimed various changes in the form, proportion and minor details of construction may be resorted to without departing from the nature of the invention.

The invention consists of the novel features, details of construction and combinations of parts which hereinafter will be more particularly set forth, illustrated in the drawings and subsequently claimed.

Referring to the accompanying drawings in which corresponding and like parts are designated by the same reference characters in all the views. Figure 1 is a perspective view of a lifting jack constructed in accordance with the invention; Fig. 2 is a vertical longitudinal section of the slide head showing the relative position of the reverse, dogs and operating lever when the reverse is elevated or thrown out of operative position to admit of upward movement of the slide head upon the standard when oscillating the operating lever; Fig. 3 is a view similar to Fig. 2 showing the relation of the parts when the reverse is thrown into operative position to admit of the slide head moving downward upon the standard by an intermittent action when oscillating the operating lever; Fig. 4 is a vertical transverse section on the line 4-4 of Fig. 2 looking to the right as indicated by the

arrows; Fig. 5 is a section on the line 5—5 of Fig. 4 looking to the left; Fig. 6 is a section on the line 6—6 of Fig. 4 looking to the right as indicated by the arrows; Fig. 7 is a detail perspective view of the jack reverse; Fig. 8 is a detail perspective view of the cam for operating the jack reverse; Fig. 9 is a detail perspective view of the inner portion of the operating lever.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The jack comprises a standard 1 which has its opposite edge portions toothed. A foot 2 is fitted to the lower end of the standard 1 and a handle 3 is applied to the upper end of the standard. The foot 2 and handle 3 are preferably detachably connected to the standard. One end of the handle 3 is formed with a laterally extending vertically disposed rib 4 which constitutes a jaw. A dog 5 is pivoted to a side of the handle 3 and is adapted to cooperate with the rib 4 so as to grip a wire or other article that may be placed between the elements 4 and 5. These parts 4 and 5 constitute a clamp of which the part 4 is the fixed jaw and 5 the movable or pivoted jaw. The teeth along opposite edges of the standard 1 are formed by means of notches 6 which are upwardly and outwardly inclined, the inner ends of such notches being made rounding so as to engage with corresponding rounded portions of the dogs. As a result of the upward and outward inclination of the notches 6 the teeth formed between such notches are upwardly and outwardly inclined, thereby making positive engagement with the dogs and guarding against casual disengagement of the dogs therefrom.

A slide head 7 is mounted upon the standard 1 to move freely thereon and is hollow to admit of the standard passing there-through. The upper portion of the slide head is contracted, as indicated at 8, so as to snugly embrace the standard and prevent lateral play of the slide head thereon. Transverse grooves 9 are formed in the inner faces of the side walls of the slide head near the lower end of such walls. These grooves 9 receive opposite edge portions of a rest 10 for the operating lever. This lever rest 10, as shown most clearly in Fig. 10, is of U-shape the space formed between the side members being of a width to snugly receive the standard and prevent any lateral play of the slidehead at its lower end. The closed end of the lever rest 10 is formed with an opening 11 which is adapted to receive a pin 12 when the rest is in position so as to hold it in place. When the lever rest 10 is in place the open end of the space 13 formed between the side members is closed by an end wall of the slide head, the oppo-

site end of such space 13 being closed by the connecting portion in which is formed the pin receiving opening 11. Grooves 14 are formed in the upper faces of the side members of the rest 10 and constitute seats in which the lower edge portions of the spaced elements of the operating lever are received. This is shown most clearly in Fig. 4. The grooves 14 are disposed intermediate of the faces of the members comprising the rest 10. The lever rest 10 is placed in position or removed from the slide head by means of a sliding motion.

The operating lever comprises an end piece 15 and a handle 16, the latter being detachably fitted to the end piece 15. The end piece 15 is preferably formed of similar sections or parts which are adapted to be placed together and secured by bolts or like fastenings. The active end of the operating lever comprises spaced portions 17 which are of like formation. These spaced portions 17 extend along opposite sides of the standard and dogs and come between the side walls of the slide head. The outer end of each portion or member 17 is widened and formed with a depending rocker portion 18 and a vertical fulcrum portion 19. The fulcrum portion 19 centers the lever whereas the portion 18 forms a rocking support for the lever. The rocker portion 18 is fitted in a groove 14 of the rest 10. The fulcrum portion 19 is engaged by a fulcrum seat 20 projecting laterally from the inner face of each of the side walls of the slide head. The fulcrum seats 20 are oppositely disposed and curve transversely so as to fit the rounded edge of the fulcrum portion 19. The outer edge portion of each fulcrum seat 20 extends downwardly to over lap the upper portion of the fulcrum element 19 and thereby hold the same in proper position. The upper portions of the fulcrum elements are held in place in the seats 20 by means of the rest 10, as indicated most clearly in Fig. 6. Openings 22 are formed in each rocker portion 18 near the opposite ends thereof to receive the pivot connections between the dogs and the operating lever.

The dogs 23 are of similar or like formation, each being of U-shape and longitudinally curved. The side members of the dogs are spaced apart a distance to extend along opposite sides of the standard 1 and to come between such standard and the spaced members 17 of the operating lever. The dogs when in position extend upwardly and their closed ends occupy a position at the edges of the standard. The closed end of each of the dogs is formed with a rounded nose 24 which is of a shape to fit the inner rounded end of the notches 6. The rounded nose 24 admits of the same riding into or out of the notches 6 with an easy movement when the operating lever is oscillated. The dogs

23 are pivotally connected at their lower ends to the spaced side members 17 of the operating lever. While the pivotal connection between the dogs and operating lever may be effected in any manner it is preferred to form the dogs 23 with trunnions 25 which extend outwardly and are adapted to enter the openings 22 formed in the rocker ends of the elements 17. The upper ends of the side members comprising the dogs 23 are formed with nibs 26 which are beveled at their upper edges so as to ride upon the beveled ends of the jack reverse. The nibs 26 extend along opposite sides of the toothed edge portions of the standard 1. A helical contractile spring 27 connects the upper ends of the dogs and acts to draw such ends inward and insure engagement of the parts 24 with the notches 6 of the standard. The spring 27 for convenience is located at one side of the standard and between such standard and the adjacent side wall of the slide head as indicated most clearly in Fig. 4.

The jack reverse comprises a stem 28 and cross head 29. The cross head 29 has its opposite ends beveled, as indicated at 30, for the beveled ends of the nibs 26 to ride upon, thereby holding the dogs away from the toothed edges of the standard at such times in the operation of the lever to admit of the slide head moving downward upon the standard by an intermittent motion. The cross head 29 of the jack reverse is arranged within the upper portion of the slide head between the standard and the adjacent side wall of the slide head and at a point above the dogs. The stem 28 passes through an opening in the offset portion of the slide head at the base of the contracted part 8 and also extends through an opening formed in a lug 31 formed upon a side of the contracted part 8. An expansible helical spring 32 mounted upon the stem 28 and confined between the lug 31 and cross head 29 normally exerts a pressure to force the cross head downward so as to hold it in position to cooperate with the dogs when reversing the movement of the slide head in the lowering of the same. A flange is formed upon one side of the cross head 29 and comprises a horizontal portion 33 and a depending portion 34, the latter curving outwardly and downwardly. This flange is disposed upon the outer face of the cross head 29 so as to come between such cross head and the adjacent side wall of the slide head.

The actuating means for the jack reverse consists of a cam 35 which is arranged at one side of the cross head 29 and below the horizontal portion 33 of the laterally extending flange. The cam 35 is mounted in the side wall of the slide head adjacent the jack reverse and is formed with a lateral stem comprising a rounded portion 36 and a square or noncircular portion 37. The rounded

portion 36 of the stem obtains a bearing in the side wall of the slide head and is of a length to project beyond such side wall so as to receive an expansible spring 38. The noncircular portion 37 of the stem receives a thumb piece 39 which is fitted thereon and retained in place by means of a machine screw 40 or other fastening means. The inner face of the thumb piece 39 is recessed to receive the outer end of the spring 38. A washer 41 is interposed between the thumb piece and the outer wall of the slide head so as to prevent any rattle and also to prevent the escape of oil. It will be observed that the spring 38 exerts an outward pressure upon the thumb piece 39 and as a result holds the cam 39 close against the inner face of the side wall of the slide head. The slide head 7 is formed with opposite extensions 42 and 43. The extension 42 constitutes a rest for receiving the load to be lifted. The extension 43 may also be utilized as a rest for receiving the load but its primary office is to constitute the movable jaw of a wrench, the companion jaw 44 being formed as a part of the handle 3. When the work to be rotated is gripped between the jaws 43 and 44 the standard 1 is utilized as a handle. In order that the device may be used as a wire stretcher or splicer, the slide head 7 is formed upon one side with an extension 45 and a dog 46 is pivoted to the slide head in position to cooperate with the extension 45. The parts 45 and 46 constitute elements of a clamp for gripping one end of the wire to be drawn upon or held during the splicing operation. The extension 42 is strengthened and braced by means of a bracket portion 47 the same also constituting a handle for carrying the jack when moving the same.

When assembling the parts the jack reverse is placed in position after which the cam 35 is put in place and the thumb piece 39 attached. The dogs are fitted to the spaced portions 17 of the operating lever after which such operating lever with the dogs attached is slipped into place in the slide head from below. The lever rest 10 is next placed in position by being slid into the grooves 9 and fastened by means of the pin 12. The standard is now passed through the end between the spaced members of the dogs and operating lever. The foot 2 or hand piece 3 may be fitted to the standard before slipping the latter into the slide head and after such standard has been placed in position the remaining part, that is the hand piece or foot not previously attached to the standard, may be placed in position. The jack when assembled operates to lift a load by oscillating the operating lever. The cam 35 is turned so as to elevate the jack reverse so as to clear the dogs. When the jack reverse is elevated

the cam occupies a position shown most clearly in Figs. 2 and 6, the toe of the cam bearing against the horizontal portion 33 of the flange and the edge of such cam engaging the depending portion 34 of the flange. In this position of the cam the parts form a lock to hold the jack reverse in elevated position. As the lever is oscillated the dogs are alternately elevated, one of the dogs engaging with a toothed portion of the standard and supporting the slide head and load during the upward movement of the other dog and the last mentioned dog in turn engaging the adjacent toothed portion of the standard while the dog previously sustaining the load moves upward to a new position upon the standard. This alternate and ratchet movement of the dogs is well understood. When it is required to reverse the jack, that is admit of the slide head moving downward upon the standard by a step by step motion upon oscillating the operating lever, the cam 35 is moved to throw its toe portion into a depending position as indicated most clearly in Fig. 3, thereby permitting the spring 32 to come into play and force the cross head 29 of the jack reverse into position to engage with the beveled nibs of the dogs in the plane of and adjacent to the jack reverse. When the operating lever is moved so as to elevate the holding dog, the latter is at the same time moved outward by reason of its nib 26 riding upon the adjacent beveled end 30 of the jack reverse while at the same time the opposite or loose dog moves inward to a position to engage the next lower tooth of the standard. The instant the holding dog clears the standard the loose dog drops into the notch and becomes the holding dog for sustaining the slide head and load during the next movement of the operating lever when the operation is repeated.

It is observed that the position of the operating lever is fixed by the fulcrum portions 19 entering the seats 20. Lateral movement of the spaced elements or parts 17 of the operating lever is prevented by the lower edges of the rocker portions 18 fitting in the grooves 14 and by the upper edges of the portions 19 being confined between the depending portions 21 of the fulcrum seats and the adjacent side walls of the slide head. The construction is such as to admit of the parts being readily assembled or taken apart for any desired purpose. The cam 35 and laterally extending flange 33—34 are of such construction and arrangement as to form a lock to hold the jack reverse elevated when moved so as to clear the dogs.

While the drawings illustrate a preferred embodiment of the invention it is to be understood that changes may be resorted

to in adapting the invention to meet specific requirements without departing from the invention as claimed.

Having thus described the invention what is claimed as new is:—

1. A lifting jack comprising a toothed standard, a slide head mounted thereon, an operating lever, a dog pivoted to the operating lever and arranged to cooperate with the toothed portion of the standard, and a rest for the operating lever having a depressed seat for retaining the operating lever in the predetermined position.

2. A lifting jack comprising a toothed standard, a slide head mounted thereon, a dog arranged to cooperate with the toothed portions of the standard, an operating lever having a dog operatively connected thereto and comprising spaced portions extending along opposite sides of the standard and within the slide head and a rest for supporting the operating lever and provided with depressed seats for receiving the spaced portions of the lever at the sides of the standard to hold such lever in the predetermined position.

3. In a lifting jack, a standard, a slide head mounted upon the standard and provided with a lateral projection recessed in its under side to form a seat, a dog adapted to cooperate with the standard and an operating lever for actuating the dog and mounted to receive an oscillatory movement, such lever having an upwardly extending fulcrum entering the said seat and having a depending rocker portion.

4. A lifting jack comprising a standard, a slide head thereon, a dog for cooperating with the standard, an operating lever having an upwardly extending fulcrum and a depending rocker portion, a rest for receiving the rocker portion of the lever and a fulcrum seat projecting from the slide head and depressed in its under side to engage over the fulcrum of the lever and acting jointly with the rocker seat to retain the lever in proper position.

5. In a lifting jack, a standard, a slide head mounted upon the standard and open at its lower end and having oppositely disposed grooves near the lower ends of its side walls, a rest slidable in such grooves and formed upon its upper side with depressed seats adjacent the inner faces of the side walls of the slide head, an operating lever having spaced portions fitted in the depressed seats of the rest, and a dog operatively connected with the lever and standard.

6. In a lifting jack, the combination of a standard, a slide head mounted thereon and provided upon the inner faces of its side walls with fulcrum seats depressed in their under sides, and a rest fitted within the lower portion of the slide head, an operat-

ing lever having spaced portions extending along opposite sides of the standard and formed with depending rocker portions engaging the said rest and having upwardly
 5 extending fulcrum portions entering the depressions in the lower sides of the said fulcrum seats, oppositely disposed dogs pivotally connected to the spaced portions of the operating lever and adapted to cooperate
 10 with the standard.

7. In a lifting jack, the combination of a standard, a slide head mounted thereon, oppositely disposed dogs, an operating lever, a jack reverse for cooperating with the dogs,
 15 a cam disposed between the jack reverse and side of the slide head and having a laterally extending stem mounted in the slide head, a thumb piece attached to the projecting end of the stem, and a spring arranged between
 20 the thumb piece and slide head.

8. In a lifting jack, the combination of a standard, a slide head mounted thereon and having its upper portion contracted, oppo-

sitely disposed dogs, an operating lever, a jack reverse comprising a stem and cross
 25 head, the stem passing through an opening in the upper portion of the slide head at the base of the contracted upper part thereof, said cross head having a laterally extending
 30 flange comprising a horizontal and a depending portion, an expansible helical spring exerting a downward pressure upon the jack reverse, a cam arranged within the
 35 slide head between the jack reverse and adjacent side of the slide head and in the plane of the flange of the jack reverse and comprising a laterally extending stem mounted in the slide head, and a thumb piece secured to the projecting end of the stem.

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

WILLIAM F. HIATT. [L. s.]

Witnesses:

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 EARL C. ROSZELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."