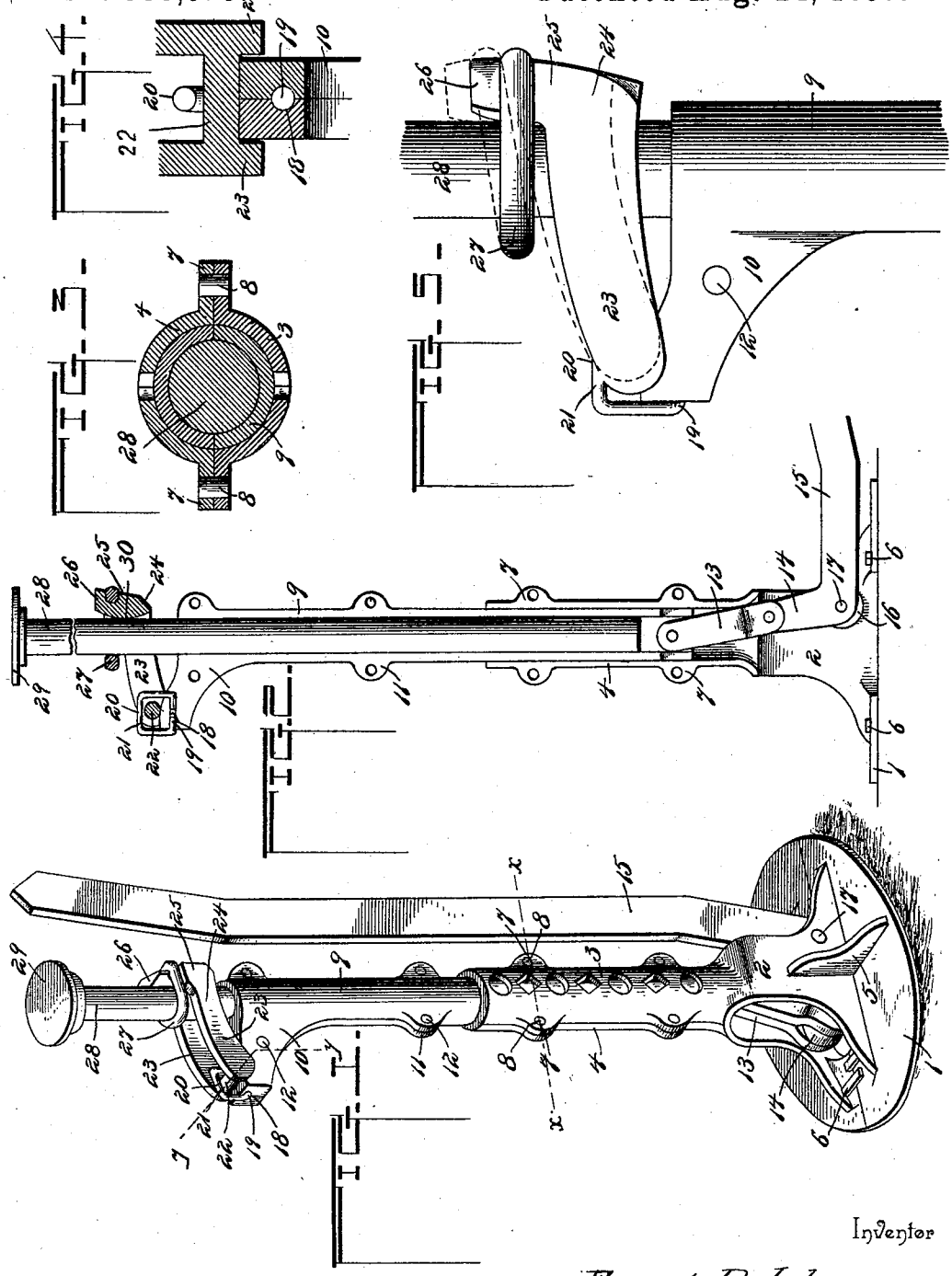
(No Model.)

F. P. JOHNSON.

LIFTING JACK.

No. 588,579. Patented Aug. 24, 1897.



Inventor

Witnesses

Milton O'Connell

Edom Luse.

Frank P. Johnson,

By his Attorneys,

C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK P. JOHNSON, OF DANVILLE, PENNSYLVANIA.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 588,579, dated August 24, 1897.

Application filed January 23, 1897. Serial No. 620,426. (No model.)

To all whom it may concern:

Be it known that I, FRANK P. JOHNSON, a citizen of the United States, residing at Danville, in the county of Montour and State of Pennsylvania, have invented a new and useful Lifting-Jack, of which the following is a specification.

This invention relates to lifting-jacks, its especial objects being, first, to provide a jack comprising a telescopic and extensible standard or lifting-bar which may be instantly adjusted to any desired height and which may be automatically grasped and retained at the proper height by a special form and arrangement of clutch, and, second, to make each of the tubular portions of the device, as well as its supporting-base, of two similar sections secured together in any desirable manner, with the dividing-lines between the sections extending longitudinally thereof.

With these and other objects in view the invention consists in certain novel features and details of construction and arrangement of parts which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the lifting-jack. Fig. 2 is a vertical longitudinal section taken on the dividing-line between the section of the tubular parts of the device. Fig. 3 is a horizontal section on the line *x x* of Fig. 1. Fig. 4 is a vertical section of a detail on line *y y* of Fig. 1. Fig. 5 is a side elevation of the clutch device.

Similar reference-numerals indicate similar parts in the several figures.

The base-plate is indicated by 1, from which extends upwardly the tubular support 2. This tubular support and the base-plate are each formed of two sections, (indicated by 3 and 4,) the respective sections of the base and tubular support being cast integral with each other. Strengthening ribs or braces 5 are also formed integral with the base-plate and the tubular support. Each section of the base-plate is provided with laterally-projecting lugs 6, the lugs on one section extending across the dividing-line between the sections to bear on the other section. Each section of the tubular support is provided with a series of laterally-projecting lugs 7 at its edges, which lugs are perforated for the reception of bolts or rivets 8, by means of which the two sections of the tubular support and the base-plate are firmly secured together, the lugs 6 on the base-plate also aiding to stiffen and lock the sections together.

9 represents an inner tube, which is also made up of two longitudinal sections, each of which sections is provided at its upper end with a laterally-projecting arm 10 and with a series of laterally-projecting lugs 11. Bolts or rivets 12 pass through the arms 10 and lugs 11 to firmly secure the two sections of this tube together. The tube 9 fits snugly within the tube 2 to move freely therein and is connected at its lower end to a link 13, which is also formed from two similar sections, the upper ends of the sections being brought together and pivoted within the lower end of the tube 9, while their lower ends are spaced to receive the end of the short arm 14 of an elbow-lever 15, which short arm is pivotally connected to them.

The lower portion of the tube 2 is open at opposite sides to permit the short arm 14 of the lever and the link 13 to work freely therein. Each section of the tube 2 is provided with an inwardly-projecting lug 16, between the inner ends of which lugs the lever 15 is pivoted at its elbow on a pin 17, extending through said lugs and the sides of the tube, the pin being secured in position in any desirable manner. The pivot of the lever is to one side of the axial center of the tube 2.

The meeting faces of the arms 10 are provided with horizontal grooves 18, in which the lower open bar 19 of a link 20 is seated, and when the arms are clamped together this link is held firmly in position. The upper bar 21 of the link extends parallel with and above the upper face of the arms 10 and in conjunction with the said arms forms a guideway in which a pin 22 moves, said pin being supported on the arms 10. The pin 22 connects the outer ends of the arms 23 of a stirrup or strap 24, which forms a part of the clutch mechanism and is cast integral therewith. From the upper edge of the looped portion 25 of the strap 24 a T-shaped lug 26 projects vertically and a link 27 removably fits over the lug 26 and projects inwardly beyond the looped end of the strap 24. The

link 27 may be rocked on the lug 26 and the stirrup may also be rocked on the arms 10.

28 represents an extension-rod having at its upper end a head or enlargement 29, on which the load is adapted to rest, and this rod passes downwardly through the link 27, strap 24, and into the tube 9 and is of such length that when in its lowest position its lower end will rest upon the upper end of the link 13. The extension-rod may be freely lifted vertically out of the tube, but when pressure is applied to return it into the tube the strap 24 and link 27 will bind upon opposite sides of the rod 28 and frictionally hold it against downward movement, and the more the weight applied to the upper end of the lever is increased the greater will be the frictional resistance of the link and strap.

The inner surface of the loop of the strap 24 is convex in a vertical direction, as indicated at 30, and the strap normally extends across the rod 28 in an inclined plane, with its free end somewhat higher than the opposite end. The link 27 when in the gripping position extends across the rod 28 at a right angle thereto, as shown in full lines in Fig. 5, and its contact-point with the rod is in a higher plane than the contact-point between the convex face 30 of the strap, and the opposite points of contact are therefore oblique to each other. It is apparent, therefore, that when downward pressure is applied to the rod 28 the normal tendency is to force the contact-points of the link and strap inwardly toward each other, since the free ends of the link and strap will each normally move downwardly in the arc of a circle toward each other. To relieve the clutching action, the loop end of the strap is lifted slightly, which will bring the strap and link parallel to each other, as indicated in dotted lines in Fig. 5, and also bring the outwardly-inclined upper portion of the convex face 30 of the strap substantially parallel with the rod, which latter will then be free to pass downwardly between the opposing faces of the link and strap.

All the parts of this jack, with the exception of the extension-rod, the lever, and the connecting-bolts, are to be malleable castings, and the holes for rivets, &c., will be made at the time of casting. The several parts may therefore be quickly assembled and secured in position with very little labor and expense.

The operation of the device is as follows: The jack is placed in position beneath the axle of the vehicle and the extension-rod raised out of the tube 9 until its head is in close proximity to the axle, in which position it will be held by the clutch mechanism, after which, by pulling the lever from its vertical position to a horizontal position, the tube 9 and the extension will be moved upwardly out of the tube 2 and elevate the wagon. When the lever is in its depressed position, the link 13 extends obliquely from the end of the tube 9 to the short arm of the lever in a line which, if extended, would pass outside the pivotal connection between the lever and the tube 2. The tendency, therefore, of the downward-pressure on the rod 28 and tube 9 is to still further depress the long arm of the lever, and as this long arm is in engagement with the base-plate it is evident that the rod 28 and tube 9 cannot be moved downwardly by the weight supported by them, and the lever therefore automatically locks itself in position to sustain the weight. Similarly, when the lever is in its upward position the ring 13 extends obliquely in the opposite direction in such a manner that the weight of the tube 9 and the extension-rod 28 normally tend to counterbalance the long arm of the lever and hold it in its vertical position.

From the foregoing description it will be apparent that I have produced a lifting-jack which may be very cheaply manufactured, and as many of the parts are cast in sections they may be quickly assembled and the expense of fitting the parts together will therefore be greatly reduced. The several parts also automatically lock themselves in position and require no especial locking devices to sustain the load in its elevated position.

It will be understood that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim is—

1. A telescopic lifting-jack comprising inner and outer tubular sections and a solid rod fitting within the inner tube, each of the tubes being made in two sections detachably bolted together and separable on a line longitudinally thereof, each section of the outer tube having a laterally-extending base portion integral therewith, and strengthening-braces integral with the tube and base portions, and each base portion having laterally-projecting lugs 6 to extend across the dividing-line between the sections and engage the other base portion, and means to adjust the tubes and rod relatively to each other and to lock them in position, substantially as described.

2. A telescopic lifting-jack comprising two tubes one within the other, a solid extension-rod fitted within the inner tube, a friction-clutch mechanism pivoted to the inner tube and engaging the rod to permit free upward movement of the rod and to automatically lock it against downward movement, and means substantially as described to simultaneously move the inner tube and the extension-rod relatively to the outer tube, and to lock them in position, as and for the purpose described.

3. A telescopic lifting-jack comprising two tubes one within the other, a solid extension-rod fitted within the inner tube, and a frictional clutch mechanism interposed between the inner tube and the extension-rod, consisting of a strap embracing the rod and loosely

connected at one end to the inner tube, and a link also embracing the rod and loosely connected at one end to the free end of the strap, the contacting points of the strap and link respectively with the rod being oblique to each other, substantially as described.

4. A telescopic lifting-jack comprising two tubes one within the other, a solid extension-rod fitted within the inner tube, a clutch mechanism interposed between the inner tube and the rod to permit free upward movement of the rod and automatically lock it against downward movement, an elbow-lever pivotally connected at its elbow to the lower end of the outer tube to one side of the axial center of the said tube, and a link connecting the outer end of the short arm of the lever with the lower end of the inner tube, whereby the inner tube and the extension-rod may be raised or lowered, the construction being such that the lever is automatically locked in either of its extreme positions, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK P. JOHNSON.

Witnesses:

ALEX. H. GROVE,

WILLIAM H. MAUGER.