

(No Model.)

2 Sheets—Sheet 1.

A. A. STROM.

LIFTING JACK.

No. 388,156.

Patented Aug. 21, 1888.

Fig. 1.

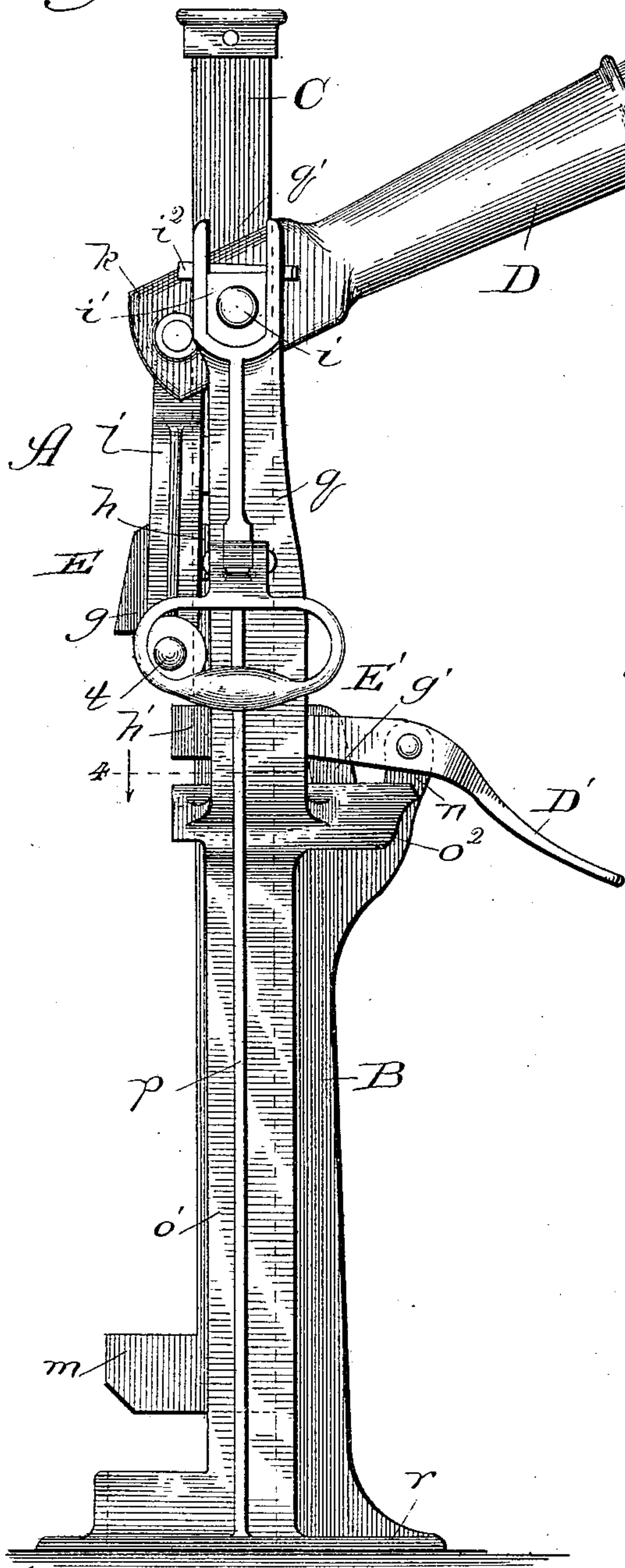
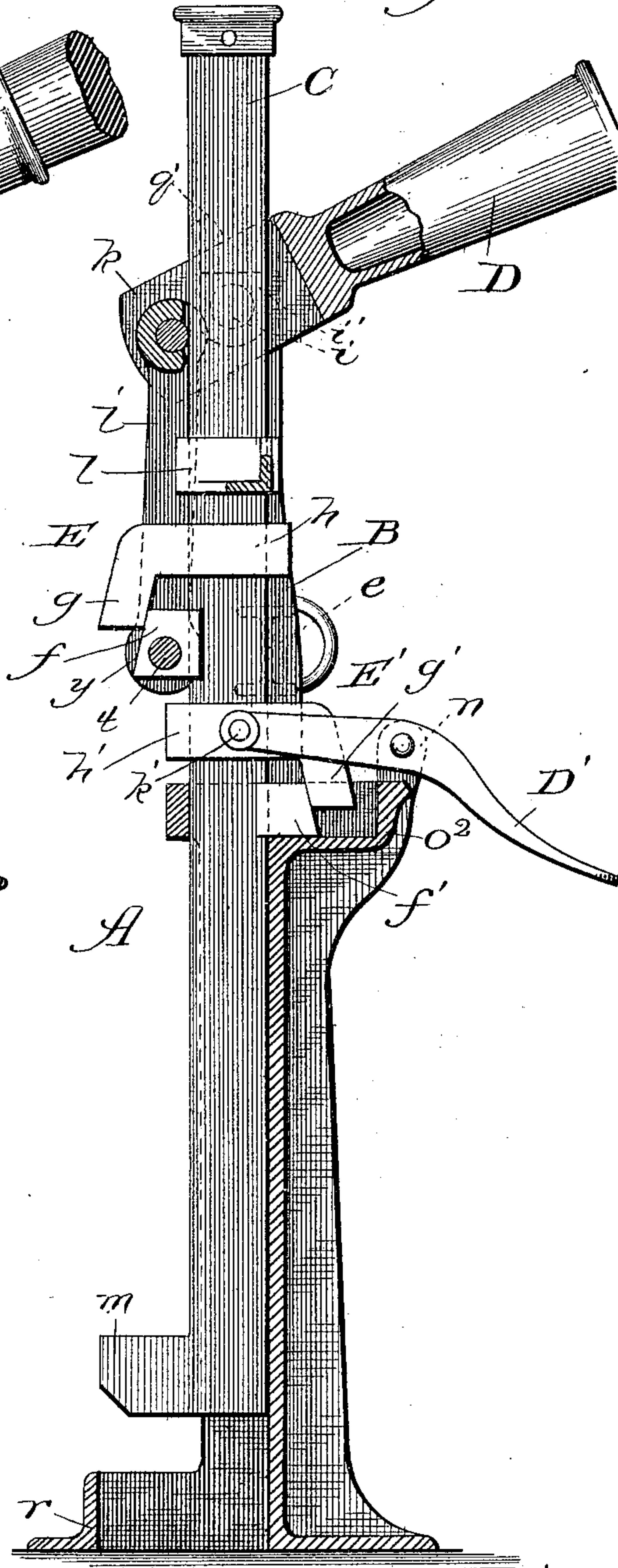


Fig. 2.



Witnesses:

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LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 388,156, dated August 21, 1888.

Application filed March 19, 1888. Serial No. 267,624. (No model.)

To all whom it may concern:

Be it known that I, AXEL A. STROM, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Lifting-Jacks, of which the following is a specification.

My invention relates particularly to an improvement upon the lifting-jack for which Letters Patent of the United States No. 359,411 were granted me on the 15th day of March, 1887, in which the principal feature of invention is the friction-clutch device for the lifting-bar. The clutch referred to involves, briefly stated, two collars on the lifting-bar, one of which is provided with an extension or ear, and by forcing the other collar by means of the operating-lever against the ear portion of the first-named the collars are forced laterally in opposite directions and thus grip the bar. The clutch portion of my present improvement involves identically the same principle of construction and operation as that included in my aforesaid former invention, but is simpler than the latter in construction, and easier and cheaper to produce, without being less effective and reliable in its operation.

Besides providing an improved construction of friction-clutch, the object of my present invention is to afford a generally-improved lifting-jack involving a particular construction of the standard for securing the centering of the load upon the jack, whereby the lifting-power shall be exerted vertically through a line central, or nearly so, on the standard and lifting-bar by fulcruming the operating-lever on such line, and the short arm of the lever shall be close to the lifting-bar and accordingly decrease the tendency of the strain exerted through the clutch to bend the bar, which tendency increases with the increase of distance from the lifting-bar at which the power is applied to the clutch, on the principle, to be more clear, that the shorter the distance laterally from the bar at which the power is applied to the clutch the shorter will be the leverage of the latter, and consequently the less the lateral strain against the bar tending to bend it.

In the drawings, Figure 1 shows a lifting-

jack involving my improvements in side elevation. Fig. 2 shows the same in sectional elevation, the section being taken lengthwise of the operating-lever, which is shown broken. Fig. 3 is a partly-sectional face view with the lever and links for connecting it with the lifting-clutch removed to avoid obstructing parts which it is desired to present clearly; Fig. 4, a section taken on the line 4 of Fig. 1 and viewed in the direction of the arrow, and Fig. 5 a section taken on the line 5 5 of Fig. 4 and viewed in the direction of the arrows.

A is the lifting-jack, having a standard, B, provided with a base, *r*, and expanded laterally and transversely open, as shown at *o*, toward its upper end, where it comprises, as a continuation of the lower contracted portion, *o'*, two parallel sides, *q*, provided with corresponding U-shaped recesses *q'* in their upper extremities, to the bases of which extend the lateral central strengthening-ribs, *p*. Toward the base of the transversely-open expanded portion, from the rear of the part *o'*, the standard is enlarged in a backward direction, as shown at *o''*, affording a chamber the side walls of which are closer together toward their upper edges than at their bases forward of the part *o''*, (see Fig. 4,) for a purpose hereinafter described, and a laterally-perforated bearing, *n*, also serving a purpose hereinafter described, extends upward from the part *o''*.

C is the lifting-bar, provided with the usual foot, *m*, at its lower end, which extends through the slot *m'*, commonly provided in the standard in jacks of the present class. The lifting-bar is of any ordinary construction, and, though shown to be rectangular in cross-section, may be of any other suitable shape, when of course the parts immediately fitted to it and to which it is fitted, as hereinafter described, should correspond in shape. The bar C extends vertically through the standard between the sides *q* and through a guide-bearing, *l*, extending between the said sides.

D is the operating-lever for the lifting-clutch, hereinafter described. It is bifurcated toward its head *k* to embrace the lifting-bar between the sides *q* of the standard, and from opposite sides of the bifurcated part extend trunnions *i*, supported in boxes *i'*, seated in

the U-shaped recesses q' , in which they are secured, as by cotter-pins i^2 , passed through opposite sides of the recesses.

E is the lifting-clutch, comprising a collar, h , 5 surrounding the lifting-bar and provided with a lip, g , extending from a side of the collar and beveled on its inner side in the direction of its extension. Below the collar h , on the side of the lifting-bar at which the lip g extends, is a block, f , corresponding with a portion of the lower collar of the lifting-clutch in my aforesaid former patent, and provided laterally with trunnions t , from which it is connected with and supported by the bifurcated 15 head of the bar D by means of links l' . The block f constitutes a wedge, and is preferably, though not necessarily, beveled on one side, as shown at y , Fig. 2, and recessed on its opposite side to embrace, and thus be guided on, 20 the lifting-bar.

From the foregoing description of the construction the operation of the lifting-clutch will be readily understood. Downward pressure on the long arm of the lever D raises the 25 block f , thus wedging it between the beveled lip g of the collar h and adjacent side of the lifting-bar, whereby, owing to the downward and outward flaring form of the block, or upward and inward bevel of the lip, or both, the 30 collar is forced or pressed (at its inner side farthest from the outer side provided with the lip) against the bar in one direction and the block in the opposite direction, or against the direction of pressure of the collar, thus effectively gripping it at different points on opposite 35 sides, the grip increasing in intensity in proportion to the resistance afforded by the weight to be raised. It will be seen, also, that there is practically no tendency in the clutch 40 to bend or "buckle" the bar, as the links l' are close to the bar.

To hold the bar in its raised position, I provide a retaining-clutch, E' , very similar in construction to the lifting-clutch, and comprising 45 a collar, h' , surrounding the bar, and having a beveled lip, g' , like the lip g , (but, for the sake of convenience, preferably at the opposite side of the lifting-bar,) and a block, f' . The block f' , however, with which the lip g' 50 is normally in engagement, owing to the weight of the collar h' , is stationary, or practically so, in the sense that it is vertically confined and held by being confined at converging sides between the contracted sides of the chamber o^2 , 55 where it is introduced by being first inserted into the wider portion thereof and then slid forward. A bifurcated lever, D' , embraces the collar h' , to which it is attached, near the extremities, as shown at trunnions k' , extending 60 centrally from its opposite sides, and near the base of the bifurcated portion it embraces and is fulcrumed to the bearing n , the long arm extending beyond the standard B into a position where it is conveniently accessible 65 to the operator to be actuated to release the retaining-clutch by downward pressure upon

it, which effects the release by raising the collar h' and thus freeing it from the wedging effect of the block f' . When the retaining-clutch is thus released, the lifting-bar may be 70 permitted to fall from its raised position by raising the long arm of the lever D or permitting it to rise until the collar h (in case it shall retain its hold at the lip g on the block f) shall strike a stop, e , provided to impede its 75 descent in proper position between the sides q of the standard.

The manner of controlling the descent of the lifting-bar is familiar to those who are in the habit of using lifting-jacks of the general 80 nature of the present device, and need not, therefore, be described herein.

While it is obviously necessary that in the clutch device only either the lip on the collar or the wedge-block shall be beveled, I prefer 85 the construction shown in the respect referred to, though I wish it to be understood that I intend to be included as within my invention also the beveling only of the wedge-block.

What I claim as new, and desire to secure 90 by Letters Patent, is—

1. In a lifting-jack, the combination, with the lifting-bar and standard, of an operating-lever fulcrumed on the standard, with its short arm extending beyond one side of the 95 lifting-bar, and a friction-clutch comprising a collar on the bar, having a lip projecting from it at the side where the short arm of the lever extends, and a wedge on one side of the lifting-bar in line with the space between the 100 said bar and lip and linked to the short arm of the lever, substantially as described.

2. In a lifting-jack, the combination, with the lifting-bar and standard, of a lever, D, fulcrumed on the standard, with its short arm 105 extending beyond one side of the lifting-bar, and a friction-clutch, E, comprising a collar, h , on the bar, having a beveled lip, g , projecting from it at the side where the short arm of the lever extends, and a block, f , on one side 110 of the lifting-bar in line with the space between the said bar and lip, and linked to the short arm of the lever, substantially as described.

3. In a lifting-jack, the combination, with 115 the lifting-bar, standard, and a lifting-clutch, of a retaining-clutch comprising a collar on the bar having a lip projecting from it on one side, and a wedge-block entirely on one side of the lifting-bar in line with and below the 120 space between the said lip and bar, and confined in its operative position against material vertical play, substantially as described.

4. In a lifting-jack, the combination of a lifting-bar, C, a standard, B, having a chamber, o^2 , reduced laterally toward one end, a 125 lifting-clutch, and a retaining-clutch, E' , comprising a collar, h' , having a lip, g' , on one side, a lever, D' , engaging with the collar, and a block, f' , confined in the chamber o^2 on one 130 side of the bar below the said lip, substantially as described.

5. In a lifting-jack, A, the combination of a standard, B, having the expanded portion *o*, bounded by sides *q*, having recesses *q'* in their upper ends, a lifting-bar, C, a guide-bearing, *l*, for the bar, a friction-clutch, E, comprising a collar, *h*, on the bar, having a lip, *g*, on one side and a block, *f*, below the said lip against the bar, and a lever, D, fulcrumed in the recesses *q'* and linked to the block *f*, substantially as described.

AXEL A. STROM.

In presence of—

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CHAS. E. GORTON.