

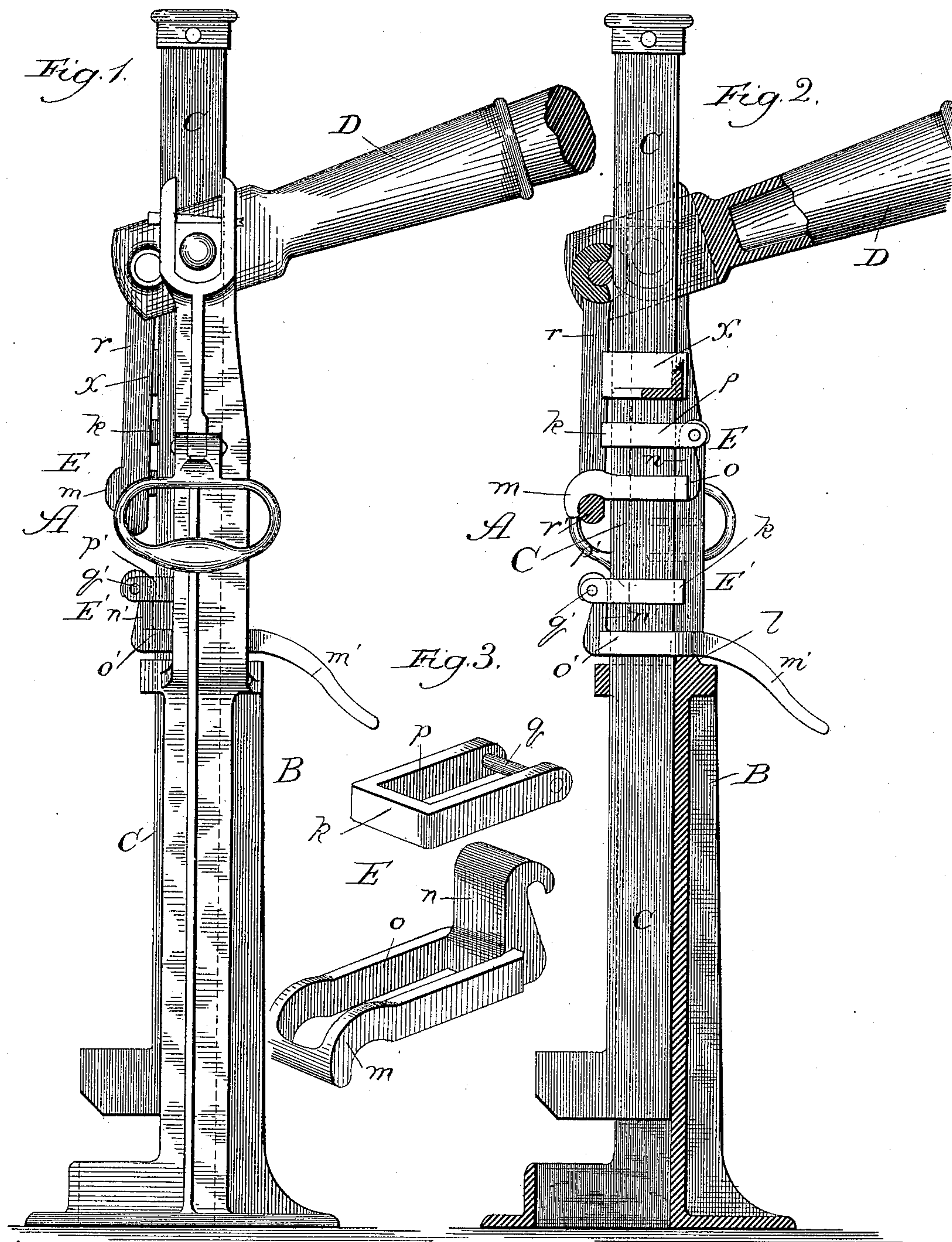
(No Model.)

A. A. STROM.

LIFTING JACK.

No. 390,813.

Patented Oct. 9, 1888.



Witnesses:

Edw. Gaylord,
J. H. Dyrenforth.

Inventor:

Axel A. Strom,
By Dyrenforth & Dyrenforth,
Attys.

UNITED STATES PATENT OFFICE.

AXEL A. STROM, OF AUSTIN, ILLINOIS.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 390,813, dated October 9, 1888.

Application filed July 21, 1888. Serial No. 280,639. (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 in the friction-clutch portion of a lifting-jack, being the device commonly employed therein in duplicate—one for raising the lifting-bar by actuating the operating-lever and the other for holding the lifting-bar in its raised position.

The object of my present improvement is to provide a construction of friction-clutch which shall afford a long leverage with which to actuate it to grip or bind the lifting-bar, and which shall be exerted close to the lifting-bar and not far away from the latter, as it would have to be if the leverage were merely extended on the clutches or pawls, as hitherto constructed, whereby there would be a tendency to bend the lifting-bar by the strain exerted to produce the gripping effect.

The principle of construction, owing to which I obtain the long leverage, as aforesaid, is the same as that set forth in my application for Letters Patent of the United States for an improvement in lifting-jacks, Serial No. 280,638, filed concurrently with the present application. Therein the construction for the said purpose is broadly claimed, and involves the extension of the handle at which the power is applied to the clutch to produce the gripping effect from the bearing or binding surface of the clutch on one side of the lifting-bar to or toward the opposite side thereof, at which the other bearing or binding surface is provided. Hence I do not claim such broad construction in the present application, which is intended to cover the general as well as the more specific construction of a lifting-jack employing the friction-clutch device shown in the accompanying drawings, in which—

Figure 1 shows a lifting-jack in side elevation provided with my improvement applied both as a lifting-clutch and as a retaining-clutch. Fig. 2 shows the same as Fig. 1, but in vertical section; and Fig. 3 presents, in perspective, the two parts separated, forming my improved friction-clutch.

A is a lifting-jack of any suitable construction, to which my improved friction-clutch is applicable, and preferably that shown and described in Letters Patent of the United States No. 389,156, granted me on the 21st day of August, 1888.

As my invention relates only to the friction-clutch, and not to the construction of other parts of the lifting-jack, which may be old, the latter are merely referred to herein and not elaborately described.

B is the hollow standard portion provided with a guide-collar, *x*; C, the lifting-bar within the standard; D, the operating-lever for the lifting-clutch, bifurcated and fulcrumed at opposite sides of its bifurcated part in recesses in opposite sides of the upper edges of the expanded upper portion of the standard, and *r* denotes the links connecting the short arm of the lever D, which projects slightly beyond the standard, with the lifting-clutch.

The guide-collar *x* referred to is merely a web connecting the two sides of the expanded portion of the standard and having a central opening for the lifting-bar, like the guide-collar in various forms of lifting-jacks, wherein it performs the same function of a guide surrounding the lifting-bar toward the upper end of the standard.

My improved clutch device may be employed both as a lifting-clutch and a retaining-clutch in a lifting-jack, though it may be used for either of the said purposes alone, any other suitable form of friction-clutch being used for the other purpose; hence I do not confine myself to the employment of both a lifting and a retaining clutch of the construction hereinafter set forth in the same lifting-jack.

E is the lifting-clutch, and E' the retaining-clutch. The clutch E comprises two parts, one being a collar, *p*, preferably conforming to the shape in cross-section of the lifting-bar and sufficiently wide to extend beyond one side of the same, where the adjacent side of the collar thus out of contact with the bar C may be, and preferably is, in the form of a round bar, *q*. The other part of the clutch E is a collar, *o*, like the collar *p*, preferably conforming to the shape in cross-section of the lifting-bar, and provided at one end with an upward and outward projecting hook, *n*, and bent

downward toward its opposite end to afford a hook, *m*, though the form of the end *m* is not of course necessarily that of a hook. In the same way that the collar *p* is wider than the lifting-bar toward the bar *q*, whereby a space is provided between it and the latter, the collar *o* is preferably also wider toward the handle *m*, leaving a space between its inner surface, forming one end of the collar and the adjacent side of the lifting-bar.

The collar *p* is adjusted on the bar *C* to surround it, with the bar *q* on one side thereof, and the collar *o* is similarly adjusted below the collar *p*, with the hook *n* of the former caught over the bar *q*, and the lower ends of the links *r* may be connected, as shown, by a bar, *r'*, to engage at the bar *r'* with the bent or hook portion *m* of the collar *o*. Any other suitable means of connecting the links and collar may be employed. When the lever *D* is lowered, it pulls through the link-connection on the collar *o*, thereby pulling the lower inner face of the hook portion *n*, which thus affords a bearing against the side of the lifting-bar, and through the connection of the hook *n* with the side *q* of the collar *p* pulls the opposite side, *k*, of the latter against the other side of the lifting-bar, thereby firmly gripping the bar *C* between two opposing bearings and causing it to be raised with whatever load may be imposed upon it.

While it is preferred that the parts *p* and *o* shall be readily separable, the hook portion *n* may, if desired, be permanently, but loosely, connected with the bar *q*.

The retaining-clutch *E'* involves as parts, in the collar *p'*, having the bar *q'*, collar *o'*, provided with the hook *n'*, and handle *m'*, exact or substantial counterparts of the features *p*, *q*, *o*, *n*, and *m* of the lifting-clutch *E*, the only difference in the construction being that the handle *m'* should be extended farther than the handle *m*, to afford a readily-accessible releasing-lever, and the difference in the adjustment being that the retaining-clutch collars occupy a reverse position on the lifting-bar with relation to those of the lifting-clutch, whereby the handle *m'*, which rests on a projection, *l*, on the standard forming its fulcrum, extends on the same side of the jack as the lever *D*, where it is readily accessible to the operator. By fulcruming the handle or lever *m'*, as described, the weight of the retaining-clutch causes it to be normally tipped, and thus to bind the bar *C*, the weight of which, together with that of the load upon it, obviously increases the binding effect. To release the retaining-clutch, downward pressure is brought to bear against the handle or lever portion *m'*, which forces the collars *p'* and *o'* and bearing sides *k'n'* thereof to their relative horizontal positions, and thus destroys their gripping effect, permitting the bar *C* to slide through them.

The collar portions of either clutch may, without altering their nature and functions,

be changed as to form and still be within my invention, and though it is preferred that the handle portion of the lower collar of the clutch shall extend beyond the side of the lifting-bar opposite that at which the bearing surface of such collar is located, such handle portion obviously need not extend so far. It will be seen, however, that the construction whereby the handle portion of the clutch extends from one side of the lifting-bar to or toward the opposite side of the same affords great leverage and permits it to be exerted close to the lifting-bar, and that the pivotal connection of the two parts of the clutch renders them flexible, and thus increases the gripping effect without requiring additional power to exert it. Of course the pivotal connection could be produced by constructing the hook *o* or *o'* on the lower collar to engage with the rear bar of the upper collar from the outer side of the said rear bar, when it would not be required to have a material space between the latter and the adjacent surface of the lifting-bar *C*. Such slight changes in the construction as have herein been suggested are quite obvious and readily comprehensible without requiring them to be illustrated in the drawings.

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

1. In a lifting-jack, the combination, with the standard and lifting-bar, of a friction-clutch comprising two collars on the lifting-bar having bearing or gripping surfaces, respectively, on opposite sides of the same, and pivotally connected from the gripping side of one to the non-gripping side of the other, and having the part on one collar at which the actuating-power is applied extended from its gripping side on one side of the lifting-bar toward the opposite side of the latter, substantially as described.

2. In a lifting-jack, the combination, with the standard *B*, lifting-bar *C*, and operating-lever *D*, of a lifting-clutch, *E*, comprising a collar, *p*, on the lifting-bar, having a bearing or gripping side, *k*, for one side of the lifting-bar, a collar, *o*, on the lifting-bar, having a bearing or gripping side, *n*, for the opposite side of the lifting-bar, pivotally connected with the adjacent side, *q*, of the collar *p*, and extended from the bearing *n* toward the opposite side of the lifting-bar, where it is connected with the lever *D*, and a suitable retaining-clutch, substantially as described.

3. In a lifting-jack, the combination, with the standard *B*, lifting-bar *C*, and operating-lever *D*, of a lifting-clutch, *E*, comprising a collar, *p*, on the lifting-bar, having a bearing or gripping side, *k*, for one side of the lifting-bar, a collar, *o*, on the lifting-bar, having a rigid bearing or gripping side, *n*, for the opposite side of the lifting-bar and terminating in a hook connected with the adjacent side, *q*, of the collar *p*, and a bent portion, *m*, extending from the side *n* toward the opposite side of the lifting-bar and connected with the le-

ver D, and a suitable retaining-clutch, substantially as described.

4. In a lifting-jack, the combination, with the standard B, lifting-bar C, and operating-
5 lever D, of a suitable lifting-clutch, and a retaining-clutch, E', comprising a collar, p' , on the lifting-bar, having a bearing or gripping side, k' , for one side of the lifting-bar, a collar, o' , on the lifting-bar, having a bearing or
10 gripping side, n' , for the opposite side of the lifting-bar, pivotally connected with the adjacent side, q' , of the collar p' , and extended from the bearing n' toward the opposite side of the lifting-bar into a handle portion, m' ,
15 fulcrumed on the standard, substantially as described.

5. In a lifting-jack, the combination, with

the standard B, lifting-bar C, and operating-lever D, of a suitable lifting-clutch, and a retaining-clutch comprising a collar, p' , on the
20 lifting-bar, having a bearing or gripping side, k' , for one side of the lifting-bar, a collar, o' , on the lifting-bar, having a rigid bearing or gripping side, n' , for the opposite side of the
25 lifting-bar, and terminating in a hook connected with the adjacent side, q' , of the collar p' , and a handle portion, m' , extending from the side n' toward the opposite side of the lifting-bar, and fulcrumed on the standard, substantially as described.

AXEL A. STROM.

In presence of—

M. J. BOWERS,

J. W. DYRENFORTH.