

(No Model.)

2 Sheets—Sheet 1.

A. A. STROM.
LIFTING JACK.

No. 401,722.

Patented Apr. 16, 1889.

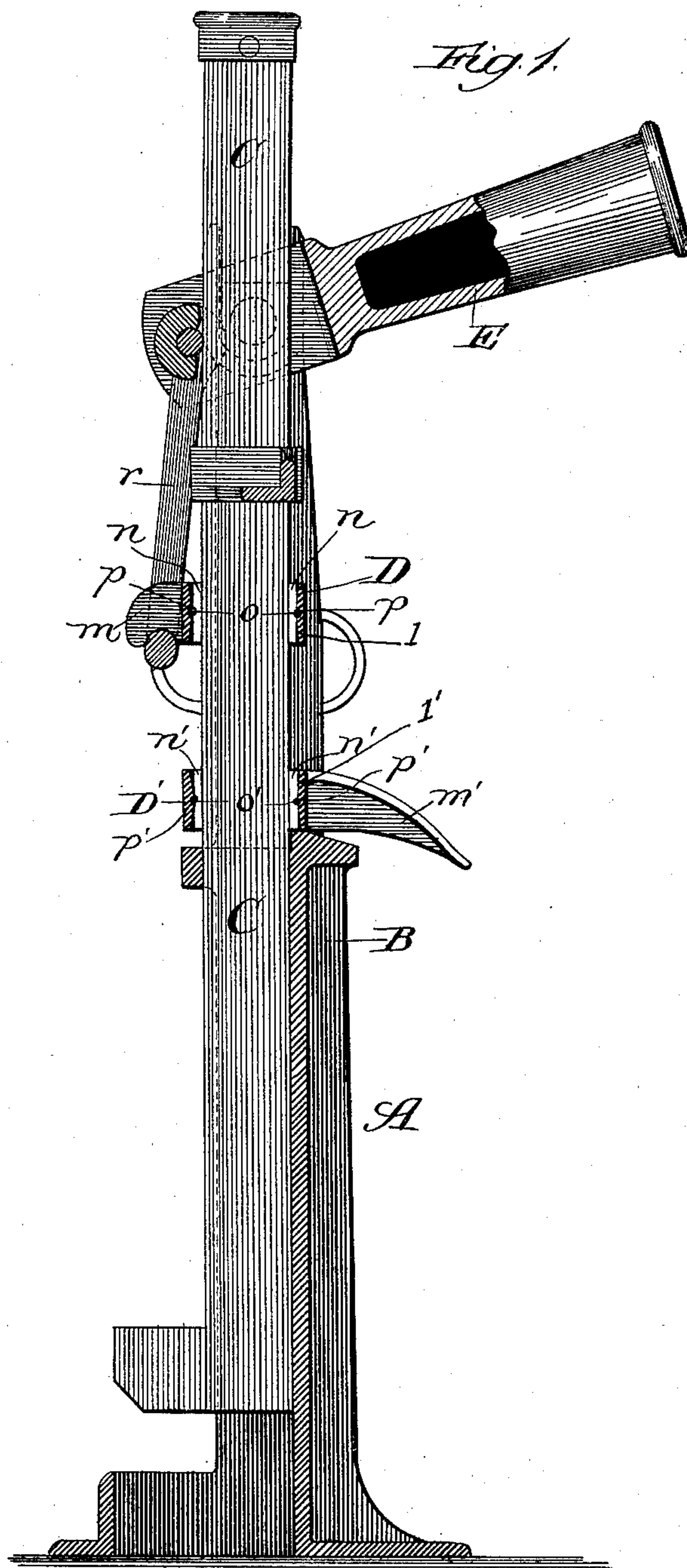
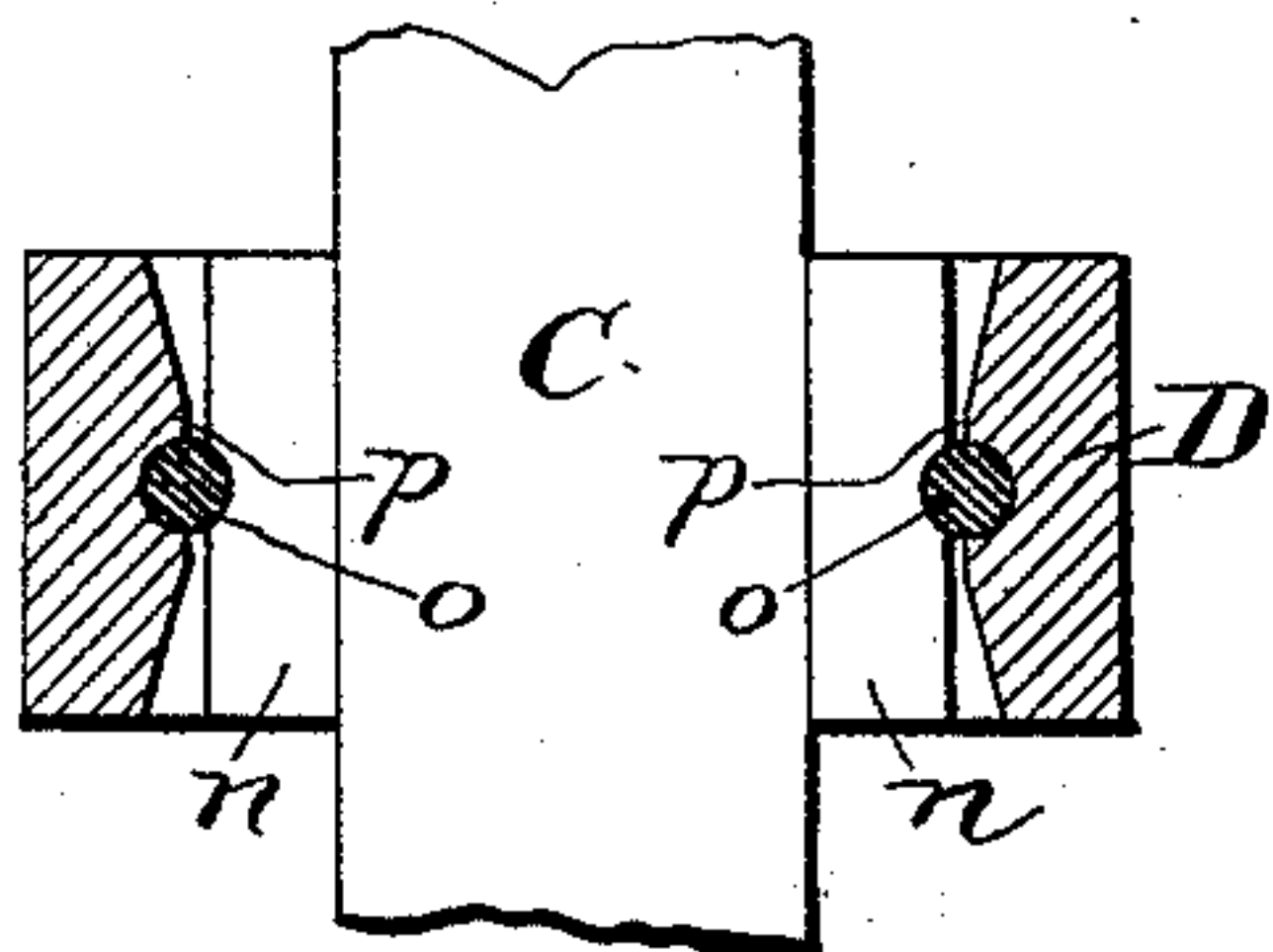


Fig. 2.



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By Dyrenforth & Dyrenforth,
Attys.

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2 Sheets—Sheet 2.

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Fig. 3.

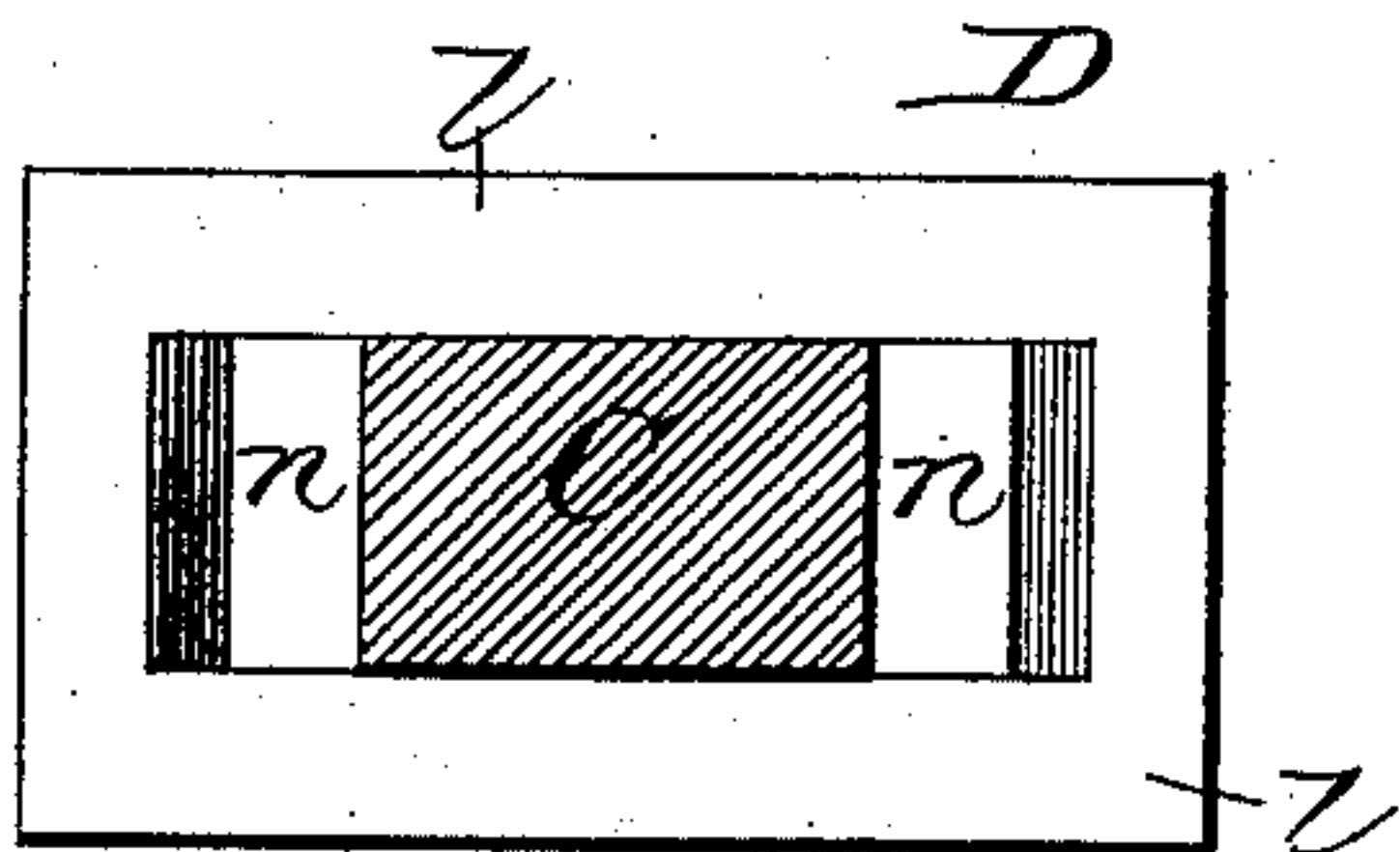


Fig. 4.

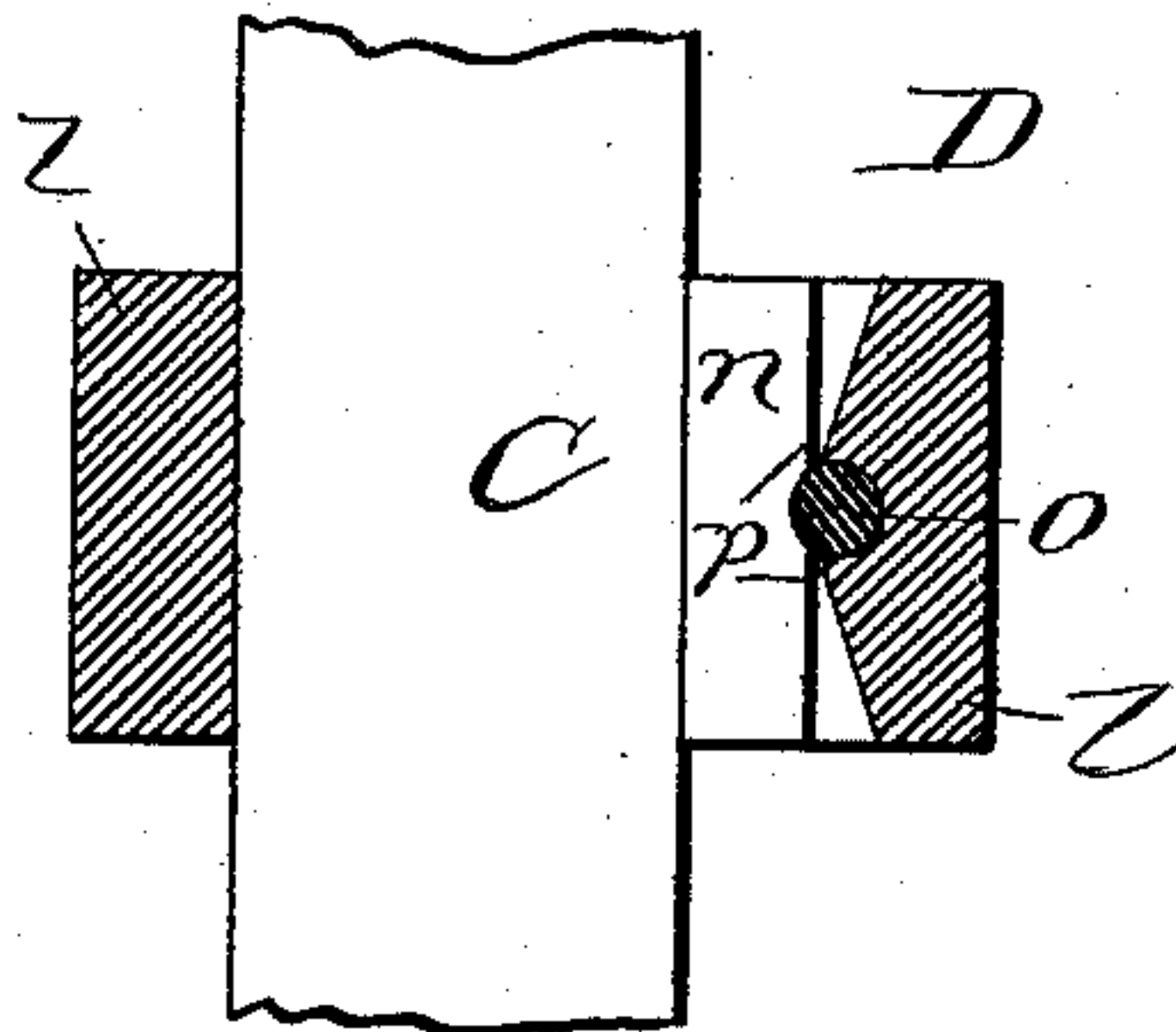


Fig. 6.

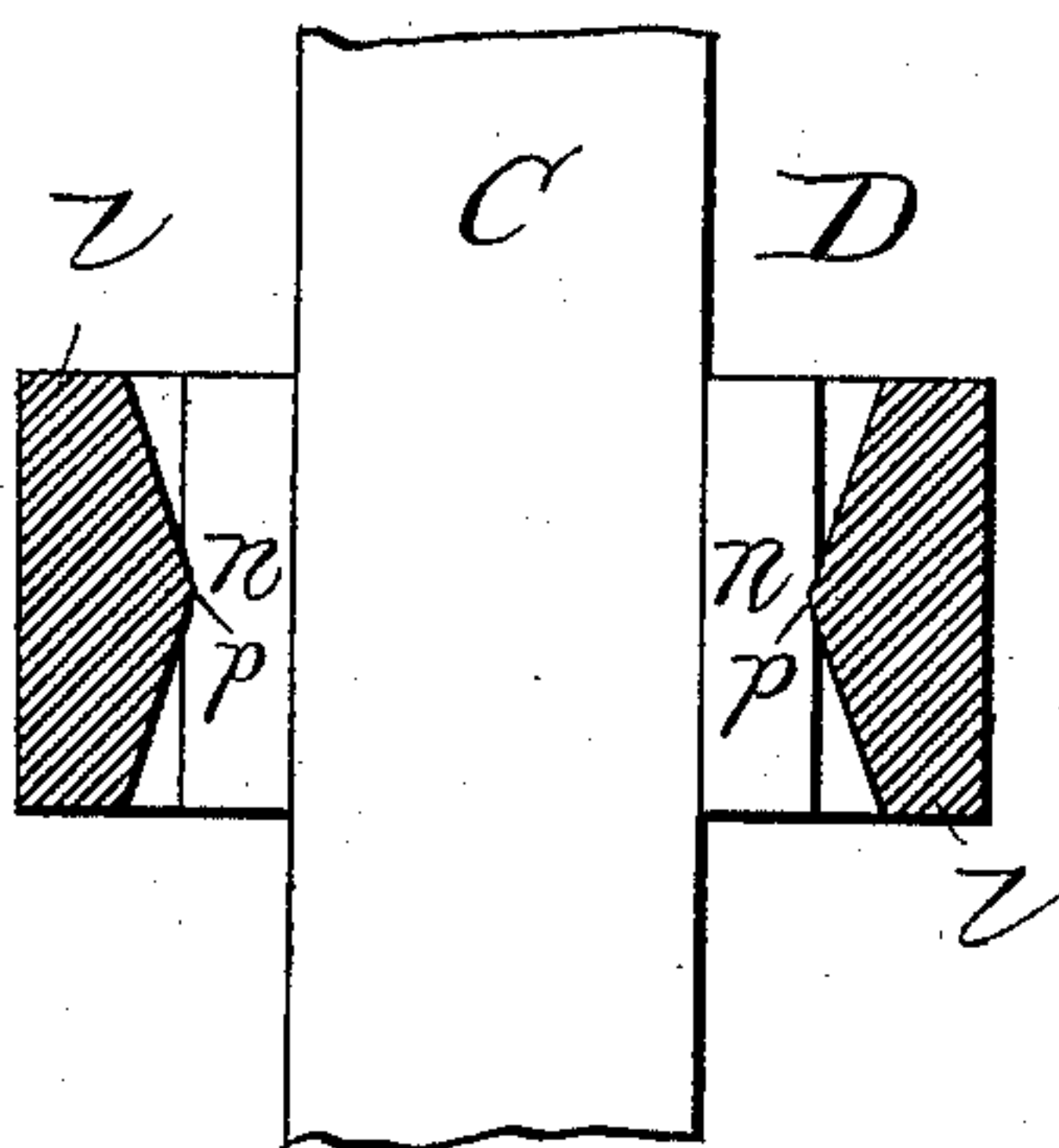
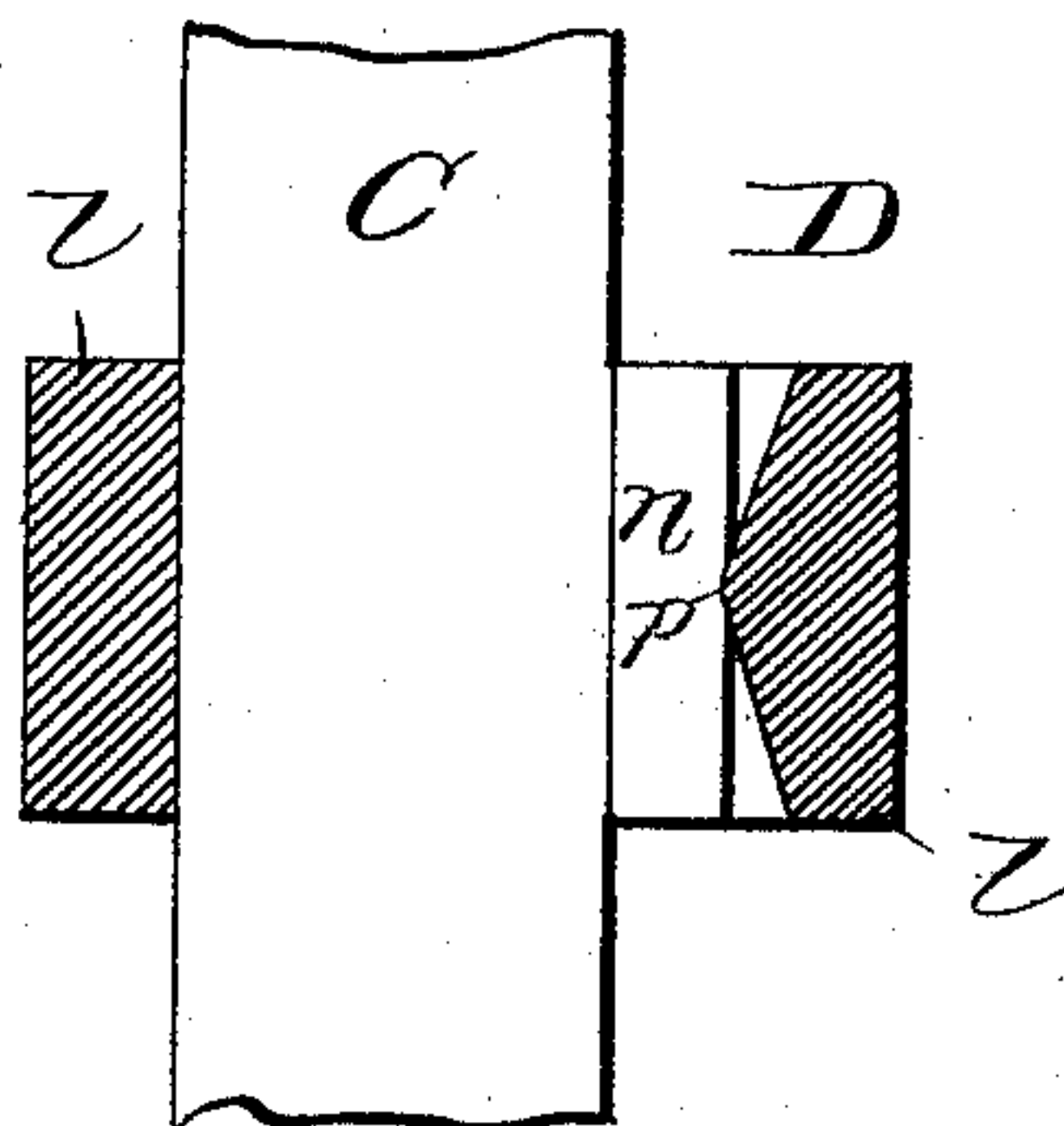


Fig. 5.



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UNITED STATES PATENT OFFICE.

AXEL A. STROM, OF AUSTIN, ASSIGNOR TO THE STROM MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 401,722, dated April 16, 1889.

Application filed December 20, 1888. Serial No. 294,188. (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 improvement relates particularly to the clutch for gripping the lifting-bar of lifting-jacks; and my object is to provide a construction of clutch by means of which the shortest possible grip may be produced on the bar without indenting the latter, thereby increasing the leverage without adding to its length for the purpose, and tending to prevent slipping of the lifting-bar by the force of the weight imposed upon it and consequent wear on the clutch.

My purpose will be more readily understood by the following brief explanation of the general construction and manner of operation of the clutch portion of lifting-jacks of the kind upon which my present invention is designed to afford an improvement.

The clutch, whether for lifting or retaining, comprises some form of collar surrounding the lifting-bar and operated to bind the bar on two opposite sides by tipping, whereby one inner side of the collar toward its upper end is forced in one direction against a side of the bar, and the opposite side of the collar toward its lower end is forced against the opposite side of the bar in the contrary direction, thus producing the gripping effect at points one above the other against opposite sides of the lifting-bar. Obviously, were it not for the degree of strength necessary in the collar to withstand the strain of the great loads which the jack should be capable of raising and supporting, and for the necessity of preventing indentation of the lifting-bar, the collar could be very narrow, thereby permitting narrow gripping-surfaces to be presented to the bar, which would then engage with the opposite sides thereof at nearly the same horizontal plane, the jack being used in a vertical position. For practical purposes, however, the collar must be so wide, to afford the requisite strength to the clutch, that either comparatively broad gripping-surfaces (opposite inner faces of the collar, which are sometimes

beveled) or the mere upper and lower edges of the collar on opposite sides of the bar are forced against the latter by tipping the collar. In the former case it is practically impossible to produce the binding effect in such a degree as will, under all circumstances of the use of the jack, prevent slipping of the bar, and in the latter case the gripping effect, being exerted at opposite sides of the bar on different planes substantially as far apart as the width of the collar, leaves a considerable length of the lifting-bar between the points or lines of binding and permits the great strain exerted in the lifting or holding of the bar to bend it between the points of grip.

By my improved construction of the clutch I prevent slipping of the lifting-bar while being raised or while being held in raised position, and also bending of the bar by the strain.

In the accompanying drawings, Figure 1 shows in sectional elevation a lifting-jack provided with my improved clutch for use in raising and for retaining in raised position the lifting-bar. Fig. 2 is a sectional view of the preferred form of the clutch; Fig. 3, a plan view of the clutch illustrated in Fig. 2 with the lifting-bar shown in cross-section; and Figs. 4, 5, and 6 are sectional views showing modifications of the clutch.

A is the lifting-jack, all of the parts of which, except the clutch portions, are old, and need not therefore be minutely described.

The standard B contains the ordinary lifting-bar, C, surrounded by collars, affording, respectively, the lifting and retaining clutch hereinafter described, the former being connected by a suitable link-connection, *v*, with the shorter arm of an operating-lever, E, fulcrumed on the standard, and the latter being supported in the standard on the base of the upper expanded portion thereof, common in lifting-jacks, as shown, for example, in Letters Patent of the United States Nos. 359,106 and 359,411, granted me, respectively, on the 8th and 15th days of March, 1887.

Each of the lifting and retaining clutches D and D' involves substantially the same construction, though it is not essential to derive benefit from my invention that both shall be used in the same jack, since either may be

used with any other suitable form of clutch.

The clutch D comprises a collar, *l*, which should conform to the shape of the lifting-bar it surrounds, having one side as or substantially as shown in Figs. 4 and 5, or two opposite sides as or substantially as shown in Figs. 2 and 6, reduced to provide at or near the center or centers thereof a narrow bearing or bearings, *p*, adjacent to the lifting-bar. The reduced end or edge affording each bearing *p* should be grooved lengthwise to receive a rounded bar, *o*, as shown in Figs. 1, 2, and 4, when the rounded bar and grooved part *p* constitute together the reduced bearing; and I interpose between each bearing and the adjacent surface of the lifting-bar a plate, *n*, which should be of hardened metal, and which is recessed in its back to fit over the apex of the reduced bearing *p* or over the bar *o*, as shown, and thus rendered pivotal or oscillatory on its support. I prefer to provide a bearing, *p*, a recessed plate, *n*, and, if provided at all, (though it is not indispensable,) a bar, *o*, in a groove in the bearing on each of two opposite inner sides of the collar, as illustrated in Fig. 2, though it is within the spirit of my improvement to provide the same on one side only.

The operation is as follows: When the collar is tipped in the usual manner to grip the bar, the binding effect is produced practically at opposite sides of the lifting-bar between the reduced ends or edges affording the bearings *p*, (or afforded by the bars *o*, if provided, as shown,) thus, by producing the grip as nearly as possible on the same plane, affording a shorter grip than if the binding were exerted at diagonally-opposite edges of the collar and leaving the least possible length of lifting-bar between the diagonally-opposite lines of binding, and practically avoiding all possibility of bending the bar, and the binding effect is exerted through, and indentation of the lifting-bar is prevented by, the interposed pivotally-supported recessed plates *n*.

The foregoing description of the construction of the clutch applies as well to the lifting-clutch D as to the retaining-clutch D', though the letters indicating on the drawings the parts of the latter which correspond with those in the former are primed, the parts of

the lifting-clutch denoted by the letters *l*, *p*, *n*, and *o*, and which correspond with parts in the retaining-clutch, being denoted in the latter, respectively, by *l'*, *p'*, *n'*, and *o'*. The collar of the clutch D is provided with a finger, *m*, extending from one end, and at which the link *r* connects with the short arm of the operating-lever E, and the collar of the clutch D', which is normally somewhat tipped, owing to the manner of its support in the standard, as shown, to exert a normal grip on the bar and prevent its falling, when raised in the ordinary manner, by actuating the lever E, is provided with a projecting finger, *m'*, at which to press downward upon it and straighten the clutch D' when it is desired to permit the lifting-bar to descend.

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

1. In a lifting-jack, the combination, with the standard, lifting-bar, and operating-lever, of a clutch for raising the lifting-bar or holding it in raised position, and comprising a collar on the bar provided with one or more reduced bearings near the center of its inner side, and a bearing-plate for each reduced bearing having a recess formed in its back transversely of the plate and fitting upon the reduced bearing, whereby the bearing-plate is pivotally supported between the collar and lifting-bar, substantially as and for the purpose set forth.

2. In a lifting-jack, the combination, with the standard, lifting-bar, and operating-lever, of a clutch for raising the lifting-bar or holding it in raised position, and comprising a collar supported on the bar and provided near the center of its inner side with one or more reduced grooved bearings, each having a rounded bar in the groove, and a bearing-plate for each reduced bearing having a recess formed in its back transversely of the plate and fitting over the rounded bar, whereby the bearing-plate is pivotally supported between the collar and lifting-bar, substantially as and for the purpose set forth.

AXEL A. STROM.

In presence of—

M. J. BOWERS,

J. W. DYRENFORTH.