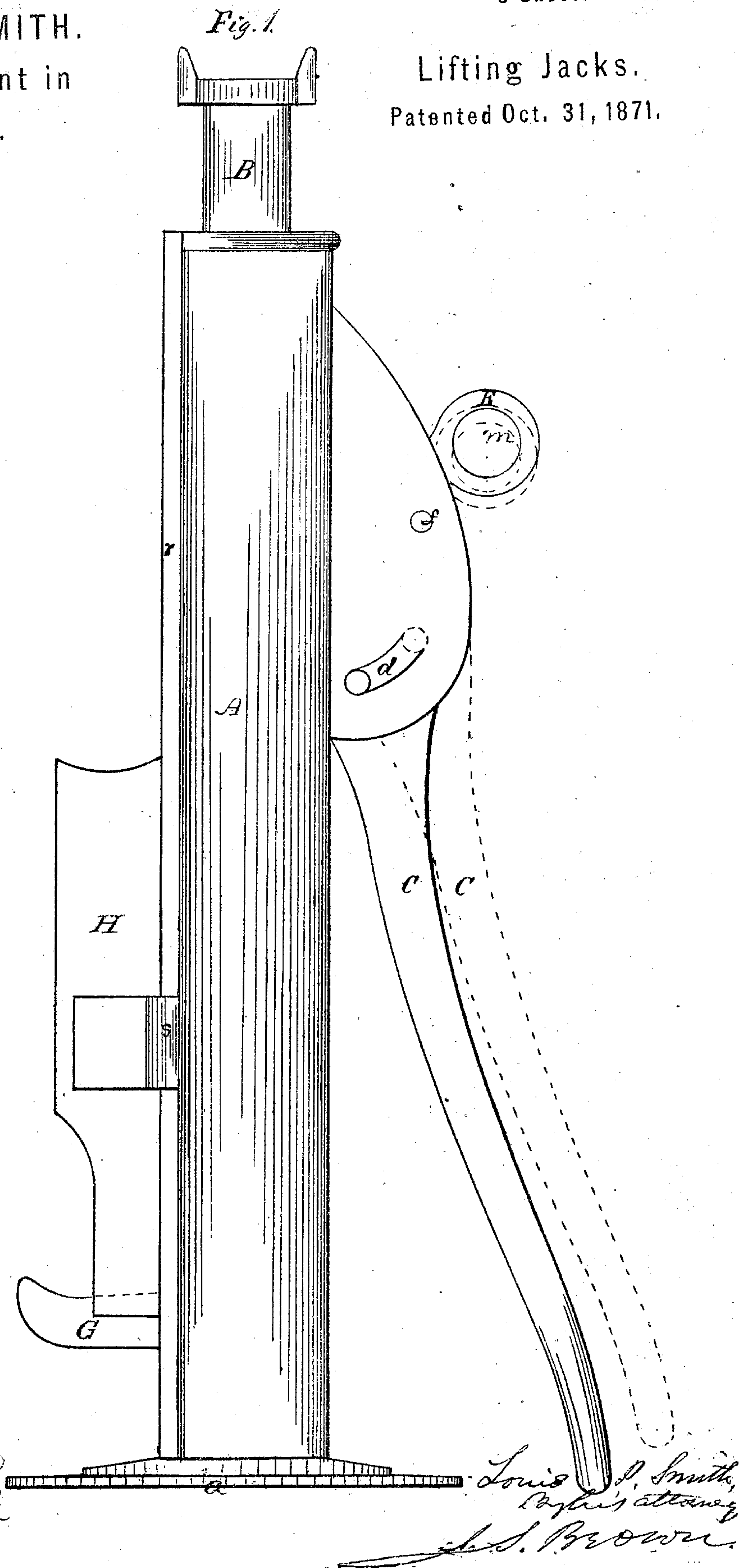


LOUIS P. SMITH.
Improvement in
No. 120,402.

Lifting Jacks.
Patented Oct. 31, 1871.



Witnesses

C. J. Brown
R. W. Smith

Louis P. Smith,
Agent's attorney
J. S. Brown

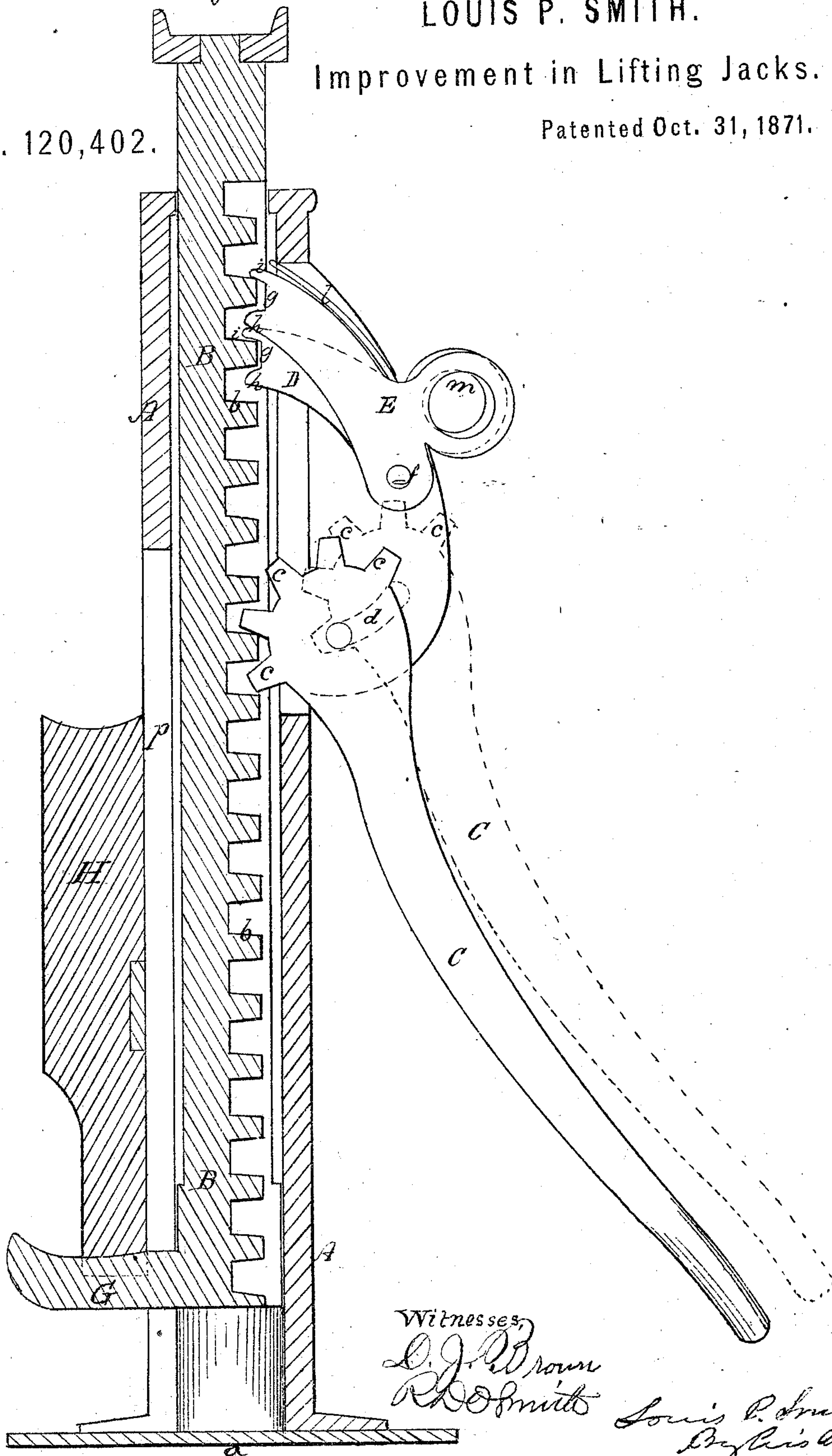
Fig. 2.

LOUIS P. SMITH.

Improvement in Lifting Jacks.

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L. J. Brown
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By his Atty.,

L. J. Brown

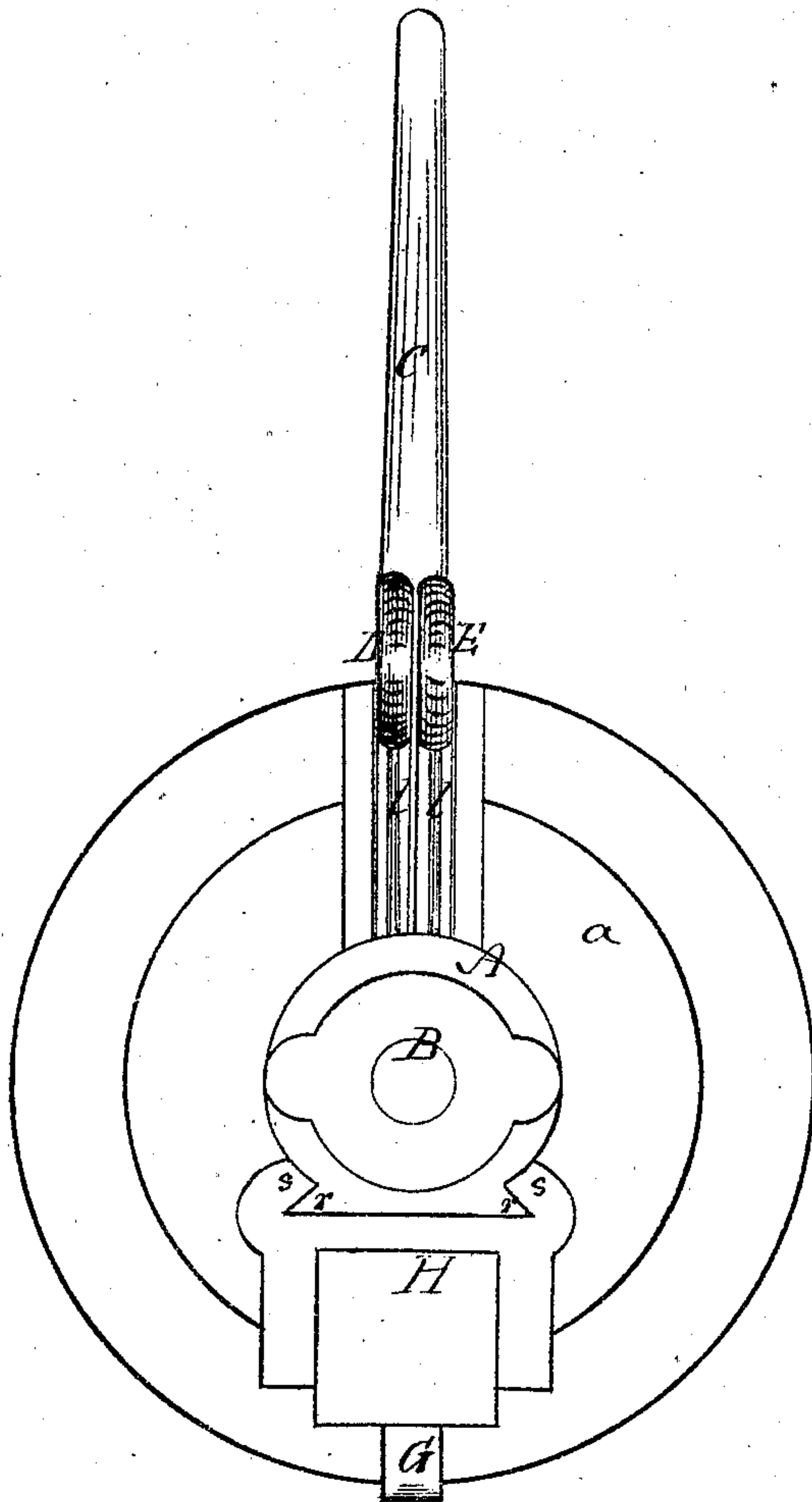
LOUIS P. SMITH.

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Fig. 3.



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UNITED STATES PATENT OFFICE.

LOUIS P. SMITH, OF MIDDLETOWN, PENNSYLVANIA.

IMPROVEMENT IN LIFTING-JACKS.

Specification forming part of Letters Patent No. 120,402, dated October 31, 1871.

To all whom it may concern:

Be it known that I, LOUIS P. SMITH, of Middletown, in the county of Dauphin and State of Pennsylvania, have invented an Improved Lifting-Jack; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making a part of this specification—

Figure 1 being a side elevation of the improved lifting-jack; Fig. 2, central section of the same, some of the parts being shown in elevation; Fig. 3, a top view thereof.

Like letters designate corresponding parts in all of the figures.

The standard A, having a suitable base, *a*, is of tubular form; and the lifting-bar B slides up and down therein, and is guided and sustained in its vertical position thereby. In one side of the lifting-bar is a set of cogs, *b b*, which is sunk beneath the surface of the bar to such a depth that the spaces between the cogs reach nearly or fully into the center of the same, so that, in lifting the bar by a pinion, or lever-cogs gearing therein, the lifting force is applied nearly or quite at the center of the said lifting-bar, thereby obviating most of the friction thereof as it slides in the standard. The cogs of this sunk rack are shrouded by the close sides of the bar, thus not only adding strength thereto, but shielding them from dust and obstructions. The lifting-bar is raised by a lever, C, which is pivoted in the standard, and has cogs *c c* concentric with its pivot-journals, to gear into the rack-cogs *b b* of the lifting-bar. Each vibration of the lever raises the bar to the extent of several of the cogs. To renew the hold of the pinion-lever when raising its handle it must be ungeared from the rack; and to effect this the pivots or journals of the lever rest in an inclined and, preferably, curved slot or slots, *d*, in the standard, so located that when the lever rests in the lower inner end thereof the cogs of the lever are fully geared into the rack of the lifting-bar; but by raising the lever so that its pivot slides into the upper end of the slotted bearing, as indicated by dotted lines in Fig. 2, the pinion-cogs are ungeared from the rack, and the lever then may be turned to renew the lift. The lifting-bar is sustained, after each lift of the lever, by means of two pawls or detents, D E, pivoted at *f* to the standard, and having each a notched end, *g*, with

the projection *h* below the same shorter than the projection *i* above the notch, so that when the lower projection *h* has slid over a cog of the lifting-bar the upper projection *i* still rests thereon, and the notch of the pawl fits over the cog and securely holds there. One pawl, D, is somewhat shorter than the other pawl, E, so that it will drop to the next cog of the rack sooner than the long pawl, as shown in Fig. 2; and this difference in length is so arranged that the short pawl will drop and hold at the middle of one lift of the lever, and the long cog at the end of the lift. This feature is valuable in large jacks, because it secures a hold at the middle of each lift, thereby insuring safety, and in lifting heavy weights enabling half lifts to be made by half vibrations of the lever. For small jacks one pawl will suffice, as usual. The pawls are held to the rack by light springs, *l l*. Each pawl is provided with a ring, eye, or handle, *m*, by which to draw it back from the rack. By thus drawing back both pawls at once and reversing the movement of the lever the lifting-bar may be lowered with its weight, the pawls being allowed to spring in and hold the bar while reversing the lever-handle for a new letting-down movement. For this movement the slot or slots *d* in the standard also is required and is effectual. From the lower end of the lifting-bar B a lifting-hook or arm, G, extends backward through a longitudinal slot, *p*, of the standard, and slides up and down therein as the lifting-bar is raised and lowered. This hook serves to lift articles from a lower position than can be raised by the lifting-bar direct. It also, by sliding in the slot *p*, serves to keep the lifting-bar from turning in the standard. In combination with the hook or arm G I employ a sliding prop or block, H, resting on the said hook or arm, so as to vary and adapt the height to the articles to be raised. Two or more of these sliding blocks, of different heights, may be used interchangeably, if desired. In order to secure and steady the sliding block H in place there are longitudinal projections or wings *r r* cast upon the back side of the standard A, around which fit the inner edges *s s* of the block, substantially as shown in Fig. 3. This lifting-jack is very strong and compact and powerful, and it is convenient for many purposes besides raising and sustaining all kinds of weights and articles, since it may be applied to pushing

and giving pressure in horizontal, downward, and oblique directions.

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

1. The rack-cogs *b b* when sunk nearly or quite into the center of the lifting-bar *B*, substantially as and for the purpose herein specified.

2. The two pawls *D E*, acting the one before the other, in combination with the lifting-bar *B* and lever *C*, substantially as and for the purpose herein set forth.

3. The sliding prop or box *H*, in combination with the lifting hook or arm *G*, as specified.

4. The wings *r r*, in combination with the sliding prop or block *H* having edge projections *s s*, substantially as and for the purpose herein set forth.

Specification signed by me this 5th day of July, 1871.

Witnesses:

LOUIS P. SMITH.

JNO. RINGLAND,

JNO. JOS. WALBORN.

(79)