(No Model.) 3 Sheets—Sheet 1.

A. GRANVILLE.

CYLINDER OF HOISTING APPARATUS.

No. 260,384. Patented July 4, 1882.

Fig. 1

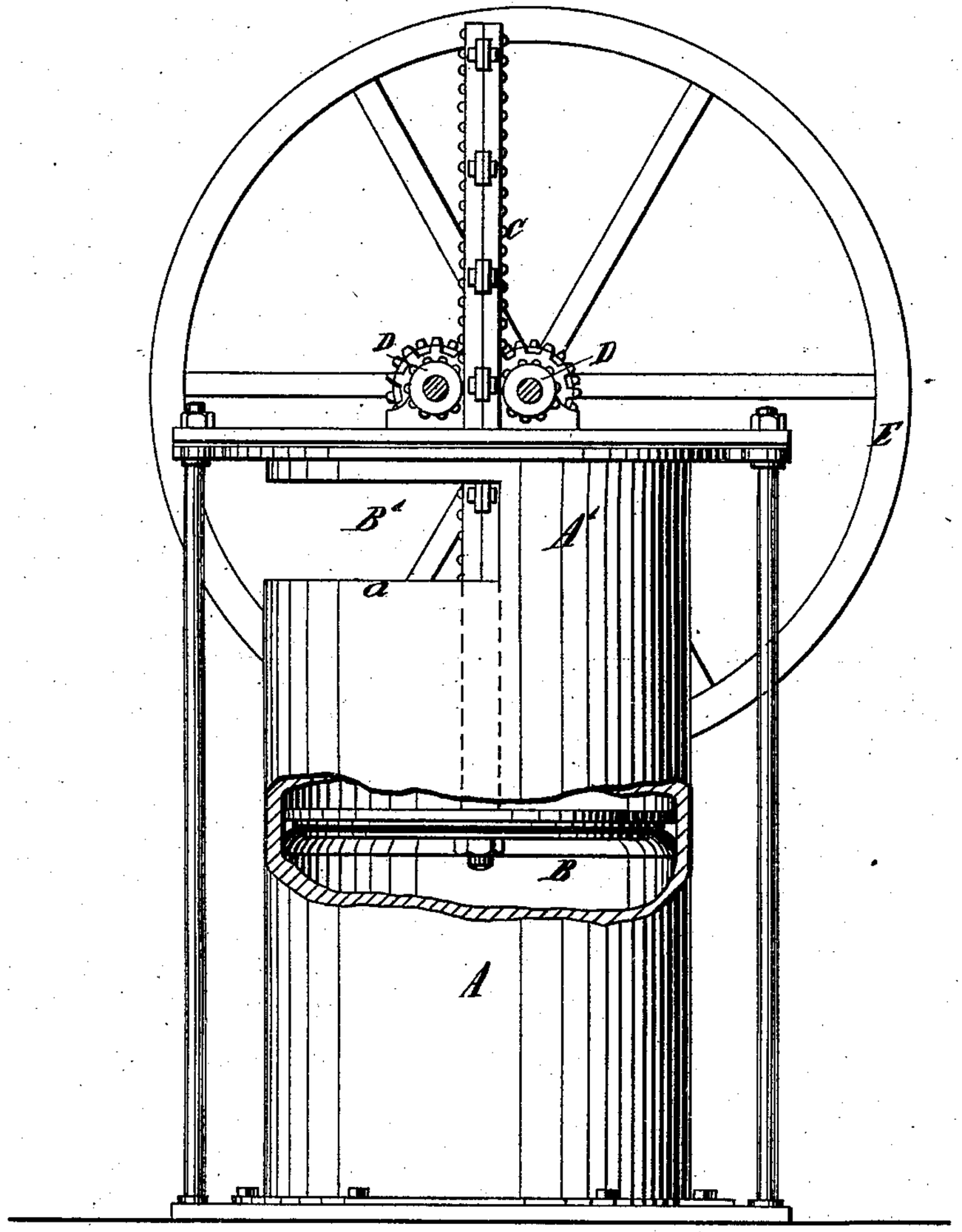

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Fig. 2.

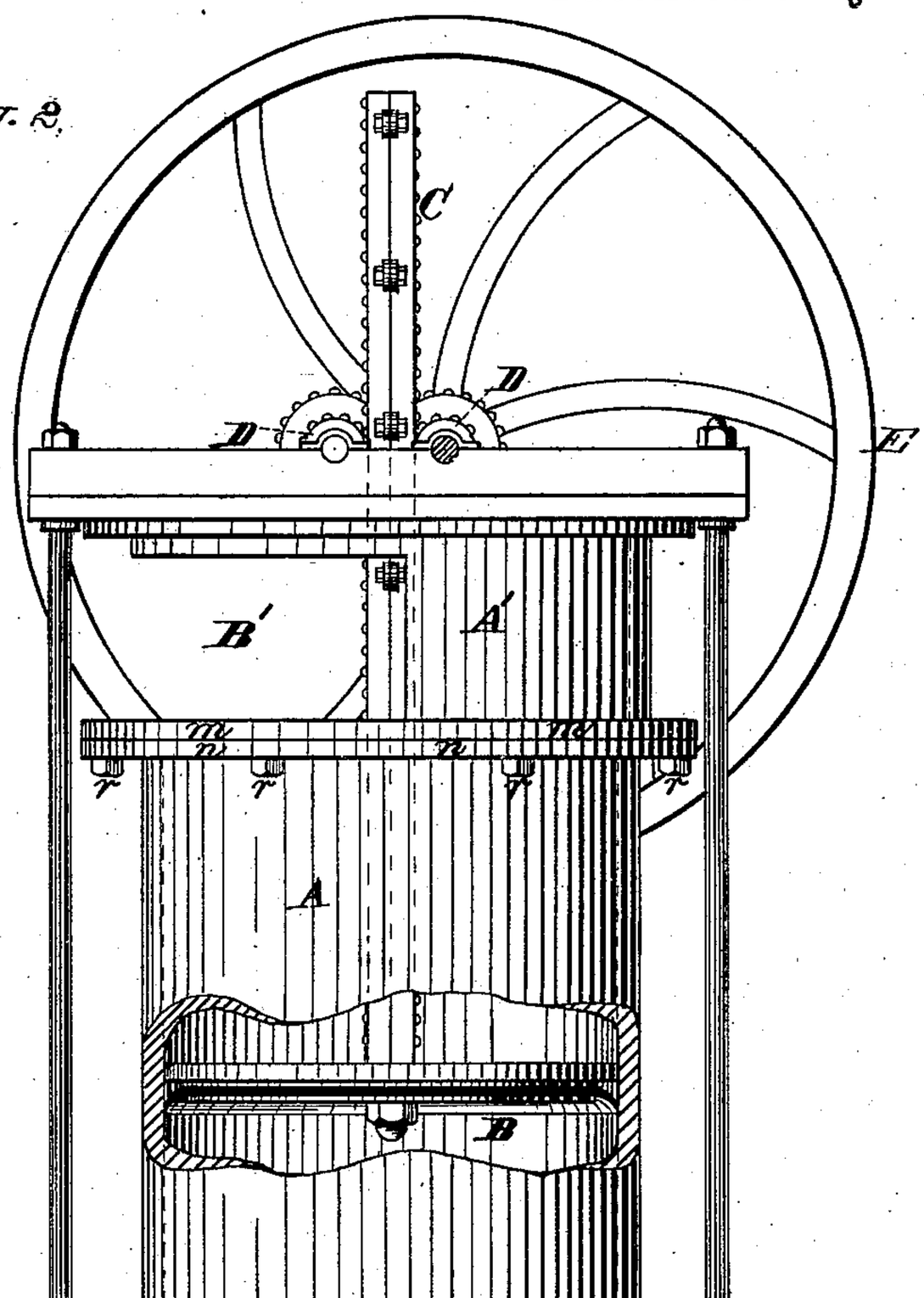
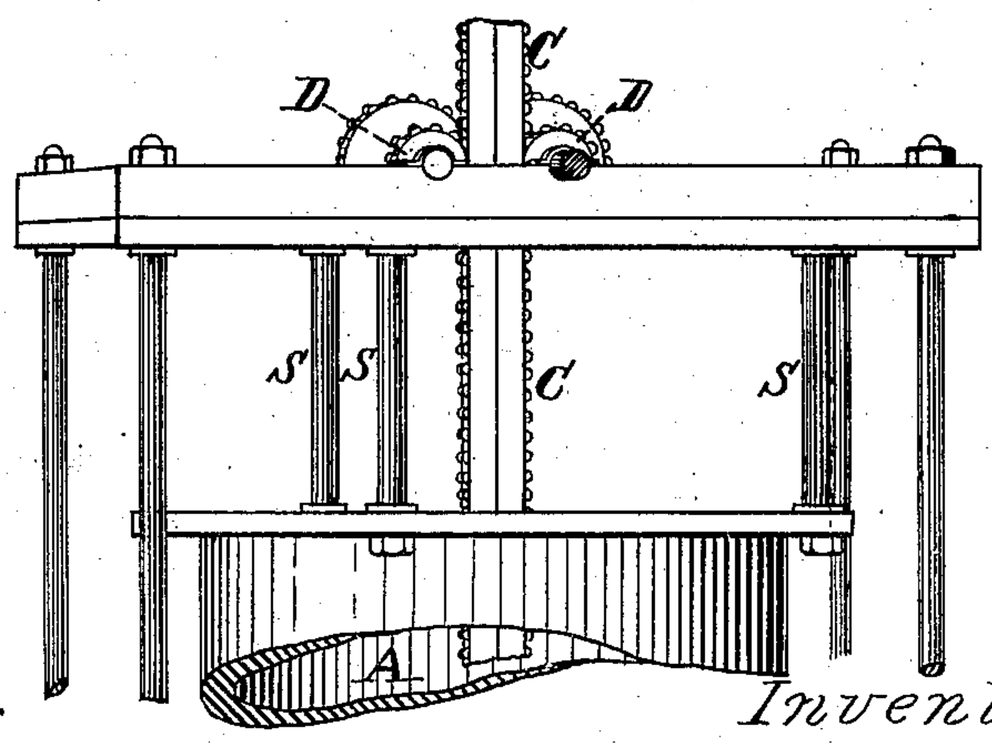


Fig. 3.



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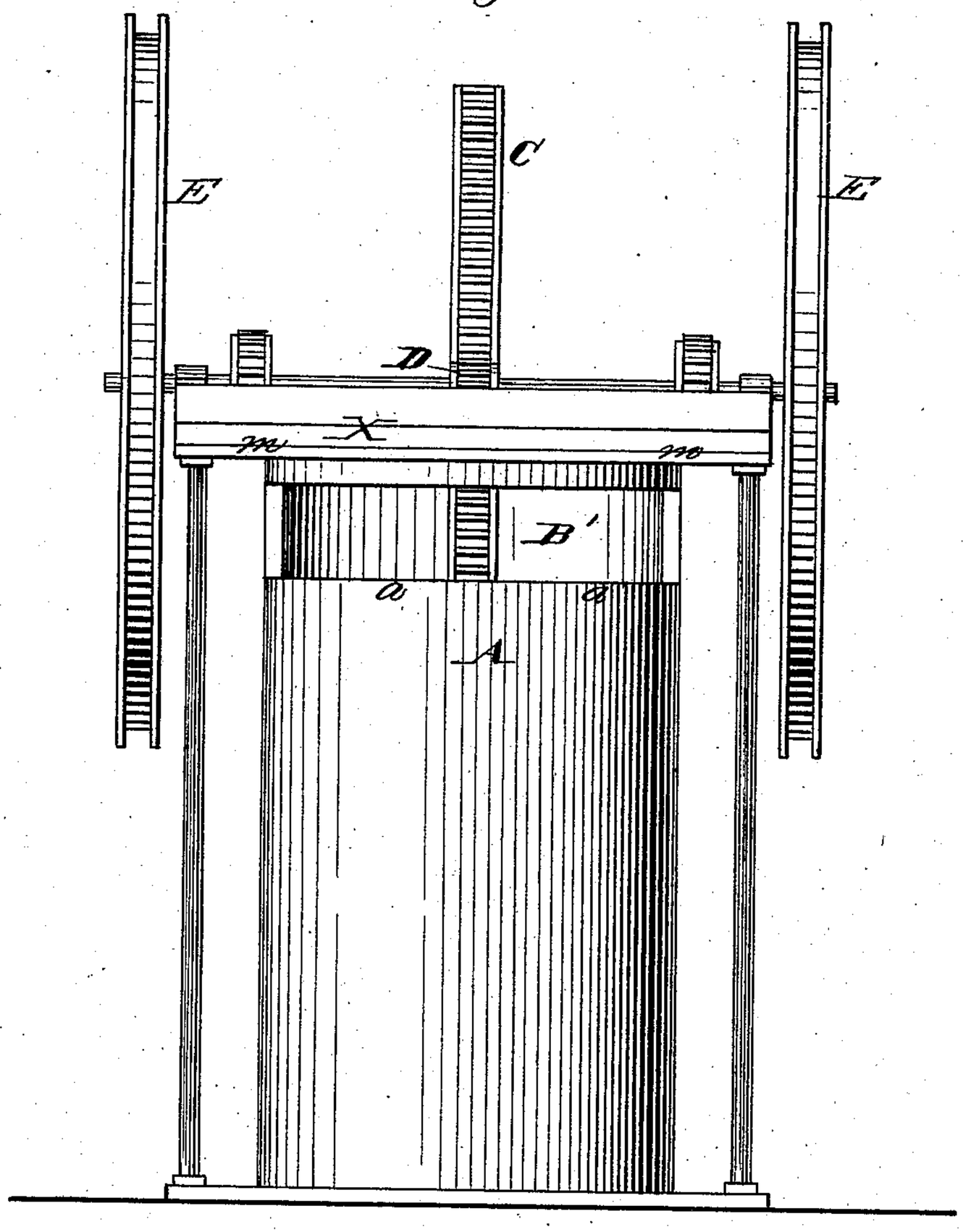
(No Model.) 3 Sheets—Sheet 3.

A. GRANVILLE.

CYLINDER OF HOISTING APPARATUS.

No. 260,384. Patented July 4, 1882.

Fig. 4.



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UNITED STATES PATENT OFFICE.

ARTHUR GRANVILLE, OF NEW YORK, N. Y.

CYLINDER OF HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 260,384, dated July 4, 1882.

Application filed January 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR GRANVILLE, of the city, county, and State of New York, have invented certain Improvements in the Cylinders of Hydraulic Hoisting Apparatus, of which the following is a specification.

This invention relates to the cylinders of hydraulic engines designed for use in connection with so-called "hoist" or "lift" elevators, used for raising passengers and merchandise from one story to another at dwellings, warehouses, &c.; and the object of the invention is to enable the packing of the piston employed in such cylinders to be adjusted, removed, replaced, or repaired without the necessity hitherto incurred of taking apart the cylinder and of disarranging to a greater or less degree the adjuncts thereof, which ordinarily necessitates the stopping of the working of the entire apparatus for several hours, and in some cases for several days, but which by my said invention is entirely avoided, together with the inordinate delays just referred to.

My said invention comprises a cylinder having at one end an extension beyond the normal stroke of the piston, and in which said extension is provided an opening extending around somewhat beyond the diameter of the cylinder, so that by drawing the piston beyond its normal stroke access is afforded thereto, for the purpose hereinbefore indicated, and a very great economy of time, labor, and expense in packing the pistons of such cylinders is secured.

Figure 1 is a side elevation and partial sectional view of a hydraulic elevator-cylinder and adjuncts embracing my said invention; and Fig. 2 is a side elevation of the cylinder and its adjuncts embracing my said invention, but of a construction somewhat modified as compared with that shown in Fig. 1. Fig. 3 is a side view of the apparatus as seen from a side at right angles to that of Fig. 1. Fig. 4 is a side view, representing another modification of one feature of my said invention.

A is the cylinder, and B is the piston, the latter being provided with the usual or any suitable packing.

As represented in the drawings, the piston has extending upward therefrom a rack, C, which gears into pinions D, which in turn transmit motion to a hoisting drum or wheels, E, of which one is placed upon each end of the shaft D, through which said wheels E, by suitable ropes, motion is given to the platform or car of the elevating or hoisting apparatus. These parts, however, may be substituted by any other suitable mechanism for hoisting or lowering the said platform or car, and are here shown only to indicate in general the character of the adjuncts with which my said invention is ordinarily intended to operate.

The valves of the cylinder A are adjusted and operated in such manner that the usual stroke of the piston B does not carry the same outward beyond the point *a* of said cylinder. The cylinder itself, however, is constructed with an extension, A′, which projects beyond the limit *a* of the normal outward stroke of the piston B, and in one side of this extension A′ is formed a deep opening or slot, B′, which extends transversely somewhat beyond one-half across the width of the cylinder, so that the said extension A′ is open somewhat beyond one-half of its diameter.

During the normal operation of the apparatus the piston B will play back and forth without passing outward beyond the limit *a*. When, however, it is desired to reach the packing of the piston B in order to replace, repair, adjust, or otherwise manipulate the same, the plate C′ is removed, and by turning the hoisting-drums E the said piston B is forced outward beyond the limit *a* and coincident with the upper portion of the opening B′, thereby enabling the packing of said piston to be reached through the said opening B′ and adjusted, and also providing room and access to permit the said piston B to be taken apart and new packing substituted in place of the old, so that by the means described the packing may be examined when required, and as a result may easily be kept in good repair and in working condition with a merely transient and unimportant stopping of the machinery and without disarranging or taking down any of the permanent or moving portions of the apparatus, thereby effecting a very material economy, not only in time, labor, and expense in the work of repairing itself, but also avoiding the consequential loss which ordinarily follows where an apparatus of the class indicated is caused to cease in its operation for any considerable

length of time—as, for example, for two or three days, or even for a few hours.

In order to facilitate and to a certain extent to cheapen the manufacture of cylinders constructed according to my said invention, I propose in some cases to make them as represented in Fig. 3—that is to say, with the cylinder A bored out in the usual manner, but originally made separate from the extension A′, the latter being simply a rough casting somewhat larger in internal diameter than the cylinder A, the extension A′ and the cylinder A being constructed with coincident flanges *m* and *n*, bolted together, as shown at *r*. By this means the manufacture of such cylinders is very much facilitated and materially lessened in cost without impairing in any material degree the utility arising from the construction of the cylinders with the extension A′ having the opening B′ in one side thereof.

Fig. 4 represents a modification in the construction of the extension A′, the latter being in this case formed by short pillars S, which hold the head of the extension at the requisite distance from the adjacent end of the cylinder A.

The piston in its normal stroke will not pass beyond the said end of the cylinder, but when moved farther outward, as hereinbefore explained, will be brought opposite the openings between the pillars S, so that easy access is afforded to the packing, for the purposes hereinbefore explained.

What I claim as my invention is—

1. In a hydraulic hoisting apparatus, the cylinder A, constructed with an extension, A′, having therein an opening or openings arranged to afford access to the piston of the said cylinder when the said cylinder is moved outward from and beyond the limit of its normal stroke, substantially as and for the purpose herein set forth.

2. The extension A′, formed of a separate casting, having in one side the opening B′, and constructed with a flange, *m*, in combination with the cylinder A, constructed with a flange, *n*, whereby the extension and the cylinder may be united by the bolts *r*, all substantially as and for the purpose herein set forth.

ARTHUR GRANVILLE.

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