

(No Model.)

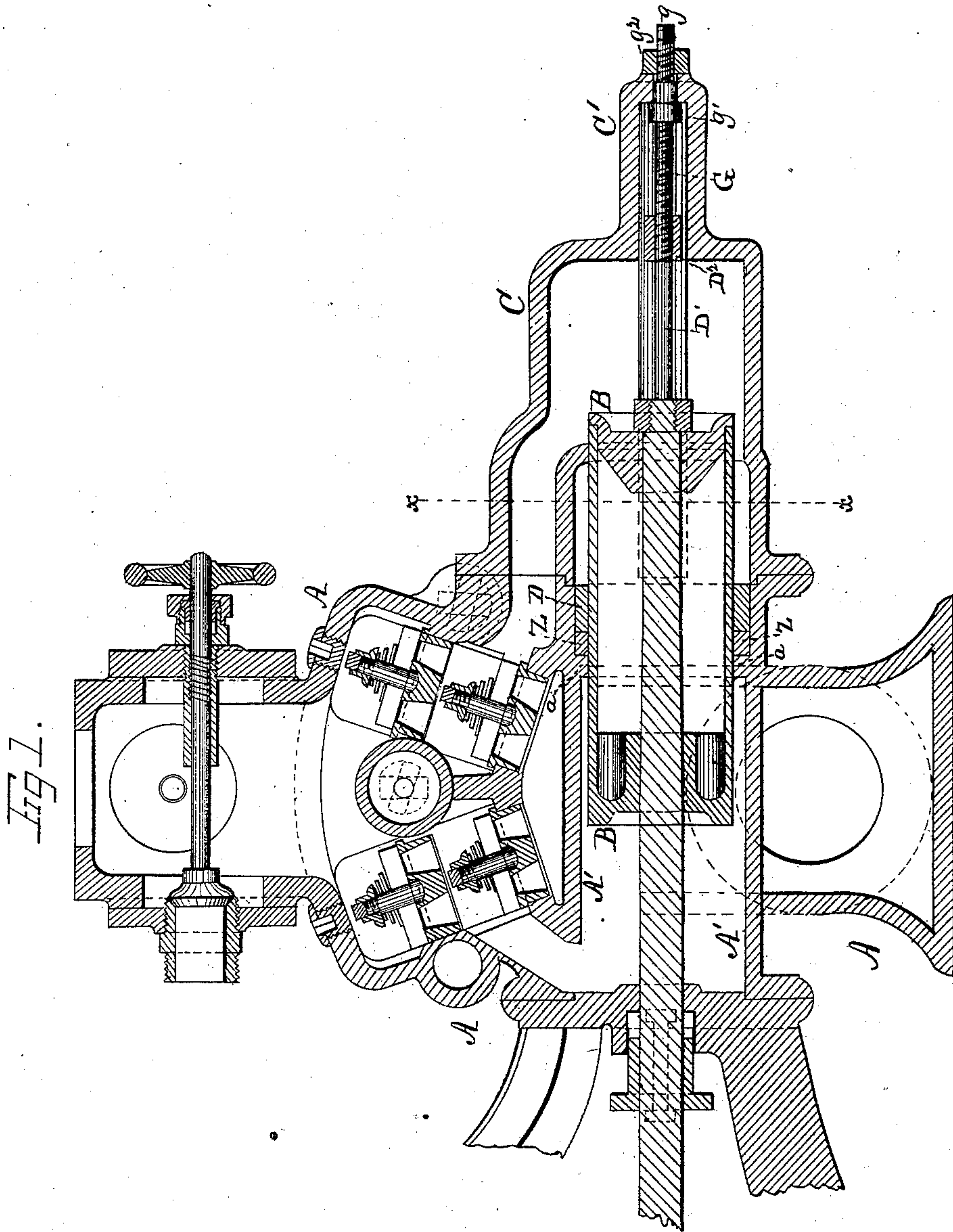
2 Sheets—Sheet 1.

W. D. HOOKER.

PACKING FOR PISTONS AND PLUNGERS.

No. 280,038.

Patented June 26, 1883.



Witnesses

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(No Model.)

2 Sheets—Sheet 2.

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Fig 2.

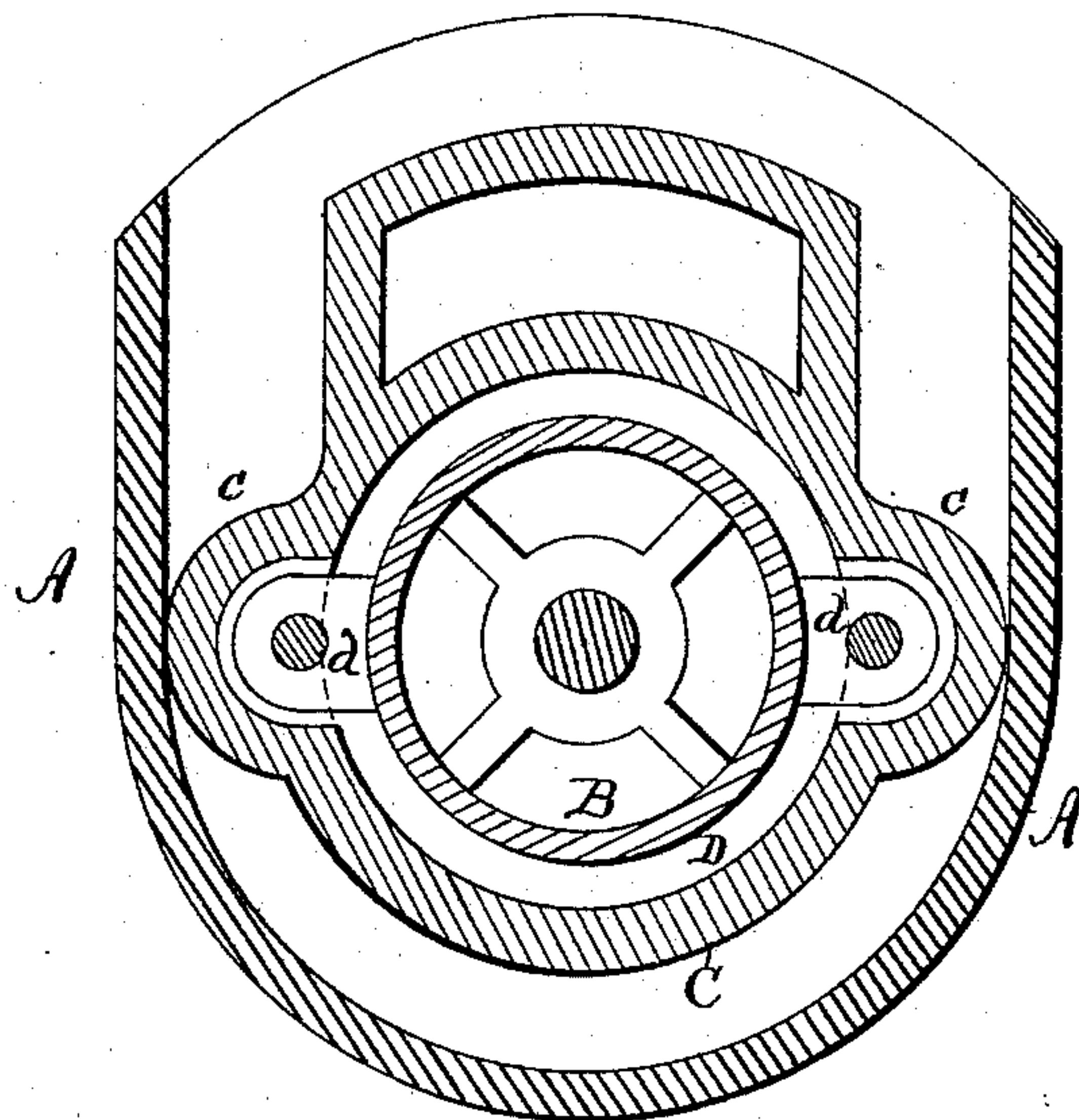


Fig 3.

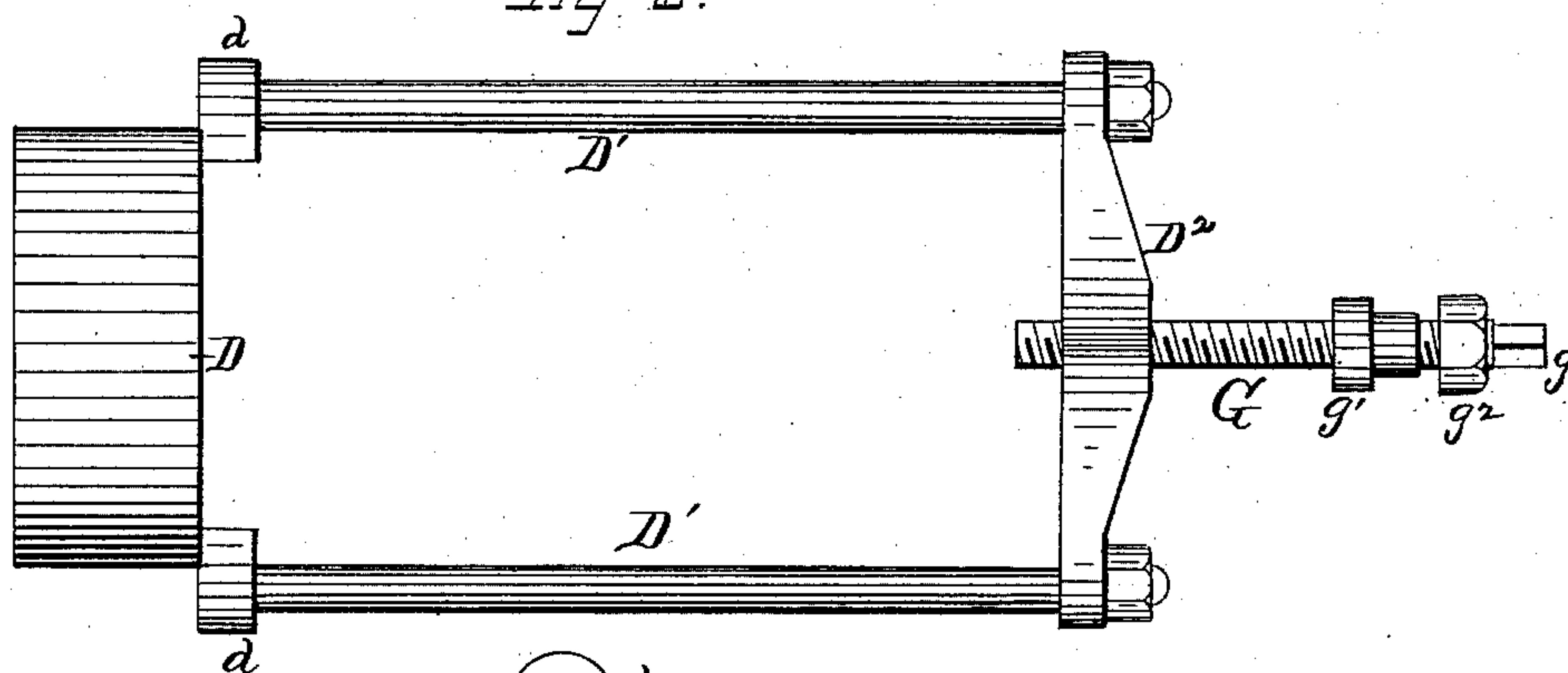


Fig 4.

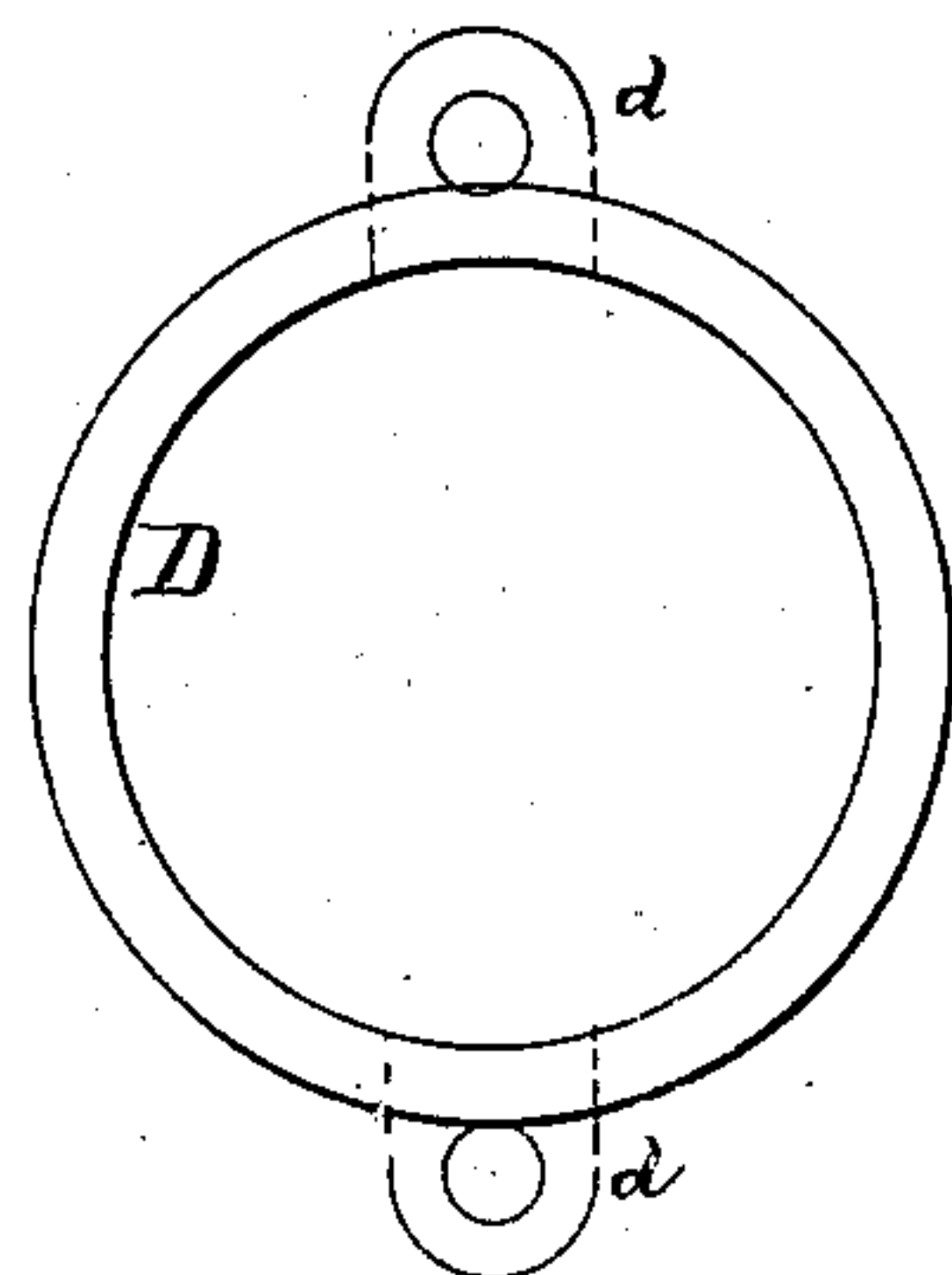
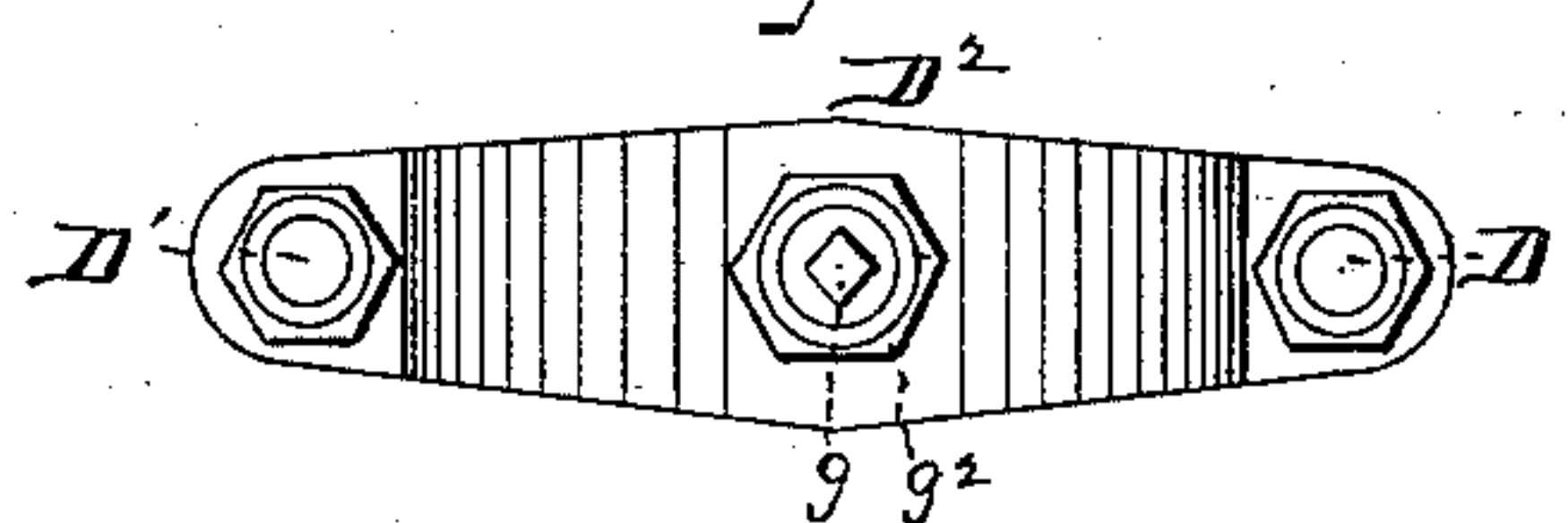


Fig 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM D. HOOKER, OF ST. LOUIS, MISSOURI.

PACKING FOR PISTONS AND PLUNGERS.

SPECIFICATION forming part of Letters Patent No. 280,038, dated June 26, 1883.

Application filed August 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. HOOKER, a citizen of the United States, residing at St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Packings for Pistons and Plungers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to packings for pistons, and is more particularly designed for use on a plunger-pump.

The invention as shown in the drawings is used in conjunction with a pump having a peculiar valve system, which has recently been made the subject of a separate application for patent by me. I make a portion of the plunger-case removable in order to have ready access to the packing-seat when occasion requires. I insert the packing around the plunger against a shoulder on the interior of the plunger-barrel, and operate a suitable gland from the exterior of the barrel to compress and adjust the packing and keep it always tight about the plunger. Any of the approved materials used in packing which possess sufficient mobility to allow compression and adjustment by a moderate force may be employed in my device. The packing is adjusted without stopping the pump.

The accompanying drawings form a part of this specification, and illustrate what I consider the best means of embodying the invention.

Figure 1 is a sectional view of a pump with my improvements attached. Fig. 2 is a vertical section on line *x x*, Fig. 1. Fig. 3 is a detail of the gland and adjusting means. Fig. 4 is an end elevation of the gland. Fig. 5 is an end view of the cross-head and adjusting-screw. Figs. 2, 3, 4, and 5 are on a larger scale than Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

A is the pump, in the dome of which is placed the series of valves before referred to.

A' is the plunger barrel or cylinder, provided with a shoulder, *a*, surrounding and snugly fitting the plunger B.

C is the removable plunger-bonnet, fitted to the barrel A' by means of lips and connecting-bolts, as shown, or in any other suitable manner, taking care, however, to make the juncture secure and tight. The bonnet C is circular in general outline, but is provided with side swells, *c c*, for the reception of parts hereinafter to be described. A contracted nose, C', is formed on the outer end of the bonnet. It is flattened, and in one direction extends the entire width of the bonnet and side swells, *c c*, while in the other it has an interior opening the same width as or slightly wider than the side swells, and forms a continuation of them.

Z is the packing, fitted around the plunger against the shoulder *a*. The packing is held in place by a circular gland, D, which is operated by a screw from the exterior of the plunger-bonnet. The gland D may be made of any suitable packing metal and fits snugly around the plunger and in the barrel. Lugs *d d*, formed upon the sides, form connections for the side bars or connecting-rods, D' D', which, with the lugs *d*, lie in the hollow of the side swells, *c*. At the outer ends the rods D' are connected by a cross-head, D², secured upon them by nuts. This cross-head corresponds in length to the distance between the outer surfaces of the lugs, so as to allow of moving in the nose C'.

G is the adjusting-screw, working in the threaded opening in the cross-head or connecting-strap D². It is provided with a square end, *g*, extended outside of the plunger-bonnet, which is worked by a suitable wrench. It is provided with a collar, *g'*, fitting against the interior face of the end of the nose C', and a check-nut, *g*², screwed up against the exterior of the nose on a threaded portion of the screw. The collar *g'* and check-nut *g*² keep the screw firm longitudinally. Whenever the screw is operated to set the gland and adjust the packing, the check-nut is changed to accommodate it and hold it securely.

The side bars, D', may be screwed into the lugs *d*, or formed in one with them and the gland, or otherwise suitably united.

The plunger-barrel for a short distance from the shoulder *a* is made plane and true to fit the gland *D* and accommodate the packing. The gland *D* and its connections to the screw *G*, together with said screw, are all contained in the plunger-bonnet, and are removed and replaced with it. When the bonnet and its contents are removed, the plunger can be packed with any proper packing and the bonnet with its contents replaced. Then by operating the screw from the exterior of the bonnet the gland can be screwed up, against the packing until it is properly compressed and held in place by the check-nut. As the packing wears away it can be screwed up, without removing the plunger-bonnet and without stopping the pump, by simply operating the screw *G* from the exterior. It may thus be adjusted until all the packing is worn away, when the bonnet can be again removed and the plunger repacked.

The extended length of the plunger-bonnet covers the side arms or bars, *D'*, and when removed will take the said arms, the gland, and attachments with it. The bonnet is of the same size as the pump-barrel. When the screw *G* is moved to operate the gland there is a tendency to twist the cross-head *D²*; but this is entirely overcome by the contracted nose *C'*, which prevents the cross-head from being twisted. They may be applied to pumps already in use by making provisions for securing the bonnet and providing a shoulder for the packing to abut against. They are adapted for use on all characters of pistons where the length of stroke does not exceed the length of the piston.

Modifications may be made without departing from the principle of the invention. Parts of the invention may be used without the whole. The invention is equally applicable whether used in connection with my improved valve system or not. I can dispense with the contracted nose *C'* and extend the bonnet full size to the end, with the side swells for the reception of the cross-strap *D²*; but I prefer to use the nose, as it holds the parts more firmly and reduces the space in the bonnet at a point where it is neither desirable nor useful. If desirable,

I may provide the protruding portion of the screw *G* with a hand-wheel for setting it. 50

Having thus described my invention, what I claim is—

1. The combination of the plunger-bonnet, of a length sufficient to cover the contained rods, and of the same size as the pump barrel or cylinder, with the said barrel or cylinder provided with an abutting means, the gland, and mechanism for operating the gland, substantially as set forth. 55

2. The combination, with the cross-head *D²*, the gland, and their connecting-bars, of a plunger-bonnet having a contracted nose for guiding the cross-head, as set forth. 60

3. The screw-threaded cross-head *D²*, in combination with the screw *G*, collar *g'*, check-nut *g²*, rods *D'*, and gland *D*, substantially as set forth. 65

4. The removable bonnet provided with side swells, in combination with the packing material, abutting means, gland, connecting-rods, cross-head, and adjusting-screw, substantially as set forth. 70

5. The combination, with the abutting means and packing material, of the compressing-gland, connecting-rods set out of line of the gland, cross-head and adjusting-screw provided with a fixed collar and check-nut, and the plunger-case, substantially as set forth. 75

6. The combination, with the compressing-gland, adjusting-screw, and connections between said parts, of the removable plunger-bonnet having the compressed nose, substantially as described. 80

7. The removable bonnet with its contained gland, parallel rods, cross-head, and adjusting-screw, in combination with the shoulder on the interior of the plunger-barrel, interposed packing material, and plunger, substantially as set forth. 85

In testimony whereof I affix my signature in presence of two witnesses. 90

WILLIAM DAVIS HOOKER.

Witnesses:

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L. FRANK OTTOFY.