

(No Model.)

E. P. GLEASON.
PUMP.

No. 432,665.

Patented July 22, 1890.

FIG. 3.

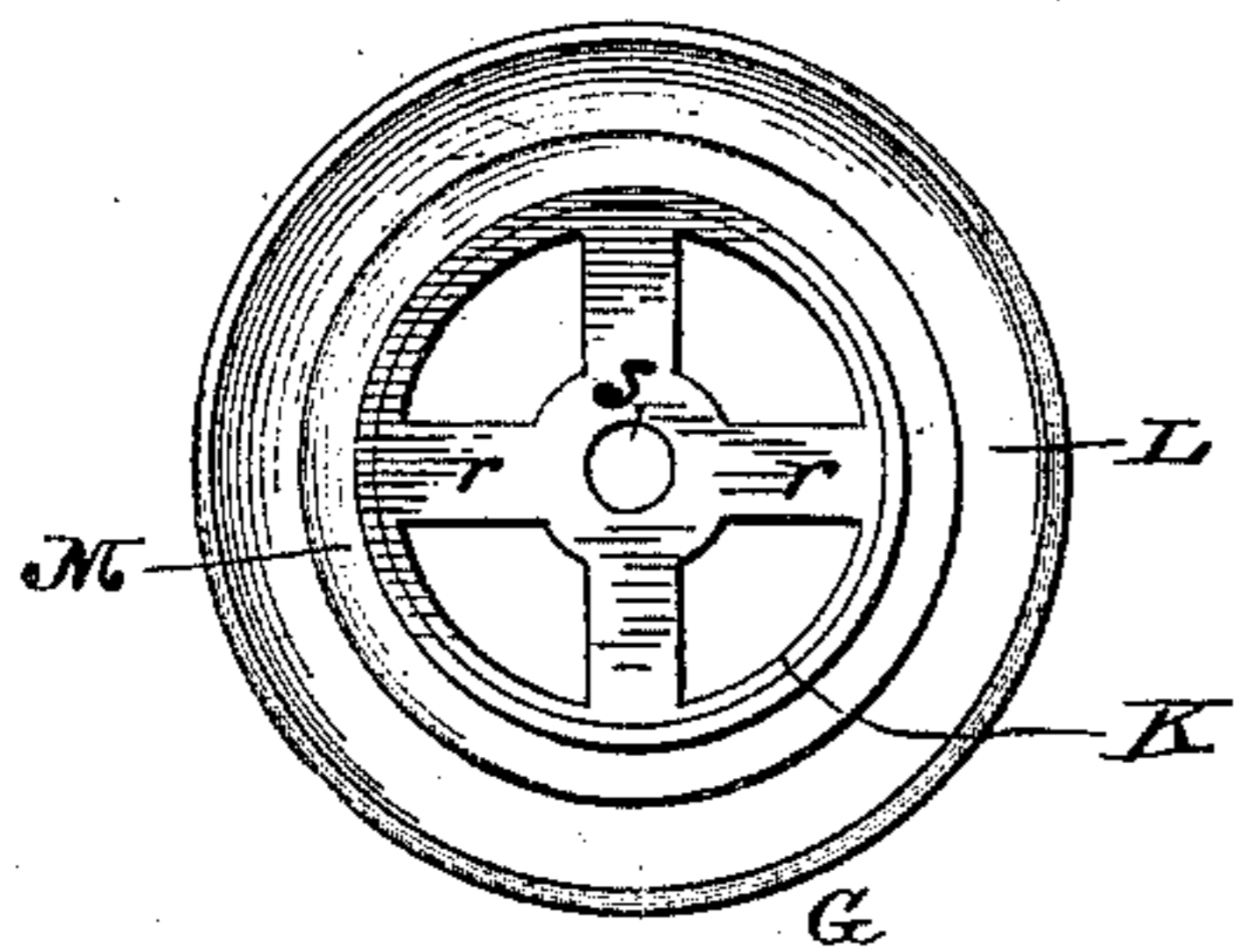


FIG. 1.

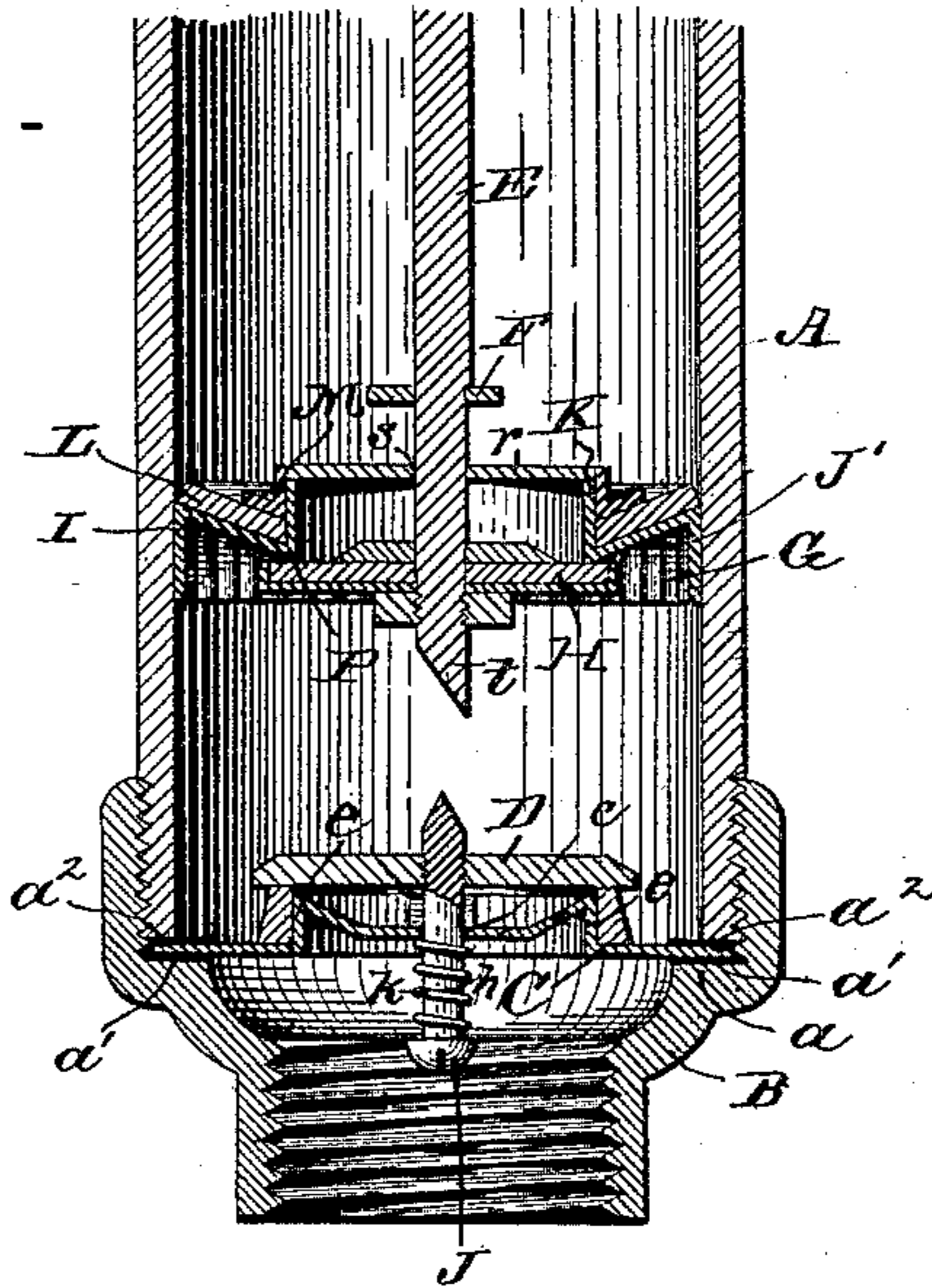


FIG. 2.

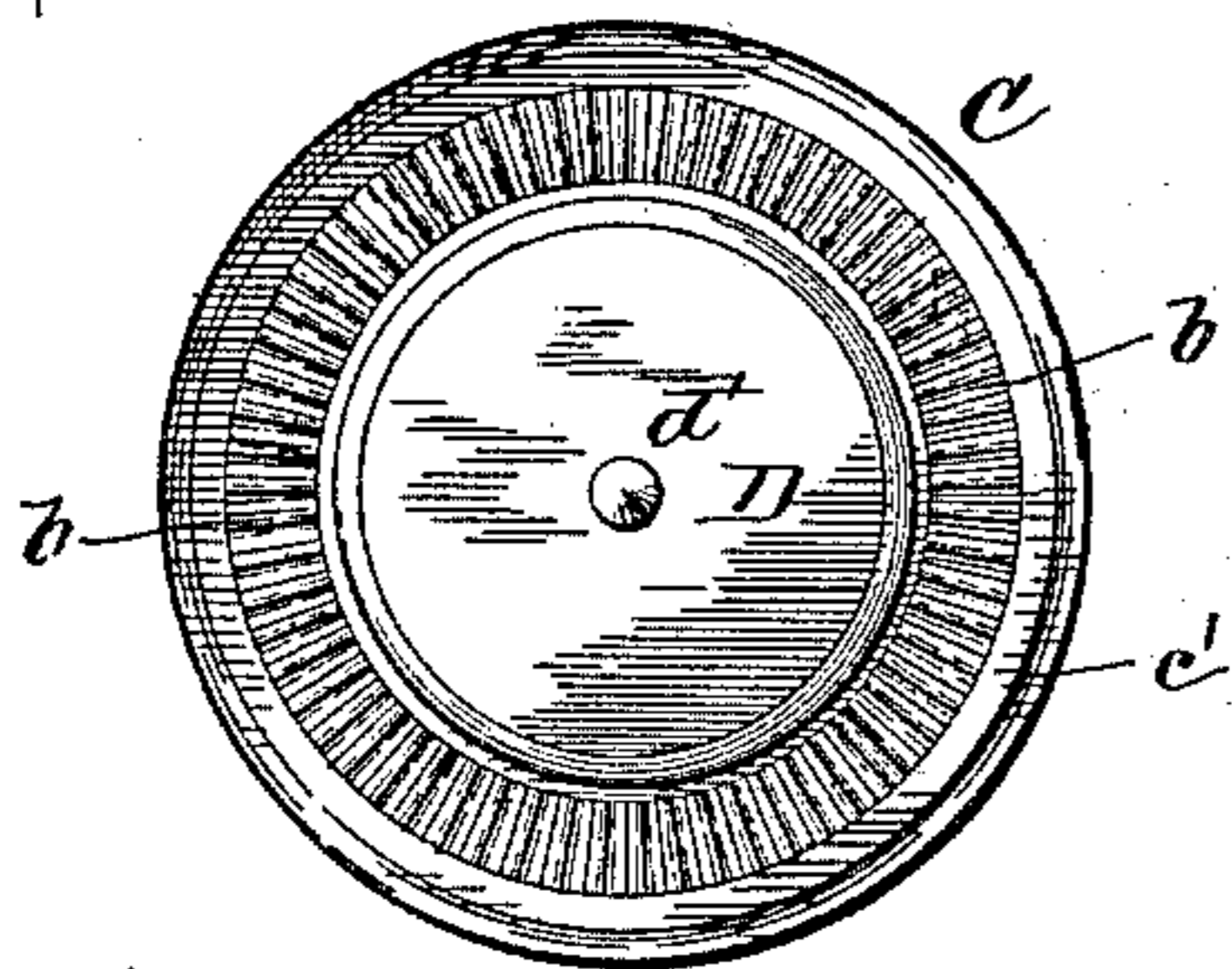


FIG. 4.

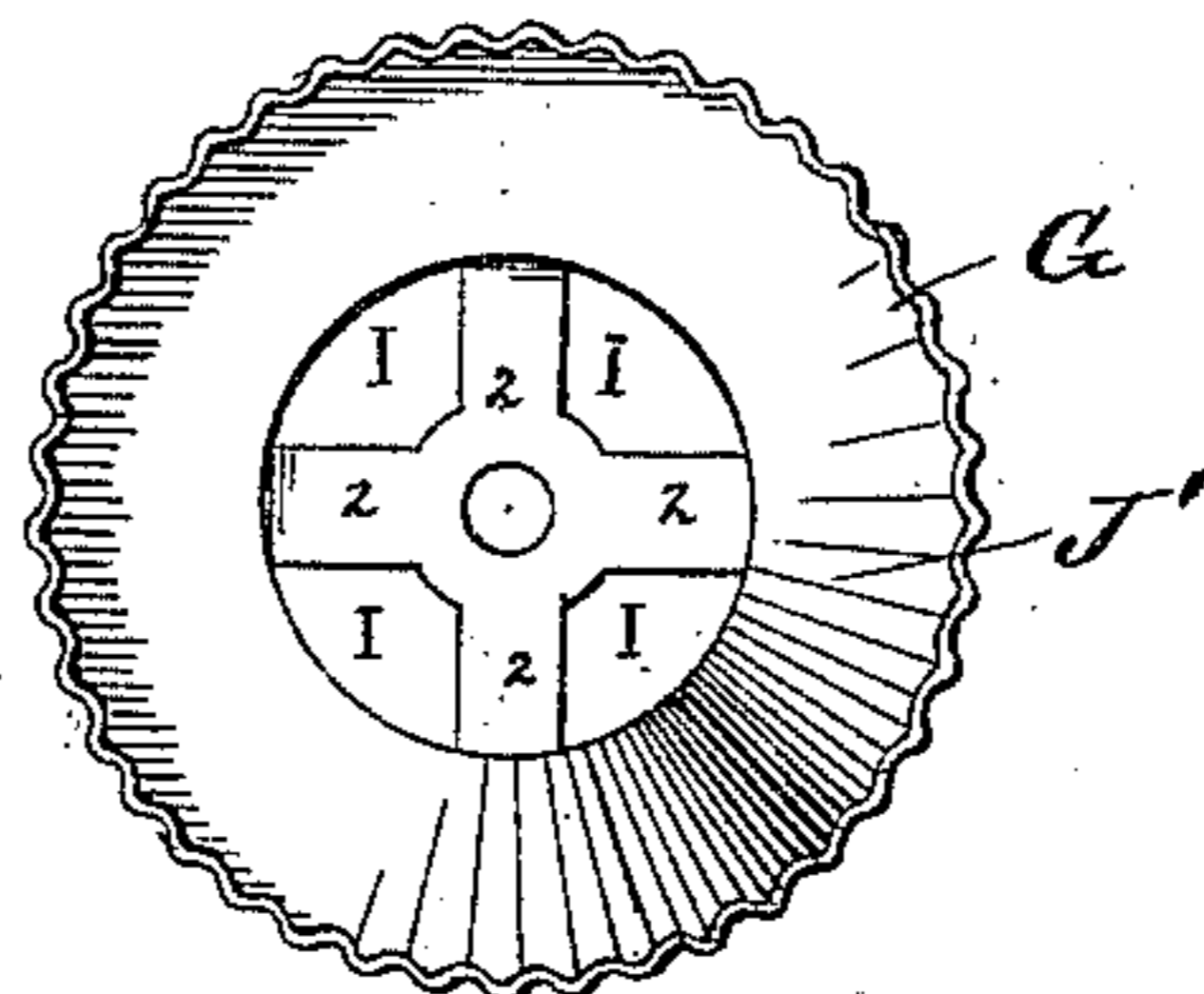


FIG. 5.



Witnesses

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PUMP.

SPECIFICATION forming part of Letters Patent No. 432,665, dated July 22, 1890.

Application filed February 17, 1888. Serial No. 264,403. (No model.)

To all whom it may concern:

Be it known that I, ELLIOTT P. GLEASON, a citizen of the United States, residing in New York, county of New York, and State of New York, have invented a new and useful Improvement in Pumps, of which the following is so full, clear, and exact a description as will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a portion of my pump and valve mechanism. Fig. 4 is a bottom plan view of the plunger. Fig. 3 is a top plan view of the plunger, showing the skeleton guide-piece. Fig. 2 is a top plan view of a disk or plate which I employ to hold the cylinder-valve in place. Fig. 5 is a vertical section of the disk used for the valve-seat of the cylinder-valve.

In the accompanying drawings, A designates the pump-cylinder, which is screw-threaded at its lower end, where it is adapted to receive the correspondingly screw-threaded section B, which latter is provided with shoulders *a* at a point directly in alignment with the end of the cylinder A when screwed to the section B, as shown in Fig. 1. This shoulder is adapted to support a packing-ring or washer *a'*, which in turn supports the disk C, which forms the guide-piece and support for the cylinder-valve D. This disk C is provided with radial corrugations *b b*, which are stamped into the disk for the purpose of stiffening the same; also at its outer edge with a concentric groove *C'*, which stiffens the periphery and makes a stronger packing-ring and valve-seat support. A second washer *a''* is placed above the periphery of the disk C and adapted to serve as a packing between this periphery and the abutting end of the cylinder A.

The cylinder-valve D is provided with a stem *d'*, which extends from both sides. The upper end of this stem *d'* forms a tripping-pin, while the lower portion *h* forms a guide for the cylinder-valve, the head J serving to limit the upward movement of the valve. This valve may or may not be provided with a spring *k*. It will be seen at a glance at Fig. 1 that the central portion of this disk C is depressed, while a portion of the disk mid-

way between the center and the outer periphery is raised, forming a seat for the valve D. Within this seat perforations 1 1 1 1 are made for water-passages, between which are the bars 2 2 2 2, which support the perforated guiding-center adapted to receive and guide the valve-stem. The plunger-rod E is provided with a stop F and extends down through the skeleton guide-piece G, and has secured on its lower end a disk-valve H. The lower end of the plunger-rod E is beveled and forms a tripping-pin *f*, which corresponds to and acts with and upon the tripping-pin *h''*, which is secured to the cylinder-valve D. The purpose of this construction of tripping-pins is to permit of the escape of the water to allow the same to waste or flow back into the well or cistern to prevent freezing, or for other obvious reasons which need not be mentioned here. From the nature of the case it will be seen at a glance that this forms a complete drainage apparatus for the pump at a trifling expense of material and labor, but one valve is disturbed out of its normal position, and the drainage is complete.

The plunger G is formed of sheet metal in this instance, and is provided with a concentric groove formed by the flange I and the depressed portion J' on its lower side and a second concentric groove formed by the depressed portion J' and the vertical screw-threaded interior portion K. Between the depressed and the central screw-threaded portion K is secured a packing-washer L by means of a screw-threaded ring M, as clearly shown in Fig. 1. The central portion of the plunger G is provided with a skeleton guide-rack, which consists of the radial arms *r r* and the centrally-perforated center piece *s*. The circumferential flange of the plunger G is provided with grooves which extend at right angles to the radius of the plunger. These grooves lessen the friction between the plunger and the casing A, and they also strengthen the plunger itself. The plunger-rod E extends through the central portion *s* of the plunger G, and the length of the stroke of the plunger-rod through the perforation in the plunger G is limited by the stop F in one direction and by the disk-valve H on the opposite side of the plunger in the opposite direction.

From the foregoing, and by reference to Fig. 1, it will be readily understood that both the plunger G and the disk-valve H are moved positively in either or both directions by the plunger-rod direct, and by forcing the plunger-rod down somewhat below the usual limit of the lower or downward stroke it will act in turn upon the cylinder-valve D, unseating the same and allowing the waste water to escape, as heretofore explained.

The circumferential flange on the plunger G serves to guide the plunger, keeping it always in such position that it will move freely within the inner walls of the cylinder and parallel with the same. The inner concentric ridge P of the plunger G will form a seat for the disk-valve H, and the grooves o o in the circumferential flange of the plunger G, acting in conjunction with the flange itself, will tend to produce a plunger which will move with the greatest accuracy and ease of movement with the least liability of accidental displacement or fracture or distortion. The plunger G and the disk C are made of sheet metal spun or die-stamped into the desired shaped.

Having now described my invention, what I desire to secure by Letters Patent, and what I therefore claim, is—

1. In a pump, a plunger consisting of a metallic skeleton body provided with grooves in its periphery extending in the direction of its motion, and a stiff stationary washer secured to one end of said body and covering and permanently closing the ends of said grooves, substantially as described.

2. In a pump, a plunger-rod provided with a stop and a disk-valve, in combination with a perforated plunger having a concentric circumferential flange provided with grooves which extend at an angle to the radius of the plunger and the cylinder-valve, said plunger being operated by the plunger-rod, which extends through it and is adapted to move freely through the plunger, its movement being limited by the stop and the disk-valve on the piston-rod, substantially as and for the purposes specified.

3. In a pump, a plunger provided with a ribbed circumferential flange and a perforated center and an intermediate valve-seat, and also having a concentric screw-threaded portion, a washer secured to the plunger and held in place by a concentric ring, which is screw-threaded to correspond with the screw-threads on the plunger, and a plunger-rod having a stop and disk-valve and extending through the plunger, as described, in combination with an upwardly-opening cylinder-valve, substantially as described.

4. In a pump, the casing A, in combination with the section B, having a shoulder, a disk provided with radial ribs and secured between the casing A and the section B and provided with suitable packing, a plunger, disk-valve, and a cylinder-valve, all constructed and combined to operate substantially as and for the purpose specified.

5. In a pump, a disk-valve and plunger provided with a tripping-pin at its bottom, in combination with a cylinder-valve rising and falling freely, having a corresponding tripping-pin, all constructed and combined to operate substantially as described, whereby the cylinder-valve is unseated by the downward movement of the plunger and disk-valve for the purpose of draining the pump, substantially as described.

6. In a pump, a plunger-rod having a plunger and disk-valve secured thereto and moved positively in both directions thereby, the lower end of said rod provided with a beveled tripping-pin, in combination with a cylinder-valve having a correspondingly-beveled tripping-pin in alignment with the tripping-pin on the plunger-rod, substantially as and for the purposes specified.

7. In a pump, the combination, with a cylinder-valve having a stem extending through it, one end of which is adapted to guide and limit the action of the valve and the other to serve as a tripping device, of a disk having a valve-seat formed upon it, within which are perforations for water-passages, and a central perforation adapted to receive the guiding end of the valve-stem, and which is provided with radial bars between the valve-seat and the periphery, substantially as described.

8. In a pump, a cylinder, plunger, valve, and plunger-rod, in combination with a cylinder-valve and a disk having a valve-seat thereon and provided with a circumferential concentric groove, and a series of radial corrugations between the center and the outer periphery, substantially as and for the purpose specified.

9. As an article of manufacture, a combined disk-valve support and washer having a valve-seat formed integral therewith and having a perforated center adapted to receive and guide a valve-stem, and which is also provided with a circumferential groove adapted to serve as a packing-ring, substantially as and for the purpose specified.

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

ELLIOTT P. GLEASON.

Witnesses:

O. F. GLEASON,
JOHN N. McLEAN.