

(No Model.)

G. R. BABBITT.
PISTON.

No. 584,914.

Patented June 22, 1897.

FIG. 1.

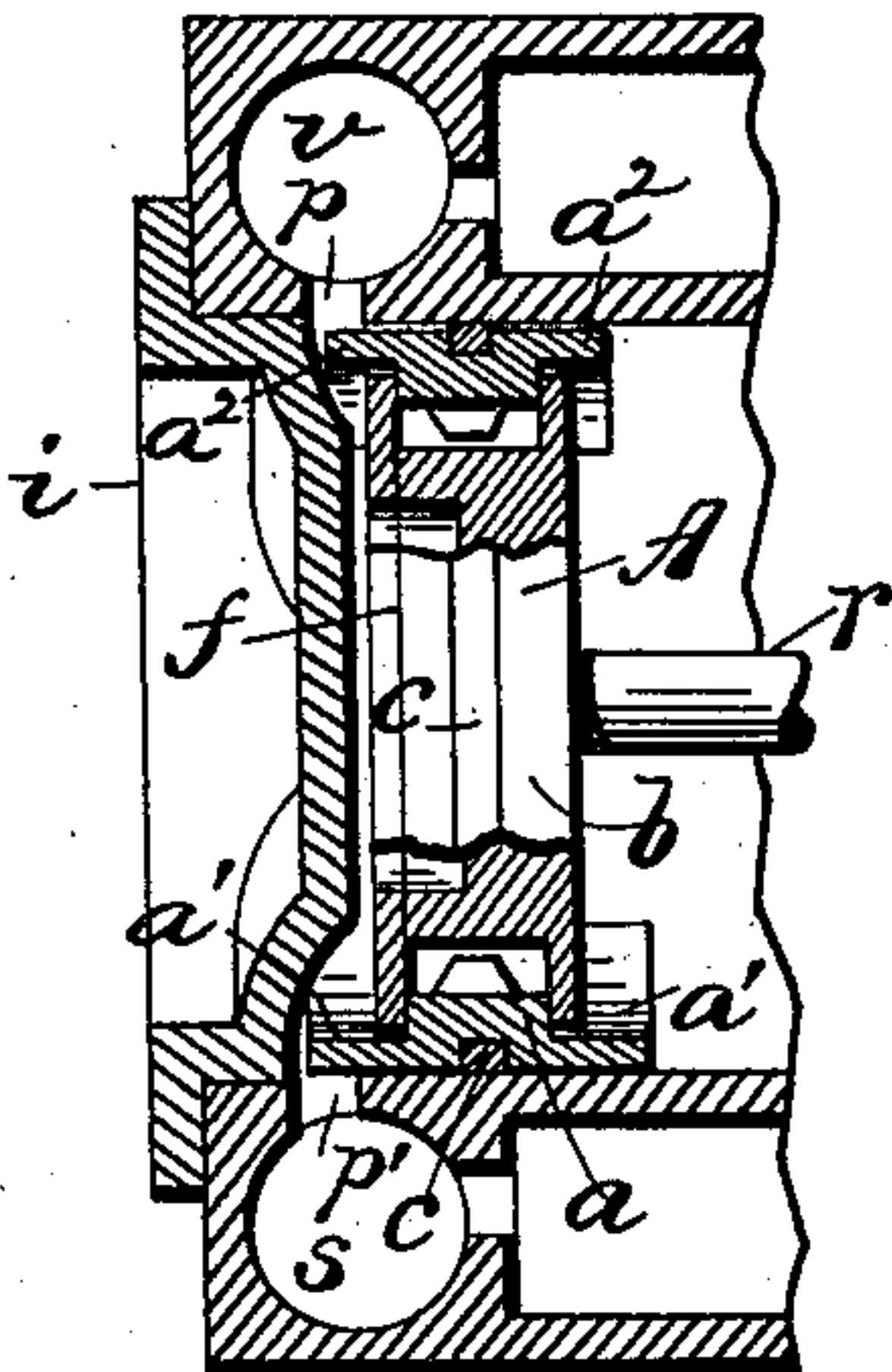
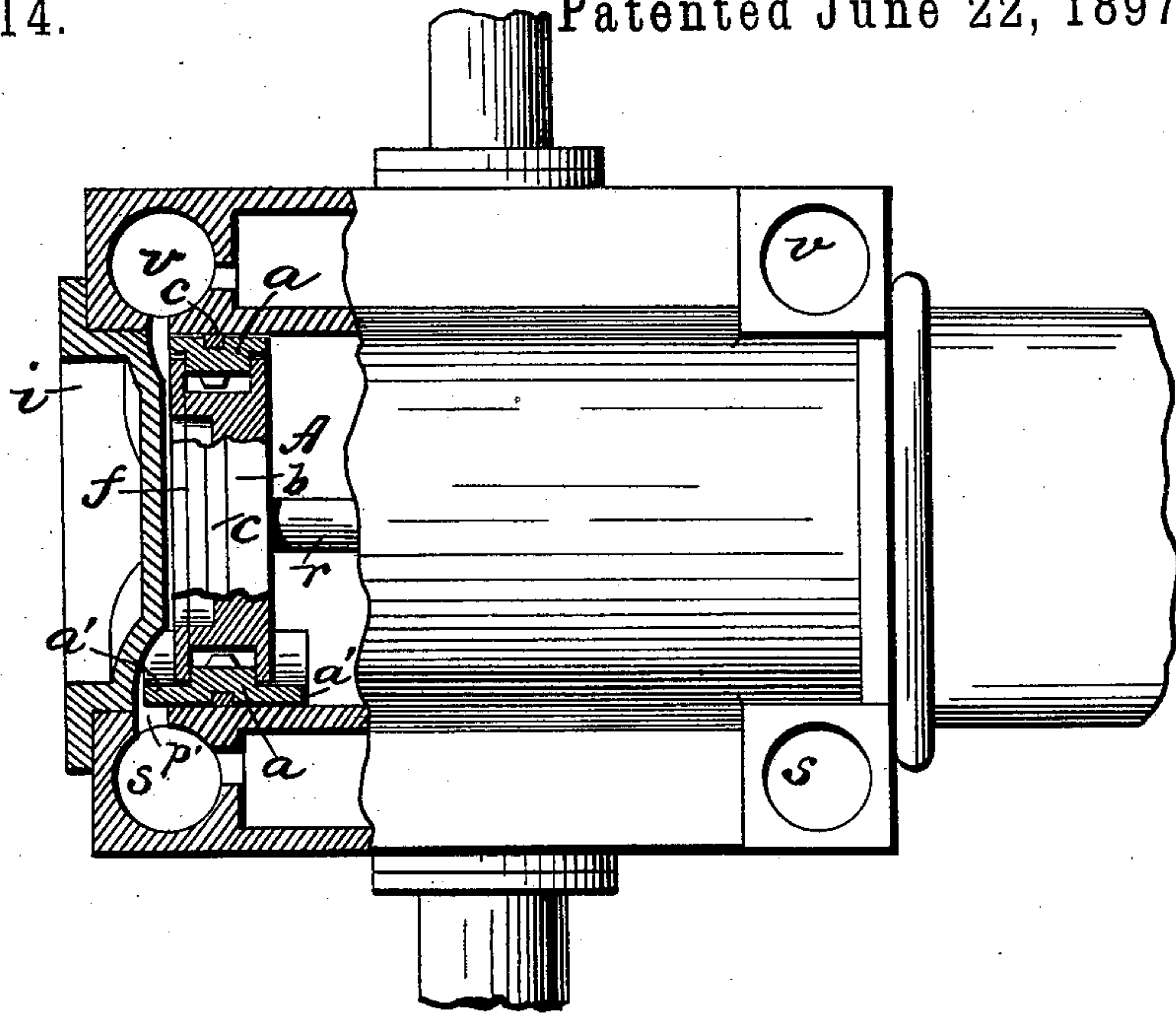


FIG. 2.

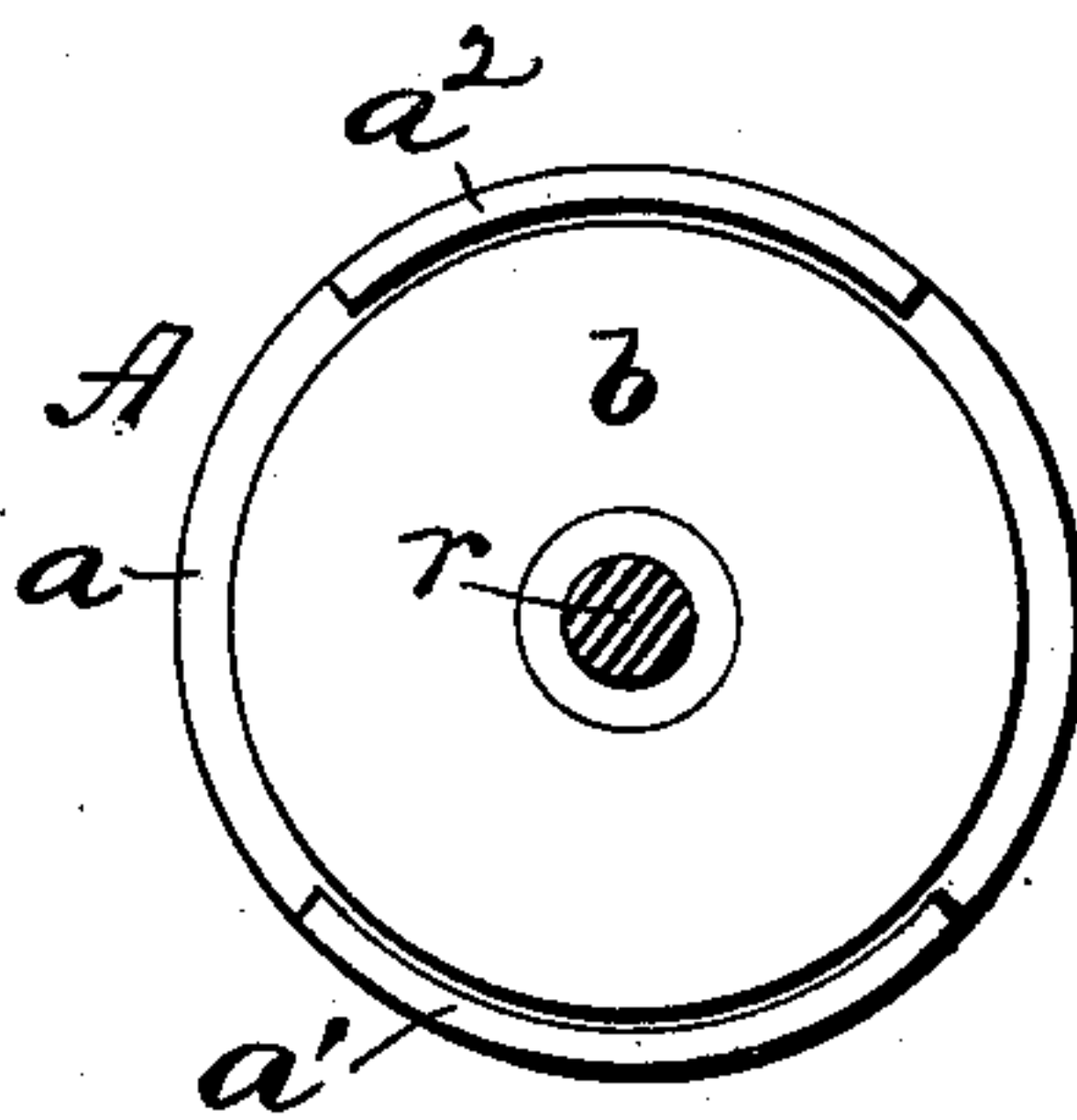


FIG. 3.

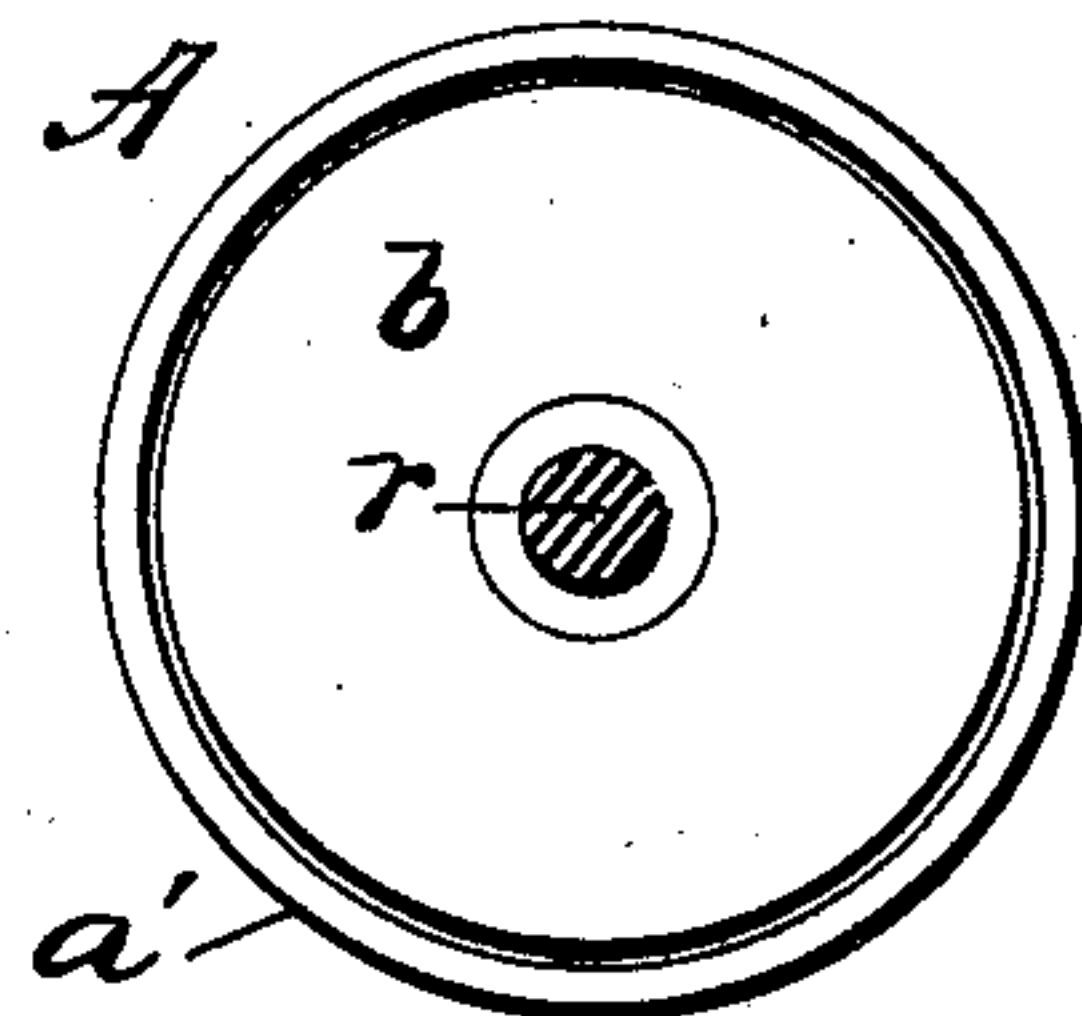


FIG. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE R. BABBITT, OF CRANSTON, RHODE ISLAND.

PISTON.

SPECIFICATION forming part of Letters Patent No. 584,914, dated June 22, 1897.

Application filed November 27, 1896. Serial No. 613,555. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. BABBITT, a citizen of the United States, residing at Edgewood, Cranston, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Pistons; and I do hereby 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 letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in pistons, but more particularly to the pistons of steam-engines; and it consists, essentially, in providing the front and rear sides or ends of the piston with a peripheral flange extending partially or wholly around the piston and conforming to the bore of the cylinder, thereby increasing the face or thickness of the piston, all as hereinafter set forth and claimed.

The object I have in view is to provide the pistons, say, of horizontal steam-engines with an increased bearing area, thereby when in use distributing the weight of the piston over a greater surface of the cylinder as compared with pistons having substantially the same normal face or thickness and unprovided with my improvement. By means of the improvement the lower or bearing side of the piston and the corresponding contact portion of the cylinder are subjected to less wear than formerly while the piston is working back and forth, owing to the area thus added to the piston's face, such added portion only slightly increasing the weight of the piston.

Another advantage or object gained by the use of my improved piston is that the percentage of "clearance" is materially reduced, since the side flanges thus formed on the piston (when at the ends of the stroke) extend into the portway or recess formed in the cylinder-heads.

In the accompanying sheet of drawings, Figure 1 is a side elevation of a horizontal steam-engine cylinder of the Corliss type, a part of the cylinder's barrel being broken away and showing my improved piston therein. Fig. 2 is a sectional view of the back

end portion of the cylinder, showing a modified form of the piston. Fig. 3 is a front view of the piston shown in Fig. 2; and Fig. 4 is a front view of the piston, showing the side or auxiliary flange extending entirely around the piston.

I would state here that while I have represented my improved piston as mounted in the Corliss type of steam-cylinder the piston may be employed equally well in other kinds of steam-engine cylinders.

As just stated, the cylinder represented is of the Corliss or four-valve type, the two steam-valve chests *v v* being at the top and the corresponding exhaust-valve chests *s s* at the bottom or lower side. The valves, however, are not shown. The cylinder proper, as well as the bed or frame and back head *i*, is or may be constructed substantially as usual in engines of this class. The several chests *v s* are provided with inlet and exhaust ports *p p'*, respectively, the same communicating directly with the bore of the cylinder, substantially as common.

Within the cylinder is mounted a piston *A*, adapted to be reciprocated back and forth through the medium of the piston-rod *r*, &c., as usual. The piston may consist of a single piece or casting, sometimes termed a "solid" piston, and provided with a circumferential packing-ring, or it may consist of several members. As drawn, it is provided with the head *b*, to which the rod *r* is secured, the removable follower *f*, and the center or "chuck" ring *a*, the latter being retained laterally between side flanges formed on said parts *b* and *f*.

The diameter of the chuck-ring is as a rule slightly less than the bore of the cylinder and is capable of being adjusted vertically within fixed limits, substantially as usual. The face of the ring *a* is provided with a peripheral groove, in which the usual packing-ring *c* is mounted.

The two outer edges of the chuck-ring *a* are provided at the bottom with projecting side flanges or wings *a' a'*. These latter are coextensive with and form a continuation of the ring *a*, as clearly shown. The said flanges *a'* extend around the head a distance substantially equal to the circumferential length of the exhaust-port *p'*, or as shown in Fig. 3.

The sides of the chuck-ring may be extended at the top or upper portion, thus forming the side flanges a^2 , substantially as just stated with respect to the lower flanges a' . It will be seen, referring to Fig. 2, that when the piston is at the end of its stroke the said flanges a' a^2 may extend beyond the inner edges of the respective ports, at the same time leaving sufficient space or clearance between them and the corresponding portways formed in the back head i .

In Fig. 1 the side flanges (or auxiliary bearing-surface) of the piston are shown only at the lower exhaust side of the cylinder.

In Figs. 2 and 3 the piston is represented as having flanges both at the top and bottom, while in Fig. 4 the flange a' is continuous around the piston. In the latter case the cylinder-heads must obviously be provided with a groove between the portways to freely receive the flange.

As before stated, the bearing-surface of the piston is by means of my present invention considerably increased, the same being effected with a comparatively small percentage of additional weight. The adjacent surfaces of the piston and cylinder will be subjected to less "wear" from the fact that the weight of the moving parts will be distributed over a much greater area than in pistons unprovided with my improvement. At the same time, too, the added flanges a' a^2

serve to reduce the percentage of "clearance" in the cylinder.

I claim as my invention and desire to secure by United States Letters Patent—

1. As an improved article of manufacture, a piston having the head b provided with an internal shoulder or recess, a follower f secured to said head, whereby an annular recess is provided between said follower and head, and a continuous inextensible inelastic ring a held within said annular recess, and having flanges extending on each side beyond the faces of said piston, substantially as described.

2. The combination of a head-piece of a piston, and a follower for said piston-head, said head-piece and follower being adapted to be bolted together and having when so bolted an annular recess, of a ring-section having a central portion arranged to be received within said recess and clamped between said head-piece and follower, said ring-section having flanges extending beyond the edges of said head-piece and follower, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE R. BABBITT.

Witnesses:

GEO. H. REMINGTON,
REMINGTON SHERMAN.