

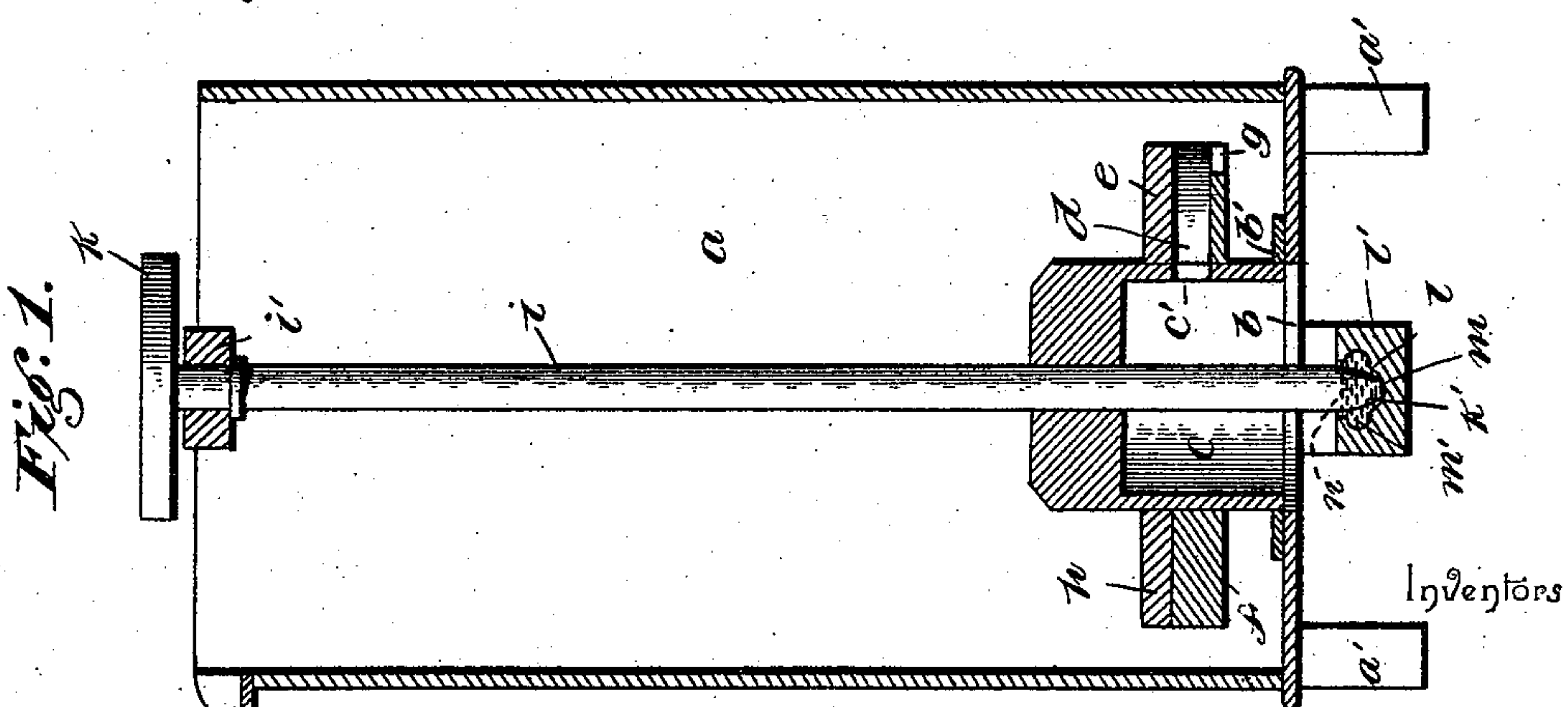
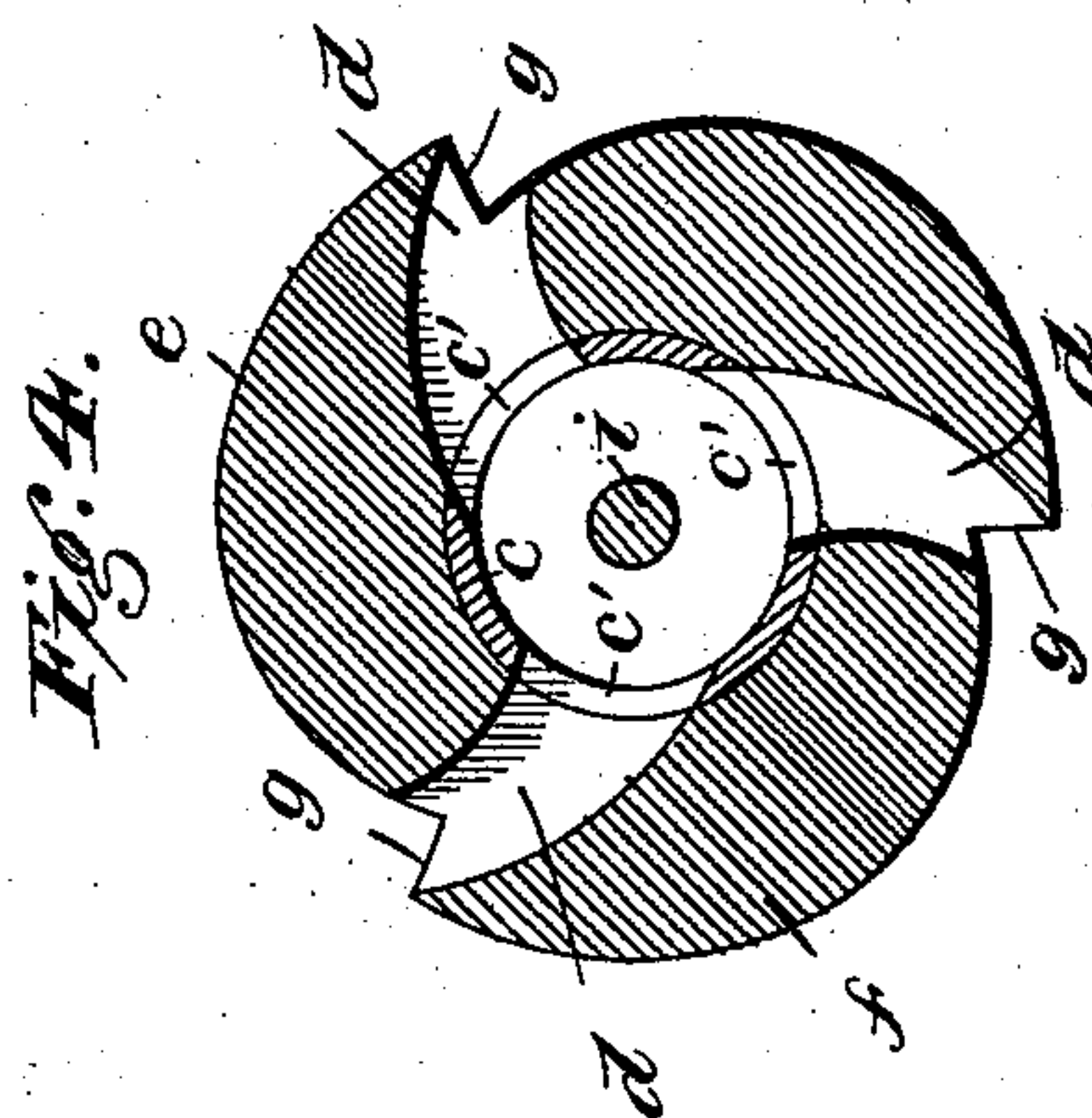
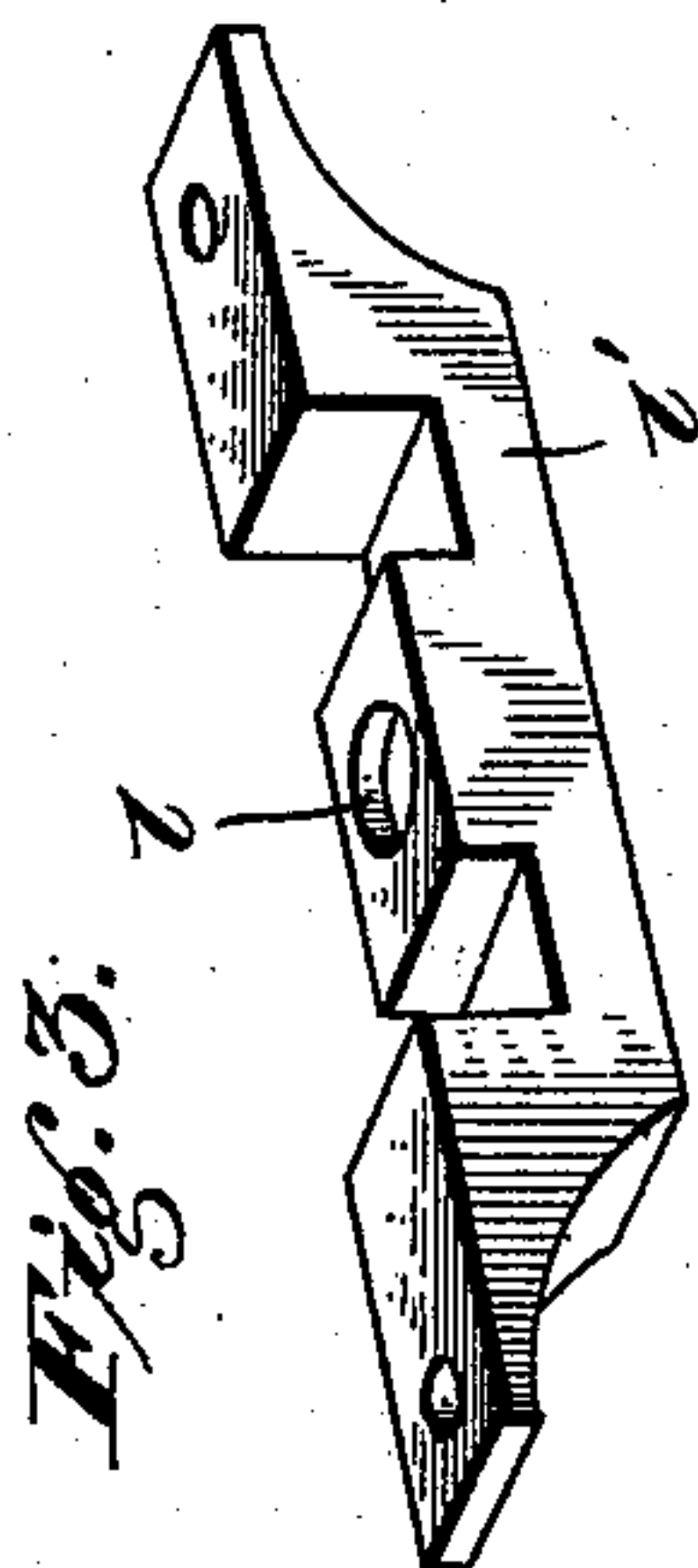
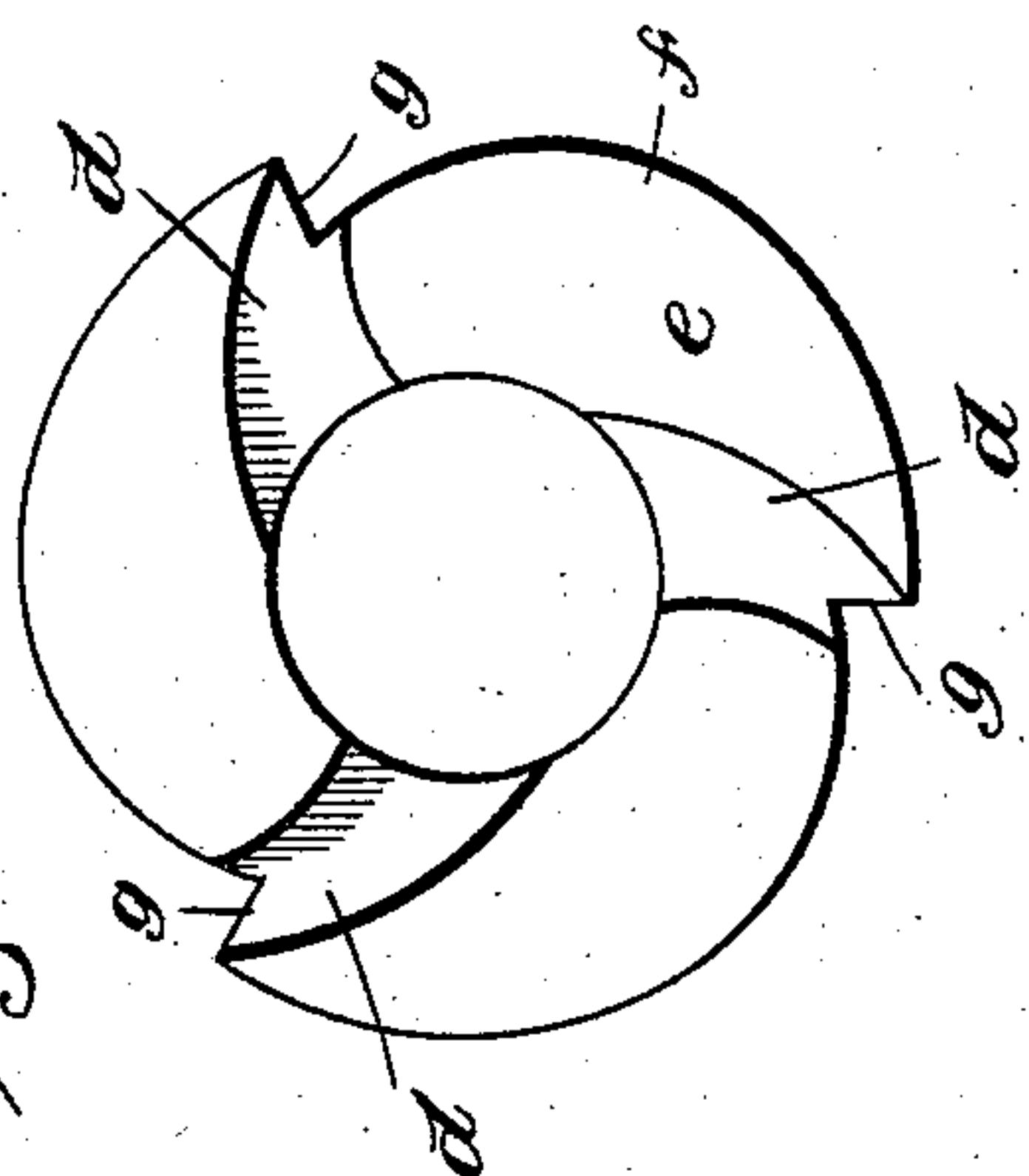
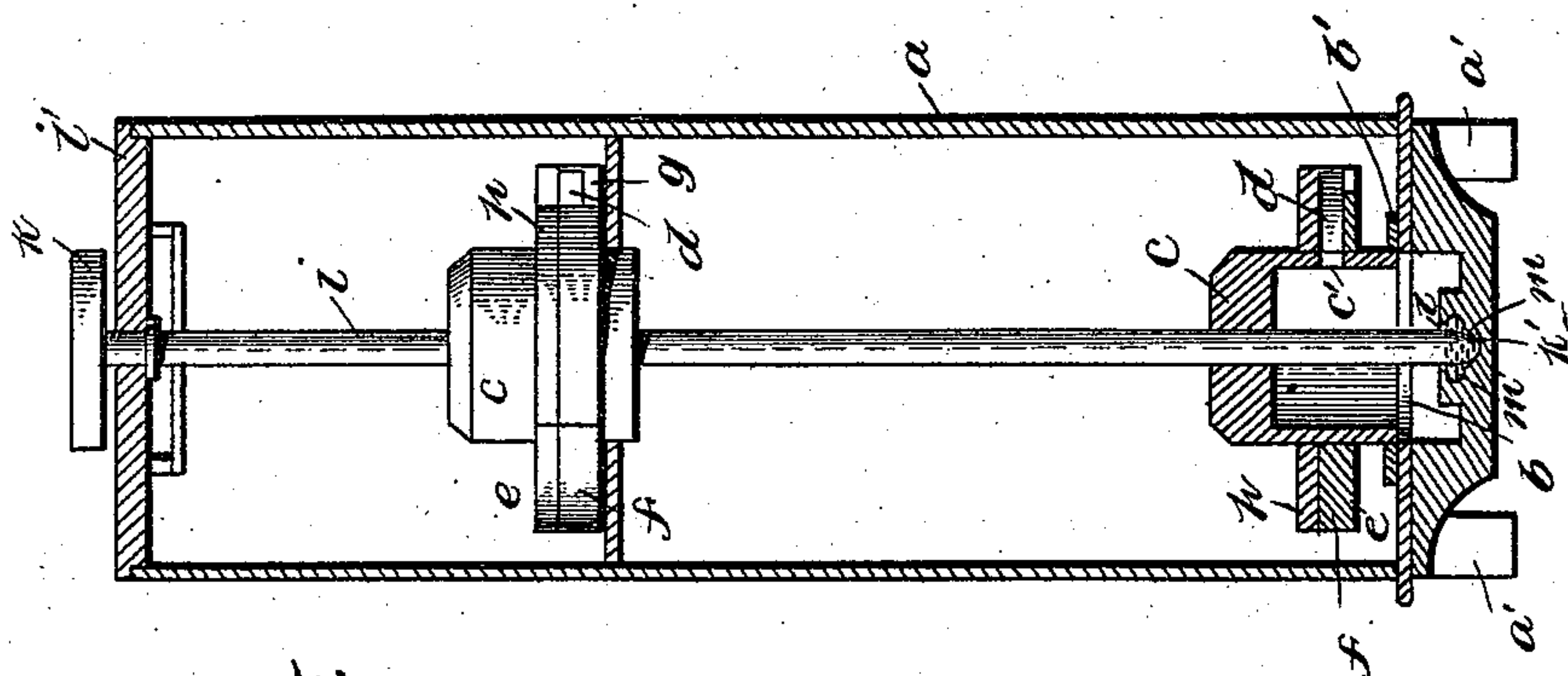
(No Model.)

M. & J. N. McCAY.

IRRIGATING PUMP.

No. 527,707.

Patented Oct. 16, 1894.



Witnesses

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UNITED STATES PATENT OFFICE.

MARION MCCAY AND JASPER N. MCCAY, OF PHOENIX, ARIZONA TERRITORY.

IRRIGATING-PUMP.

SPECIFICATION forming part of Letters Patent No. 527,707, dated October 16, 1894.

Application filed February 16, 1894. Serial No. 500,427. (No model.)

To all whom it may concern:

Be it known that we, MARION MCCAY and JASPER N. MCCAY, citizens of the United States, residing at Phoenix, in the county of Maricopa and Territory of Arizona, have invented a new and useful Irrigating-Pump, of which the following is a specification.

Our invention relates to an improvement in those pumps wherein the water is raised by the centrifugal influence attending a revolving piston; and the primary object of the invention is to provide a more efficient appliance for this purpose and one in which the water can be raised with the expenditure of less power than ordinarily.

A further object is to improve the construction of the piston so that it will be more efficient and speedy in gathering the water, and in permitting its expulsion immediately after. To these ends the invention consists of certain improved features of construction and combination and arrangement of parts, which will be more fully described hereinafter and finally embodied in the claim.

In the accompanying drawings:—Figure 1 represents a vertical section of the pump. Fig. 2 is a plan view of the piston with the cap plate removed; Fig. 3, a detail view of the bearing for the lower end of the piston-rod; Fig. 4, a horizontal section of the piston; Fig. 5, a view of a modified arrangement of the body.

The reference letter *a* indicates the body of the pump, which body may be of any preferred construction, and of wood or iron, as may be desired. This body is adapted to be arranged in the water to be raised, for example the bottom of a well, and is provided at its lower ends with the legs *a'*, by which it is supported above the ground. Formed in bottom of the body *a* is the circular opening *b*, through which the water is adapted to pass into the body, and this opening is provided with the ring or gasket *b'*, which is arranged on the inner side of the body and which operates to form a water-tight joint between the sides of the opening *b*, and the cylindrical hub or tube *c*. This device is circular in cross-section and of such a size that it will fit snugly within the opening *b*, while its upper end is closed and its sides provided with the openings *c'*. Openings *c'* are arranged to commu-

nicate with the passages *d* of the piston *e*, and this latter device is rigidly secured to the tube *c*, at a point intermediate of its upper and lower ends and consists of a substantially circular plate *f*, having the passages, *d*, formed in its upper face. These passages are larger at the ends adjacent to the openings *c'* than at the outer ends, and taper gradually throughout their length. In addition to this they curve from right to left, so that they may be said to extend from tube *c* at a tangent, thereby accommodating themselves to the course which the water is inclined to take when being thrown from the piston.

The peripheral opening or mouth of each of the passages *d* is formed with the overhanging ledge or projection *g*, which disposes said opening or mouth substantially tangential to the periphery of the wheel, and the function of which ledge is to create a vacuum at the mouth and thereby tend to accelerate the expulsion of the water.

h indicates the cap plate of the piston, which is shaped like the body of the piston and is secured on its upper side, thus closing the grooves *d*, and forming the complete passage.

Rigidly secured to the tube or hub *c* is the piston rod *i*, which projects upwardly from the hub and has its upper end embraced by the yoke bearing *i'*. The rod *i* extends a short distance above the bearing *i'* and is provided at its upper end with the drive pulley *k*. The rod *i* extends through the hub *c* and down to its lower end. The lower extremity of the rod *i* is rounded as at *k'*, and arranged in the cavity *l* of the beam *l'*, which is in turn secured to the lower side of the body and under the opening *b*. The cavity *l* is provided at its bottom with a rounded portion *m*, adapted to receive and hold the point *k'* while the upper portion is provided with a circular enlargement *m'*. This enlargement *m'* is adapted to receive the mercury *n*, which operates to exclude the sand from the bearing and prevent the consequent grinding. In addition to this the mercury operates as a lubricant for the rod.

Fig. 5 illustrates a manner of arranging the body, whereby the water may be raised a greater distance. In this arrangement the body is provided with a plurality of pistons,

each duplicates of the piston before described, and arranged at regular intervals above each other. By this means the water may be raised by one piston to the piston above, and then
5 carried to the end by the second piston, or, if more than two be provided, by the pistons above the first.

It will be understood that during the operation of the pump the body of the pump must
10 be far enough in the water to allow the latter to rise within the hub *c*, and as this revolves the water is drawn in the passages *d*, and thrown out their open ends and into the body *a*. This operation continues and the
15 water is forced up the body and finally out the chute *g*.

From the foregoing description it will be seen that water may be forced up the body
20 *a*, with a comparatively small expenditure of power and in a regular stream. In these attributes lie the attainment of the objects of our invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—
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In a pump of the class described, the combination of the upright tubular body or stand pipe provided with a circular bottom inlet

opening, a bearing ring or gasket fitted on the bottom of said body or stand pipe and surrounding the inlet opening thereof, a vertically arranged shaft, a hollow cylindrical piston hub having a closed upper end and a lower open end working snugly inside of said ring or gasket, said hollow cylindrical hub
30 being provided in the sides thereof at an intermediate point with a circular series of openings, and a horizontal circular piston fitted on the exterior of said hub intermediate of its ends, said piston consisting of separate
35 superposed plates one of which is provided with a series of curved water passages communicating at their inner ends with the openings in the sides of the hub, said water passages terminating at their outer ends in tangentially disposed peripheral discharge openings, substantially as set forth.
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45

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

MARION McCAY.
JASPER N. McCAY.

Witnesses:

JOHN F. WILCOX,
NEWTON J. McCAY.