

No. 843,004.

PATENTED FEB. 5, 1907.

H. DOCK.

CONNECTING ROD FOR TRUNK PISTONS.

APPLICATION FILED APR. 25, 1906.

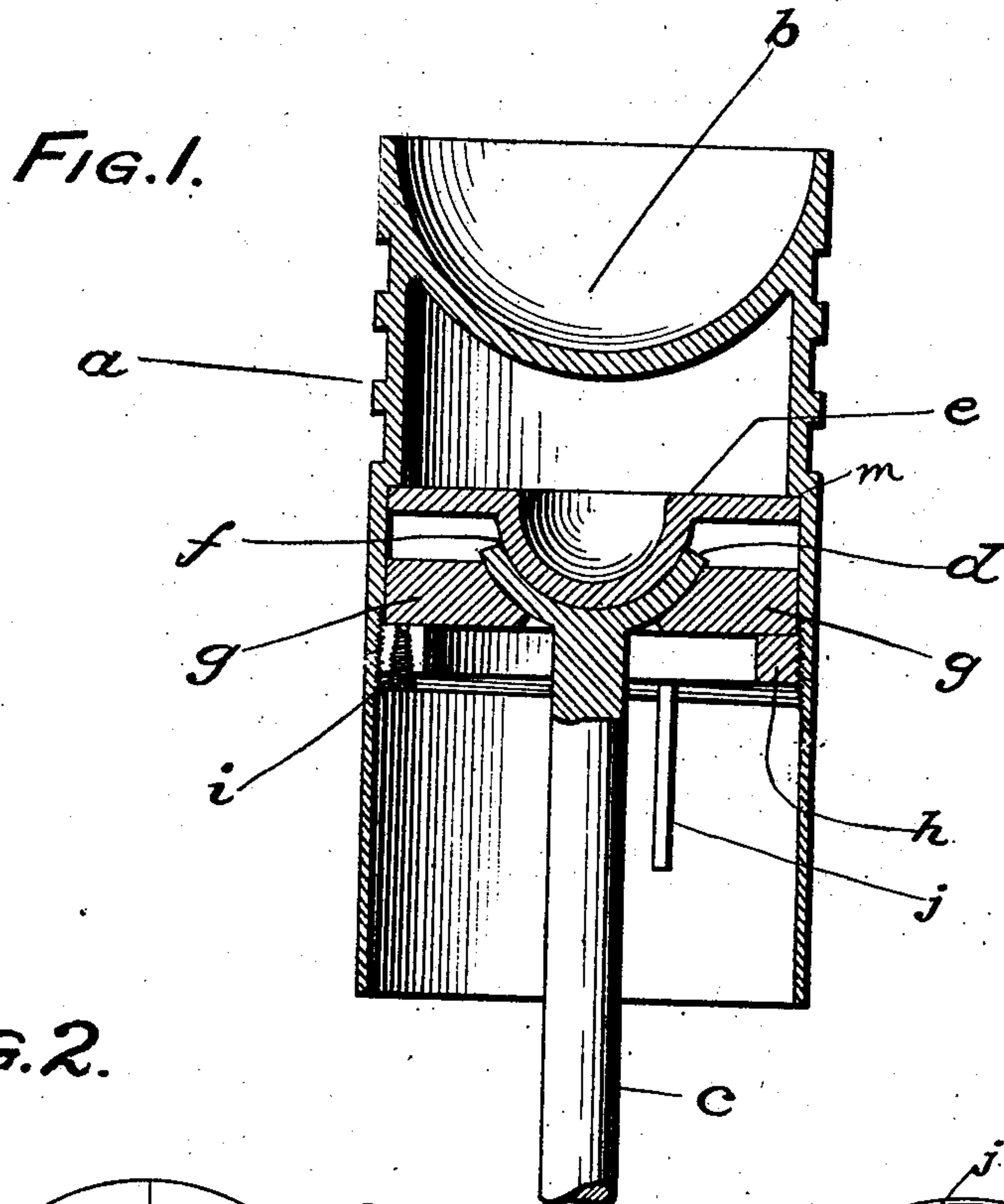


FIG. 1.

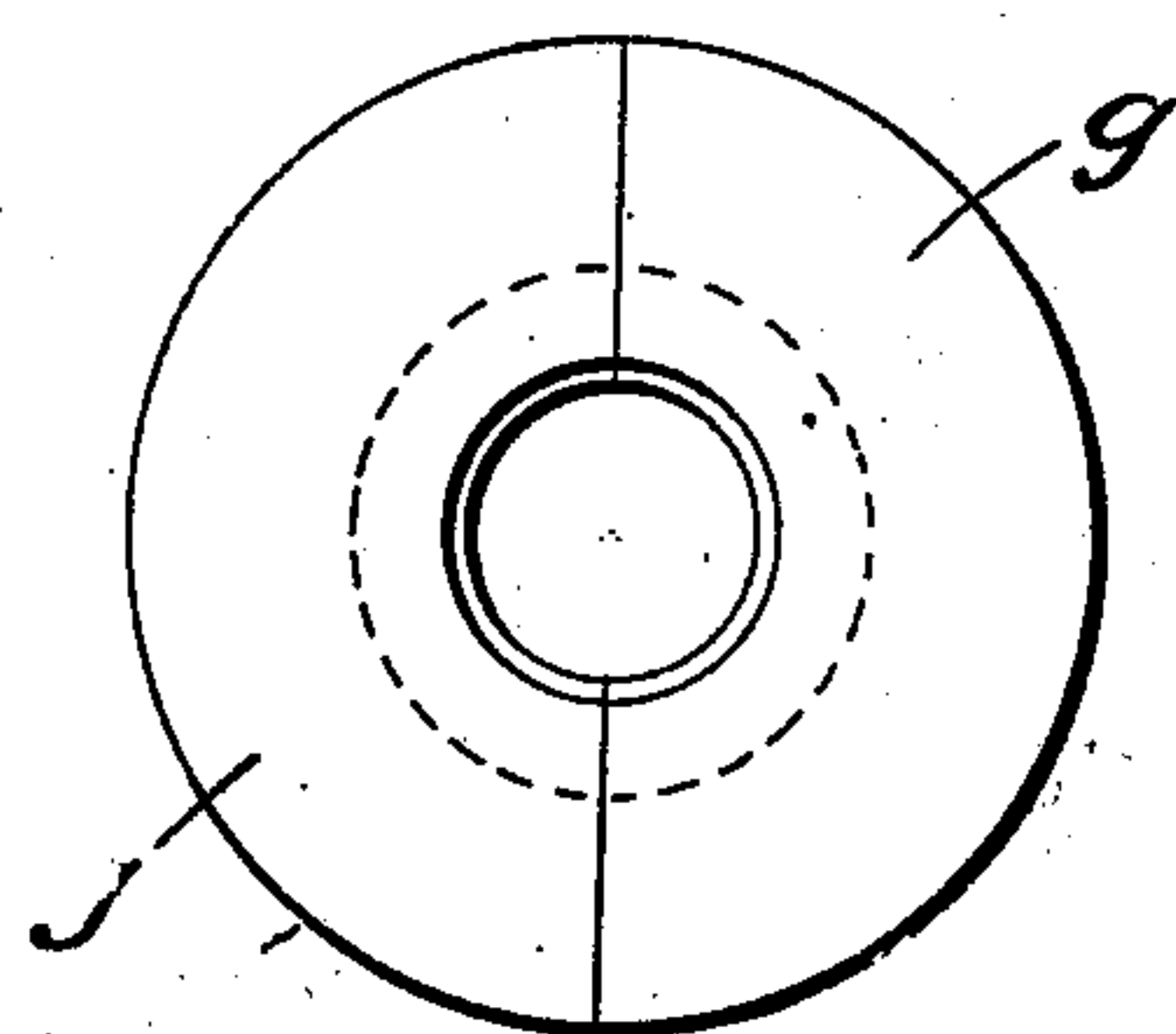


FIG. 2.

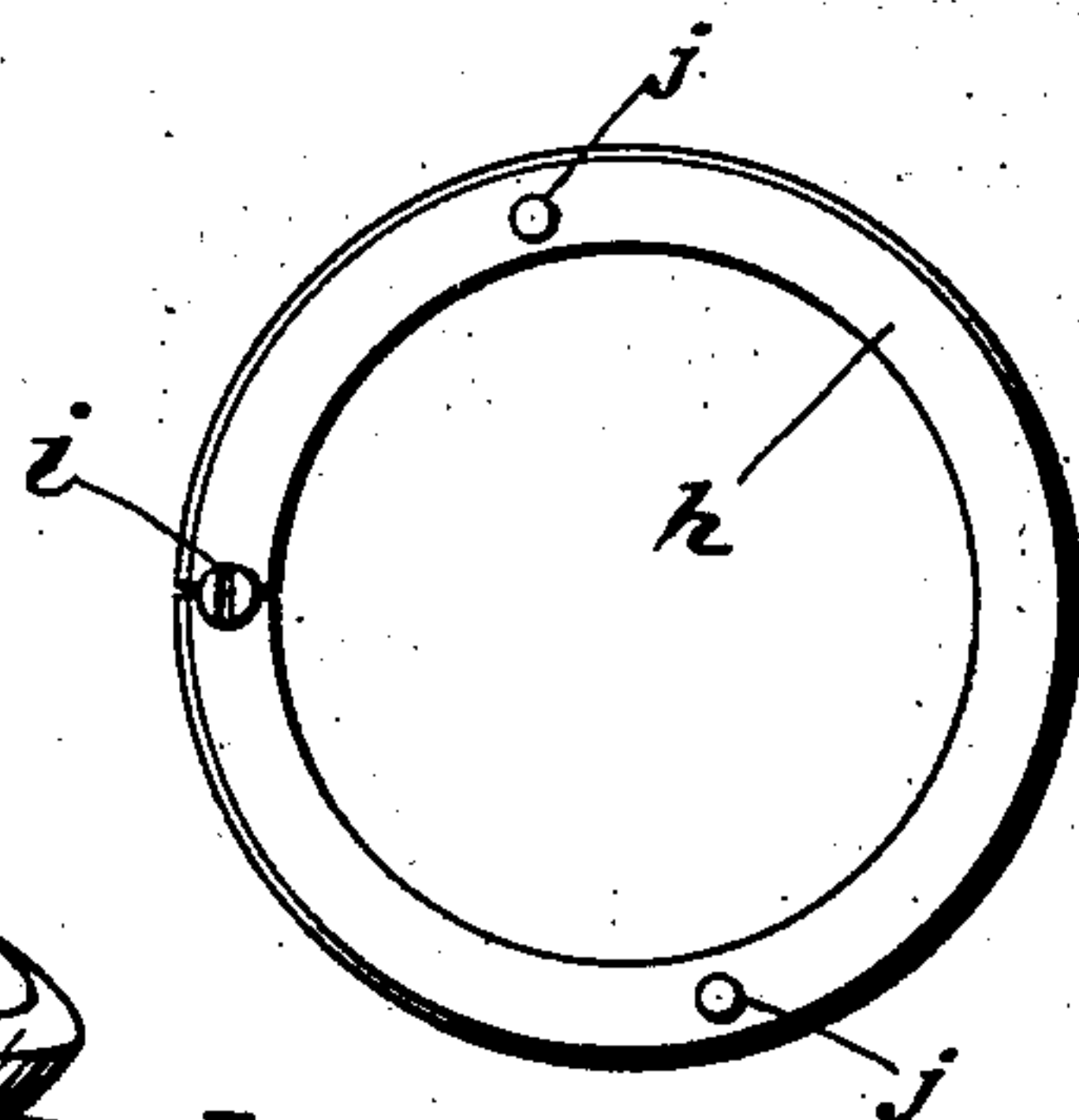


FIG. 3.

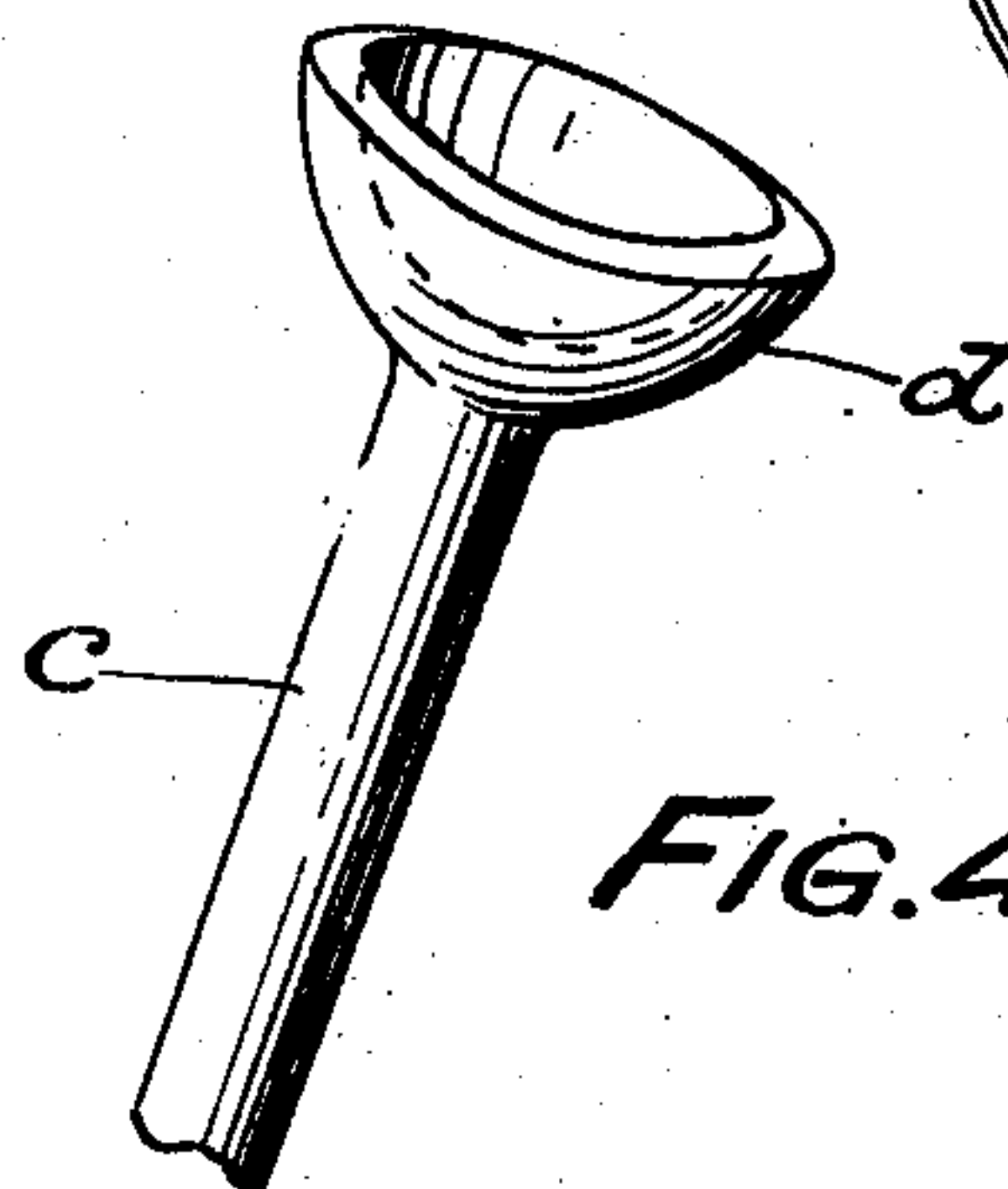


FIG. 4.

WITNESSES:

Robt. R. Ketchel.

M. M. Hamilton.

INVENTOR

INVENTOR
Herman Dock

BY

BY
Hendricks & Hendricks
ATTORNEYS

ATTORNEY, &

UNITED STATES PATENT OFFICE.

HERMAN DOCK, OF WYNCOTE, PENNSYLVANIA, ASSIGNOR TO DOCK GAS ENGINE COMPANY, A CORPORATION OF NEW JERSEY.

CONNECTING-ROD FOR TRUNK-PISTONS.

No. 843,004.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed April 25, 1906. Serial No. 313,557.

To all whom it may concern:

Be it known that I, HERMAN DOCK, a citizen of the United States, residing at Wyncote, county of Montgomery, and State of Pennsylvania, have invented a new and useful Improvement in Connecting-Rods for Trunk-Pistons, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object the production of a simple form of connecting-rod particularly useful for so-called "trunk-pistons." The connection between said rod and said piston is such as to provide a most effective bearing-contact, eliminating the necessity for the use of pins and providing a simple and certain connection.

The invention also provides a maximum amount of metal for the trunk-piston connection, thus reducing to a minimum the amount of contraction and expansion, and finally allows the end of the trunk-piston to be concaved or semispherical in shape, which according to practice is the most effective form that the end of the piston can take.

Generally speaking, I accomplish these objects as follows: I provide the connecting-rod with a concaved or semispherically-cupped bearing end, and I provide the trunk-piston with a correspondingly convexly curved bearing-surface, against which the cupped end of the connecting-rod takes a bearing. I also provide suitable means to hold the cupped bearing end of the connecting-rod in place relatively to the convex bearing-surface of the piston.

The preferred embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 is a longitudinal section through my improved piston, showing the piston-rod connection. Fig. 2 is a plan view of the rod-retaining gland. Fig. 3 is a plan view of a means for retaining the rod-retaining gland in place. Fig. 4 is a perspective view of the piston-rod end detached.

a is a trunk-piston having a semispherically-hollowed end *b*.

c is a connecting-rod having a semispherically cupped or concaved bearing end *d*.

e is a bearing carried by the piston, against which the thrust of the connecting-rod is taken. In the particular form shown this

bearing *e* is a plate adapted to the inner wall of the piston and resting against a flange or shoulder *m* therein. This plate has a semi-spherically or convexly curved projection *f*, corresponding to the concaved or cup-like end of the connecting-rod, which projection constitutes a bearing therefor.

g is a retaining-gland arranged to bear underneath the cupped end of the rod *c*, so as to hold the rod in its proper position relatively to the bearing end *f*. This retaining-gland is preferably split into two sections *g g*, Fig. 2, to facilitate its ready application. Any suitable means may be provided to hold this gland in its proper position. One means to accomplish this end may comprise a split ring *h*, screw-threaded externally and arranged to take into corresponding screw-threads inside of the trunk-piston and below the gland *g* when the latter is in place. By setting up on this split ring the desired adjustment may be obtained, and when attained the ring may be expanded—for example, by means of an expanding-screw—so as to lock it securely in place. The ring *h* may be provided with projections *j* to facilitate turning it.

In assembling the parts the bearing-plate *e* is placed in position, the connecting-rod is entered, with its cupped end placed in contact with the bearing *f*, the retaining-gland *g* or lower bearing is then inserted, and finally the split ring is moved up on the threaded interior of the trunk-piston until the desired adjustment is attained, whereupon the split ring may be locked in place. When assembled, it will be observed that the rod may partake of a universal movement, which is of decided advantage, for it is obvious that by such a movement in use the piston may turn in the cylinder without disturbing the connecting-rod, so as to compensate for all wear. Furthermore, since the connection is not held in one definite position it will not wear out of round, as does a piston with the usual wrist-pin connection.

These and other advantages will be apparent to mechanics skilled in the art; but not the least is the matter of economical construction and the advantage that this connection possesses in that it permits the trunk-piston to have a concaved or semispherically-cupped end *b* without unduly increasing the length of said piston.

Another conspicuous advantage that might be mentioned over the usual wrist-pin connection resides in the capacity to take up all wear quickly and effectively.

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

1. A connecting-rod having a cupped or concaved bearing-face at its end.
2. A connecting-rod for a trunk-piston, said connecting-rod having a cupped or concaved bearing-face at its end.
3. The combination with a connecting-rod, having a cupped or concaved bearing-face at its end, of a trunk-piston having a similarly-curved but convex surface upon which said rod has its bearing.
4. The combination with a connecting-rod, having a cupped or concaved bearing-face at its end, of a trunk-piston, having a similarly-curved but convex surface upon which said rod has its bearing, the cupped end and convexly-curved bearing-surfaces being concentric.
5. The combination with a connecting-rod, having a cupped or concaved bearing-face at its end, of a trunk-piston having a removable transverse bearing-plate provided with a similarly-curved but convex bearing-surface for said concaved bearing end of the connecting-rod.
6. The combination with a connecting-rod, having a cupped or concaved bearing-face at its end, of a trunk-piston having a transverse bearing-plate provided with a convexly-curved bearing-surface for said concaved end of the connecting-rod, and means carried by the piston to hold said concaved bearing end of the rod in bearing contact with the convex bearing-surface of said plate.
7. The combination with a connecting-rod, having a cupped or concaved bearing-face at its end, of a trunk-piston having a convex bearing-surface upon the end of which said connecting-rod has its bearing, and adjustable means to hold said concaved end in

proper bearing contact with said convex bearing-surface.

8. The combination with a connecting-rod, having a cupped or concaved bearing-face at its end, of a trunk-piston having a convexly-curved surface upon which said cup end has its bearings, a removable rod-retaining gland having a clearance-passage for said rod, and adjustable means for holding said gland and rod in place.

9. The combination with a connecting-rod, having a concaved bearing end, of a trunk-piston having a plate provided with a convexly-curved bearing-surface for said bearing end of the connecting-rod, a gland, an adjustable split ring, and means to expand said ring to hold the gland in place.

10. The combination with a connecting-rod, having a concaved bearing end, of a trunk-piston having a convexly-curved surface upon which the end of said rod has its bearing, a rod-retaining gland, a threaded retaining-ring for holding said gland and coacting threads in the trunk-piston arranged to receive the threaded retaining-ring, and means to lock said ring when the bearing-surfaces are in proper contact.

11. The combination with a connecting-rod, having a concaved bearing end, of a trunk-piston having a plate provided with a convexly-curved bearing-surface for said bearing end of the connecting-rod, a rod-retaining gland, a split ring, said ring being threaded on its outer surface and acting to retain said gland, coacting threads in the trunk-piston, and a taper screw at the split portion of said ring to expand or lock said ring.

In testimony of which invention I have hereunto set my hand, at Philadelphia, on this 21st day of April, 1906.

HERMAN DOCK.

Witnesses:

M. M. HAMILTON,
E. E. WALL.