

(No Model.)

A. & E. R. SIMPSON & M. SPEICHER.

LUBRICATOR FOR PISTONS AND CYLINDERS.

No. 331,831.

Patented Dec. 8, 1885.

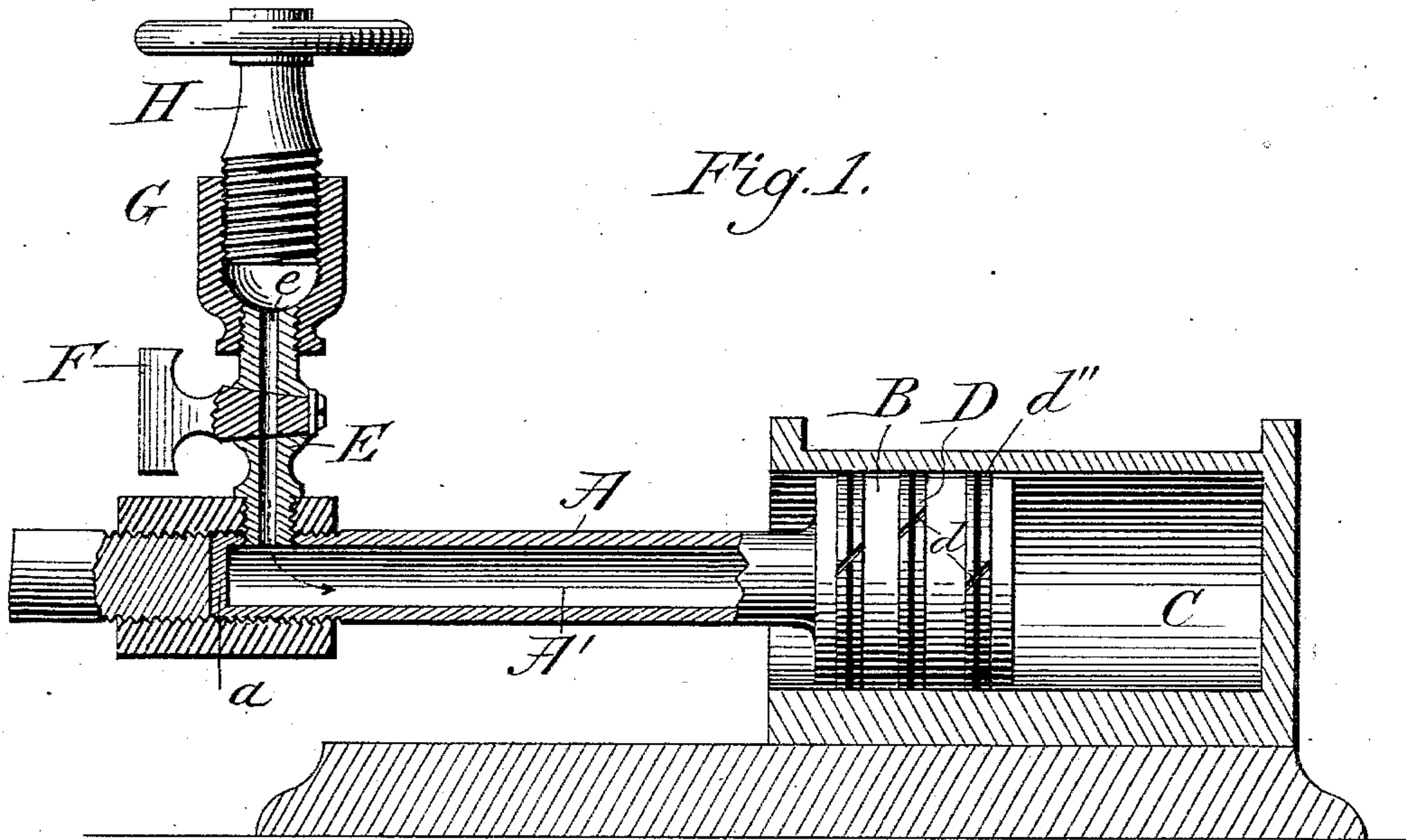


Fig. 1.

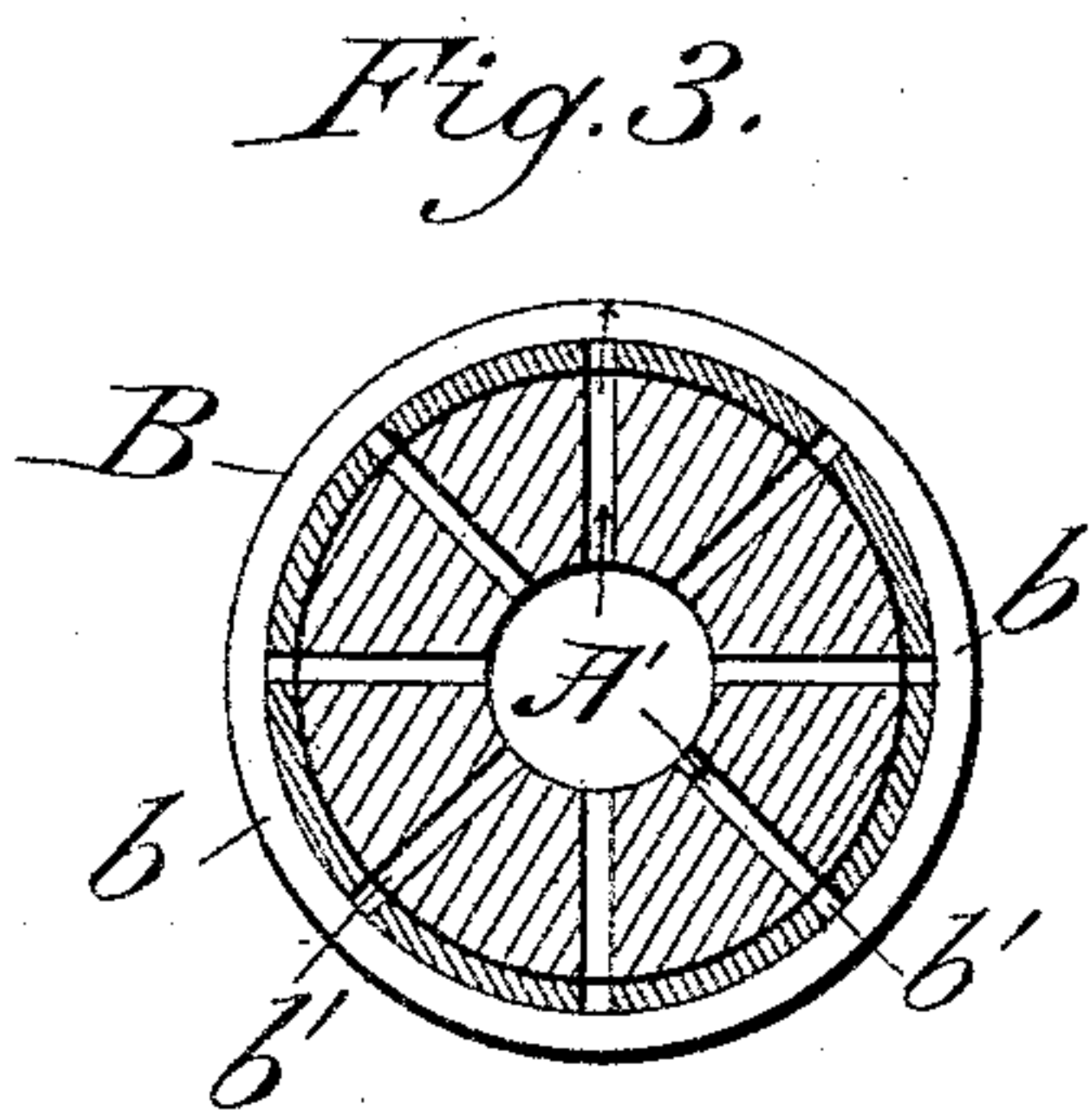


Fig. 3.

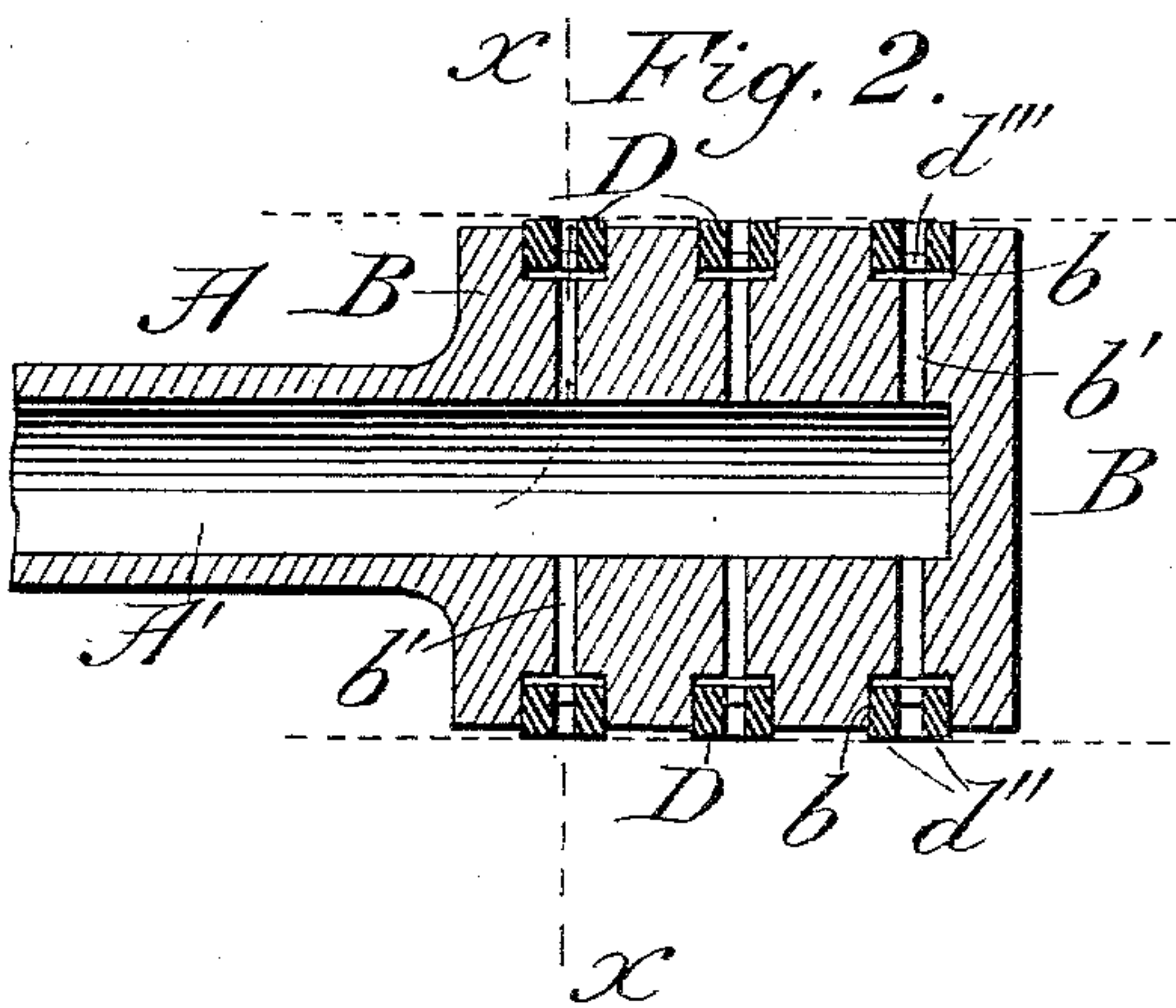


Fig. 2.

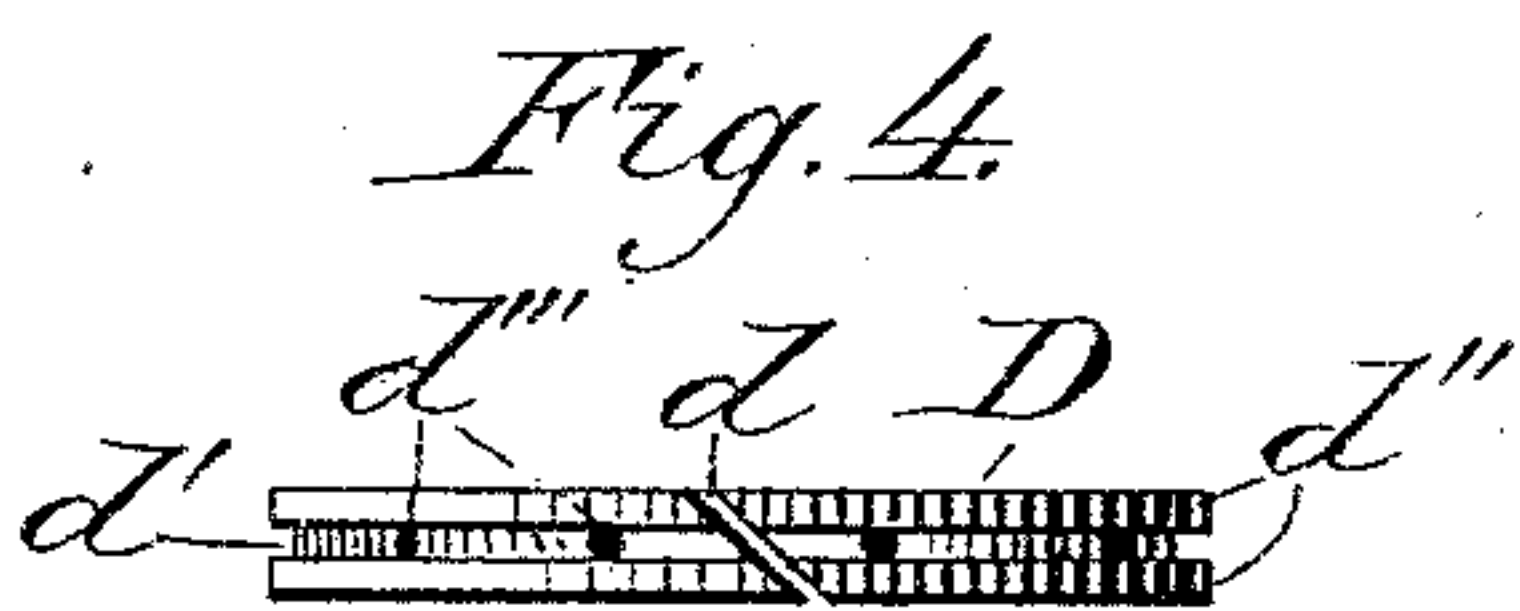


Fig. 4.

WITNESSES  
H. H. Schott  
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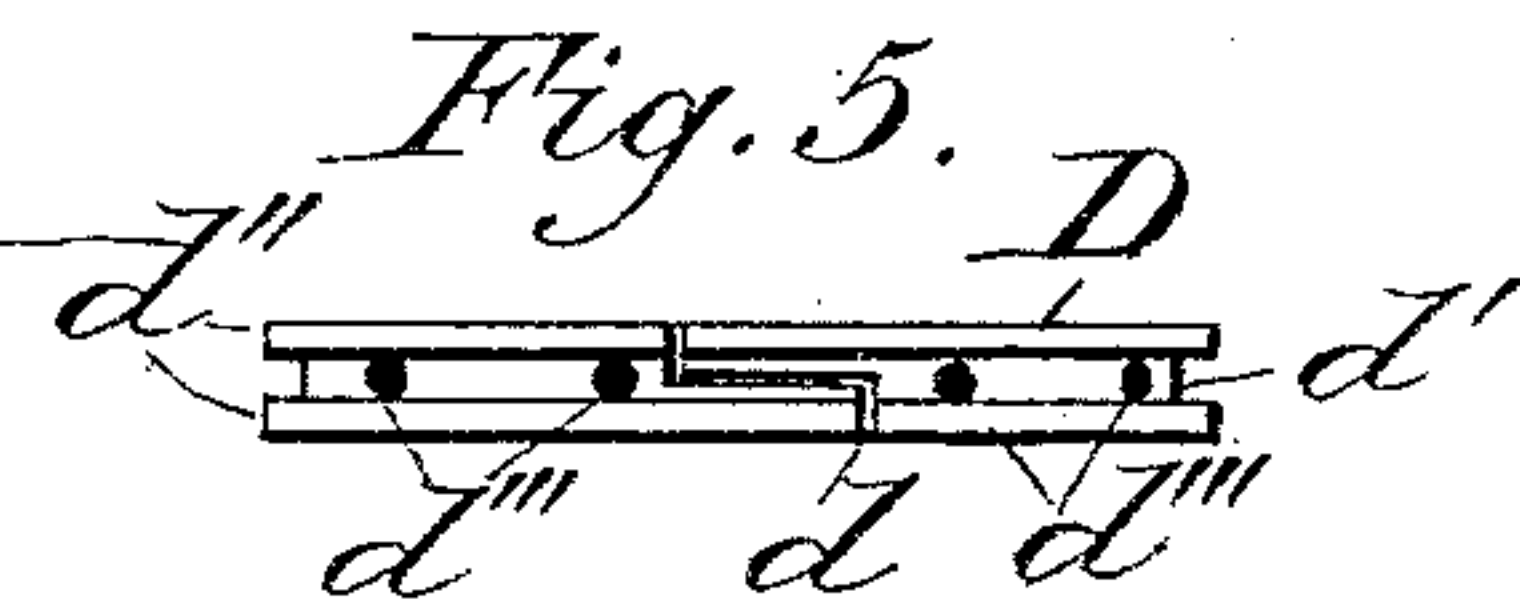


Fig. 5.

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# UNITED STATES PATENT OFFICE.

ALEXANDER SIMPSON AND ELLIS R. SIMPSON, OF SCRANTON, AND MATHIAS SPEICHER, OF ARCHBALD, PENNSYLVANIA.

## LUBRICATOR FOR PISTONS AND CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 331,831, dated December 8, 1885.

Application filed October 15, 1885. Serial No. 180,025. (No model.)

*To all whom it may concern:*

Be it known that we, ALEXANDER SIMPSON, ELLIS R. SIMPSON, and MATHIAS SPEICHER, all citizens of the United States, ALEXANDER SIMPSON and ELLIS R. SIMPSON residing at Scranton, and MATHIAS SPEICHER, residing at Archbald, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Lubricators for Pistons and Cylinders, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to the construction of pistons to pumps and the packing of the piston to always have a tight fit in the cylinder, and at the same time to keep the piston properly lubricated within the cylinder, and is an improvement upon the Patent No. 316,492 obtained by us April 28, 1885; and it consists in the special construction of some of the operative parts, as will be fully hereinafter described.

In the drawings, Figure 1 represents a side view of the device, partly in section. Fig. 2 represents a sectional view of the piston-head and its construction to receive the packing-rings. Fig. 3 shows a transverse section of same on line *x x* of Fig. 2. Fig. 4 represents an edge view of a divided spring packing-ring, and Fig. 5 represents a modification of the divided spring packing-ring represented in Fig. 4.

A represents a hollow piston-rod of the proper size.

B represents a piston-head of cast metal that is cast around and upon the hollow piston-rod, after which the head is turned to the proper length, and to be parallel with the longitudinal center of the rod A, and of a diameter a trifle less than the bore of the cylinder C. This head cast upon the piston-rod secures the rod and head together, making one complete and solid casting, thus saving the usual expense of fitting a connection of the two by bolts and nuts, as is usually the case in attaching a piston-rod to the head, and avoids all the liability of the rod becoming loose from the head, as there is nothing to come loose short of a break of the metal itself. After the piston-head is turned and fitted to the right size to easily go into the bore of the cyl-

inder, grooves *b* are, one, or any number more than one, turned in the surface of the circumference of the head to a proper depth. Then the head is bored to have the radial passages *b'* from the hollow piston-rod into the groove *b*, as seen in Figs. 2 and 3.

D represents a grooved and slitted spring packing-ring of the width to closely fit in the grooves *b* of the piston-head; curved to a perfect circle on its perimeter, and of a diameter, when free, to be a trifle greater than the inside diameter of the cylinder C, and so slitted at *d* that it can be compressed in diameter to easily enter and freely slide in the bore of the cylinder. This spring ring-packing is a trifle greater in its inner diameter than the diameter of the bottom of the groove *b* in the piston-head, has a circumferential groove, *d'*, in its edge with the rubbing-surfaces *d''* on each side of the groove *d'*, that bear against the inside surface of the cylinder in its reciprocations, and has holes *d'''*, from groove *d'*, toward the center of the head B, of which holes there may be the same number, and to agree in their location with the holes *b'* in the head B; or they may not so agree, as the spring-packing D can revolve in the groove *b* when desired. The ring D may be slit diagonally, as seen in Fig. 4, or it may be a slip-splice, as seen in Fig. 5, as the kind of slit or splice does not avail, as any kind of such splice that will allow the ring to expand or contract in the groove will answer the purpose.

The device for supplying the lubricating substance is the same as shown and described in said Patent No. 316,492, which consists of the piston-rod A, having the longitudinal hollow or bore A', a stopper or head, *a*, at its outer end to close the bore A', which bore is connected to a supply-tube, E, having a passage, *e*, therein, stop-cock or valve, F, a tallow, tar, or other proper lubricating cup, G, and a screw-forcing plug, H, as seen in Fig. 1.

The operation is as follows: The soft tallow, tar, or other lubricant is placed in the cup G. The screw-plug H is turned to screw the plug upon the lubricant in the cup, which forces a portion into opening or passage *e* of tube E, and thence into the bore A' of the piston-rod, filling it so as to force the lubri-



cant through the radial passages  $b'$  in the head B underneath the slitted spring-ring, D, forcing the ring-packing outward, so that the rubbing-surfaces  $d''$  will closely fit the bore of the cylinder C, and at the same time the tallow or lubricant will be forced under the spring packing-ring in groove  $b$ , so that all parts of the ring are supported upon the lubricant, while a portion of the lubricant is forced through holes  $d'''$  into the groove  $d'$  of the ring D, filling the groove  $d'''$ , through which the lubricant is forced into the circumferential groove  $d'$ , whereby it is brought in contact with the cylinder, thus completely lubricating the surfaces.

By the above construction it will be seen that by forcing the tallow through the intermediate passages against the rings D, it is possible to obtain great pressure against the rings, thus causing them to bear with any desired force against the cylinder C, thus obtaining an efficient and tallow packing, whereby the wear of the piston-head and cylinder is greatly diminished.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a lubricating device, the combination, with the soft-tallow cup provided with an opening in its bottom connecting with a hollow piston-rod, a piston-head formed integral with the rod, having grooves on its periphery, and provided with radial passages, and radial holes connecting with said passages, of a grooved and slitted spring ring-packing adapt-

ed to fit in said grooves and bear against a cylinder, substantially as described.

2. In a device for lubricating with a semi-fluid or soft tallow, the combination, with the cup containing the soft tallow, a forcing-plug, a check cock or valve, and means for conveying the semi-fluid to and between the piston-head and cylinder, of a slitted spring-ring packing adapted to surround the piston-head, substantially as described.

3. The combination, with a cylinder, of a hollow piston having peripheral grooves therein, and openings leading from the interior of the hollow piston to said grooves, split rings located within said grooves and having openings for the escape of the lubricant, and a hollow piston-rod connected with the hollow piston-head, substantially as described.

4. The combination, with a cylinder, of a hollow piston having peripheral grooves therein, and openings leading from the interior of the hollow piston to said grooves, and split rings located within said grooves, and means whereby the lubricant when escaping will cause the rings to expand and form a tight packing between the cylinder and piston, substantially as described.

In testimony whereof we have affixed our signatures in presence of two witnesses.

ALEXANDER SIMPSON.

ELLIS R. SIMPSON.

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Witnesses:

E. W. SCHARAR,

URIAH McDONNELL.