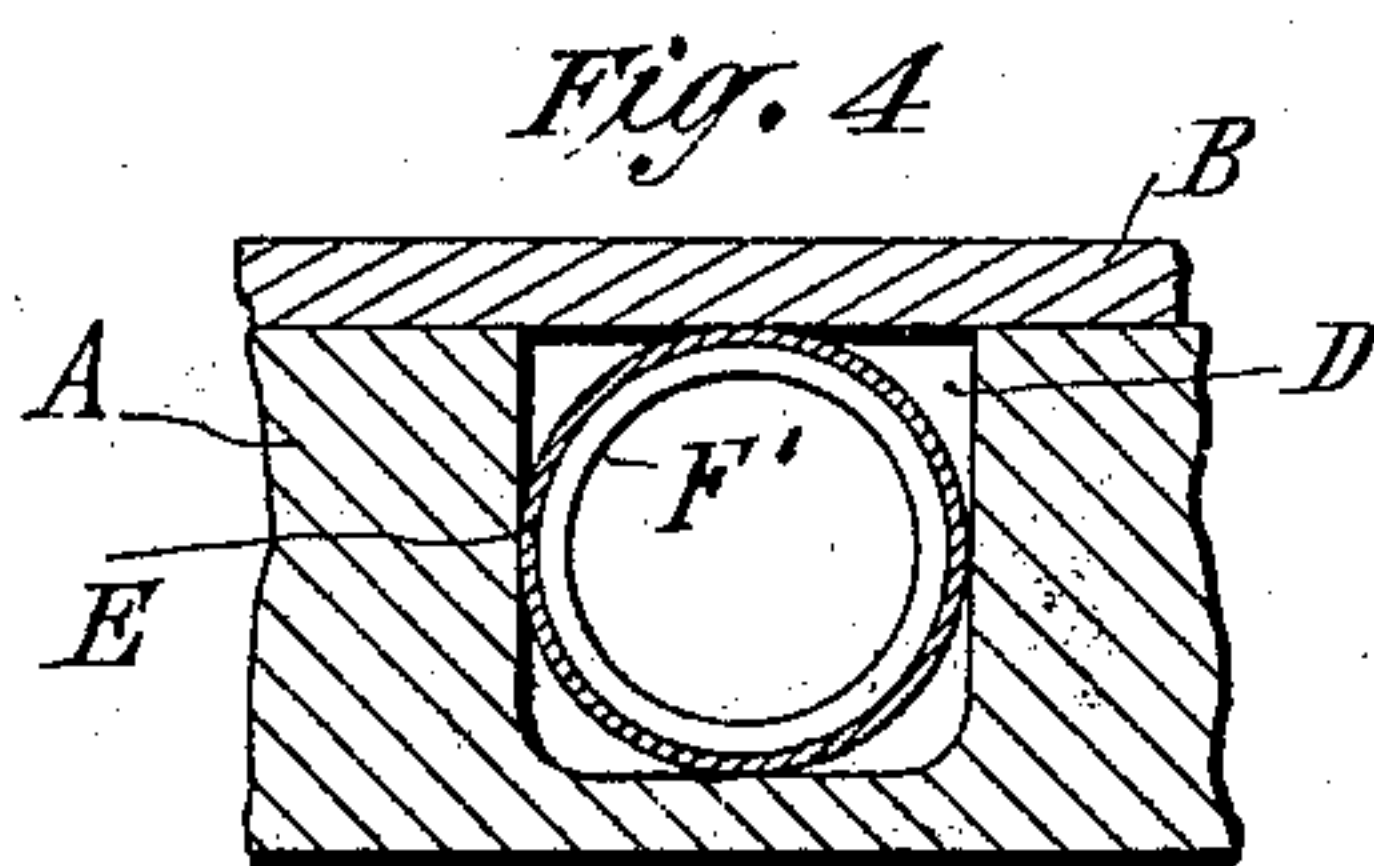
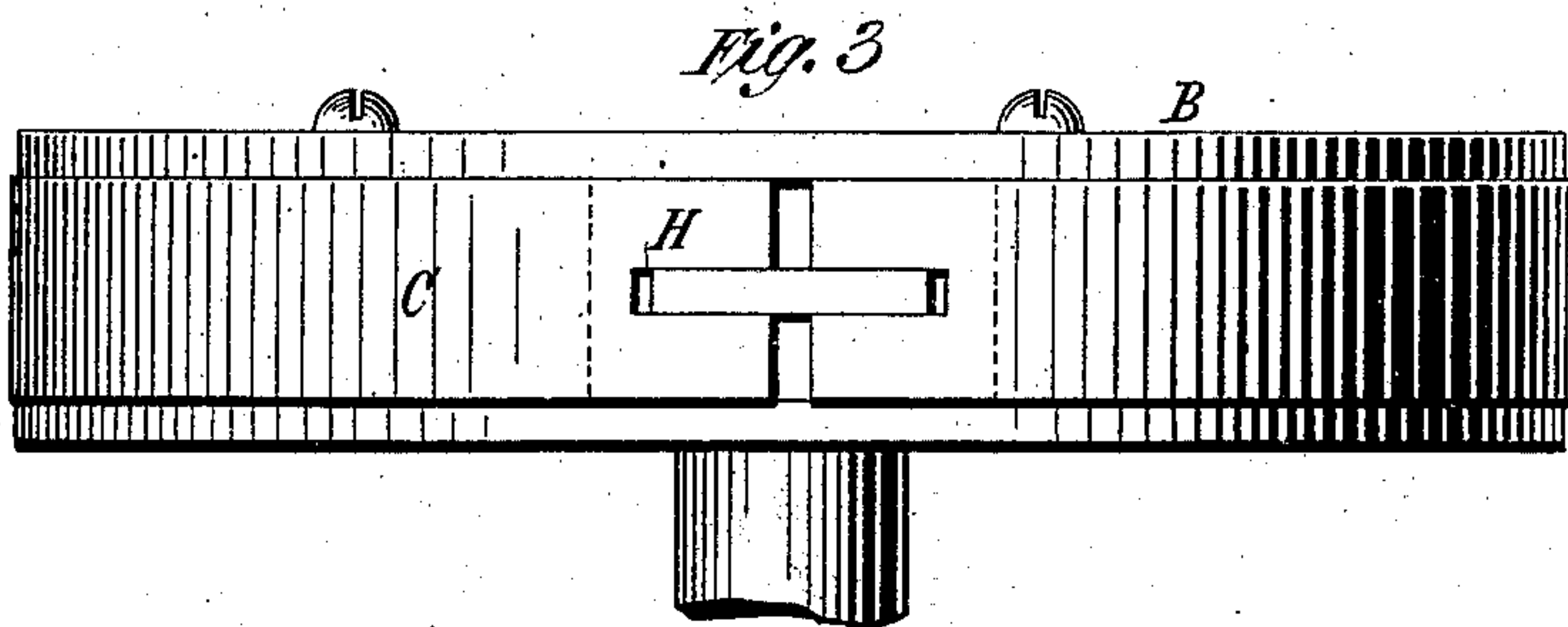
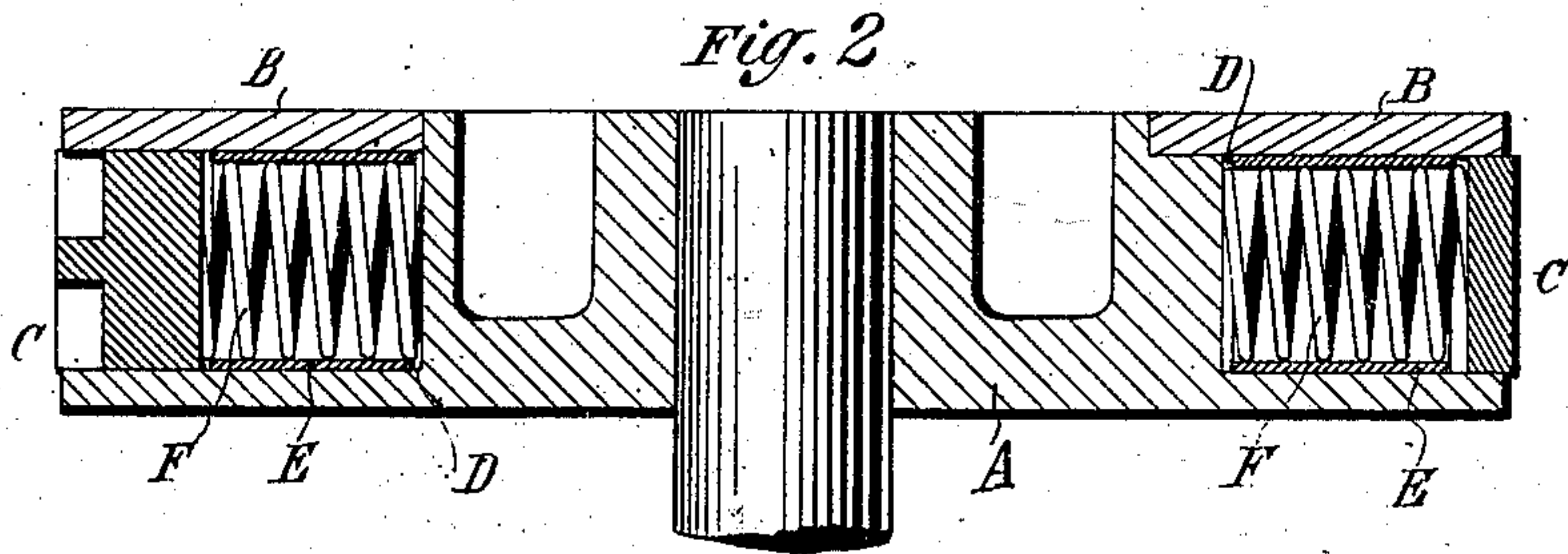
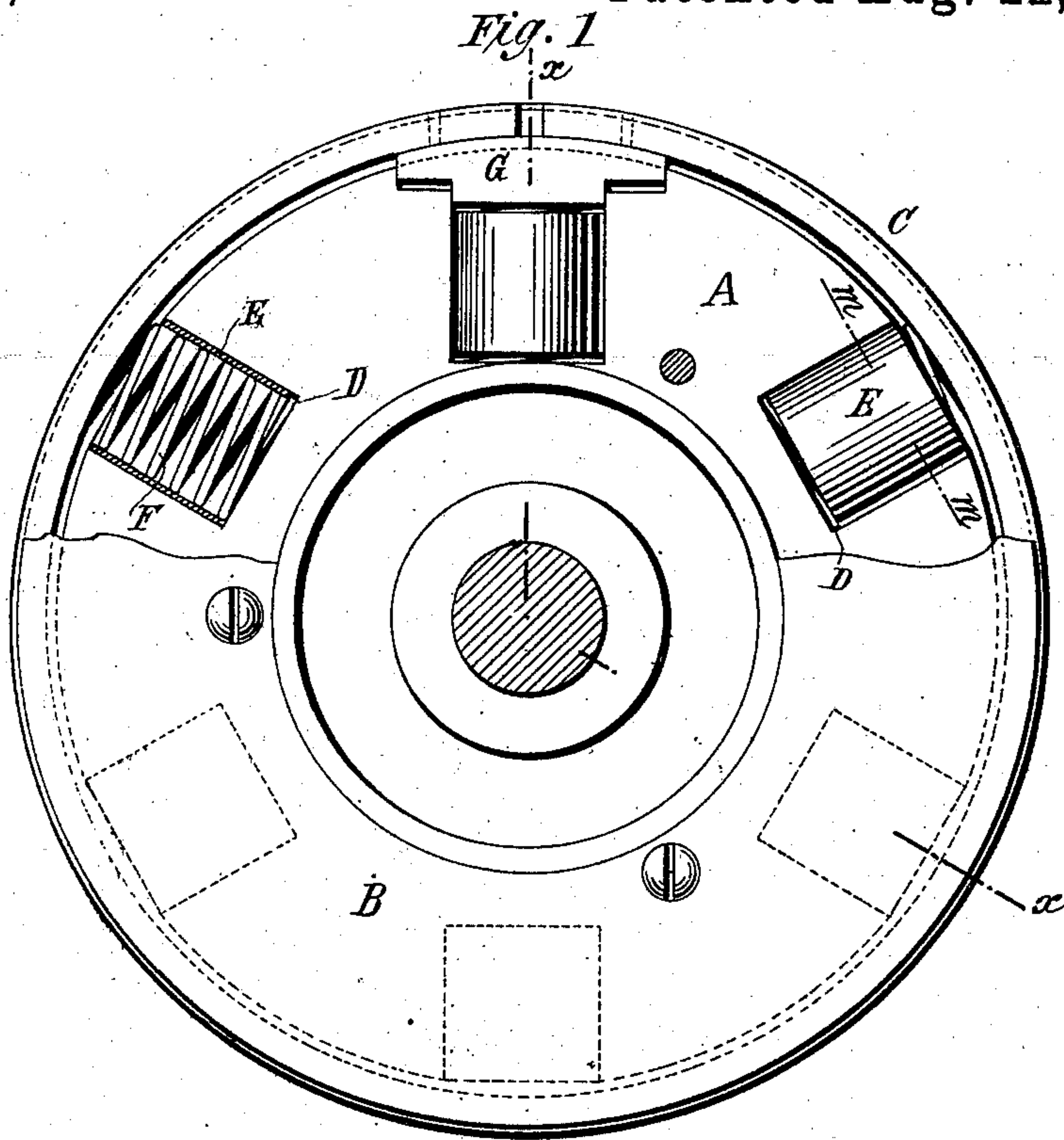


(No Model.)

I. A. KILMER.
PISTON PACKING.

No. 503,859.

Patented Aug. 22, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

IRVING A. KILMER, OF NEWBURG, NEW YORK.

PISTON-PACKING.

SPECIFICATION forming part of Letters Patent No. 503,859, dated August 22, 1893.

Application filed February 20, 1893. Serial No. 462,956. (No model.)

To all whom it may concern:

Be it known that I, IRVING A. KILMER, of Newburg, in the county of Orange and State of New York, have invented a new and useful
5 Improvement in Piston-Packing, of which the following is a specification.

The invention relates to that class of pistons in which snap-rings are used as a packing, and spiral springs are located within the
10 rings for forcing them outward; and the invention consists, more especially, in the construction of the seat for the springs, as hereinafter set forth.

One mode heretofore employed for supporting the spiral springs used for operating the expansion rings of a piston-packing is to construct the body of the piston with radial sockets, of cylindrical cross-section, in the bottom of the peripheral channel in which the rings
20 are seated. These sockets may be made either by the use of cores in the casting or they may be drilled afterward; but, in whatever way they are made, the construction is necessarily expensive. Another way heretofore suggested has been to form the piston in
25 two parts, viz: a body part and a follower, and, in casting the body part, to make it with radial recesses open on the side next to the follower, the spiral springs being laid in the square-shaped recesses thus formed. This is
30 a relatively cheap mode of building a piston, as compared within the first construction above named. The molds are readily made and the patterns easily drawn. One difficulty,
35 however, is that the recess is approximately square in cross-section, so that it does not support the circular spiral spring on all sides; and, again, the inner faces of the recesses, not being dressed up, are apt to be rough so as
40 to interfere with the free action of the spring. To obviate these difficulties, I propose to build my piston with a detachable follower, and to cast the body with radial recesses open on the side toward the follower, all as above
45 described, and then to introduce short open-ended cylindrical tubes into these recesses—the springs being inclosed in these tubes. The tubes will fit the recesses with sufficient accuracy, and being cylindrical they will give
50 full support to the springs on all sides; also, being smooth on the inside, they permit per-

fect freedom of movement in the coils of the spring as it contracts and expands.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a piston built on the improved plan, the follower plate being removed. Fig. 2 is a vertical section along the dotted line $x-x$ of Fig. 1, the follower
60 being in place. Fig. 3 is a side view in elevation; and Fig. 4 is a section on the dotted line $m-m$ of Fig. 1, with the follower in place.

Referring to the several views, A is the body of the piston, B the follower, and C an expansion ring. As shown, the body is cast
65 with a number of radial recesses D D, open on the side toward the follower. Into each of these recesses there is introduced a short open tube, E; and in this tube there is placed a spiral spring F. The springs should be long
70 enough to rest on the bottom of the recess, and at the same time press against the ring with sufficient force to hold it in contact with the walls of the cylinder. When the follower is in place, the springs and their inclosing
75 tubes are securely confined in the recesses.

As shown in the drawings, the cut in the ring is closed by a circumferential rib on the face of a segmental block G, which at this point is interposed between the ring and the
80 spring. This rib enters notches formed in the adjacent ends of the ring, as shown at H in Fig. 3. This construction, however, forms no part of the present invention.

I do not propose to limit myself to a piston
85 having a single expansion ring; as, manifestly, the invention as above set forth would be applicable to pistons in which a plurality of such rings are used.

What is claimed as new is—

The combination in a piston, of one or more expansion rings, spiral springs arranged in radial recesses in the body of the piston, which recesses are closed on one side by a follower,
90 and open ended tubular or sleeve supports surrounding the springs and interposed between them and the walls of the recesses, substantially as shown.

IRVING A. KILMER.

Witnesses:

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