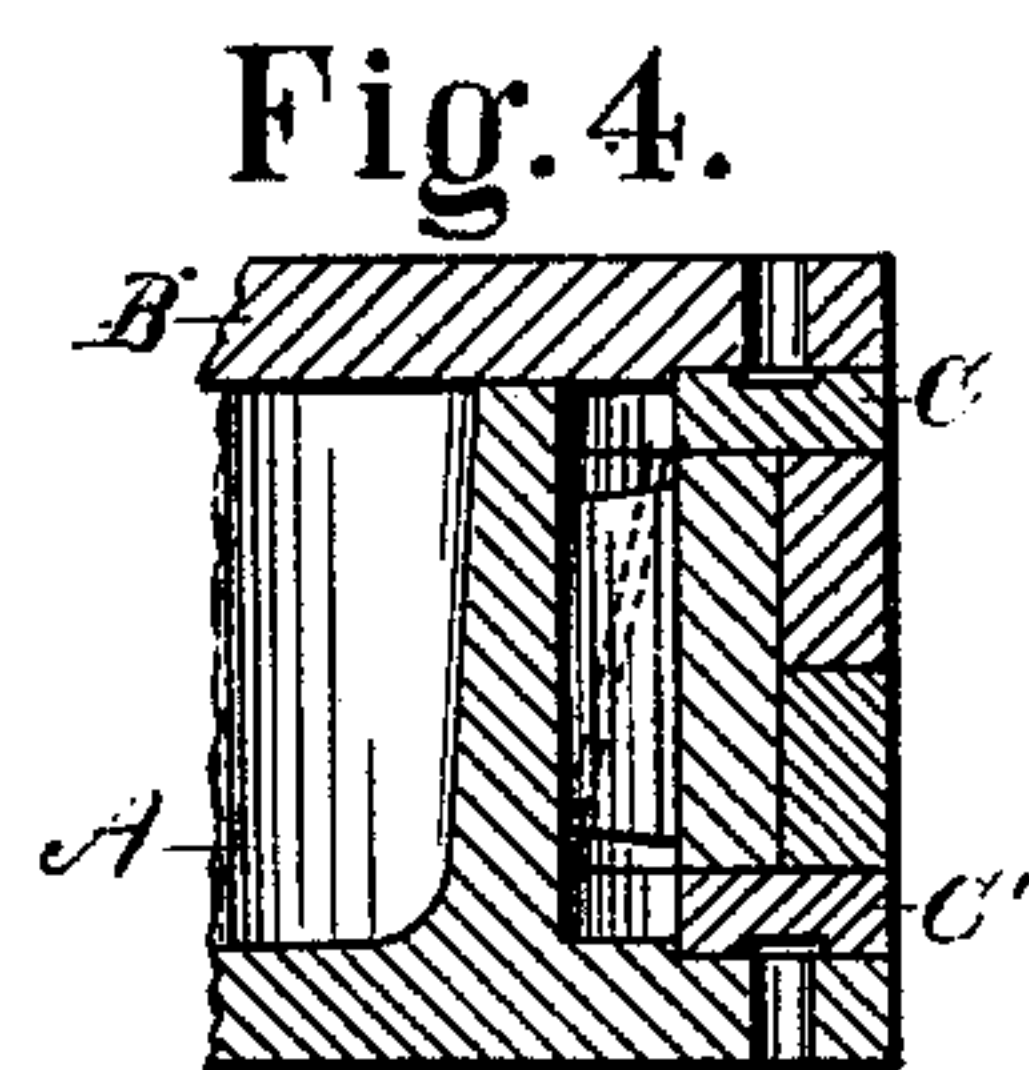
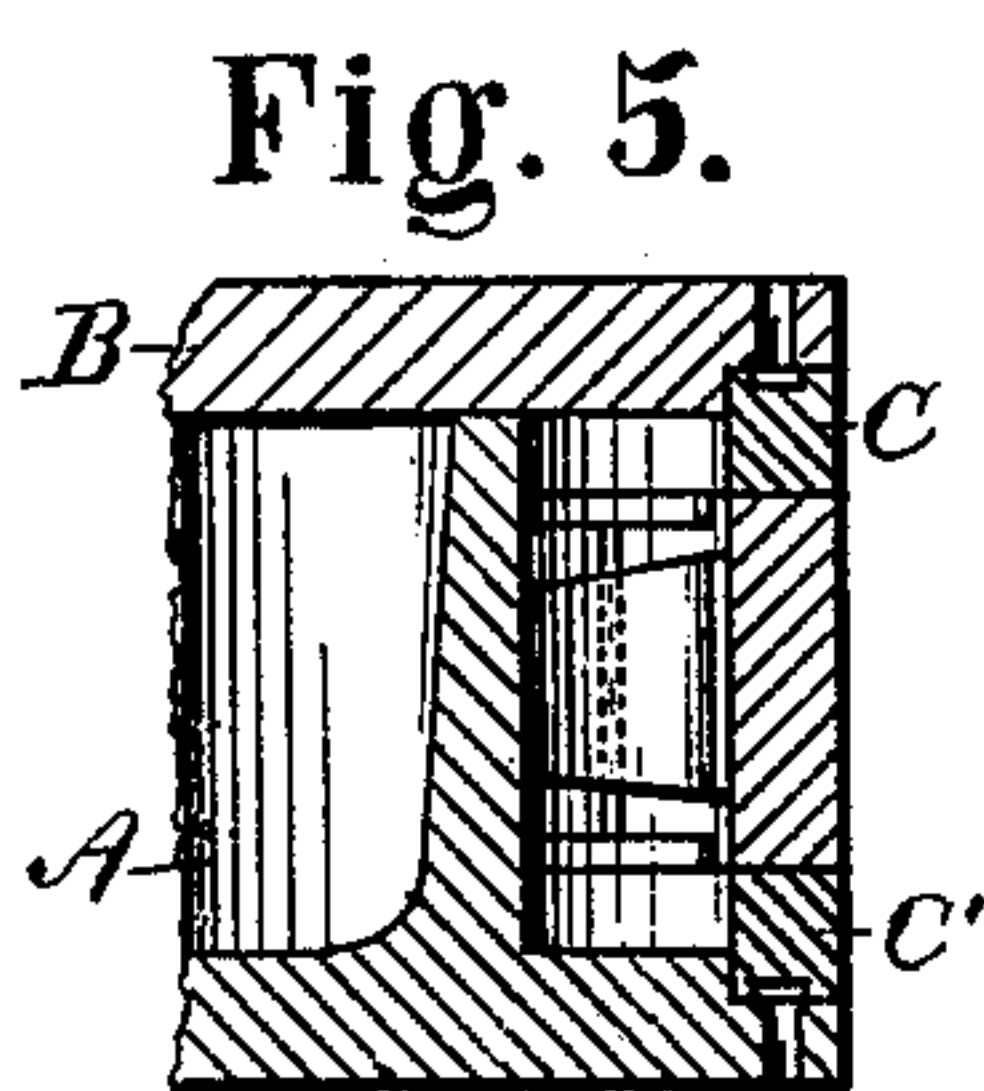
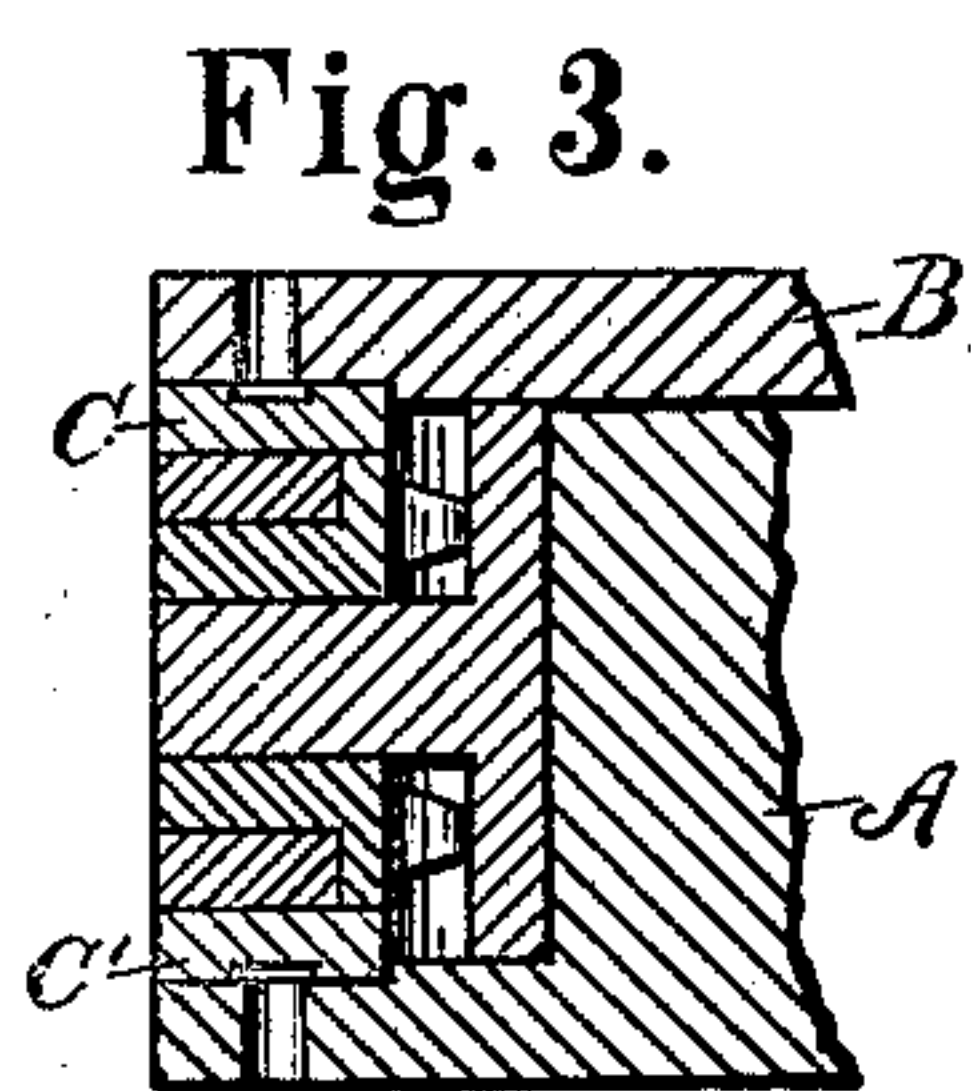
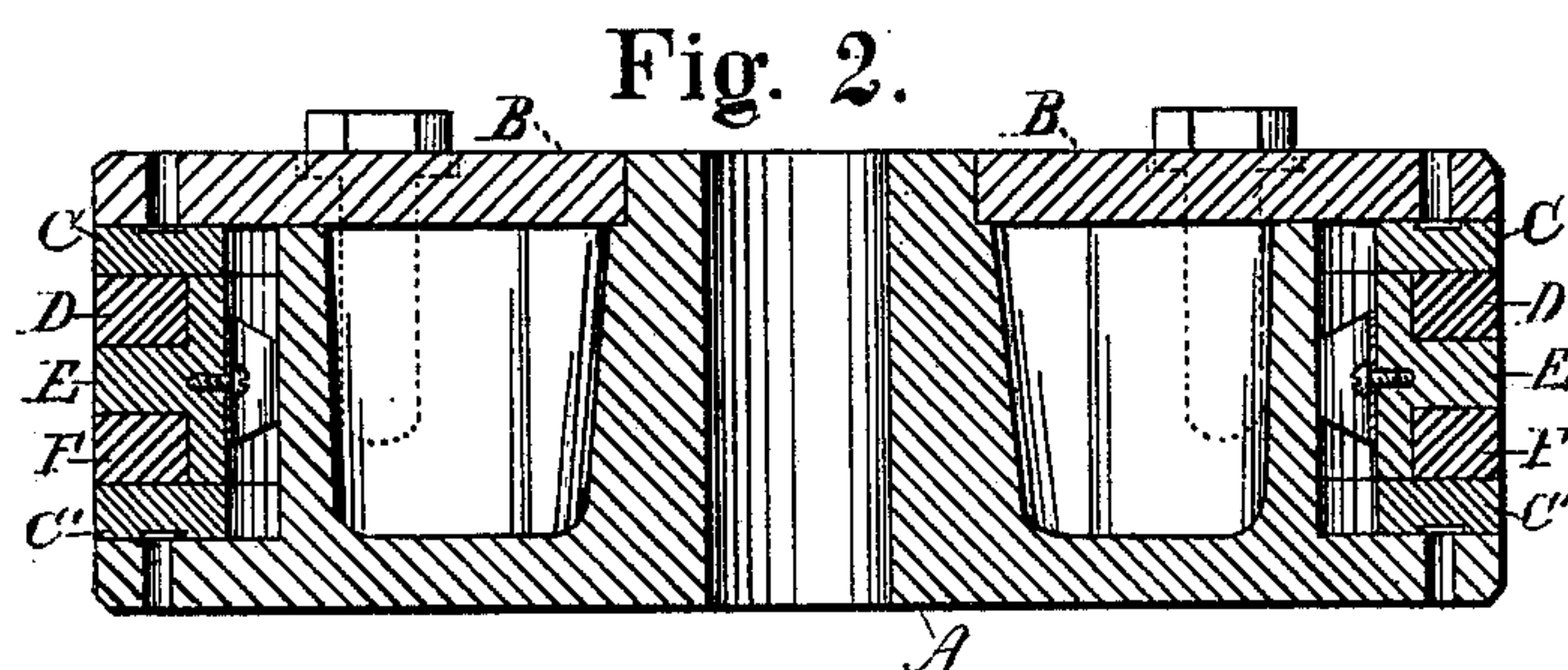
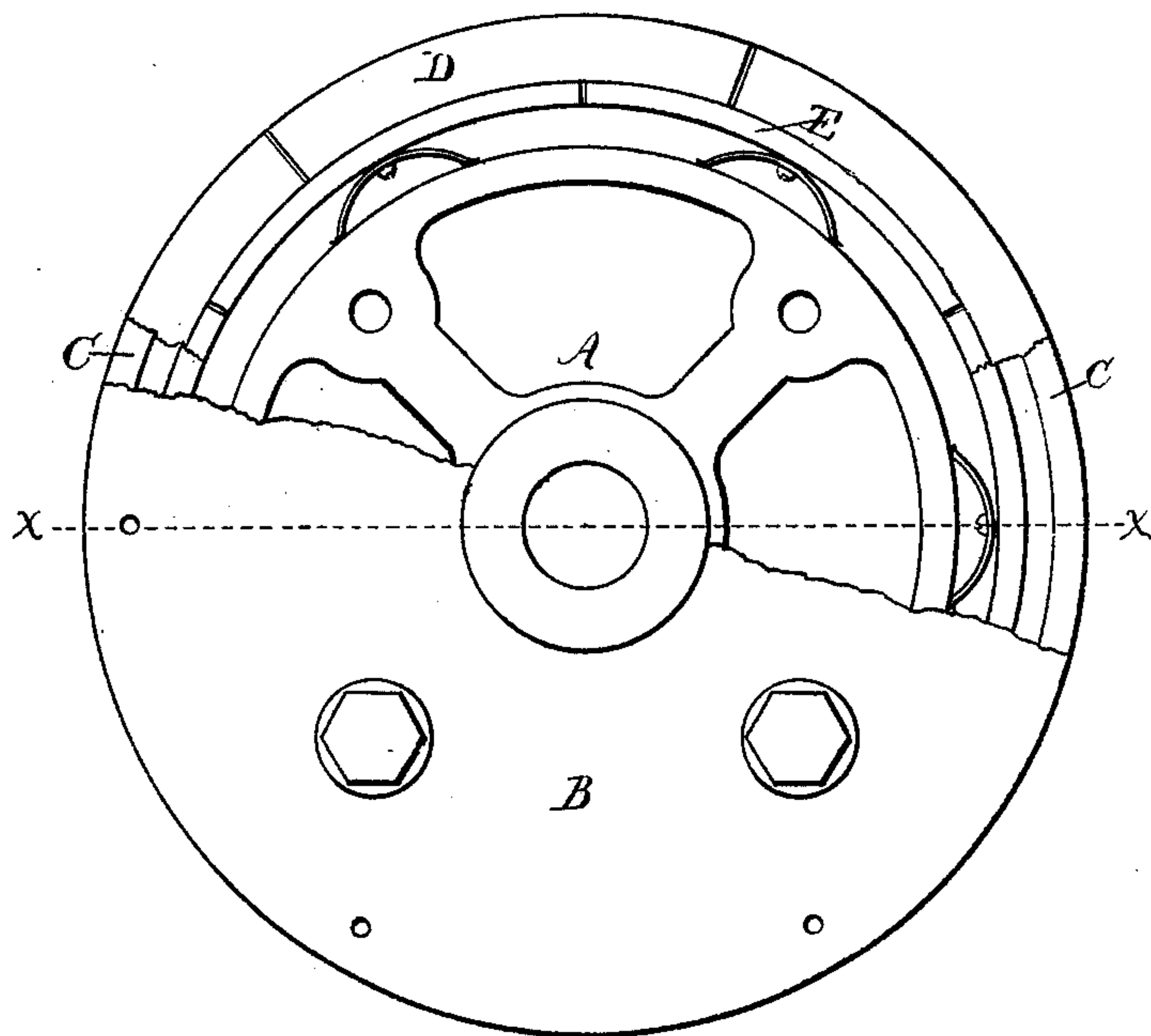


(No Model.)

J. SEEBERGER.
Piston Packing.

No. 231,196.

Fig. 1. Patented Aug. 17, 1880.



Witnesses:

H. Lisle Fleming,
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UNITED STATES PATENT OFFICE.

JOSEPH SEEBERGER, OF WEST TROY, NEW YORK.

PISTON-PACKING.

SPECIFICATION forming part of Letters Patent No. 231,196, dated August 17, 1880.

Application filed May 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SEEBERGER, of the village of West Troy, in the county of Albany and State of New York, have invented
5 a new and useful Improvement in Piston-Packing, of which the following is a specification.

This invention relates to pistons for steam and hydraulic engines, and for pumps in which
10 expansive metal rings may be used as packing; and it consists in causing them to pack laterally against sides of recess formed to receive the same between head and follower of piston, as well as outwardly, in the usual manner,
15 against inner surface of cylinder or of pump-barrel, wherein said piston may operate, my object being to increase the efficiency of engine or pump by preventing, as hereinafter more fully described, the usual leakage between packing-rings and sides of recess aforesaid.

In the accompanying drawings, Figure 1 is a plan or top view of piston containing my improvement, which, for convenience of illustration, may be as used in vertical steam-engines, with portions of follower or top plate and ring immediately beneath broken away.
25 Fig. 2 is a vertical transverse section of the same, taken through dotted line *xx*, *XX* in Fig. 1; and Figs. 3, 4, and 5 show modifications.

Similar letters of reference in each indicate corresponding parts.

A represents the head or main portion of piston, formed, as usual, with skeleton-frame or spider and bottom plate, and B the follower or top plate, bolted to the spider, as shown, the space between outside of spider being the recess for packing before mentioned. C and C'
35 are continuous rings placed in said recess, respectively, just below the top and above the bottom plates, which said rings may be formed on the sides adjoining the same with annular grooves communicating with cylinder through perforations in plates, also as shown.

Between the rings C C', and engaged thereby, are placed packing-rings D, E, and F, in segments, with lap-joints. The central ring, E, may be T-shaped and inwardly overlap rings D and F on either side, as shown in Fig. 1;
45 50 also, said central ring may be provided with

suitable springs, through the agency of which the same, and consequently in connection therewith said side rings, may be pressed outward and against inner surface of cylinder.

To insure perfect joints the various rings 55 mentioned should be respectively ground together and against sides of packing-recess.

The operation of this device is as follows:

When steam is admitted above or below the piston, as the engine may be on either stroke, 60 it may pass through the perforations before mentioned in top or bottom plate, and, traversing the surface of the continuous ring adjacent, exert sufficient pressure upon the same to force all rings contained therein toward opposite side of packing-recess, thus causing the 65 corresponding or farthestmost continuous ring to form a steam-tight joint thereon, and closing all side joints between said rings, the effect of this being to prevent the escape of steam 70 that may have been admitted purposely or otherwise within said recess; for, though not essential in the working of this device, steam may be allowed to enter recess through slight openings left between piston-plates and continuous rings on the sides, from which they 75 may be driven during the operation above described, to assist springs in pressing packing-rings outwardly, as aforesaid. Steam may also be accumulated within recess by being retained 80 after each movement of piston, when the rings would be driven in reverse direction immediately as stroke was reversed, and side where admitted closed before the same could be exhausted, thus insuring a constant and equal 85 pressure of packing upon cylinder throughout entire length, which, in all engines cutting off steam before completion of stroke, would otherwise be greatest at its commencement, thereby causing an enlargement of cylinder 90 at each end and an unequal wear at intermediate points. In low-pressure engines particularly, without this reserve pressure within recess, the action of packing outwardly would be very uncertain if steam were relied upon 95 wholly or in part to operate the same. The advantage, therefore, of my system is that by properly regulating the springs they may be relied upon entirely to give required outward pressure and steam excluded from recess; 100

though if by chance any should be admitted by being retained therein the effect would be beneficial. To insure the exclusion of steam the sides of recess may be turned out to width
 5 of continuous rings, so as to form offsets or shoulders, as shown, against which inner edges of same may bear and, forming joints thereon, prevent leakage within during their lateral movement. This arrangement would be espe-
 10 cially desirable in horizontal engines, as then said rings could be turned about to compensate for unequal wear upon them and bottom edges of piston-plates, and would, by bearing thus afforded, support and keep the same
 15 raised above the lower inside surface of cylinder.

In previous attempts at side packing, when steam has been conveyed against edges of various rings to force them against each other
 20 and opposite side of recess, it has also been insinuated between the different sections, forcing them apart, and thus practically defeating the very object sought to be accomplished in this manner. Since as each section is in a man-
 25 ner independent of every other, it is evident that they will be forced to their respective positions at different velocities, varying with the freedom of steam in reaching and operating each particular section. The result is irregu-
 30 lar and unnecessary working of these different sections, whereby their integrity is soon impaired. Another advantage, therefore, of my system is that, no matter in what number of portions the packing may be divided, they will
 35 at all times be confined in proper position between the continuous rings, and by them prevented in the alternate motion from side to side of recess from rolling upon and against each other and the surface of cylinder. It
 40 also follows that the same may lose longitudinally by wear or otherwise, and still perform their proper functions by being thus confined, the greatest advantage of the lateral packing movement, besides preventing leakage
 45 through and around piston, being compensa-

tion for side wear between rings, as above explained.

When the rings C and C' are grooved, as indicated, less perforations are required to admit and diffuse the steam between sides of re-
 50 cess and surfaces of same; but the operation of device may be equally effective if the grooves are dispensed with; also, notches may be used to admit steam instead of perforations, or steam may be conveyed around edges
 55 of aforesaid plates forming sides of recess, and thus admitted.

I do not claim, broadly, the use of continuous rings in packing-recess of pistons, as I am aware that the same have been used before to
 60 operate differently with different objects in view. Nor do I claim, broadly, T-shaped rings therein, as I am also aware that the same have been used before, though not as packing, and without being cut in segments; but
 65

What I do claim, and desire to secure by Letters Patent, is—

1. In a piston-packing, the continuous side rings, C and C', so arranged in connection with head and follower that steam may be admitted
 70 between them and a lateral motion given said side rings within packing-recess, all substantially as shown and described, for the objects herein set forth.

2. In combination with the side rings, C and C', constructed and arranged as herein described, segmental packing-rings D, E, and F, operated by springs, all arranged substantially
 75 as and for the purpose specified.

3. The combination of the T-shaped seg-
 80 ments of central ring, E, and plain rectangular segments of auxiliary side rings, D and F, as shown by cross-section, said auxiliary rings being fitted to central ring and inwardly overlapped thereby, substantially as and for the
 85 purpose specified.

JOSEPH SEEBERGER.

Witnesses:

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