No. 721,287. PATENTED FEB. 24, 1903.

L. S. & E. B. CUSHMAN.

PACKING FOR ENGINES.

APPLICATION FILED NOV. 13, 1902.

NO MODEL.

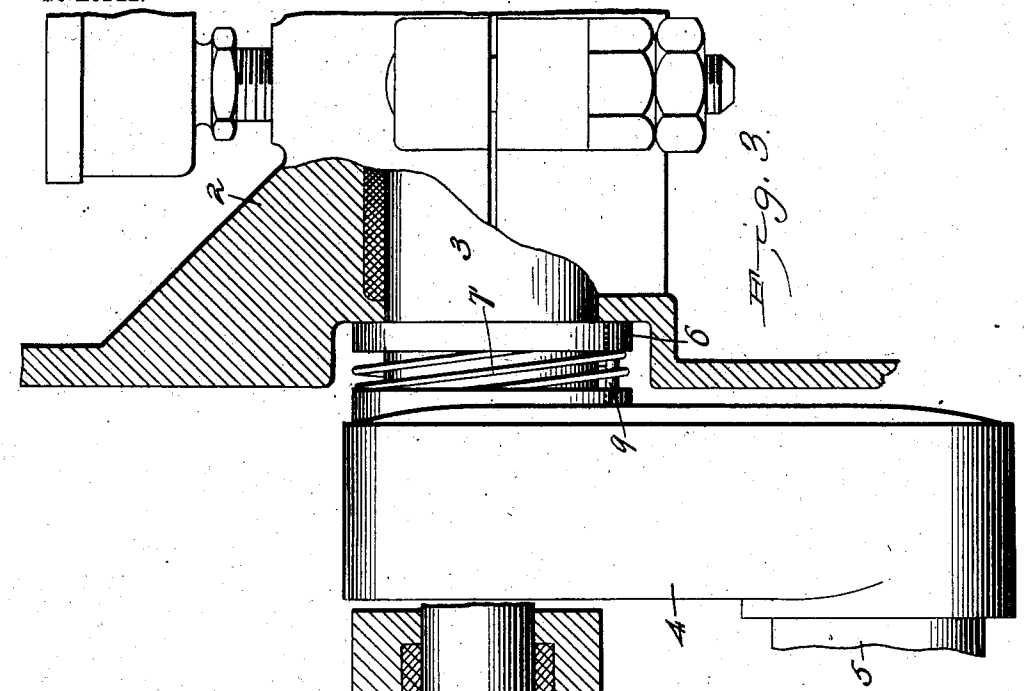


Fig. 3.

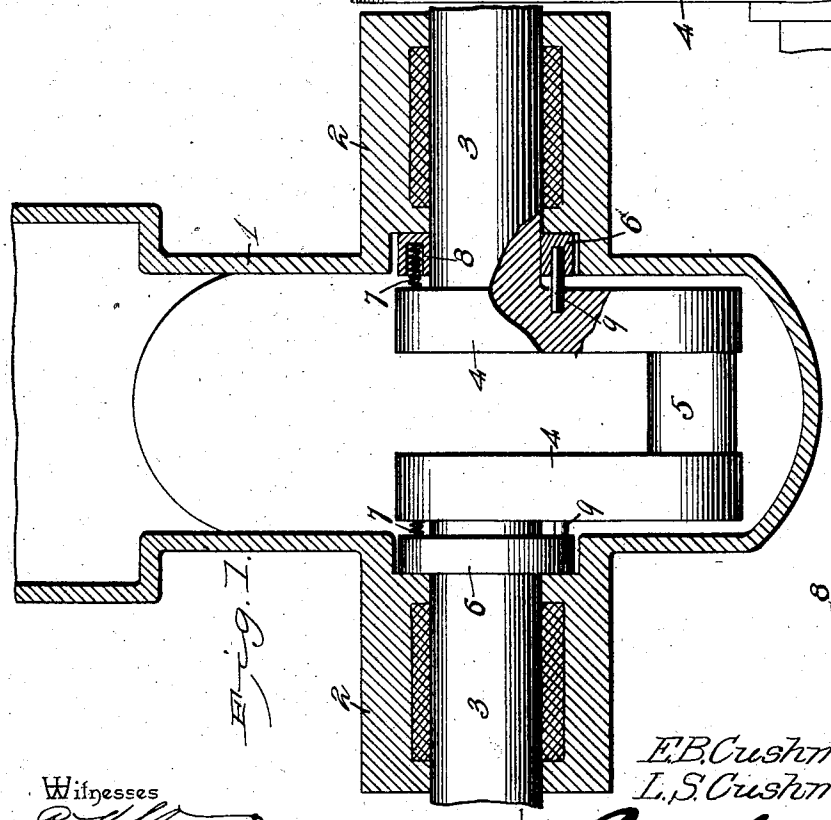


Fig. 1.

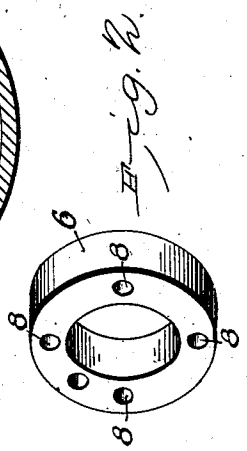


Fig. 2.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LESLIE S. CUSHMAN AND EVERETT B. CUSHMAN, OF LINCOLN, NEBRASKA.

PACKING FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 721,287, dated February 24, 1903.

Application filed November 13, 1902. Serial No. 131,251. (No model.)

To all whom it may concern:

Be it known that we, LESLIE S. CUSHMAN and EVERETT B. CUSHMAN, citizens of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented a new and useful Packing for Gas-Engines, of which the following is a specification.

The present invention relates to certain improvements in gas-engines, and particularly to engines of the two-cycle type wherein the crank-casing is employed as a compression-chamber for the initial compression of air to mingle with the hydrocarbon oil or vapor or where the chamber is employed both as a mixing and compression chamber for the explosive compound.

The principal object of the invention is to provide means for guarding against the leakage of fluid from the compression-chamber, and to this end comprises, in general, a spring-pressed packing ring or rings held against the sides of the casing and extending around and revolving with the crank-shaft of the engine.

With this and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of the lower portion of the crank-casing of a gas-engine, illustrating the arrangement of packing-rings in accordance with the invention. Fig. 2 is a detail perspective view of one of the packing-rings. Fig. 3 is a view of a portion of the crank-casing, illustrating a slight modification of the invention.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

In the drawings, 1 indicates the crank-casing of an ordinary form of explosive-engine, the casing being provided with boxes 2, forming bearings for a crank-shaft 3, the two members of the shaft being secured together by the cranks 4 and crank-pin 5. The arrangement of this portion of the mechanism may be that ordinarily followed in the construction of gas-engines, and the casing proper may be provided with openings for the passage of the shaft and the bearings formed of separate members carried by the engine-bed or otherwise suitably supported.

The inner faces of the crank-casing at the point where the crank-shaft extends through the casing-openings are finished, and against each bears a ring 6, fitting snugly around the shaft and revolving therewith. The ring is pressed against the finished face of the casing by springs, which may take the form of small helical compression-springs 7, bearing at one end against the crank and at the opposite end bearing against the bottom of a recess or opening 8, formed in the ring for the reception of the spring. The springs may be of any desired number, and in practice it is preferred to employ three or more springs in order to evenly distribute the pressure.

To insure the turning of the ring with the shaft, the ring is recessed for the reception of a pin 9, projecting from the adjacent face of the crank, the pin insuring rotative movement of the ring with the shaft without preventing longitudinal movement thereof under the stress of the springs in order to automatically take up the wear.

In some cases we have found a single helical spring sufficient for the purpose, the spring 7′ in this case being arranged in the manner shown in Fig. 3.

The ring fits snugly around the shaft and prevents any possibility of escape of fluid between the ring and shaft, while the springs keep the outer face of the ring in close contact with the finished face of the crank-casing and form a fluid-proof joint therewith.

Having thus described the invention, what is claimed is—

1. The combination with a revoluble shaft, of a casing having an opening for the passage of the shaft, a ring surrounding the shaft, means for securing the ring to an integral portion of the shaft, and means for forcing the ring into contact with the inner face of the casing.

2. The combination with a revoluble shaft, of a casing having an opening for the passage

of the shaft, a ring surrounding the shaft, means for securing the ring to an integral portion of the shaft, and springs for forcing the outer face of the ring into engagement with the inner face of the casing.

3. The combination with a revoluble crank-shaft, of a casing having an opening for the passage of the shaft, a ring surrounding the shaft, a pin connecting the ring to the crank as to insure the revoluble movement of said ring with the shaft, and springs extending between the outer face of the crank and the adjacent face of the ring.

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

LESLIE S. CUSHMAN.
EVERETT B. CUSHMAN.

Witnesses:
I. H. HATFIELD,
E. P. COLEMAN.