

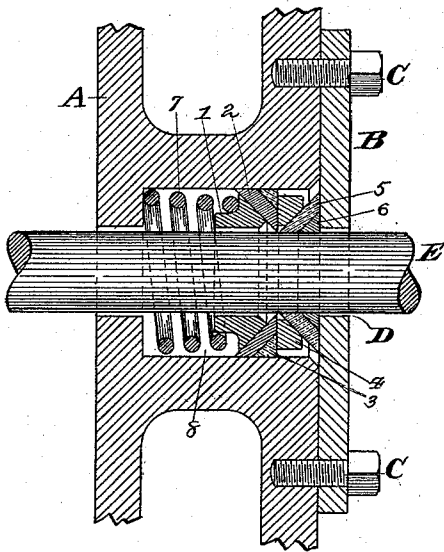
(No Model.)

J. J. SULLIVAN.  
PACKING RING.

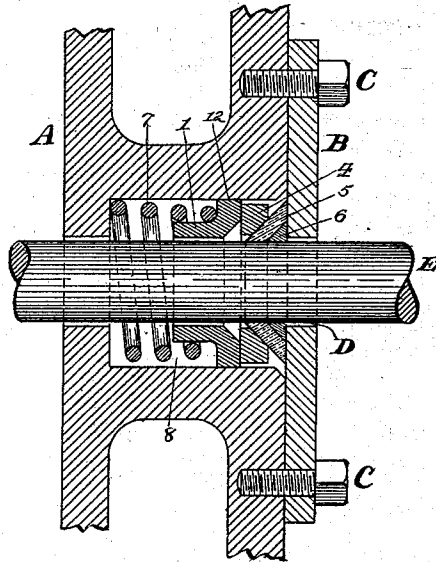
No. 410,127.

Patented Aug. 27 1889.

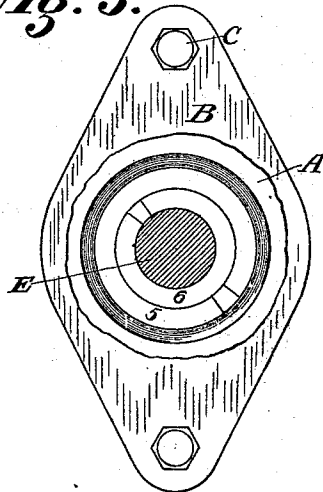
*Fig. 1.*



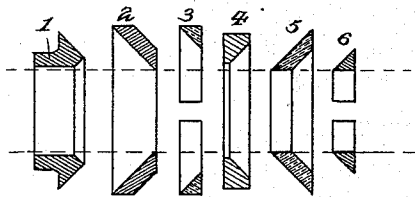
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

JEREMIAH J. SULLIVAN, OF LUDLOW, KENTUCKY.

## PACKING-RING.

SPECIFICATION forming part of Letters Patent No. 410,127, dated August 27, 1889.

Application filed March 13, 1889. Serial No. 303,112. (No model.)

*To all whom it may concern:*

Be it known that I, JEREMIAH J. SULLIVAN, a citizen of the United States, and a resident of Ludlow, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Packing-Rings, of which the following is a specification.

This invention has for its object to improve the packing devices for which Letters Patent No. 389,772 were issued to me September 18, 1888; and the object of the present invention is to provide novel means for obtaining a joint which will prevent leakage of liquid and gaseous fluids. This object I accomplish by the construction and operation of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a central vertical section illustrating both forms of my improvement. Fig. 2 is a similar view illustrating my packing applied to a piston-rod. Fig. 3 is an end elevation with the cap broken away to show the rings in position. Fig. 4 is a longitudinal central vertical section of the packing-rings shown in Fig. 1.

A represents a cylinder-head, and B a cap secured on the outer end thereof by set-screws C.

D represents a central orifice through which the piston-rod E freely passes, the size of this orifice being sufficient to allow the vibrations of the piston-rod.

In the preferred form of my device a spring supports and keeps the packing device in place, yielding to the slight vibrations of the piston-rod, yet preserving a tight joint under all conditions.

In Fig. 1 I have shown a prolonged cylinder-head made with a cylindrical recess 8. My packing device is to be applied to the cylindrical portion of said recess, as shown in Fig. 1, where the numeral 1 indicates a ring or follower, the outer periphery of which at its front end is inclined or beveled to fit a corresponding beveled split ring 2.

3 represents a wedge-shaped ring interposed upon the beveled ring 2, rings 2 and 3 serving as a cylindrical packing. They abut against a wedge-shaped ring-follower 4, pref-

erably made integral, abutting against the rings 2 and 3. When a double packing is to be employed upon both cylinder and piston-rod, the wedge-shaped follower 4 is supported upon a beveled split ring 5 and a wedge-shaped ring 6, placed in relation to each other, as shown in Figs. 1 and 2, and forming a packing-joint around the piston-rod E and against the cylindrical cap B. An adjustable gland or follower may be used in lieu of this stationary cap B, if desired; but it is not essential.

It will be observed in Fig. 1 that as the beveled split rings 2 and 5 and the wedge split rings 3 and 6 wear the recoil of spring 7 forces the follower 4 up on its incline and takes up lost motion and preserves a tight joint, and a similar operation occurs in Fig. 2, where the rings 5 and 6, and the follower 4, spring 7, operate in the same manner. In said Fig. 2, however, I dispense with the rings 2 and 3 and obtain the packing by the extension of the periphery of the follower 1, so as to have said periphery 12 bear against the inner periphery of the cylindrical recess 8, the spring operating against the follower 12, and the beveled follower 4, bearing the packing-rings 5 and 6, taking up lost motion as said packing-rings wear. The inner orifice 13, leading into the cylinder, is likewise larger than the piston-rod E, so as to allow vibrations of the same, and the inner periphery of the follower 12 is of similar size, allowing a slight play to the piston-rod E. The packing-rings 5 and 6, being split rings, move up or down to accommodate this vibration, and spring 7 yielding thereto; but inasmuch as the follower 12 is in contact with the periphery or recess 8, and the beveled ring 5 and wedge-shaped ring 6 forming a packing around the orifice D, no escape of steam fluid or gas occurs by reason of such vibrations.

I do not wish to limit myself to the use of the packing-rings 5 and 6, in combination with the rings 2 and 3 and the beveled follower 4, as I believe I am the first broadly to employ the beveled ring 5 and the wedge-ring 4 as a packing device, when used with ordinary glands, and the spring or other suitable means for preserving the compact pack-

ing-joint. It will be observed that the rings 2 and 3 and 5 and 6 are split rings and placed so as to break joints.

Having described my invention, what I claim is—

1. In a packing, the combination of the beveled split ring 5 and wedge-shaped split ring 6, one resting by its inclined face upon the inclined face of the other, with the intermediate rigid follower 4, having an inclined face resting on the inclined face of the beveled ring, the inside rigid follower 1, for advancing the intermediate follower upon the beveled ring against which it bears, and means for advancing the inside rigid follower, with the intermediate rigid follower, along a piston-rod, substantially as described.

2. The combination, with the cylinder A, the cap B, and the piston-rod E, passing loosely through the cylinder-cap, of the beveled split ring 5 and the wedge-shaped split ring 6, both resting against the cap and one resting upon the other, the intermediate follower 4, having an inclined face resting against the inclined face of the beveled ring, the inside

follower 1, bearing against the intermediate follower, and means for advancing both followers simultaneously along the length of the piston-rod, substantially as described.

3. A combined cylindrical and stem packing, consisting of the beveled follower 1, the split rings 2 and 3, the beveled follower 4, the split rings 5 and 6, and the devices for pressing the said follower against the other device to form a compound packing-joint, substantially as herein specified.

4. In combination with the cylinder 8, and the piston E, passing freely through the same, the beveled follower 1, the packing-rings 2 and 3, the beveled follower 4, and split packing-rings 5 and 6, in contact with the piston-rod, and a spring 7 for forcing the packing-rings together, substantially as herein specified.

In testimony whereof I have hereunto set my hand.

JEREMIAH J. SULLIVAN.

Witnesses:

T. SIMMONS,  
EDWARD BOYD.