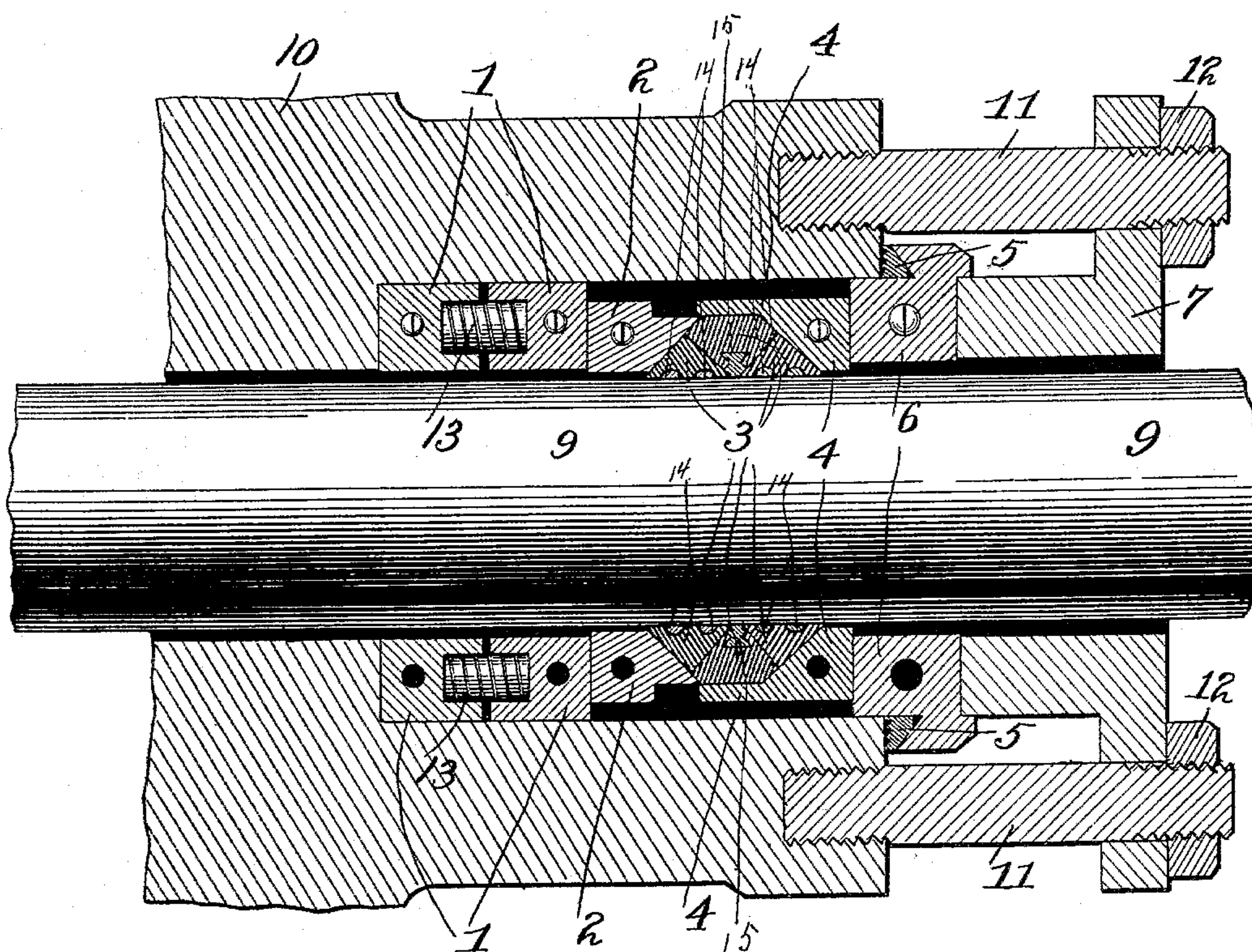


(No Model.)

F. F. SWAIN.  
METALLIC PACKING.

No. 598,123.

Patented Feb. 1, 1898.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

FREDRICK F. SWAIN, OF CHICAGO, ILLINOIS.

## METALLIC PACKING.

SPECIFICATION forming part of Letters Patent No. 598,123, dated February 1, 1898.

Application filed August 9, 1897. Serial No. 647,585. (No model.)

*To all whom it may concern:*

Be it known that I, FREDRICK F. SWAIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Metallic Packing, of which the following is a specification.

This invention relates to improvements in metallic packing.

The invention consists, substantially, in the construction hereinafter described, and then more definitely pointed out in the claims.

The figure of the drawing represents a vertical central sectional view of a metallic packing and box as applied to the rod, part of which rod is broken away at each end.

The metallic packing which will now be described is especially designed for locomotive and marine service, but is also well adapted for high-speed and vertical engines and can be applied in almost any situation where a metallic packing is useful.

In the drawing the several parts are designated by numerals.

9 designates the shaft to which the packing is to be applied.

10 designates the box which incloses the packing.

11 designates the bolts which, by proper screw-threaded ends, connect the box with the annular follower 7, adjustment being made by the nuts 12.

6 designates a face-ring upon which the follower-gland 7 bears and which is provided with an undercut or inclined recess for containing the joint-ring 5.

The wearing-rings 3 are made of an alloy of well-known soft or antifriction metal. In practice it has been found that the rings wear faster if they constitute the whole contact with the shaft than if a portion of the contact-surface is between hard-metal surfaces, and, further, that if the rings are made entirely of soft metal a portion of the same will be pulled or drawn out by the shaft or rod. To obviate these difficulties, I preferably employ hard-metal contacts in connection with the soft-metal rings, as shown in the drawing and as will be now described. At suitable distances apart, in recesses formed for the purpose in the bottom of the two outside soft-metal rings, I place rods or parts of hard

metal—such as copper, brass, &c.—which may be of any suitable shape; but a convenient form is that shown, comprising a portion of a circle. These hard-metal rods are designated by the numeral 14. Again, between the adjacent or proximate edges of the outer soft-metal wearing-rings I place a hard-metal part 15, the lower surface of which is flat and in contact with the shaft and the sides bearing against the metal ring in any suitable manner, a convenient fastening being the dovetail joint, as shown. By these means the soft metal of the wearing-rings is confined so that it cannot be drawn out and the heavy thrust upon the packing is partially taken up by the hard-metal parts, especially by the central part 15.

The soft-metal rings may advantageously be made of the shape shown—that is, three rings are employed, two of which have flat surfaces contacting with the rod, and the rings are approximately pyramidal in cross-section, so as to provide a similar-shaped recess to receive a third ring, which is also approximately pyramidal in cross-section, but with the apex reversed or turned downwardly. The exterior sides of all the rings are turned outwardly, but the lower portions of the inside edges of the outside rings are shaped to conform to the adjacent surface of the hard-metal central part 15, placed between such rings.

2 and 4 designate reciprocating rings or parts having inclined surfaces to bear against the correspondingly-inclined surfaces of the wearing-rings, and one of which parts, 4, has a horizontal extension to bear upon and hold down the wearing-rings. It will be observed that all of the parts of the wearing-rings in contact with each other or the reciprocating parts are inclined, so as to be capable of movement relative to each other when wear or adjustment requires it. It will also be noticed that the wearing-rings break joints at every point.

Two spring-rings or spring-containing rings are arranged at the bottom of the stuffing-box, and inside of each is formed a recess for containing a portion of the spring. This recess has its bottom formed at a point an appreciable distance from the bottom surface of the ring, so that the spring is not allowed to come in contact with the rod. The spring is designed



nated by the numeral 13 and the spring-rings by the numerals 1 1.

5 The face-ring 6, in addition to the undercut recess above described for containing the joint-ring 5, has also an exterior shoulder, which affords a bearing for the same upon the follower-gland, and at such a depth as will serve to retain such face-ring out of contact with the shaft or rod.

10 By the above construction it will be seen that all of the parts, excepting the wearing-rings, are held out of contact with the rod.

15 It is obvious that many modifications may be made in the details of the construction without departing from the principles of the invention.

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

20 1. In a metallic packing, the combination with a stuffing-box of wearing-rings mounted in such stuffing-box composed chiefly of soft metal, but having secured to their under surfaces, at suitable distances apart and flush with such surfaces, hard-metal parts, and a  
25 central hard-metal part between the two out-

side soft-metal rings; substantially as and for the purpose set forth.

2. A metallic packing, comprising a stuffing-box, a follower-gland, a face-ring having a shoulder supported by said follower-gland, 30 wearing-rings having plane faces bearing upon the rod, inclined sides and a pyramidal recess, a pyramidally-shaped member bearing in such recess, reciprocating parts having inclined bearing-surfaces resting upon 35 the rings and wearing-rings having sockets above the rod and a bearing at the inner end against the reciprocating part; whereby all of the members are supported by the rod and out of contact with the same, excepting the 40 wearing-rings; substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 7th day of August, 1897, in the presence of the subscribing witnesses.

FREDRICK F. SWAIN.

Witnesses:

FRANK T. BROWN,  
H. H. HUMPHREY.