

W. D. KESSELRING.
PISTON ROD AND VALVE STEM PACKING.
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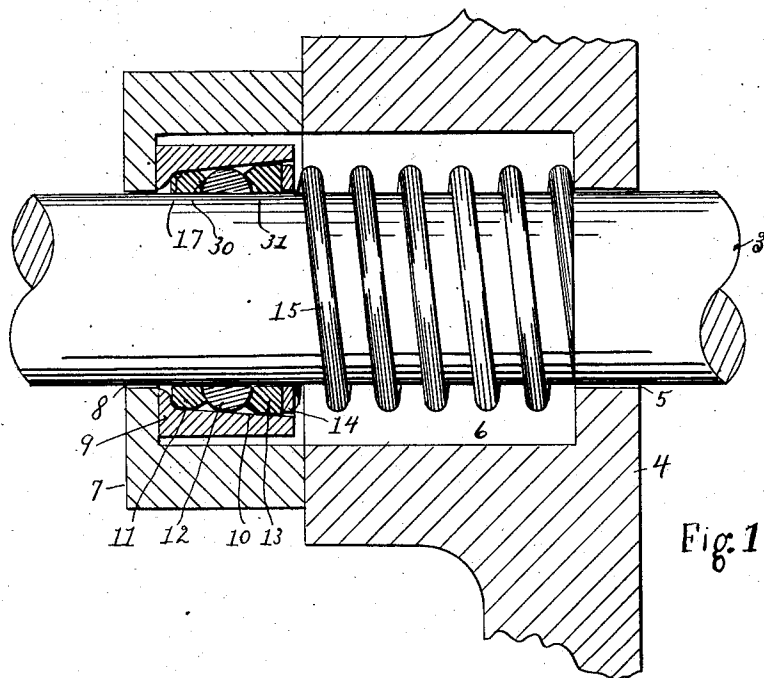


Fig. 1

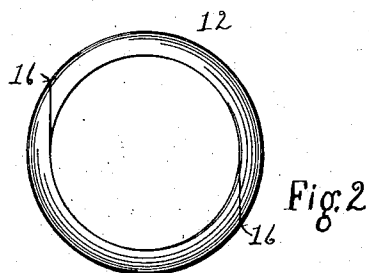


Fig. 2

Witnesses
Edo. Fields

J. W. Stark.

Inventor
William D. Kesslering
By J. H. Kessler
Atty

UNITED STATES PATENT OFFICE.

WILLIAM D. KESSELRING, OF ATCHISON, KANSAS.

PISTON-ROD AND VALVE-STEM PACKING.

1,021,683.

Specification of Letters Patent. Patented Mar. 26, 1912.

Application filed March 9, 1911. Serial No. 613,276.

To all whom it may concern:

Be it known that I, WILLIAM D. KESSELRING, a citizen of the United States, residing at Atchison, in the county of Atchison and State of Kansas, have invented certain new and useful Improvements in Piston-Rod and Valve-Stem Packings, of which the following is a specification.

My invention relates more especially to the packing rings for packing piston rods and valve stems.

It comprises mainly of three rings, a middle ring which is semi-circular in cross section, and which is adapted to closely hug the rod or stem, and to complementary rings which hug the rod or stem, and which are so shaped as to fit closely against the opposite sides of the middle ring; together with a pressure spring and a cup in which the rings are mounted and which engage the outer rims of the rings to compress them together and toward the rod or stem, the rings being each split on a line tangent to their inside circumferences.

It is the object of my invention to produce a simple, cheaply constructed and efficient set of packing rings, with such arrangement that as they wear they will close together and around the rod or stem without leaking, so that the stock in the rings will stand a maximum amount of wear before requiring replacement; and I attain this object by the parts, improvements, and combinations herein set forth and claimed.

In the drawings accompanying and forming part of this specification, and in the description of the drawings, I have shown my invention in its preferred form, and have shown what I deem to be the best mode of applying the principles thereof; but it is to be understood that, within the scope of the appended claims, I contemplate changes in form, proportions, and materials, the transposition of parts, and the substitution of equivalent members, without departing from the spirit of my invention.

Figure 1 is a longitudinal sectional elevation of a cylinder head and piston rod, in part, with my improved packing applied thereto. Fig. 2 is a side elevation of the middle packing ring.

4 is part of a piston rod, or valve stem working through an opening 5 in the cylinder-head or valve casing 4; it being under-

stood that my invention is applicable to both such valve and cylinder.

7 is the gland secured in any suitable manner to the cylinder-head and also provided with an opening 8 for the piston rod.

9 is the vibrating cup for the reception of the packing rings and itself having some slight lateral play in the gland, its inner face 10 being inclined from its inner end toward its outer end, and inwardly, as shown, and terminating with a more abrupt angle at the outer end, as shown at 17.

12 is the middle ring which is semi-circular in cross-section, the flat side being adapted to hug the rod. On one side of this middle ring, namely, on the side toward the smaller end of the vibrating cup, is another ring 11 adapted to fit snugly between the vibrating cup and the rod, its outer edge being rounded off to fit against the end of the cup, and its opposite face 30 being formed with a radius corresponding with that of the middle ring. On the other side of the middle ring is another ring 13 which fits between the cup and the rod, and which has a face 31 corresponding in form with the contiguous face of the middle ring.

14 is a neck ring bearing against the packing, and 15 is a compression spring surrounding the rod and bearing between the cylinder head and the neck ring and tending to force the packing rings into or toward the smaller end of the cup, and located in the recess 6 of the cylinder head. Each of the three packing rings is split on a tangent to its inner circumference, at two oppositely disposed places, as indicated by the numeral 16.

When the rings are new, they are adapted to fit about as shown in the drawing, that is, the first ring 11 is compressed inwardly against the rod, as is also the third ring 13, by reason of being made of a suitable size for thus fitting between the tapered cup and the rod. The middle ring is also similarly compressed inwardly; and it is also compressed inwardly by the pressure of the overlapping portions of the other two rings. As the rings wear on the under side, the two outer rings compress the middle ring on the rod, and they in turn are pushed toward the smaller end of the cup, and by reason of the tapered inner surface they are also compressed toward the rod, and the tangent cuts

16 permit this contraction of the rings by reason of the extreme ends wearing off. These cuts are arranged in alternating relation, so that the rings will at all times
5 form a perfect seal around the rod.

I claim that with my packing rings, it will take more than a slight wearing away of their surfaces to require displacing; and that on the other hand, they are arranged
10 to compensate for the wearing away and to maintain a perfect seal until the middle ring has worn down quite small, and that they will maintain a perfect seal under working conditions much longer than any
15 packing rings heretofore devised.

What I claim is:

1. The combination of a casing, a rod extending therethrough, a gland, an interiorly tapered cup in the gland, a series of three
20 packing rings surrounding the rod and fitting in the tapered part of the cup, the middle ring being semi-circular in cross section and having its flat side engaging against the rod, and the other two rings bearing
25 against the rod and having faces corresponding in shape with, and bearing against the opposite sides respectively of the middle ring, a neck ring bearing against said packing rings, and a compression spring bearing
30 against said neck ring.

2. The combination of a casing, a rod extending therethrough, a gland, an interiorly

tapered cup in the gland, three packing rings fitting closely between the tapered part of the cup and the rod, the middle ring being semi-circular in cross section and having its flat side bearing against the rod, and the other two rings bearing against the rod and having faces corresponding in shape with, and bearing against, the opposite sides
35 respectively of the middle ring, and a compression spring bearing against said packing rings and forcing them toward the smaller end of the cup.

3. The combination of a rod, a casing, an interiorly tapered cup, and three packing rings between the tapered part of the cup and the rod, the middle ring being semi-circular in cross section and having its flat side against the rod, and the other two rings
45 having faces corresponding with, and bearing against, the opposite faces respectively of the middle ring, and a spring tending to force the rings toward the smaller end of the cup, each of said rings being split
55 approximately on a tangent to its inner circumference.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM D. KESSELRING.

Witnesses:

E. E. FIELDS,

J. M. STARK.