H. A. YOUNG.

PISTON PACKING.

APPLICATION FILED JAN. 6, 1909.

934,125. Patented Sept. 14, 1909.

Fig. 1.

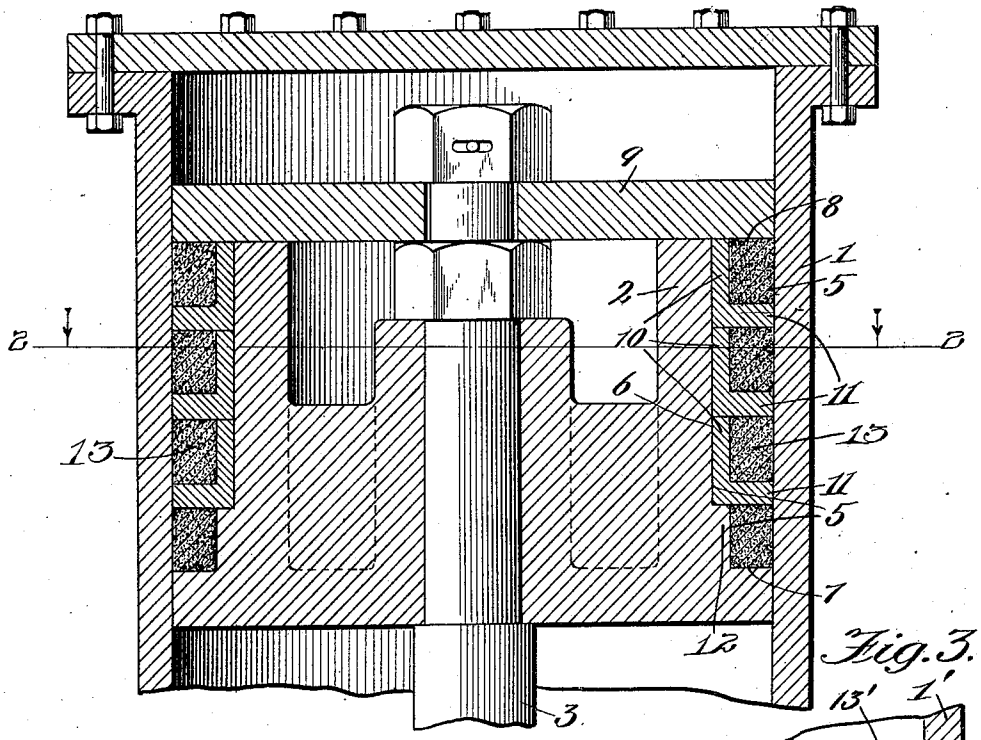


Fig. 2.

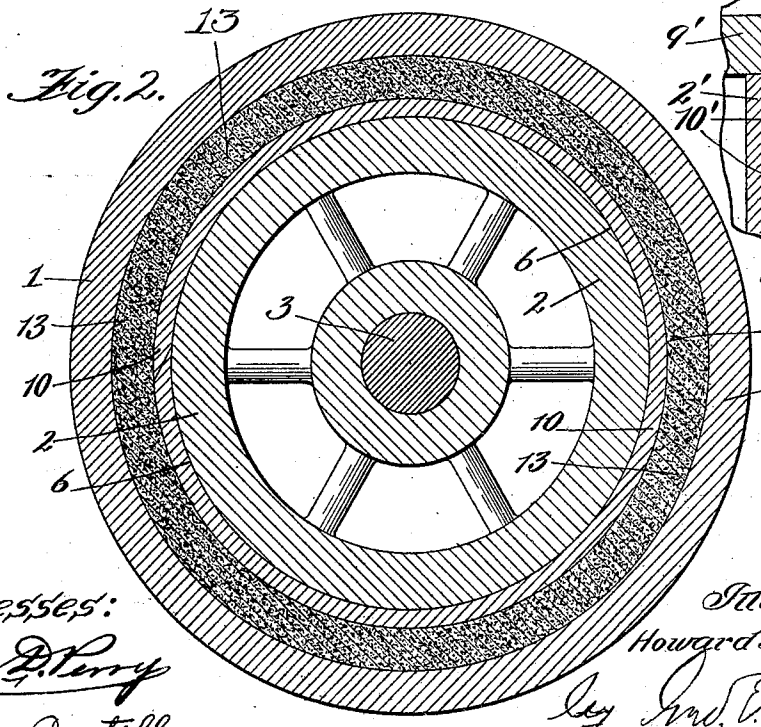
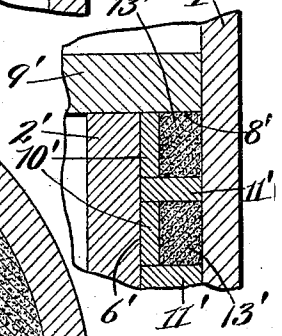


Fig. 3.



Witnesses:

Ira D. Perry

K. A. Costello.

Inventor:

Howard A. Young

by Ira E. Waldo,

Atty.

UNITED STATES PATENT OFFICE.

HOWARD A. YOUNG, OF CHICAGO, ILLINOIS.

PISTON-PACKING.

934,125. Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed January 6, 1909. Serial No. 470,902.

To all whom it may concern:

Be it known that I, HOWARD A. YOUNG, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Piston-Packings, of which the following is a specification.

This invention relates to piston packing and relates particularly to piston packing comprising rings of soft material, as strips of duck, wicking, or the like.

So far as I am aware, the present practice of packing pistons with soft material of this character, consists in inserting several rings of the packing material side by side in the same groove. Packing of this character is objectionable for the reason that, as soon as any of the packing rings begin to wear, this will permit the other strips to "shuck" back and forth, as the piston reciprocates, which will soon operate to tear and wear them entirely out.

The object of the present invention is to overcome this objectionable feature and to provide a piston packing of this character in which each ring or section of packing will be unaffected by wear of any of the other rings or sections.

To this end my invention consists in providing means for rigidly holding each strip of packing in position independently of all of the other strips, so that wear of any one or more of said strips will produce no tendency to "shuck" or to cause "lost motion" of any of the other strips as the piston reciprocates.

The invention also consists of the various other features, combinations of features and details of construction hereinafter described and claimed.

In the accompanying drawing, in which my invention is fully illustrated—Figure 1 is a central, longitudinal, sectional view of a cylinder and piston, packed with my improved packing. Fig. 2 is a transverse sectional view thereof on the line 2—2 of Fig. 1; and Fig. 3 is a fragmentary view similar to Fig. 1, showing a slightly modified form of packing embodying my invention.

Referring now to the drawing, 1 designates a cylinder, 2 a piston fitted to reciprocate therein and 3 the piston rod secured in said piston.

My improved piston packing, which is shown in the drawing for maintaining a tight joint between the piston 2 and cylinder 1, consists of separate rings or sections 4 of any desired or usual soft material, such as is commonly used for the purpose, as braided flax, wicking, strips of duck, or the like, inserted in separate grooves 5 formed in the surface of the piston 2. As shown in Fig. 1, the grooves 5 are formed in the following manner:—Between its ends the surface of the piston 2 is reduced, as shown at 6, leaving outwardly projecting shoulders 7 and 8 at each end of said reduced portion 6.

To provide for conveniently applying my improved packing to the piston, said piston comprises a removable head or section, on which one of said shoulders is formed. In the drawing, 9 designates the removable section of the piston, the shoulder 8 being formed by the inner side thereof which extends outwardly beyond the bottom of the depressed portion 6 of the surface of said piston. Fitted to the reduced portion 6 of said piston 2 are rings 10 formed on the corresponding edges of which are outwardly projecting flanges 11 of substantially the same diameter as the piston 2. With this construction it is obvious that when the rings 10 are placed upon the reduced portion 6 of the piston 2, the body portions of said rings will operate to maintain the flanges 11 at a predetermined distance apart, the flange 11 on the collar 10 adjacent to the shoulder 7 being preferably spaced from said shoulder by means of an enlarged portion 12 of the piston, the diameter of which is substantially equal to that of the body portions of said rings 10. Moreover, to prevent all lost motion, the aggregate length of the rings 10 and of the enlarged section 12 of the piston is equal to or slightly greater than the length of the reduced portion 6 of the piston 2 between the shoulders 7 and 8. Thus, when the removable head 9 is secured in position, said rings 12 will be held firmly in position against sliding movement relatively to the piston. Secured in the grooves or spaces between the flanges 11 and preferably also between the flanges of the end rings and the shoulders 7 and 8, respectively, are separate rings or sections 13 of suitable soft material of any desired or usual character, as braided flax, wicking, strips of duck, or the like. In this manner, it is obvious that each packing ring or section 13 will be held firmly in position independently of the others and that said rings will be unaffected by wearing of any of the

others so that no "shucking" of said separate packing rings or sections 13 will occur even though one or more thereof should be entirely worn out. In this manner the life of the packing is very greatly increased as compared with methods of packing now in common use.

In Fig. 3 of the drawing, I have shown a modified form of my improved packing. Referring now to said Fig. 3, 1^1 designates the cylinder, 2^1 the piston, 6^1 the reduced portion of the piston and 9^1 the removable head or section thereof, the inner side of which projects outwardly beyond the reduced portion 6^1 and forms the shoulder 8^1. The rings or sections 13^1 of soft packing material are secured between rings 11^1 of substantially the same diameter as the piston 2^1 and which are spaced apart by separate rings 10^1 smaller in diameter than said piston 2^1. The aggregate length of the rings 10^1 and 11^1 is equal to or slightly greater than the length of the reduced portion 6^1 of the piston. It is obvious that the results obtained by said modified construction are substantially identical with those incident to the construction shown in Fig. 1.

The heads or sections 9, 9^1 of the piston being removable, provides for sliding the rings 10, 10^1 and 11^1 over the reduced piston sections 6, 6^1 and admits of the use of solid rings. My invention, however, contemplates equally the use of split rings, if for any reason desired.

I claim:—

The combination with a cylinder and a piston comprising a section smaller in diameter than the bore of the cylinder forming a reduced portion of said piston provided with shoulders at both ends thereof, one of said shoulders being formed by a removable section of said piston, of a packing for said piston, said packing comprising rings of rigid material removably secured upon the reduced portion of said piston in fixed longitudinal adjustment, said rings being spaced apart to form annular grooves in the perimeter of said piston, and a single ring of suitable soft packing material secured in each of said grooves, substantially as described.

In testimony, that I claim the foregoing as my invention, I affix my signature in presence of two subscribing witnesses, this 24th day of December, 1908.

HOWARD A. YOUNG

Witnesses:
G. M. ELLINGEN,
K. A. COSTELLO.