No. 723,681. PATENTED MAR. 24, 1903.

G. P. KLINE.

PISTON ROD PACKING.

APPLICATION FILED APR. 14, 1902.

NO MODEL.

Fig. 1.

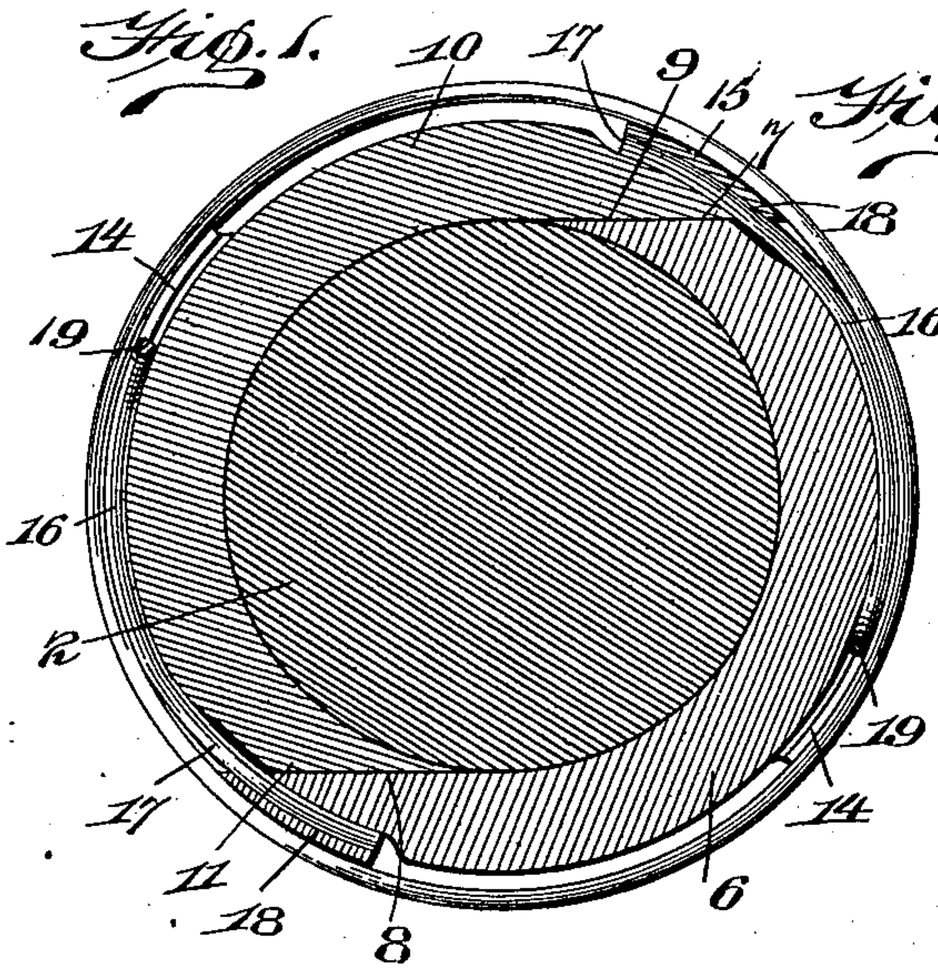


Fig. 2.

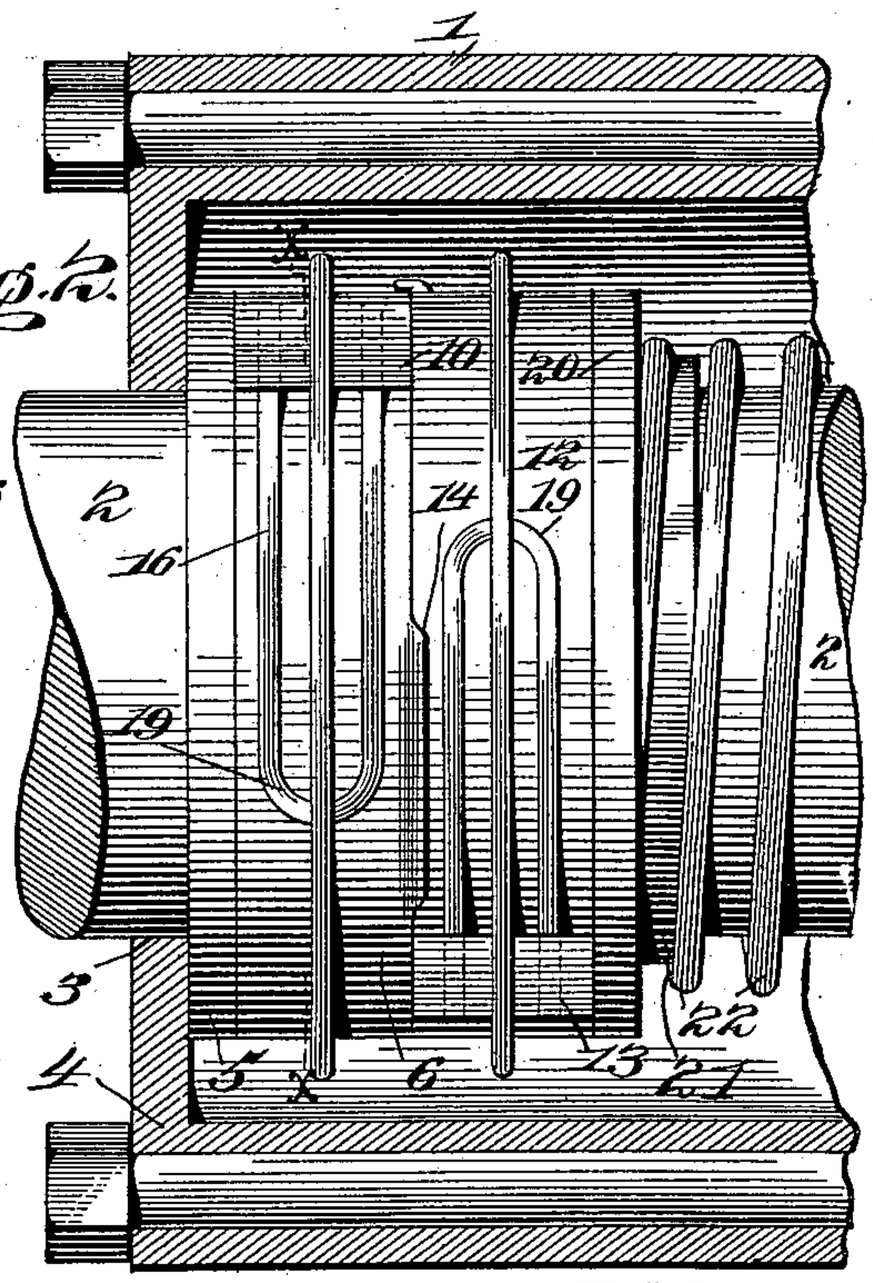


Fig. 3.

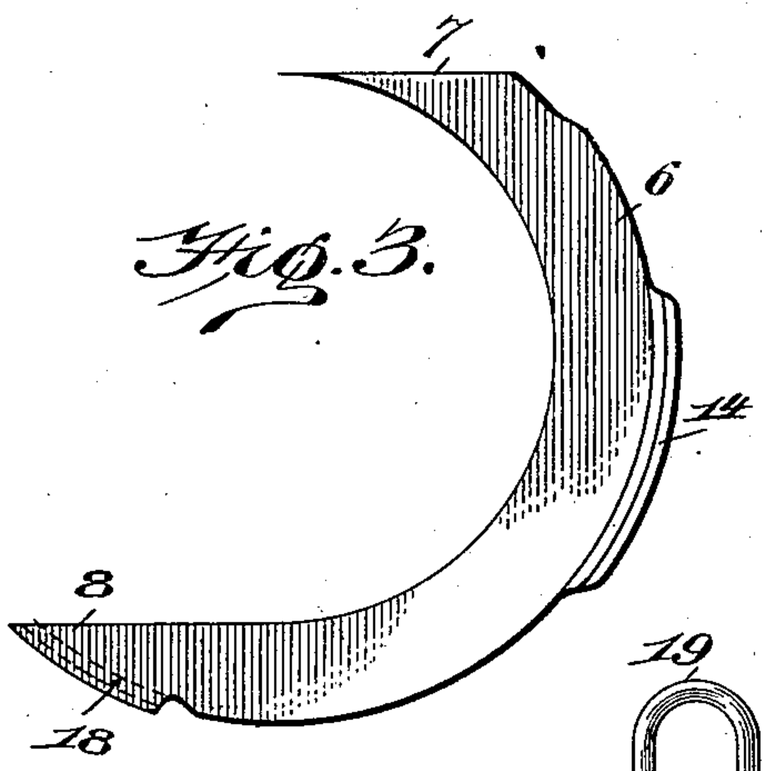


Fig. 4.

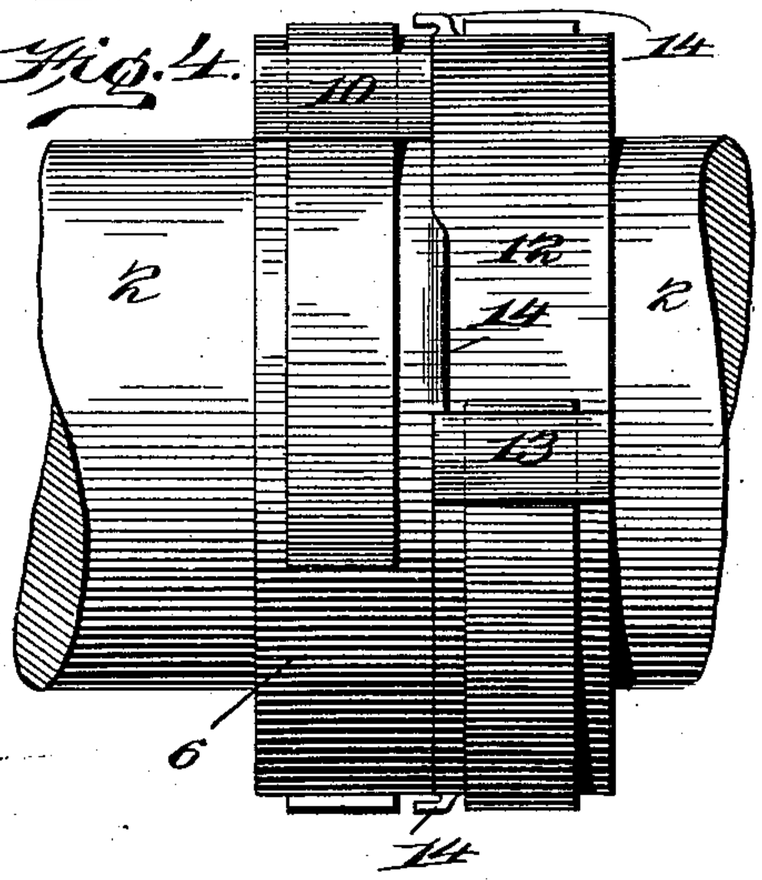
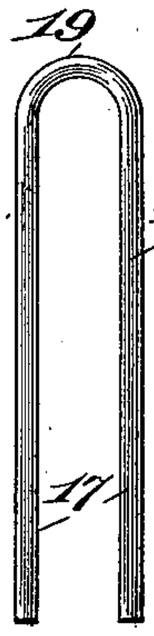


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE P. KLINE, OF ROCK ISLAND, ILLINOIS.

PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 723,681, dated March 24, 1903.

Application filed April 14, 1902. Serial No. 102,888. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. KLINE, a citizen of the United States, residing at Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Piston-Rod Packing; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in metallic packing for the piston-rods of steam-engines or mechanisms of a like character.

The object of this invention is to provide a packing of the character above described which shall be constructed of several distinct sections, all being combined and correlated in such manner that a steam-tight packing entirely surrounding the piston-rod is formed.

It also has in contemplation the provision of spring means for retaining the sectional packing securely in place, whereby each piece is capable of adjustment relative to the aforesaid piston-rod, this compensating for the wear of the parts.

Further, it is intended in the present invention to so arrange the portions or sections of packing that ready access may be had to the same and so that the liability of the sections becoming disengaged or broken through any sudden strain or jar upon the same is greatly lessened.

To the accomplishment and attainment of the above-recited objects the invention consists in surrounding the portion of a piston-rod which works in the gland of the steam-cylinder with curved (approximately semicircular) sections of packing retained in proper position by spring-pressure, thus providing a steam-tight joint at the portion of the gland-cylinder wherein the piston-rod enters.

It also consists in the peculiar construction, combination, and arrangement of parts, as will be more fully hereinafter set forth and claimed.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The invention is susceptible to various changes in the form, proportions, and minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and a full disclosure and adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a transverse vertical sectional view of the piston-rod and its surrounding packing-retaining means, taken on the line *x* *x* of Fig. 2. Fig. 2 is a side elevation of a piston provided with my improved packing, the gland wherein piston works being shown in section. Fig. 3 is a view of one of the sections of packing. Fig. 4 is a modification illustrating another means of securing the packing-section in place.

Referring now to the drawings in detail and in particular to Fig. 2, the numeral 1 designates a gland or supplemental cylinder connected with the main cylinder of the engine. Passing through this gland and working therein is an ordinary piston-rod 2, which enters the aforesaid gland at 3. Now it is the desire in structures of the character of steam-engines and the like to maintain an absolutely steam-tight joint at the point of entrance of the piston-rod into the aforesaid gland. Various means have been tried and employed to accomplish this result, but in most instances there has been more or less leakage; but to prevent such leakage of steam I have devised a structure which I will now proceed to describe in detail.

Positioned on the piston-rod in such manner that it will abut against the interior of the wall 4 of the gland is a metallic ring or collar 5. Around the piston-rod and abutting against such collar I have placed my packing, which consists of a number of metallic sections 6, of substantially semicircular form, as will be seen by reference to Fig. 3. These sections are cut away, as at 7 and 8, in such manner that when the opposite section of packing is placed in the relative or normal position they occupy on the rod such rod is encircled by the same. By examining Fig. 1 it will be seen that the end of the section 6 abuts against the portion or face 9 of the section 10, while the face 11 of such section 10 rests upon the part of the section 6. After these sections have been so arranged on the

piston-rod similar semicircular sections, as 12 and 13, are placed around the rod immediately contiguous to the first packing. Each section of packing is formed with a lug or projection 14, which is so placed as to prevent the joints of one section of packing from coming into alinement with the joints of another section. As the piston works in the cylinder the tendency of the packing portions would be to slip around the rod; but by the arrangement or provision of this shoulder the head or entrance 15 of the section would abut or strike against this lug and prevent further movement. As each section is provided with such a head and the contiguous sections with a lug, it will readily be seen that the sections will be preserved in the proper correlative position at all times. To hold the semicircular sections forming the complete encircling packing portion in place, I have devised the following means: A band 16, formed of wire doubled into substantially the shape shown in Fig. 5 and adapted to conform to the surface of the semicircular packing, has its ends 17 17 inserted in orifices or ports 18, bored in the section end, while the doubled-end portion 19 is adapted to rest upon the outside of the adjacent semicircular sections of packing, as will be seen by reference to Fig. 2. The same relative arrangement is preserved in securing the different sections together, and the entire encircling packing is held securely in place on the rod by means of a spring-collar or encircling band, which holds the retaining-pins 16 securely in place and counteracts the normal tendency of the end 19 of the pin to fly outward. By this arrangement an extremely tight packing is formed, while at the same time the piston-rod is free to slide through the same.

In order at all times to cause the collar 5 and the metallic packing just described to abut against the wall 4, I provide a second ring or collar 20, between which collars 5 and 20 the packing is placed, and secured to a shoulder 21, preferably formed on collar 20, is one end of a coiled tension-spring 22, the other end of which may be secured in any suitable manner. (Not shown.) It will be seen that the spring 22 presses the entire structure, consisting of the two collars 5 and 20 and the intermediate packing-sections, at all times firmly against the wall 4 of the gland, thus obviating the possibility of leakage.

In Fig. 5 a modification of the means for securing the sections together is illustrated, steel bands being employed instead of the doubled-wire pin.

While I have shown my improvements applied to the part of the rod in the gland or supplemental cylinder, it will of course be understood that they are applicable to the main cylinder.

The securing springs and pins may be of any suitable metal, bronze and steel being usually employed.

The many advantages resulting from a construction of this character are so obvious that it is unnecessary to dwell upon the same in detail.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A packing of the class described comprising metallic sections, each section having a socket near one end, such sections being adapted when positioned on the rod to completely encircle the same, and spring-pins for securing the sections together, one end of the pin being adapted to be inserted in the socket of one section, while its other end rests upon the surface of the adjoining section, substantially as set forth.

2. A packing of the class described comprising metallic sections, each section having a socket near one end, such sections being adapted when positioned on the rod to completely encircle the same, and spring-pins for securing the sections together, one end of the pin being adapted to be inserted in the socket of one section, while its other end rests upon the surface of the adjoining section, and means for binding the entire structure firmly together, substantially as set forth.

3. In a device of the class described, a packing comprising metallic sections jointed and surrounding the piston-rod, means for retaining the packing-sections in their working positions, a second packing similar to the first-mentioned packing arranged contiguous thereto on the rod, and a lug formed on one of the metallic sections of one packing, adapted to contact with a portion of the contiguous packing for preventing the movement of the encircling packing-sections relative to each other, substantially as set forth.

4. In a device of the class described, the combination of a cylinder, a piston-rod working therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod, and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, and metallic packing-sections jointed to surround the rod interposed between the two aforesaid collars, substantially as described.

5. In a device of the class described, the combination of a cylinder, a piston-rod working therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod, and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, metallic packing-sections jointed to surround the rod interposed between the two aforesaid collars, and means for pressing the collars and the interposed packing firmly against the interior end wall of the cylinder, substantially as described.

6. In a device of the class described, the combination of a cylinder, a piston-rod work-

ing therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, metallic packing-sections jointed to surround the rod interposed between the two aforesaid collars, and spring-tensioned means for pressing the collars and the interposed packing firmly against the interior end wall of the cylinder, substantially as described.

7. In a device of the class described, the combination of a cylinder, a piston-rod working therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, metallic packing-sections jointed to surround the rod interposed between the two aforesaid collars, and spring-tensioned means secured to the shoulder on the second ring for pressing the collars and the interposed packing firmly against the interior end wall of the cylinder against the movement of the piston, substantially as described.

8. In a device of the class described, the combination of a cylinder, a piston-rod working therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, metallic packing-sections jointed to surround the rod interposed between the two aforesaid collars, and a spring coiled about the rod and having one end secured to the shoulder of the second collar for pressing the collars and the interposed packing firmly against the interior end wall of the cylinder against the movement of the piston, substantially as described.

9. In a device of the class described, the combination of a cylinder, a piston-rod working therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, a packing for piston-rods comprising metallic sections approximately semicircular in conformation, adapted when positioned on said rod to completely encircle the same, and means for uniting the parts, substantially as described.

10. In a device of the class described, the combination of a cylinder, a piston-rod working therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, a packing for piston-rods comprising metallic sections approximately semicircular in conformation adapted when positioned on said rod to completely encircle the same, means for uniting the parts, such means comprising a spring having one end mounted on a socket in one of said sections, the other end resting upon the surface of the adjoining section, and an encircling band for securely binding the parts together, substantially as described.

11. In a device of the class described, the combination of a cylinder, a piston-rod working therein, and means for providing a steam-tight joint at the point of entrance of the piston in the cylinder, such means comprising a collar mounted on the rod and abutting against the interior wall of the cylinder, a second collar provided with a shoulder, a packing for piston-rods comprising metallic sections approximately semicircular in conformation, adapted when positioned on the rod to coöperate and completely encircle the same, means for firmly uniting the two sections, a second encircling sectional packing contiguous to the first-mentioned packing, and means for preventing the movement of the encircling packing portions relative to each other, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

GEORGE P. KLINE.

Witnesses:
WILLIAM L. LUDOLPH,
JAMES B. ECKHART.