

June 28, 1927.

1,634,018

C. L. COOK

PISTON PACKING

Filed June 8, 1926

2 Sheets-Sheet 1

Fig. 2.

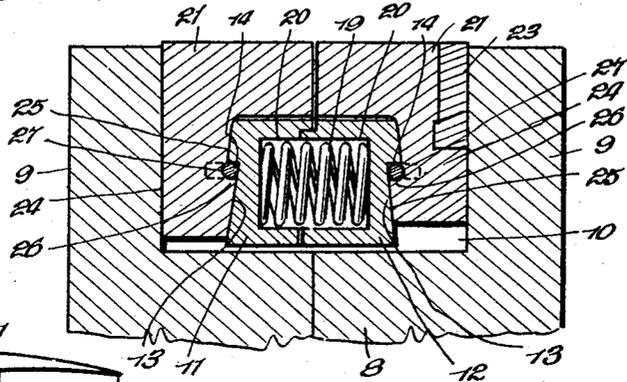


Fig. 5.

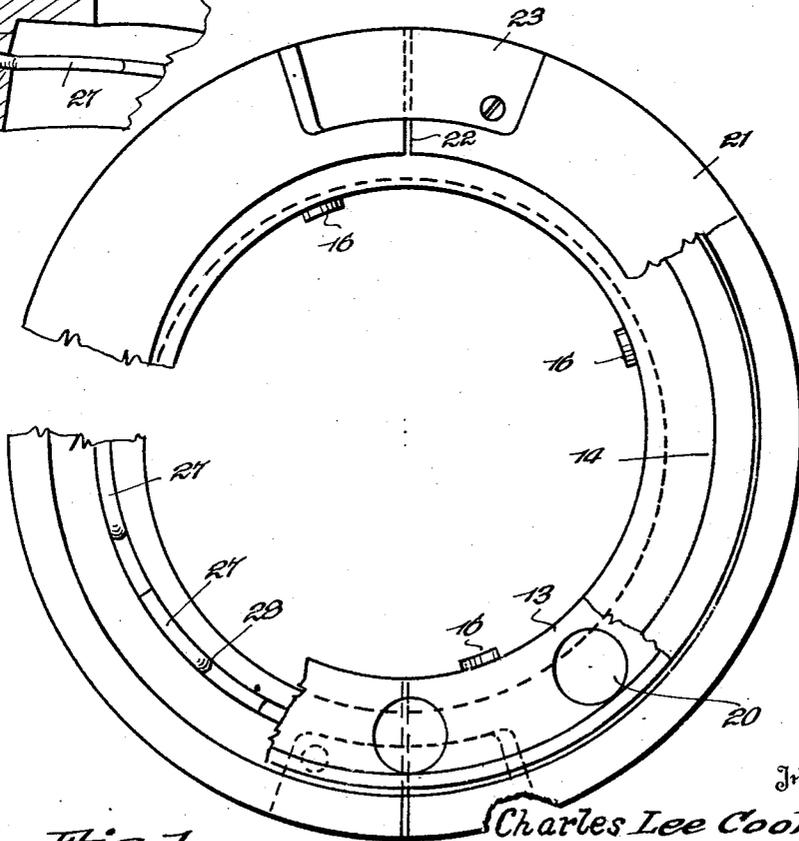
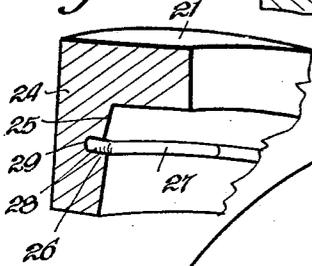


Fig. 1.

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Fig. 3.

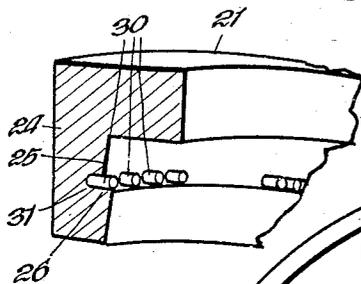
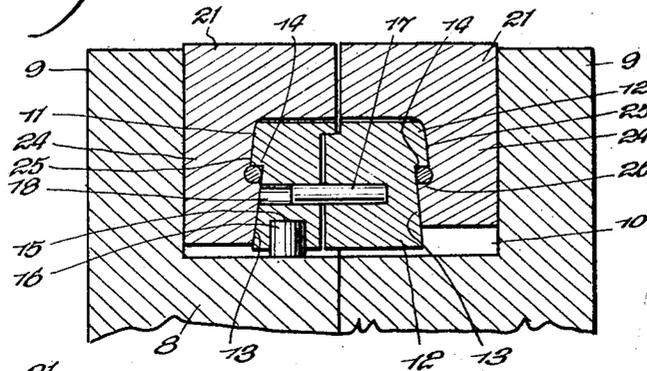


Fig. 7.



Fig. 6.

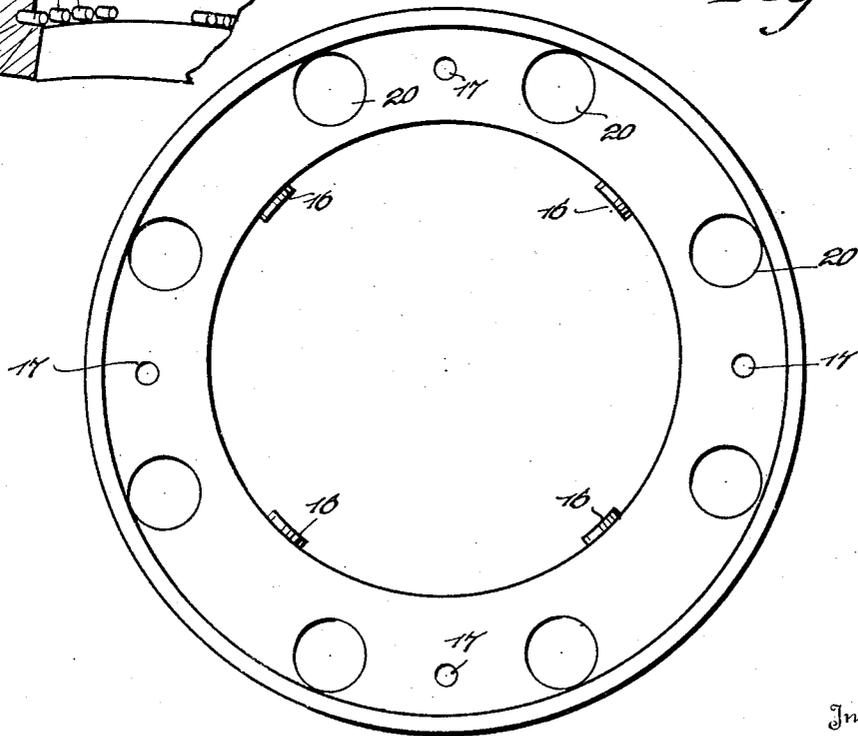


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## PISTON PACKING.

Application filed June 8, 1926. Serial No. 114,538.

The present invention relates to packing of the type disclosed in my prior patent, No. 1,546,625, of July 21, 1925, the object being to provide a structure that can be varied so as to be properly fitted to the piston and can be adjusted so as to afford the proper amount of resistance under the different pressure conditions found to obtain.

In the accompanying drawings:—

Figure 1 is a view in elevation of the piston packing, with portions thereof broken away,

Figure 2 is a cross sectional view showing the packing in place on a piston.

Figure 3 is a view similar to Figure 2, but taken at a different point,

Figure 4 is a view in elevation of the inner side of one of the bull ring sections,

Figure 5 is a detail perspective view of a portion of a packing ring illustrating one of the holding elements and the means for maintaining it in position.

Figure 6 is a detail perspective view of a portion of one of the holding elements.

Figure 7 is a detail sectional perspective view of one of the bull ring sections showing a modified form of construction.

In the full embodiment disclosed, a piston body is shown at 8, and has outstanding flanges 9 forming the usual annular groove or recessed seat 10.

In the groove 10 is located a "bull" or "junk" ring formed of sections 11 and 12. Said sections have outer inclined faces 13 and inwardly faced shoulders 14. One of the bull ring sections, as 11, is provided with a plurality of sockets 15 opening through its inner face and in these sockets are placed plugs 16 that project beyond the inner face of the ring section, as illustrated in Figure 4, and rest upon the bottom of the groove 10 as illustrated in Figure 3. The other section 12 is provided with laterally projecting pins 17 slidably engaged in sockets 18 formed in the section 11. It will thus be evident that while the section 11 is primarily supported on the bottom of the groove 10, the section 12 is supported from and by the section 11, but is allowed to move away from and toward the same. Inasmuch as these two rings have their inner diameters eccentric to their peripheral faces, and they are set diametrically opposite, this setting is maintained by the pins 17. The feet 16 are provided for supporting the bull ring as a whole, and they may be properly fitted to

the particular piston by filing the same feet. The ring sections are urged apart by coiled springs 19 interposed between them and fitted in sockets 20 formed in said rings, the said sockets alternating with the pins, as illustrated in Figure 4.

Surrounding each bull ring section 11—12 is a packing ring 21 that is split as illustrated at 22, and is provided with the usual cover plate 23. These rings have inwardly extending flanges 24 provided with inner inclined faces 25 that bear against the correspondingly inclined faces 13 of the bull ring sections. The packing rings 21 furthermore have outwardly faced shoulders 26 that underlie the shoulders 14 of the bull ring sections and are spaced therefrom. Interposed between the shoulders 14 and 26 are holding elements formed of material softer than the material of the rings. These elements as shown in Figures 1, 5 and 6 may be short sections of wire. They are designated 27. They lie in a ring between the shoulders with their adjacent ends spaced apart, each preferably having one end offset, as illustrated at 28, and engaged in a socket 29 formed in the packing ring. The holding elements, for example, may be of copper, and as they are interposed between and are borne against by the shoulders 14 and 26, obviously they assist in holding the packing rings against undue expansion, and therefore prevent the creation of excessive friction on the cylinder wall. At the same time as wear takes place between the packing rings 21 and the cylinder wall, the elements 27 being of soft material, will become deformed both cross sectionally and longitudinally, thus allowing expansion on the part of the rings to take up wear.

Instead of these elements 27 extending longitudinally of the shoulders 14 and 26, as indicated in Figures 1 and 5, series of short pins or pegs 30 may be employed, as illustrated in Figure 7, these pins or pegs being engaged in sockets 31 formed in the packing rings and projecting so as to overlie the outwardly facing shoulder of said packing rings.

With this construction, as already explained, the bull ring 11—12 is fitted to the piston and yet the sections thereof are allowed to move away from and towards each other. Their movement away from each other is caused by the springs 19; and as a consequence, their outer inclined faces 13

bearing against the faces 25 of the packing rings 21, serve to urge said packing rings diametrically outward. This movement, however, is resisted by the holding elements 27 or 30. As already explained, these elements are deformed when resistance to the outward movement is lessened by the wear. It will furthermore be clear that by altering the number of elements 27 or 30, this resistance can be varied and either increased to a maximum by employing a full number of the holding elements, or reduced by removing some of the same.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim, is:—

1. A piston packing comprising a bull ring formed of separable sections, an expansible packing ring associated with each section, and a plurality of separately removable and insertible holding elements of material softer than the bull ring sections and packing rings and interposed between portions thereof, said holding elements being deformed by being compressed between said portions of the sections and packing rings due to the expansion of the packing rings.

2. A piston packing comprising a bull ring formed of separable sections having outer inclined faces and holding shoulders, an expansible packing ring associated with each section and having inner inclined faces that bear against the outer inclined faces of the bull ring sections, said expansible packing rings having shoulders underlying the shoulders of the bull ring sections, and holding elements interposed between the shoulders and of softer material than the bull ring sections and packing rings, said holding elements being deformed by being compressed between said shoulders due to the expansion of the packing rings.

3. A piston packing comprising a bull ring, an expansible packing ring associated therewith, and holding means interposed between portions of the same, said means comprising a plurality of separate elements formed of material softer than the rings and deformed by being compressed between said portions thereof due to the expansion of the ring, said elements being separately removable and insertible to vary the amount of resistance afforded thereby.

4. A piston packing comprising a bull ring, an expansible packing ring associated thereto, and holding means interposed be-

tween portions of the same, said means comprising a plurality of separately mounted separately removable elements formed of material softer than the rings and deformed by being compressed between said portions thereof due to the expansion of the ring.

5. A piston packing comprising a bull ring having a shoulder, an expansible packing ring having a shoulder in opposition to the shoulder of the bull ring, a plurality of spaced elements interposed between the shoulders and of softer material than the rings, said elements being deformed by pressure between the shoulders on the expansion of the packing ring, and means for holding the elements in spaced relation.

6. A piston packing comprising a bull ring having a shoulder, an expansible packing ring having a shoulder in opposition to the shoulder of the bull ring, one of said rings having sockets adjacent the shoulder, and a plurality of spaced elements engaged in the sockets and interposed between the shoulders and of softer material than the rings, said elements being deformed by pressure between the shoulders on the expansion of the packing ring.

7. A piston packing comprising a bull ring of separable sections having outer inclined faces and inwardly facing shoulders, expansible packing rings having inclined inner faces that bear against the inclined faces of the bull ring sections, said packing rings having outwardly facing shoulders underlying the shoulders of the bull ring, and elements of softer material than the rings fixed to certain of the same and located between the shoulders, said elements being deformed by pressure between the shoulders.

8. The combination with a piston having a groove, of a bull ring member in the groove, comprising separable sections, spaced feet on one of the sections that rest on the bottom of the groove, means connecting the sections for supporting the other section by the footed section, while permitting their separation, and expansible packing rings carried by the bull ring sections.

9. The combination with a piston having a groove, of a bull ring member in the groove comprising separable sections, spaced feet on one of the sections that rest on the bottom of the groove, sliding pin connections between the sections for supporting the other section by the footed section, while permitting their separation, and expansible packing rings carried by the bull ring sections.

10. The combination with a piston body having an annular groove, of a bull ring in the groove, comprising sections having inclined outer faces and inwardly facing shoulders, springs interposed between the sections, spaced feet on one section that rest on the bottom of the groove, dowels connecting the sections and supporting one by the other

while permitting their movement away from each other, packing rings surrounding the bull ring sections and having inner inclined faces that slidably bear against the corresponding faces of the bull ring sections, said packing rings having outwardly faced shoulders underlying the shoulders of the bull ring sections, and holding elements interposed between the opposed shoulders and of softer material than the rings, said elements being deformed by pressure against them as the packing rings expand.

In testimony whereof, I affix my signature.

CHARLES LEE COOK.