

1,027,280.

Fig. 1.

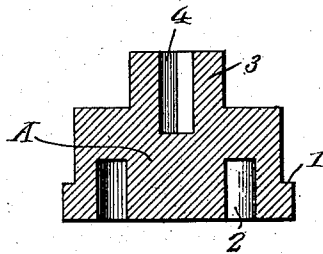
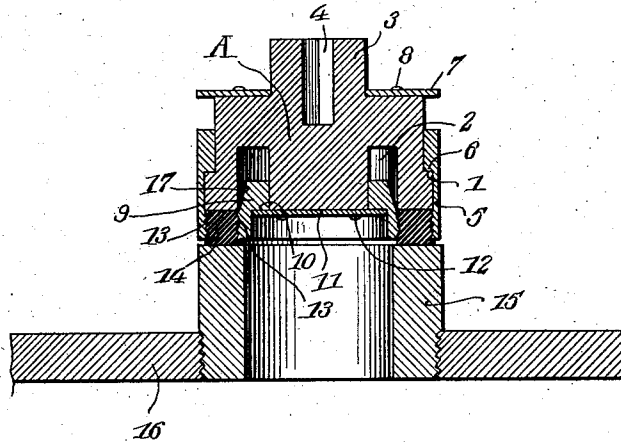


Fig. 2.

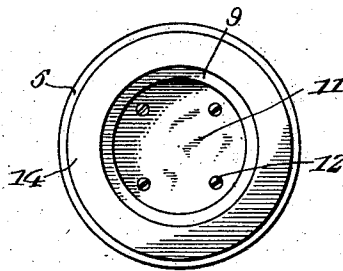


Fig. 3.

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PUMP-VALVE.

1,027,280.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed December 19, 1911. Serial No. 666,654.

To all whom it may concern:

Be it known that I, JOHN N. ROBERTSON, a citizen of the United States, residing at Maricopa, in the county of Kern and State of California, have invented new and useful Improvements in Pump-Valves, of which the following is a specification.

This invention relates to pump valves, and it has reference to that kind of valves which are used in connection with rings of rubber or similar soft and yielding material.

The particular object of the present invention is to provide a construction whereby the valve ring shall be protected from undue wear and maintained in such a condition that it will engage the seat accurately and without danger of leaking.

A further object of the invention is to provide a construction which will so protect the valve ring that only the engaging face of the latter will be exposed to wear, and whereby the valve ring will be automatically fed outward as it becomes worn so that it will at all times become accurately seated when the valve is in operation.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawing has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawing,—Figure 1 is a vertical sectional view of the improved valve showing the same seated. Fig. 2 is a vertical sectional view of the valve body. Fig. 3 is a bottom plan view of the valve.

Corresponding parts in the several figures are denoted by like characters of reference.

The valve body A consists of a cylindrical body having an external circumferential shoulder or offset 1, and provided in its underside with an annular recess 2. Said valve body is also provided with an upwardly extending boss 3 having a recess or

bore 4 for engagement with the valve stem, whereby the valve is guided in operation, but which is not illustrated in the drawing.

5 designates a band or collar exteriorly fitted upon and engaging the valve body, said collar being provided with an internal circumferential shoulder or offset 6 adapted to engage the shoulder or offset 1 of the valve body, and the parts being so proportioned that when the shoulder 1 of the valve body is engaged by the shoulder 6 of the collar 5, the lower edge of the latter will project below the lower face of the valve body, while the upper edge of the collar 5 will be positioned below the upper face of the valve body. Secured on top of the valve body and surrounding the boss 3 is a plate or washer 7 which projects slightly beyond the perimeter of the valve body, thereby preventing the collar 5 from becoming detached, but permitting said collar to slide up and down upon the valve body. The plate or washer 7 may be secured by means of fastening members such as screws 8.

Fitted in the annular recess 2 in the bottom of the valve body is a ring or collar 9 having an internal shoulder or offset 10. The collar 9 is retained in the recess 2 where it is free to slide vertically by means of a retaining plate 11 secured upon the underside of the valve body by fastening means such as screws 12. The parts are so proportioned that the collars 5 and 9 may project an equal distance below the under face of the valve body when the parts are assembled, and both of said collars are free to slide in an upward direction, as will be readily understood.

The collars 5 and 9 are provided on their opposed faces with annular corrugations 13, said corrugations being formed upon such portions of the collars which project below the valve body. These corrugations are for the purpose of retaining in position the valve ring 14 which may be made of rubber or other suitable material, it being preferred to use a composition containing rubber which is sufficiently soft to make a perfect contact with the valve seat 15 which is secured in the base 16 and also of such a nature that it will yield to the pressure of grains of sand and grit that may be contained in the fluid that is being pumped

without such sand, grit or other obstructions becoming permanently embedded in the valve ring.

For convenience in assembling the parts, it is preferred that the collar 9 be exteriorly beveled in an upward direction, as shown at 17.

In assembling the parts of the improved valve, the collar 5 is placed upon the valve body, after which the plate or washer 7 is secured in position. The valve ring 14 is now inserted in the lower end of the collar which projects below the valve body. The collar 9 is now placed in position, the beveled portion 17 of said collar enabling it to be readily assembled with the valve ring, which latter is sufficiently yielding to permit the collar to be inserted therethrough and into the annular recess 2. The plate 11 is finally secured in position, thus assembling the parts in such a manner that the collars 5 and 9 while free to move upwardly with relation to the valve body are prevented from such movement by the presence of the valve ring 14 which is clamped therebetween. The valve ring 14 projects but slightly below the lower edges of the collars 5 and 9.

As the projecting seat engaging portion of the valve ring becomes worn, and when only a very small portion of the said valve ring projects below the lower edges of the collars 5 and 9, such projecting portion will, when the valve engages the seat, become compressed and laterally distended, thereby exerting an upward pressure against the collars 5 and 9 which will be moved or shifted a short distance upwardly relatively to the valve ring while still clamping and holding said valve ring securely. This operation is made possible by the flexible resilient nature of the valve ring, and it will be particularly noted that the said valve ring is at all times intimately connected with the collars 5 and 9, both of which forcibly and frictionally contact with the valve ring while freely slidable on the valve body. It will be noticed that only a sufficient portion of the valve ring will at any time be exposed below the lower edges of the collars 5 and 9 to make a perfect contact with the seat, while the latter is at all times protected from contact with the metallic collars 5 and 9, owing to the fact that the exposed portion of the valve ring will become distended therebetween when the valve contacts with the seat, as previously described. The valve ring is also completely guarded against rupture or other injury.

As will be seen from the foregoing description I have provided a simple and efficient construction whereby the valve ring may be utilized practically as long as any portion of it remains. When the valve ring

has been completely worn out, the parts of the valve may be readily disassembled and a new ring placed in position.

Having thus described the invention, what is claimed as new, is:—

1. In a valve, the combination of a valve body, a pair of concentric collars associated therewith for slidable movement, and a valve ring supported between portions of said collars that normally project below the valve body.

2. In a valve, the combination of a valve body, a pair of annular concentric collars connected therewith for slidable movement, said collars having circumferential grooves on their opposed faces, and a valve ring of yieldable material supported between the grooved portions of said collars which normally project below the valve body.

3. In a valve, the combination of a cylindrical valve body having an annular recess in its underside, a collar externally slidable upon the valve body, a second collar slidable in the annular recess and concentric with relation to the first collar, a flexible valve ring supported between portions of said collars which normally project below the valve body, and means for limiting the slidable movement of the collars with reference to the valve body.

4. In a valve, the combination of a cylindrical body having an external circumferential shoulder and provided with an annular recess in its underside, a collar externally slidable upon the valve body and having an internal shoulder, a washer secured on top of the valve body and overhanging the same to limit the upward movement of the external collar, a plate secured upon the underside of the valve body and overhanging the annular recess to engage the internal shoulder of the collar slidable in said recess, and a flexible valve ring supported between portions of the two collars that normally project below the valve body.

5. In a valve, the combination of a cylindrical body having an annular recess in its underside, a collar externally engaging the valve body and slidable thereon, a collar slidably mounted in the annular recess, said collar being externally beveled in an upward direction, a valve ring mounted between portions of the two collars which normally project below the valve body, and means for limiting slidable movement of the collars with reference to the valve body.

6. In combination, a valve body, a flexible valve ring, and means carried by the body for protecting the ring in use, said means automatically accommodating itself to the wear of the ring, a portion of which constantly projects beyond the protecting means.

7. In combination, a valve body, a valve ring, and means carried by the body of the

valve for protecting the ring in use, said means being movably associated with the ring, a small portion of which constantly projects beyond the protecting means.

5 8. In combination, a valve body, a valve ring, and means carried by the body for protecting the ring in use, said means comprising annular solid members slidably engaging the valve body, and clamping the
10 ring therebetween.

9. In combination, a valve body, a valve ring, and annular ring holding and protecting means slidably engaging the valve body, said holding means comprising two sleeves
15 having opposed corrugated faces between which the valve ring is clamped and fed.

10. In combination, a valve seat, a valve

body, a flexible valve ring abutting upon the body, and ring holding and protecting means slidably engaging the body and frictionally contacting with the valve ring, a
20 portion of which constantly projects beyond the ring holding and protecting means to make contact with the seat, thereby gradually moving the holding and protecting
25 means to expose unused portions of the ring.

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

JOHN N. ROBERTSON.

Witnesses:

GEO. A. KOENIG,
P. E. GIBBONEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."