

May 28, 1929.

E. TIMBS ET AL

1,714,740

SLUSH PUMP VALVE

Filed April 18, 1927

Fig. 1.

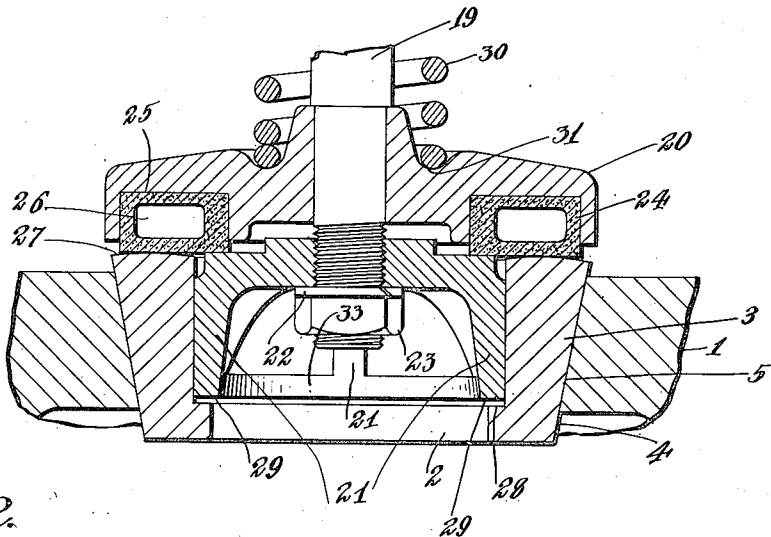
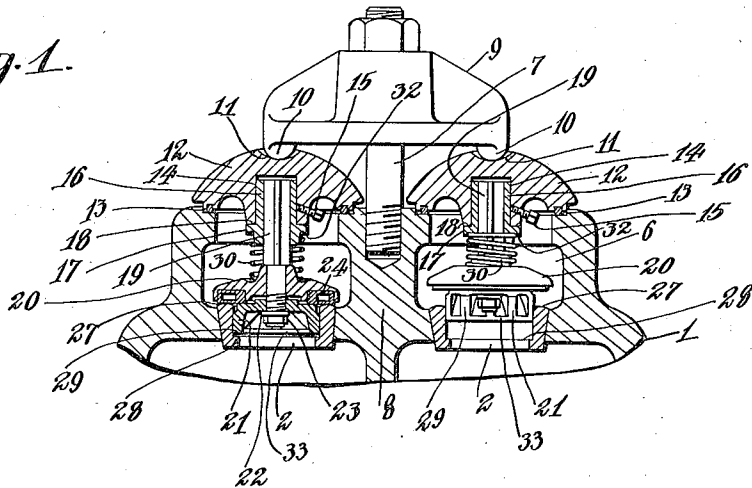


Fig. 2.

Inventors

Edward Timbs
Lewis E. Jerbe
By Lyon & Lyon

Attorneys

Patented May 28, 1929.

1,714,740

UNITED STATES PATENT OFFICE.

EDWARD TIMBS, OF LOS ANGELES, AND LEWIS E. ZERBE, OF MONETA, CALIFORNIA,
ASSIGNORS TO THE NATIONAL SUPPLY COMPANY OF DELAWARE, OF NEW YORK,
N. Y., A CORPORATION OF DELAWARE.

SLUSH-PUMP VALVE.

Application filed April 18, 1927. Serial No. 184,557.

This invention relates to slush pump valves, and refers more particularly to a self-cushioning slush pump valve having mounted in the valve head a ring of resilient material having a cored interior.

Slush pumps are especially built for use in connection with rotary drilling outfits for the purpose of pumping slush or rotary mud through the rotary drill stem. The pumps are made with large valve areas so as to provide direct water passages to efficiently handle the slush or rotary mud of varying consistencies. They are designed to handle water containing a large amount of grit and sand and offer an unobstructed passage to the fluid.

It is an object of this invention to provide a valve for use in slush pumps which is self-cushioning and is provided with a cored ring of resilient material seated in the valve head in position to engage the water valve seat to cushion the valve head on the valve seat.

Other objects and advantages of this invention, it is believed, will be apparent from the following detailed description of a preferred embodiment thereof, as illustrated in the accompanying drawings. In the

Figure 1 is a fragmental section of a portion of a slush pump illustrating slush pump valves as embodying this invention mounted therein, and illustrating one of the valves in substantially vertical mid-section.

Figure 2 is an enlarged fragmental section of a slush pump valve embodying this invention.

In the preferred embodiment of this invention, illustrated in the drawings, 1 illustrates a fragment of a slush pump having water passages 2 formed therein. Mounted within the passages 2 are tapered valve sleeves or seats 3, tapered on their exterior periphery 4 to engage within the tapered section 5 of the body 1. The passages 2 communicate above the valve seats 3 with fluid passages 6 which may be either the inlet or outlet passages of the slush pump.

Means are provided for maintaining the self-cushioning slush pump valves in position, which means preferably comprise a stud 7 which is screw-threaded to the central web 8 of the body 1 and is provided with a cross head 9 having bolt engaging

portions 10 which fit within arcuate recesses 11 formed in the caps 12. The caps 12 are maintained seated within the annular recesses 13 formed in the body 1 by means of the stud 7 and cross head 9.

Secured within bores 14 formed in the caps 12, by means of screws 15, are sleeves 16. The sleeves 16 are provided with circumferential flanges 17 which engage the lower edges 18 of the caps 12. Slidably mounted within the sleeves 16 are water valve stems 19 upon which valve heads 20 are mounted. Winged valve guides 21 are mounted upon the valve stems 19 and are maintained in position by means of a washer 22 and water valve stem nut 23 which is screw-threaded to the end of the water valve stem 19.

Interposed between the upper surface of the guide 21 and valve head 20 is a cored ring 24, which is preferably formed of a resilient material, such as rubber or a composition of rubber and canvas, or the like. The cored ring 24 is mounted within an annular recess 25 formed in the valve head 20 and is maintained in position by means of the valve guide 21 which clamps the same within the recess 25. The cored ring 24 is formed with an interior core 26. The core 26 formed in the ring 24 provides an air cushion within the ring 24. The cored ring 24 extends outwardly beyond the valve guide 21 in the valve head 20 in position to engage the arcuate seat 27 of the valve seat 3.

Means are provided for limiting the downward movement of the valve, which means preferably comprise a circumferential shoulder 28 formed at the lower end of the valve sleeve 3, which acts as a limit stop to engage the lower end 29 of the guide 21.

Secured to or formed integral with the guide 21 is a ring 33 which is adapted to engage the circumferentially extending shoulder 28 formed within the valve sleeve 3. The ring 33 provides a contact surface at the ends of the guide 21 to take up the pounding action of the same on the shoulder 28.

Means are provided for yieldably urging the valve head 20 toward the valve seat 3, which means preferably comprise a compression spring 30 which is mounted upon the valve stem 19 and is engaged at its lower

end within an arcuate recess 31 formed in the upper surface of the head 20 and engages at its opposite end the under surface 32 of the circumferential flange 16 of the sleeve 15.

5 Having fully described our invention, it is to be understood that we do not wish to be limited to the details herein set forth, which may obviously be varied without departing from the spirit of our invention as set forth in the appended claims.

10 We claim:

1. In a device of the class described, the combination of a valve sleeve, a valve head, a valve guide, a cored ring of resilient material, the cored ring being seated in an annular recess formed in the valve head intermediate the valve head and valve guide and providing a cushion between the valve head and valve sleeve, the valve sleeve being provided with an interiorly extending circumferential shoulder against which the end of the valve guide engages.

2. In a device of the class described, the combination of a valve sleeve, a valve head, a valve guide, a pneumatically cored ring of resilient material interposed between the valve head and valve guide and adapted to engage the upper end of the valve sleeve, a ring secured to the valve guide at the lower end thereof in position to engage a circumferentially extending shoulder formed in the valve sleeve.

3. In a device of the class described, the combination of a valve sleeve forming a valve seat at its upper end, a valve head, a valve guide, a pneumatically cored ring of resilient material interposed between the valve head and the valve guide and adapted to engage said valve seat, a valve stem passed axially through the valve head and guide and means secured to the valve stem for clamping the guide to the head to secure said ring in position, a ring secured to the valve guide at the lower end thereof in position to engage a circumferentially extending shoulder formed in the valve sleeve to compress the valve head toward the valve guide and compress the pneumatically cored ring to provide a resilient cushion between the valve seat and said head.

4. In a device of the class described the combination of a valve sleeve, a valve head, a valve guide, a pneumatically cored ring of resilient material interposed between the

valve head and valve guide and adapted to engage the upper end of the valve sleeve, a ring secured to the valve guide at the lower end thereof, in position to engage a circumferentially extended shoulder formed in the valve sleeve, and means for securing the valve head to the valve guide to permit the valve head to move toward the valve guide when the valve guide engages said circumferentially extending shoulder.

5. In a device of the class described the combination of a valve sleeve, a valve head, a valve guide, a pneumatically cored ring of resilient material interposed between the valve head and valve guide and adapted to engage the upper end of the valve sleeve, means for securing the valve guide to the valve head to permit relative movement of the valve guide and valve head and stop means adapted to be engaged by the valve guide.

6. In a device of the class described, the combination of a valve sleeve, a valve head, a valve guide, a ring of resilient material seated in an annular recess formed in the valve head intermediate the valve head and valve guide, the valve sleeve being provided with an interiorly circumferential shoulder against which the end of the valve guide is adapted to engage.

7. In a device of the class described, the combination of a valve sleeve, a valve head, a valve guide, a ring of resilient material interposed between the valve head and valve guide and adapted to engage the upper end of the valve sleeve, a ring secured to the valve guide at the lower end thereof in position to engage a circumferentially extending shoulder formed in the valve sleeve.

8. In a device of the class described, the combination of a valve sleeve, a valve head, a valve guide, a ring of resilient material interposed between the valve head and valve guide and adapted to engage the upper end of the valve sleeve, means for securing the valve guide to the valve head to permit relative movement of the valve guide and valve head, and stop means adapted to be engaged by the valve guide.

Signed at Torrance, California, this 5th day of April, 1927.

EDWARD TIMBS.
LEWIS E. ZERBE.