R. H. THORNE.

VALVE.

APPLICATION FILED DEC. 17, 1909. RENEWED APR. 4, 1916.

1,204,087. Patented Nov. 7, 1916.

Fig. 1.

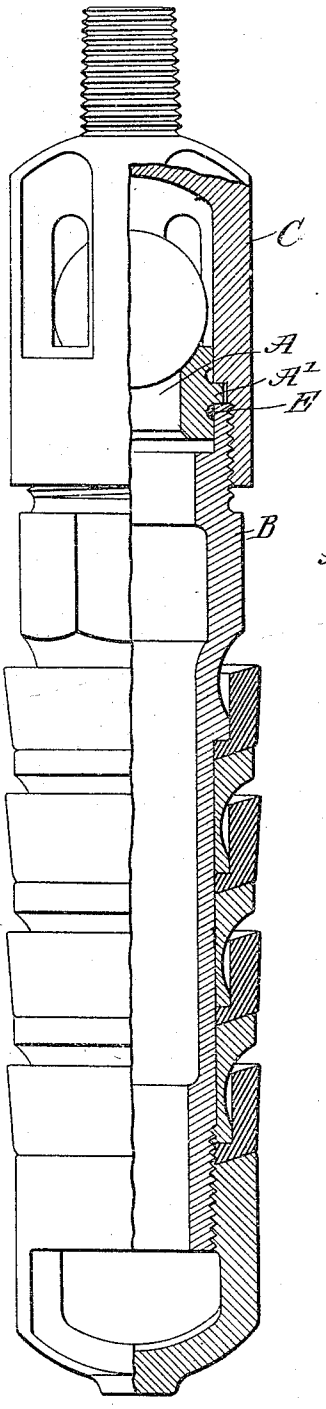


Fig. 2.

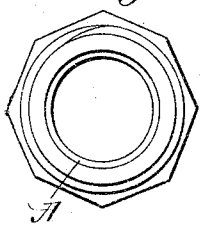


Fig. 3.

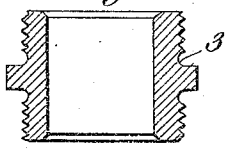


Fig. 4.

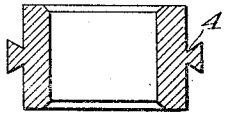


Fig. 5.

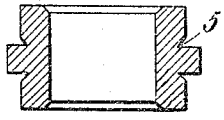


Fig. 6.

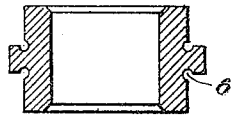


Fig. 7.

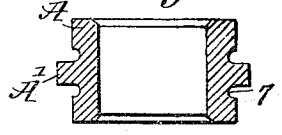
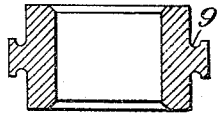


Fig. 8.



Fig. 9.



WITNESSES

Samuel E. Wade.

Percy B. Turpin

INVENTOR

ROBERT H. THORNE

BY Munn & Co.

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT H. THORNE, OF WILLIAMSPORT, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO J. LEWIS HOUGH, OF WILLIAMSPORT, PENNSYLVANIA.

VALVE.

1,204,087. Specification of Letters Patent. Patented Nov. 7, 1916.

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To all whom it may concern:

Be it known that I, ROBERT H. THORNE, a citizen of the United States, and a resident of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention is an improvement in valve seats and while the valve seat hereinafter described has been especially designed for use upon pistons and check valves of deep well pumps, and the like, it will be apparent that the valve seat is susceptible of use in a large number of places which will readily suggest themselves.

An important object of the present invention is to provide a valve seat of simple construction which will afford practical and reliable means of packing the seat in the piston body or check valve body as hereinafter described.

In oil and Artesian wells the piston of the pump is required to be of permanent and durable character on account of the great depth of the wells. The usual method of making these seats heretofore, has been to form them as near as possible to a driving fit in the piston body, forcing them to the shoulder of the collar, depending upon the contact of the two metallic surfaces to make a fluid tight joint. This method has been found faulty where the piston body has become worn by the removal of the seats for repairs and replacing the same, thus permitting a leakage of the fluid between the seat and the piston body. In such cases the worn piston body can be used only by folding thin cloth of a number of thicknesses required to make a tight fit and drive the new seat in, in the usual manner, or by using a seat somewhat larger in diameter than the standard size. In doing this the threaded portion of the piston body surrounding the seat becomes enlarged making it difficult to screw the crown on the body of the piston, and when the crown is screwed on, it will not remain tight on account of bearing only on the first three or four threads.

To remedy this, and with other objects in view the nature of which will fully appear as the description proceeds, the invention consists in a novel construction of the seat by making a recess or annular groove in the outer surface of body of seat on either side or on both sides of the collar of the seat, which recess forms a receptacle for packing, so that by placing packing in said recess, when the seat is forced or screwed to the piston body, or to the valve crown, a tightly packed joint will be formed between the valve seat and the piston body, or between the valve seat and the valve crown, as may be desired.

The recess for packing may be arranged at the angle of the collar and body of the seat (as shown in Figure 4) or on the collar or body of the seat, as shown in Figs. 5 and 9 or may be formed in the body of the seat adjacent to the collar or flange as shown in Figs. 1 and 3.

In the drawing Fig. 1 is an elevation, partly in section of a piston of a deep well pump showing the improved valve seat associated therewith with packing inserted in the groove or recess of the seat, between the seat and the piston body. Fig. 2 is an end view of the seat. Fig. 3 is a sectional view of the seat with the body of the latter threaded and with rounded grooves at the angle of the flange and body portion. Fig. 4 is a sectional view of a seat with grooves formed by undercutting the faces of the flange. Fig. 5 is a sectional view of a seat with grooves formed in the body of the seat at the juncture of the flange. Fig. 6 is a sectional view of the seat with rounded grooves formed partly in the body and partly in the flange of the seat, and Figs. 7, 8 and 9 are sectional views showing different forms of grooves, etc., all of which will be described.

The valve seat A is a longitudinal section of a tube with a flange A′ which is clamped between two connected parts such as B and C as shown in Fig. 1.

The groove for the reception of the packing may be formed and located in various ways. Thus in Fig. 3 the grooves 3 are on opposite sides of the flange and formed in the body and rounded in cross section, while in Figs. 4 and 5 the grooves 4 and 5 are angular and are formed in Fig. 4 in the faces of the flange and in Fig. 5 in the body of the valve seat at the base of the flange.

In Figs. 6, 7 and 8 the grooves 6, 7 and 8 are rounded in cross section, being formed in Fig. 6 partly in the flange and partly in

the body of the seat; in Fig. 7 in the body at the base of the flange and in Fig. 8 in the body at the base of the flange, but on one side only of the flange instead of on both sides, as shown in Fig. 7.

Fig. 9 shows grooves 9 rounded in cross section and formed entirely in the opposite faces of the flange.

In Fig. 1, I show applied the form of seat illustrated in detail in Fig. 7. In this construction as in all the other forms except that shown in Fig. 3, the exterior of the seat body is unthreaded and may be secured as shown in Fig. 1.

In the use of the threaded form of seat shown in Fig. 3, the piston body B and the crown C may be suitably threaded to connect directly with the valve seat.

The seat may be provided with grooves on both sides of the flange or either above or below according as it may be desired to pack between the seat and parts A and B or between the seat and either of said parts.

The packing E which may be of any suitable material when placed in the groove or grooves forms a tight joint as will be understood from Fig. 1.

I claim:

1. A valve seat comprising a body having its outer side cylindrical with the surface thereof parallel with the axis of the body and having on said body mid-way between its ends an outwardly projecting annular flange and provided on opposite sides of said flange with continuous annular grooves formed partly in the face of the flange at the junction of the latter and the body and partly in the body, the said grooves extending below the outer cylindrical surface of the body, substantially as set forth.

2. A valve seat comprising a body having its outer side cylindrical with the surface thereof parallel with the axis of the body, and having on said body mid-way between its ends an outwardly projecting annular flange and provided on opposite sides of the said flange with continuous annular grooves, said grooves being formed partly in the faces of the flange substantially as set forth.

ROBERT H. THORNE.

Witnesses:
A. G. SMITH,
CLARENCE M. HULING.

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