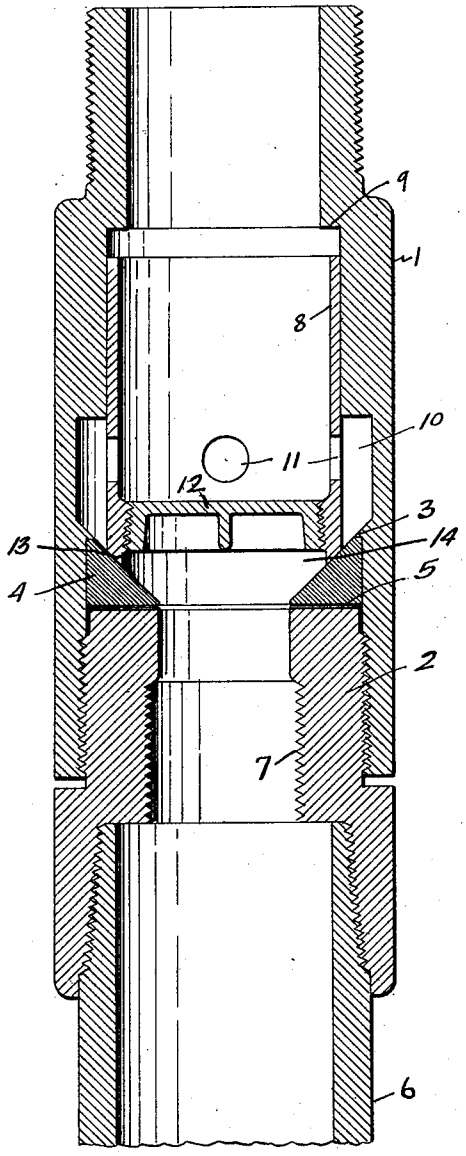
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STANDING VALVE

Filed Jan. 21, 1929



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STANDING VALVE

Application filed January 21, 1929. Serial No. 333,902.

This invention relates to new and useful improvements in a standing valve mechanism.

One object of the invention is to provide a valve of the character described specially designed for use in an oil well pump and which is designed to permit the upward flow of fluid through the well tubing upon upstroke of the traveling valve, but to prevent the back flow, or down flow thereof, and which is of such novel design as to afford large fluid capacity, to prevent leakage, and to suffer a minimum of wear in operation.

Another object of the invention is to provide a standing valve of the character described which normally blocks, or prevents, the back flow of fluid through the pump tubing, and which includes a frangible disc, or part, that may be readily broken out to permit the drainage of the tubing back into the well when it becomes necessary to pull the pump and break up the tubing.

A still further feature of the invention is to provide a valve structure of the character described which is of very simple structure, which has large fluid capacity, which may be cheaply produced and readily installed or repaired and which is very durable in use.

With the above and other objects in view this invention has particular relation to certain novel features of construction, operation and arrangement of parts an example of which is given in this specification and illustrated in the accompanying drawing, wherein:—

The figure shows a vertical sectional view of the valve.

Referring more particularly to the drawing the numeral 1 designates the valve casing whose upper end is reduced and outwardly threaded and thus adapted to be connected to the lower end of the conventional working barrel (not shown) of the pump. Screwed into the lower end of this casing there is the tubular valve body 2. Clamped between the upper end of this body and the inside annular rib 3 in the casing, there is the ring-like seat 4 whose upper side converges downwardly. Clamped between the body and seat there is a suitable gasket 5. Depending from the valve body there is the blank tubing 6, for the well known purpose and the valve body is interiorly threaded, as at 7, to receive the upper end of the conventional, depending gas anchor (not shown).

There is a sleeve like valve 8 fitted snugly in the casing and reciprocable between the seat 4 and the inside, annular, shoulder 9 above. The lower end of this valve is inwardly beveled to conform to the shape of and to nicely fit against the seat 4. Around the lower end of the valve the casing is provided with an annular chamber 10 and opposite this chamber the valve 8 has the openings 11. Beneath these openings there is a frangible disc 12, screwed from beneath into, and forming a part of, the valve.

Upon up stroke of the traveling valve (which is located in the pump barrel above the standing valve) the valve 8 is lifted from the seat 4 and the fluid being pumped passes up through said seat and around the lower end of the valve 8 and in through the openings 11 and thence on up through the pump barrel and the tubing above and is discharged.

In order to minimize the wear of the seat 4 and the valve 8 and to minimize the force of the strokes of the valve against said seat the lower end of said valve has a depending annular flange 13 beneath the disc 12, thus forming a circular pocket, 14. Upon downward movement of the traveling valve, above, the valve 8 will move downwardly toward its seat 4 but the fluid beneath will be trapped in said pocket and will retard the downward movement of said valve 8 and will act as a cushion to present the violent striking of said valve 8 against said seat 4.

When it becomes necessary to pull the pump from the well there is usually a certain amount of fluid in the pump tubing and as the tubing is broken up in the process of withdrawal this fluid, unless drained out, will be spilled out over the derrick floor and wasted. When the type of standing valve herein described is used, when the fluid in the tubing is encountered, in breaking up the tubing, a go-devil, or similar appliance, may be dropped into the tubing and this will strike and break out the disc 12 and will be

caught in the gas anchor beneath. The fluid in the tubing will then drain back into the well as the pump is removed from the well bore.

Before again lowering the pump into the well a new disc 12 may be readily substituted for the one broken out.

What we claim is:—

1. A standing valve mechanism including a tubular valve casing, a sleeve reciprocable therein, an annular valve seat in the casing controlled by said valve and a frangible disc-like web disposed transversely across and screwed into the sleeve, and forming a part of, said valve.

2. A standing valve mechanism including a tubular valve casing, an annular seat therein, a sleeve like valve having a transverse frangible web therein, arranged above the seat and adapted to control the flow of fluid therethrough said web being detachably anchored in place.

3. A standing valve mechanism including a tubular valve casing, an annular seat therein, a sleeve like valve having a removable transverse frangible web therein, arranged above the seat and adapted to control the flow of fluid therethrough, said casing having an annular chamber around the valve above said seat and the valve having an opening through which the chamber communicates with the interior of the valve.

4. A standing valve mechanism including a tubular casing having a vertical passageway therethrough and an annular valve seat therein around said passageway, a sleeve like valve fitted in the casing above said seat, a removable frangible transverse disc across, and forming part of, said valve, said casing having a chamber around the valve above the seat and said valve having an opening leading inwardly from said chamber and a stop in the casing limiting the range of upward movement of the valve.

5. A standing valve mechanism for pumps including a tubular casing, an annular valve seat therein, a sleeve fitted in the casing above the seat and having a removable disc closing the lower end thereof and forming a valve, said casing having a chamber around the sleeve and said sleeve having an opening leading from said chamber, at all positions of the sleeve, into the interior of said sleeve, said disc being frangible.

6. A standing valve mechanism for pumps including a valve casing, a valve body attached to the lower end of said casing, said casing and body having a fluid passageway therethrough, an annular seat around said passageway and clamped between said casing and body, whose upper side converges downwardly, a sleeve like valve fitted snugly in the casing and an inside annular abutment in the casing spaced above said valve, said valve being reciprocable between said seat and abutment, the lower end of the valve being inwardly beveled to conform to the shape of said seat, said casing being provided with an annular chamber around the lower end of the valve and said valve having an opening opposite said chamber and a disc like web beneath said opening screwed into and forming part of said valve.

In testimony whereof, we have signed our names to this specification.

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