

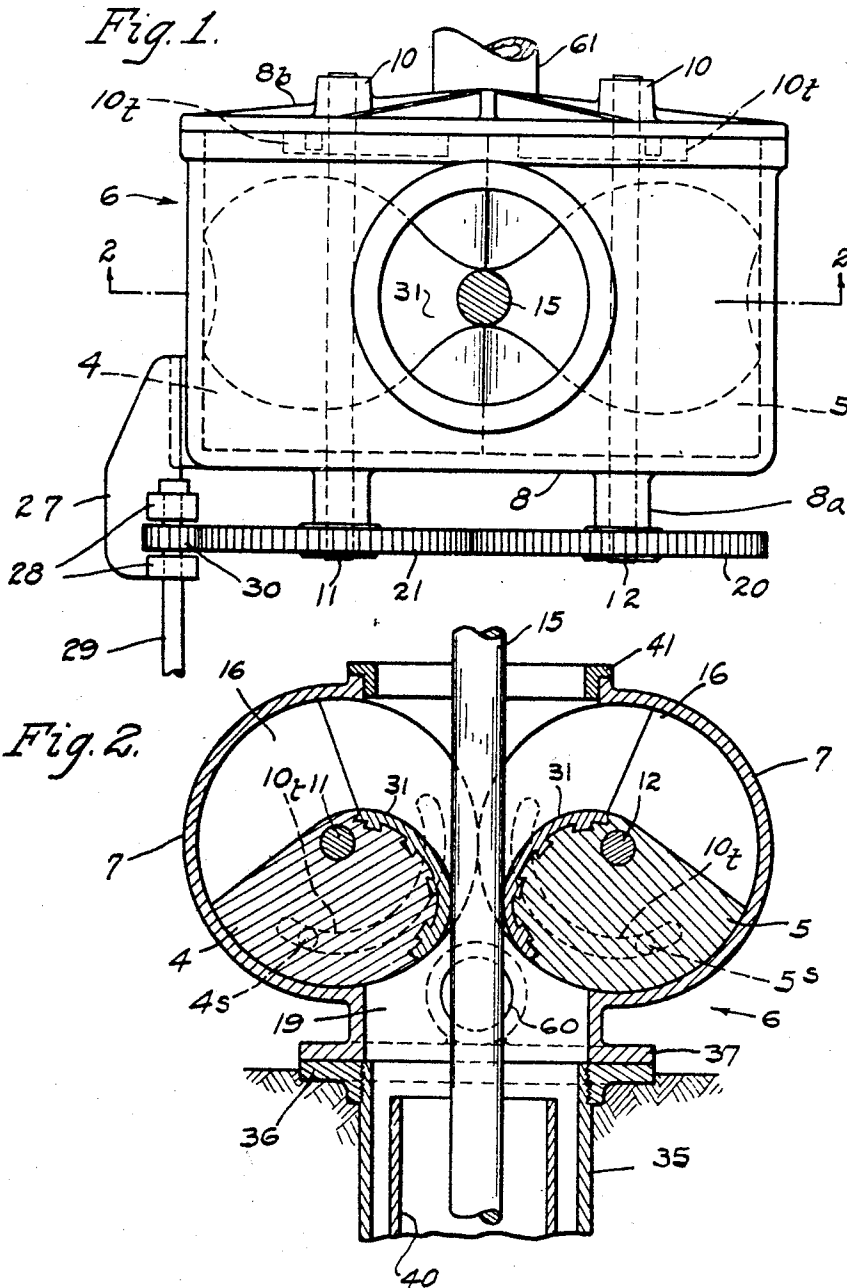
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J. C. SCHOFIELD ET AL

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CHECK VALVE CONSTRUCTION

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INVENTOR.
John C. Schofield and
Verner A. Johnson

BY

Robt. W. Pearson
ATTORNEY.

UNITED STATES PATENT OFFICE

JOHN C. SCHOFIELD AND VERNER A. JOHNSON, OF LOS ANGELES, CALIFORNIA, ASSIGNORS OF FIFTEEN ONE-HUNDREDTHS TO ROBERT D. PEARSON, OF LOS ANGELES, CALIFORNIA

CHECK VALVE CONSTRUCTION

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This invention relates to a check valve construction which is provided with manually operable means for imparting an initial closing movement to the valve, and which, after receiving such initial movement, is adapted to automatically move itself to a completely closed position.

An important object of the invention is to provide improved means to promptly and efficiently cut off the supply of gas or inflammable liquid at the top of the well casing so as to prevent the occurrence of an accidental fire, and also to prevent waste of oil or gas.

Another object of the invention is to provide a manually operable means for controlling the action of the valve construction at a considerable distance from the well in case it becomes necessary to do so.

A further object of the invention is to provide, in conjunction with the other features of the invention, an auxiliary means for more perfectly sealing the well casing against escape of fluid therefrom when the valve elements have been moved to the closed position, such auxiliary means also being adapted for use as a by-pass to withdraw fluid from the well while the valve elements are closed.

Still other objects are to provide a very strong and simple closure device for fuel supply wells which will be adapted to withstand heavy pressure from within the well and at the same time to effect a complete closure thereof.

Other objects and advantages may herein-after appear.

Referring to the accompanying drawings, which illustrate what is at present deemed a preferred embodiment of the invention.

Fig. 1 is a plan view of the device showing the same attached to the top of a well casing and showing also a polish rod engaged by and between the valve members of the device.

Fig. 2 is a cross section on line 2—2 of Fig. 1.

Referring in detail to the drawings, which illustrate an embodiment of the invention provided with two co-operating rotatable valve bodies, said valve bodies are designated 4 and 5 and are located within a housing 6 having a pair of oppositely directed concavo-convex end walls 7, a flat side wall 8 on one side, and on the other side a similar

side wall 8b constructed as a cap plate having bosses 10 which, in conjunction with bosses 8a on the other plate 8, form bearings for the gear shafts 11 and 12.

To the gear shaft 11, within the housing 6, is secured in fixed relation to said shaft, the valve body 4, the co-operating valve body 5 being likewise fixed to the other shaft 12. In vertical mid-section said valve bodies 4 and 5 appear as cams adapted to grip between them the polish rod 15, each of said valve bodies being provided through its upper portion with an expanded concave-groove 16 whereby said valve bodies are adapted to co-operate in gripping between them different sizes of polish rods, and at the same time effecting a complete closure of the vertical passage 19 through the housing 6.

To the shaft 12 is fixed a gear 20 and to the shaft 11 is fixed a gear 21 in mesh with said gear 20. The housing 6 is provided with a bracket 27 having bearing elements 28 to support a pinion shaft 29 to which is fixed a pinion gear 30 in mesh with the gear 21. It is to be understood that the pinion shaft 29, a fragment of which is shown in Fig. 1, may be extended any suitable distance and have its extended portion provided with any suitable means (not shown) for manually or otherwise rotating it.

The inner portion of each of the valve bodies is provided with a facing plate 31 which is of softer material than the remaining portion of the valve body of which it forms a part. Said facing plates are of Babbitt metal or of other soft metal, the purpose of their soft nature being to cause them to conform closely to, and form an air tight, or nearly air tight, fit around the polish rod 15 when forcibly brought into contact therewith.

The soft metal facing plates 31 each have their inner faces provided with internal projections or dove-tails as shown in Fig. 2, in order to secure them in place upon the harder metal bodies which they overlie. The metallic facing thus provided can be fastened in place more securely than would be possible if a fabric facing, not adapted to have

internal projections formed thereon, were to be used.

As well shown in Figure 2, a dovetailed union is preferably formed between facing plates 31 and the main portions of the valve bodies to which they are secured, such dovetailed union being desirable to safe-guard against said facing plates slipping under the heavy strain to which they may be subjected.

Each of the facing plates 31 is shaped to conform to the bottom part of that portion of the groove 16 which grips the polish rod 15. This groove 16 is similarly formed for each of the rotary members 5 and extends only part way around said member 5, the depth of the groove increasing until it reaches a point near the center of the rotary valve member 5 in which it is formed. By this construction a cam action is provided, which not only enables the rotary members 5 to grip the polish rod with increasing force, but also adapts them to accommodate themselves to different sized polish rods and to allow joints or other enlargements upon the polish rod to pass between them.

In order to securely attach the housing 6 to the top of the outer well casing 35, an internally threaded collar 36 is screwed onto the top of said casing 35 and the housing 6 is provided with a base flange 37 which is secured to said collar 36 in any suitable manner.

40 designates the inner casing. 41 designates a top collar with which the housing 6 is preferably provided.

In order to limit the rotary movement of each of the valve bodies they are provided at one side of the device with project-studs 4s and 5s, said studs traveling in arcuate grooves 10t in the inner face of the end plate 8b.

Below the valve bodies 4 and 5 the housing 6 is provided with a port 60 with which communicates a pipe 61 which may be used to conduct fluid cement to the lower portion of said housing 6 in order more effectually to seal the space around the polish rod 15 when the valve bodies 4 and 5 are clamped thereagainst. Said conduit 61 may also be used as a by-pass to withdraw oil or gas from the lower portion of the housing 6 when the parts are in the position shown in the drawings, that is to say when the valve construction is in the closed position.

In operation, when it is desired to effect a complete closure of the well casing 35 the valve bodies 4 and 5 are rotated by manually or otherwise turning shafts 11 and 12 to move the valves towards the gripping position shown in the drawings. It is to be understood, however, that normally the valve bodies 4 and 5 will be positioned so as to provide a clearance around all sides of the polish rod 15 so that said rod may be operated in the usual manner.

After the shaft 29 has been manually rotated sufficiently to close up the vent and to bring the facings 31 into contact with the polish rod, it will then follow that any force within the well tending to expel the polish rod 15 therefrom will cause the valve bodies 4 and 5 to act as cams thus gripping said rod between them with great force and spreading out the soft material of said facing plates on all sides of the rod to form a seal which will prevent escape from the well of liquid or gas.

We claim:

In combination, a well casing, a housing secured to the upper end of said casing and forming an upward continuation of the passage afforded by said casing, a plurality of cooperating rotatable valve bodies, each of said valve bodies having a groove extending a portion only of the distance therearound, each of said grooves increasing in depth and being positioned to engage the polish rod to act as a cam thereupon, means for rotating said valve bodies to grip between them the polish rod, there being a facing of relatively soft metal provided for said grooves to engage the polish rod during the gripping action of said valve bodies thereupon, said soft metal facing having upon its inner side projections which project into recesses formed in said valve bodies.

Signed at Los Angeles, in the county of Los Angeles, and State of California, this 2nd day of May, 1929.

JOHN C. SCHOFIELD.
VERNER A. JOHNSON.