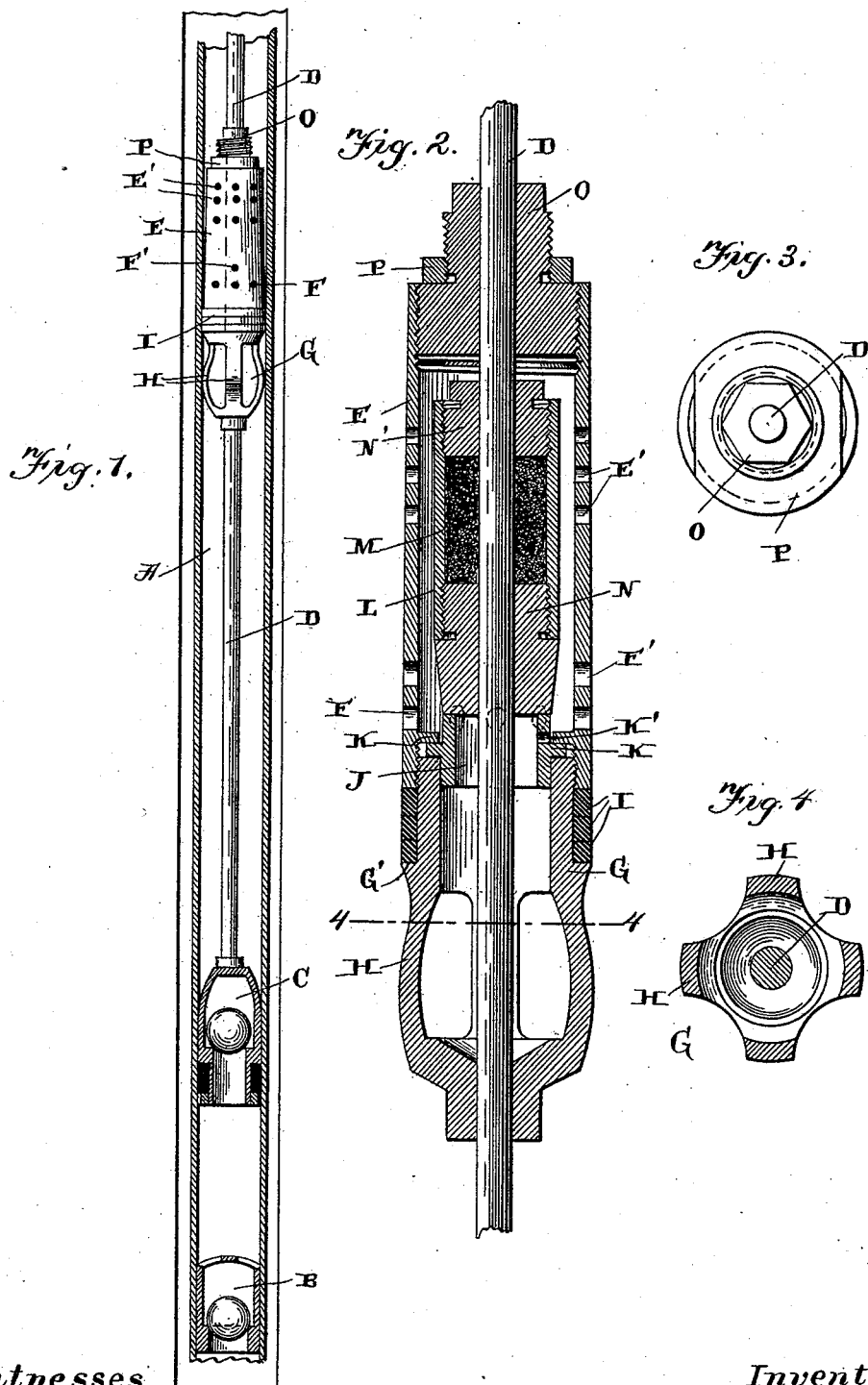


(No Model.)

E. EVANS.  
CHECK VALVE FOR OIL WELLS.

No. 523,629.

Patented July 24, 1894.



Witnesses.

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# UNITED STATES PATENT OFFICE.

EVAN EVANS, OF CHICORA, PENNSYLVANIA.

## CHECK-VALVE FOR OIL-WELLS.

SPECIFICATION forming part of Letters Patent No. 523,629, dated July 24, 1894.

Application filed August 15, 1893. Serial No. 483,208. (No model.)

*To all whom it may concern:*

Be it known that I, EVAN EVANS, of Chicora, in the county of Butler and State of Pennsylvania, have invented certain new and useful  
5 Improvements in Check-Valves for Oil-Wells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use  
10 it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improved check valve for oil wells, and it consists in the novel  
15 means for securing the valve casing within the well tubing, and also in the means for confining the check valve in said casing, as will be fully described hereinafter and especially referred to in the claims.  
20 My invention is especially directed to the provision of a check valve embodying at once simplicity in construction and effectiveness in operation.

Referring to the accompanying drawings:  
25 Figure 1, is a sectional view of a well showing the relative position of the check valve and the other operating parts. Fig. 2, is a vertical sectional view of the check valve mechanism. Fig. 3, is a plan view of the same.  
30 Fig. 4, is a sectional view on line 4—4, of Fig. 2.

A is the working barrel and B the standing valve of the ordinary or any preferred construction at its lower end.

C is the traveling valve, and D the sucker  
35 rod for operating the same extending upward through the tubing and the check valve, now to be described, arranged at a suitable distance above the standing valve. The said check valve structure consists of the cylinder  
40 E having a number of small perforations E', in its upper portion to pass the oil to the working barrel and a series of larger perforations F toward its lower end, while arranged between the perforations E' and F, are the two  
45 openings F' on opposite sides of the cylinder for the purpose presently to be explained. The lower end of the cylinder is screw threaded interiorly and adapted to be run upward thereinto is the base portion G carrying a  
50 number of compressible wings H arranged vertically, which bind tightly the wall of the working barrel when in position therein, thus

holding the valve casing securely in position.

The base portion is enlarged to form a flange G' and arranged above the same are a series  
55 of rings I which may be formed of leather or soft metal, upon which the lower end of casing E is firmly seated by having the base portion run tightly thereon, thus serving to expand the said rings to fit tightly the said  
60 working barrel, and thus prevent any possible backward flow of oil around them.

Upon the interior of casing near its lower end is the annular flange K, and adapted to be confined between the same and the upper  
65 end of the base portion is the reversible valve seat J. One end of this seat is perforated as shown at K'. In wells of small capacity or flow, there is but a small amount of oil below the foot valve, not enough in fact to afford the  
70 suction necessary to work properly, so that the walking beam and valves have an accelerated movement until the oil fills in sufficiently to flow. The movement of the said parts often becomes so rapid that when the  
75 oil is finally drawn the sudden action is liable to stop the valves and beam. The leak is provided for the purpose of allowing a backward flow all the while so that the pumping action may be regular and uninterrupted.  
80 The leak is not needed at all for large wells and the size thereof will be regulated according to the volume of oil produced; large openings being provided for wells of small flow and smaller openings for those flowing more  
85 freely. The said leak opening being constructed as here shown and described, has no tendency to cause wear upon the valve seat as is the case in check valves now in general use. As the annular shoulder K'' on said  
90 seat is clamped between the parts above referred to in holding the seat in its proper position, it is apparent that either end of the seat may be utilized, one for a tight valve and the other for what I term a leak valve.  
95

L is the valve proper which consists of the body or cylindrical portion M into the lower end of which is screwed the foot piece N having a perfectly flat lower surface which is adapted to rest evenly upon the valve seat K,  
100 which latter is equally smooth and even so that a tight joint is formed through which no leaking is possible. This feature forms an important part of my invention as by its use

the passage is sealed at all times when the valve is down and thus washers and other similar packings are effectually dispensed with. The foot piece and cylinder are also provided with smooth meeting ends or shoulders as shown, which effect a tight joint and serve to keep said parts in perfect alignment. Cylindrical portion M is filled with packing of any desired kind which is confined in place by the removable capping N' at its upper end and through this complete valve the sucker rod has a free movement, while the packing within the cylinder prevents any backward flow of oil.

The stroke or movement of the valve is regulated by nut O adapted to be run into the upper end of casing E, and which is adjusted to the desired point by the lock nut P, upon the upper end of said nut O. The surfaces of both nuts are so formed as to permit of the application of a wrench, as will be readily understood. Thus it will be seen that the lock nut may be so placed upon the nut O, as to permit the latter being run into the casing only a given distance, thus allowing the valve the desired amount of vertical play.

The two openings F' in casing E, are for the purpose of affording a hold for a rod or other suitable tool when the casing is to be turned tightly down upon the base portion. Openings F are arranged in line with the upper end of the valve seat, so that the same may be inspected for the purpose of ascertaining whether or not the valve is properly seated thereon so as to permit of no leakage.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an improved valve, the combination

of a casing, a reversible valve seat therein of less diameter than the casing and provided with a leak opening adjacent one end, a means for supporting the seat so that when the leak end of the seat is uppermost the leak opening will be unobstructed, and a valve, substantially as shown and described.

2. In an improved valve, the combination of a recessed base, a valve seat adapted at either of its ends to fit therein, a lateral flange on the seat between its ends for resting on the upper end of the base and a transverse leak opening adjacent one end of the seat, whereby the leak will be unobstructed when uppermost but which will be effectually sealed by said base when the position of the seat is reversed, and a valve, substantially as shown and described.

3. In an improved valve, the combination of a vertically recessed base, a perforated casing secured to and of greater diameter than the base to which it is secured, a reversible valve seat on the base of less diameter than the said casing and adapted to be supported partially above the base, a transverse leak opening near one end of the seat whereby the oil will flow freely therethrough when said end of the seat is uppermost being obstructed by either the base or casing but which will be effectually sealed when the position of the valve is reversed, and a valve, substantially as shown and described.

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

EVAN EVANS.

Witnesses:

A. A. HOEH,

T. G. McLANAHAN.