

J. BURKE.
TUBULAR WELL.

No. 497,302.

Patented May 16, 1893.

Fig 1

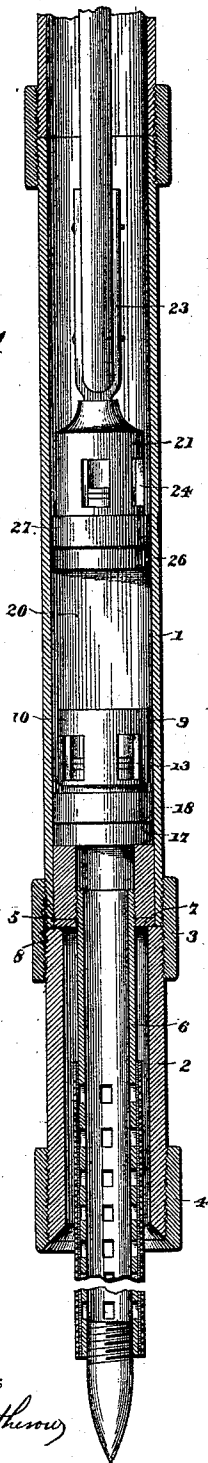


Fig. 2.

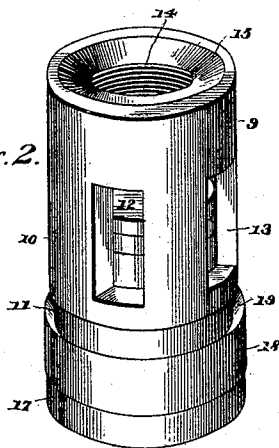
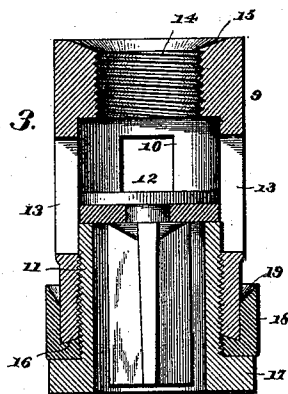


Fig. 3.



Witnesses
J. M. Withers

Wm. Bagger

By *his* Attorneys,

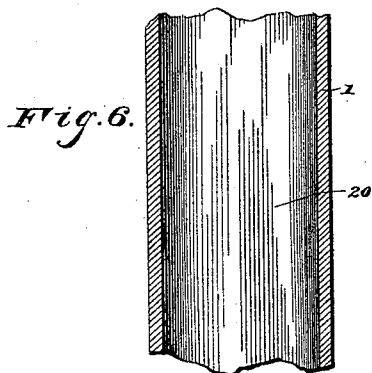
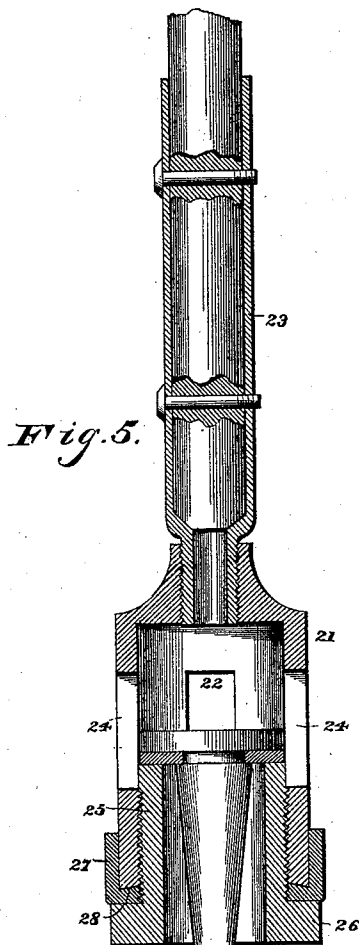
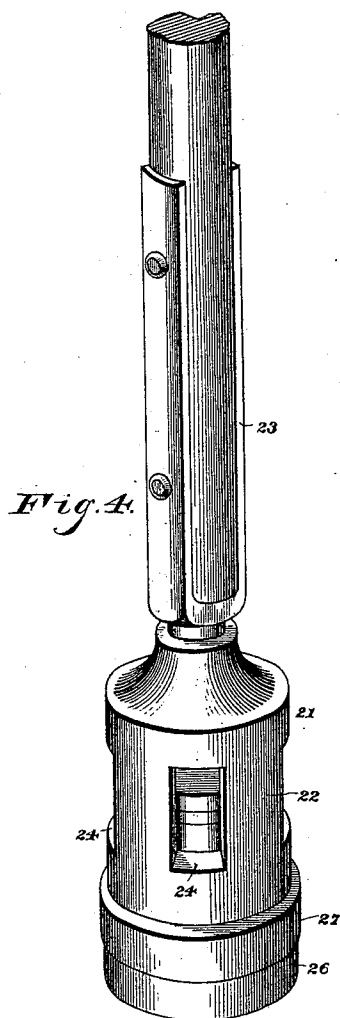
C. A. Snow & Co.

Inventor
John Burke

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UNITED STATES PATENT OFFICE.

JOHN BURKE, OF NILES, MICHIGAN.

TUBULAR WELL.

SPECIFICATION forming part of Letters Patent No. 497,302, dated May 16, 1893.

Application filed March 15, 1890. Serial No. 344,007. (No model.)

To all whom it may concern:

Be it known that I, JOHN BURKE, a citizen of the United States, residing at Niles, in the county of Berrien and State of Michigan, have
5 invented a new and useful Tubular Well, of which the following is a specification.

This invention relates to tubular wells and it consists in certain improvements in the well casing, the check valve and the plunger valve all as will be hereinafter fully described
10 and particularly pointed out in the claims.

In the drawings Figure 1 is a vertical sectional view of the lower end of a tubular well having my improvements. Fig. 2 is a perspective detail view of the check valve. Fig. 3 is a vertical sectional view of the check valve removed from the well casing. Fig. 4 is a detail perspective view of the plunger valve. Fig. 5 is a vertical sectional view of the plunger valve. Fig. 6 is a detail section
15 of the working barrel.

Like numerals of reference indicate like parts in all the figures of the drawings.

To the lower end of the well casing which is designated by 1, is attached a short length of pipe 2, which is considerably thicker than the well casing proper forming what might be termed a reinforced nipple the exterior diameter of which is equal to that of the well casing while the interior diameter of said nipple owing to its increased thickness is less than that of the well casing proper to which it is connected by means of an ordinary coupling sleeve 3. The lower end of the pipe 2 is
20 reinforced by means of an ordinary sleeve 4 which may be screwed, shrunk or otherwise secured thereon.

The upper edge of the pipe section 2 forms a shoulder 5 which forms a seat for the strain-
25 er 6 which is of ordinary construction and which is provided at its upper end with a flange or shoulder 7 resting upon the shoulder 5, a washer 8 of leather or other suitable material, being interposed for the purpose of forming a tight joint.

9 designates the check valve which comprises the cylindrical casing 10, the lower end of which is threaded to receive the valve seat 11, the upper edge of which supports the
30 valve 12. The casing 10 is provided with openings 13 in its side to admit of the escape of the fluid as it rises through the valve seat and

the upper end of the said cylindrical casing has a screw threaded upper portion 14 adapted to receive the end of a rod or pipe or other
35 suitable tool by means of which the said valve may be adjusted in position for operation, or removed from the well when occasion demands. The upper side of the valve casing is beveled downwardly as shown at 15 to the
40 central screw threaded opening 14, the object of this being to guide the tool when it shall be desired to remove the valve from the well casing, and enable it to engage the screw threaded opening quickly and without fail.
45 It will be observed that the casing of my improved check valve forms a complete cylinder and in this it differs from the check valves ordinarily employed which are usually in the form of cages to inclose a ball or other valve,
50 and which have been objectionable on account of their lack of sufficient strength and durability.

The lower edge of the cylindrical valve casing 10, is beveled upwardly and inwardly as
55 shown at 16, and between the said lower edge and the flange 17 which is formed at the lower edge of the valve seat is interposed a cup shaped packing ring of leather or other material denoted by 18. The beveled lower edge
60 of the valve casing will when the parts are screwed together bite firmly upon the said packing ring and render its displacement practically impossible thereby avoiding an objection which frequently arises when valves
65 are to be seated in deep tubular wells. The upper edge of the leather packing ring is beveled upwardly and outwardly as will be seen at 19; owing to this construction of the said
70 packing ring, the body of water which in practice will rest thereon, will expand the said packing ring against the walls of the casing and thus form an absolutely tight joint. Owing to this construction, my improved valve
75 may be effectually seated at any point in the well casing and the necessity is avoided of providing a shoulder or seat to support the said valve.

The use of valves of ordinary construction usually necessitates the provision of a seat or
80 support of some kind, and when for any reason it is found impossible to cause the valve casing to reach its support, the valve will be inactive. By my improved construction of

the check valve, difficulties in seating the valve are effectually avoided.

The part of the well casing 1 which forms the working barrel, and which is usually the lower end of the casing, is as usual finished off smoothly to admit of a close fit of the plunger valve. In tubular wells, as ordinarily constructed this finishing is performed by means of rotary tools; this leaves the working valve, although practically with a smooth surface, yet with a series of annular ridges which however minute interfere more or less with the operation of the plunger and quickly wear the latter to such an extent as to render its renewal, or at all events the renewal of its packing necessary. I have discovered that by finishing or smoothing the working barrel by a longitudinal reciprocating movement of a properly constructed tool such ridges or inequalities in the surface as are left will take the shape of minute longitudinal ribs such as shown at 20, which have no tendency to affect the plunger injuriously. This I consider an important part of my present invention.

21 designates the plunger valve which is composed of the casing 22 having a tapering upper end to which is secured the bail 23, by means of which connection is made with the pump rod. The side walls of the valve casing have perforations 24 and its lower end is threaded so as to receive the valve seat 25 which is provided at its lower edge with a flange 26 between which and the lower edge of the valve casing a cup shaped packing ring 27 of leather is interposed. The lower edge of the valve casing is bent upwardly and inwardly as shown at 28, in order to take a firm hold upon the packing ring, as in the case of the check valve. In the plunger valve this feature of construction is considered even of greater importance, owing to the constant reciprocating motion to which the said plunger valve is in practice subject.

The operation and advantages of my invention will be readily understood from the foregoing description taken in connection with the drawings hereto annexed by those skilled in the art to which it appertains. The construction is simple, durable and inexpensive and the invention may be easily and effectively put into operation.

Having thus described my invention, what I claim is—

1. In a tubular well the working barrel composed of a section of the well casing, finished interiorly by the longitudinal reciprocating movement of a suitable finishing tool, substantially as and for the purpose set forth.

2. The combination with the tubular well casing of a check valve cage, composed of an upper section or casing, a lower section or seat and an interposed cup-shaped leather packing ring, the upper edge of which is beveled upwardly and outwardly as at 19 the lower edge being held rigidly between the upper and lower sections of the valve cage, substantially as and for the purpose set forth.

3. The combination with the tubular well casing, of a check valve cage comprising the upper section or casing having slots or openings in its sides and upwardly and inwardly beveled lower edge, a lower section or seat having a flange at its lower edge and an interposed cup-shaped packing ring, having an upwardly and outwardly beveled upper edge, said upper and lower sections being screwed tightly together, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN BURKE.

Witnesses:

E. L. HAMILTON,
O. W. COOLIDGE.