M. B. SQUIRES.

Well-Tube Check-Valves.

No. 148,387. Patented March 10, 1874.

Fig: 1.

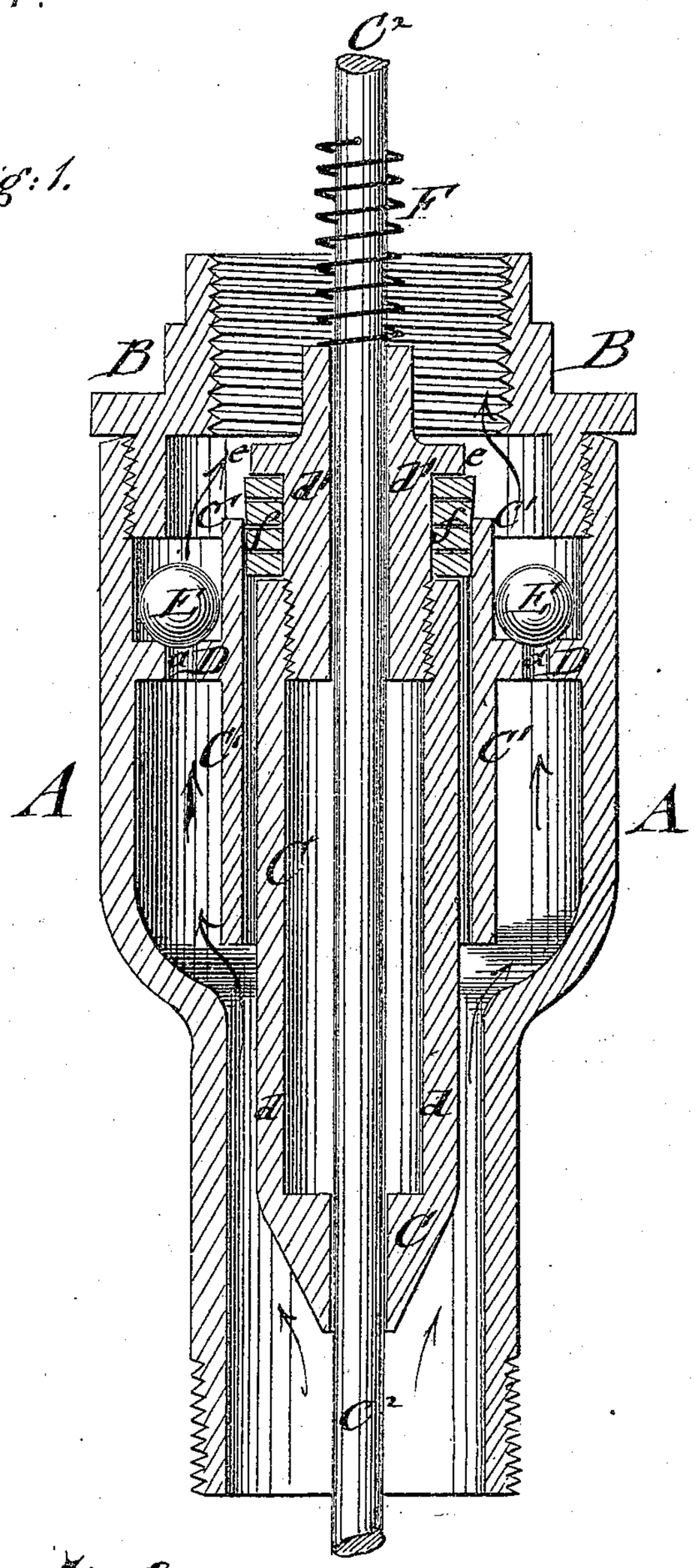
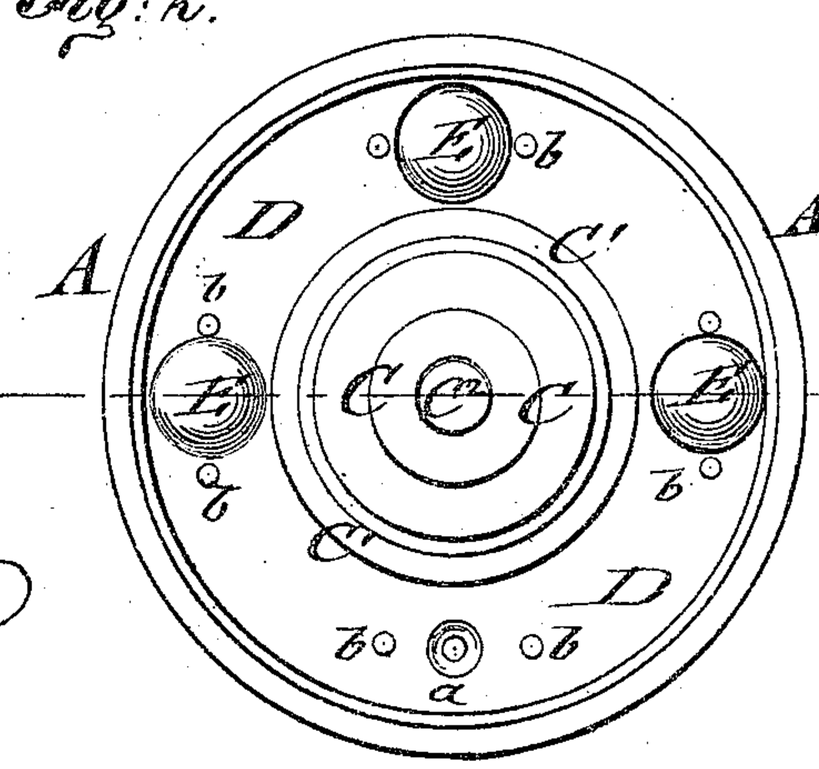


Fig: 2.



WITNESSES:

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MEREDITH B. SQUIRES, OF TIDIOUTE, PENNSYLVANIA.

IMPROVEMENT IN WELL-TUBE CHECK-VALVES.

Specification forming part of Letters Patent No. **148,387**, dated March 10, 1874; application filed January 5, 1874.

To all whom it may concern:

Be it known that I, MEREDITH B. SQUIRES, of Tidioute, in the county of Warren and State of Pennsylvania, have invented a new and Improved Well-Tube Check-Valve, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical central section, on the line *c c*, Fig. 2, of my improved check-valve for well-tubes; and Fig. 2, a top view of the same.

Similar letters of reference indicate corresponding parts.

The object of my invention is to furnish an improved check-valve for oil, salt, and other wells, by which the weight of the fluid is retained above the working-valve during the down-stroke of the same, so as to increase the effect of the same and facilitate its operation. My invention consists in placing a check-valve above the working-valve in the tubing of oil, salt, or other wells, which is made wider than the tubing, so that the stuffing-box for guiding the valve-rod may be tightly and firmly applied therein during the working of the valve, and easily withdrawn for repairs, with the valve-rod, if required. A spiral spring, which is attached to the valve-rod, acts with its lower end on the top of the stuffing-box, and forces the same tightly in its seat during the working of the valves.

In the drawing, A represents a tubular case, which is screwed by a thread cut on its narrower lower end into the working-barrel, and by a thread at its upper wider part on the head B, which again screws over the tubing above it. The upper part of case A is made wider to give sufficient space for the arrangement of one or more ball-valves around the stuffing-box C, which serves to guide the valve-rod C^2, which passes down through the same to the working-valve at the bottom of the well. An inner tube, C^1, of the diameter of the lower part of case A, is connected by the horizontal ring or flange D with the case A, and extends to suitable distance above and below ring D, forming thereby, with the outer casing A, circular chambers, into which the fluid enters after each upward stroke of the valve-rod. One or more ball-valves, E, are arranged on the upper side of ring D, which is provided with a corresponding number of ports and valve-seats *a*, and vertical side guide-pins *b*, for retaining, in connection with the walls of tube C^1 and casing A, the ball-valves in regular working order. The head B of casing A projects far enough toward the inside to prevent valves E from getting out of the upper chamber in which they are arranged. The stuffing-box C fits closely on valve-rod C^2, and consists of the longer lower part *d*, which screws over the head part *d'*. A projection, *e*, of head part *d'*, serves, in connection with the upper edge of part *d*, to rivet or bind firmly a series of leather rings, *f*, between them, which form the water-tight packing of the stuffing-box C with the inner tube C^1. A spiral spring, F, is applied around valve-rod C^2, and fastened with its upper end to the same. The lower end rests on the head or top part *d'* of the stuffing-box, and serves to force, at each down-stroke of the valve-rod, the stuffing-box tightly into its seat, precluding thereby any possibility of an incomplete packing, or loosening of the stuffing-box by the upward stroke of the rod.

The fluid enters after each stroke of the working-valve sidewise around the stuffing-box into the lower chamber of the casing, as indicated by arrows in the drawing, lifting the ball-valves, and passing through the upper chamber into the tubing above. The pressure of the fluid ceases immediately on the completion of the upstroke of the rod, which causes the instant closing of the ball-valves by the weight of the fluid in the tubing above the same, relieving thereby the working-valve of the pressure of the fluid column pumped up, and causing thereby an easier and quicker working of the same. On pulling out the valve-rod, the stuffing-box is carried up with it, while the valves, which are not liable to get out of order, remain attached to the well-tubing. On replacing the valve-rod, after repairs have been attended to, the stuffing-box is immediately seated again on the inner tubing in the manner described.

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

1. The combination, with the enlarged case

or well-tube A, having removable head B, of the inner tube C^1, and ball-valves E, surrounding the same, as and for the purpose specified.

2. The casing A, constructed with interior tube C^1, supported by ring-shaped connection D, and extending vertically above and below the same, for forming the seat of the stuffing-box and the chambers for the ball-valves, as specified.

3. The combination of stuffing-box, which is provided with packing-rings *f*, riveted between the upper and lower parts, with valve-rod C^2 and spiral spring F attached to the same, for forcing the stuffing-box tightly and securely into its seat and the inner tube C^1, substantially as set forth.

MEREDITH B. SQUIRES.

Witnesses:

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