

J. T. WHIPPLE.

ADJUSTABLE VALVE FOR TUBULAR WELLS.

No. 172,227.

Patented Jan. 11, 1876.

Fig. 1

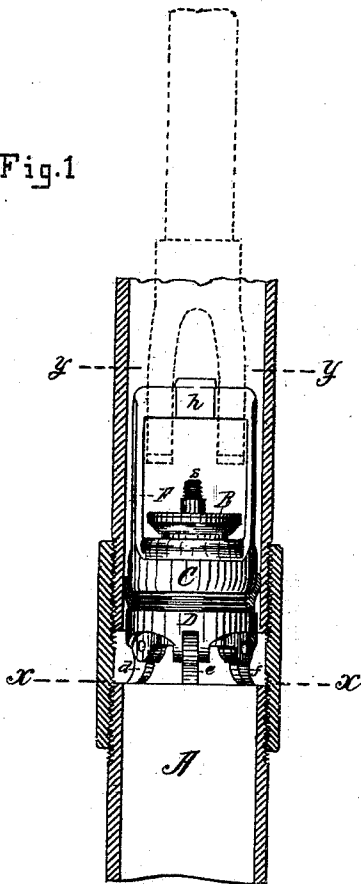


Fig. 2

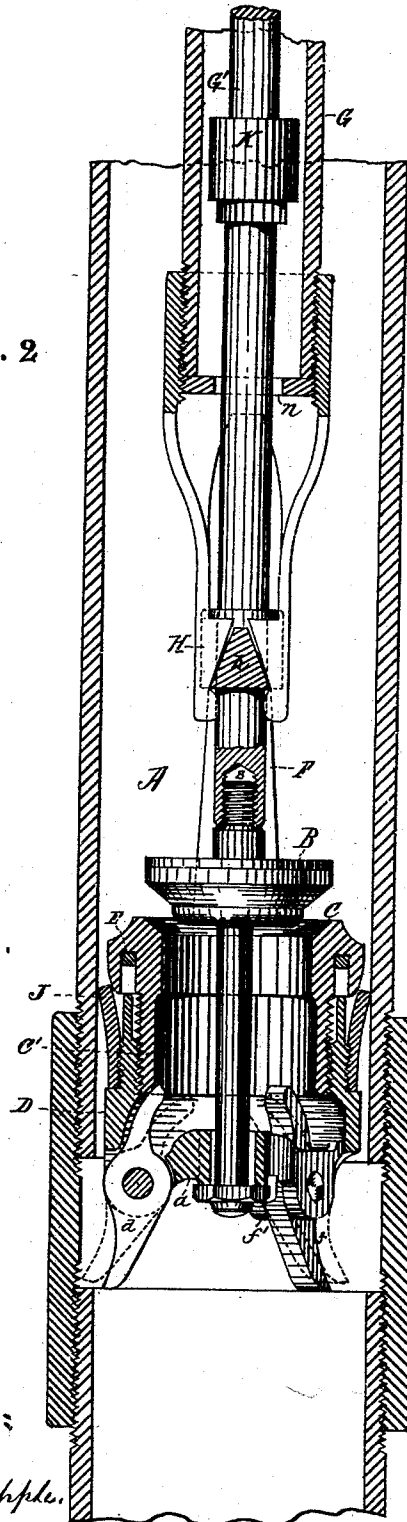


Fig. 3

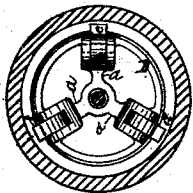
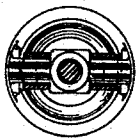


Fig. 4



WITNESSES:

INVENTOR:

Julius Wilcke
J. Mason Gwyler

James T. Whipple.

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Fig. 5

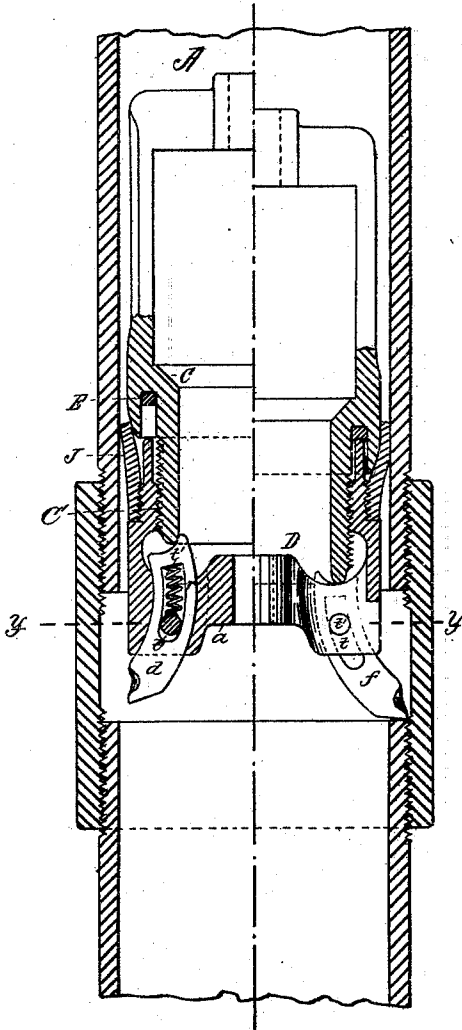
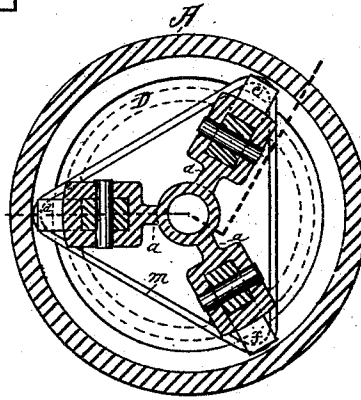


Fig. 6



WITNESSES:

Julius Wilcke
J. Mason Gutzler

INVENTOR:

James T. Whipple.

UNITED STATES PATENT OFFICE.

JAMES T. WHIPPLE, OF OAK PARK, ILLINOIS.

IMPROVEMENT IN ADJUSTABLE VALVES FOR TUBULAR WELLS.

Specification forming part of Letters Patent No. **172,227**, dated January 11, 1876; application filed November 20, 1875.

To all whom it may concern:

Be it known that I, JAMES T. WHIPPLE, of Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Valves for Tubular Wells; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1, Sheet 1, is a central section of a portion of the main tube, showing an elevation of my said invention. Fig. 2, Sheet 1, is an enlarged vertical central section of the same, showing the parts employed to insert the valve within the tube. Fig. 3, Sheet 1, is an inverted sectional plan taken on the line *x x* drawn across Fig. 1. Fig. 4, Sheet 1, is a detail section taken on the line *y y*, Fig. 1. Fig. 5, Sheet 2, is a vertical central section of my said invention, showing a modification of the parts employed for holding the valve in position within the tube; and Fig. 6, Sheet 2, is a sectional plan of the same, taken on the line *y y* drawn across Fig. 5.

Similar letters of reference indicate like parts in the several figures of the drawings.

My invention relates to that class of valves used in tubular wells; and has for its object to provide a means for securing the valve-seat at any desired point within the tube after the latter has been driven to its place in the ground. To that end it consists in providing the base or coupling supporting the valve-seat with a system of adjustable levers arranged to admit of being forced against the inner surface of the main tube by the base of the valve-seat as the latter is screwed into the coupling; and in the device employed for inserting the valve-seat, and parts holding the same, in position within the main tube, all of which will be more fully understood by the following description and claims.

In the accompanying drawing, A represents the main tube, which consists of wrought-metal pipe made in sections, and connected together in the usual manner. B is the valve, C the valve-seat, and E and J the packing, all of which are arranged as shown and described

in Letters Patent No. 166,048, issued to me July 27, 1875. D is the base or coupling, to which the valve-seat is secured. This base or coupling is adapted to pass loosely through the cavity in the main tube, and is provided at its lower end with a series of radial arms, *a*, having vertical mortises, within which are pivoted vertical levers *d*, *e*, and *f*, as shown in Figs. 1, 2, and 3. The upper ends of these levers extend upward into the cavity of the coupling, and are bent in proper shape to allow the lower extremity of the threaded portion *C'* of the valve-seat to bear against them when the latter is screwed into the coupling. The lower end of each of said levers is curved outward in proper shape to engage the inner surface of the main tube when the upper ends of the levers are forced inward by the lower extremity *c* of the valve-seat. G and G' are the adjusting-rods for securing the valve-seat in position within the main tube. The outer or main rod G is made less in diameter than the cavity in the main tube, and is of the proper length to extend downward through the tube to the point where the valve-seat is to be located. This rod is made hollow its entire length, and is provided at its lower end with a grappling-wrench, H, adapted to seize the cross-bar *h* of the bail F of the valve-seat. The jaws of this wrench are made of proper material and in proper shape to spring apart and allow the cross-bar to pass between them when pressure is applied to the rod, and to spring apart and allow the wrench to be removed from the bar by an upward movement of the rod. The inner rod G' is adapted to pass loosely through the rod G, and its lower end passes loosely through an aperture formed centrally in the cross-bar of bail F of the valve-seat, and is connected to the upper end of the valve-stem *s* by a screw-thread, as shown in Fig. 2. Permanently attached to the lower end of the valve-stem, below the valve, is a lug, *f'*, adapted to engage one of the arms *a* of the coupling, by which means the latter is prevented from being rotated while being secured within the main tube. Permanently secured upon rod G', slightly above the grappling-wrench, is a collar, K, the lower end of which is made square, and adapted to take into a corresponding mor-

tise, *n*, in the lower end of rod *G*, at or near its point of connection with the wrench when the latter is elevated from the cross-bar *h*.

My invention is adjusted for operation as follows: The packing being properly arranged and the threaded portion *C'* of the valve-seat being partially screwed into the coupling, the grappling-wrench of rod *G* is then secured to cross-bar *h* of the valve-seat, and the rod *G'* passed through rod *G* and screwed to the valve-stem *s*. The valve-seat and coupling are then inserted within the cavity of the main tube and lowered to the proper point by means of the rods. Rod *G'*—consequently coupling *D*—is then held in a fixed position and a rotary movement imparted to rod or shaft *G*, consequently to the valve-seat, screwing the threaded portion *C'* of the latter into the coupling, forcing the lower end of the levers *d*, *e*, and *f* outward against the inner surface of the main tube, securing the coupling and valve-seat in a fixed position, while, at the same time, the packing is properly compressed, forming an air and water tight joint between the valve-seat and inner surface of the tube. The operator then draws rod *G* slightly upward, which releases the wrench from the cross-bar of the valve-seat, and causing the lower end of the collar *K* to enter mortise *n*, when a rotary motion is again imparted to rod *G*—consequently to rod *G'*—unscrewing the latter from the valve-stem, when the rods are removed from the main tube.

In Figs. 5 and 6 of the drawing I have shown a modified form of levers, in which case the latter are slightly curved and fitted into the mortises in the arms of the coupling, so as to admit of an ascending and descending movement, and provided with a longitudinal mortise, *t*, through which a pivot, *t'*, loosely passes: A coiled spring, *r*, is arranged within the mortise above the pivot, by which means the levers

are held from contact with the inner surface of the tube when the coupling and valve-seat are being inserted therein. With this arrangement of levers the base of the valve-seat bears against the upper end of the levers, forcing the latter downward and outward against the inner surface of the tube as the base of the valve-seat is screwed into the coupling, thus performing the same function as the levers when pivoted to the arms, as previously described.

In place of the coiled spring *r* to hold the levers from contact with the tube, an elastic band, *m*, may be placed around the lower end of the levers, as shown in Fig. 6.

It will be observed, by reference to the drawing, that the levers are adjusted to bear against the inner surface of the coupling connecting the sections of the pipe; but I do not confine myself to so arranging them, as they may be adjusted to hold the valve-seat at any point within the pipe between the couplings.

Having thus described my invention, I claim—

1. In combination with coupling *D* and base *c* of the valve-seat, the levers *d*, *e*, and *f*, arranged for joint operation to hold the valve-seat at any desired point within the main tube, as and for the purpose specified.

2. In combination with the valve-seat, the adjusting-rods *G* *G'* and wrench *H*, rod *G'*, adapted for joint operation with valve-stem *s*, provided with lug *f'*, whereby the coupling *D* is held in a fixed position during a rotary movement of the valve-seat, as and for the purpose specified.

JAMES T. WHIPPLE.

Witnesses:

R. H. TRUMBULL,
WM. S. HEATH.