

(No Model.)

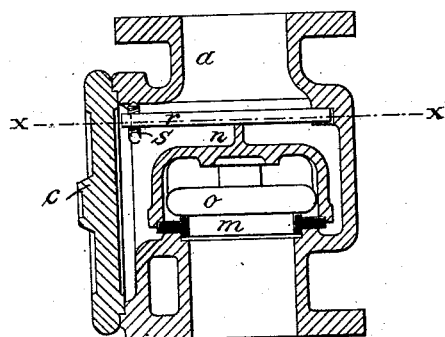
J. KROOG.

VALVE.

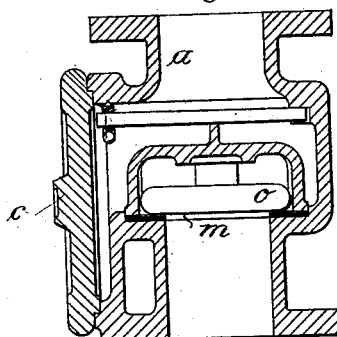
No. 301,821.

Patented July 8, 1884.

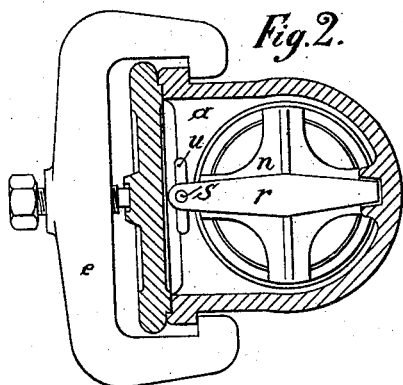
*Fig. 1.*



*Fig. 3.*



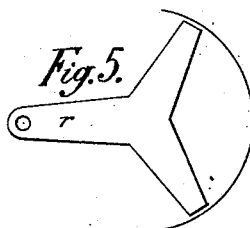
*Fig. 2.*



*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



Witnesses,

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# UNITED STATES PATENT OFFICE.

JOHANN KROOG, OF HALLE-ON-THE-SAALE, PRUSSIA, GERMANY.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 301,821, dated July 8, 1884.

Application filed July 31, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOHANN KROOG, of the city of Halle-on-the-Saale, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 This invention has for its object to provide a novel construction of valves more especially designed for pumps, whereby the valve and valve-seat can be reversed and the valve be accurately guided in its movements in a valve-cage.

15 The invention consists in the construction and combination of parts hereinafter described and specifically claimed.

To enable others skilled in the art to better understand the nature of my invention, I will now proceed to describe the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section showing my improved valve when provided with a valve-seat of hard brass. Fig. 2 is a horizontal section through the valve-box on the line *x x*, Fig. 1. Fig. 3 is a sectional view similar to Fig. 1, showing my improved valve when provided with a valve-seat of soft brass. Fig. 4 shows the valve-cage in section. Fig. 5 shows a modified form of the cross plate or bar whereby the valve-cage is held in position, and Fig. 6 shows a modified arrangement of the valve-seat for obtaining a stroke of shorter length.

35 *a* is the valve-box; *c*, the cover, which is fastened upon the box *a* by means of the clamping-piece *e*. *m* is the valve-seat; *o*, the valve; *n*, the valve-cage; and *r* is the cross plate or bar, the latter being provided near its outer end with a hole for the reception of the binding-screw *s*, which bears against the inner surface of the box *a*, and allows of being turned by means of the handle *u*. With its other end the said plate or bar *r* enters a slot provided 40 in the inner wall of the box *a*, as shown. The valve-box *a* is closed by means of the cover *c*, a binding-screw bearing against the latter and passing through the clamping-piece *e*, the latter catching around shoulders provided on the valve-box in the usual manner.

50 Within the valve-box *a* is arranged the valve-

seat *m*, and upon this seat rests the valve *o*, which is inclosed, and has its stroke limited by the valve-cage *n*, the said valve *o* being guided by the said cage *n* by means of its circumference only. The circumferential edges of the said valve *o* are properly rounded off in order to prevent it from sticking in the guiding-cage *n*. The valve-seat *m* and the valve-cage *n* are fastened by means of the cross plate or bar *r* being drawn downward by turning the binding-screw *s* through its handle *u*. After having thus drawn down the plate or bar *r*, so as to bear upon the top of the cage *n*, the handle *u* is turned parallel with the cover *c*, so that after the latter has been fastened, as above described, it will be practically impossible for the component parts of the valve to become loose or to shift, as, for instance, otherwise might occur from shaking, since it will be readily understood that as herein constructed the handle *u* of the binding-screw *s* is prevented from turning by the closed cover *c*, the plate or bar *r* being sufficiently elastic to allow of turning the handle *u* parallel with the cover *c*.

Both the valve-seat *m* and the valve *o* are constructed with duplicate seating-faces—that is to say, an upper one and an under one, the said lower or under face of the valve *o* always acting together with the upper face of the valve-seat *m*, while the upper face of the said valve *o* and the lower face of its said seat *m* are out of action. Now, in case of the working-face of the valve *o* and that of the valve-seat *m* being worn out or otherwise injured, the herein-described construction allows of readily putting the valve in its former good working order again by simply reversing the said valve *o* and its seat *m*.

I am aware that piston-pumps having a reversible seat in connection with a ball-valve are old, and I disclaim such construction; but,

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

1. The combination of a valve-box, *a*, a cover, *c*, therefor, a valve-seat, *m*, a cage, *n*, a bar, *r*, and screw *s*, for locking the cage in a stationary position, and a valve, *o*, free to play in the cage, and guided by the inner surface of the latter, substantially as described.

2. The combination, with the valve-cage

of the cross-plate *r*, having the binding-screw *s*, and handle *u*, substantially as and for the purpose specified.

3. A check-valve consisting of a valve-box, *a*, having a removable cover, *c*, and a reversible seat, *m*, in combination with a cage, *n*, in which is arranged a reversible valve, *o*, and a bar, *r*, bearing against the back of the cage, and adjusted by a screw, *s*, in the manner  
10 herein shown and specified.

4. In a check-valve, the combination of the valve-box provided with a removable cover, and a valve-seat, *m*, having duplicate seating-surfaces, and capable of being reversed, with

a reversible flat valve, *o*, having duplicate 15 seating-surfaces, and a cage, *n*, held in position by a cross-bar, *r*, having a bearing in one side of the valve-box, and adjusted at the opposite end by a screw, *s*, all constructed and arranged as shown, and for the purpose specified. 20

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHANN KROOG.

Witnesses:

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B. ROY.