(No Model.)

# J. C. DENNERT & G. G. LIND.

## WATER METER.

No. 266,273. Patented Oct. 24, 1882.

Fig. 1.

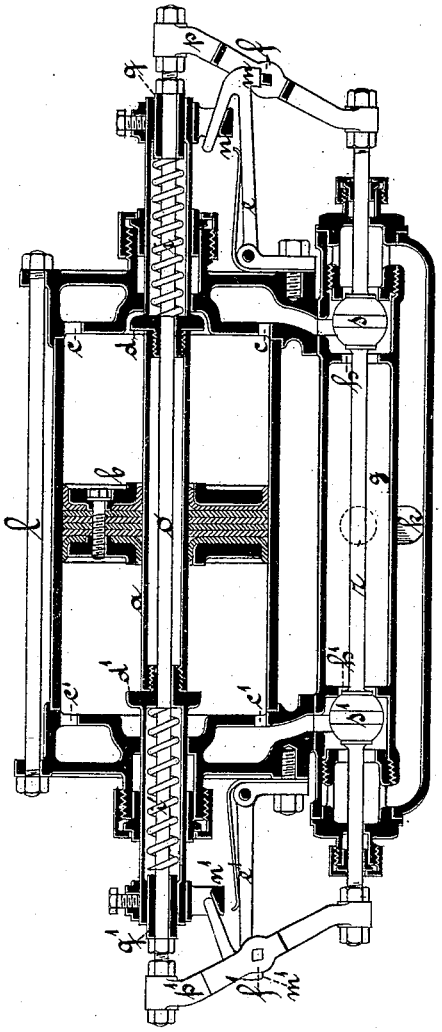
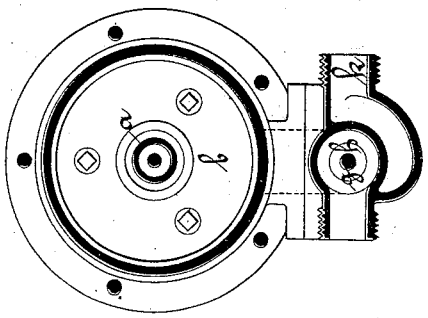


Fig. 2.



Witnesses:
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per William Meyer, Atty.

# UNITED STATES PATENT OFFICE.

JOHANN C. DENNERT AND GEORGE G. LIND, OF ALTONA, PRUSSIA, GERMANY.

## WATER-METER.

SPECIFICATION forming part of Letters Patent No. 266,273, dated October 24, 1882.

Application filed September 8, 1881. (No model.) Patented in Germany December 15, 1880, No. 15,285; in England May 30, 1881, No. 2,367, and in Austria-Hungary July 2, 1881, No. 21,554 and No. 38,102.

*To all whom it may concern:*

Be it known that we, JOHANN CHRISTIAN DENNERT and GEORGE GUSTAVE LIND, the first a subject of the Emperor of Germany and the latter a subject of the Queen of England, both residing at Altona, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Water-Meters, also applicable to water-motors, (for which we have obtained a patent in Germany, No. 15,285, dated December 15, 1880,) of which the following is a specification.

Our invention relates to improvements in water-meters in which a reciprocating piston is moved by the pressure of water; and the object of our improvements is to obtain a sudden entire closing of the water flow on one side of the cylinder when the water flow of the other side of the cylinder is opened, and vice versa. We attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the entire apparatus, and Fig. 2 a cross-section thereof.

Similar letters refer to similar parts throughout the several views.

The loose piston *b* slides on the hollow piston-rod *a* in consequence of the water entering the cylinder *l* through the openings *c* or *c'*, according to the position of the valve-rod *r* and the valves *s* and *s'*. The spring-rod *o*, inside of the hollow piston-rod *a*, bears at both ends the arms *p* and *p'*, to which is also attached the valve-rod *r*, arranged parallel to the piston-rod. Two spiral springs, *i* and *i'*, around the rod *o*, inside of the parts of the piston-rod extending outside of the cylinder, are alternately compressed between the projections *d* or *d'* of the piston-rod and the collar *q* or *q'* of the rod *o* when the piston *b* moves the piston-rod by touching the projection *d* or *d'*. The advancing piston-rod, while compressing the spring, raises the latch *e* or *e'* by means of the incline *n* or *n'* sliding under an inclined arm of the latch *e* or *e'*. The nose *m* or *m'* so becoming free from the pin *f* or *f'* of the arm *p* or *p'*, the latter is pushed forward according to the tension of the corresponding spring. This motion causes the valve *s'* to be drawn from its seat *h'* and the other valve, *s*, to be pressed to its seat, or vice versa, according to the position of the piston *b*. The water enters at *g*, and, passing the cylinder, leaves the apparatus at the outlet *k*.

Having thus fully described our invention, what we desire to claim and secure by Letters Patent is—

1. In water-meters, the combination of the loose piston *b* with the movable hollow piston-rod *a*, inclosing the spring-rod *o*, and the springs *i* and *i'*, which parts cause the sudden working of the reversing mechanism, substantially as described.

2. In water meters or motors, the combination of the piston *b* with the piston-rod *a*, the spring-rod *o*, the springs *i* and *i'*, the projections *d* and *d'*, and the collars *q* and *q'*, substantially as set forth.

3. In water meters or motors, the combination of the hollow piston-rod *a*, the annular projections *d d'*, and the collars *q q'* with the spring-operated rod *o*, the springs *i* and *i'*, the arms *p p'*, with pins *f* and *f'*, the latches *e e'*, and inclines *n n'*, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 20th day of August, 1881.

JOHANN CHRISTIAN DENNERT.
GEORGE GUSTAVE LIND.

Witnesses:
H. SCHRADE,
C. ZEUG.