

C. A. CONDE.
Valves for Hydraulic Purposes.

Patented June 30, 1874.

No. 152,463.

Fig. 2.

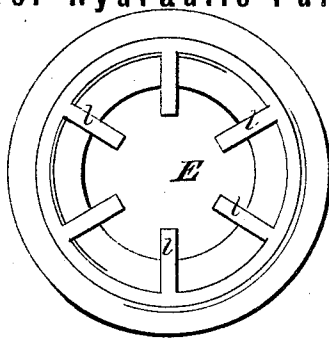


Fig. 1.

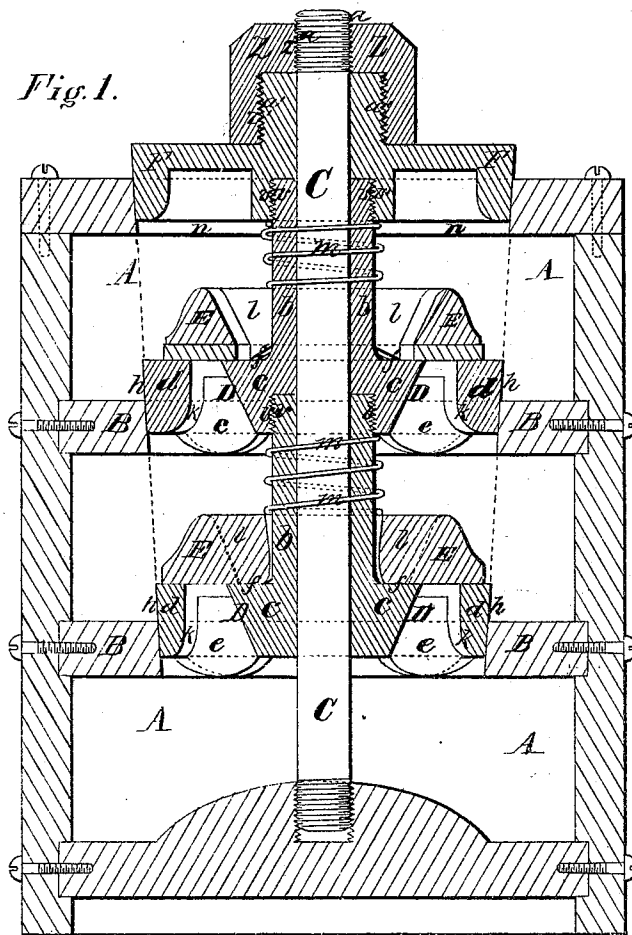
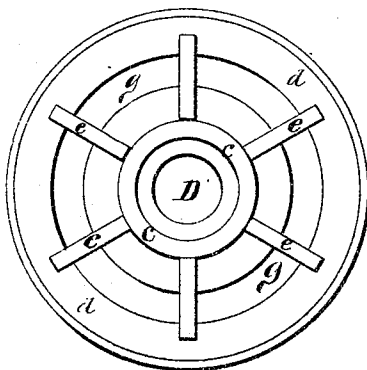


Fig. 3.



Witnesses.
Villette Anderson
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UNITED STATES PATENT OFFICE.

CHARLES A. CONDÉ, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN VALVES FOR HYDRAULIC PURPOSES.

Specification forming part of Letters Patent No. **152,463**, dated June 30, 1874; application filed November 23, 1871.

To all whom it may concern:

Be it known that I, CHARLES A. CONDÉ, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and valuable Improvement in Valves for Hydraulic Purposes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

This invention has relation to pump-valves; and it consists in the construction and general arrangement of the valve-seats and the cap-plate, whereby their edges are tapered, to coincide with the surface of an imaginary frustum of a cone, connecting the entire series of seat-disks and cap-plate, said cone having sufficient pitch for each partition-opening to be large enough to admit the passage of all the seat-disks below it; and in the differential threads, for the purpose of starting the disks when they become fixed in their places.

In the accompanying drawings, the letter A designates the valve-casing, provided with one or more partition-seats, B. C designates a stout central rod, passing axially through the valve-casing, to which it is firmly secured at one end. The other end of said rod is provided with a screw-thread, *a*, for purposes hereinafter set forth.

D D represent the valve-seats, which are connected together as sections. Each seat D consists of a stem, *b*, body *c*, ring *d*, and radial connecting-plates *e*. The stem *b* is provided in the outside of its upper end with a thread, *v*, by means of which it is connected with a female screw, *v'*, formed in the base of the body *c*. The body *c* is of the form of an inverted frustum of a cone, its broad end being connected with the stem *b* by a plane surface or shoulder, *f*. The lateral wall of the body is inclined downward and inward in a conical manner, as above indicated.

Concentric with the body *c*, and separated therefrom by an annular space, *g*, is the external ring *d*, whose outer face, *h*, is made slightly tapering or conical, in order that it may be made to fit closely the circular opening in the partition B. The upper surface of this ring is plane, and designed to be even

with the shoulder *f* of the body. The inner wall, *k*, of the ring is curved upward and inward, and thus a tapering circular slot is formed between the ring *d* and the body *c*. This slot *g* is divided into sections by the radial plates *e*, which connect the body with the ring. These plates *e* are not designed to extend up even with the shoulder *f*, but terminate a little below the bearing-face, so that at the upper portion the annular space is continuous. The plates *e* also extend downward a little below the ring.

E represents the valve, annular in form, and having its under surface plane, and finished to fit neatly the bearing-faces of the valve-seat. In transverse section the valve E is somewhat triangular, usually, its lateral faces extending downward from a circular ridge, respectively, to the outer and inner edges of the bearing-face. From the wall of the valve extend radially inward the projections *l*, which bear against the stem *b*, and serve to keep the valve-annulus properly centered. The ends of the projections *l* are slightly inclined upward and outward, and do not fit the stem closely, so that the valve-annulus is allowed a free and somewhat rocking movement. The projections *l*, instead of extending inward toward the stem, may extend outward against the casing. The object is simply to provide guides for the valve which shall present little or no obstruction to the center flow.

A spring, *m*, may be employed to press the valve toward the seat, when from the position of the valve or other circumstances such action is required.

Commencing with the lowest partition B of the casing, each valve-seat opening is made slightly tapering, and the diameter of these openings gradually increases, to suit the diameters of the series of valve-seats, whose edges terminate in the surface of an imaginary frustum of a cone, commencing with the lowest seat, and terminating with the cap-plate, which fits the largest opening of the series. The pitch of this imaginary frustum is such that all the seat-disks below any partition-opening can have a free passage through it. This larger opening, *n*, at the top of the valve-casing, is designed to receive the tapering edge of the flanged plate F, which is pro-

vided on its under side with a female screw, for connection with the stem of the first valve, and on its upper side with a short stem, having upon its outer surface a screw-thread, a' , of smaller pitch than the thread a at the upper end of the rod C, which projects through the central opening of the plate F, which has a free movement on said rod.

Z represents a nut, provided with differential threads to suit the threads a and a' , which are of different pitch. The smaller thread is formed around the larger opening, z' , in the base of the nut, while the larger thread is formed around the smaller opening, z , which extends through the top of the nut.

The flow through the valve is central as well as external, the beveled walls of the slot g serving to guide the water in both directions, while the construction of the annular valve is such as to present the least amount of obstruction it is thought consistent with the requisite strength of parts. The friction of the valve on the stem is small, while the guides l are sufficient to keep the valve properly centered upon its seat. The sectional construc-

tion of the series of valve-seats is regarded as important with reference to purposes of repair, as any seat may be removed from the series and replaced in a short space of time.

The leverage obtained by the use of the differential screws is applied to force the valve-seats to their places in the partitions. It is also useful in releasing the valve-seats from their places when necessary, said seats becoming, from various causes, sometimes so firmly fixed that they cannot be started by ordinary means.

I claim as my invention—

The combination, with the partitioned casing, having the central stem C, of the conical series of valve-seats, the cap-plate F, and the differential nut Z, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHAS. A. CONDÉ.

Witnesses:

D. D. KANE,
F. B. CURTIS.