(No Model.)

C. D. WILEY.

VALVE.

No. 245,904. Patented Aug. 16, 1881.

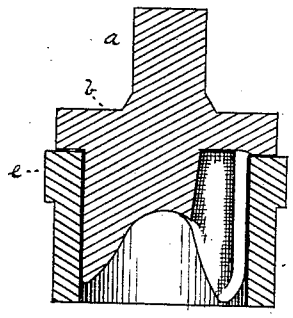


Fig 1.

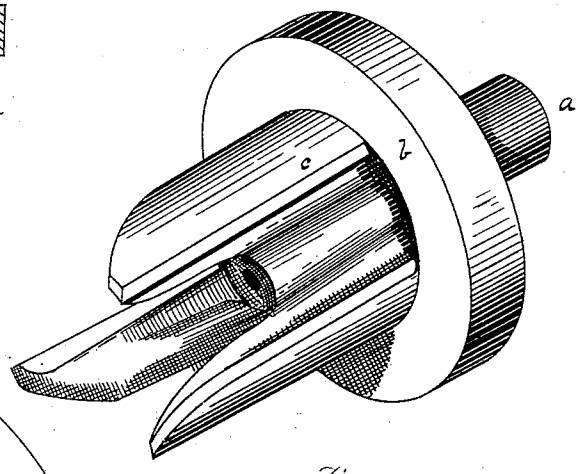


Fig 2.

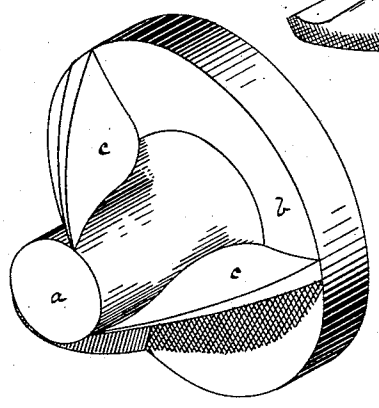


Fig. 4.

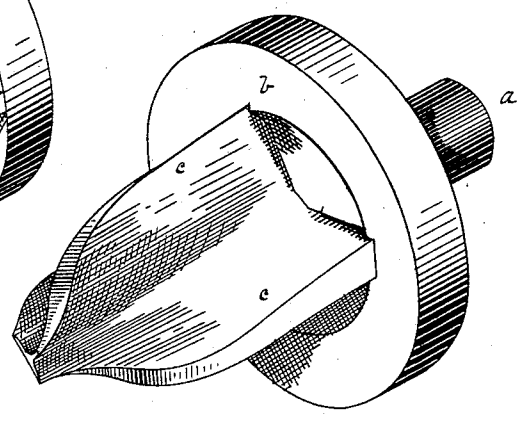


Fig 3

Witnesses—

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by his attorneys

Bakewell & Kerr

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UNITED STATES PATENT OFFICE.

CHARLES D. WILEY, OF VERONA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GEORGE H. MOORE, OF SAME PLACE.

VALVE.

SPECIFICATION forming part of Letters Patent No. 245,904, dated August 16, 1881.

Application filed May 20, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. WILEY, of Verona, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Valves; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a sectional view of my improved valve and valve-seat. Fig. 2 is a perspective view of the valve. Fig. 3 is a perspective view of a modified form of the same. Fig. 4 is a perspective view of the top of the valve, showing the wings of the valve placed above the valve-seat, those below the seat not being shown; but the same may be similar to what is shown in Figs. 2 and 3.

My invention relates to that class of valves wherein the construction is such that the passing fluid, &c., gives the valve a rotary motion to prevent the clogging of the valve by the deposit of sediment, &c.; and it consists, mainly, in providing the valve with a series of wings or vanes arranged either upon its under or upper surface, or both, whereby a rotary motion of the valve is obtained without materially obstructing the passage of the fluid and without presenting an extended surface for the lodgment of sediment, all as will hereinafter more fully appear.

Heretofore valves which are automatic—that is, which are opened or closed by the pressure of the fluid the flow of which they are designed to regulate—as ordinarily constructed, become in a short time clogged and worn by dirt and foreign matter in the fluid. This is especially the case in pump-valves when the water is muddy and sandy. The mud and sand, accumulating unevenly between the valve and valve-seat, choke the operation of the same, and, what is still more injurious, the valve rising and falling always in the same relative position with its seat, the meeting surfaces become worn unevenly, and the valve becomes useless until it has been repaired by grinding the meeting surfaces of the valve and the valve-seat. This often is the occasion of much trouble, loss of time, labor, and expense, for the valves after repeated grinding become worthless and have to be replaced.

I will now proceed to describe my invention, so that others skilled in the art may manufacture and use the same.

In the drawings, *a* represents the stem of the valve, and *b* the disk, from the lower side of which extend two or more curved or spiral wings or vanes, *c*, which extend inside of the pipe *d*, below the seat *e*. The wings *c* on the lower side of the disk *b* do not extend to the outer circumference of the disk, but are limited in width by the inner circumference of the valve-seat, while the disk *b* extends over the seat *e*. The meeting surfaces of the valve-seat *e* and disk *b* should be ground smooth.

In Fig. 4 the vanes *c'* are those which are arranged upon the upper face of the disk-valve *b*, and may extend to the periphery of the disk *b*, while those upon the under or opposite side of the disk (not shown) will correspond to what is shown in Fig. 2 or Fig. 3.

Two forms of spiral wings are shown in the drawings—one in Figs. 1 and 2, where the wings are disconnected at their outer end, and another form in Figs. 3 and 4, where the wings are connected throughout their length and taper to a point at their outer end. Either form may be used, as desired.

The operation of my valve is as follows: When the valve is drawn up by the force of the gas or fluid which passes through the same, the fluid or gas, pressing against the surface of the spiral wings *c*, causes the valve to turn, and when it reseats itself the relative meeting surface of the valve and seat is changed. This has the effect of grinding any dirt or foreign matter which may settle between the seat and valve and cause the same to be carried away by the gas or fluid; also, the meeting surfaces of the valve and seat are continuously moving or grinding upon each other, by which they are kept smooth and even; also, the wings *c*, extending in the pipe below the seat, ream out the pipe at that point where the dirt is most likely to settle.

Where the valve is not worked automatically, but connected with a rod, piston, or plunger, the connection between the valve and the

rod, piston, or plunger should be a pivotal one, so that the valve may still be turned easily on a vertical axis by the action of the fluid or gas on the fans *c*.

My valve may be adapted to many kinds of machinery, such as steam-engines, &c.; but it is especially adapted to use on pumps.

I am aware that a spiral pin or screw has heretofore been attached to the under surface of a valve in order to obtain a rotary movement of the valve during the passage of the fluid, and do not claim the same for the following reasons: first, because the spiral web or flange completely encircles the axis of the valve and in a measure obstructs or impedes the passage of the fluid; secondly, because it affords increased surface for the lodgment of sediment, &c.; and, thirdly, because any sediment arrested by the screw would tend to settle next the pipe, and thus wedge the valve.

I am also aware that spirally-arranged grooves have been formed upon the body of a cylindrical puppet-valve, to effect a slight rotation of the valve and to cause it to grind upon its seat, and do not herein claim such a construction, as the same is not applicable to disk-valves, and at the best gives but a very limited movement to the valve.

The valve may be provided with wings or fans on both its upper and lower sides. The wings may curved to the right or to the left, as is found most convenient.

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

A disk-valve having a series of tapering wings or vanes applied to the face of the disk and arranged spirally with relation to the axial line or stem of the disk, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 14th day of May, A. D. 1881.

CHARLES D. WILEY.

Witnesses:
JNO. K. SMITH,
JAMES H. PORTE.