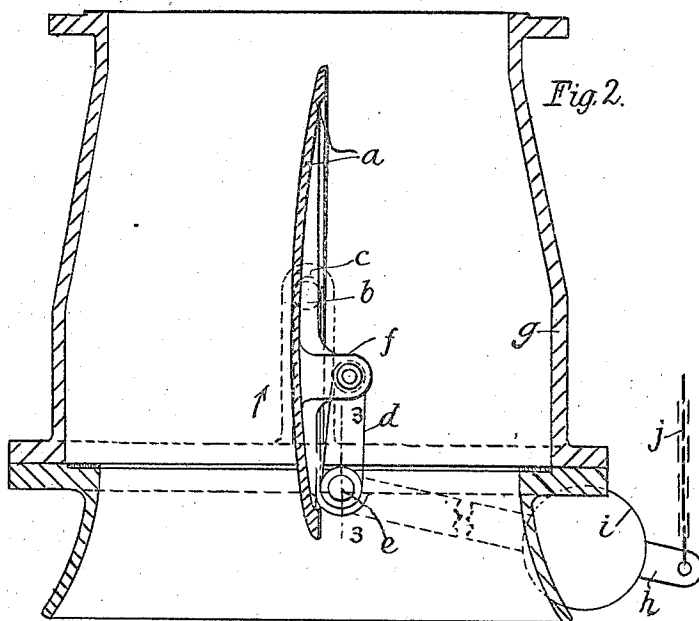
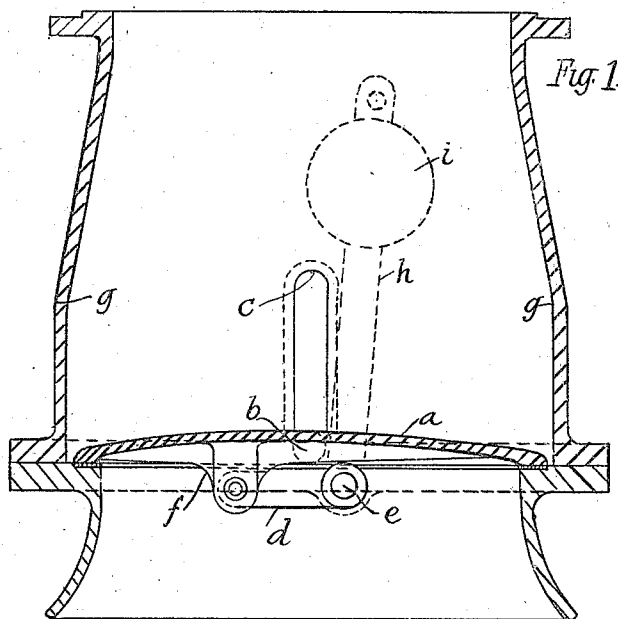


1,239,015.

T. D. KEY.
DISK VALVE.
APPLICATION FILED SEPT. 15, 1916.

Patented Sept. 4, 1917.
3 SHEETS—SHEET 1.



Witnesses:

P. E. Steward

M. H. Hunt

Inventor

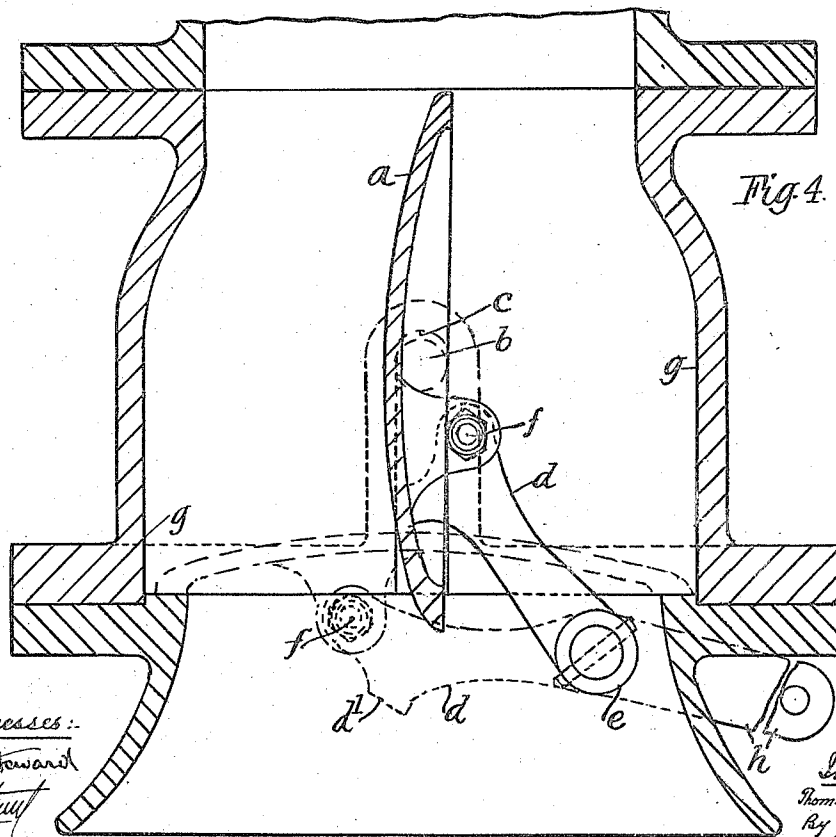
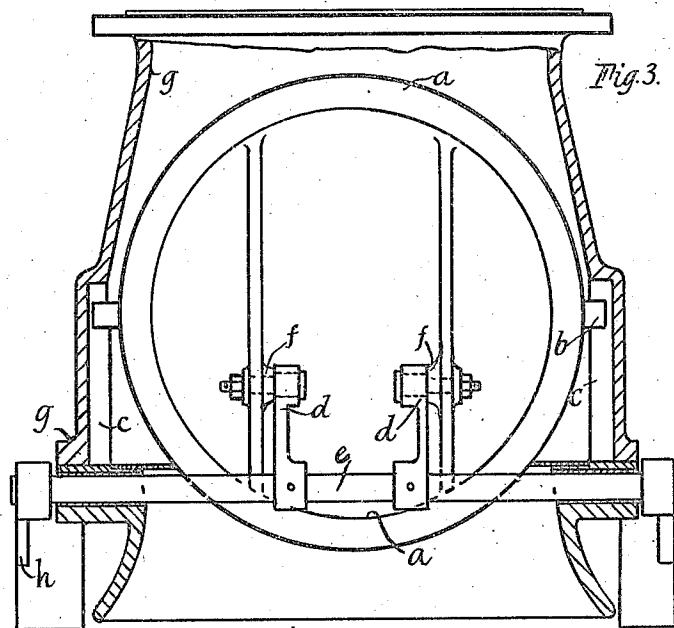
Thomas Dow Key

By: *J. S. Watson*
att'y.

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3 SHEETS—SHEET 2.



Witnesses:
P. S. Steward
[Signature]

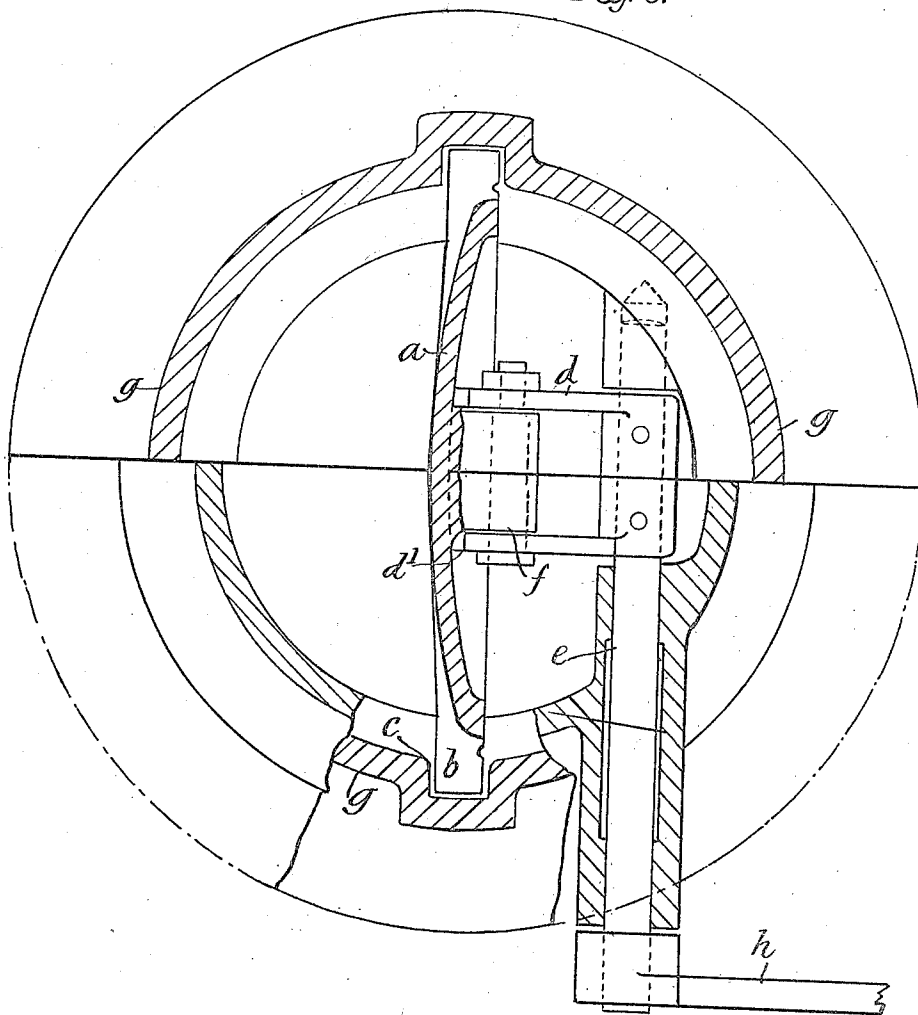
Inventor:
Thomas D. Key
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1,239,015.

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3 SHEETS—SHEET 3.

Fig. 5.



Witnesses:-

P. E. Steward

[Signature]

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Thomas Dow Key.

By

[Signature]

Atty

UNITED STATES PATENT OFFICE.

THOMAS DOW KEY, OF ALEXANDRIA, EGYPT.

DISK VALVE.

1,239,015.

Specification of Letters Patent.

Patented Sept. 4, 1917.

Application filed September 15, 1916. Serial No. 120,294.

To all whom it may concern:

Be it known that I, THOMAS DOW KEY, a subject of the King of Great Britain, residing at Alexandria, Egypt, have invented
5 a new and useful Disk Valve, of which the following is a specification.

This invention relates to disk valves and one of its objects is to provide external control of the valve while imparting to the
10 latter a turning movement from the closed to the open position, and vice versa, on a diametral line in the valve casing. A further object is to prevent the valve from swinging and from being thrown back on its
15 seat by the flow of water or other liquid or fluid.

In order that the invention may be clearly understood, I will describe the same with reference to the accompanying drawings, in
20 which:—

Figure 1 is a vertical section showing the valve in closed position; Fig. 2, a similar section showing the valve in open position; Fig. 3, a vertical section on the line 3—3 of
25 Fig. 2; Figs. 4 and 5, are a vertical section and a sectional plan of a modified construction.

In all the figures the same reference characters denote the same or corresponding
30 parts.

The drawings and the following description refer to an improved foot-valve for use in the suction pipe of large deep well centrifugal pumps, but a similar type of valve
35 can be adapted as a retaining valve for small pumps and as an atmospheric exhaust valve and for other purposes.

The valve *a*, which has no central guide or lift-pin, is provided with diametral trunnions *b* lodged in vertical slots *c* cast in a slightly enlarged portion of the suction
40 pipe; or the valve may be guided in any other way provided the same is constrained, when opening and closing, to move along the vertical center line of the pipe while simultaneously performing a turning motion on
45 its trunnions *b*.

For the purpose of imparting to the valve *a* the combined turning and rising movement, I provide at the underside of the
50 valve, links or arms *d* which are fixed to a

turning shaft *e*. This shaft is positioned eccentrically beneath the underside or the rear side of the valve and parallel with the trunnions *b*. The links or arms *d* are articulated to bosses provided on the valve body, and parallelism is insured between the trunnions *b*, the axis of the hinge-joint at *f*, and the shaft *e*. When the valve *a* is in its closed position as shown in Fig. 1, the axis
55 of the hinge-joint is positioned on the opposite side of the center line of the valve to that in which the shaft *e* is situated, the trunnions *b* being in a position higher than and parallel to both the former.
60

The shaft *e* is projected beyond the valve casing *g* and is provided with an operating lever *h* loaded with a balance weight *i*, said lever being advantageously secured by a chain *j* or the like.
65

According to the modification shown in Figs. 4 and 5, the links *d* are integral and formed with a stop *d*¹ which, at the open position of the valve *a*, comes to rest against the body of the valve and so helps to keep
70 the latter steady.

In action the valve has to be set on its seat by lifting the chain *j* fixed to the outer end of the weighted lever *h*, the valve being then retained in its closed position so that
75 the pump may be primed in the ordinary way, either by means of an independent supply pipe, or by a by-pass taken from the delivery side of the reflux valve which ordinarily is fixed on large centrifugal pumps
80 working against even moderate head. When the rotation of the pump attains sufficient speed, the flow of water up through the suction pipe lifts the valve off its seat and throws it into the vertical position where it
85 offers the least possible resistance to the incoming water. The balance weight *i* prevents any tendency for the valve to be thrown back on its seat when the pump stops and thus obviates any danger of the
90 pump casing or the suction pipe being subjected to heavy water hammer shocks.

I claim:

1. A disk valve consisting of the valve body, diametral trunnions integrally formed
95 on the peripheral edge of said body, lugs on the underside of the same, and means con-

nected to said lugs for turning and vertically displacing said valve on its trunnions, as and for the purpose described.

2. A disk valve consisting of the valve body, lugs on the underside and diametral trunnions formed on the edge of the same, guiding means for the trunnions, arms ar-

ticulated to said lugs, a turning shaft fixed in the arms, bearings for the shaft, an extension of the shaft, and an operating lever 10 fast on same, as and for the purpose described.

THOMAS DOW KEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."