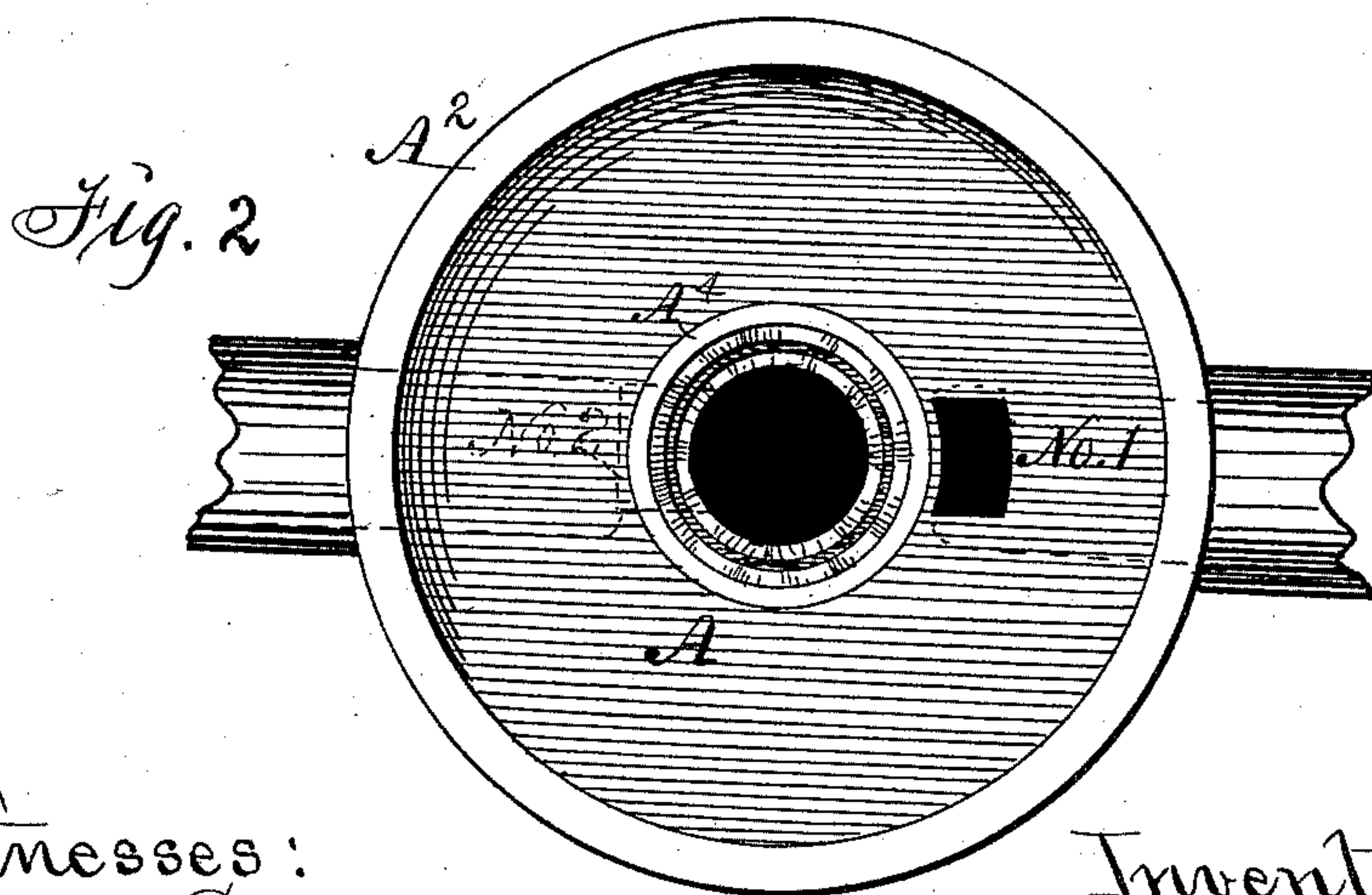
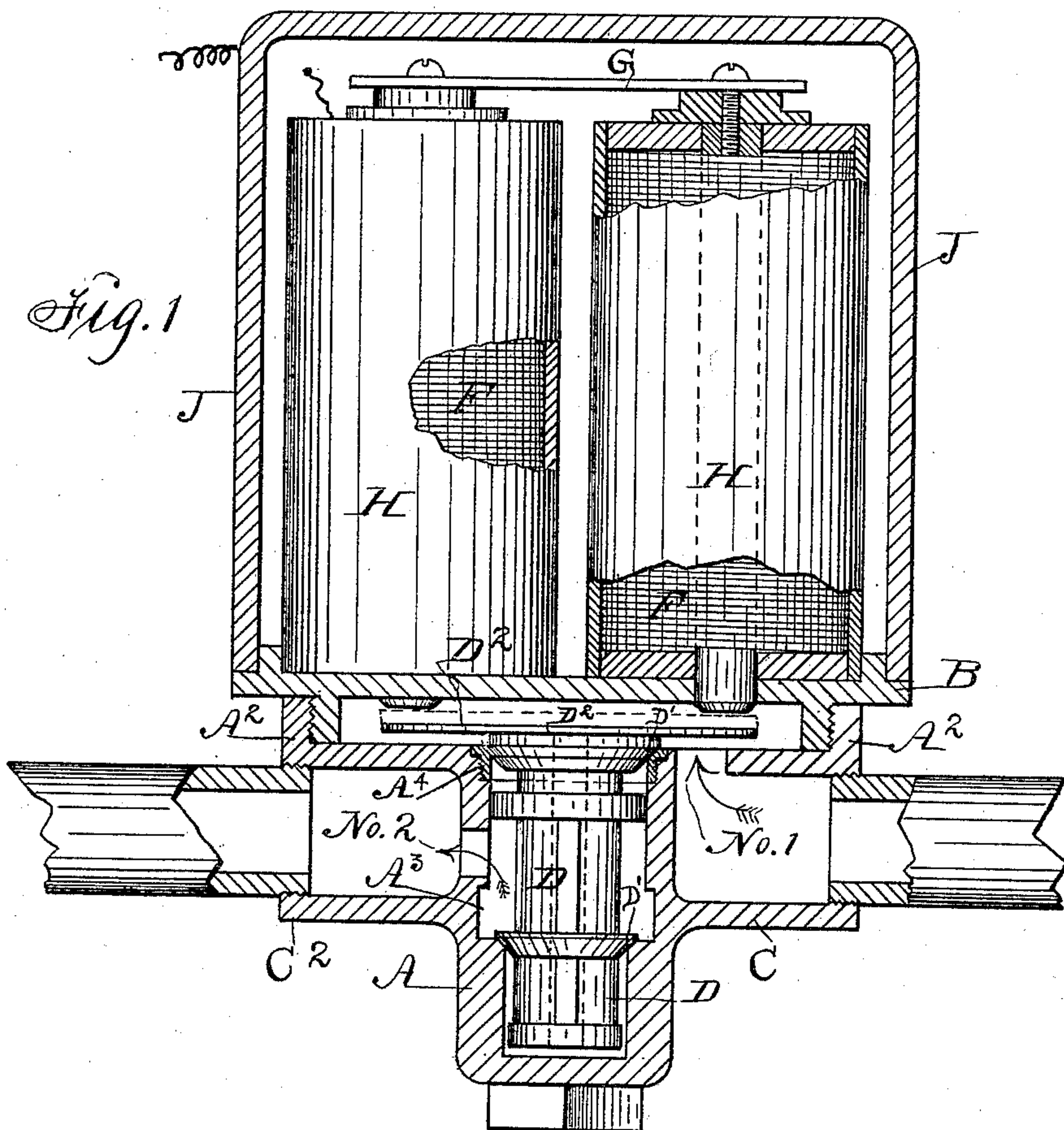


(No Model.)

M. C. WHEELER & A. M. CLARK.
ELECTRIC VALVE.

No. 409,170.

Patented Aug. 20, 1889.



Witnesses:
C. M. Stiles
M. P. Smith.

Inventors:
Albert M. Clark and Milton C. Wheeler
By Thomas G. Orwig, Attorney.

UNITED STATES PATENT OFFICE.

MILTON C. WHEELER AND ALBERT M. CLARK, OF MARSHALLTOWN, IOWA.

ELECTRIC VALVE.

SPECIFICATION forming part of Letters Patent No. 409,170, dated August 20, 1889.

Application filed February 4, 1889. Serial No. 298,683. (No model.)

To all whom it may concern:

Be it known that we, MILTON C. WHEELER and ALBERT M. CLARK, citizens of the United States, and residents of Marshalltown, in the county of Marshall and State of Iowa, have invented an Electric Valve, of which the following is a specification.

Our object is to provide a balanced valve adapted to be connected with a tube or chamber to instantly release confined steam, air, vapor, or fluid by means of electricity; and our invention consists in the construction and combination of a balanced valve, an armature, electro-magnets, and a valve-chamber and a cover, as hereinafter set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view showing all the parts combined. Fig. 2 is a top view of the valve-chamber detached from its cover.

A is a cast-metal valve-chamber. It has a central bore that extends downward and is closed at its bottom.

A² is an integral enlargement concentric with the bore and provided with an internal screw-thread in its open top adapted to receive the screw-threaded bottom extension of the cover B.

A³ is an annular groove or enlargement of the bore, and the lower edge of this groove is beveled to produce a valve-seat.

A⁴ is a corresponding valve-seat screwed in the top of the bore in such a manner that it can be adjusted relative to the lower valve-seat and the flanges on the valve that engage the two valve-seats.

C is a tubular integral right-angled extension at the side of the chamber adapted to be connected with a tube, a boiler, or any receptacle from which steam, air, or fluid is to be released and conducted. 1 is an induction-port extending from the bore of the extension C through the top of the chamber A.

C² is a corresponding extension on the opposite side of the chamber, and 2 is an eduction-port leading from the chamber into the bore of said extension.

D is a valve that has a bore through its longitudinal axis, and is provided with annular flanges D' that are beveled on their under

sides to fit to and engage the two distance valve-seats in the bore of the chamber A, as required to produce two steam-tight connections when the induction-port is open, and steam passes down through the bore of the valve and presses upward, as required to retain the valve balanced by pressure on both ends simultaneously.

D² is an armature consisting of a soft-iron bar fixed across the top of the valve D. A perforation in its center coincides with the bore of the valve D and allows steam to pass down through the bore when the ports are open, as required to retain the complete valve balanced by steam-pressure on its opposite ends, so that the force of the electric magnets will not be resisted by the force of the steam, but need only overcome the gravity of the valve to open and retain open the ports.

F are electro-magnets fitted and fixed on the top of the cover B and connected at their top ends by means of a bar G in such a manner that when they are combined with a battery or dynamo, as required to establish a circuit, and the circuit is closed by means of a push-button in a common way, they will instantly lift the armature and valve and open the induction and eduction ports to allow steam to escape from its confinement and pass through the valve.

H are hard-rubber covers placed over the coils of the magnets F.

J is a metal case fitted to the circumference of the chamber-cover B to inclose and protect the electro-magnets.

Our electrical valve may be applied to a steam boiler, chest, or any receptacle where steam, air, or liquid is confined to facilitate its escape for operating an engine without any valve-gear and without expending any of the force of the engine in operating a valve, and any number of the electrical valves may be located at different positions and all of them connected with an electric circuit and instantly operated simultaneously.

We claim as our invention—

1. A valve-chamber having a central bore, an angular groove and valve-seat in the lower portion of the bore and a corresponding valve-seat at the top of the bore, and a detachable cover, electro-magnets supported by

the cover, a branch at one side of the valve
and a port extending from its bore into the
top of the valve-chamber, a corresponding
branch having a port extending from its bore
5 into the bore of the valve-chamber at a point
between the two valve-seats, and a cylindrical
tubular valve having annular flanges adapted
to engage the two valve-seats in the bore of
the valve-chamber, to be balanced and oper-
10 ated by electric force, in the manner set forth.

2. The valve-chamber A A², having an an-
nular groove A³, tubular extensions C and C²,

and ports 1 and 2, the tubular valve D,
having annular flanges D', that are beveled on
their under sides, the fixed armature D², and 15
the electro-magnets F, arranged and com-
bined substantially as shown and described,
to operate in the manner set forth.

MILTON C. WHEELER.
ALBERT M. CLARK.

Witnesses:

GEO. E. ADAMS,
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