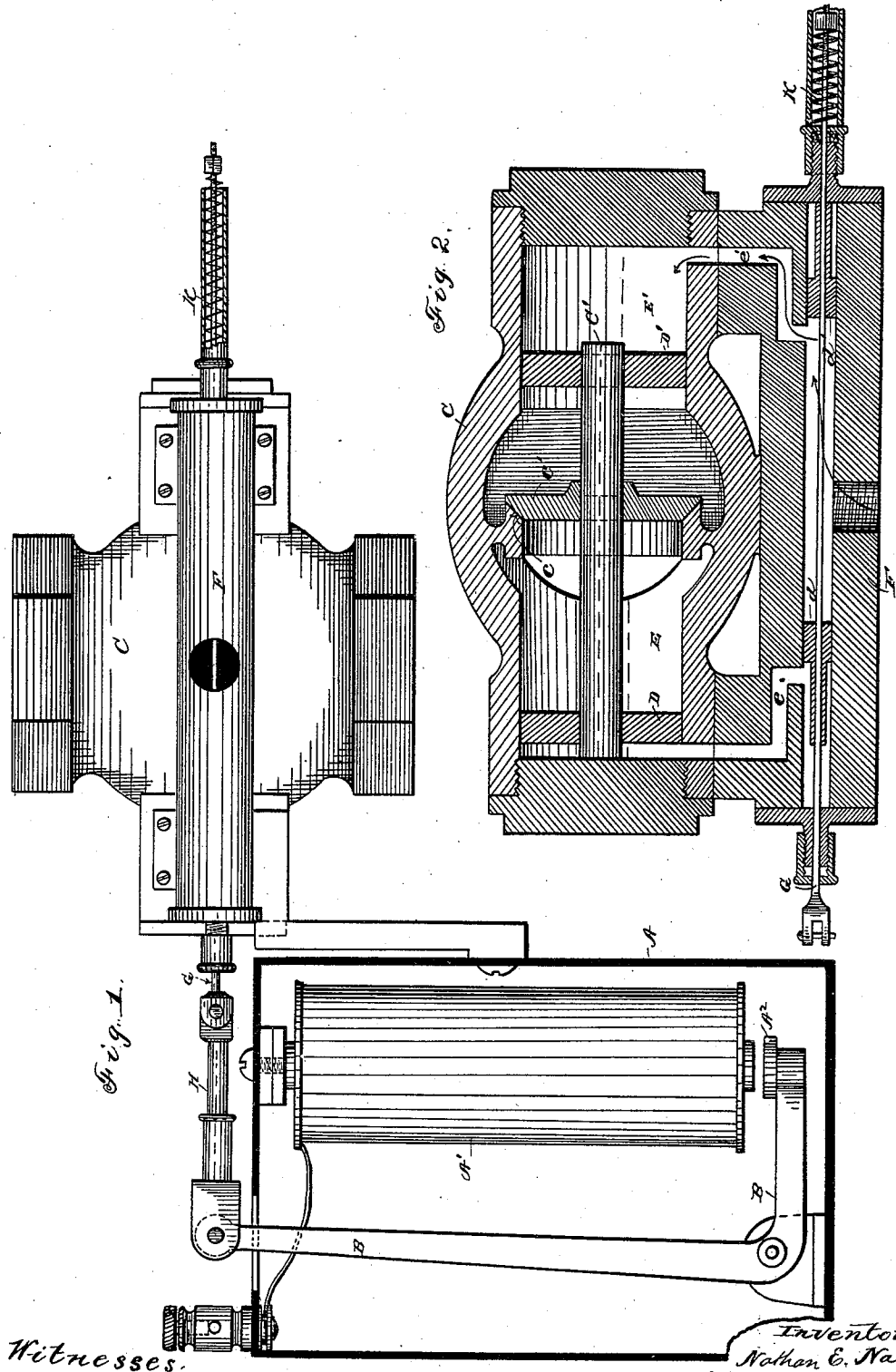
(No Model.)

N. E. NASH & G. A. EDDY.

VALVE CONTROLLER.

No. 471,999. Patented Mar. 29, 1892.



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UNITED STATES PATENT OFFICE.

NATHAN E. NASH AND GEORGE A. EDDY, OF CLEVELAND, OHIO, ASSIGNORS TO THE NATIONAL ELECTRIC VALVE COMPANY, OF SAME PLACE.

VALVE-CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 471,999, dated March 29, 1892.

Application filed November 20, 1890. Serial No. 372,071. (No model.)

To all whom it may concern:

Be it known that we, NATHAN E. NASH and GEORGE A. EDDY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Valve-Actuating Mechanisms; and we do hereby declare the following to be a full, clear and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to valves, and especially to means for operating and controlling a valve by means of an associated and auxiliary engine in connection with electrical agencies, as will hereinafter more fully appear; and it consists in certain novel features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claim.

In the drawings, Figure 1 is a view in elevation, partially in section, of one form of a device embodying our invention. Fig. 2 is a horizontal section taken through the valve in Fig. 1, showing its interior construction.

A represents any suitable frame or box, to which is secured, by means of screws or otherwise, an electro-magnet A′. Pivotally secured to the lower part of the frame or box A is a bell-crank lever B. The lower and shorter arm of this lever B is provided with an armature A^2, which is so located as to be under the influence of the electro-magnet A′. The vertical arm of the lever B extends upward through the upper part of the box or frame A.

C is a valve, in the present case being of the so-called "globe-valve" variety, such as is ordinarily used to regulate or cut off a supply of fluid or steam. It has the usual two chambers and valve-seat *c* and valve *c′*, by means of which the communication between the two chambers of the valve C is regulated or cut off.

C′ is the valve-stem to which the valve *c′* is secured and by means of which it is operated. This stem C′, however, instead of ending at one end at the valve *c′* and being provided at the other end with a hand-wheel, as in the usual globe-valve, extends beyond the valve *c′*, and is provided at both ends with suitable pistons D D′, respectively operating in cylinders E E′. A steam-chest F, containing balance-valves *d d′*, is located on the side of the valve C in such juxtaposition to said valve C as to communicate with the ends of the cylinders E E′ by means of ports *e e′*, the admission of steam to said ports being governed by the valves *d d′*, respectively.

G is a valve-stem which is connected to and operates the valves *d d′*. This valve-stem extends through suitable stuffing-boxes outside the steam-chest F at both ends. In the device shown it is connected at one end through the medium of an adjustable link H to the upper end of the bell-crank lever B. It will thus be seen that when the electric current is passed through the coil of the electro-magnet A′ this magnet becomes energized, the armature A^2 under its influence is moved toward it, and through the intervening bell-crank lever and link the valves *d d′* are shifted and the ports *e e′* are opened, one *e′* in communication with the steam-chest and the other *e* in communication with the exhaust. A spring K is so located at the opposite end of the valve-stem G as to retract or reverse the action of the valves *d d′* when the current is discontinued or the circuit broken.

From the foregoing description of the form of apparatus shown in the drawings the operation of our invention can be readily understood.

Supposing that the retractile spring K (or a sufficient counter-weight, if desired) is holding the valve open and it is desired to close it, all that is necessary is to pass the electric current through the electromotor, whereupon its magnet becoming energized moves its armature, and through the intermediary mechanism and connections also the valves *d d′* of the engine. This results in applying the force of the engine to shut the valve.

We also desire to state that the valve-actuating engine may be of a kind to work the valve through the pressure of steam, compressed air, water, or other liquid, or by the force of a vacuum.

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

The combination, with a valve, valve-stem, and pistons on the opposite sides of the valve,

of a spring-pressed balance-valve controlling the supply of fluid to both pistons, an armature connected with the latter, and an electromagnet or equivalent device for actuating the armature, whereby the balance-valve is moved, substantially as set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 13th day of September, 1890.

NATHAN E. NASH.
GEORGE A. EDDY.

Witnesses:
W. E. DONNELLY,
C. H. DORER.