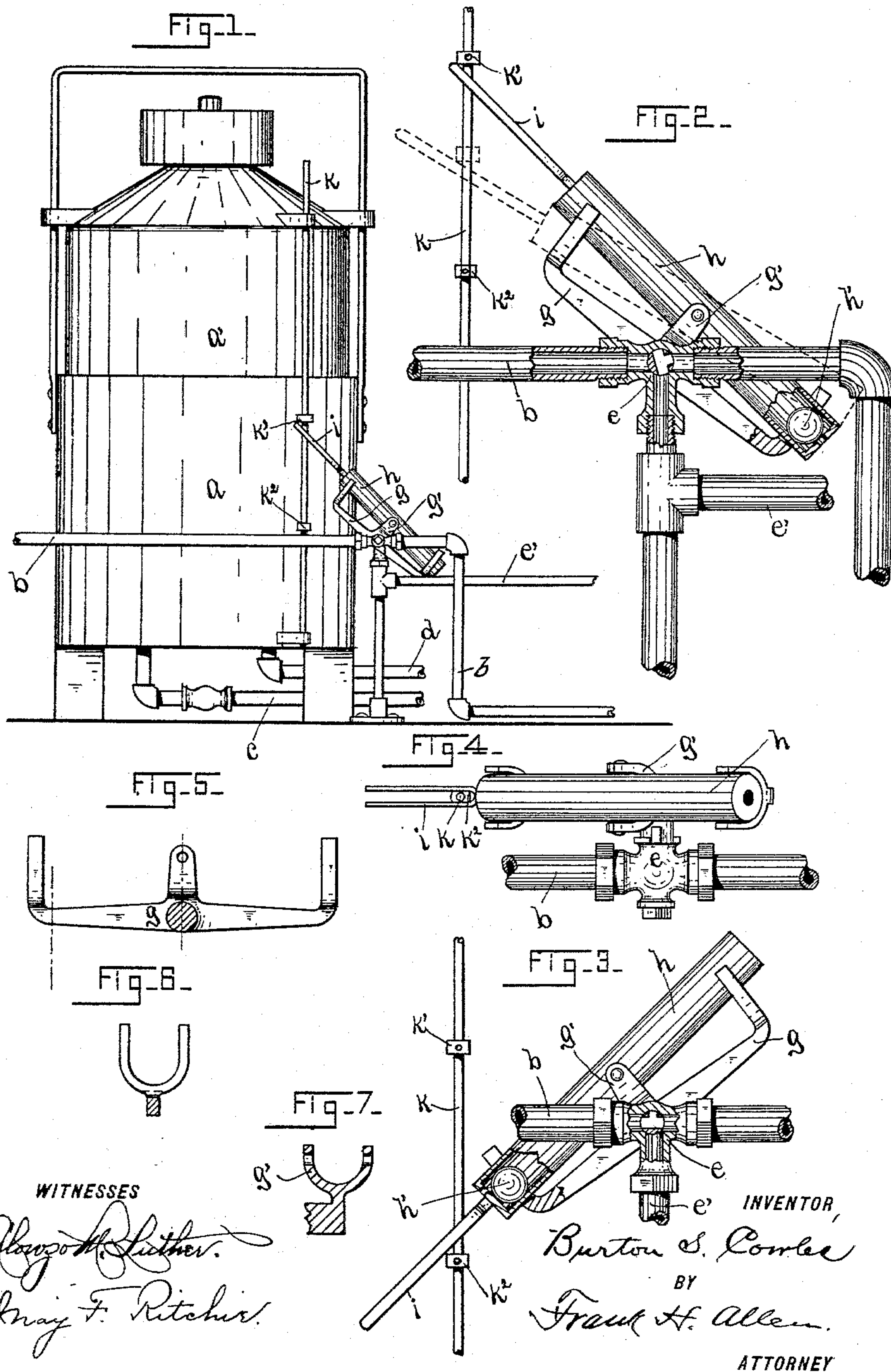


(No Model.)

B. S. COWLES.
VALVE OPERATING MECHANISM.

No. 589,700.

Patented Sept. 7, 1897.



UNITED STATES PATENT OFFICE.

BURTON S. COWLES, OF NORWICH, CONNECTICUT, ASSIGNOR OF ONE-FOURTH TO SIDNEY L. GEER, OF SAME PLACE.

VALVE-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 589,700, dated September 7, 1897.

Application filed June 7, 1897. Serial No. 639,771. (No model.)

To all whom it may concern:

Be it known that I, BURTON S. COWLES, a citizen of the United States, residing at Norwich, in the county of New London and State of Connecticut, have invented a certain new and useful Improvement in Valve-Operating Mechanism, which improvement is fully set forth and described in the following specification, reference being had to the accompanying sheet of drawings.

This invention has for its object the production of an improved form of rocking valve of the class in which a weight operating by gravity is utilized to close or open said valve quickly, such valves being specially valuable for use with hydrocarbon-gas machines for controlling the flow of water to the pump by means of which the aerometer is operated.

In order to clearly explain my said invention, I have provided the annexed sheet of drawings, in which—

Figure 1 is a side elevation of an aerometer having connected therewith the water-supply pipe, my new form of valve, and such other elements as are desirable for the perfect understanding of my present invention. Fig. 2 is an enlarged view, partly in section, of my said valve and the parts immediately related thereto, showing said valve as rocked to cut off the water-supply; and Fig. 3 is a similar view showing the valve rocked to allow the passage of water to said pump. Fig. 4 is a plan view of the elements of Fig. 3. Figs. 5, 6, and 7 are detail views of a yoke that forms an important element of my newly-invented valve-operating mechanism.

In the drawings the letter *a* denotes an ordinary aerometer consisting of two telescoping sections, the upper of which, *a'*, is free to move vertically.

b indicates a water-pipe leading from any convenient source of supply to a piston-plunger which, operating with an air-pump, serves to compress air, which is conveyed by a pipe *c* to the aerometer *a* and is carried from said aerometer to the carbureter by a pipe *d*. In the main line of water-pipe *b* is a "three-way" rocking valve *e*, which also connects with a waste branch *e'*.

Secured to the end of the valve-stem is a frame *g*, that is formed with three upwardly-extending yokes of U shape, one of said yokes *g'* being located midway the length of the said frame, and also one at each end thereof. Hung in the central yoke *g'*, by trunnions, is a cylinder *h*, in which is a weight *h'*, that is free to travel from end to end of the cylinder *h* when the latter is properly rocked. One end of the cylinder *h* has secured thereto a fork *i*, that straddles a vertical rod *k*, secured to and adapted to rise and fall with section *a'* of the aerometer, and on said rod are collars *k'* *k''*, located, respectively, above and below the fork *i*, and in such relation to said fork that when the rod *k* begins its upward movement (the valve *e* being open, as in Fig. 2) the collar *k''* forces fork *i* upward, rocking the cylinder *h* until the latter reaches and passes a horizontal position, when the ball *h'* rolls to the opposite end of the cylinder and, by reason of its weight, quickly rocks frame *g* and the connected valve to shut off the flow of water through pipe *b*. (See Fig. 2.) When the rod *k* moves downward again, the collar *k'*, operating with fork *i*, rocks the cylinder in the opposite direction until the ball rolls by gravity within said cylinder and finally rocks frame *g* to open the valve, as in Fig. 3.

It should be particularly noted that the valve-controlling frame *g* and the cylinder *h* rock together during the last part of the valve-operating movement, but that the cylinder *h* has a considerable rocking movement on its trunnions independent of said frame. By thus arranging the frame and cylinder much less power is required of the rod *k* when it begins its movement (either upward or downward) than if it were connected directly with the frame *g*, as said rod is only required to rock the cylinder slightly past a horizontal position, when the weight of ball *h'* then operates quickly to rock the cylinder and frame *g* sufficiently to open or close the valve, as may be required.

I find in practice that the described valve-rocking mechanism works most satisfactory and with no possibility of getting out of order.

Having thus described my invention, I

claim as new and wish to secure by Letters Patent—

Mechanism for operating valves of the class herein referred to, consisting of a frame secured to the valve-stem, a cylinder trunnioned in said frame and capable of a limited rocking movement independently of said frame,

a weight within said cylinder free to travel by gravity from end to end thereof and means for rocking the said cylinder and frame.

BURTON S. COWLES.

Witnesses:

FRANK H. ALLEN,

MAY F. RITCHIE.