

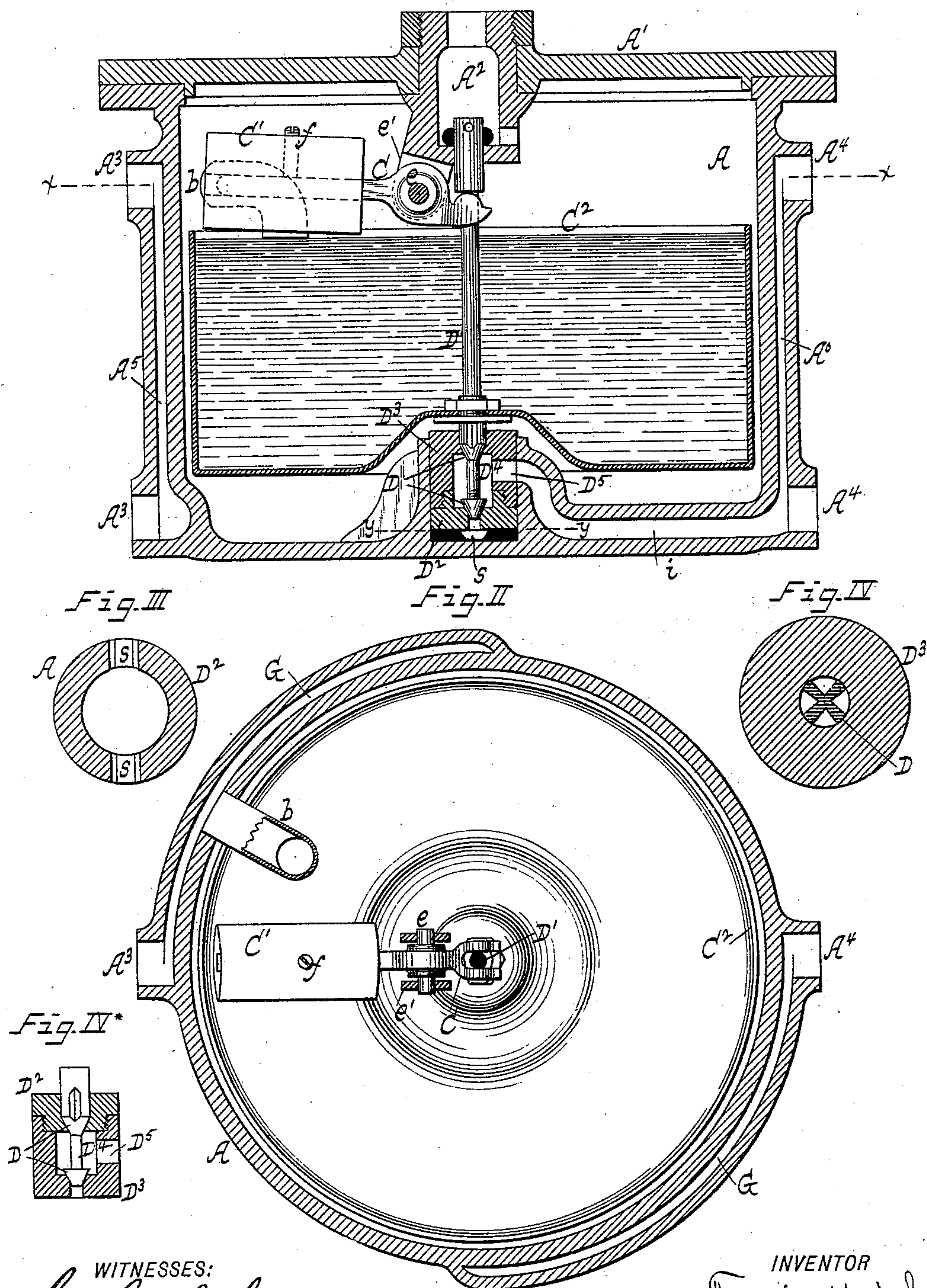
(No Model.)

2 Sheets—Sheet 1.

F. M. ASHLEY.
STEAM TRAP.

No. 517,422.

Fig. 1 Patented Apr. 3, 1894.



WITNESSES:

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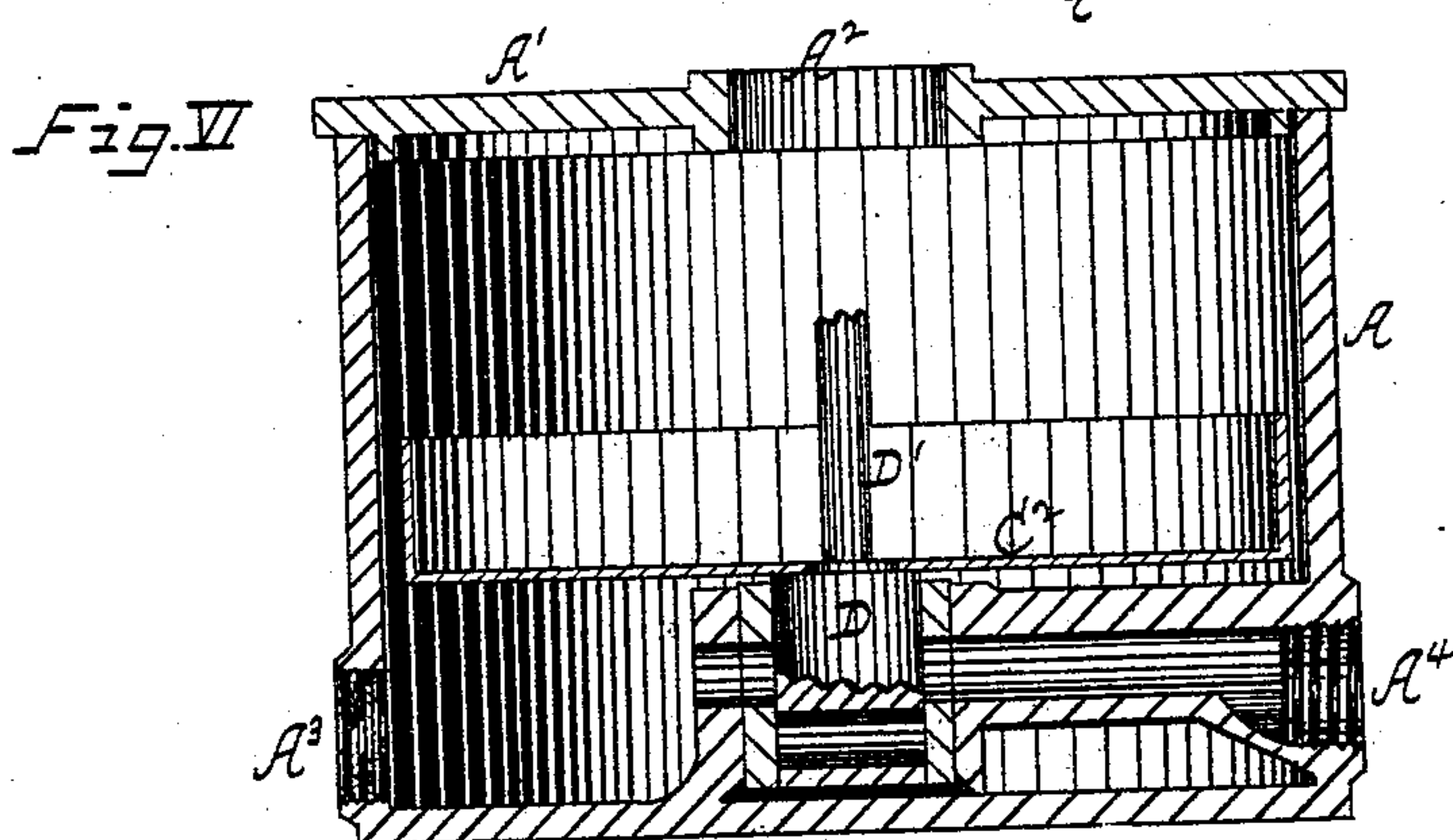
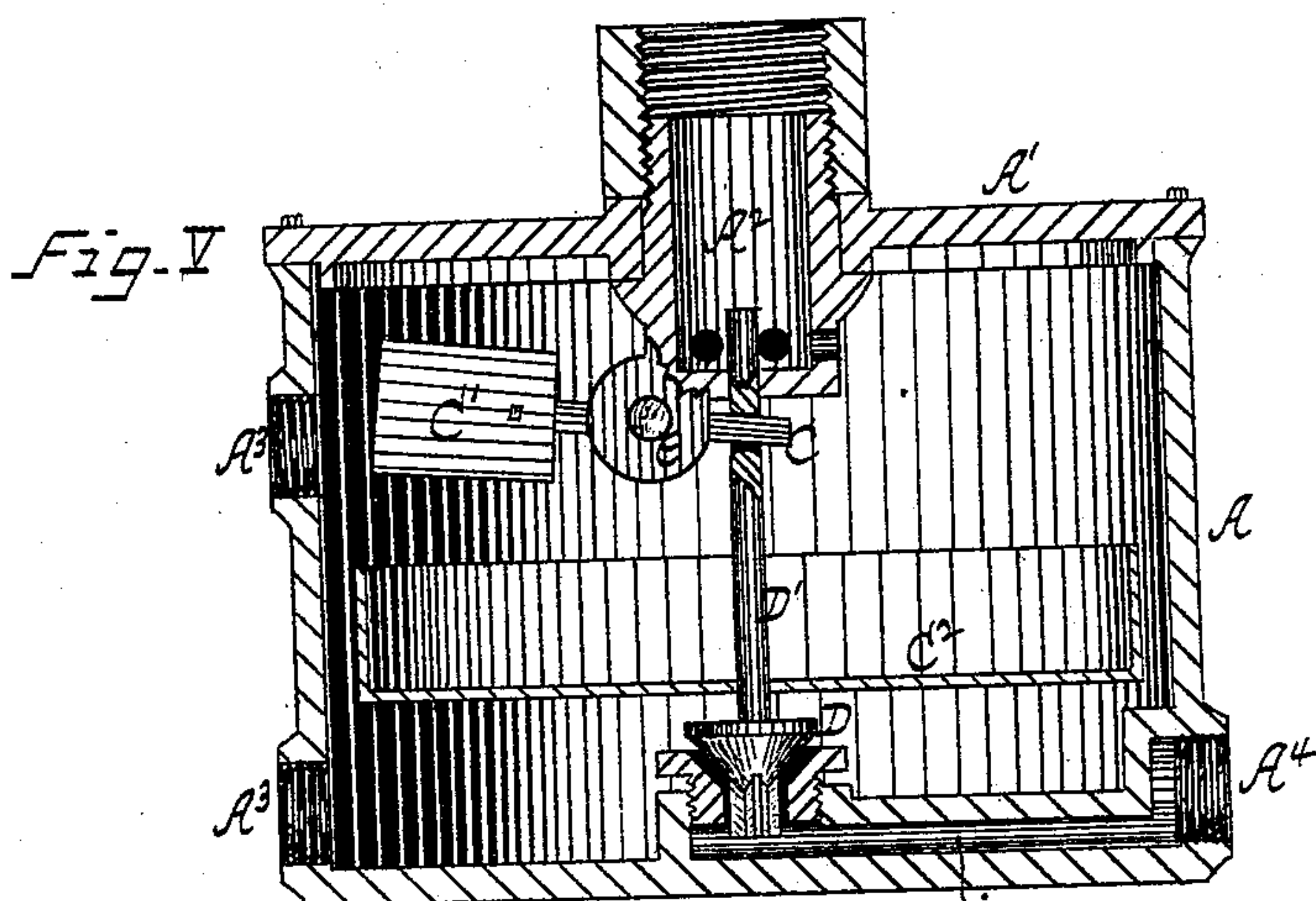
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UNITED STATES PATENT OFFICE.

FRANK M. ASHLEY, OF HAWTHORNE, NEW JERSEY.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 517,422, dated April 3, 1894.

Application filed June 17, 1892. Serial No. 437,105. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. ASHLEY, a citizen of the United States, and a resident of Hawthorne, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

My invention is a steam trap in which the operation of the outlet valve is effected by means of a lever carrying weights, one of which is exposed to the buoyant action of the water accumulating in the trap.

The essential features of my invention are hereinafter fully described with reference to the accompanying drawings, in which—

Figure I, represents a vertical central section. Fig. II, represents a horizontal section on the line $x x$ Fig. I. Fig. III, represents a detail horizontal section on the line $y y$, Fig. I. Fig. IV, represents a horizontal section of a portion of the outlet valve. Figs. IV*, V, and VI, represent each a vertical central section with a modification of my invention.

Similar letters of reference indicate similar parts.

The letter A, indicates the trap-casing which has a removable lid or cover A', with an inlet A², also a side inlet or inlets A³, and a side outlet or outlets A⁴. Two side inlets and side outlets are preferably used in order to facilitate the required pipe connections with the trap, each two being joined by a vertical passage A⁵ or A⁶. From the side inlet A³, at the top of the trap casing, extends a pipe b , into the casing, for conducting the water and steam therein.

The letter C, indicates the valve-operating-lever which has its fulcrum in a pivot e , hung in a bracket e' of the casing lid, and is formed with two arms each carrying a weight C' or C². The weight C', consists of a solid body and is adjustable on its carrying-arm by means of a set-screw f , while the weight C² consists of a panlike vessel for containing water, as shown in Figs. I, II, and VI. Both weights C', C² however, may consist of a solid body as shown, or both may consist of a water-containing-vessel. Said weight-vessel C² is hung on its carrying-arm by means of the stem D', of an outlet valve D; this stem having two shoulders, one receiving the vessel and the other a forked end of the le-

ver-arm, as clearly shown. By this arrangement the weight vessel C² is brought into a lower horizontal plane than the weight C', which is a necessary condition to the successful operation of the weights, whether one be a vessel or both solid. The outlet valve D, is at the center of the bottom of the trap casing, and its escape is joined to the side outlet or outlets A⁴, by a horizontal passage i , of the trap-casing. A feed opening s , is made below the outlet valve D, in order to permit access of the water thereto from that direction as well as from above it. When the trap is applied to use the inlet-pipe b , is arranged to communicate with the weight-vessel C², and this vessel is arranged to counter-balance the weight C', in its empty state, in which position of the parts the outlet valve D, is open. The water from the inlet pipe b , filling the weight vessel C², renders the latter heavier than the weight C', causing it to over-balance this weight; and by the consequent lowering of the vessel the outlet valve D, is closed; the lever C, becoming displaced. The water continuing to pour into the weight-vessel C², overflows therefrom and accumulating on the bottom of the trap-casing, acts on the vessel by its buoyant force, to raise the vessel, thereby adjusting the parts to re-open the outlet valve D, and permit escape of water from the trap-casing. Said escape of the water continues until the level thereof falls below a point to sustain the weight vessel C², when the outlet valve D, is reclosed; this operation of the valve being kept up as the water enters or escapes from the trap casing, with the effect of maintaining an approximately fixed level of the water therein.

Referring to Figs. I and IV* the outlet valve D, has a casing which is divided horizontally into two parts or sections D², D³ preferably screwed together. Between these sections D², D³, is formed a chamber D⁴, with valve seats at the top and bottom thereof to each of which is fitted a valve D, and with a lateral escape opening D⁵, leading to the outlet passage i . The valve D, thus is double, the stem D', being common to its members; and to insure its correct operation the upper member of the valve should be partly grooved, or in lieu of the valve, its seat may be grooved. Any other suitable form of an outlet valve, how-

ever, may be used, and in Figs. V, and VI, I have shown various modifications thereof.

Referring to Fig. II, the trap-casing A, is of cylindrical shape, and it is formed with 5 channels G, each extending partly around it. Each of these channels is concomitant to an inlet A³, and outlet A⁴; and the chief purpose thereof is to permit of placing the inlet and outlet at different angles in relation to each 10 other, which is often a convenience to the pipe fitter. It is evident that one of the channels G, may be omitted.

The inlet A², through the cover consists of a hollow plug which is at the center thereof 15 so as to coincide axially with the valve stem D'. Said plug A² receives the upper end of the valve stem D', and thus forms jointly with the valve casing D², D³, a guide for the stem; and since the hollow plug and valve 20 casing are respectively above and below the weight vessel C², the valve stem and vessel are very firmly sustained thereby.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a steam trap a reciprocating rod con- 25 trolling a valve at one end and carrying a cup normally filled with water to keep the valve closed, in combination with a separate lever pivoted between its extremities and carrying at one end a counter balancing weight and at 30 the other loosely engaging the reciprocating rod, substantially as described.

2. In a steam trap, the combination of a trap-casing, an outlet valve at the center of the bottom of said casing, a valve stem with 35 a water-containing weight-vessel mounted thereon, and a hollow plug at the center of the cover of the trap casing, forming jointly with the casing of said valve, a guide for the valve stem, substantially as herein described. 40

FRANK M. ASHLEY.

Witnesses:

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G. L. LYLE.