

No. 798,578.

PATENTED AUG. 29, 1905.

N. FOLEY.
STEAM TRAP.

APPLICATION FILED OCT. 15, 1904.

Fig. 1.

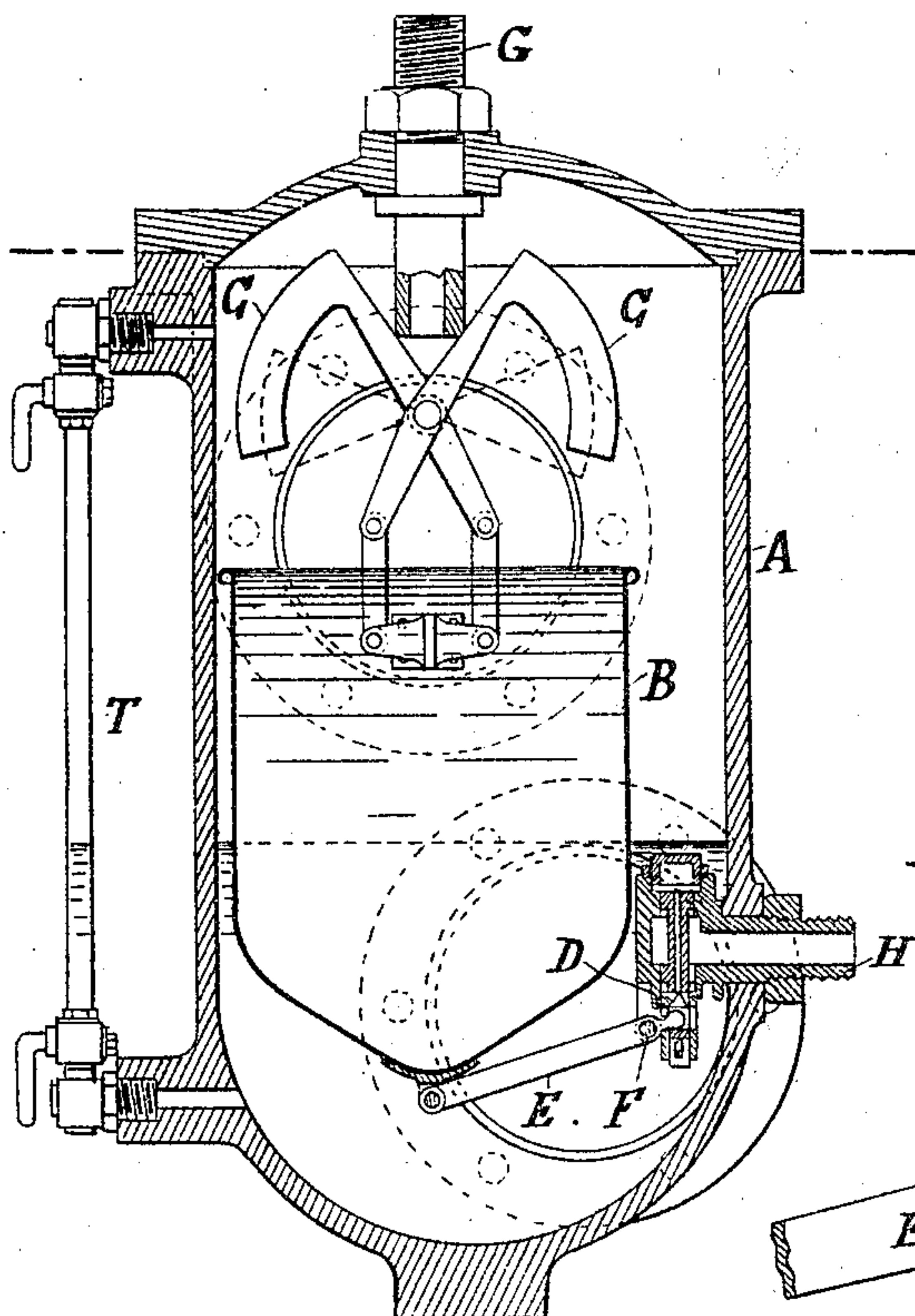


Fig. 3.

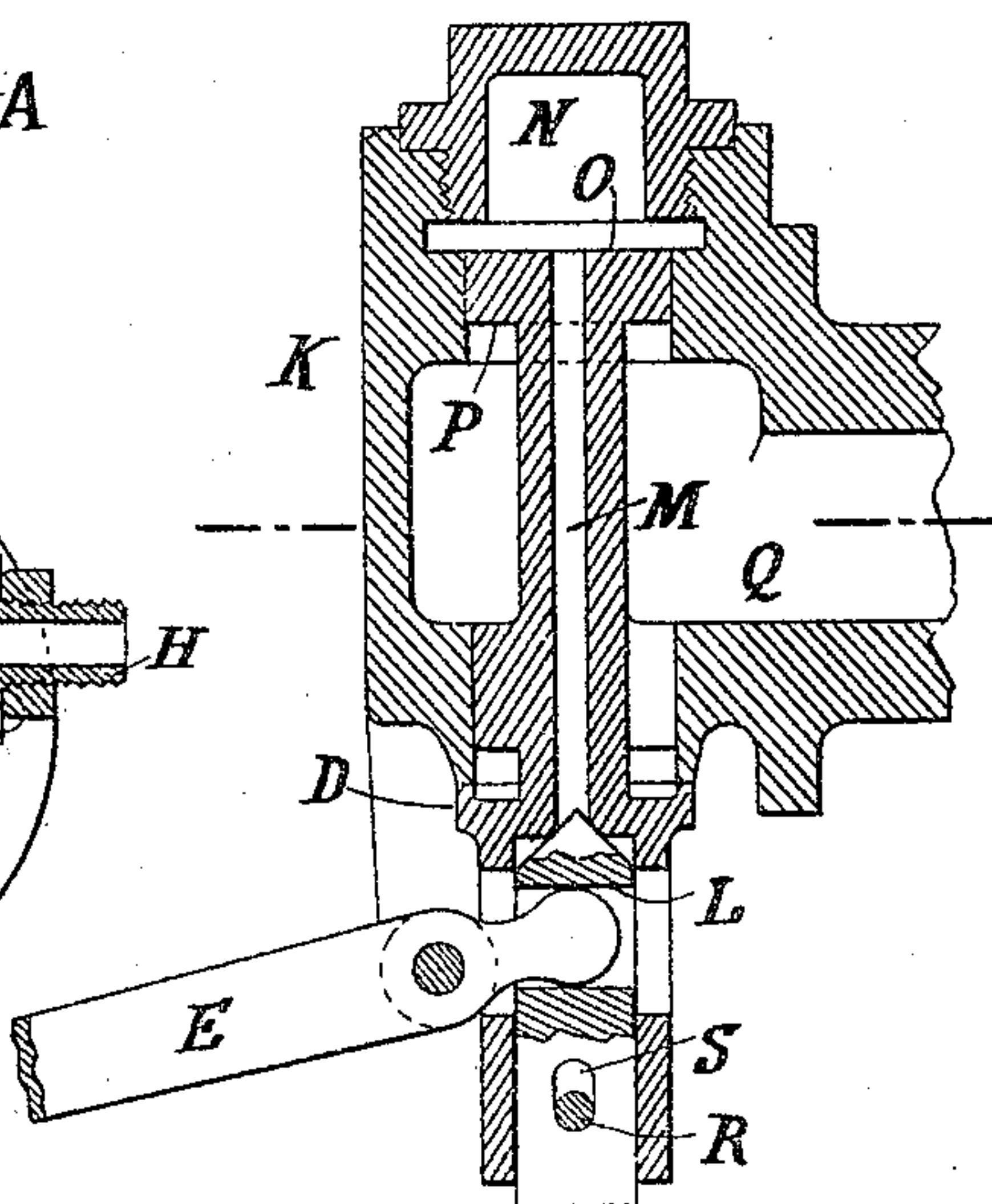


Fig. 2.

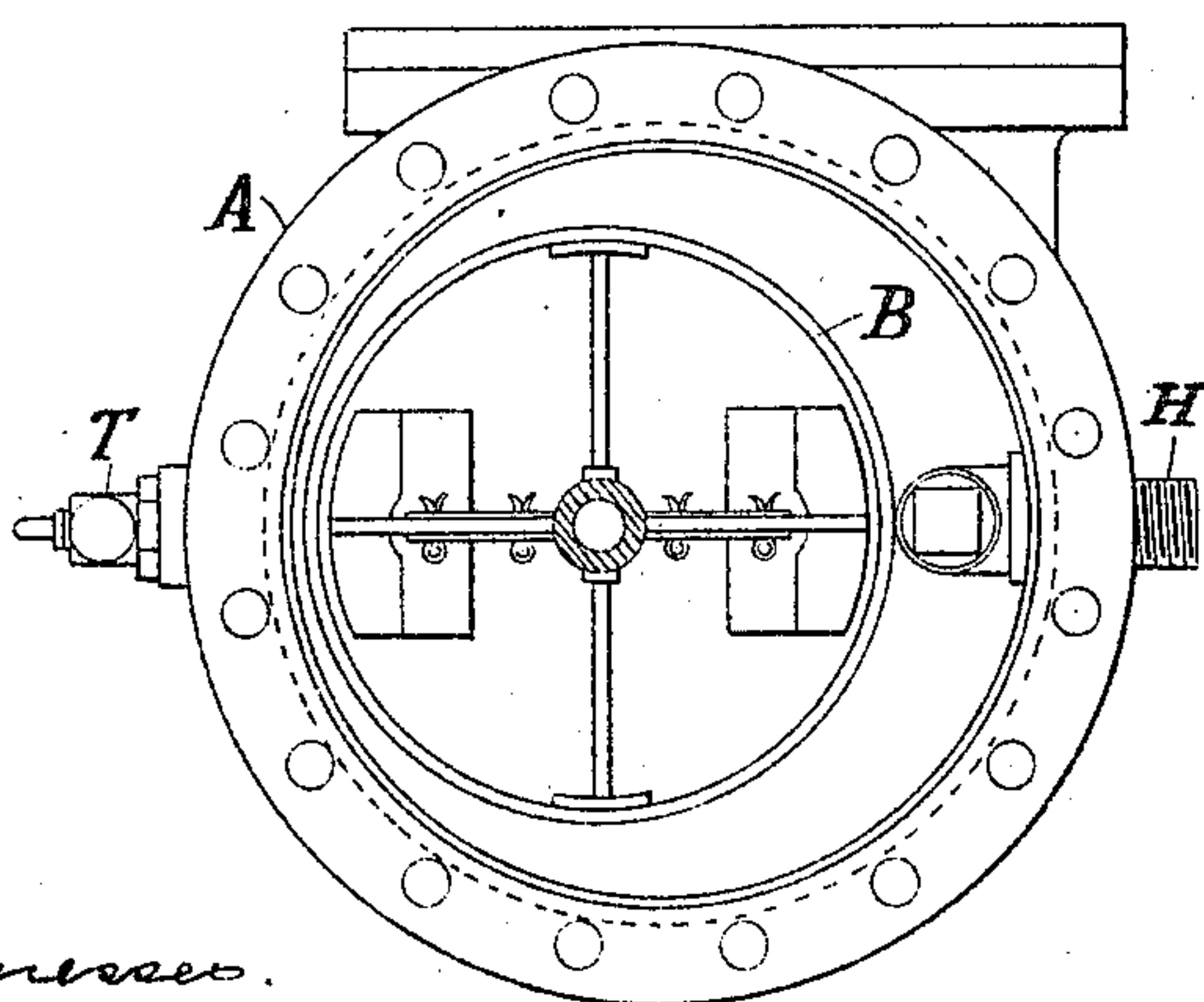
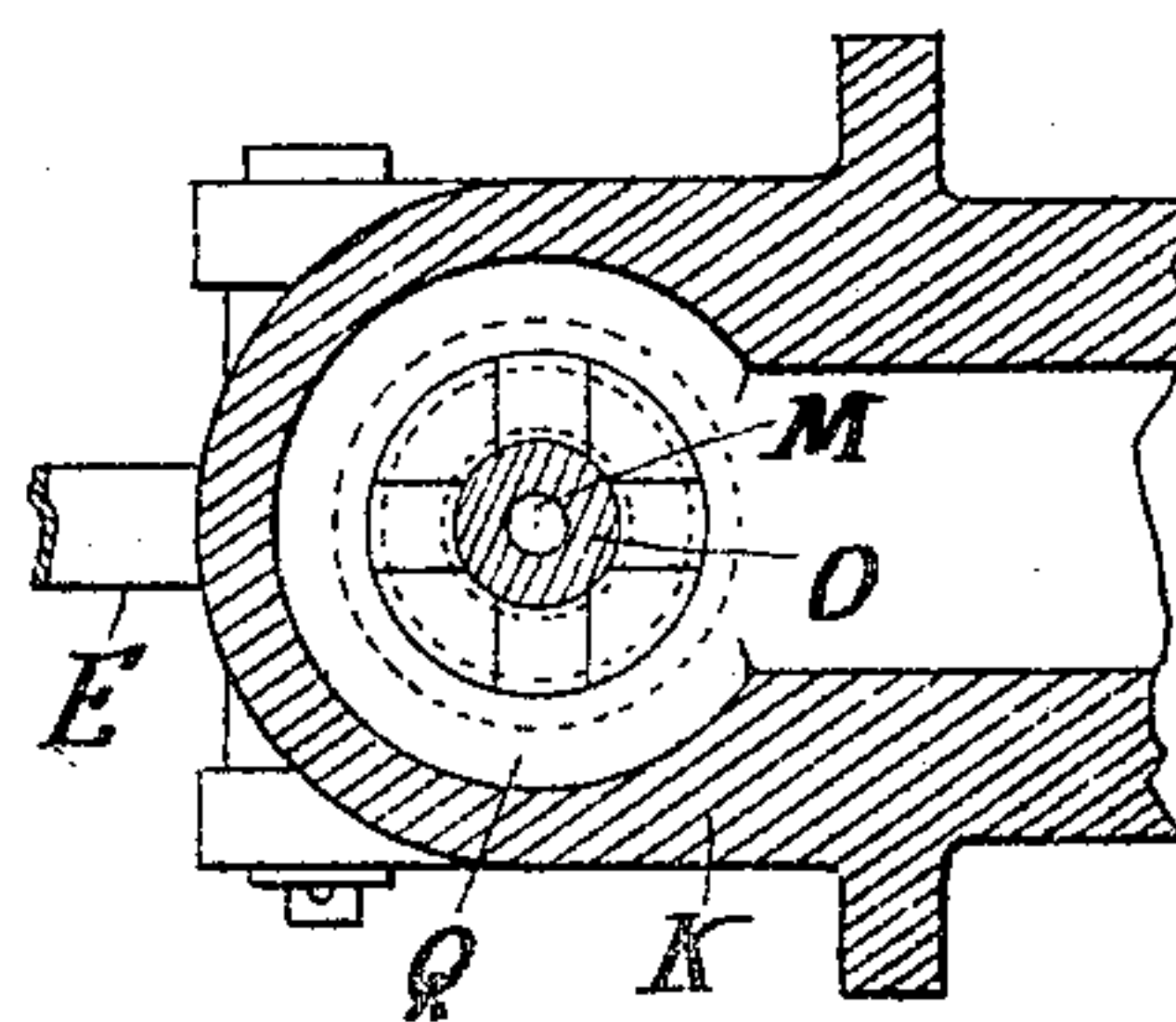


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

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STEAM-TRAP.

No. 798,578.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed October 15, 1904. Serial No. 228,656.

To all whom it may concern:

Be it known that I, NELSON FOLEY, a subject of the King of the United Kingdom of Great Britain and Ireland, residing at Naples, Italy, have invented a new and useful Improvement in Steam-Traps; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to improvements in steam-traps for the discharge of condensed water from steam tubes or receivers subjected to high pressure.

The object of this invention is to provide a device by means of which a single-seat valve can easily be opened, even if under high pressure, thereby obtaining a satisfactory trap in which the great leakage is avoided which occurs with valves where the compensation is effected on the double seat or piston principle, and in order that my invention may be more fully understood I have caused to be appended hereunto one sheet of drawings marked with letters of reference indicating like parts in the various figures.

Figure 1 is a vertical section, and Fig. 2 a plan, of the apparatus; Fig. 3, a vertical section, and Fig. 4, a plan, on a larger scale, of the valve with its details.

In carrying out my invention the apparatus consists of a collector or collecting-receptacle A, Figs. 1 and 2, for the waste water. In the said collector is placed a weighted body B, of a convenient size. In the drawings this body is represented by a receptacle full of water; but it is evident that the same may also be made solid, of stone or the like material. This body B is suspended by levers and partially balanced by counterweights C. An outlet-valve D, Figs. 1 and 2, is connected with the weight B by means of a lever E, fulcrumed at F. The water enters at G and leaves at H. A water-gage T indicates the working of the valve. The valve D works in the valve-case K and is provided with a supplementary valve L, placed in the center of the valve D, the spindle of which latter has a passage M, which leads to the chamber N above, and the lower orifice of which forms the seat for the supplementary valve L.

The upper part of the valve-case K has a cylindrical opening P, which establishes communication between the chamber N and the waste-water space Q. In the said cylindrical opening moves a small piston O, formed on the spindle and which is of equal area to the

valve D and serves as compensator as well as guide for the same.

The supplementary valve L, placed in the center of the valve D, is connected with the latter by means of a pin R, fixed on the valve D and working in the slot S cut in L, so as to permit the said supplementary valve to have a slight independent movement. In this way a movement of the lever E, designed to work the valve D, thus at first slightly displaces the valve L.

When the water in the collector A has risen to a certain level, the body B, becoming immersed in water, loses part of its load as a weight, and, due to the action of the counterweights C, rises and imparts a small movement to the supplementary valve L, which in opening permits the pressure in the collector A to pass also to the chamber N, behind the compensating piston O. In this way the pressure on the valve D is equalized, or nearly so. At this time the supplementary valve L will have reached the limit of its lift controlled by the slot S, and as the body B continues to rise the valve D will also open and discharge the water through Q.

When the waste water has lowered to a certain level, the body B, overpowering the counterweights D, descends and closes first the supplementary valve L and afterward the valve D. When both valves are closed, the pressure tends to establish a hermetic closure of the valve D.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be applied, I declare that what I claim is—

1. In mechanism for controlling automatically the outflow of liquid, the combination of a receptacle for said liquid, having an inlet and an outlet, with a weighted body within said receptacle rising and falling with said liquid, a lever operated by such movement of the said body, an outlet-valve arranged to be opened by said lever as the said body ascends, a casing for said valve provided with a pressure-chamber beyond the said valve and a supplemental valve arranged to be opened by said lever for uncovering a passage from said receptacle to said pressure-chamber and having a limited independent motion in order that the passage of liquid to the said pressure-chamber may slightly precede the opening movement of said outlet-valve and facilitate the same by balancing the pressure thereon,

each of the said valves being engaged and operated by the said lever substantially as set forth.

2. In mechanism for controlling automatically the outflow of water of condensation from a steam-trap, the combination of a collecting-receptacle for said water, having an inlet and an outlet with a weighted and counterbalanced body within said receptacle, rising and falling with said water, a lever operated by such movement of said body, an outlet-valve having a longitudinal bore arranged to be opened by said lever as the said body ascends, a casing for said valve provided with a pressure-chamber beyond the said valve communicating through said bore with the interior of said receptacle, and a supplemental valve located within said outlet-valve and having a limited independent motion to open and close the said bore, this supplemental valve being arranged to be operated by the said lever for opening said bore a little in advance of the opening

movement of the said outlet-valve substantially as set forth.

3. In combination with a fluid-receptacle having an inlet and an outlet, a valve controlling the said outlet, a supplemental valve arranged within the said outlet-valve and controlling the transfer of fluid for establishing counterbalancing pressure on said outlet-valve, a lever engaging both of the said valves and a device rising and falling with the fluid in said receptacle, the said parts being arranged to open first the supplemental valve and then the main outlet-valve substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

NELSON FOLEY.

Witnesses:

W. N. BENEDETTI,
A. ROZZI.