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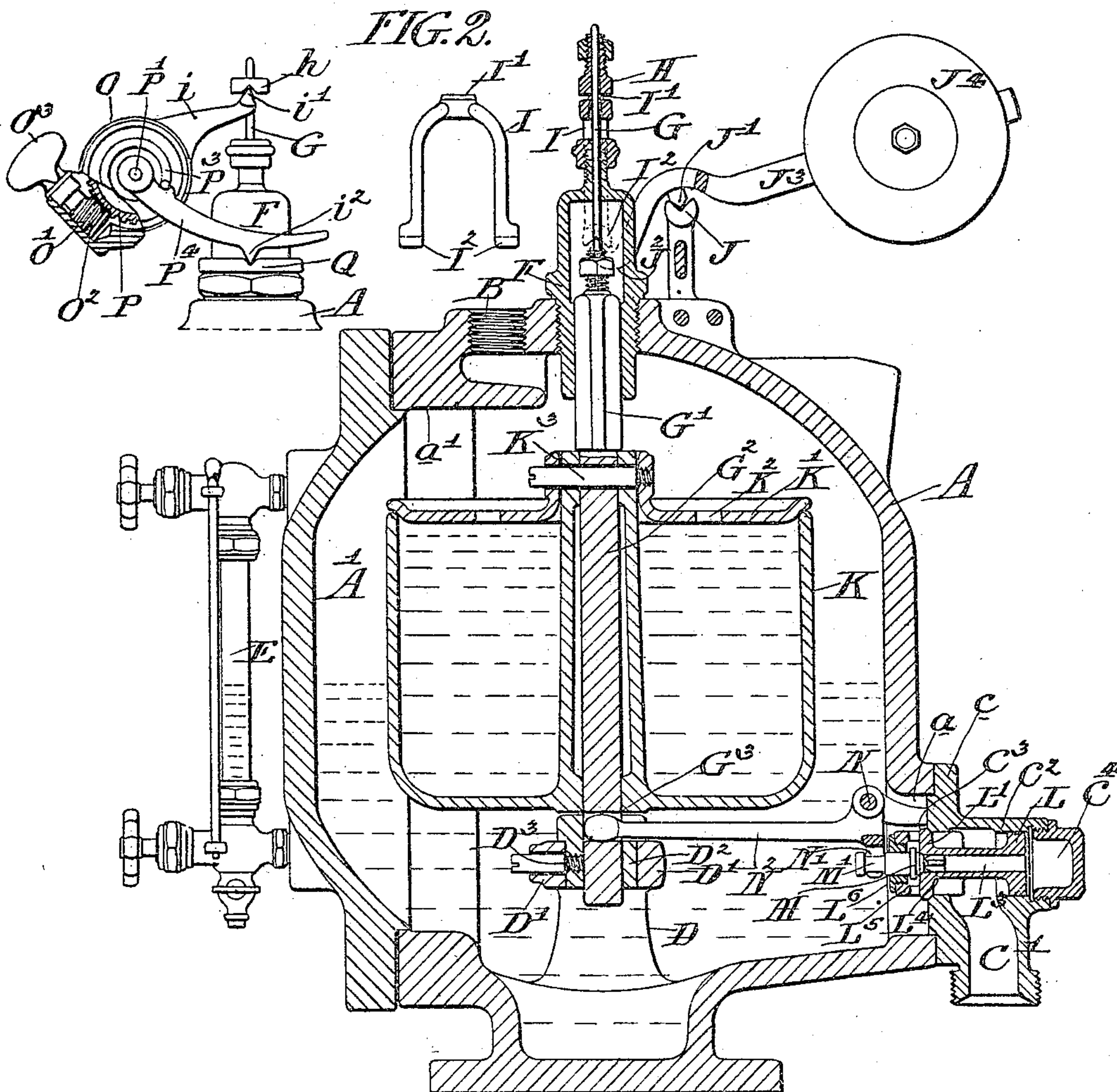
WATER TRAP.

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FIG. 1.

FIG. 3.

FIG. 2.



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WATER-TRAP.

No. 801,161.

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To all whom it may concern:

Be it known that we, LOUIS SCHUTTE, residing in the city and county of Philadelphia, in the State of Pennsylvania, and TEILE HENRY MÜLLER, residing in the city, county, and State of New York, citizens of the United States of America, have invented certain new and useful Improvements in Water-Traps, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

Our invention relates to water-traps such as are used in connection with steam-pipes, and has for its object to provide a trap of simple and efficient construction in which the parts and connections are arranged and combined for most convenient adjustment and repair and which is particularly well adapted for use where the pressure in the collecting-chamber is high, our improvements consisting partly in the general structure and make-up of the apparatus, but more especially consisting in improved waste or discharge valves.

The nature of our improvements will be best understood as described in connection with the drawings, in which—

Figure 1 is a vertical sectional elevation of our improved trap; Fig. 2, a detached elevation of a yoke forming part of the said trap structure, and Fig. 3 a view illustrating a modified constructive detail.

A is a trap-chamber which we preferably form, as shown, with a large lateral opening a' , through which the float can be introduced, and with a smaller lateral opening a , which is covered by a plate or casting in which is formed the discharge-valve, as will hereinafter be described.

A' indicates the cover fitting over the opening a' and to which we secure the water-gage, (indicated at E.)

B is the entrance-opening through which water reaches the trap-chamber.

C is the cover-plate for the opening a , in the face of which is formed the valve-seated port C^3 and in the rear of which is formed the cylinders C^2 , C' indicating the exhaust-port leading from the space of the port C^3 and cylinder C^2 .

C^4 indicates a separable cover for the rear end of the cylinder C^2 .

L indicates a piston working in the cylinder

C^2 and connected by the hollow stem L^3 with the waste-valve L' , which is adapted to seat itself on the port C^3 . As shown, the port formed in the hollow stem L^3 extends from the face of the valve L' to the rear of the piston L , so as to connect the chamber A with the rear end of cylinder C^2 . The front view of the valve L' supports, through an annular ring L^5 , a guide and shoulder, (indicated at L^6), said guide and shoulder supporting the stem M' of a pilot-valve M, while giving the said valve sufficient freedom of motion to enable it to open and close the port formed through the valve L' . The cover-plate C also supports the lever-pivot, (indicated at N,) the lever being indicated at $N' N^2$, the short arm N' connecting with the valve-stem M' and the long arm M^2 connecting with the float to be described.

We have shown extending up from the bottom of the chamber A a frame D, supporting an annular guide, (indicated at D'), which in turn supports the annular bushing D^2 , said bushing being held to the ring D' by the set-screw D^3 .

F is a guide screwing into the top of the chamber A, G being a rod passing through a stuffing-box at the top of the guide F and connecting at its lower end with a guide-rod G' working in the lower portion of the guide F and forming a continuation of a rod G^2 , the lower end of which is guided in the bushing D^2 and is also formed with a lateral perforation G^3 , into which passes the end of the lever-arm N^2 .

H is a shoulder secured to the top of the guide-rod G and against which rests the knife-edge I' of a yoke I, having notches I^2 at the end of its arms which engage knife-edges on the arm J^2 of the lever $J^2 J^3$, having a knife-edge J' , which rests in the stationary notch J, while a counterweight J^4 is secured on the arm J^3 .

K is an annular receptacle secured on the rod G^2 and, as shown, provided with a cover K' , formed with perforations K^2 and also secured to the rod G^2 by the bolt K^3 .

Describing the construction shown in Figs. 1 and 2, we would state that, aside from the combination of the water-gage E with the cover A' and the special construction and arrangement of the cover C and parts immediately connected therewith, the apparatus is

of a generally familiar and well-known character. The annular vessel K being full of water at all times while the trap is in use and counterbalanced through the described connections by the weight J^4 , so as to serve as a float rising and falling as the water-level in the chamber A increases or diminishes. When the weight or float K moves down it acts through the lever $N^2 N'$ to move the valve M in a direction to set out on the valve L' and through the pilot-valve M to also cause the valve L' to set out on the port C^3 . When, on the other hand, the float moves up, the action of the lever is first to open the pilot-valve M, admitting the water through the port L^3 into the rear end of the cylinder C^2 , thus balancing pressure on the valve, so that when the pilot-valve M comes in contact with the shoulder L^6 it will with little or no resistance draw in and open the valve L' , permitting the water to pass through the waste-port. The fall in the water-level reverses the movements of the valves, as already described, and as the rear end of the cylinder C^2 is through the usual leaky fit of the piston L in communication with the exhaust-port C' the closing of the pilot-valve practically at once cuts off the pressure on the rear end of the piston L, so that the valve L' when closed is held to its seat by practically whatever pressure exists in the chamber A.

The modification illustrated in Fig. 3 is simply one in which an adjustable spring is indicated as a valuable alternative of the adjustable counterweight J^4 for balancing and adjusting the weight of the float K. In this construction a shoulder h is secured to the top of the rod G, and a notched ring Q is secured to the guide F. An arm i rests against the shoulder h and has at its outer end a casing O with a lateral chamber O' , which separates a worm O^2 , actuated by a finger-grip O^3 , and engaged with a worm-wheel P, which is secured to a pivot P' at the center of the casing O, and is arranged to adjust the tension of a spring P^3 , the end of which rests on an arm P^4 , pivoted at P' and having knife-edges i^2 , which rest in the notches of the ring Q. It will readily be understood that this device is in all respects the full equivalent for the adjustable counterweight indicated in Fig. 1.

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

1. In a water-trap, a collecting-chamber A, having an opening a , in combination with a cover C, for said opening, said cover having formed in it a valve-seated waste-port C^3 , a

cylinder C^2 , and a waste-outlet C' , situated between said port and cylinder, and said cover also supporting a lever-pivot N, a valve L' , and piston L, connected together and having a port L^3 , leading through them from chamber A, to the rear of the cylinder C^2 , a pilot-valve M, supported on valve L' , and adapted to open and close port L^3 , a valve-actuating lever supported on pivot N, and means in chamber A, actuated by the varying level of water therein and connected with the actuating-lever aforesaid for opening and closing the valves.

2. In a water-trap, a collecting-chamber A, having an opening a , in combination with a cover C, for said opening, said cover having formed in it a valve-seated waste-port C^3 , a cylinder C^2 , and a waste-outlet C' , situated between said port and cylinder, and said cover also supporting a lever-pivot N, a removable cylinder end C^4 , a valve L' , and piston L, connected together and having a port L^3 , leading through them from chamber A, to the rear of the cylinder C^2 , a pilot-valve M, supported on valve L' , and adapted to open and close port L^3 , a valve-actuating lever supported on pivot N, and means in chamber A, actuated by the varying level of water therein and connected with the actuating-lever aforesaid for opening and closing the valves.

3. In a water-trap, a chamber A, having an opening a' , of large area and a smaller opening a , in combination with a cover A' , for the larger opening said cover having secured to it a water-gage E, a cover C, for the smaller opening, said cover having formed in it a valve-seated waste-port C^3 , a cylinder C^2 , and a waste-outlet C' , situated between said port and cylinder, and said cover also supporting a lever-pivot N, a valve L' , and piston L, connected together and having a port L^3 , leading through them from chamber A, to the rear of the cylinder C^2 , a pilot-valve M, supported on valve L' , and adapted to open and close port L^3 , a valve-actuating lever supported on pivot N, and means in chamber A, actuated by the varying level of water therein and connected with the actuating-lever aforesaid for opening and closing the valves.

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