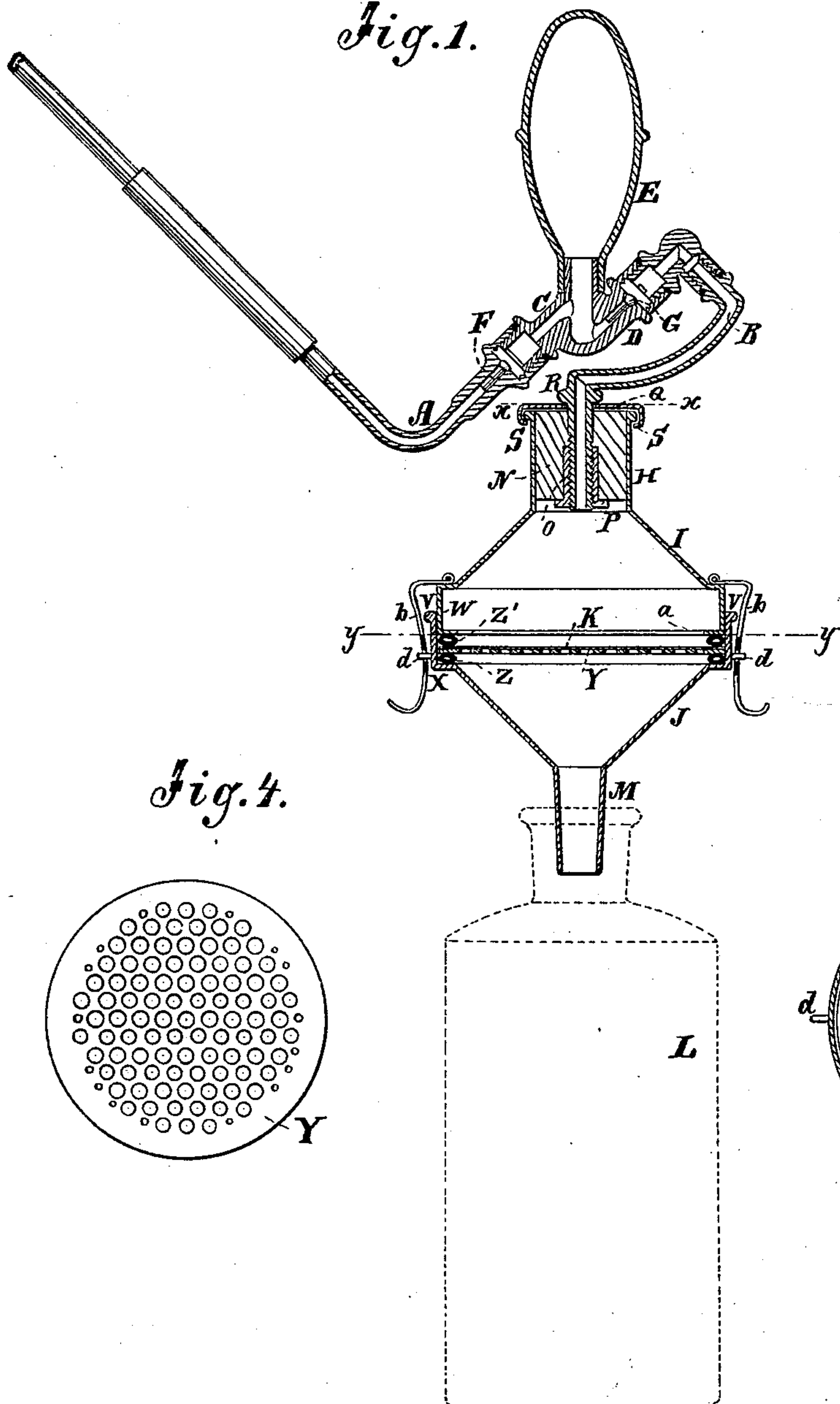


**W. W. GRANT.**  
**Combined Siphons and Filters.**

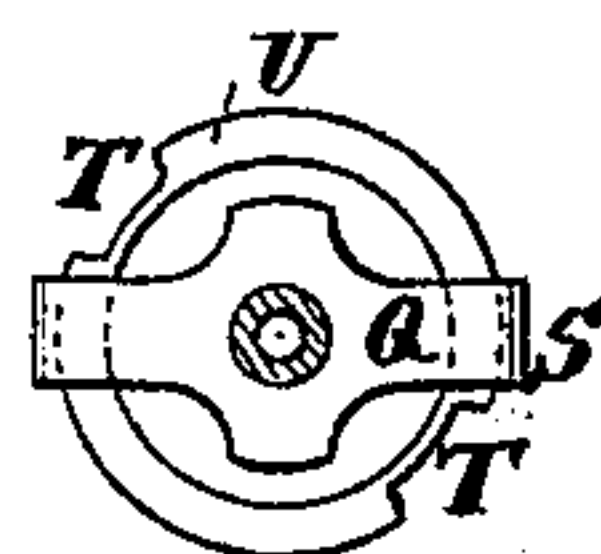
No. 151,382.

Patented May 26, 1874.

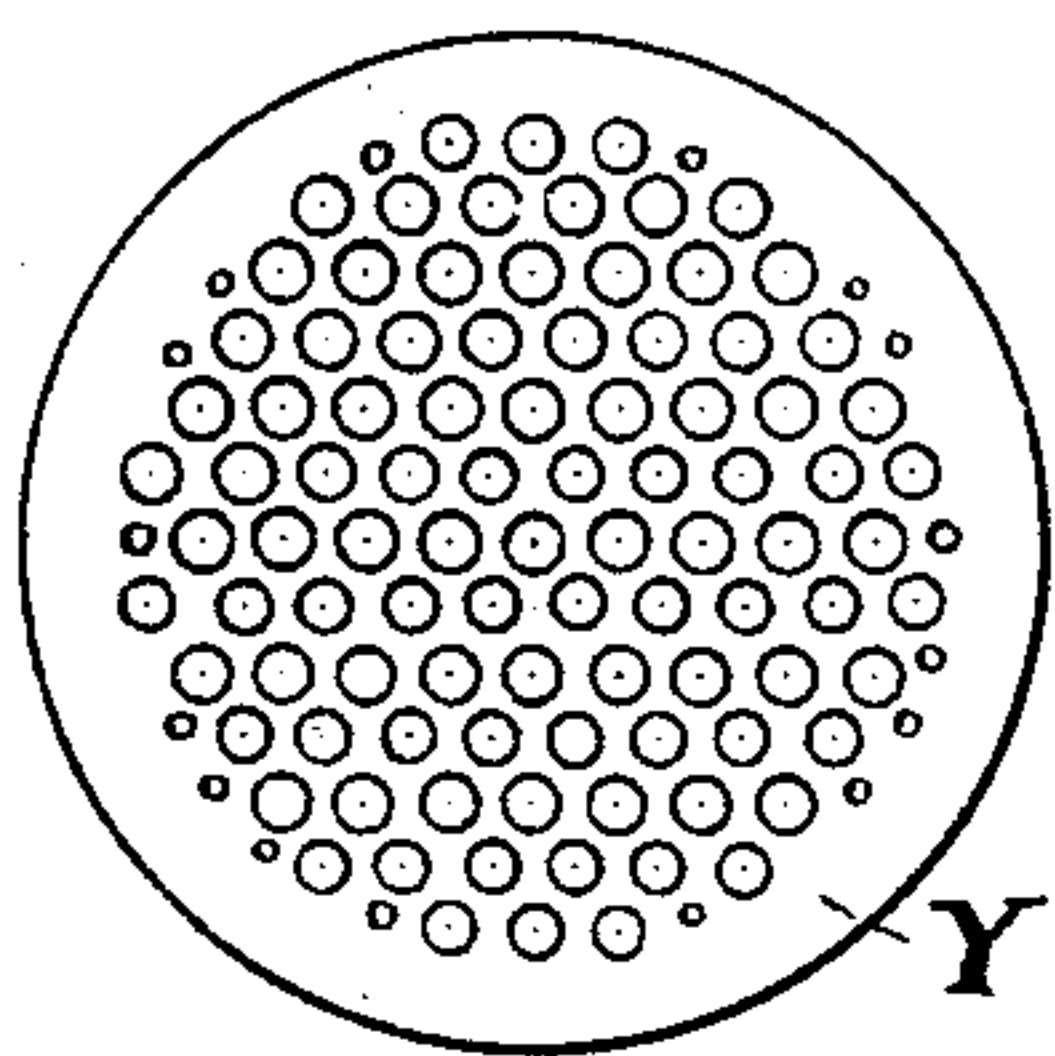
*Fig. 1.*



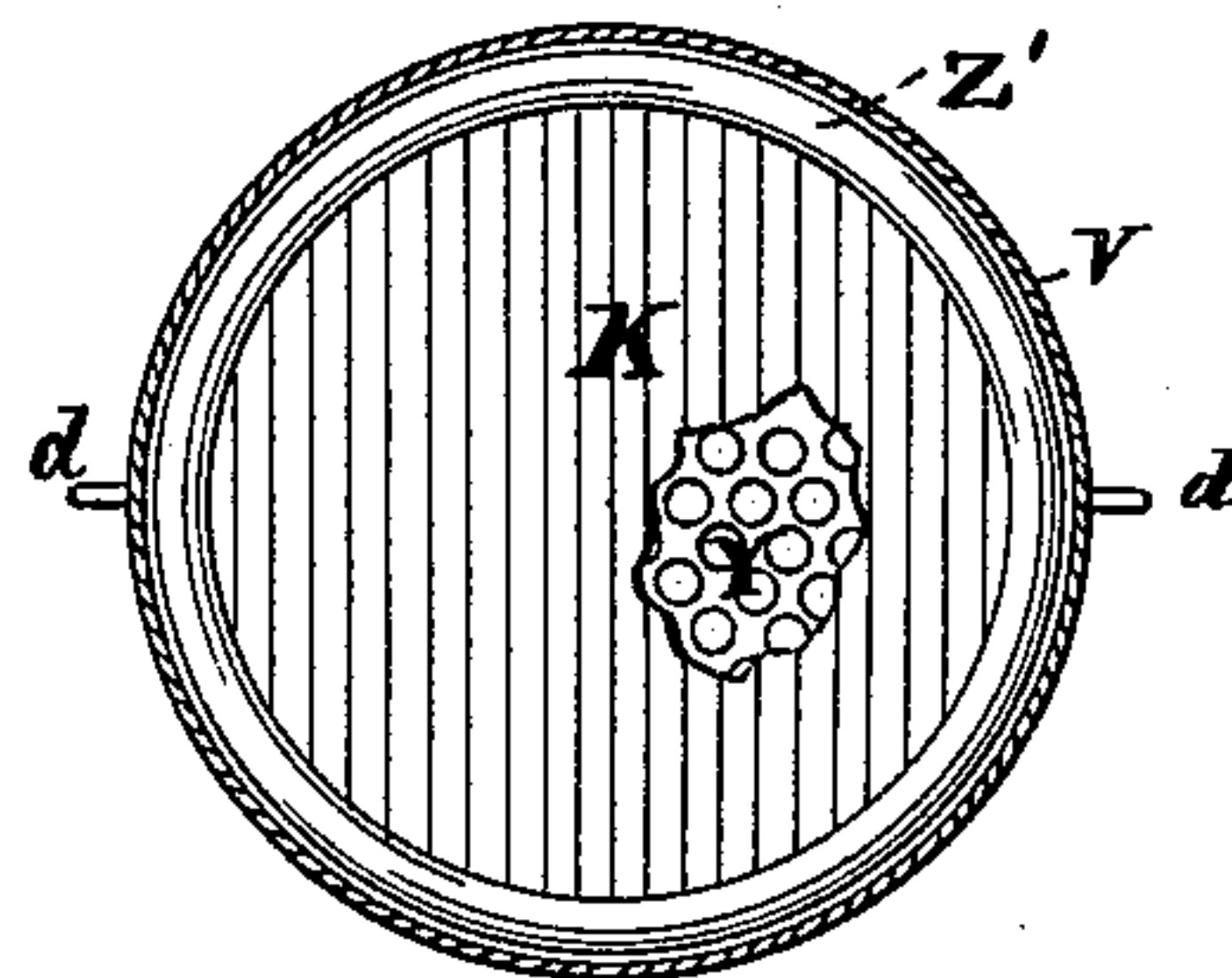
*Fig. 2.*



*Fig. 4.*



*Fig. 3.*



**WITNESSES:**

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# UNITED STATES PATENT OFFICE.

WILLIAM WALLACE GRANT, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN COMBINED SIPHONS AND FILTERS.

Specification forming part of Letters Patent No. 151,382, dated May 26, 1874; application filed December 6, 1873.

*To all whom it may concern:*

Be it known that I, WILLIAM WALLACE GRANT, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and Improved Combined Siphon and Filter, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claims.

Figure 1 is a sectional elevation of the apparatus. Fig. 2 is a horizontal section of Fig. 1 on the line *x x*, showing the mode of securing the siphon-tube to the filter. Fig. 3 is a horizontal section of Fig. 1 on the line *y y*, showing the filter; and Fig. 4 is a plan view of the perforated plate of the filter, for supporting the filtering-paper.

Similar letters of reference indicate corresponding parts.

A and B represent two parts of a siphon-tube, which are coupled by an angular obliquely-placed coupling, C and D, of a flexible bulb, E, containing valves F and G, and, together with the bulb, comprising a pump for removing the air from the siphon for setting it in operation readily. The part B of the siphon is connected to the top H of a filtering-vessel composed of two parts, I J, which are detachably connected at the middle, and contain a filter, K, thereat, through which the liquid substance may be passed for removing impurities from it at the same time it is discharged into the vessel L, in the nozzle of which a nozzle, M, on the lower part of the filtering-vessel fits. Thus I am enabled to filter the liquid at the same time that I transfer it, and thereby economize time and labor; moreover, I avoid exposing the liquids to the atmosphere, which, in the case of very volatile liquids, causes more or less waste. I have arranged the valves in the angular obliquely-placed coupling C D to descend when closing, so as to cause them to close by gravitation when not acted on by any other force to secure the closing of them in all cases. To attach the siphon to the filtering-vessel, I make a top, H, to it, large enough to receive a cork, N, to be fitted in it air-tight, and having a hole through its center, which in the lower part is bushed with a long nut, O, secured against being drawn up through the hole by a flange, P, below, into which the end of the tube B is screwed,

said tube passing through a hooked button, Q, and clamping or binding it tight on the top of the cork by a collar, R. The hooks S of this button drop through the notches T of a collar, U, on the top of part H, and the button then turns so that the hooks catch under the collar and hold the cork securely against being forced out by any pressure within the filter. The parts I and J of the filter are conical in form, with a cylindrical flange at the top, and the upper one is inverted, and its flange W fitted within the flange V of the lower part, which has an annular shoulder, X, at the bottom of its flange, on which the perforated filter-holding plate Y rests, with a rubber or other flexible packing-ring, Z, between it and said shoulder; also with another, Z', above it, on which a flange, a, on flange W of the upper part of the filtering-case rests, for packing the filter and the two parts of the case together efficiently, and so that the case can be readily taken out and the filter removed. The two parts of the case are pressed together smartly when thus adjusted, and secured by the spring-hooks *b* on one part, and the stud-pins *d* on the other. A paper or cloth filtering-disk, K, is placed over the perforated plate Y, and secured by the upper packing-rings.

The siphon, with its pump for setting it in motion, may, of course, be detached from the filter, and used independently of it, and the filter may be used independently of the siphon.

The filter-case and the solid portion of the filter-pump may be made of glass; but it may sometimes be desirable to make them of metal, in which case it will be necessary to line them with a coating of something which will protect them from acids. For this I propose to use two parts of tar to one each of beeswax and paraffine in combination.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a siphon; A B, of the angular obliquely-placed coupling C D, provided with oblique passages, the valves F G therein closing obliquely downward by their own gravity, and the bulb E vertically attached to the coupling between the valves, substantially as and for the purposes set forth.

2. The combination, with the siphon-tube B,

having the circumferential collar R, and the filter-top H, having a notched collar, U, at the upper edge of the cork N, flanged screw-bushing O, and the button Q, with hooks S S, all substantially as and for the purposes herein set forth.

3. The filtering-case herein described, consisting of the part I, with top H, and vertical flange W, having an interior horizontal flange,

a, the part J, with nozzle M, offset X, and vertical flange V, the elastic packing-rings Z Z', perforated plate Y, and fastening devices b d, all substantially as and for the purposes herein set forth.

WILLIAM WALLACE GRANT.

Witnesses:

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MILTON T. BOSWELL.