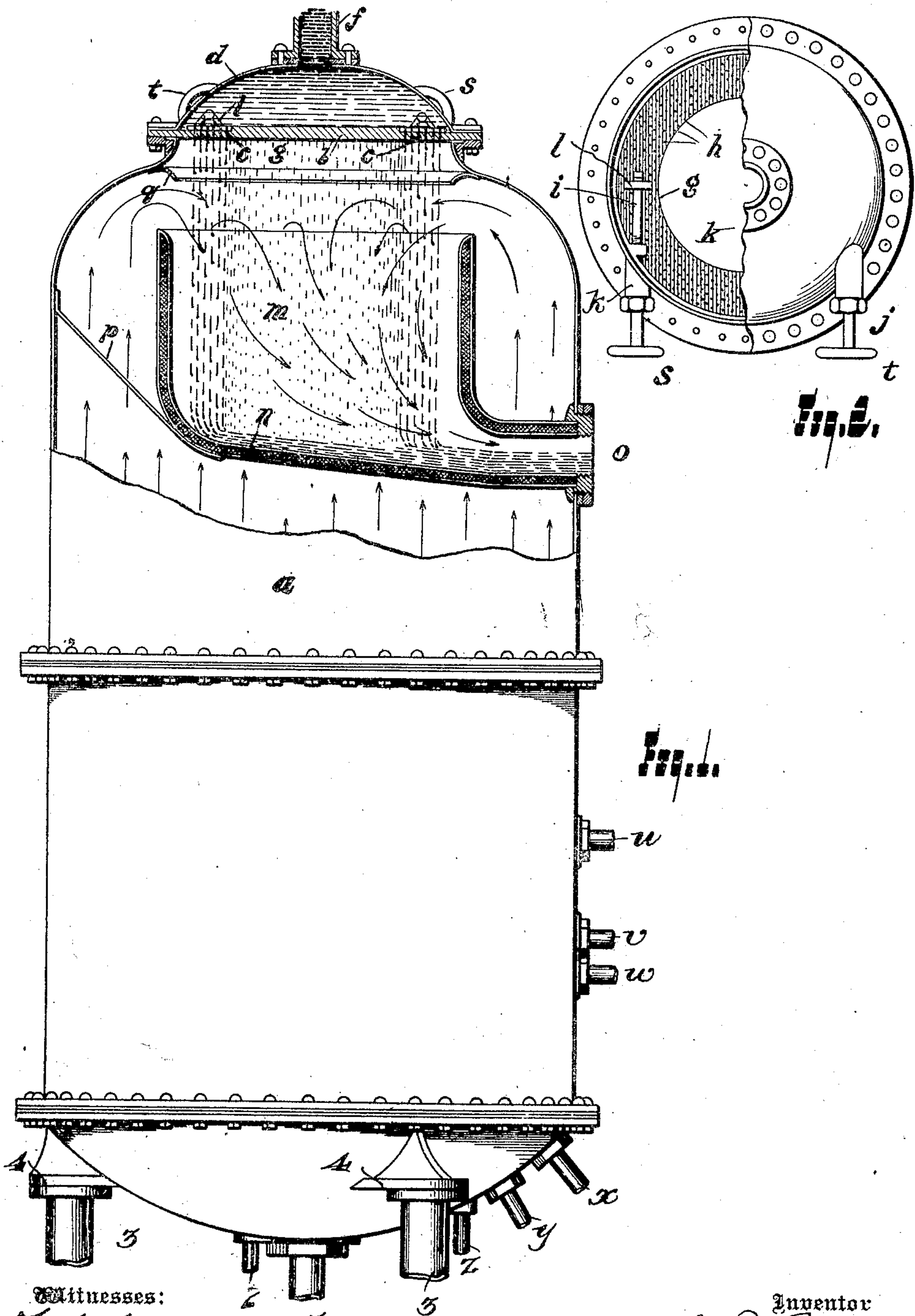


No. 795,650.

PATENTED JULY 25, 1905.

C. T. ROGERS.  
COMBINED VACUUM PAN AND CONDENSER.  
APPLICATION FILED JAN. 15, 1904.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

CHARLES T. ROGERS, OF DETROIT, MICHIGAN.

## COMBINED VACUUM-PAN AND CONDENSER.

No. 795,650.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed January 15, 1904. Serial No. 189,194.

*To all whom it may concern:*

Be it known that I, CHARLES T. ROGERS, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in a Combined Vacuum-Pan and Condenser; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in combined vacuum-pans and condensers; and the object of my improvement is to provide a simple and economical device of this type, one in which the condenser is located inside of the vacuum-pan instead of being separate from it, as usual, and one in which the amount of condensing fluid supplied to the condenser may be regulated to a nicety.

With these objects in view my invention consists in the construction and combination of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a side elevation, partly in section, of my combined vacuum-pan and condenser; and Fig. 2 is a top view of the same, partly in section.

*a* represents the vacuum-pan, which is of the usual construction. The top of this pan is closed by a plate *b*, which is provided with a number of vertically-arranged perforations *c*. These perforations are preferably arranged in a circle upon the plate *b*. Above the plate *b* is a curved casing *d*, the space between the plate *b* and the casing *d* serving as a reservoir for the condensing liquid.

*f* indicates the supply-pipe for the condensing liquid. The pipe *f*, casing *d*, plate *b*, and the top of the pan *a* are fastened together in any desired manner, preferably by means of bolts and packing. The plate *b* is cut away just above the perforations *c*, forming a circular groove or channel, and in this groove or channel is located another plate *g*, provided with perforations *h*, which when the plate *g* is in position register with the perforations *c*. The plate *g* is adjustable upon the plate *b* by means of the screws *i* and *j*, operated by the hand-wheels *s* *t*. The screw *i* passes through a lug *k*, fastened to the top of the pan and engages a projection *l* on the plate *g*. The screw *j* is similarly mounted. It is obvious by moving the plate *g* back and forth above the plate

*b* that flow of condensing liquid through the perforations *h* and *c* may be regulated exactly as desired or may be entirely cut off.

Below the plate *b* is located the receptacle *m* for the condensed fluid. This is preferably made out of two parallel sheets of metal separated by heat-insulating material *n* for the purpose of preventing surface condensation on the outside of the receptacle *m*. Any suitable non-conductor of heat may be used—such, for example, as asbestos or mineral wool. This receptacle terminates in a sloping discharge-neck *o*, which is connected to the vacuum-pump and passes through the wall of the pan *a*. One or more braces *p*, fastened to the receptacle and to the interior of the vacuum-pan, serve to hold the receptacle in its proper position. A curved deflecting-plate *q* is used near the top of the pan to prevent the condensing fluid from running around the interior of the pan *a*, and this plate compels all the condensing fluid to drop directly into the receptacle *m*.

By means of the perforated plates *b* and *g* the amount of condensing fluid delivered into the interior of the vacuum-pan can be regulated exactly without changing the number of streams or jets and without varying the main supply, thus rendering it possible to obtain efficient condensation with a less amount of condensing fluid and rendering it possible to maintain a vacuum or a partial vacuum with little or no fluctuations.

It is evident that many changes might be made in the form of my invention without departing from the spirit thereof, the two essential features being that the condenser is located wholly within the vacuum-pan and that the supply of condensing fluid can be regulated exactly while keeping the supply of the condensing fluid to the condenser always in the form of a spray. I wish it to be understood, therefore, that I do not limit myself to the exact details shown and described.

The vacuum-pan *a* is supported by means of standards 3, engaging with projections 4 on the base of said pan. Any desired number of these standards may be used.

*u*, *v*, *w*, *x*, *y*, *z*, 1, and 2 represent inlet and outlet pipes for the admission and drawing off of the liquid to be evaporated, the evaporated liquid, and the heating medium—such as steam, for example.

Having thus described my invention, what



I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a vacuum-pan, a condenser located within said pan, means for supplying jets of condensing fluid to said condenser, and means for varying the size of said jets, substantially as described.

2. The combination of a vacuum-pan, a perforated plate applied thereto, a second perforated plate located in proximity to said first-named plate, and means for moving one of said plates relatively to the other to vary the supply of fluid delivered through said plates, substantially as described.

3. The combination of a vacuum-pan, a perforated plate applied to the top thereof, a revolvable circular plate located above said first-named plate, and means for moving one of said plates relatively to the other, substantially as described.

4. The combination of a vacuum-pan, a plate closing the top of said pan and provided with a circular perforated trough, a movable circular perforated plate mounted in said trough, and means for moving said second-named plate, substantially as described.

5. The combination of a vacuum-pan, a plate closing the top thereof, said plate being provided with a circular perforated trough, a movable perforated circular plate mounted in said trough, means for moving said last-named plate, a casing located above said plates, and an inlet-pipe passing through said casing, substantially as described.

6. The combination of a vacuum-pan, a plate

closing the top thereof, said plate being provided with a circular perforated trough, a movable circular perforated plate mounted in said trough, and adjusting-screws for moving said second-named plate, substantially as described.

7. The combination of a vacuum-pan, a perforated plate closing the top of said pan, a second movable perforated plate located in proximity to said first-named plate, means for moving said second-named plate, and a condenser located in said pan underneath said plates, substantially as described.

8. A condenser having an open top and a discharge-opening, said condenser being made of parallel sheets of metal separated by a non-heat-conducting material, substantially as described.

9. The combination of a vacuum-pan, a plate closing the top thereof, said plate being provided with a circular perforated trough, a movable circular perforated plate located in said trough, means for moving said second-named plate, a casing located above said plates, an inlet-pipe delivering into said casing, and a condenser located beneath said plates and having a discharge-neck passing out through the side of said pan, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES T. ROGERS.

Witnesses:

H. H. HAGER,

A. M. STARBIRD.