

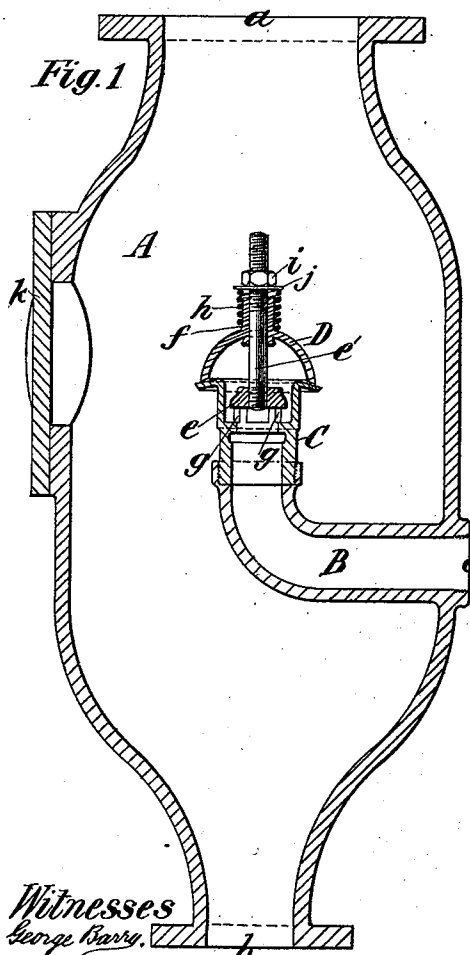
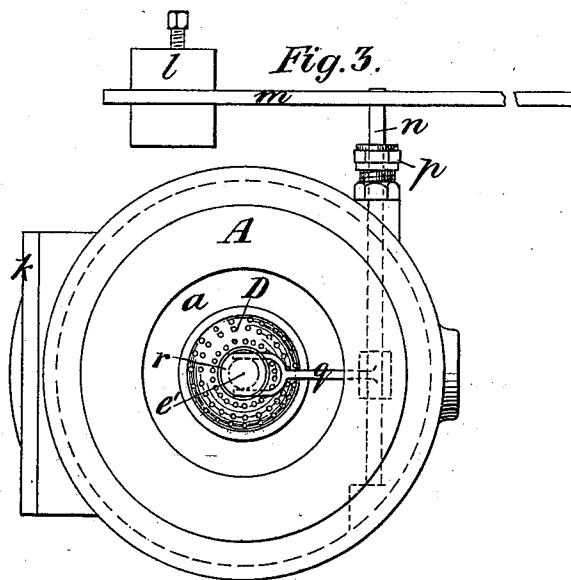
(No Model.)

W. F. GARRISON.

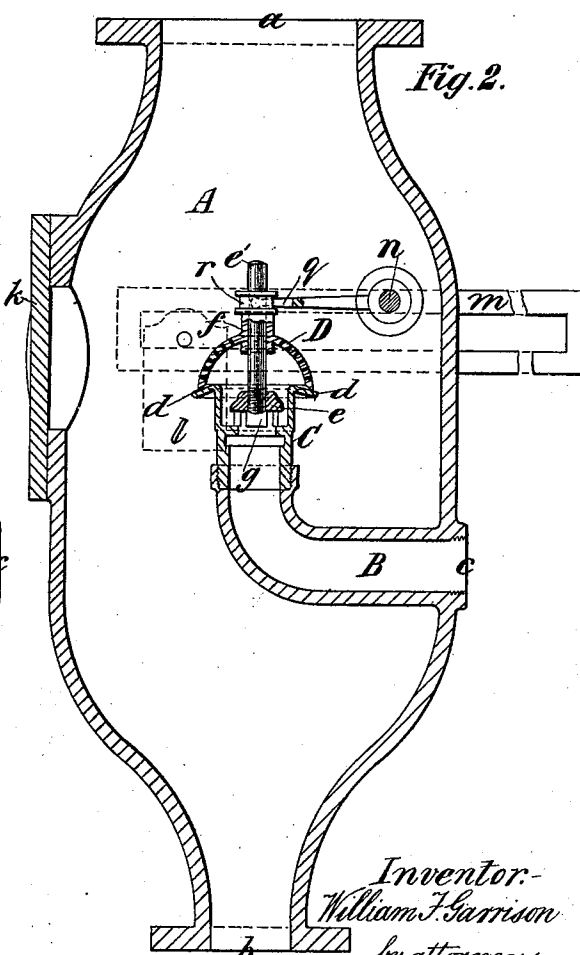
WATER REGULATING VALVE FOR CONDENSERS.

No. 519,083.

Patented May 1, 1894.



Witnesses
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Inventor:
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UNITED STATES PATENT OFFICE.

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WATER-REGULATING VALVE FOR CONDENSERS.

SPECIFICATION forming part of Letters Patent No. 519,083, dated May 1, 1894.

Application filed February 11, 1893. Serial No. 461,932. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. GARRISON, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Water-Regulating Valves for Condensers, of which the following is a specification.

This invention relates to condensers in which the condensation is effected by the direct contact of the cold water with the vapors to be condensed by it and from which the said water and the products of condensation are drawn by an air pump.

The object of the improvement is to provide for the automatic regulation of the supply of the cold water to the condenser in quantity required according to the vacuum desired to be produced in the apparatus to which the condenser is applied.

The nature of the invention will be understood from the description with reference to the accompanying drawings and the claims which follow.

Figures 1 and 2 represent vertical sections of condensers to which my invention is applied illustrating different examples of the invention. Fig. 3 is a plan view corresponding with Fig. 2.

A (Figs. 1, 2 and 3) is the body or chamber of a condenser to which the inlet for the vapors to be condensed is at *a*, and from which the outlet for the condensing water and products of condensation is at *b* where connection is made with the air pump.

B (Figs. 1 and 2) is an elbow pipe entering the chamber A at one side and intended to have connected with it at *c* the pipe for supplying the condensing water. At the upper and inner end of this elbow pipe is a distributor C D which constitutes the principal feature of my invention and which I will now proceed to describe.

C is a hollow head piece attached in any suitable manner, as by screwing, to the elbow B and represented as having its upper edge spread or flanged outwardly with a slight downward slope as shown at *d* in Figs. 1 and 2, to constitute a downwardly and outwardly inclined seat for a cap D to be presently described. In the center of this head piece some distance below its upper edge is a bridge *e* in the crown of which is secured a fixed

central stem or post *e'*. In and around this bridge below the base of the stem or post *e'*, there are lateral openings *g g* for the flow of water through the distributor. The cap D has the form of an inverted cup with a central hub *f* which is bored to fit and move up and down freely on the stem or post *e'*. In the example shown in Figs. 2 and 3, this cap is perforated all over like a rose sprinkler so that water introduced through the head C into the chamber formed within the said cap wherein it collects in considerable volume, may be distributed through the perforations of the said cap in numerous small jets among the vapors received in the condenser. When the edge of the perforated cap D is slightly raised above the seat *d*, water escapes also from the chamber within the cap through the annular opening between the edge of the said cap and the said seat whence it assumes the form of a thin dome-shaped film which is also distributed among the vapors.

In the example shown in Fig. 1, the cap is imperforate and water can escape from the chamber within it only through the annular opening between the seat *d* and the cap. The head C is to be loaded by a spring or weight which will exert a constant tendency to close the said annular opening.

In the example Fig. 1 a spring *h* is employed for loading or depressing the cap D. This spring, which is shown coiled around the hub *f*, is compressed to a regulated tension by means of a nut *i* and a collar or washer *j*, applied to the screw-threaded upper portion of the stem *e'*. The tension of this spring may be adjusted by hand when necessary on the removal of a bonnet *k* from an opening provided in the chamber A.

In the example Figs. 2 and 3 a weight *l* is employed to load or depress the said cap, the said weight being adjustable on a slotted lever *m* the fulcrum of which is a shaft *n* which passes through a stuffing-box *p* in one side of the chamber and the inner end of which is supported on a bearing in the opposite side of the chamber. This shaft *n* carries a fork *q* which embraces a grooved collar *r* on the hub *f* of the cap. By shifting the weight *l* on the lever *m* the pressure on the cap D may be regulated from outside the condenser. The spring or weight is so adjusted that the down-

ward pressure produced by it on the cap D is just sufficient to balance the upward pressure thereon due to the degree of vacuum desired to be produced in the condenser. In case the vacuum in the condenser should tend to become too great the cap D would rise and the supply of water between it and the head C would be increased and the air pump then receiving a larger quantity of water would have its working capacity reduced and the vacuum in the condenser would be at once correspondingly reduced; or in case the vacuum in the condenser should tend to become too low the cap would be depressed and the supply of water would be diminished with the effect of increasing the working capacity of the air pump and increasing the vacuum in the condenser. In this way the vacuum may be kept substantially uniform. Whenever necessary to adjust the pressure of the spring *h* (Fig. 1) on the cap D, it will be necessary to remove the bonnet *k* when the nut *i* may be reached by hand, but the adjustment of the pressure on the cap in the example Fig. 3 may be effected by shifting the weight *l* on the lever *m* without opening the condenser.

What I claim as my invention is—

1. The combination of the hollow head piece C having a downwardly flaring external flange constituting a seat and having within it below said seat a bridge in which is a stationary central stem or post and in which below the base of said stem or post there are lateral openings, a cap of the form of an inverted cup fitted to said post and forming a water chamber above said seat, and a spring or weight applied to said cap, substantially as herein set forth.

2. The combination of the hollow head piece C having a downwardly flaring external flange constituting a seat and having within it below said seat a bridge in which is a stationary central stem or post and in which below the base of said stem or post there are lateral openings, a perforated cap fitted to said post and a spring or weight applied to said cap, substantially as herein set forth.

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Witnesses:

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