

No. 834,286.

PATENTED OCT. 30, 1906.

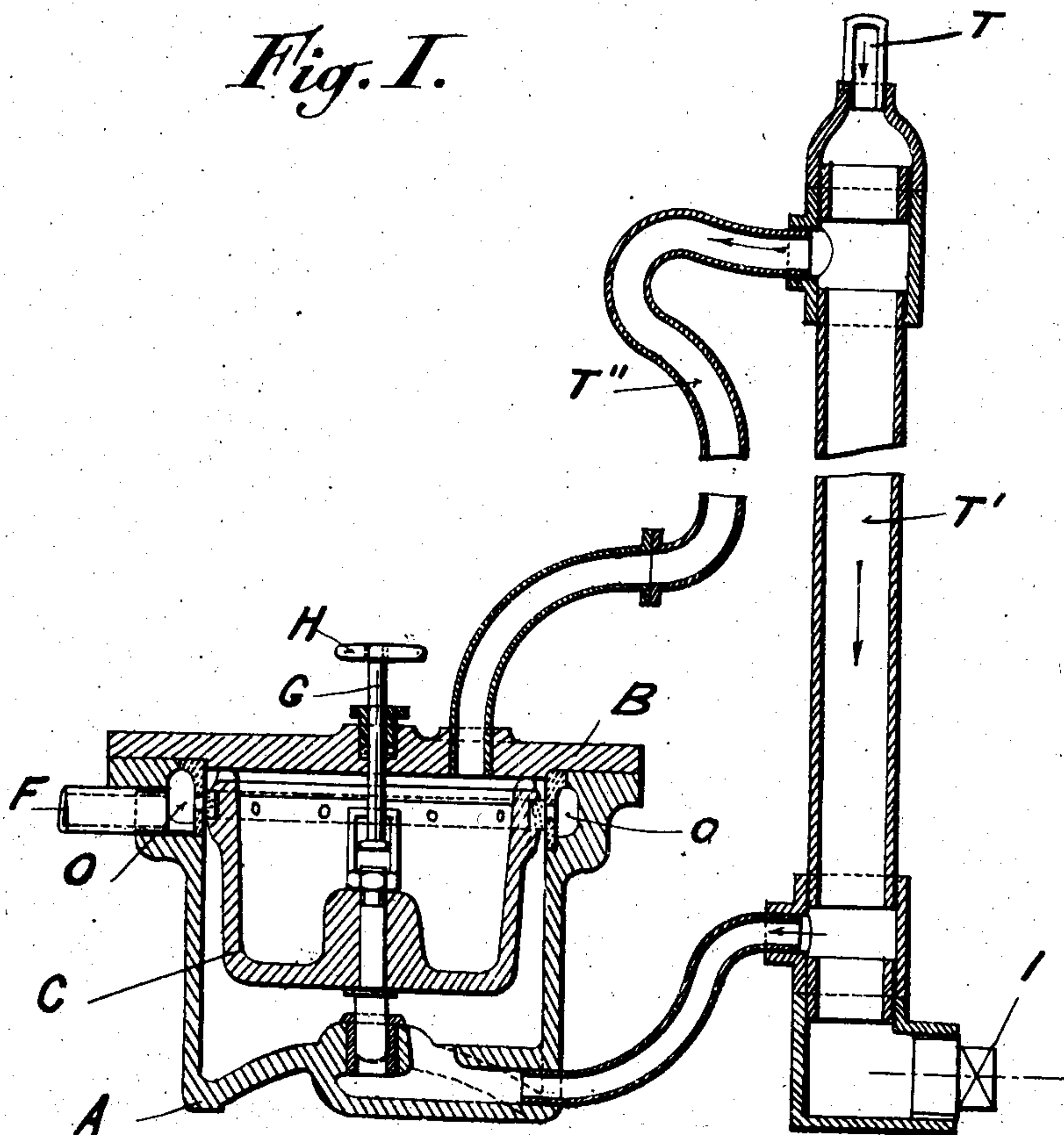
L. FONDU.

AUTOMATIC BLOW-OFF DEVICE FOR CONDENSATION WATER.

APPLICATION FILED DEC. 5, 1905.

2 SHEETS—SHEET 1.

Fig. I.



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2 SHEETS—SHEET 2.

Fig. II.

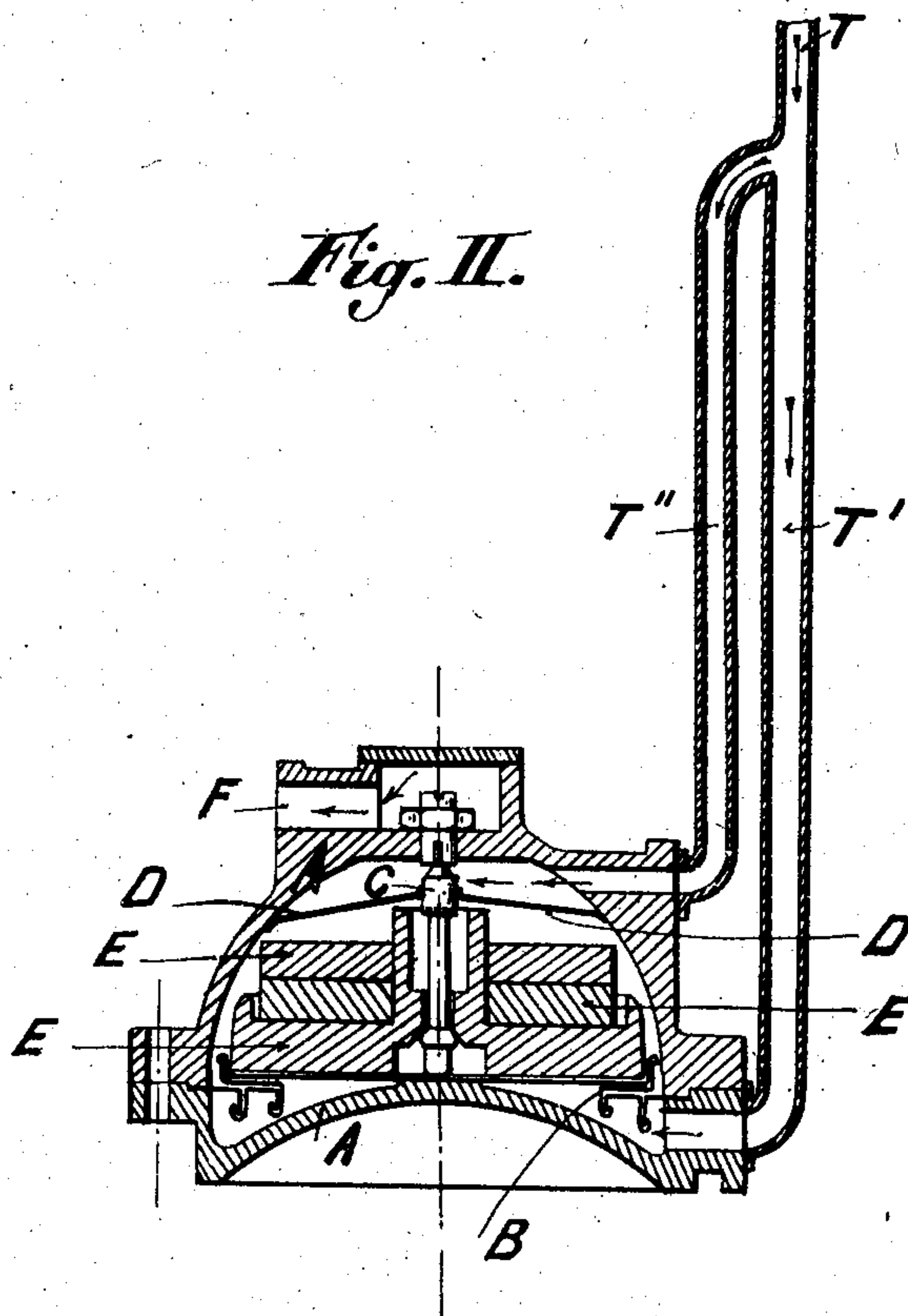


Fig. III.

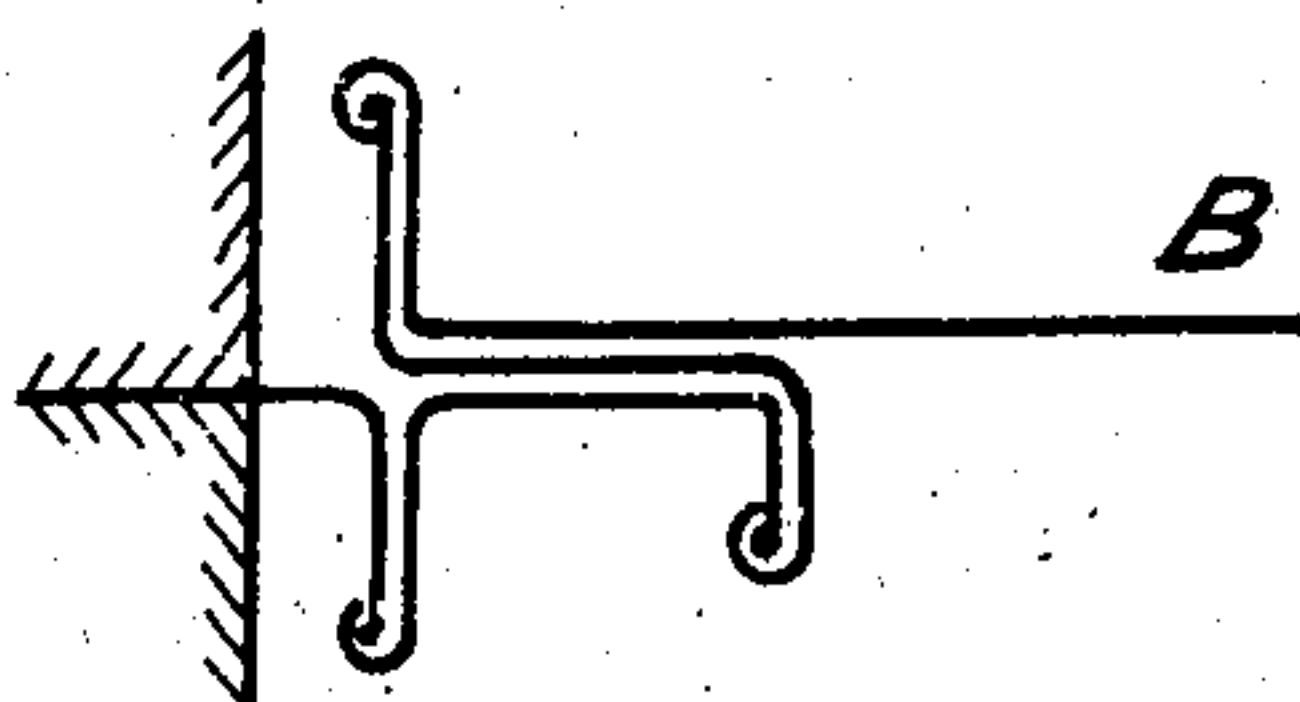


Fig. IV.

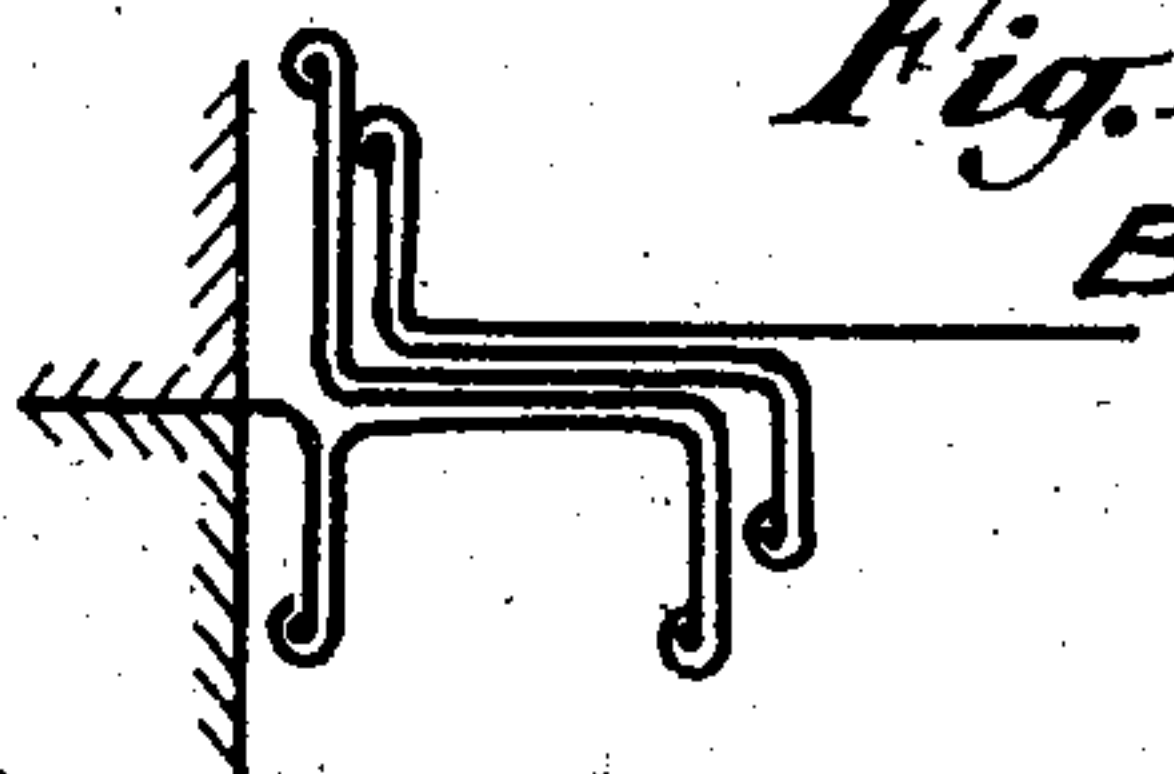


Fig. V.

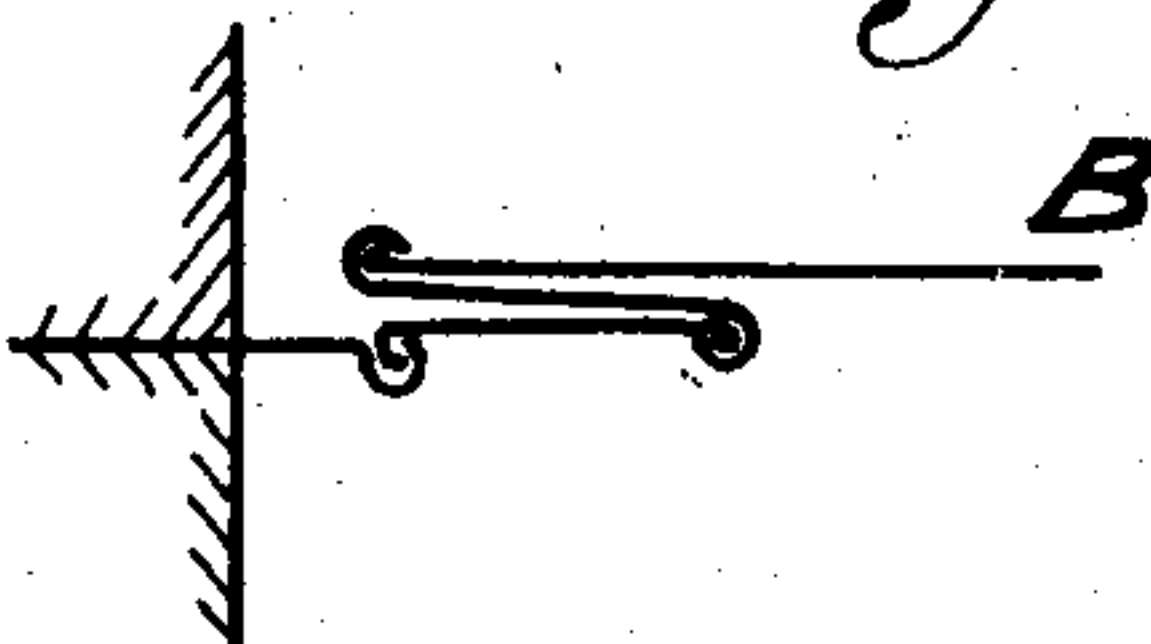
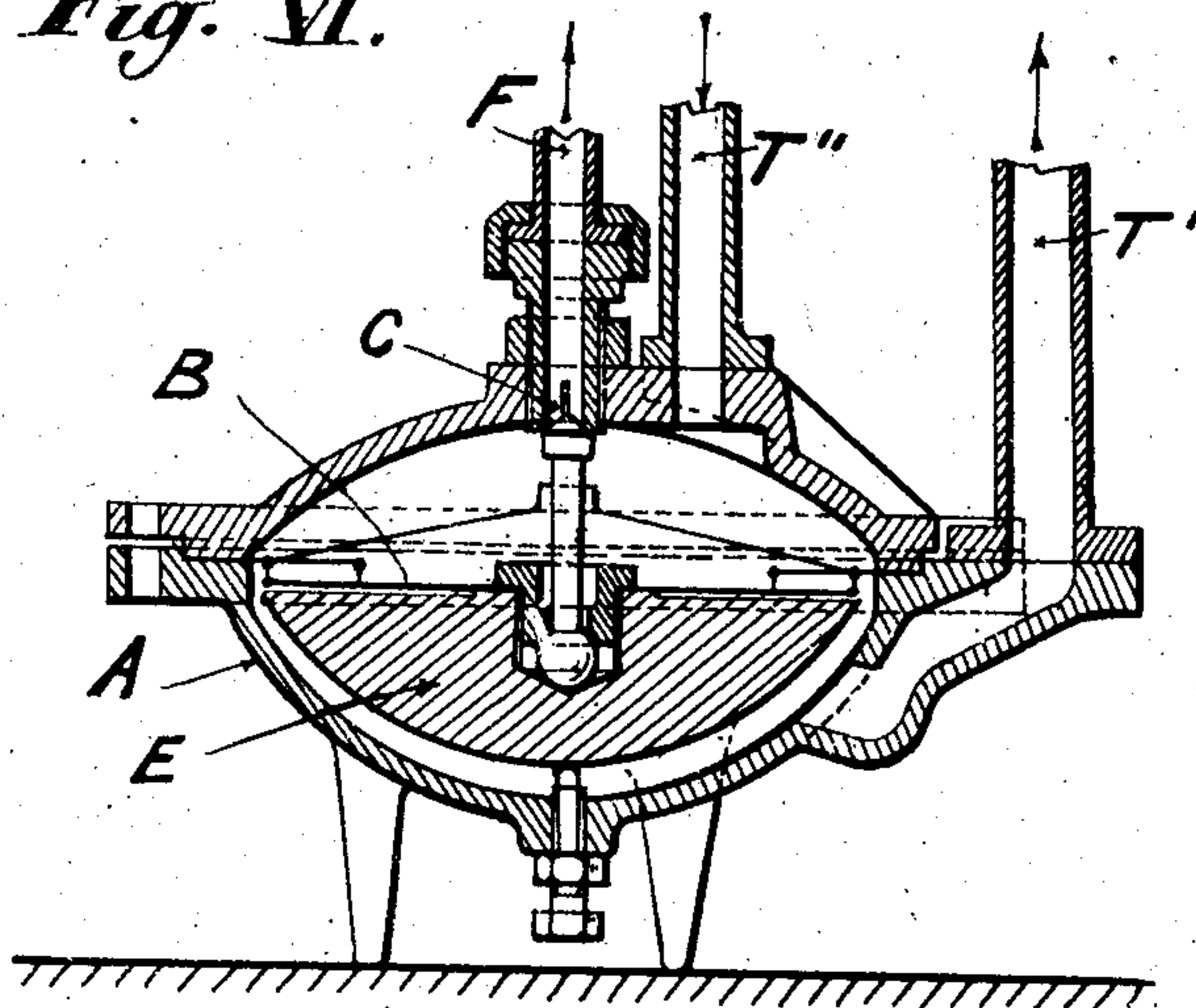


Fig. VI.



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UNITED STATES PATENT OFFICE.

LÉON FONDU, OF CHAPELLE-LEZ-HERLAIMON, BELGIUM.

AUTOMATIC BLOW-OFF DEVICE FOR CONDENSATION-WATER.

No. 834,286.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed December 5, 1905. Serial No. 290,408.

To all whom it may concern:

Be it known that I, LÉON FONDU, a subject of the King of the Belgians, residing in Chapelle-lez-Herlaimon, Belgium, have invented certain new and useful Improvements in Automatic Blow-Off Devices for Condensation-Water; 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, reference being had to the accompanying drawings, and to letters of reference marked therein, which form a part of this specification.

The present invention relates to an improved automatic blow-off device having for its object to automatically blow off the water resulting from condensation in steam-pipes.

Some executory forms of the present invention are represented in the annexed drawings.

Figure I represents a section of such a device in which the overflow-valve is actuated by a piston. Fig. II represents a section through a similar device in which the piston is replaced by a diaphragm. Figs. III, IV, and V are several forms of the diaphragm. Fig. VI represents another form of the device.

The blow-off apparatus is connected to a blow-off pipe T by means of two pipes T' and T'', one of which ends at the lower part, the other one at the upper part, of a cylinder A, having a lid B. In this cylinder is placed the bell proper or piston C, which can move in the cylinder with a certain play, owing to packing-rings. The movements of this piston are guided by means of wings and of a tail. The piston opens or closes the openings O, made in a crown placed on the upper part of the cylinder, according to the position it occupies. These openings communicate with an annular channel which ends in the discharge-pipe F. The bell or piston is extended outside of the cylinder by a rod G, provided with a handle H, which allows to work the said piston by hand. The pipe T' is closed at its lower end by a plug I, which may be taken off for inspection. It will be seen that this tube T' connects the discharge-pipe F with the lower face of the piston, while the pipe T'' connects the upper face to the discharge-pipe. The flared form of the bell allows to collect the mud.

As the device will not work unless the pipe T' be normally filled with water, it is neces-

sary when starting it the first time to fill this pipe with water either by hand or by allowing the condensation to take place, in which case the piston will have to be kept lifted by means of the handle H. It will also have to be pointed out that as long as the pipe T' is not full the water fed by T (which arrives in drops) will fall directly into T' and that not a drop will fall into T''.

Supposing the pipe T' is full of water up to the point where the pipe T'' is embranched, the height of this pipe is established in such a way that the pressure which this water column exerts on the lower face of the piston C is higher than the weight of the piston itself and that the piston is lifted and closes the openings O. If condensation-water is then introduced through the pipe T, this water cannot enter any longer the pipe T', which is full. It consequently escapes through T'', which it fills by and by. When this pipe T' is full, (or nearly so,) the charges of water on the two faces of the piston are equal. Under these circumstances the action of the weight becomes preponderant, so that the piston falls back and allows the water contained in the pipe T'' to escape through the openings O. As soon as the pipe T'' is empty the piston is lifted again under the action of the pressure exerted by the water contained in T', and so on.

In the executory form represented in Fig. II the piston has been replaced by a diaphragm B, which controls the position of a valve mounted on the discharge-opening. The lower face of the diaphragm is constantly exposed to a determined charge, while the upper face is alternately exposed to a water column either equal to the former or nil. The combination of the charges on the upper face with the constant charge on the lower face will determine the movement of the diaphragm with its valve. This diaphragm B is preferably formed by means of several sheet-metal rings linked to each other, which assures a great tightness and perfect elasticity.

The diaphragm B is lifted by a valve C, placed on the discharge-opening. The valve may be provided with a rod having a handle in order to be worked by hand, if necessary.

The pipe T' connects the discharge-pipe T with the lower surface of the diaphragm B, while the pipe T'' assures the communication with the upper face. The inner sheet D allows to easily collect the impurities which

might penetrate in the apparatus and prevents them from depositing on the diaphragm. The latter is charged with one or more counterweights E, which assure the opening of the valve C when the balance is established by the effect of the pipes T' and T''.

The operation is exactly the same as with a piston.

Figs. III, IV, and V represent several forms of the diaphragm.

Fig. VI represents another form of the device in which the diaphragm B is placed on the counterweight E.

The operation is the same as with the other constructional forms.

Having now fully described my invention, what I claim is—

1. In a steam-trap, the combination of a trap-shell, means adapted to contain a hydrostatic column communicating with said shell, an inlet-opening in the bottom part of the trap-shell, an inlet-opening in the top part of the shell, a piston, means for guiding the piston, outlet-openings in the top of the shell, and a discharge-pipe.

2. In a steam-trap, the combination of a trap-shell, means adapted to contain a hydrostatic column communicating with said shell, an inlet-opening in the bottom part of the trap-shell, an inlet-opening in the top part of the shell, a piston, means for guiding the piston, an outlet-opening in the upper part of the shell, a discharge-pipe, a rod con-

nected to the top of the piston and projecting through the top of the shell, and a handle on the projecting end of the rod.

3. In a steam-trap, the combination of a trap-shell, means adapted to contain a hydrostatic column communicating with said shell, an inlet-opening in the bottom part of the shell, a metallic diaphragm, a valve supported on the diaphragm and having a valve-rod, a weight on the diaphragm surrounding the valve-rod, a mud-collecting roof over the weight, a lateral inlet-opening in the upper part of the shell, a valve-seat in the center of the top of the shell, and a discharge-pipe above the seat of the valve.

4. In a steam-trap, the combination of the trap-shell, means adapted to contain a hydrostatic column communicating with said shell, an inlet-opening in the bottom part of the shell, an inlet-opening in the top of the shell, a diaphragm in the shell, a weight fixed to the under surface of the diaphragm, a valve supported on the said weight, a mud-collecting roof on the diaphragm, a valve-seat in the top of the shell, and a discharge-pipe communicating with the valve-seat.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

LÉON FONDU.

Witnesses:

JOSEPH DALLONS,
LERMIGNCOUR CORY.