

(No Model.)

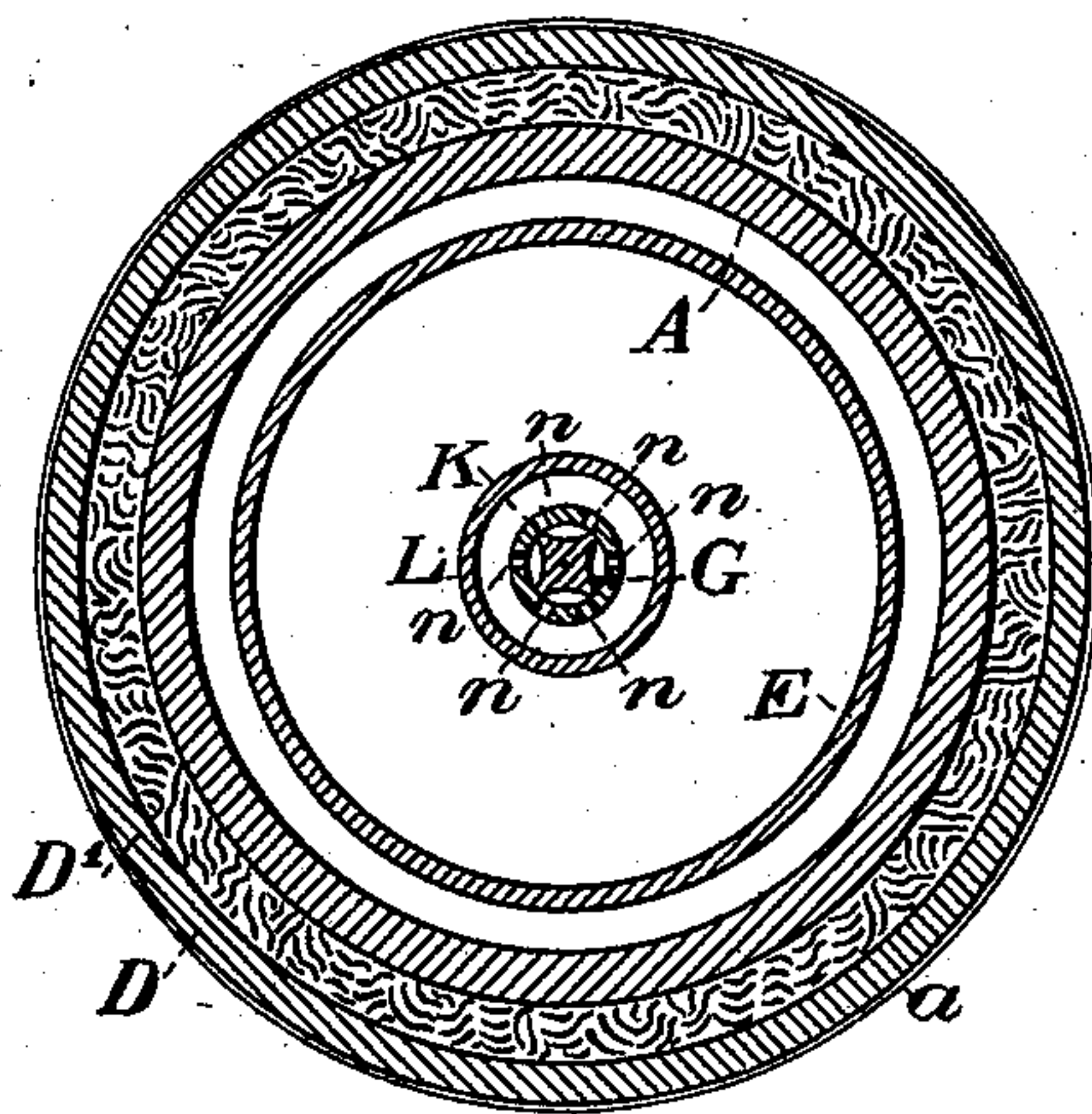
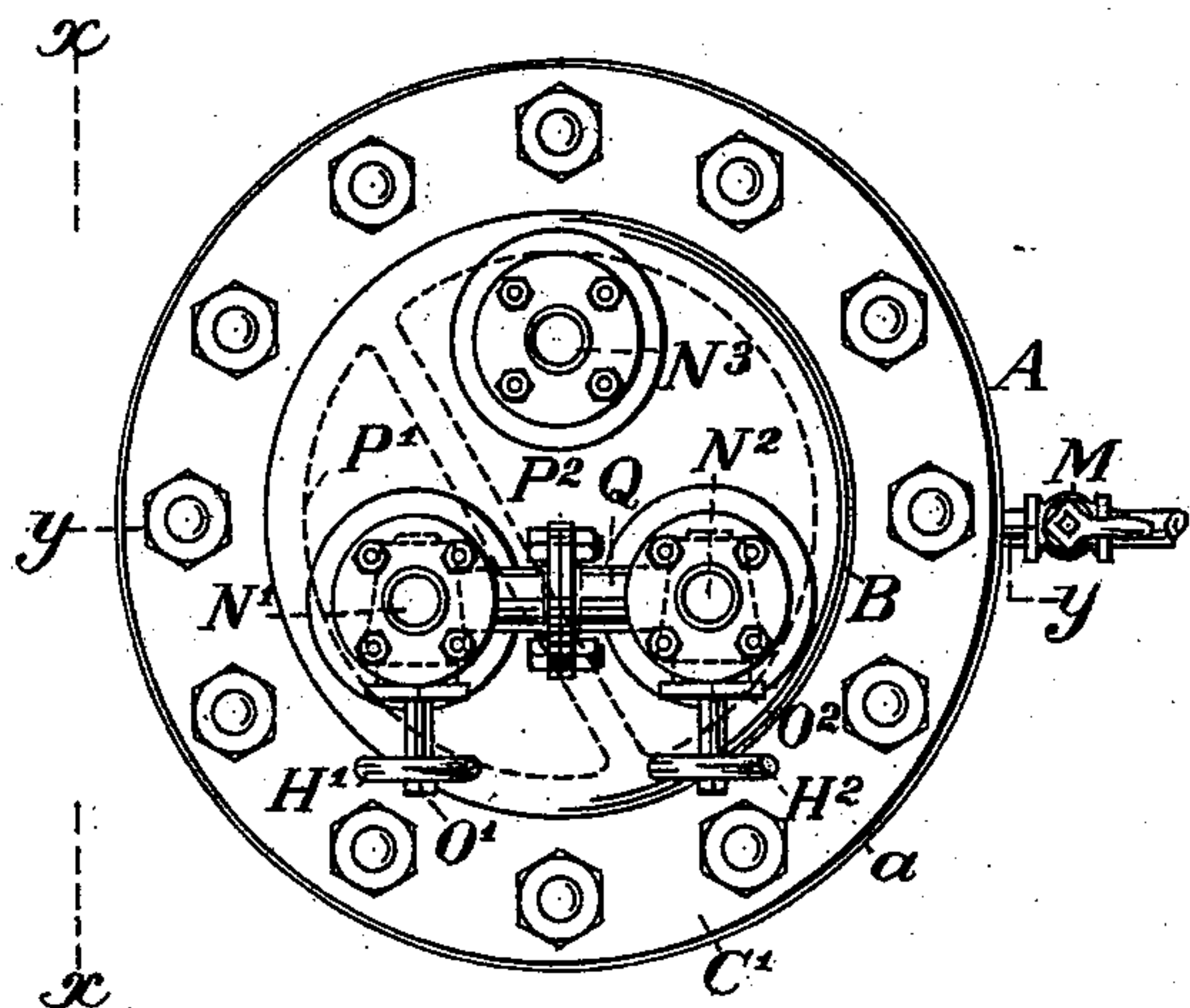
J. McKELLAR.  
STEAM TRAP.

No. 522,268.

Patented July 3, 1894.

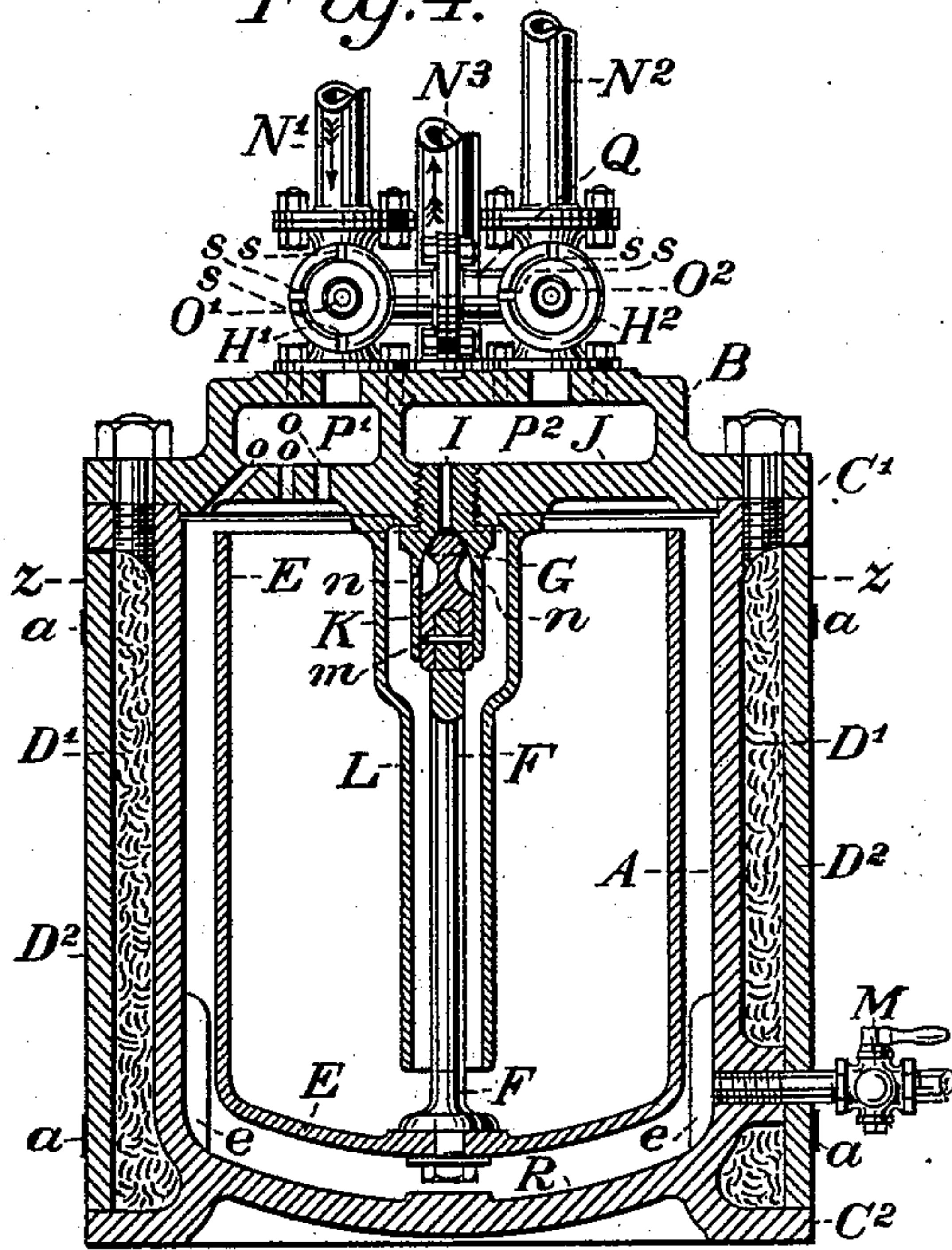
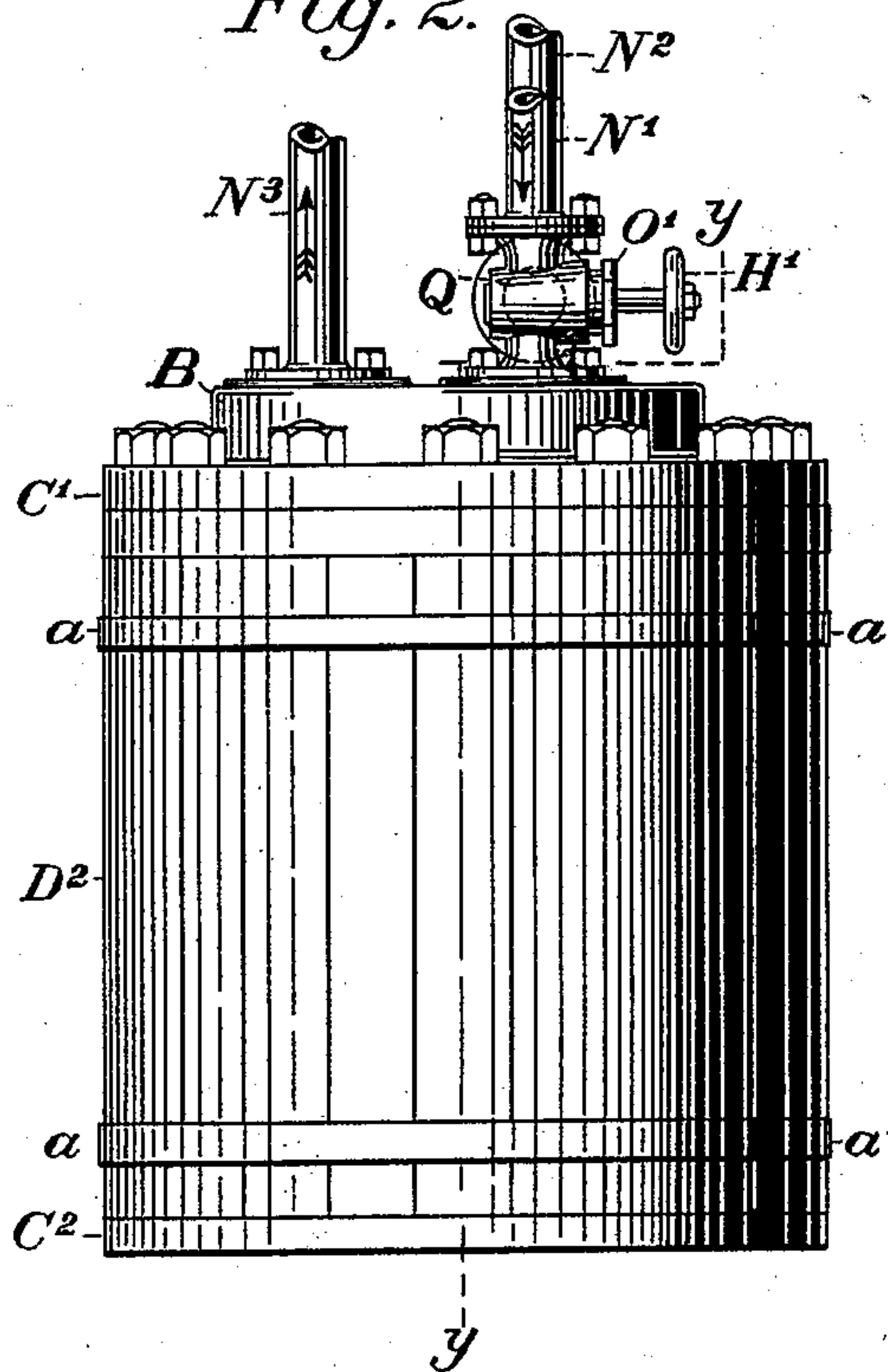
*Fig. 1.*

*Fig. 3.*



*Fig. 2.*

*Fig. 4.*



Witnesses:

*E. A. Brandau*

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Inventor:

*John McKellar*  
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# UNITED STATES PATENT OFFICE.

JOHN McKELLAR, OF SAN FRANCISCO, CALIFORNIA.

## STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 522,268, dated July 3, 1894.

Application filed December 20, 1893. Serial No. 494,151. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN McKELLAR, a citizen of the United States, and a resident of the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Steam-Traps; and I hereby declare the following specification and the drawings therewith to be a full, clear, and exact description of my improvements aforesaid.

My invention relates to what are called steam traps, for collecting and discharging condensed water formed in steam pipes or vessels by liquefaction, and to certain improvements on steam traps, for which Letters Patent of the United States, No. 481,507, were granted to me on the 23d day of August, 1892.

My present invention consists in adapting my improved steam traps to the high pressures employed at this day, especially for marine purposes; also adapting the apparatus to closed rooms without objectionable radiation of heat, and to means of cleansing and operating the connecting pipes, with other features that will be fully explained in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a steam trap made according to my improvements. Fig. 2 is a side elevation of the same trap taken on the plane  $x-x$  at an angle of ninety degrees with respect to Fig. 1. Fig. 3 is a cross section on the line  $z-z$  of Fig. 4. Fig. 4 is a vertical section on the line  $y-y$  of Figs. 1 and 2.

Similar letters of reference are employed to designate like parts of the different figures of the drawings.

The main-containing vessel A is cylindrical in form, open at the top to receive the covering plate B, which is bolted to a flange C' in the usual manner. A corresponding flange C<sup>2</sup> is formed around the bottom of the vessel A and between these flanges C' C<sup>2</sup> is a covering D<sup>1</sup> of asbestos or other fibrous non-conducting material, and around this a covering of wood D<sup>2</sup> made in staves, and secured by metallic bands  $a$ , as seen in Fig. 2, or a covering of sheet metal, such as Russia iron or brass, so the exterior of the apparatus is in contour a plain symmetrical cylinder as shown. In this vessel A is an open top float E, guided at the bottom by ledges  $e$  cast on

the interior of the vessel A. In the bottom of this float E is fastened a stem F that extends up to the conical pointed valve G, the two being joined by a loosely-fitting socket and a cross pin  $m$ , as shown in Fig. 4.

The valve guide, valve seat and escape aperture I are combined in one member K, screwed into the main plate J of the cover B, as shown. In the sides of the member K, around the valve G, are a series of inlets or apertures  $n$ , opening diagonally upward, through which the escape water passes without causing the usual noise that occurs when there is a fixed body of water around such valves. The inclosing tube L is also fastened to the plate J of the top B, and serves to draw the waste water from the bottom of the float vessel E. A cock M is also provided for emptying the main vessel A, as seen in Fig. 4.

Steam and water enter the trap by the pipe N, and after passing the cock O' enter the chamber P, formed in the main cover B, the water draining down through the apertures  $o$  into the float vessel E and the main vessel A, the latter being all the time filled, so the buoyant action of the float vessel E holds the valve G shut until the vessel E also fills, then this float vessel E sinks by its gravity, opening the valve G and discharging the accumulated water through the aperture I into the chamber P, and out through the outlet pipe N<sup>3</sup>, the float vessel E, rising and closing the valve G when the buoyancy is sufficient. These latter described features pertaining to the float, escape valve, and connected parts, are embodied in my Letters Patent hereinbefore referred to, and do not, therefore, constitute a part of my present invention.

Referring now to the steam and water ducts on the top of the trap, the main cover B is made with two chambers P' and P<sup>2</sup>, the former communicating with the inlet pipe N', and the second chamber P<sup>2</sup>, with a blow-through pipe N<sup>2</sup>, also with the regular outlet pipe N<sup>3</sup>. The passage of steam through these chambers and pipes is regulated by the cocks O' and O<sup>2</sup>. These cocks O' O<sup>2</sup> have ways or ports corresponding to the marks  $s$  on the hand wheels H' H<sup>2</sup>, the one O' having three ports or ways, and the one O<sup>2</sup> having two ports or ways, as indicated in Fig. 4. In the position shown in Fig. 4 these cocks O' O<sup>2</sup> are



adjusted in the normal working position, the inlet pipe  $N'$  being open to the chamber  $P'$ , and the outlet or waste pipe  $N^3$  being open to the chamber  $P^2$ , the blow-off pipe  $N^2$  being closed each way. If the cock  $O'$  is turned ninety degrees to the right this will open communication between the inlet pipe  $N'$  and the blow-off pipe  $N^2$  by means of the cross pipe  $Q$ , and steam or water is discharged directly from the pipe  $N'$  through the pipe  $N^2$ , usually to a tank, the open air or outboard on vessels. This is what I term the blow-through position. If the cock  $O^2$  is turned ninety degrees to the left, so its two ports  $s$  are in communication with the cross pipe  $Q$  and the chamber  $P^2$ , this opens communication between the inlet pipe  $N'$  and cross pipe  $Q$  to the chamber  $P^2$ , and consequently to the regular discharge pipe  $N^3$ , so that the water or steam escapes to a condenser, hot well or other place where the regular waste water is commonly conveyed. In this manner the inlet pipe is at pleasure put in communication with the main vessel  $A$ , the blow-off pipe  $N^2$ , or the waste pipe  $N^3$ , as is required in the case of naval vessels, or other uses where circumstances are the same.

The bottom  $R$  of the main vessel  $A$  is made convex, as shown in Fig. 4, so as to withstand high pressure, the walls, cover and all other parts being made proportionally strong.

The coverings  $D' D^2$  prevent objectionable radiation of heat, so the trap can be set in an engine room or other closed space without discomfort to attendants.

I claim—

1. In a steam trap, a main containing vessel with a float vessel and escape valve, as herein described; a chambered main cover

having inlet, blow-through, and waste-water pipes communicating with the chambers in the cover, in the manner shown, multi-ported cocks to change the flow of steam or water from the inlet to either the blow-off or waste-water pipes, in the manner substantially as described.

2. In a steam trap, a main containing vessel with a float vessel therein; a chambered cover with an inlet chamber having holes in its bottom for the discharge of water into the main containing vessel; connecting pipes, as herein shown; cocks to connect the inlet pipes with the interior of the main containing vessel, and with a waste chamber in the cover, and also with a direct blow-off pipe, so steam and water can be led into the main vessel and float, into the waste chamber in the cover, or discharged through a blow-off pipe without entering the main vessel or the chambers in its cover, substantially in the manner described.

3. In a steam trap, a main containing vessel with a chambered cover as herein shown, connecting pipes for inlet, blow-off and waste water, with double and treble way cocks to connect the several pipes and chambers, so the inlet steam can enter the trap, be blown off direct, or through the chambers in the cover of the main vessel, in the manner substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

JOHN McKELLAR.

Witnesses:

ALFRED A. ENQUIST,  
WILSON D. BENT, Jr.