

D. MURDOCK.  
STEAM TRAP.

Application filed Apr. 21, 1902.

(No Model.)

Fig. 1.

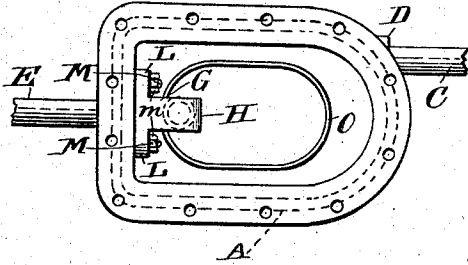


Fig. 2.

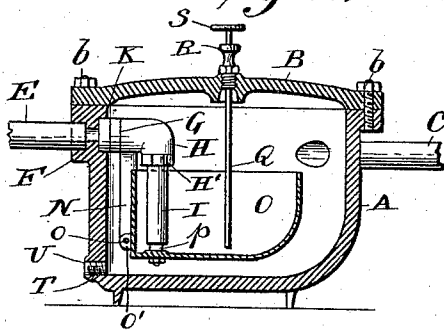


Fig. 3.

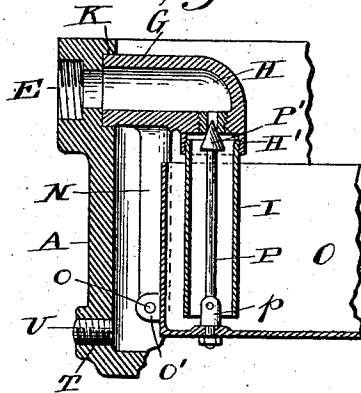


Fig. 4.

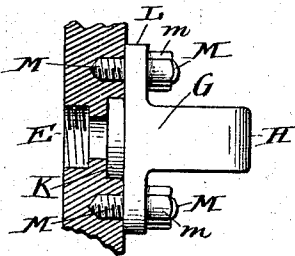
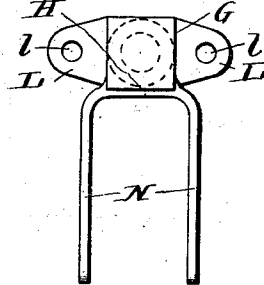


Fig. 5.



Witnesses  
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# UNITED STATES PATENT OFFICE.

DENNY MURDOCK, OF PHILADELPHIA, PENNSYLVANIA.

## STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 714,509, dated November 25, 1902.

Application filed April 21, 1902. Serial No. 104,066. (No model.)

To all whom it may concern:

Be it known that I, DENNY MURDOCK, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

My invention relates to devices for drawing the water of condensation, &c., from steam-lines without the loss of steam, and has for one of its objects to make a steam-trap that has a body portion adapted to be attached to the drain-pipe of a steam-line pipe and a float, valve-chamber, valve-seat, and valve-stem that may be assembled separately and attached to or detached from the body of the trap, as desired.

Another object is to provide a device of the character described having means to positively hold the float-valve down, and thus keep the drain-pipe valve open in order to blow out any sediment that may have accumulated in the float.

Another object of my invention is to provide means to hold the float against the bottom of the body portion should I find it advantageous to ship the trap in an assembled condition.

A further object of my invention is to make a trap containing as few parts as possible, thus reducing to a minimum the cost of manufacture, as well as the danger of the trap getting out of order.

Further advantages of my invention will more fully appear in the following description and by reference to the accompanying drawings, in which—

Figure 1 is a top plan view of my invention with the cover of the body portion removed; Fig. 2, a side view showing the body portion, cover, and float in section and the other parts in elevation; Fig. 3, an enlarged fragmental view in section of the drain-valve, float, and connections; Fig. 4, an enlarged top plan view of the valve-chamber, showing it attached to a fragment of the body portion of the trap; and Fig. 5, a front elevation of the valve-chamber.

Referring to the drawings, in which similar reference characters indicate corresponding parts throughout the several views, A represents the body portion of my trap, and

B the cover, secured thereto by means of bolts and nuts *b*.

C represents the inlet-pipe, screwed into a suitable screw-threaded connection D, and E the drain-pipe, also screwed into a connection F in said body portion A.

G represents the valve-chamber, consisting of the elbow-pipe H, having its downwardly-extended end tapped to receive a valve-seat H', which is in turn tapped to receive a piece of pipe I. The other end of the elbow-pipe H is adapted to fit into a recess K in the interior of the body portion A opposite the drain-pipe E, and has outwardly-extending ears L L, perforated, as shown at *l*, to fit over stud-bolts M, secured in the casing A. The valve-chamber G is secured to the body portion by means of nuts *m*, screwed onto said bolts M.

N represents arms extending downwardly from the valve-chamber G, and O the float, pivoted at the ends of the arms N by means of bolts *o*, passing through holes in said arms N and ears *o'* on the float O.

P represents the valve-stem, pivoted to the bottom of the float O by means of a clip *p*, secured to the bottom of said float, said valve-stem extending upwardly inside the pipe I and having a conical-shaped head P' to fit into the valve-seat H' in the valve-chamber G.

Q represents a rod mounted in a valve casing or bonnet R, secured in the top B, having its top portion screw-threaded for a distance and fitting in the screw-threaded bore of the casing R.

S represents a handle fixed to the end of the rod Q to turn it.

T represents a hole to drain the trap when not in operation, which is closed by means of the plug U or a nipple and valve.

The operation and assembling of parts is as follows: The body portion A is secured to the steam-inlet pipe at D and the drain-pipe E to the connection F. The pipe I is then inserted in the end of the valve-chamber G and the valve-stem P in the clip *p* in the bottom of the float O. The valve-stem is then inserted in the pipe I and the float secured to the arms N by means of a bolt *o*, passing through a hole in each arm N and in an ear *o'*. The valve mechanism can then be se-

cured opposite the drain-pipe E in the recess K by means of the bolts M and nuts *m*. The top B is then secured in place by means of the bolts and nuts *b* and the device is ready for operation. As soon as steam is turned on the condensed water will run into the bottom of the body portion and raise the float O, closing the drain-pipe by means of valve-stem P and its conical-shaped head P'. As the water continues to rise it will eventually rise above the top of the float and fall over into it. As soon as the float and water it contains overcomes the specific gravity of the water in the body portion, it will sink, thus opening the port of the valve-chamber. The force of the steam will then cause the water in the float to rise through the pipe I, the valve-chamber G, and flow out through the drain-pipe E. It will be readily seen that when the float Q sinks a portion of its top edge will be lower than the level of the water in the body portion, which will continue to flow over into the float as the water therein is blown out through the drain-pipe, so that when sufficient water has been blown out to lighten the float and permit it to rise the water in the body portion will be below the top edge of the float, which insures a periodical emptying of the trap. Should it be desired to blow out the sediment that may have accumulated in the float, the rod Q is screwed down by means of the handle S, thus holding the float O in a lowered position, notwithstanding the specific gravity of the water in the body of the trap, and the force of the steam will cause any particles of dirt or other solid matter to escape through the drain-pipe E. In shipping the trap in an assembled condition the rod Q may be utilized to hold the float against the bottom of the body portion to prevent breakage. To prevent the corrosive action of the water, I prefer to make portions of my device out of brass or other metal that does not yield to the action of water, this especially applying to the bolts M, nuts *m*, and nuts *b*.

Having thus described my invention, what I claim is—

1. In a steam-trap, a tank having a recess at its drain-port, a valve-chamber adapted to seat in said recess, bolts in said tank, perforated ears on said valve-chamber to seat over said bolts, a float pivoted to said valve-chamber, a valve-seat in said chamber, and a valve-stem pivoted to said float, substantially as shown and described.

2. In a steam-trap, a tank having a recess

at its drain-port, a valve-chamber adapted to seat in said recess, bolts in said tank, perforated ears on said valve-chamber to seat on said bolts, arms integral with said valve-chamber, a float pivoted on said arms, a valve-seat in said chamber, and a valve-stem pivoted to said float, substantially as shown and described.

3. In a steam-trap, a tank having a recess at its drain-port, a valve-chamber adapted to seat in said recess, bolts in said tank, perforated ears on said valve-chamber to seat on said bolts, depending arms integral with said valve-chamber, a float pivoted on said arms, a hooded valve-seat in said chamber, and a valve-stem pivoted to said float, substantially as shown and described.

4. In a steam-trap, a tank having an inlet-port, a drain-port, and a recess in said drain-port, a bolt on each side of said recess, a valve-chamber having perforated ears to receive said bolts and be secured thereto by nuts, the end of said valve-chamber formed to fit into said recess, depending arms on said valve-chamber, a float pivoted on said arms, a pipe secured in said valve-chamber around the valve-seat and extending downwardly into said float, and a valve-stem pivoted to the bottom of the float extending upwardly into said pipe and adapted to close the port of said valve-seat, substantially as shown and described.

5. In a steam-trap, a tank having an inlet-port, a drain-port and a recess in said drain-port, a bolt on each side of said recess, a valve-chamber having perforated ears to receive said bolts and be secured thereto by nuts, the end of said valve-chamber formed to fit into said recess, depending arms integral with said valve-chamber, a float pivoted on said arms, a pipe secured in said valve-chamber around the valve-seat and extending downwardly into said float, a valve-stem pivoted to the bottom of said float extending upwardly into said pipe and adapted to close the port of said valve-seat, a valve-bonnet secured in the cover of said tank, and a screw-actuated rod mounted in said valve-bonnet adapted to depress said float by bearing against its bottom, substantially as shown and described.

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

DENNY MURDOCK.

Witnesses:

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MABEL I. CASSELL.