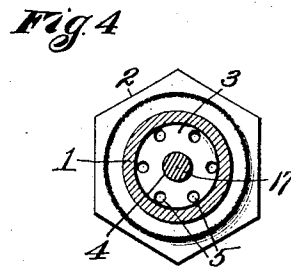
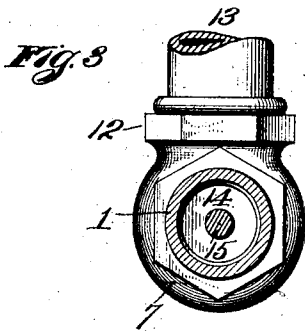
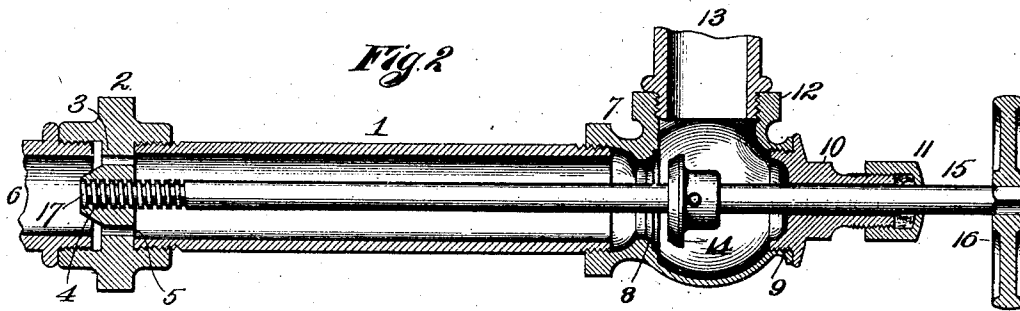
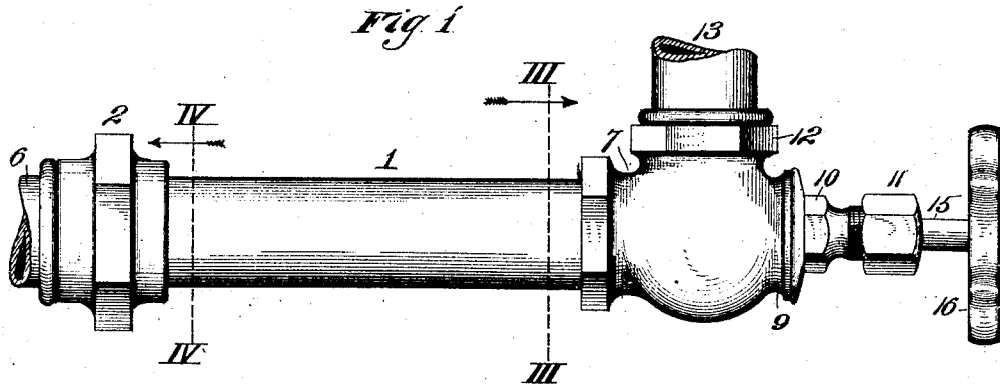


No. 779,203.

PATENTED JAN. 3, 1905.

F. M. CAMPBELL.
STEAM TRAP.

APPLICATION FILED SEPT. 21, 1904.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK M. CAMPBELL, OF KANSAS CITY, KANSAS.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 779,203, dated January 3, 1905.

Application filed September 21, 1904. Serial No. 225,383.

To all whom it may concern:

Be it known that I, FRANK M. CAMPBELL, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

This invention relates to steam-traps for steam-heating systems, and is especially adapted for use in connection with railway-coaches, my object being to produce a device of this character which will automatically discharge water when the temperature falls to a certain degree and which can be utilized to automatically return water to the point of supply and against pressure.

A further object is to produce a device of this character which can be used in connection with practically any steam-heating system and which is of simple, strong, durable, and inexpensive construction.

To these ends the invention consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a side elevation of a steam-trap embodying my invention. Fig. 2 is a central vertical longitudinal section of the same. Fig. 3 is a section on the line III III of Fig. 1. Fig. 4 is a section on the line IV IV of Fig. 1.

In the said drawings, 1 designates a brass or equivalent tube, and screwed on one end of the same is a nut 2, having a diaphragm or partition 3, provided with a central threaded passage 4 and with a plurality of passages 5 outward of the central passage, said nut at the opposite side of said partition from tube 1 being screwed upon a steam-supply pipe 6. The opposite end of tube 1 is screwed into a coupling 7, having a valve-seat 8, and at the opposite side from said valve-seat the coupling has a threaded passage 9, wherein is screwed a bearing 10, equipped with a packing-box 11. The coupling is provided with a tubular stem 12, with which is connected pipe 13, which may be a drain-pipe or may project upwardly, as shown, in order to return

the condensed steam back to the point of supply. (Not shown.)

14 is a valve to engage the valve-seat 8 and close communication between tube 1 and coupling 7, said valve being secured rigidly upon the valve-stem 15, provided with a handle 16 at one end and with threads 17 at the other, the latter engaging the threaded passage 4.

In practice the person in control screws the stem inwardly until the valve is seated on seat 8. Steam is then admitted through pipe 6 and enters tube 1, wherein it condenses, the water in time filling the tube, and therefore shutting out further steam. The hottest water is naturally nearest the valve-stem, which, by the way, is of iron or non-tempered steel by preference. The result is said stem will cool less rapidly than the tube, and as a consequence the more rapid contraction of the latter will unseat the valve to permit the water under the pressure of the steam behind it to pass through pipe 13 if said pipe 13 leads to atmosphere as a drain-pipe or leads to a point of supply whose pressure is less than that of the steam in pipe 6. As soon as all of the water has been exhausted from the tube and from pipe 6, wherein it will also collect to some extent, the steam quickly raises the temperature of and reexpands the tube and valve-stem, and thus effects the reseating of the valve, and thereby prevents the escape of any material volume of steam.

With this type of steam-trap a railway-coach can be sidetracked from a train without any danger of injury to the pipes by freezing, as the drop in temperature following the detachment of the car from a train results in the unseating of the valve and the automatic drainage of the water. It will be apparent that the use of this trap will save a large volume of water, and consequently result in an economy in fuel, as it is obvious that the water which is forced back by the steam in pipe 6 to the point of supply is hot, and therefore in condition to be readily reconverted into steam.

From the above description it will be apparent that I have produced a steam-trap embodying the features of advantage enumerated as desirable and which is obviously susceptible

of modification in some particulars without departing from its essential spirit and scope or sacrificing any of its advantages.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A steam-trap, comprising a tube, having a perforated partition at one end, and a valve-seat at the other, a valve-stem extending longitudinally through the tube and having a screw-thread relation with the partition, and a valve mounted on said stem and adapted to engage said seat; said tube being of material which will contract more quickly than the material of said valve-stem, in combination with a steam-supply pipe to supply steam through the perforated partition to the tube, and a discharge or drainage pipe at the opposite side of the valve from said tube and in communication with the latter.

2. A steam-trap, comprising a tube, a coup-

ling secured to the end of the same and provided with a perforated partition having a threaded opening, a steam-pipe screwed to the coupling at the opposite side of the partition, a coupling screwed to the opposite end of the tube and provided with a valve-seat, a discharge or drain pipe, a bearing having a packing-box, a valve-stem extending axially through the tube and journaled in the bearing and provided with a threaded portion engaging the threaded opening of the partition, and with a handle, and a valve secured rigidly upon said stem and adapted to engage said seat, and cut off communication between the tube and the discharge or drain pipe.

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

FRANK M. CAMPBELL.

Witnesses:

H. C. RODGERS,
G. Y. THORPE.