

(No Model.)

E. E. GOLD.  
DRAINAGE TRAP FOR STEAM PIPES.

No. 522,253.

Patented July 3, 1894.

FIG. 1.

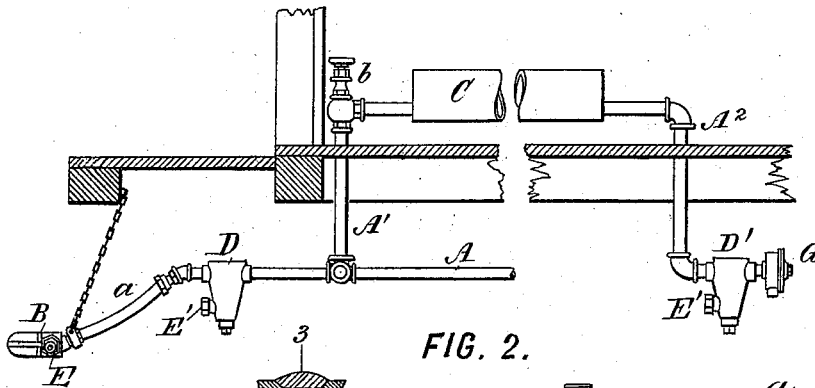


FIG. 2.

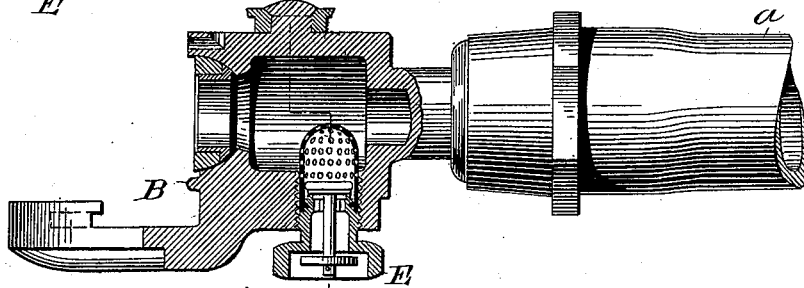


FIG. 4.

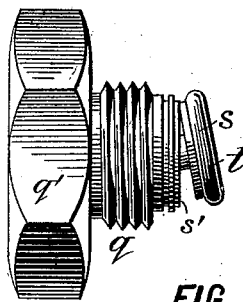


FIG. 5.

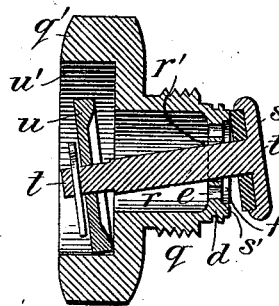


FIG. 3.

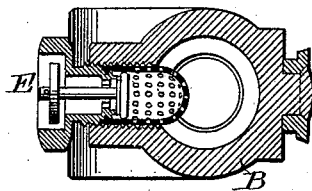


FIG. 6.

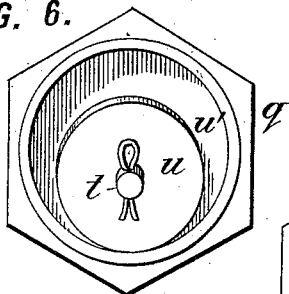


FIG. 7.

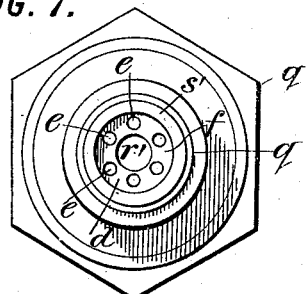
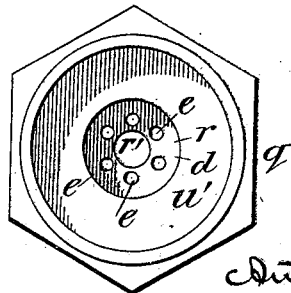


FIG. 8.



WITNESSES:

*Fred White*  
*Thomas H. Wallace*

INVENTOR:

*Edward E. Gold,*

By his Attorneys,

*Arthur C. Draper & Co.*

# UNITED STATES PATENT OFFICE.

EDWARD E. GOLD, OF NEW YORK, N. Y.

## DRAINAGE-TRAP FOR STEAM-PIPES.

SPECIFICATION forming part of Letters Patent No. 522,253, dated July 3, 1894.

Application filed November 2, 1893. Serial No. 489,793. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD E. GOLD, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Drainage-Traps for Steam-Pipes, of which the following is a specification.

This invention relates to dynamic traps or drainage valves for draining off water of condensation from steam pipes, being particularly suited for use with the steam heating pipes of railway cars. It is of that class wherein the trap valve is constructed to open outwardly so that it is closed and held to its seat by internal pressure, but when the steam is turned off it opens automatically and drains out the accumulated water.

My present invention is more particularly an improvement upon the construction of drainage trap shown in my Patent No. 481,727, dated August 30, 1892. In that patent the trap consists of a body or casing having an opening through it and formed with a seat at its inner side or end, and a valve arranged to close outwardly against said seat, with a counterweighting stem attached to the valve and projecting laterally therefrom passing through the seat opening and of sufficient weight to impart to the valve a tendency to open by tilting on its seat. In that trap the valve stem by being guided in the seat opening necessarily nearly fills this opening, the actual area of opening for the escape of steam being limited to the looseness or clearance between the stem and opening.

My present invention provides an improved construction wherein the advantage is realized of providing a larger outlet for escape of steam or water which is not dependent for its area upon clearance around the stem, so that the guiding opening for the stem may be made a reasonably close fit therewith without thereby restricting the space through which the steam or water may discharge from the trap.

Figure 1 of the accompanying drawings is a fragmentary longitudinal section of a railway car illustrating a main and branch steam heating pipe to which my improved trap is applied. Fig. 2 is a horizontal section of one of the coupling heads showing my trap applied thereto. Fig. 3 is a transverse section of the coupling head and trap on the line

3—3 in Fig. 2. Fig. 4 is a side elevation on a larger scale of the trap removed. Fig. 5 is a vertical section thereof. Fig. 6 is a front view of the trap. Fig. 7 is a rear view of the trap body with the valve and stem removed. Fig. 8 is a front view thereof.

In Fig. 1, A designates the main steam heating pipe of a railway car, and A' a branch pipe leading therefrom into the car controlled by a valve *b* and extending to a radiator or storage heater C, from the outlet of which a pipe A<sup>2</sup> leads as usual and terminates in a thermostatic drainage trap G, which automatically discharges the water of condensation as it accumulates and cools. The opposite ends of the main pipe A are connected each by a flexible hose *a* to a coupling B for uniting a section of pipe to that on the adjoining car as usual. In the side of the coupling head is shown a drainage trap E, the application of which is better shown in Figs. 2 and 3, and which is constructed according to my present invention. The main steam pipe A is usually provided with one or more sediment wells, of which one is shown at D. A similar sediment well D' is also shown as applied to the lowest portion of the pipe A<sup>2</sup>. These sediment wells are provided with my improved drainage traps, as shown at E' E' in Fig. 1.

The manner of application of the trap being now understood, I will proceed to describe the construction of the trap itself. It is constructed with a suitable body portion, shell or casing lettered *q* (see Figs. 4 to 8), which is preferably screwthreaded in order that it may be screwed into the coupling head, sediment well, or other part of the steam piping system to which it is to be applied. To facilitate screwing it in, it is provided with a hexagonal head *q'*. The body *q* is formed with an interior chamber or cavity *r*, and at its rear or inner end with an annular seat *s'*. A valve disk *s* seats against this seat, and has a stem *t* which passes through the chamber *r*, and carries at its front end a baffle disk or counterweight *u*, which is partially inclosed within a hollow or recess *u'* formed in the enlarged head *q'*, as shown in Fig. 5. The disk *u* and the outer end of the stem *t*, serve as a counterweight to throw open the valve *s* by tilting it to the position shown in Fig. 5. In

this position the water of condensation drains out through the trap. When steam is turned on, the steam pressure closes the valve to the position shown in Fig. 3, thereby lifting the stem and disk *u*.

5 So far as described my present construction does not differ from that shown in my prior patent. In that patent, however, the chamber or opening *r* through the body *q* is a simple tapering or conical passage which is made  
10 quite small at the inner end within the seat *s'*, being there but little larger than the stem, in order to properly guide the stem and hold the valve in a close approximation to a central position on the seat. This construction consequently afforded but a limited outlet opening  
15 for the passage of the condensed water or steam, the outlet having simply the area of the clearance left around the stem. By my present invention the chamber *r* is made larger, and preferably cylindrical, and a partition cross-piece or diaphragm *d* is formed at its inner end, perforated with a central opening *r'* for  
20 the passage and guidance of the valve stem *t*, and with a series of small openings *e e* around this central opening for the free passage of condensed water or steam. The valve seat *s'* instead of being formed by the mere flat facing off of the rear or inner end of the  
25 valve body, is formed annularly as a projecting rib outside the circle of holes *e e*, thereby forming a slight chamber or recess *f* within the valve seat on the inner or rear side of the partition *d*. It results from this construction  
30 that the valve seat affords a comparatively narrow face against which dirt or grit is not liable to lodge, and by which a tighter closing of the valve can be effected. At the same time the valve disk can be kept in a more  
35 nearly central position on the seat, since but a very minute clearance is required for the opening *r'* around the stem *t*, since this clearance is not necessarily enlarged to the entire capacity required for the outlet of water as  
40 formerly. The outlet area is consequently

enabled to be greatly increased compared with the former construction, since the outlet openings *e e* may be of any number required to give the desired area of escape. In the drawings six of these openings are shown, which  
45 in practice have been found to give an ample vent for the water.

My improved construction renders the valve more rapid in its fitting action, enables a smaller valve to be used in any given location,  
50 keeps the valve disk more accurately centered upon its seat, and reduces the liability of leakage of the trap by reason of grit working into it.

I claim as my invention the following-defined novel features, substantially as hereinbefore specified, namely:

1. A steam drainage trap consisting of a body or casing having an opening through it with a seat on its inner end and a partition  
55 adjacent to said seat, said partition formed with a central opening for guiding the valve stem, and with escape holes around it for the passage of water or steam, combined with a valve disk arranged to close outwardly against  
60 said seat, and having a counterweighting stem passing through said central opening and adapted to impart to the valve a tendency to open by tilting on its seat.

2. A drainage trap consisting of a body or  
65 casing formed with a chamber *r*, an annular seat *s'*, a recess *f* within said seat, and a partition *d* having a central opening *r'*, and escape holes *e e* around it, combined with a valve disk *s* having a stem *t* passing through  
70 and guided by said central opening, and a counterweighting disk *u* on the outer end of said stem.

In witness whereof I have hereunto signed my name in the presence of two subscribing  
75 witnesses.

EDWARD E. GOLD.

Witnesses:

GEORGE H. FRASER,  
FRED WHITE.