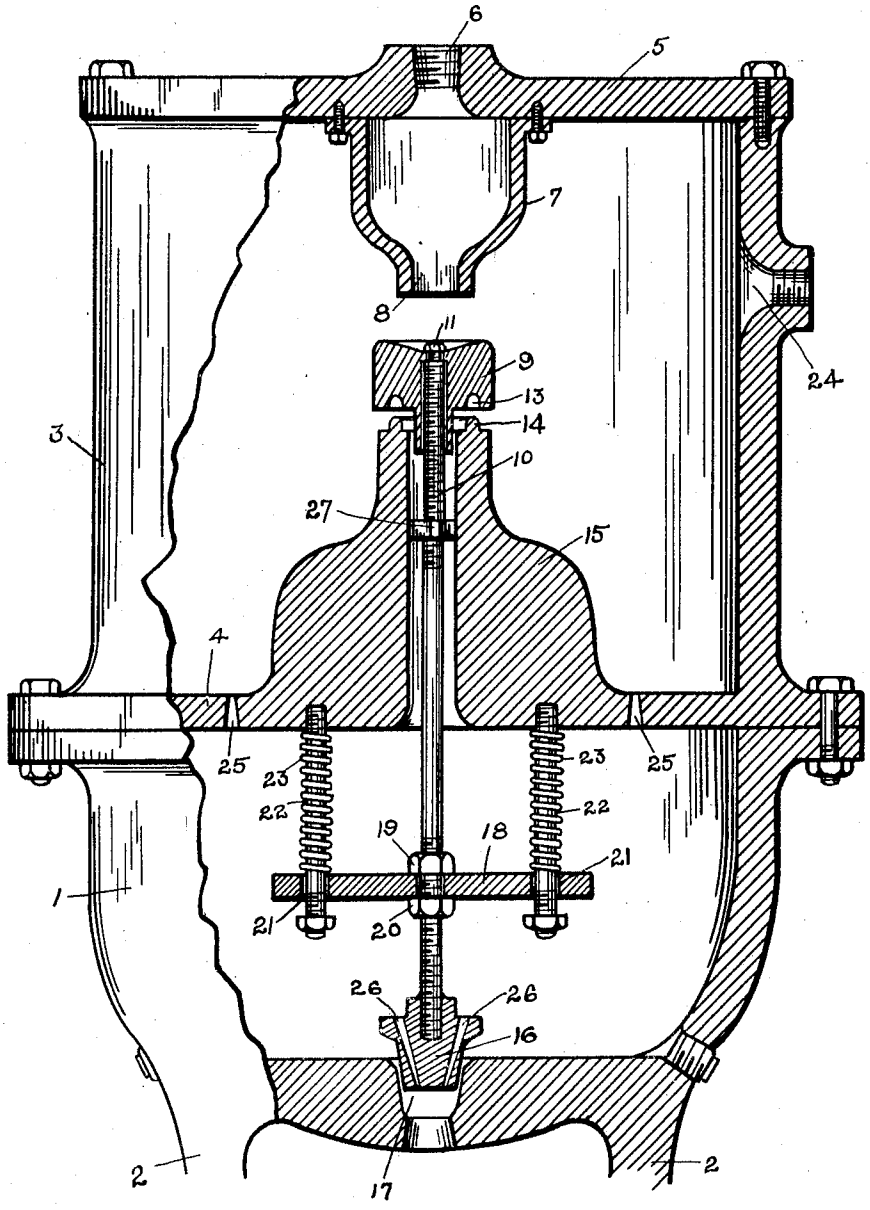
H. WILLEMSTYN.

STEAM TRAP.

APPLICATION FILED SEPT. 23, 1920.

1,384,715. Patented July 12, 1921.



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STEAM-TRAP.

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Application filed September 23, 1920. Serial No. 412,329.

To all whom it may concern:

Be it known that I, HENRY WILLEMSTYN, a subject of the Kingdom of Holland, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Steam-Traps, of which the following is a specification.

The object of this invention is to provide a new and improved form of steam trap.

This and other objects of this invention will be fully illustrated in the drawing, described in the specification and pointed out in the claims at the end thereof.

In the accompanying drawing:

The figure shows a side elevation of the trap with a portion thereof shown in section.

In the figure, like reference numerals indicate like parts.

The steam trap forming the subject matter of this invention, comprises the hollow base 1 which is provided with suitable legs 2, 2, by which the trap is properly supported. On top of the base 1 is bolted the vertical cylinder 3 which has the bottom 4 formed integral therewith. The top of the cylinder is closed by means of the head 5 which is suitably bolted thereto.

The inlet 6 is formed in the center of the cylinder head 5 and below this inlet on the inside of the cylinder is suitably fastened the nozzle 7. The nozzle 7 is provided with the outlet 8 which is reduced in diameter from that of the body of the nozzle and is in line with the inlet 6 in the cylinder head.

Mounted below the nozzle 7 on the inside of the cylinder is the float 9, which float is carried on the upper end of the valve stem to which it is suitably fastened by mean of the small nut 11. The under side of the float 9 has a circular channel 13 provided therein which is adapted to normally fit over the circular ridge 14 formed on top of the valve stem guide 15, forming a part of the bottom 4 of the cylinder and projecting inwardly therefrom. The hollow center of the valve stem guide 15 has the valve stem 10 mounted to slide up or down therein as will presently appear. On the lower end of the valve stem is carried the valve head 16 which is normally adapted to rest in the valve seat 17 provided in the bottom of the hollow base 1. Intermediate the valve head 16 and the float 9 on the valve stem 10 is adjustably mounted the cross bar 18. The valve stem 10 is threaded at the point where the cross bar is to be fastened thereto and the nuts 19 and 20, one on top and the other on the bottom of the cross bar, are screwed together at the desired point to clamp the cross bar 18 at the proper elevation in the hollow base between them.

On the outer ends of the cross bar 18 are provided the suitable holes 21, 21, through which the studs 22, 22, are adapted to project. The studs 22 are carried on the under side of the bottom 4 of the cylinder and are suitably threaded therein. Surrounding these studs 22 and spaced between the cross bar 18 and the under side of the bottom 4 of the cylinder are the expansion coil springs 23, 23, which normally hold the valve stem and its associated parts in its lowest position. In this position the valve head 16 is firmly seated in the seat 17 in the base 1. At the same time the float 9 is held down on top of the valve guide 15 so that the ridge 14 thereof engages into the channel 13 to form a tight joint between them which will prevent the seam from passing therethrough.

The outlet or exhaust 24 for the steam is provided in the side of the cylinder at a point about level with the outlet 8 of the nozzle 7.

In operation, the steam enters through the inlet 6 and passes through the nozzle 7 to the inside of the cylinder. As the steam leaves the nozzle, it strikes the top of the float 9 which is slightly dished so as to spread the steam and assist in knocking the moisture out of the steam. The steam then passes out through the outlet 24, leaving the water separated therefrom behind in the cylinder. The water thus knocked out of the steam drops to the bottom 4 of the cylinder and passes through small openings 25, 25, provided therein into the hollow base 1. From there the water passes out through the holes 26, 26, in the valve head into a suitable receptacle provided for this purpose. The small amount of moisture ordinarily present in steam is thus taken care of by the separation therefrom as above described.

If there is a larger amount of water, however, due to heavy condensation in a part of the steam line, this excess water will not pass out through the openings 25 and 26 respectively fast enough as these holes are too small for this purpose and this water, separated from the steam, accumulates in the cylinder 3 until it reaches the float 9. The float 9 is

then lifted by the water and in so doing, opens the valve formed by the channel 13 and ridge 14 so that the water can pass down through the hollow center of the valve stem guide 15. This prevents the water from rising higher than the under side of the float and the outlet formed by the hollow center is amply large enough to take care of the draining of the water thus accumulated. When the float 9 is lifted, the valve stem 10 is raised thereby, which in turn lifts the valve head 16 from its seat 17 to allow the water passing down through the valve stem guide to quickly drain out from the base. When the float 9 is lifted, it is raised against the pressure of the springs 23, 23 interposed between the cross bar 18, carried by the valve stem, and the under side of the bottom 4. Thus, when the level of the water in the cylinder drops and the float 9 is free to seat itself, these springs expand and force the float 9 and the valve head 16 back onto their seats, after which the remainder of the water will pass only through the openings 25 and 26 as above described. In order to prevent the valve stem 10 from binding during its rise and fall in the guide 15, the sliding member 27 is provided thereon. This member is made up in the form of a spider and is adapted to slide in the valve stem guide 15, suitable openings being provided therein so as not to obstruct the draining of the water through the hollow center of the guide.

I claim:

1. In a steam trap, the combination of a hollow base, a cylinder mounted on top of said base, an inlet and an outlet provided in said cylinder, a float valve mounted in said cylinder below said inlet, a valve stem operated by said float valve, a valve head carried on the end of said valve stem, a partition between said cylinder and said hollow base, said valve stem passing through said partition to operate said valve head in said hollow base.

2. In a steam trap, the combination of a hollow base, a cylinder mounted on top of said base, an inlet and an outlet provided in said cylinder, a float valve mounted in said cylinder below said inlet, a valve stem operated by said float valve, a valve head carried on the end of said valve stem, a partition between said cylinder and said hollow base, said valve stem passing through said partition to operate said valve head in said hollow base, said partition and said valve head having small openings therein.

3. In a steam trap, the combination of a hollow base, a cylinder mounted on top of said base, an inlet and an outlet provided in said cylinder, a float valve mounted in said cylinder below said inlet, a valve stem operated by said float valve, a valve head carried on the end of said valve stem, a partition between said cylinder and said hollow base, said valve stem passing through said partition to operate said valve head in said hollow base, a spring pressed yoke, carried on said valve stem to normally hold said float valve and said valve head in a closed position.

In testimony whereof I affix my signature.

HENRY WILLEMSTYN.