No. 803,893. PATENTED NOV. 7, 1905.

E. H. GOLD.

FILLING ATTACHMENT.

APPLICATION FILED DEC. 30, 1904.

Fig. 1.

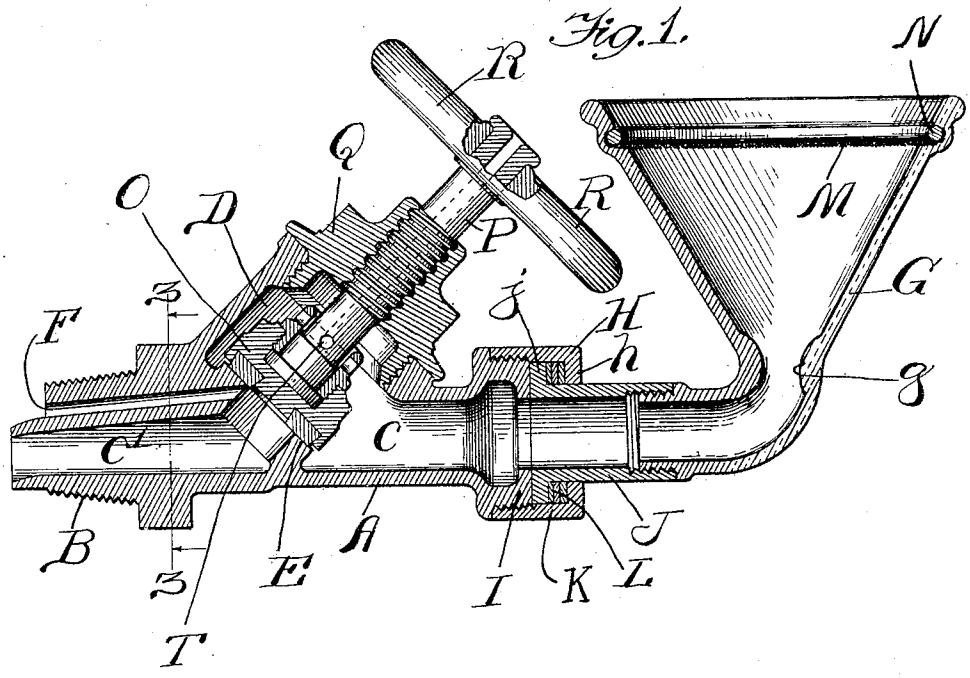


Fig. 2.

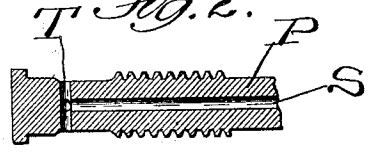


Fig. 4.

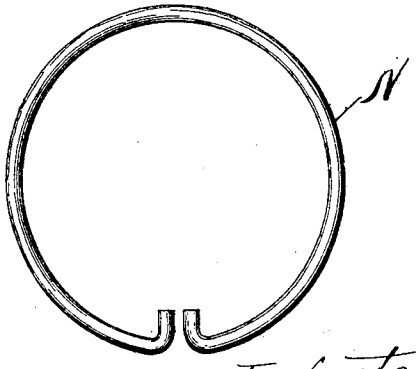
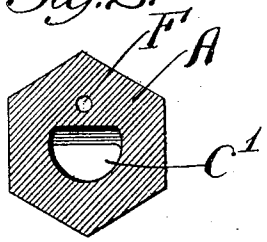


Fig. 3.



Witnesses:

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FILLING ATTACHMENT.

No. 803,893. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed December 30, 1904. Serial No. 239,004.

To all whom it may concern:

Be it known that I, EGBERT H. GOLD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Filling Attachments, of which the following is a specification.

My invention relates to improvements in filling attachments, and is especially adapted for use as a filling attachment for the expansion-drum of a hot-water car-heating system.

The object of my invention is to provide a device of the character described which shall be reliable in operation, which shall at all times remain tight when closed, while effectively providing means for the inlet of water and the outlet of air when open, which shall be of simple and inexpensive construction, and which shall be so constructed that inflow of water shall not interfere with the outflow of air from the expansion-dome.

Another object of my invention is to provide an apparatus so constructed that the valve shall not leak when subjected to expansion and contraction resulting from the varying temperature of the water in the system.

A still further object of my invention is to provide means for automatically and effectively holding the funnel in any desired position.

These and such other objects as may hereinafter appear are attained by my invention, which is shown in its preferred embodiment in the accompanying drawings, in which—

Figure 1 is a longitudinal section through the apparatus. Fig. 2 is a longitudinal section through the valve-stem. Fig. 3 is a cross-section on the line 3 3 of Fig. 1 looking in the direction indicated by the arrows, and Fig. 4 is an elevation of the strainer-retaining ring.

Like letters of reference indicate the same parts in the several figures of the drawings.

Referring by letter to the accompanying drawings, in the preferred embodiment of my invention A is a casting, preferably made of brass, screw-threaded at B for convenient attachment to the expansion-tank or other connection and provided with water-passages C C′, a valve-chamber D, a valve-seat E, and an air-passage F.

G is the filling-funnel, which is connected with the casting A by a union H, the end I of the casting A constituting the head-piece of the union and a pipe-section J constituting the tail-piece of the union. The head and tail pieces of the union are connected in a familiar manner with a locking ring or bonnet; but a spring, which is preferably in the form of a split washer L, is interposed between the flange *h* of the locking-ring and the flange or shoulder *j* of the tail-piece, so that while the funnel G may be freely turned to any desired position the spring L will serve to hold the funnel in any position in which it is set. The importance of this feature will be recognized when it is remembered that in using these attachments on railway-cars while the funnel G must open upwardly for filling purposes it is desirable that the funnel be turned downwardly at other times to prevent the entrance of dust, dirt, cinders, &c. To further accomplish this latter purpose, I stretch across the open mouth of the funnel G a strainer or screen M, which is held in place by a ring N, which is sprung into a groove or seat provided for it in the funnel, so as to clamp the screen M in place. The passage from the funnel to the expansion drum or other attachment connected to the end B of the device is controlled by a valve O, which is arranged to be seated on the valve-seat E.

It will be noted that in my preferred construction the water-passage C and the air-passage F connect with the same port, which is surrounded by the valve-seat E, so that the valve O serves the double purpose of closing both the water-passage C′ and the air-passage F. The valve O is controlled by the valve-stem P, which is threaded through the bonnet or cap Q and is provided with an operating wheel or handle R. In the preferred embodiment of my invention the valve-stem P is provided with a longitudinal passage S, opening externally of the apparatus at one end and opening at the other end through cross-passages T into the valve-chamber D. It will also be noted that at its extreme end the water-passage C′ is deflected downwardly.

The operation of the apparatus is as follows: When it is desired to fill the expansion-drum or other connection, the funnel G is turned upwardly and is held in its upturned position by the spring L. Water being poured into the funnel G through the union H will flow through the water-passage C, over the valve-seat E, and through the water-passage C′, whence it is directed downwardly by the downwardly-deflected end of said passage. In order to positively insure that the volume of water flowing in shall not be suffi-

cient to fill the water-passage C′ and overflow into the air-passage F, the water-passage between the funnel-inlet and the valve-seat E should be narrowed at some point, so that the maximum volume of inflowing water cannot exceed the minimum capacity of the water-passage C′. In the drawings I have shown the passage so narrowed at the base of the funnel *g*. While this is a desirable feature, it is of course not necessary, as ordinarily the amount of water fed into the device will not be equal to the minimum capacity of the water-passage C′. As the water flows through the device and into the tank or like connection the air displaced by it will flow outwardly through the air-passage F, and by virtue of the downward deflection of the end of the water-passage C′ any tendency of the water to splash upward into the air-passage F will be overcome. This result is further attained by having the water-passage C′ extend beyond the inlet end of the air-passage F. The air flowing through the passage F will enter the valve-chamber D, whence it may escape through any convenient port; but in my preferred construction it will flow from the valve-chamber D through the transverse passages T in the valve-stem into the longitudinal passage S and thence to the atmosphere. When the apparatus is sufficiently filled with water, the water will be forced through the air-outlet port, thereby indicating that fact. It has been found, however, that in valve structures wherever used, and especially in devices of this sort which have to deal with varying conditions of salt-water used in hot-water car-heating systems, a valve which is closed tightly when exposed to the heat of the fluid in the apparatus will be caused to leak by the contraction which results when the device cools. Accordingly, to overcome this objection I make the valve-stem and the casing within which it is mounted of metals having different degrees of contraction. For example, the valve-stem P may be made of iron, while the casting A or the bonnet Q, or both, are made of brass. Assuming now with such construction that the valve is tightly closed, when the device is subjected to a high temperature it follows that when the apparatus cools the brass casing within which the valve-stem is mounted will contract more rapidly than the valve-stem, so that instead of loosening the valve and permitting a leak the result of such cooling and contraction will be to more tightly seat the valve, as the freely-contracting brass will pull the less freely-contracting iron valve-stem against the valve, thus tightly forcing the valve upon its seat.

It will be readily understood from the foregoing description that while I have shown my invention in its preferred form as to the several features thereof I do not limit myself to the precise embodiment thereof shown, and while I have described my invention as particularly adapted to filling attachments for car-heating appliances it is as to some or all of its features adapted for use in various other situations and connections, and therefore I do not limit myself to an embodiment of my invention which shall be intended only for the particular use shown.

I claim—

1. A filling device comprising a casing provided with fluid inlet and outlet ports connected by a water-passage, and with air inlet and outlet ports connected by an air-passage, a single valve-seat arranged between said air inlet and outlet ports and between said water inlet and outlet ports, and a reciprocating valve arranged to engage said seats so as to close communication between said ports.

2. The combination with a casing provided with a valve-chamber and with water and air passages, of a valve adapted to simultaneously close said water and said air passages, said air-passage connecting with said valve-chamber and said valve-stem being provided with longitudinal and transverse air-passages also connecting with said valve-chamber.

3. The combination with a casing provided with a valve-chamber and with water and air passages, of a single valve-seat disposed across said passages a reciprocating valve adapted to simultaneously close said air and water passages, said air-passage communicating with said valve-chamber when the valve is open, the structure being provided with an air-vent leading from said valve-chamber.

4. A filling device, comprising a casing provided with fluid inlet and outlet ports connected by a water-passage, and with air inlet and outlet ports connected by an air-passage, a single valve-seat arranged between said air inlet and outlet ports and between said water inlet and outlet ports, a reciprocating valve arranged to engage said seat so as to close communication between said ports, said fluid-passage between said fluid-inlet port and said valve-seat being constricted to a cross-area less than the minimum cross-area between said point of constriction and said fluid-outlet port.

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