Dec. 8, 1942. H. WILCOCK ET AL 2,304,224

RADIATOR VALVE

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FIG 1

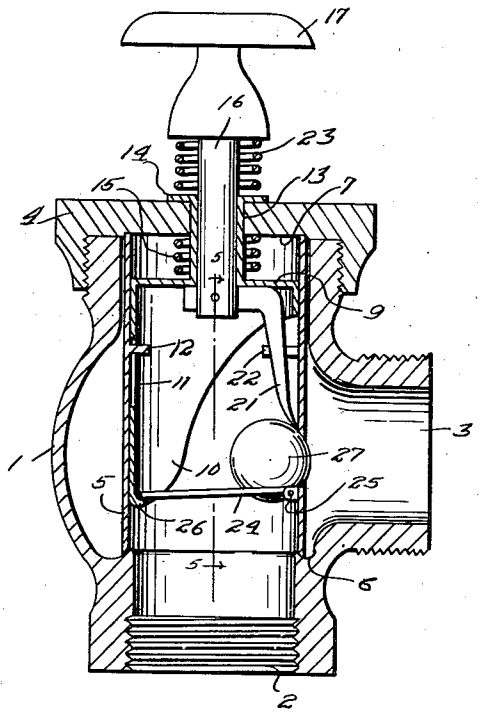


FIG 3

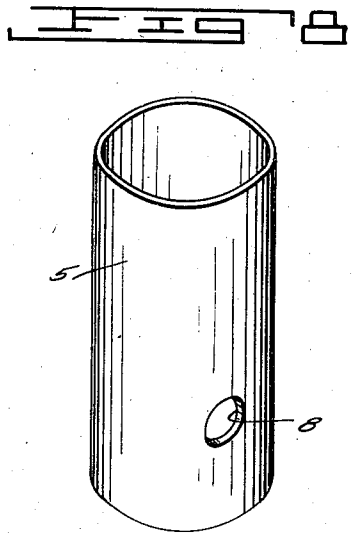


FIG 5

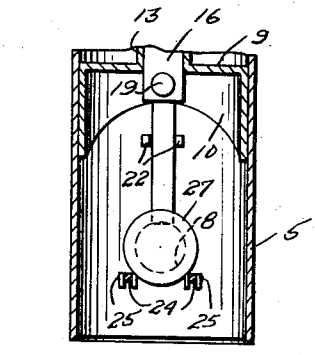
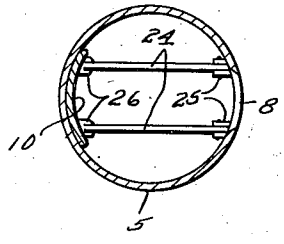


FIG 4



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RADIATOR VALVE

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FIG 2

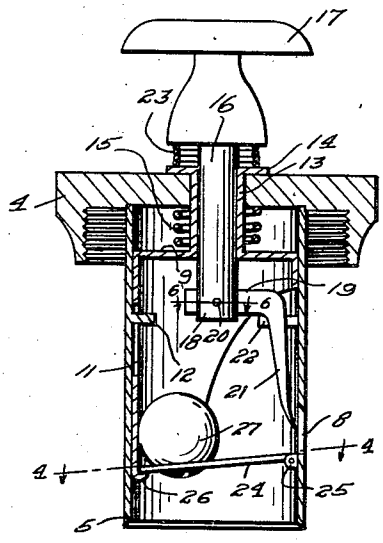


FIG 5

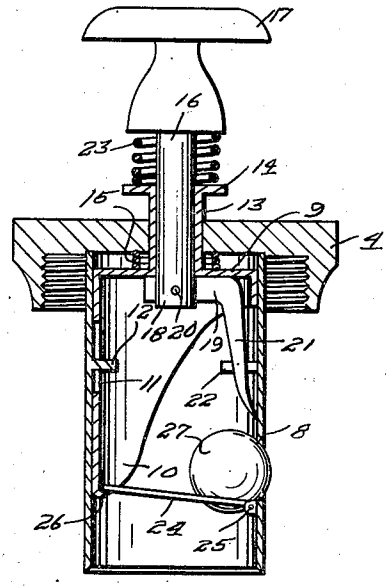


FIG 7

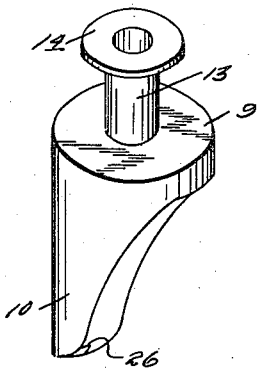
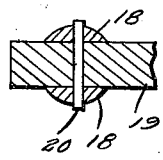


FIG 8



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2,304,224

RADIATOR VALVE

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Application January 23, 1942, Serial No. 428,004

3 Claims. (Cl. 251—135)

The present invention relates to new and useful improvements in radiator valves for use particularly in vacuum systems and has for its primary object to provide, in a manner as hereinafter set forth, a valve of this character which will automatically open when the vacuum is shut off.

Another very important object of the invention is to provide a radiator valve of the aforementioned character comprising a novel construction and arrangement whereby said valve may readily be opened or closed manually.

Other objects of the invention are to provide a radiator valve of the character described which will be comparatively simple in constructon, strong, durable, highly efficient and reliable in use, compact, and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in vertical section through a radiator valve constructed in accordance with the present invention, showing said valve closed.

Figure 2 is a vertical sectional view through the device without the body, showing the valve after it has been manually opened.

Figure 3 is a vertical sectional view substantially similar to Figure 2, showing the valve after it has been manually closed.

Figure 4 is a view in horizontal section, taken substantially on the line 4—4 of Figure 2.

Figure 5 is a vertical sectional view through the valve mechanism, taken substantially on the line 5—5 of Fig. 1.

Figure 6 is a detail view in horizontal section, taken substantially on the line 6—6 of Figure 2.

Figure 7 is a perspective view of the reciprocating closing member.

Figure 8 is a perspective view of the tube which is mounted in the valve body.

Referring now to the drawings in detail, it will be seen that reference numeral 1 designates a suitable body having an inlet 2 in one end and a lateral outlet 3. Threaded on the other end portion of the body 1 is a bonnet or cap 4.

Mounted in the body 1 and firmly secured therein by the cap 4 is a tube 5 of suitable metal. The tube 5 is longitudinally aligned with the inlet 2 and communicates therewith. The lower end of the tube 5 seats on a shoulder 6 in the body 1. A shallow recess 7 in the cap 4 accommodates the upper end portion of the tube 5. A port 8 in the tube 5 communicates with the outlet 3 of the body 1.

Slidably mounted in the tube 5 is a piston or the like 9 comprising a segmental skirt portion 10. The skirt 10 has formed therein a vertical slot 11. A pin 12 in the tube 5 is engaged in the slot 11 for securing the piston 9 against rotation in said tube.

The piston 9 further includes a tubular rod 13 on its upper end which extends slidably through an opening provided therefor in the cap 4. At its upper end, the tubular piston rod 13 terminates in an out-turned flange 14 which is engageble with the cap 4 for limiting the downward movement of the piston 9. A coil spring 15 encircles the tubular stem 13 and is engaged with the piston 9 for yieldingly urging the piston downwardly in the tube 5.

Extending slidably through the tubular piston rod 13 is a plunger 16 having an operating head or button 17 on its upper end. At its lower end, the plunger 16 terminates in bifurcations 18 between which a crosshead 19 is secured by a pin 20. Depending from one end of the crosshead 19 is an integral cam finger 21, the purpose of which will be presently set forth. The cam finger 21 is operable between a pair of guides 22 in the tube 5 for retaining said cam finger against rotation relative to said tube. A coil spring 23 encircles the plunger 16 and is engaged beneath the head 17 for elevating said plunger with the cam finger 21.

A pair of spaced parallel rails 24 have one end pivotally secured at 25 in the tube 5 adjacent the lower portion of the port 8. The free ends of the rails 24 rest on inturned lips or lugs 26 on the lower end portion of the piston skirt 10. A ball check valve 27, which controls the port 8, is operable on the rails 24.

It is thought that the operation of the valve will be readily apparent from a consideration of the foregoing. Briefly, when steam is passing through the radiator, the ball valve 27 is held in closed position in the port 8, as seen in Figure 1 of the drawings, by the suction or pressure. When the vacuum is shut off the ball 27 automatically rolls by gravity to open position on the inclined rails 24. Thus, when the steam is again turned on, as in the morning, said steam will again flow through the radiator. The cam finger 21 is normally positioned above the port 8. To manually open the ball valve 27, the plunger 16 is depressed against the tension of

the coil spring 23, thereby engaging the cam finger 21 with the ball valve 27 in a manner to force said ball valve away from the port 8 on the rails 24. This is shown to advantage in Figure 2 of the drawings. To manually close the valve, the plunger 16 is lifted through the medium of the head 17, thus causing the cross-head 19 to pick up and elevate the piston 9 against the tension of the coil spring 15. When this is done the rails 24 are inclined in the opposite direction (see Figure 3) and the ball valve 27 rolls by gravity to closed position in the port 8.

It is believed that the many advantages of a radiator valve constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A radiator valve comprising a body having an inlet and an outlet therein, a tube in the body communicating with the inlet, said tube having a port therein communicating with the outlet, a pair of rails pivotally mounted in the tube and inclining away from the port, a ball valve, for controlling the port, operable on said rails, and means for reversing the inclination of the rails for closing the ball valve by gravity.

2. A radiator valve comprising a body having an inlet and an outlet therein, a tube mounted in the body and communicating with the inlet, said tube having a port therein communicating with the outlet, a pair of inclined rails pivotally mounted in the tube, a ball valve, for controlling the port, operable on said rails, manually operable means in the body engageable with the ball for opening said ball, and means for reversing the inclination of the rails for closing the ball.

3. A radiator valve comprising a tube having a port therein, inclined rails pivotally mounted in said tube, a ball valve, for controlling the port, operable on said rails, and common means for manually opening the ball valve and for reversing the inclination of the rails for closing said ball valve.

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