E. E. GOLD.

VENTILATOR FOR THERMOSTATS.

APPLICATION FILED NOV. 21, 1910.

1,007,862.

Patented Nov. 7, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

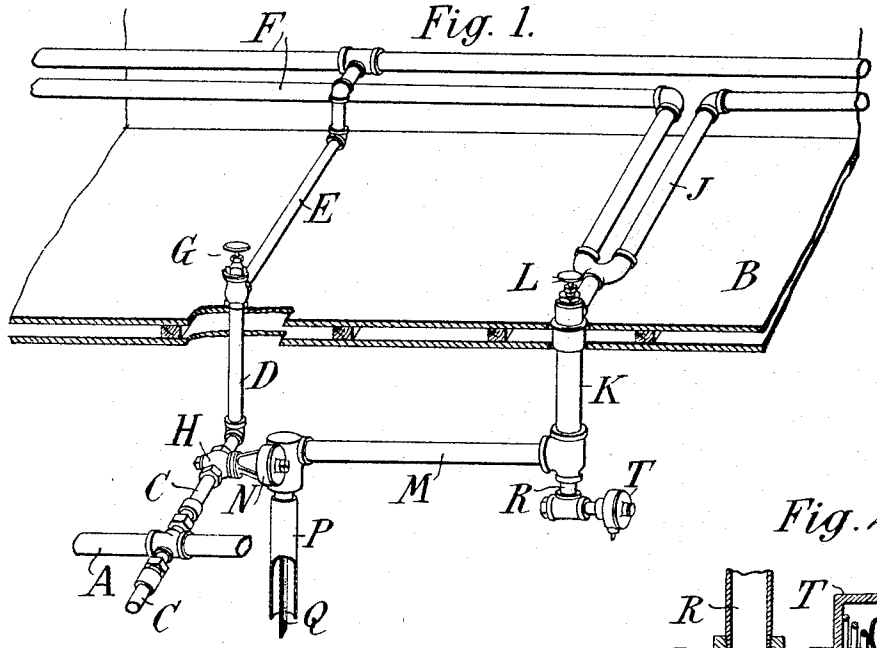


Fig. 2.

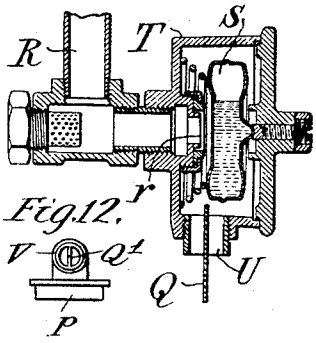


Fig. 3.

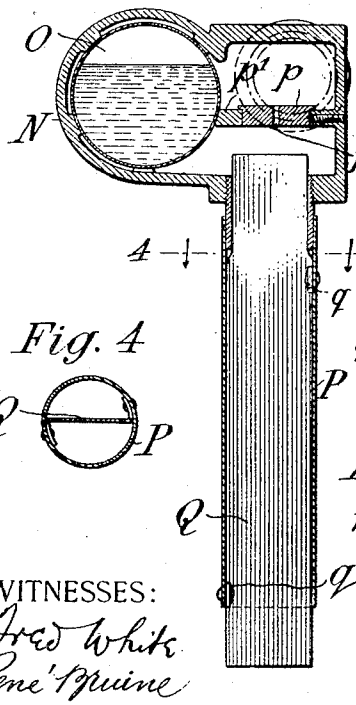


Fig. 5.

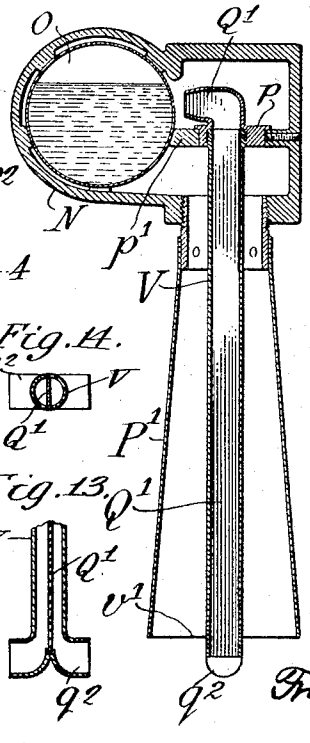


Fig. 12.

Fig. 6.

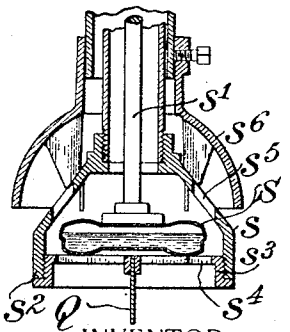


Fig. 4

Fig. 14.

Fig. 13.

WITNESSES:

Fred Whitt

Rene' Bruine

INVENTOR:

Edward E. Gold,

By Attorneys,

Fraser Trubee Myers

Henry J. Fuch

E. E. GOLD.

VENTILATOR FOR THERMOSTATS.

APPLICATION FILED NOV. 21, 1910.

1,007,862.

Patented Nov. 7, 1911.

3 SHEETS—SHEET 2.

Fig. 9.

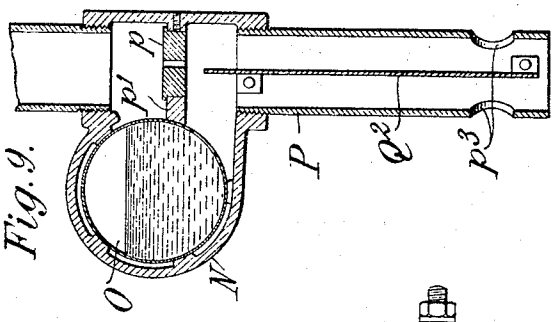


Fig. 8.

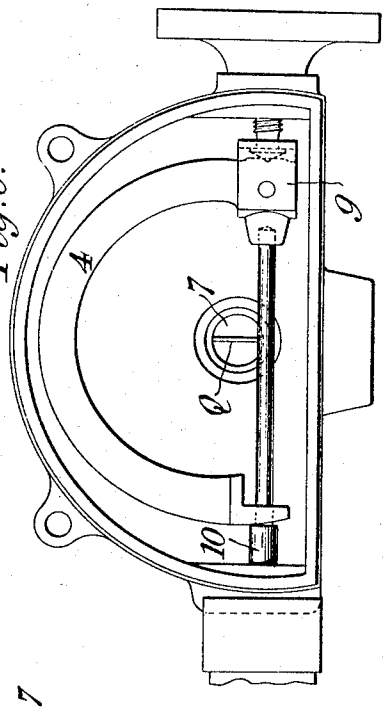


Fig. 7.

WITNESSES:

Fred Whitt

René Bruine

INVENTOR :

Edward E. Gold,

By Attorneys,

Fraser, Trubt & Myers

Henry M. Trubt

E. E. GOLD.

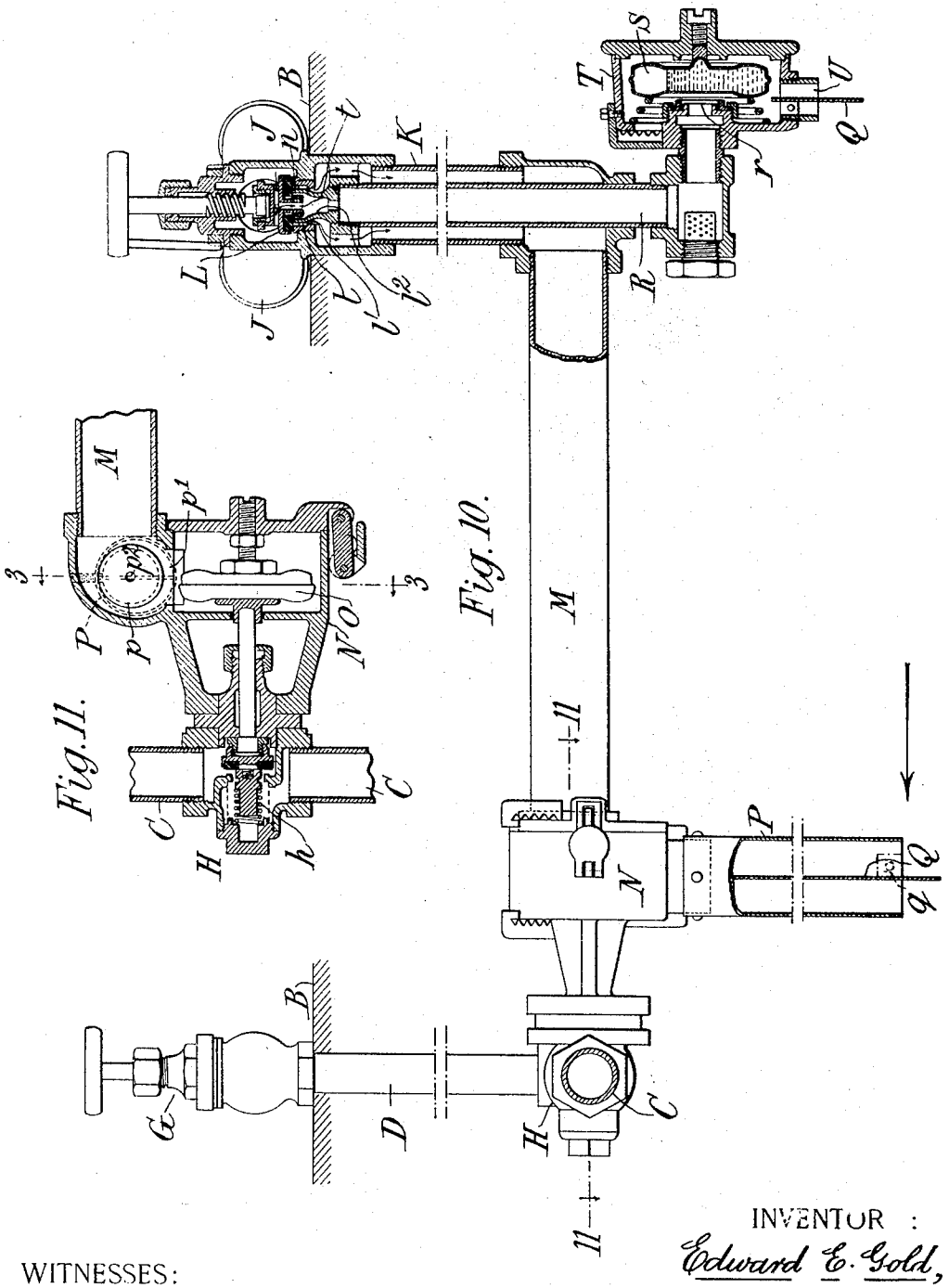
VENTILATOR FOR THERMOSTATS.

APPLICATION FILED NOV. 21, 1910.

1,007,862.

Patented Nov. 7, 1911.

3 SHEETS—SHEET 3.



WITNESSES:

Fred Whitt

Rene' Bruine

INVENTOR :

Edward E. Gold,

By Attorneys,

Fraser, Turner & Myers

UNITED STATES PATENT OFFICE.

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

VENTILATOR FOR THERMOSTATS.

1,007,862. Specification of Letters Patent. Patented Nov. 7, 1911.

Application filed November 21, 1910. Serial No. 593,341.

To all whom it may concern:

Be it known that I, EDWARD E. GOLD, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Ventilators for Thermostats, of which the following is a specification.

My invention relates to thermostats for automatically operating the valves in steam-heating systems, and has for its object to produce an improved ventilation for such thermostats whereby they are rendered more sensitive and their operation is rendered more certain, and to effectuate this object I have provided means whereby a current of atmospheric air is positively directed toward such thermostats. Prior means of ventilating thermostats have usually provided for such ventilation where the thermostat was inclosed in a casing merely by openings in the wall of the casing through which air was permitted to enter, and these openings have been so placed relatively to the car that they were not in position to have a current of air positively directed through them by the rapid motion of the car, and furthermore, the escape of the exhaust steam therefrom has been objectionable in its effect upon the car. My improved ventilator overcomes such defects and provides means whereby the motion of the car causes a direct and energetic current of air to be produced and directed toward the thermostat.

Several desirable ways in which my invention may be carried into effect are illustrated in the accompanying drawings.

Figure 1 is a perspective view of part of a steam-heating system wherein my improved ventilator is shown as applied to different forms of outlets. Fig. 2 is a sectional view of one of said outlets. Fig. 3 is a sectional view of another of said outlets. Fig. 4 is a cross-section on the line 4—4 of Fig. 3. Fig. 5 is a modified form of my invention. Fig. 6 is another modified form thereof. Fig. 7 is a view of the said invention as applied to another system of steam-heating. Fig. 8 is a side view of the device illustrated in Fig. 7, parts being omitted. Fig. 9 is a view illustrating a modified form of deflector. Fig. 10 is a detail elevation of parts of said system, parts being in section. Fig. 11 is a horizontal section on the line 11—11 in Fig. 10. Fig. 12 is a detail end view of the modified form of ventilator appearing in Fig. 5. Fig. 13 is a vertical section of the lower end of the said modified form of ventilator; and Fig. 14 is a cross-section thereof looking down upon the top of Fig. 13.

In carrying my invention into practice I may employ any kind of thermostat, the particular variety thereof not being essential, and I may locate the same either within or without the car. I provide for the ventilation of the said thermostat by drawing air from beneath the car which is conducted by a suitable deflector so that a current of air is positively directed by the said deflector and is caused to pass adjacent to the thermostat whereby the latter is rendered sensitive and its action accelerated, which is the well known effect of ventilation.

In Fig. 1 there is illustrated a steam heating system wherein steam is taken from the train-pipe A which extends underneath the train, and has two branches C extending on each side of the car communicating with vertical pipes D which extend through the floor B of the car and by which steam is supplied through horizontal pipes E to radiators F. A hand-operated valve G is located within the car for shutting off steam from each car as desired. A return loop J is attached to the lower branch of radiator F and leads the water of condensation to the outlet K. A hand-operated valve L within the said outlet may be turned to direct the steam and water of condensation through pipe M, whence the escaping steam passes through casing N around thermostat O and out through drip P. The thermostat O is here shown in the form of an expansible vessel filled with a volatile liquid, which upon expanding closes valve H and shuts off steam from the inlet C. When the thermostat cools the valve H is automatically opened by a spring *h*. The drip pipe P is in open communication with the thermostat O within casing N and the means here illustrated for ventilation of the thermostat comprise a deflector Q in the form of a partition which extends across the drip pipe P from side to side and, as shown, extends below the bottom of the said pipe. The deflector is sustained in position by any suitable means,—the means illustrated are lugs *q* by which the deflector is riveted to the pipe. If the train to which the steam heating system is attached is moving toward the left, indicated by the arrow in Fig. 10, the wind will hit against the bottom of the deflector Q and

will be caused to pass up over the upper part thereof and down the opposite or rear side. This will bring a current of fresh, cool air at approximately atmospheric temperature into contact with the thermostat O, and will effectually cool the same. The plug p in the baffle plate p^1 may have an opening p^2 as shown, through which a small amount of air will be caused to pass assisting in cooling the upper part of the thermostat. This will not interfere with the escape of the water of condensation and exhaust steam which may pass around the sides of the thermostat O and down to the drip pipe P as usual, as illustrated in the section Fig. 11.

The valve L is adapted to be turned so that return steam etc., will be directed to either the pipe M or the pipe R. The construction of such valve forms no part of my present invention. I may however adopt for this purpose a valve such as is illustrated in Fig. 10 where the valve L when closed permits the return steam to pass through port t and pipe R to the thermostat S controlling the outlet. When the valve L is open steam passes through ports n between the outer and inner valve seats l l^2 and between the lugs l^1, which space the seats l and l^2 apart, through pipes K and M to thermostat O controlling the inlet valve. When the valve L is turned so that steam passes through the pipe M, the system is adapted to act as a vapor system by means of thermostatically controlled inlet valve H. When, however, the said valve is turned so that steam shall pass through the pipe R, the system will act as a pressure system. The outlet will then be closed by a thermostatic vessel S within the casing T. The thermostat S is similar in construction to O, and on expansion closes the valve r and is spring-pressed to open such valve when cooled. The water of condensation and steam escapes through drip U, and this is equipped with deflector Q which causes the passage of a current of air, up on one side and down on the other of the said drip pipe and adjacent to the thermostat S.

In Fig. 6 the thermostatic vessel S is located within a casing s and actuates a valve overhead through valve stem s^1. The casing terminates in a short, downwardly extending pipe s^2 within which is screw-threaded a ring s^3 having arms s^4 which support the thermostat as well as the deflector Q which operates here as in previous forms to cool the thermostat. The openings s^5 in the casing s which have been heretofore employed to ventilate the thermostat, may if desired be retained, and the air directed against the thermostat and into the casing by the deflector Q will pass around the thermostat between the arms s^4 and will then emerge through the openings s^5. Thereby a current of atmospheric air will be positively directed upon the thermostat. Hood s^6 will cause the exhaust steam to pass downward.

In Figs. 7 and 8 I have illustrated my invention as applied to the Heintz system of steam heating, for instance, as illustrated in the Heintz French patent Number 327,061 and U. S. Patent No. 777,203. Here the steam inlet pipe 1 has an opening 2 closed by a valve 3 which is operated by a valve stem through a bow thermostat 4. The steam from the return steam pipe 5 passes into a casing 6 within which the said thermostat is contained and heats said thermostat, closing valve 3. Air is taken into the casing through air inlet pipe 7 and into the steam pipe through nozzle 8. The thermostat 4 is composed of a bow of metal which expands by heat and is fixed to a block 9 at one end and at its free end bears against a shoulder 10 upon the valve stem. My deflector Q is illustrated as being located within the air inlet pipe 7, and will extend below the bottom of the car to which the apparatus is applied. Thereby, as the car is caused to travel air will be caused to pass up the advancing side of the deflector and into the casing in proximity to the bow thermostat, and down and out the rear side of the deflector. This will greatly increase the sensitiveness of the thermostat.

In Fig. 5 the thermostat is of the same construction and operates the same as in Fig. 3. The drip pipe P^1 is horn-shaped. The thermostat is ventilated by a current of atmospheric air which is forced up through pipe V, which at its upper end passes through plug p in baffle plate p^1 and has its end turned toward the thermostat. Within said pipe is a deflector in the form of a partition Q^1 which at its lower end below the horn is flared out on both sides as at q^2 to assist, in connection with flared ends v^1 of pipe V, in entraining a current of air. The deflector Q^1 may be bent in conformity with the nozzle of pipe V, to pass the current of air close to the thermostat.

While I have illustrated the deflector as extending below the drip pipe, for the purpose of entraining and positively directing a current of air toward the thermostat, it will be apparent that such object may be accomplished without locating the deflector in this precise position. For instance, as shown in Fig. 9, the drip P has openings p^3 on its front and rear sides through which air is admitted. The deflector Q^2 does not extend below the bottom of the drip pipe, but does extend sufficiently far to substantially cover openings p^3, and serves to direct the current of air into proximity to the thermostat O.

While I have described with great particularity of detail the construction of my invention, it does not follow that it is limited in its application to the said particular de-

tails, as these details may be varied within the limits of the appended claims.

What I claim is:—

1. In a steam car heating system containing a valve-controlling thermostat, a casing having inlet and outlet openings and a chamber containing said thermostat and communicating with the outside air only through said openings, and a deflector located between said openings and having a forward face transverse to the line of motion of the car and adapted to force a current of air into said chamber and to cause the same to be discharged on the rearward side of the deflector.

2. In a steam car heating system containing a valve-controlling thermostat, a casing, a deflector having faces transverse to the line of motion of the car, said casing having a chamber for receiving said thermostat and having openings to the atmosphere adjacent to the opposite faces of said deflector, said deflector adapted when the car moves in either direction to force a current of air along its forward face into said chamber, and along its rearward face out of said chamber.

3. In a steam car heating system containing a valve-controlling thermostat, a casing having a chamber for said thermostat and means for ventilating said thermostat comprising a pipe communicating at one end with said chamber and at the other end with the outer air, and a deflector located within said pipe and extending from side to side thereof with its faces transverse to the line of motion of the car and adapted to force a current of air along its forward face into said chamber and to cause the same air to be discharged along its rearward face from said chamber to the atmosphere, said chamber communicating only with said pipe.

4. In a steam heating system a thermostat, a casing having a chamber for receiving said thermostat, a pipe communicating with said chamber and the outside air, said chamber having no communication with the air except through said pipe, and a deflecting plate within said pipe and extending beyond the outer end thereof to force a current of air along its forward face into said chamber and outward from said chamber along its rearward face.

5. In a steam heating system, an exhaust pipe, a thermostat located in operative relation to said exhaust pipe, a valve adapted to be closed by said thermostat, and means for ventilating said thermostat, comprising a deflecting plate located in said exhaust pipe on the outlet side and extending from side to side of said exhaust pipe in a direction transversely of the length of the car, and projecting beyond the end of said pipe, whereby a current of atmospheric air is directed by said deflector into communication with said thermostat by the forward side of the deflector and is caused to circulate about the end of said deflecting plate adjacent said thermostat, and is withdrawn therefrom on the rear side of the deflector.

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

EDWARD E. GOLD.

Witnesses:
HENRY M. TURK,
FRED WHITE.