

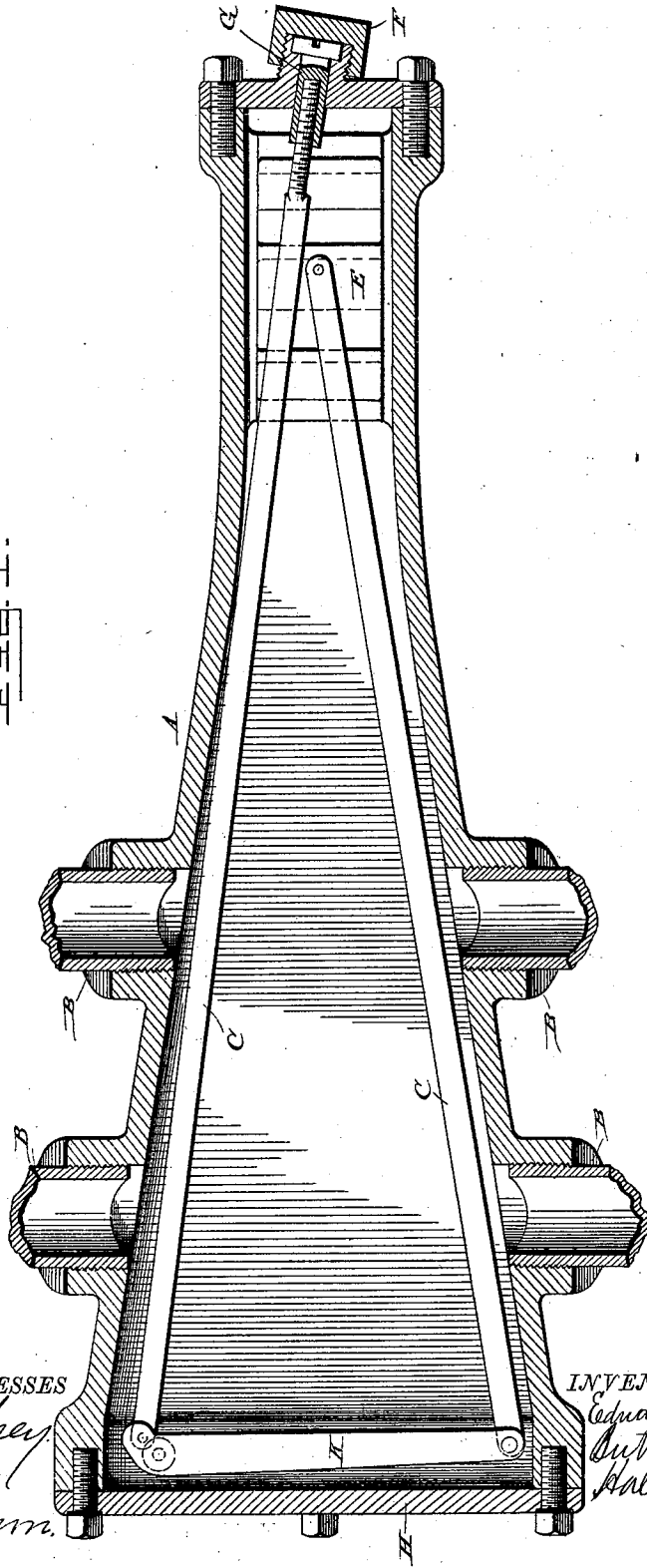
(No Model.)

2 Sheets—Sheet 1.

E. F. ROBERTS.
AUTOMATIC DRIP VALVE.

No. 506,260.

Patented Oct. 10, 1893.



WITNESSES

W. H. Humphrey
J. L. Brown

INVENTOR

Edward F. Roberts
Arthur W. Little
Hall & Brown
Attorneys.

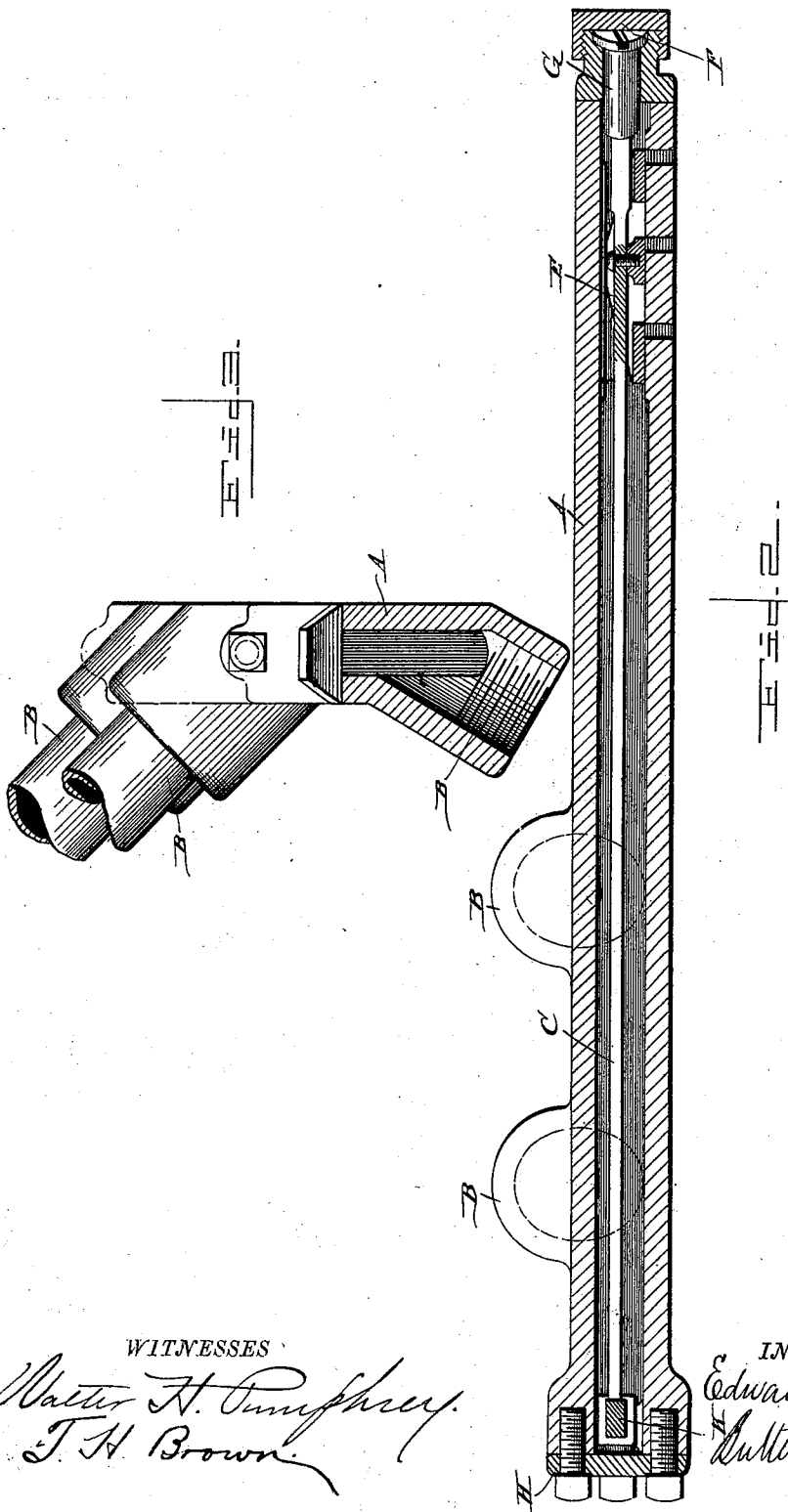
(No Model.)

2 Sheets—Sheet 2.

E. F. ROBERTS.
AUTOMATIC DRIP VALVE.

No. 506,260.

Patented Oct. 10, 1893.



WITNESSES

Walter H. Humphrey.
J. H. Brown.

INVENTOR

Edward F. Roberts
Carter & Hall & Brown
Attorneys

UNITED STATES PATENT OFFICE.

EDWARD F. ROBERTS, OF COLUMBUS, OHIO, ASSIGNOR TO THE ROBERTS
MANUFACTURING COMPANY, OF SAME PLACE.

AUTOMATIC DRIP-VALVE.

SPECIFICATION forming part of Letters Patent No. 506,260, dated October 10, 1893.

Application filed August 11, 1890. Serial No. 361,734. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. ROBERTS, a citizen of Great Britain, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Automatic Drip-Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to automatic drip valves, for use in connection with steam heating apparatus, wherever employed, but specially designed with reference to car heating apparatus.

My invention consists in the construction and arrangement hereinafter described and set forth in the claims.

Like reference letters refer to the same parts in the several figures of the drawings, in which—

Figure 1, is a longitudinal and horizontal section of my apparatus. Fig. 2, is a longitudinal vertical section of the same; and Fig. 3 is a transverse view, partly in section, and partly in elevation.

In steam heating systems, especially such as are applied to cars, great trouble is experienced from the water of condensation, and many methods have been devised for disposing of the same at the proper time and place. Heretofore the water of condensation has been allowed to escape while it was quite hot, but so long as this water of condensation has a temperature of 100° Fahrenheit, or approximately that temperature, it is desirable to retain the same in order to secure its heating effects, but when its temperature falls much below this point, it becomes necessary to allow it to escape, so that it will not lower the temperature of the heating coil; and to prevent danger to the apparatus by the subsequent freezing of such water. It is also desirable to employ means quite sensitive to variations in temperature to control the valves for this water, and to arrange the devices for controlling such valves in a compact manner so that they will not require the apparatus containing them to be unnecessarily large for

its own purposes. With a view of accomplishing these ends I have designed my present invention.

A refers to a chamber preferably of a long and shallow form. In this chamber is a series of inlet chambers, B, which may be connected with the pipes of the heating system. Within the main chamber I arrange a plurality of rods, C, C, the outer ends of which are pivoted to the lever, K, which in turn is pivoted to the sides of the chamber at a point near one of its ends, and thus has the effect of a multiplying lever in its action upon the rods. The other ends of the rods are secured one to the valve, and the other to a nut arranged in an aperture in the casing or chamber, and working upon a screw thread formed upon the end of such rod. This aperture for the nut extends through the end of the casing so as to afford ready access to an instrument for manipulating the nut, and I usually cover the aperture by a cap F; the nut is designated by the letter G, and the valve by the letter E. The arrangement of rods and the connecting lever constitutes a triangle in the form I show, but it is obvious that other arrangements might readily be made. At the other end of the main chamber is a cap H, secured to the same by bolts or other suitable fastening devices. This cap H can be removed to give access to the rear portions of the rods, and to the corresponding portion of the main chamber. The valve I prefer to use is formed of several parts each acting as valves, and all connected together so as to be operated by the single rod or lever.

The rods C are made of any suitable material sensitive to thermostatic changes, or may be made of a compound of several materials, as is common. I have found brass to be a good material for the purpose. When, as before said, the temperature of the water of condensation falls below 100° Fahrenheit, the rods will contract and draw the valves from over the exit openings, and so permit such water to escape; but when the temperature is above the point named, the rods will be in an expanded condition, and will close and keep closed the valves. By means of a nut G, and a screw thread upon one end of one

of the rods C, the rods may be adjusted so as to open and close the valves at any predetermined temperature.

In heating systems it has heretofore been proposed to use thermostatic devices comprising a number of rods and levers composed of material sensitive to variations of temperature, connected with a valve for controlling the exit openings of a fluid chamber or chambers; but such devices generally consist of a greater number of parts than is actually necessary, which increases the cost of production and renders the same cumbersome and unreliable in use.

The object of my invention is to provide simple, economical, and effective appliances for controlling the exit openings of the chambers in a heating system, which appliances shall occupy as little space as possible, and at the same time be capable of adjustment, and housed within the chamber, so as to prevent meddlesome persons from tampering with the adjusting devices thereof. To accomplish these results I propose to use a pair of thermostatic rods connected to a lever which is pivoted near one end thereof; said rods being also connected, the one to an adjusting nut secured to the casing and the other directly to the valve, so as to dispense with intermediate connections and render the action of the rods upon the valve direct, positive and certain.

What I claim as new, and desire to secure by Letters Patent, is—

1. A drip valve comprising the long and shallow valve chamber having inlet and exit openings therein, a valve for controlling said exit opening or openings arranged at one end of the chamber and a pivoted multiplying lever arranged at the opposite end thereof, a pair of thermostatic rods connecting one arm of said lever with said casing and the other arm thereof directly to said valve; the connection between the casing and rod being

made by an adjusting nut arranged in an aperture in one end of the chamber and connected with the screw-threaded end of the rod; and removable caps at the ends of the chamber to permit access to the thermostatic rods and adjusting nut housed therein, substantially as described.

2. A drip valve comprising a long and shallow valve chamber of triangular form having inlet and exit openings therein, a valve for controlling said exit opening or openings arranged near the apex of the triangle, a multiplying lever arranged at the base of the triangle and pivoted near one of its ends, a pair of thermostatic rods one of which connects the short arm of said lever with said casing and the other the long arm thereof directly to said valve; the connection between the casing and rod being made by an adjusting nut arranged in an aperture in one end of the chamber and connected with the screw-threaded end of the rod, substantially as described.

3. The combination, in a drip valve, of the long and shallow triangularly shaped valve chamber or casing having suitable inlet and outlet openings therein, a valve for controlling said outlet openings, a multiplying lever pivoted near one of its ends within said casing at the base of the triangle, and a pair of thermostatic rods of unequal lengths, the longer one of which is pivoted at one end to the short arm of the said lever and has its opposite end adjustably connected to said casing, while the shorter rod connects the long arm of said lever directly with said valve, the several parts being housed within the casing and adapted to operate substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD F. ROBERTS.

Witnesses:

O. M. BALL,
GEO. W. STICKNEY.