

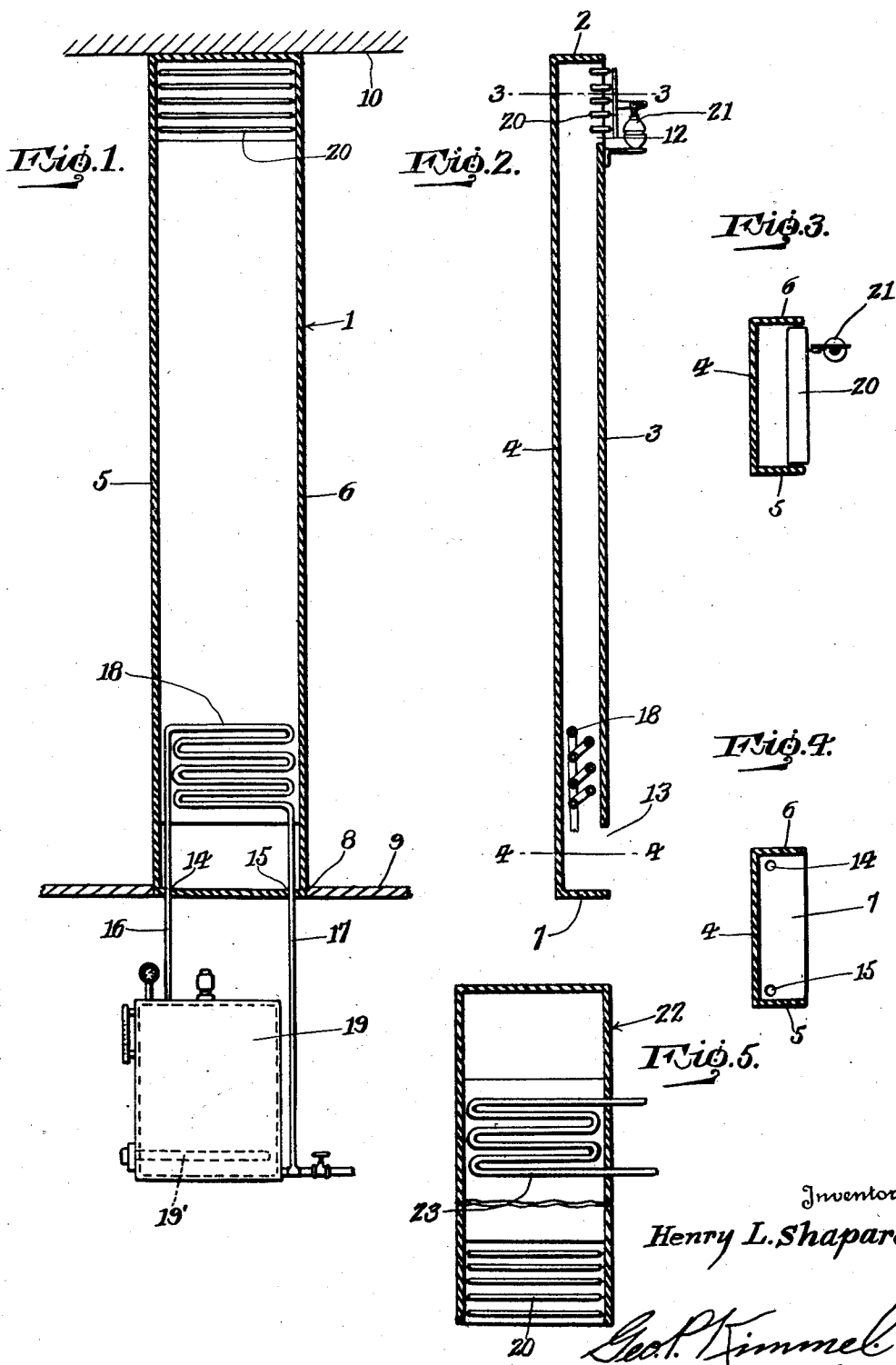
Oct. 16, 1934.

H. L. SHAPARD

1,977,494

TEMPERATURE CONTROLLING DEVICE

Filed April 27, 1932



Inventor
Henry L. Shapard

Geo. P. Kimmel
Attorney

UNITED STATES PATENT OFFICE

1,977,494

TEMPERATURE CONTROLLING DEVICE

Henry L. Shapard, Missoula, Mont., assignor of
one-half to Charles E. Gaskill, Missoula,
Mont.

Application April 27, 1932, Serial No. 607,834

1 Claim. (Cl. 257—136)

This invention relates to a device designed primarily for controlling the temperature of dwelling rooms, stores, storage rooms, refrigerating rooms, auditoriums, halls, but it is to be understood that a device in accordance with this invention is adapted for use in any connection for which it may be found applicable, and the invention has for its object to provide, in a manner as hereinafter set forth, a device for controlling temperature in a chamber by providing for a rapid circulation of air through the latter.

A further object of the invention is to provide, in a manner as hereinafter set forth, a device for controlling temperature in a chamber by providing for a rapid circulation of heated air through the latter for heating.

A further object of the invention is to provide, in a manner as hereinafter set forth, a device for controlling temperature in a chamber by providing for a rapid circulation of cold air through the latter for cooling.

Further objects of the invention are to provide, in a manner as hereinafter set forth, a device for the purpose referred to, which is simple in its construction and arrangement, strong, durable, compact, readily installed at the point desired, thoroughly efficient in its use, thermostatically controlled, and comparatively inexpensive to manufacture.

To the above ends essentially and others which may hereinafter appear, the invention consists of such parts and such combination of parts which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a vertical sectional view of the device when employed for causing a rapid circulation of warm air for heating a chamber.

Figure 2 is a vertical section of the device taken at right angles to Figure 1.

Figure 3 is a section on line 3—3 Figure 2.

Figure 4 is a section on line 4—4 Figure 2.

Figure 5 is a fragmentary view in vertical section of the form of device employed for causing a rapid circulation of cool air for cooling a chamber.

Referring to Figures 1 to 4 of the drawing, 1 denotes a vertically disposed heat insulated tube of the desired dimensions formed of a closed top 2, a front 3, a closed back 4, a pair of closed sides 5, 6 and an apertured bottom 7. The tube 1 has its lower end extended into an opening 8 formed in the floor 9 of a chamber. The tube 1 snugly fits the wall of opening 8, extends to the ceiling 10 of the chamber, is of oblong cross section, fixedly

secured in position, and constitutes an air conducting element.

The front 3 is formed at its upper end with an outlet opening 12 and at its lower end with an intake opening 13. The dimension of each of the openings is equal to the circumference of the tube.

The bottom 7 is formed with a pair of apertures 14, 15 for the passage respectively of a heating medium conducting pipe 16 and a heating medium return pipe 17. The pipe 16 terminates at its upper end in the top of a steam coil 18. The pipe 17 terminates at its top in the bottom of the coil 18, the latter being arranged within tube 1 above and in close proximity to the top of opening 13. The pipes 16 and 17 couple the coil with a water boiler 19 arranged by way of example below the floor 9. The boiler 19 may be of any suitable capacity or form. Preferably miniature in size with any idea yet introduced. Extending into the boiler 19 is an electric heating unit 19'.

Arranged within the upper portion of tube 1 and controlling the opening 12 is a shutter element 20 of the louvre type. The element 20 is connected to and has its operation automatically controlled by a thermostatic element 21 supported exteriorly of the upper portion of tube 1.

The construction shown in Figures 1 to 4 is for the generating of temperatures and the temperature is controlled by element 20 on the rapid circulation of warm air. The boiler 19 may be common to one or more tubes.

With reference to Figure 5 the device shown thereby and indicated generally at 22 is for generating temperature and is provided with means for controlling the temperature of a chamber on the rapid circulation of cold air. The form shown in Figure 5 is the same as that illustrated by Figures 1 to 4, with this exception that there is installed within the tube below and in proximity to opening 12 a refrigerating coil 23 for cooling the air before discharge of the latter at opening 13. When the coil 23 is employed, the shutter element 20 is arranged to control opening 13, the latter in this instance functioning as an outlet and opening 12 providing an intake.

Warm air being lighter than cold air will rise, and by placing the steam coil in the lower end of element 1 will cause a natural rapid circulation, due to the upward draught in element 1. A down draught in the latter will be provided when the refrigerating coil 23 is active.

What I claim is:—

In a temperature controlling means for a room or enclosed space, the combination with the ceil-

ing and floor of the room, a vertically disposed heat insulated tube arranged within said room in juxtaposition to a wall of the latter and formed with front, rear, side, top and said tube of a length to extend from said floor to and abutting said ceiling, said front wall being formed with an upper transversely extending opening constituting an air passage and having its edges provided by the top, sides and front walls of said tube, said front wall being formed with a lower transversely extending opening constituting an air passage and having its edges provided by the bottom, sides and front walls of said tube, operable means within one of said openings for controlling the area thereof, an automatically operated thermostatic controlled means supported from and adjacent to the outer face of said front wall for operating said area controlling means, a radiation element within said tube disposed completely above said lower opening and completely below said upper opening, said tube having the interior thereof from the top of said element to said top wall free of interruption, and supply and return lines leading to and from said element and extended from said tube.

HENRY L. SHAPARD.

15

20

25

30

35

40

45

50

55

60

65

70

75