E. V. COULSTON.

HEATING SYSTEM.

APPLICATION FILED OCT. 11, 1919.

1,366,165.

Patented Jan. 18, 1921.

2 SHEETS—SHEET 1.

FIG. 1.

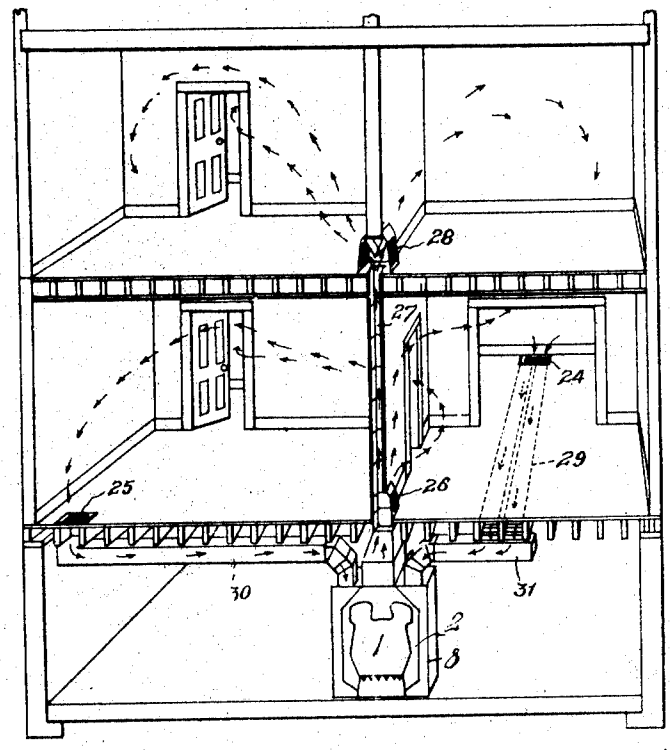
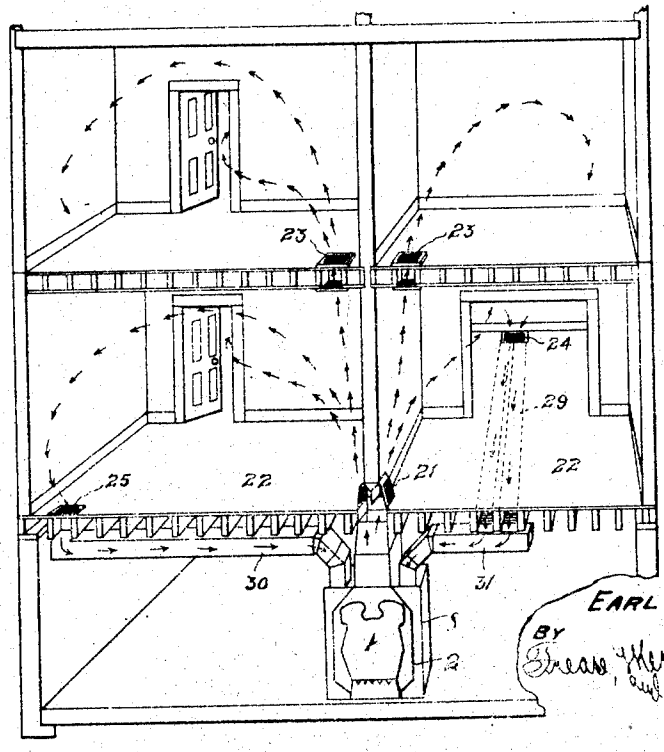


FIG. 2.



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2 SHEETS—SHEET 2.

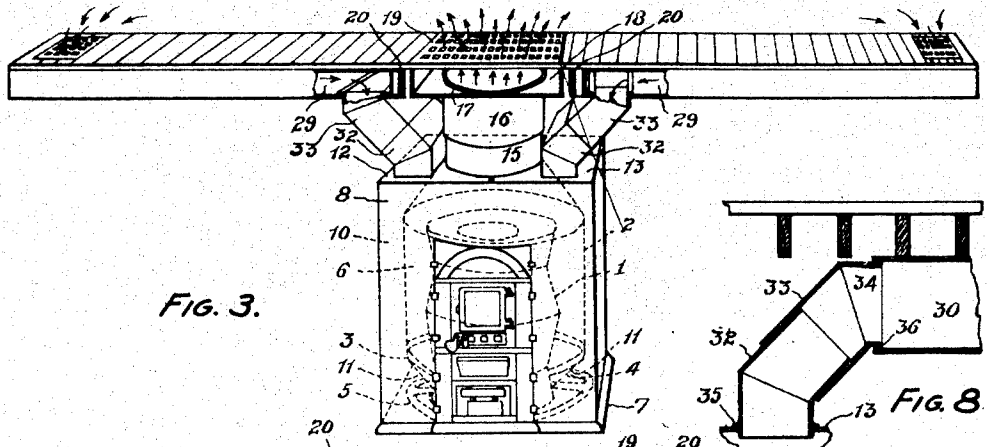


FIG. 3.

FIG. 8.

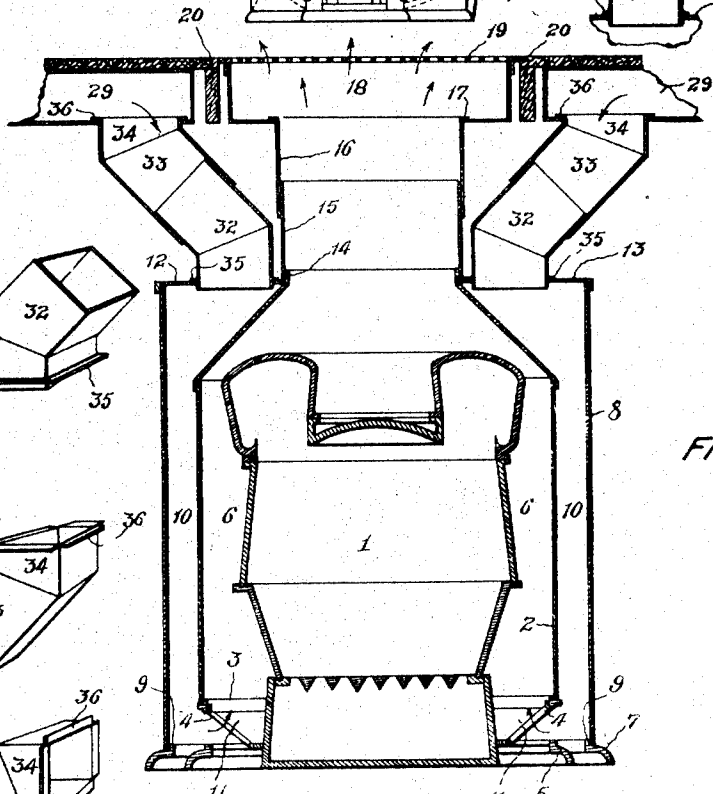


FIG. 4.

FIG. 5.

FIG. 6.

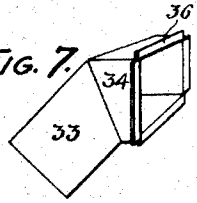


FIG. 7.

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UNITED STATES PATENT OFFICE.

EARL V. COULSTON, OF ROCK ISLAND, ILLINOIS.

HEATING SYSTEM.

1,366,165. Specification of Letters Patent. Patented Jan. 18, 1921.

Application filed October 11, 1919. Serial No. 330,068.

To all whom it may concern:

Be it known that I, EARL V. COULSTON, a citizen of the United States, resident of Rock Island, county of Rock Island, and State of Illinois, have invented new and useful Improvements in Heating Systems, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to heating systems and particularly to that class of such devices, adapted for heating dwellings, in which pipes in the basement for conveying warm air to different parts of the house are dispensed with. The improvements sought are a greatly increased air circulation and satisfactory floor warming. As hereinafter described in detail, these objects are attained by providing vertical telescoping warm air pipes and obliquely placed telescoping cold air connections which connect with conduits conducting the cold air from cold air registers located near the outside walls of the dwelling, such cold air conduits being disposed under the floors.

The annexed drawings and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of the various mechanical forms in which the principle of the invention may be employed.

In said annexed drawings:

Figures 1 and 2 represent vertical sections of a dwelling equipped with my improved heating system and showing two of the many possible combinations of heat distribution and cold air collection and conduction;

Fig. 3 represents an elevation, partially in section, in which is shown a fragmentary portion of the lower floor of the dwelling beneath which are disposed the ducts for conducting the cold air back to the furnace;

Fig. 4 represents a vertical section of the elements shown in Fig. 3;

Figs. 5 and 6 represent perspective views of two obliquely disposed telescoping cold air connections;

Fig. 7 represents a perspective view of one of said telescoping cold air connections turned half way around so that the inlet is in a vertical plane instead of a horizontal illustrating the reversibility of the connection; and

Fig. 8 represents a vertical longitudinal section of said obliquely placed telescoping cold air connections as arranged with reference to a floor in which the supporting joists run at an angle to the plane in which it is necessary that the return cold air conduit should run, such view illustrating the use of the cold air connection in the position shown in Fig. 7.

Referring to the annexed drawings, a warm air furnace or heater of standard construction is designated by 1, provided with a round casing 2 of which the lower end is open, said casing having a lower ring 3 upon which it is supported by a plurality of cast iron legs 4. A main circular base for the heater is shown at 5. The construction thus provides a warm air passage 6 between the wall of the casing 2 and the furnace 1. A rectangular auxiliary base 7 is provided a spaced distance outwardly of the base 5 and secured to the latter, upon which base 7 is supported exteriorly of a flange 9 an auxiliary rectangular casing 8, thus affording between casings 2 and 8, a passage 10 for cold air. This passage 10 provides a liberal space for the movement of the cold air, owing to the fact that the rectangular casing 8 provides large open spaces in each of the four corners. Even at the narrowest cross-section, this construction provides as much space as a circular outer casing, so that the net result is a cold air return area more than equal to the warm air area, which condition is necessary for best results. It is evident that the open bottom end of the casing 2 provides a passage 11 connecting the respective warm air and cold air ducts 6 and 10.

The rectangular outer casing 8 is set up in sections and when the same is thus positioned, a rectangular top, comprised of the two sections 12 and 13 is placed upon this casing, the sections 12 and 13 of said top being formed to provide a central circular hole for the reception of a hot air flange 14 provided upon the dome of the casing 2. A round pipe 15 fits over the hot air flange 14 and an additional round pipe 16 fits over and telescopes with the pipe 15, the latter pipe resting upon the top sections 12 and 13. The telescoping pipe 16 is provided with a top flange 17 by means of which it is supported upon the floor of a register box 18 provided with a circular opening in its lower side registering with the opening of

the telescoping pipe 16. The register box 18 is of a diameter substantially greater than that of the telescoping pipes 15 and 16, is rigidly suspended in the floor above the furnace and is utilized in connection with a floor hot air register 19 of substantially the same diameter as the box 18. The purpose in making the box 18 and register 19 of materially greater diameter from that of the telescoping pipes 15 and 16 is to provide sufficient aggregate area in the openings of the register 19 adequately to freely pass the entire contents of the telescoping pipes 15 and 16, the space taken up by the solid portions of the register being compensated for by its comparatively greater size.

The construction thus far described forms part of the subject-matter shown, described and claimed in United States Letters Patent No. 1,308,335 issued to me. I wish to improve upon the construction of some of the portions of the other subject-matter shown in said patent, as well as upon all other constructions of this general character with which I am acquainted. The necessity for the improvements, which I am about to describe in detail, arise from the fact that the return cold air connections shown in said patent do not allow for satisfactorily warm floors or obviate drafts upon floors, nor does the construction shown in said patent conveniently provide the necessary room for the combination of warm air pipes, cold air pipes, register box and registers. It is difficult to find room for all of these elements above the furnace. The register box 18 spreads out and takes up more space than the pipe 16 and the hole cut in the floor for the warm air register 19 requires the cutting through of one or more joists which must be consequently headed in, and these headers take up more space. The headers are illustrated in Fig. 4 by the numeral 20. The result is that it becomes quite impossible to run up the cold air pipes vertically, and yet a construction should be provided in which the cold air connections can be quickly placed and readily adjusted to the varying heights of basement ceilings. This is provided for the warm air conduit by the telescoping connections 15 and 16. Due to the fact that unskilled workmen are often utilized by the small dealer for erecting these jobs, the necessary cutting and special fitting have often been poorly done, through lack of skill in sheet metal work. The construction which I am about to describe in detail obviates these difficulties and permits anyone to erect satisfactorily.

Instead of providing cold air floor registers adjacent the warm air register 19, I provide cold air conduits 29 under the floor by means of boxing up the joist spaces, if said conduits can run parallel with the joists. If the cold air conduits necessarily run at an angle to the joists, I utilize sheet metal conduits 30 secured to the under surface of the joists as shown in Figs. 1, 2 and 8. In Figs. 1 and 2 is also illustrated an arrangement in which conduits 29 are combined with short sheet metal conduits 31. The cold air passes from the conduit 29 to the passage 10 through obliquely disposed telescoping connections 32 and 33. The connection 32 is formed with a lower flange 35 resting upon the top sections 12 and 13 and the telescoping connection 33 is formed with a top flange 36 by means of which the connection is supported upon the floor of the conduit 29. It is evident that this construction provides ready means for effecting the vertical adaptability of the cold air connections required by the height of the basement which is being utilized, the connection of the section 33 and the conduit 29 being in that horizontal plane, Fig. 4 in which the top of the section 33 lies when the same has been telescoped to the proper height. The section 33 is reversible so that the same can be utilized in a vertical plane to afford a connection shown in Fig. 4 or in a horizontal plane to afford a connection shown in Fig. 8. This results from the fact that said pipe 33 can be turned half way around from the position shown in Fig. 6 to the position shown in Fig. 7.

The cold air enters the conduits 29 and 30 from cold air registers 24 and 25. These registers are disposed in the floor in parts of the house remote from the centrally disposed warm air register 19, usually near the walls of the house. I have suggested in Figs. 1 and 2 a few of the many possible warm air circulation and cold air gathering systems. In Fig. 2, 21 illustrates a double baseboard register, in lieu of the floor register 19. This register with outlets on both sides of the partition is utilized where heat should be delivered to both rooms 22. This distribution is illustrated in combination with floor registers 23 to the upper part of the dwelling. Naturally a rapid warm air circulation is effected, the cold air gathering register 24 being disposed in the floor preferably adjacent the bottom of a stairway. In Fig. 1, I have illustrated a single baseboard register 26 which should be utilized when a living room is on one side of the partition and a bedroom or other room which it is not required to completely continuously warm, is on the other side of the partition. In combination with this warm air distribution, I have shown a vertical stack 27 in the partition and a double baseboard register 28 for the second floor.

I have fully described the advantages attaching to my obliquely disposed telescoping cold air connections. It is evident, furthermore, in so far as the floors are concerned, that the construction obviates cold and

drafty floors by providing near the center of the house, instead of a single register or closely adjacent registers for both warm and hot air, a warm air register only, in combination with remotely placed cold air registers connected with the cold air passage 10 around the furnace by means of ducts disposed under the floor.

What I claim is:

1. In a device for heating dwellings, in combination, a furnace; means forming a warm air conduit therefrom; a register communicating with said conduit; means forming a cold air conduit; means providing communication between said two conduits; means forming branch conduits leading obliquely to said cold air conduit; means for effecting vertical adjustment being provided in the warm air conduit; and means for lengthwise adjustment being provided in said oblique conduits.

2. In a device for heating dwellings, in combination, a furnace; a surrounding casing spaced therefrom forming a warm air passage; an exterior casing more distantly spaced forming a cold air passage; means providing communication between these passages; a top vertical connection for the warm air passage formed with telescoping members; and obliquely placed top connections for the cold air passage formed with telescoping members.

3. In a device for heating dwellings, in combination, a warm air register substantially centrally located; cold air return registers located substantially adjacent to the outside walls; a furnace below the warm air register and surrounding the furnace forming an inclosed warm air passage, said passage connected with the warm air register by a vertical duct of telescoping construction, said furnace further surrounded by exterior means forming an inclosed air passage, means providing communication between said passages; obliquely placed telescoping top connections for the cold air passage; and ceiling conduits connected with said oblique connections and also connected with the said cold air return registers.

4. In a device for heating dwellings, in combination, a furnace; means forming a vertical warm air conduit therefrom; a register directly above said conduit; means forming a cold air conduit about said warm air conduit; means providing communication between said two conduits; means forming branch conduits leading obliquely to the top of said cold air conduit, means for effecting vertical adjustment being provided in the warm air conduit; and means for lengthwise adjustment being provided in the oblique conduits at substantially the level of the adjustment in the warm air conduit.

5. In a device for heating dwellings, in combination, a furnace; means forming a vertical warm air conduit therefrom; a register above said conduit; means forming a cold air conduit about said warm air conduit; means providing communication between said two conduits; means forming a branch conduit leading obliquely to the top of said cold air conduit; a second register, means providing communication between the latter and said branch conduit; and telescoping pipes connecting said first-named register and said warm air conduit, said branch conduit also being comprised of telescoping sections.

Signed by me this 23rd day of September 1919.

EARL V. COULSTON.