June 3, 1952 L. L. SCOTT 2,598,842

RADIANT HEATING SYSTEM

Filed April 13, 1949 3 Sheets-Sheet 1

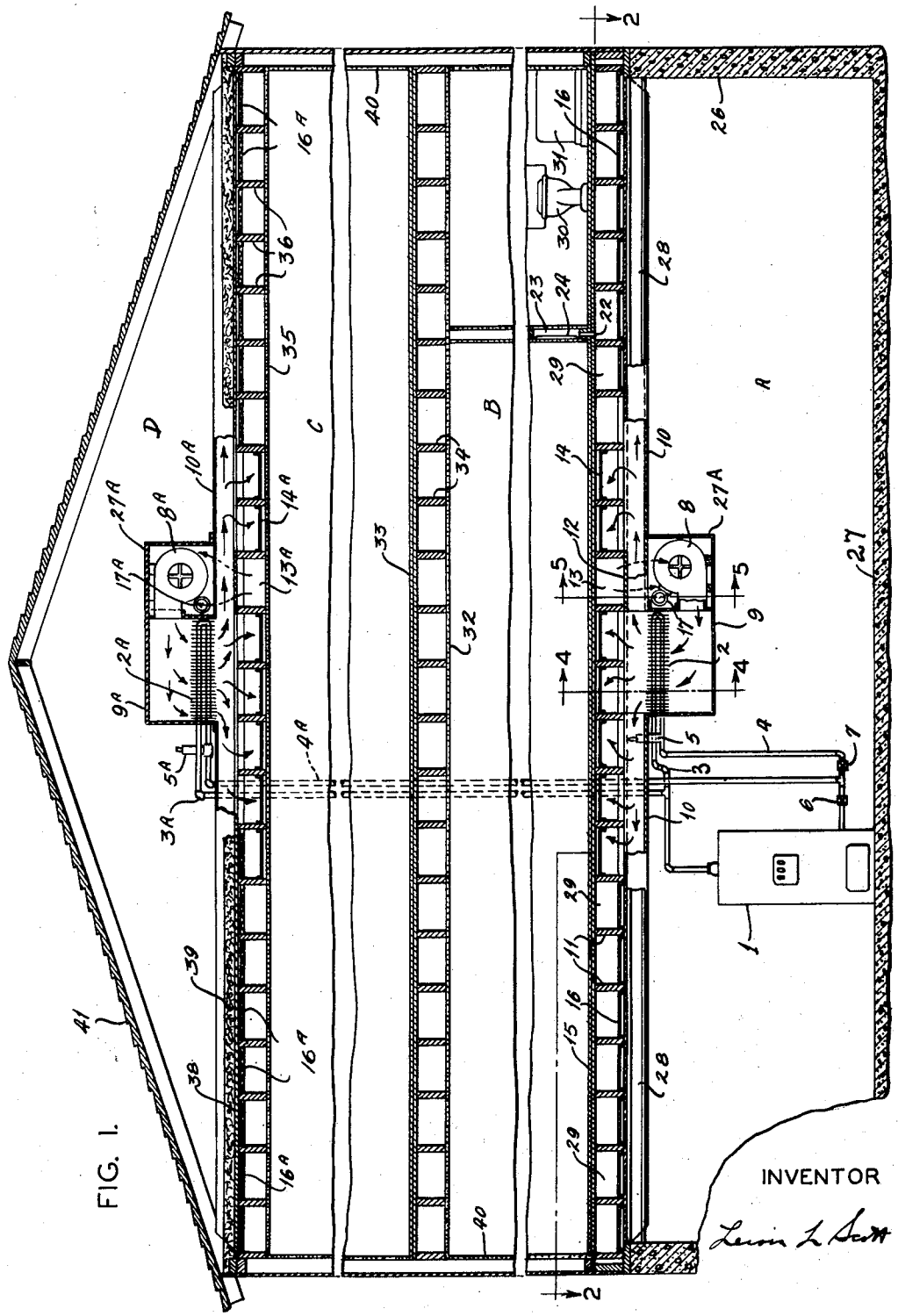


FIG. 1.

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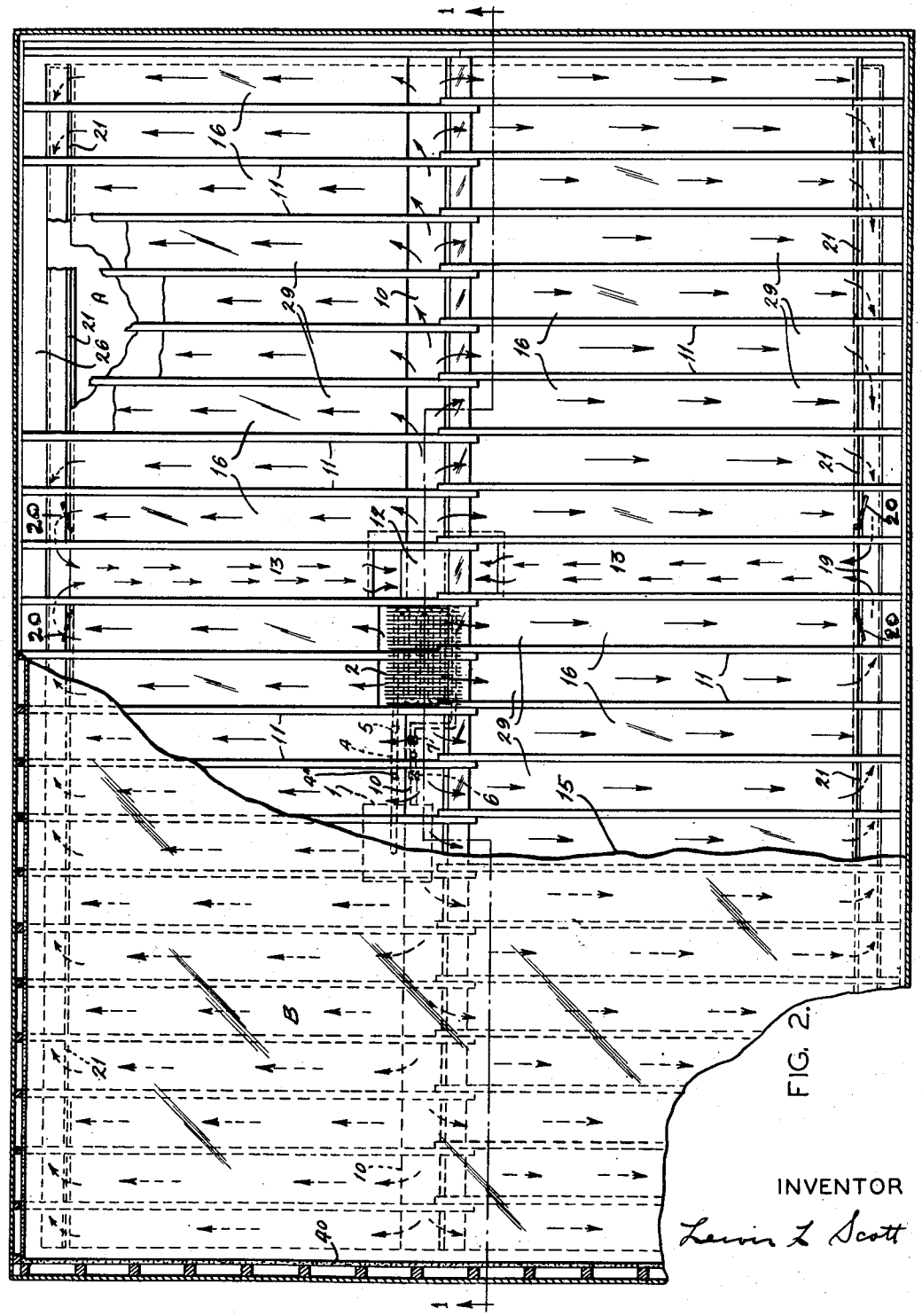


FIG. 2.

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FIG. 3.

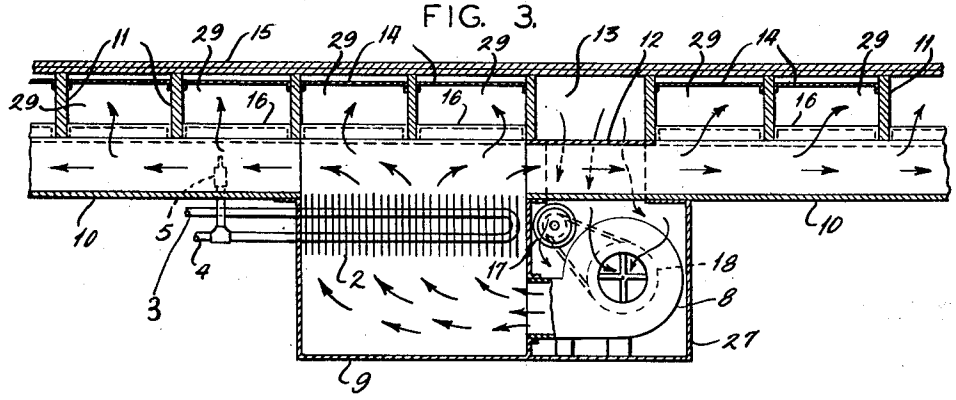


FIG. 4.

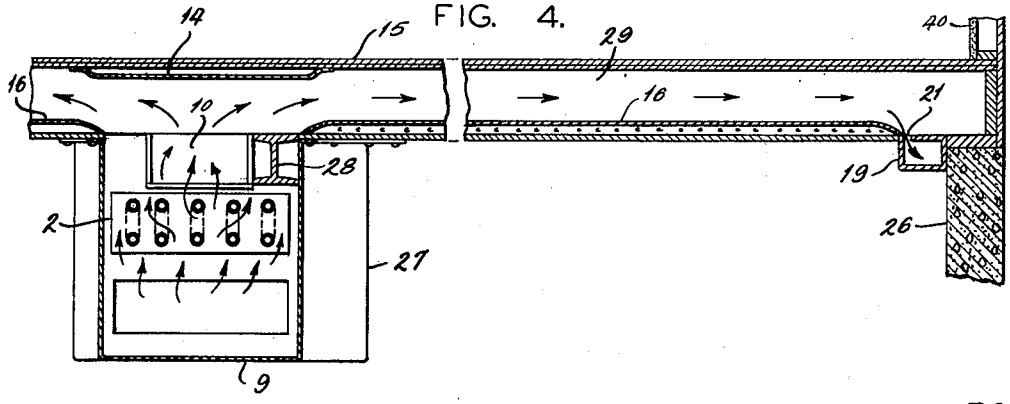


FIG. 5.

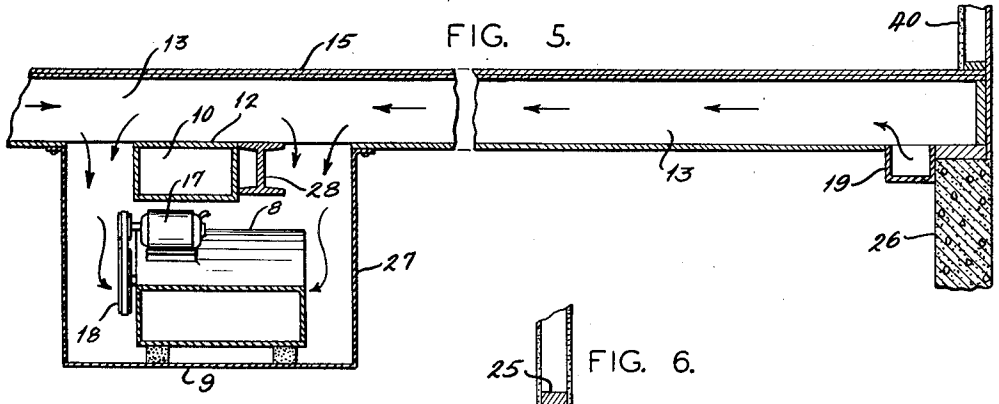


FIG. 6.

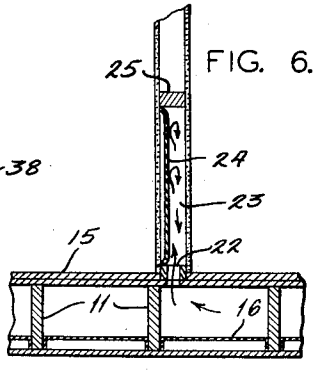
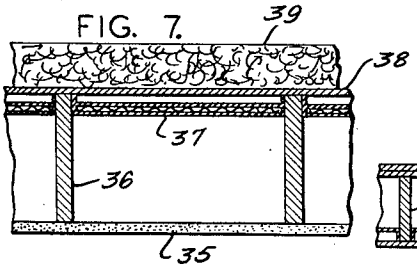


FIG. 7.



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Patented June 3, 1952 2,598,842

UNITED STATES PATENT OFFICE

2,598,842

RADIANT HEATING SYSTEM

Lewis L. Scott, St. Louis, Mo.

Application April 13, 1949, Serial No. 87,240

2 Claims. (Cl. 237—69)

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This invention relates particularly to a system for heating homes, apartments and the like.

One of the objects of my invention is to provide a radiant heating system that can be applied to practically any type of existing home without any alterations to said home. This takes in a two-story home with basement and attic space; a one-story home with basement; a one-story home without a basement, but with an attic space.

A further object is to do away with the necessity for all fire stops as shown in my application No. 67,840, filed December 29, 1948, now abandoned or in my application Serial No. 85,949, filed April 7, 1949.

A further object is to provide a means of heating certain rooms, such as bathrooms, to a higher temperature than other rooms.

A further object is to provide a warm air radiant heating system that is simple, safe and effective, with no danger of developing air temperatures that will set the house on fire.

A further object is to provide a warm air radiant heating system that uses the structure of the building, (i. e., wood joists, etc.) for conducting the air and for storing heat, that is simple, low in cost, safe and effective.

In the accompanying drawings,

Figure 1 is a sectional view of a two-story house, showing my radiant heating system applied for heating the floor of the first floor and the ceiling of the second floor.

Figure 2 is a plan view on the line 2—2 of Figure 1 (shown partly broken away) of the first floor of the house, with a portion of the floor, above the floor joists, broken away.

Figure 3 is an enlarged sectional view of the heat coil, blower, etc., as shown in Figure 1.

Figure 4 is a section on the line 4—4 of Figure 1.

Figure 5 is a section on the line 5—5 of Figure 1 showing the blower outlet, the path of the inlet air, and the heat duct which is completely closed at the top at this particular point.

Figure 6 shows an enlarged sectional view of a portion of a bathroom wall shown in Figure 1.

Figure 7 shows an enlarged sectional view of the second floor ceiling, showing the arrangement of insulation I have found desirable at this point.

Referring to the drawings, (see Figure 1), the letters A, B, C and D indicate the basement, first floor, second floor and attic, respectively.

The numeral 1 indicates a steam boiler. 2 is a steam coil which is connected to the boiler 1 by the steam pipe 3 and the return pipe 4. 5 is a

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well-known air vent valve connected to the return pipe 4. The numerals 6 and 7 are check valves located in the return pipes. 8 is an air blower which discharges air into the duct 9 below the coil 2. 10 is a discharge duct attached to the joists 11 and open at the top into the space between all joists except at point 12 which is the point where the return duct 13 between joists 11 crosses over said discharge duct 10. 14 is insulation which runs for a short distance over the heat duct 10 (see Figure 4) and under floor 15 so as to avoid a hot spot above the heat duct 10 and on floor 15 at that point. The insulation 16 runs in the spaces between the joists 11 and near the bottom of said joists as shown in Figures 3 and 4.

The numeral 17 is an electric motor arranged to drive the blower wheel of blower 8 by belt 18. The blower operation is controlled by an aquastat, not shown, which is usually located in the return steam line 4 so to cause the blower to operate when the coil is hot and to stop operation at a reduced temperature in coil 2. Any type of fuel burner (not shown) may be used to heat the boiler 1, which burner is controlled by a room thermostat (not shown).

The return air ducts 19 (see Figures 4 and 5) all connect to the return air space 13 which space connects to the suction side of blower 8. Air dampers 20 are located in the return air ducts 19 near the points where these ducts spill the air into duct 13. See Figures 1, 2 and 4. It will be noted that the top of air duct 19 is covered, under joists 11, leaving only a narrow slot 21, see Figure 4. The slots 21 are for the purpose of getting even distribution of the heated air to all spaces between all joists. If I did not provide these narrow slots 21 as shown, I would get little or no heat into the joist spaces that are located away from the heat coil 2. The air dampers 20 may be used to regulate the heat in the four different sections of the building.

It will be noted that I provide an opening 22 (see Figure 6) which connects to the heated air supply. By so doing, hot air will enter into the space 23 between the wall studs and will furnish additional radiant heat to the room or rooms adjacent to said wall. This may, for example, be a bathroom. If it is desirable to heat only one side of the wall, insulation 24 can be used so that practically all of the heat from the wall will be rediated one way. I provide stops 25 so as to limit the wall area I desire to heat. This makes a convenient and simple method of getting a bathroom five or six degrees warmer than other rooms.

The numeral 26 indicates the basement walls, 27 the basement floor, 28 an I beam for supporting the basement ceiling joists 11.

The housing 27A encloses the blower, which blower discharges air into the housing 9, which air passes upward through the heat coil 2 and into the duct 10 and from the duct 10 between all joist spaces 29, through the slot openings 21 and into the return ducts 19 and space 13 back to the suction side of the blower 8.

The numeral 30 is a toilet. 31 is a bathtub. 32 is the ceiling of the first floor, 33 is the floor of the second floor, 34 indicates the first floor ceiling joists. 35 is the ceiling of the second floor. 36 indicates the second floor ceiling joist, 16A indicates insulation located near the top of the second floor ceiling joists, 38 is a paper board which covers and seals the top of joists 36. 39 is insulation on top of the paper board 38.

The method of heating the ceiling 35 of the second floor is identical to heating the floor 15 of the first floor. I use a blower 8A, a heat coil 2A which is connected to the boiler 1 by the pipe 3A and the return pipe 4A. An air relief valve 5A is connected to the return pipe 4A. The blower 8A discharges air through the heat coil 2A and then into the heat duct 10A. I use the same type of return air ducts which connect to the space 13A which space connects with the air intake of blower 8A. The housing 27A covers the blower 8A. I use a similar insulation 14A near the ceiling 35 under the duct 10A. I use insulation 16A to reflect the heat between joists 36 to ceiling 35. All of the parts used above the ceiling 35 of the second floor are, generally speaking, the same and function the same as similar parts used to heat the floor of the first floor, therefore I feel that my general description of the function and operation of parts for heating the floor of the first floor should serve and apply to heating the ceiling of the second floor and that no further description is necessary.

The numeral 40 indicates the side walls of the building, 41 is the roof.

I claim:

1. A heating system adapted for installation in a standard building construction, which includes floor and ceiling walls supported by spaced transverse joists forming air passages extending to an outer wall of the building, including in combination therewith a heat exchanger located on one side of said floor-ceiling, a housing for said heat exchanger in open communication with a centrally located portion of one of said walls, a plurality of air inlet ducts extending in different directions away from and in closed communication with said housing and extending transversely of the joists and in communication with the air passages therebetween, a blower in said housing for forcing a heated air stream in contact with said heat exchanger and through said duct and along said air passages, a first return duct at the opposite end of said joists in proximity to a building wall extending transversely of said joists and in communication with the discharge end of the air passages therebetween at the opposite ends from said inlet ducts, a second return duct in communication with said first return duct for returning the air stream to the suction side of said blower, and damper means located between said return ducts for controlling the flow of the air stream to selected areas of the floor and ceiling walls.

2. A system of the class described for heating a building having a horizontal portion which includes, in combination, first and second walls horizontally disposed in parallel spaced relationship, vertical joists arranged in spaced relationship between said walls and forming therewith a plurality of closed air passages extending to opposite exterior walls of the building, a plurality of air inlet ducts extending in different directions in transverse communication with said air passages and opening into a housing which is centrally located relative to and in open communication with one of said walls, a heat exchanger in said housing in closed communication with said ducts, a blower in said housing for forcing a heated air stream through said ducts and in different directions along said air passages to opposite vertical walls of the building, a first return duct at the opposite end of said joists from said inlet ducts and in proximity to said vertical walls and extending transversely of said joists and in communication with the discharge end of the air passages therebetween and a second return duct in communication with said first duct for returning the air stream to the suction side of said blower.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
209,342	Hawley	Oct. 29, 1878
1,770,593	Johnson	July 15, 1930
2,176,586	Goerg	Oct. 17, 1939
2,240,951	Hamjy	May 6, 1941
2,274,736	Parks	Mar. 3, 1942
2,364,220	Johnson	Dec. 5, 1944
2,392,240	Frankel	Jan. 1, 1946
2,422,685	Keck	June 24, 1947
2,465,184	Alderman	Mar. 22, 1949
2,559,869	Gay	July 10, 1951