

1,002,776.

D. STRONG.
FURNACE.
APPLICATION FILED MAR. 6, 1911.

Patented Sept. 5, 1911.

2 SHEETS-SHEET 1.

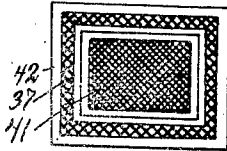


Fig. IX.

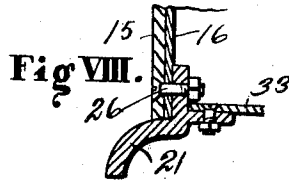


Fig. VIII.

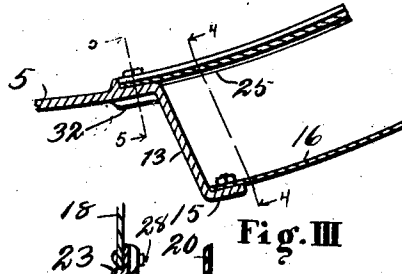


Fig. III.

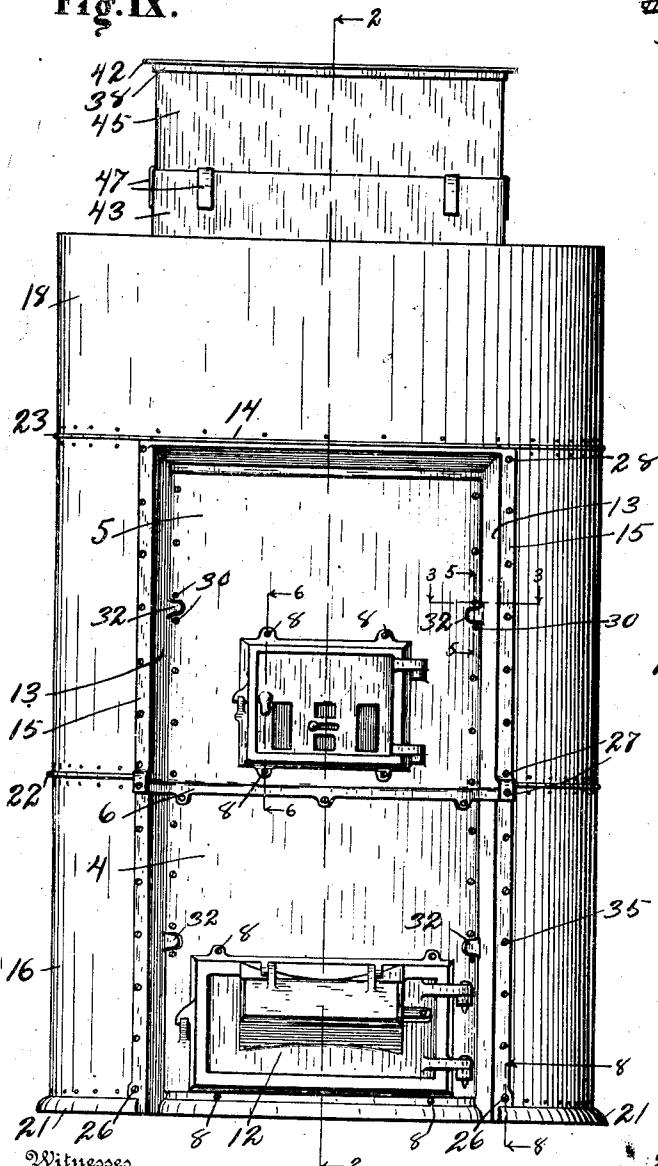


Fig. I.

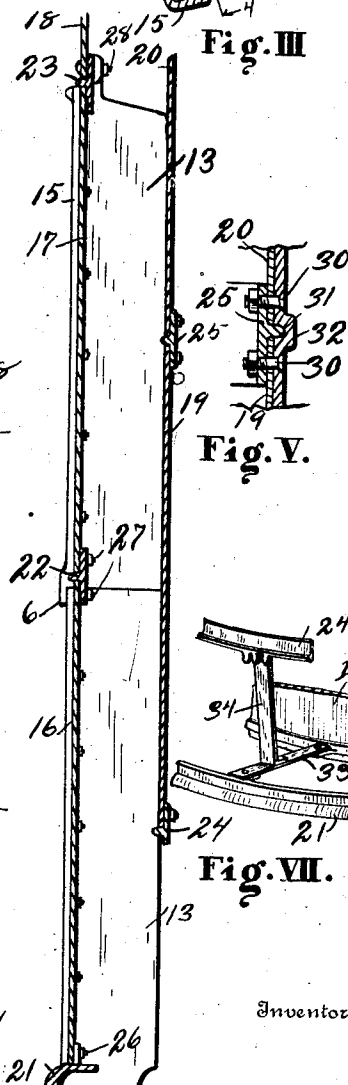


Fig. IV.

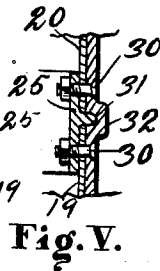


Fig. V.

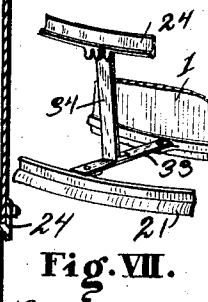


Fig. VII.

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2 SHEETS—SHEET 2.

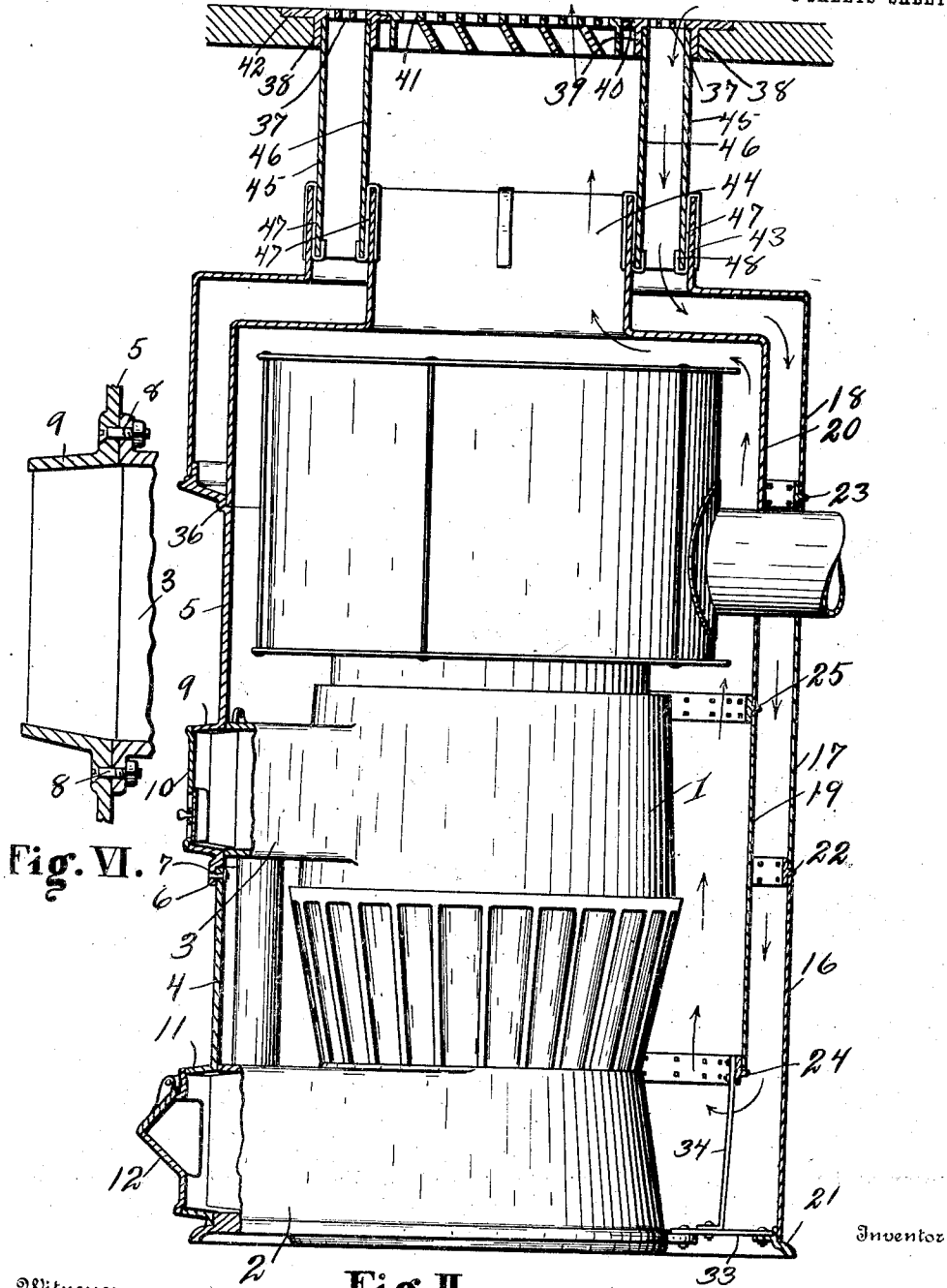


Fig. VI.

Fig. II.

Witnesses
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UNITED STATES PATENT OFFICE.

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1,002,776.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed March 6, 1911. Serial No. 612,631.

To all whom it may concern:

Be it known that I, SAMUEL D. STRONG, a citizen of the United States, residing at Homer, Michigan, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates to improvements in furnaces.

The main objects of this invention are:

10 First, to provide in a furnace, an improved furnace casing. Second, to provide an improved furnace which may be shipped in the knock-down condition and easily and quickly set up and one which may be set up by an unskilled workman.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

20 I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

25 A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a front view of my improved furnace. Fig. II is a vertical central section taken on a line corresponding to line 2—2 of Fig. I, the furnace body being shown in full lines, portions thereof being broken away to show structural details. Fig. III is an enlarged detail horizontal section taken on a line corresponding to line 3—3 of Fig. I. Fig. IV is a detail section taken on a line corresponding to line 4—4 of Fig. III. Fig. V is an enlarged detail section taken on a line corresponding to line 5—5 of Fig. III. Fig. VI is an enlarged detail section taken on a line corresponding to line 6—6 of Fig. I. Fig. VII is an enlarged detail perspective showing the outer and inner bottom casing rings and their connections to the furnace body and to each other. Fig. VIII is a detail section taken on a line corresponding to line 8—8 of Fig. I. Fig. IX is a plan view of my combined cold air grate and hot air register.

50 In the drawings, similar reference characters refer to similar parts throughout the

several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

The furnace body 1 is provided with an ash pit passage 2, and a combustion chamber passage 3. As the structural details of the furnace body form no part of this invention, they are not illustrated or described herein.

The furnace body is surrounded by a hot air chamber casing, and this hot air chamber casing is surrounded by a cold air chamber casing. These casings comprise a front wall, formed of sections 4 and 5, the section 4 being the bottom section and the section 5 the top section. This top section is offset at 6 at its lower end to receive the upper end of the bottom section and is secured thereto by bolts 7. The front wall is secured to the combustion chamber and ash pit passages 2 and 3 by means of bolts 8, as clearly shown in the drawing. The front wall is provided with a flange-like frame 9 for the combustion chamber door 10, and a similar flange-like frame 11 for the ash pit door 12. This front wall has forwardly-projecting flanges 13 at its side edges and a forwardly-projecting flange 14 at its top. The edges of these flanges are turned laterally at 15 for convenience in joining the casing thereto.

80 The outer or cold air casing is formed of wall sections 16, 17 and 18, while the inner casing is formed of wall sections 19 and 20. The outer casing sections are supported by the casing rings 21, 22 and 23 and the front wall, while the inner casing sections are supported by the rings 24 and 25 and the front wall. The casing rings are open at one side to receive the front wall, the bottom ring 21 of the outer casing being secured by the bolts 26 to the laterally-turned edges 15 of the side flanges of the front plate. The casing ring 22 is also secured to these flanges, as by the bolts 27, while the ring 23 is secured to the top flange of the front wall by the bolts 28.

The inner casing rings 24 and 25 are secured to the rear sides of the front wall, as by the bolts 30. These rings are centrally ribbed,—that is, they are of T-iron shape, the better to support the casing section and to provide a finished joint between the wall

sections. The front wall is provided with notches 31 to receive the ribs of the inner casing rings, the wall having bosses 32 to accommodate these notches.

5 The bottom ring 21 is secured to the body 1 by the strap 33, see Fig. II. The bottom ring 24 of the inner casing is supported in an elevated position by the arm 34 mounted on the strap 33. These parts are bolted together for convenience in assembling. The casing sections are arranged on and secured to the rings as indicated. The outer casing sections are secured to the laterally-turned edges of the front wall flanges by means of the bolts or rivets 35. The ordinary form of stove bolts,—that is, bolts having screw heads, as shown, being preferred.

The casing section 18 rests upon and is secured to the top flange 14 of the front wall, see Figs. I and II. The top section 20 of the inner casing rests on the front wall, which is offset at 36 to receive the same; see Fig. II.

Located centrally above the furnace body 25 is a cold air grate 37 having downwardly-projecting concentric flanges 38 and 39 thereon, and a seat 40 for the hot air register 41. The grate 37 is provided with a floor-engaging flange 42 on the outside of the flange 38, as shown. The outer casing section 18 is provided with a conduit coupling member 43, while the top section 20 is provided with a similar conduit coupling member 44. The cold air conduit 45 is adapted 35 to telescope with the grate flange 38 and with the coupling member 43 of the casing section 18. The hot air conduit 46 is adapted to telescope with the grate flange 39 and with the coupling member 44 of the inner casing section 20. The conduits 45 and 46 are held in position by the straps 47, the lower ends 48 of which are folded over the lower edges of the conduits, the straps being arranged between the coupling members on the casing 45 sections and the conduits, and folded over the upper edges of the casing coupling members, as illustrated. Those supporting the hot air conduit are folded inwardly. By thus forming and arranging the parts, they 50 are economically produced and can be readily shipped in the knock-down condition and quickly assembled in the place the furnace is to be used, even by an unskilled workman. By providing the adjustable connections 55 shown for the conduits, they may be adjusted to the depth of the basement or cellar in which the furnace is placed.

In use, the cold air passes through the grate 37 which surrounds the hot air register, as 60 illustrated, down through the cold air chamber under the lower edge of the hot air casing into the hot air chamber and out through the hot air conduit to the hot air

grate. This is found, in practice, to be very effective and to secure a very even heating 65 and complete circulation of air from the room or rooms into which the register delivers.

I have illustrated and described my improvements as I have embodied same in 70 structures for the market. While considerable variations are possible without departing from my invention, I have not attempted to illustrate and describe such variations, as they will no doubt be readily 75 understood by those skilled in the art to which this invention relates.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a furnace, the combination with the 80 furnace body having projecting ash pit and combustion chamber passages, of a front wall having forwardly-projecting side and top flanges, the edges of the flanges being 85 turned laterally, said front wall being formed of top and bottom sections bolted to each other and to said ash pit and combustion chamber passages, the lower edge of the top section being offset to receive the 90 upper edge of the bottom section, said front wall being provided with a flange-like combustion chamber and ash pit door frames; inner and outer casing rings having openings therein to receive said front wall, the 95 outer casing rings being secured to the laterally-turned edges of the said front wall flanges, the inner casing rings being secured to the rear side of said front wall, the bottom outer casing ring being connected to 100 the said furnace body by straps, the bottom inner casing ring being supported in an elevated position by arms mounted on said straps; and inner and outer casing sections, the outer casing sections being secured to 105 said outer casing rings and to said laterally turned edges of said front wall flanges, the inner casing sections being secured to the inner casing rings and to the rear sides of said front wall. 110

2. In a furnace, the combination with the 110 furnace body having projecting ash pit and combustion chamber passages, of a front wall having forwardly-projecting side and top flanges, the edges of the flanges being 115 turned laterally, said front wall being provided with a flange-like combustion chamber and ash pit door frames; inner and outer casing rings having openings therein to receive said front wall, the outer casing 120 rings being secured to the laterally-turned edges of the said front wall flanges, the inner casing rings being secured to the rear side of said front wall, the bottom outer casing ring being connected to the said fur- 125 nace body by straps, the bottom inner casing

ring being supported in an elevated position by arms mounted on said straps; and inner and outer casing sections, the outer casing section being secured to said outer casing rings and to said laterally-turned edges of said front wall flanges; the inner casing section being secured to the inner casing rings and to the rear sides of said front wall.

3. In a furnace, the combination with a furnace body, having projecting ash pit and combustion chamber passages, of a front wall having forwardly-projecting side and top flanges, the edges of the flanges being turned laterally, said front wall being formed of top and bottom sections bolted to each other and to said ash pit and combustion chamber passages, the lower edge of the top section being offset to receive the upper edge of the bottom section, said front wall being provided with a flange-like combustion chamber and ash pit door frames; inner and outer casing rings having openings therein to receive said front wall, the outer casing rings being secured to the laterally-turned edges of the said front wall flanges, the inner casing rings being secured to the rear side of said front wall; and inner and outer casing sections, the outer casing section being secured to said outer casing rings and to said laterally turned edges of said front wall flanges, the inner casing section being secured to the inner casing rings and to the rear sides of said front wall.

4. In a furnace, the combination with the furnace body having projecting ash pit and combustion chamber passages, of a front wall having forwardly-projecting side and top flanges, the edges of the flanges being turned laterally, said front wall being provided with a flange-like combustion chamber and ash pit door frames; inner and outer casing rings having openings therein to receive said front wall, the outer casing rings being secured to the laterally turned edges of the said front wall flanges, the inner casing rings being secured to the rear side of said front wall; and inner outer casing sections, the outer casing section being secured to said outer casing rings and to said laterally-turned edges of said front wall flanges, the inner casing section being secured to the inner casing rings and to the rear sides of said front wall.

5. In a furnace, the combination with the furnace body, of a front wall secured to said furnace body, said front wall being provided with forwardly-projecting flanges at its edges and with combustion chamber and ash pit doors; inner and outer casing rings having openings therein to receive said front wall secured thereto, the outer casing rings being secured to the said front wall flanges,

the bottom outer casing ring being connected to the said furnace body by straps, the bottom inner casing ring being supported in an elevated position by arms mounted on said straps; and inner and outer casing sections, the outer casing section being secured to said outer casing rings and to said front wall flanges, the inner casing section being secured to the inner casing rings and to said front wall.

6. In a furnace, the combination with the furnace body, of a front wall secured to said furnace body, said front wall being provided with forwardly-projecting flanges at its edges and with combustion chamber and ash pit doors; inner and outer casing rings having openings therein to receive said front wall secured thereto, the outer casing rings being secured to the said front wall flanges; and inner and outer casing sections, the outer casing section being secured to said outer casing rings and to said front wall flanges, the inner casing section being secured to the inner casing rings and to said front wall.

7. In a furnace, the combination with the furnace body, of a front wall secured to said furnace body, said front wall being provided with forwardly projecting flanges at its edges and top and with combustion and ash pit doors; and inner and outer casing members, the outer casing members being secured to said front wall flanges and the inner casing members being secured to said front wall, whereby they are supported in a spaced relation to provide an air chamber between them, the lower edge of one of the outer casing members being secured to said top flange.

8. In a furnace, the combination with the furnace body having projecting ash-pit and combustion chamber passages, of a front wall having forwardly-projecting side and top flanges, the edges of the flanges being turned laterally, said front wall being formed of top and bottom sections bolted to each other and to said ash pit and combustion chamber passages, the lower edge of the top section being offset to receive the upper edge of the bottom section; and inner and outer casing sections, the outer casing sections being secured to said laterally-turned edges of said front wall flanges, the inner casing sections being secured to the rear sides of said front wall, whereby they are supported in a spaced relation to provide an air chamber between them, the lower edge of one of the outer casing members being secured to said top flange.

9. In a furnace, the combination with the furnace body having projecting ash-pit and combustion chamber passages, of a front wall having forwardly-projecting side and

top flanges; the edges of the flanges being turned laterally; and inner and outer casing sections, the outer casing sections being secured to said laterally-turned edges of said front wall flanges, the inner casing sections being secured to the rear sides of said front wall, whereby they are supported in a spaced relation to provide an air chamber between them, the lower edge of one of the outer

casing members being secured to said top 10 flange.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

SAMUEL D. STRONG. [L. S.]

Witnesses:

EARL J. FELLOWS,
B. D. GARDNER.