

No. 751,389.

PATENTED FEB. 2, 1904.

F. FIEBEGER.

MEANS FOR SECURING AIR BLAST DEVICES TO FURNACES.

APPLICATION FILED SEPT. 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

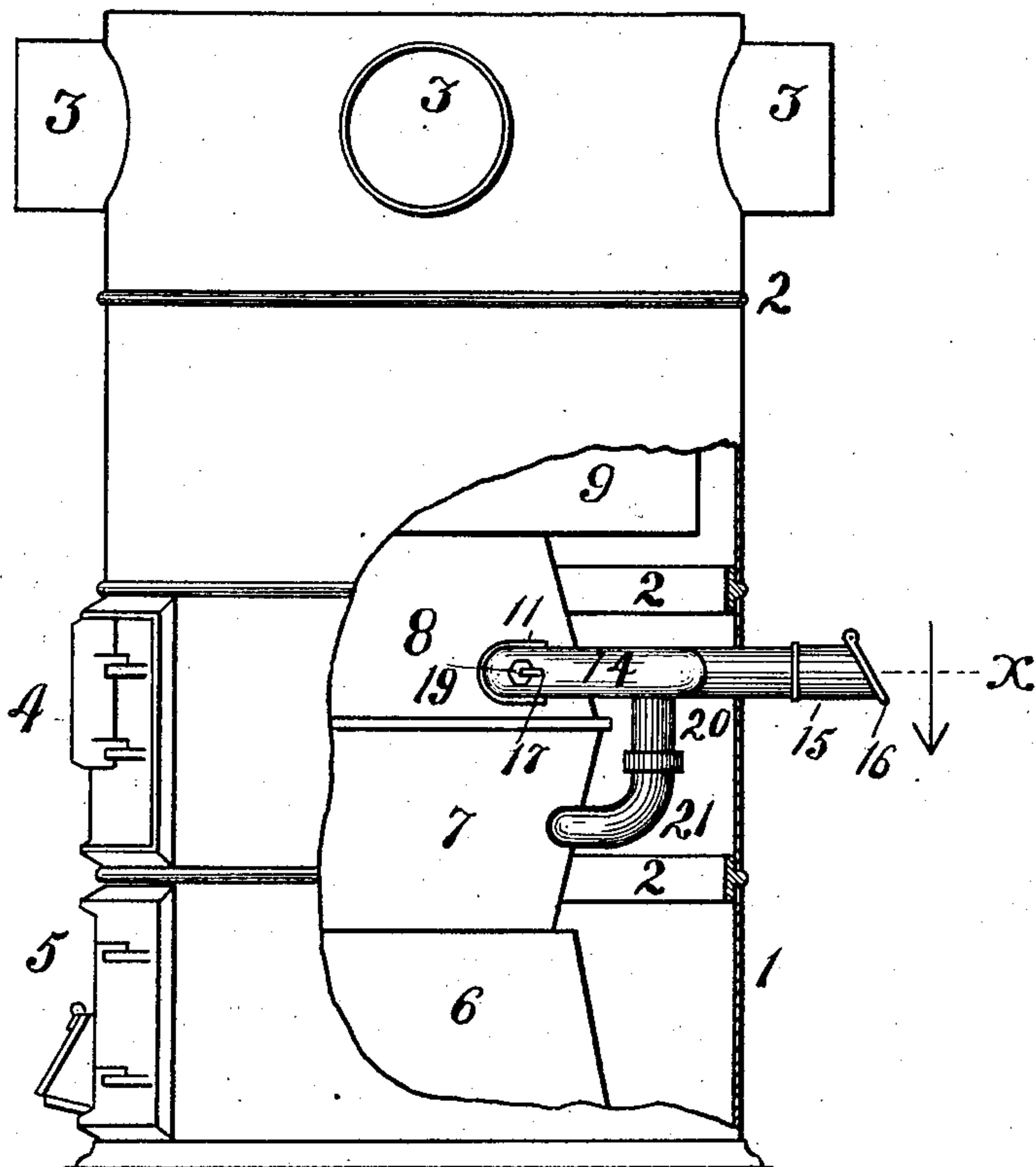


Fig. 1.

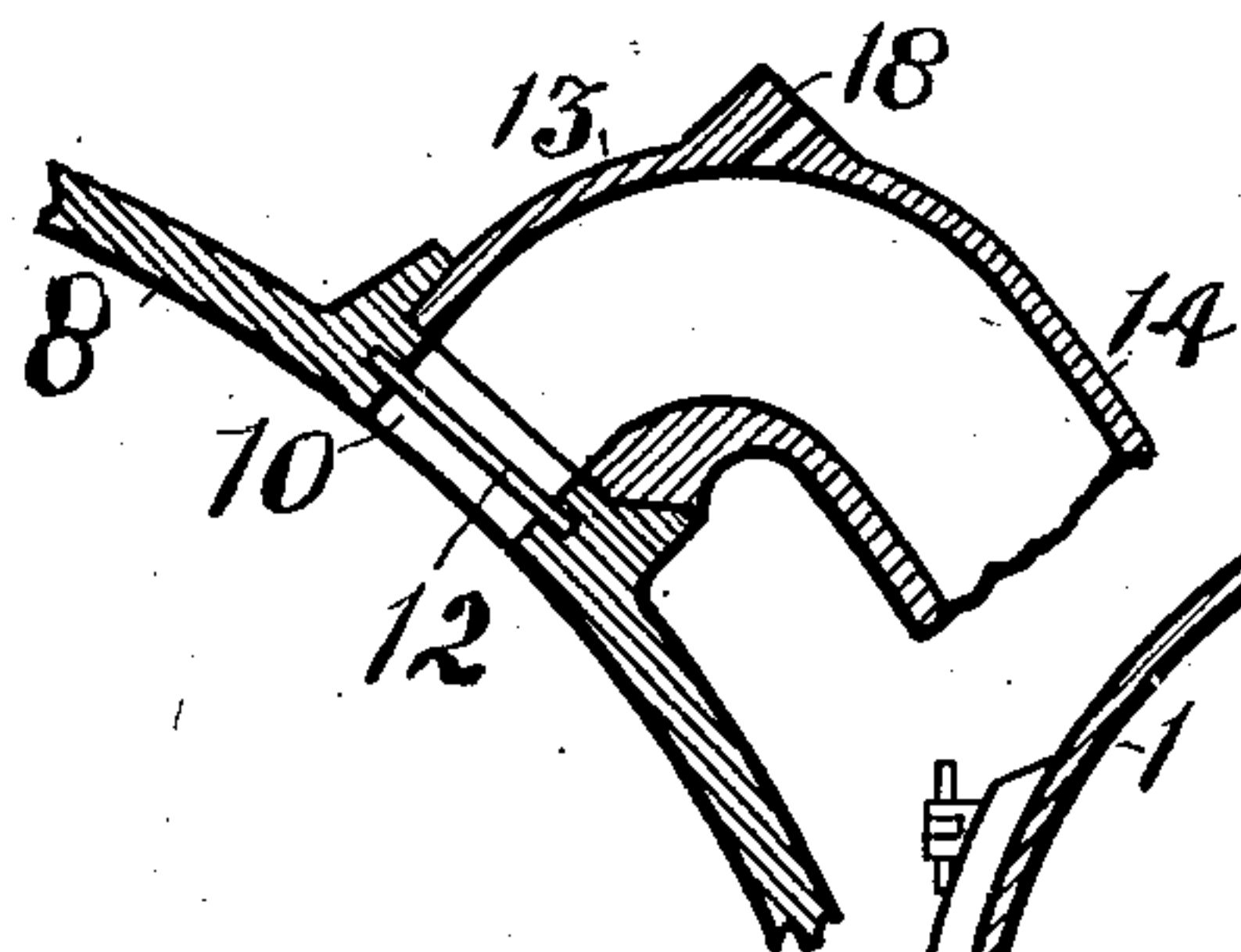


Fig. 3.

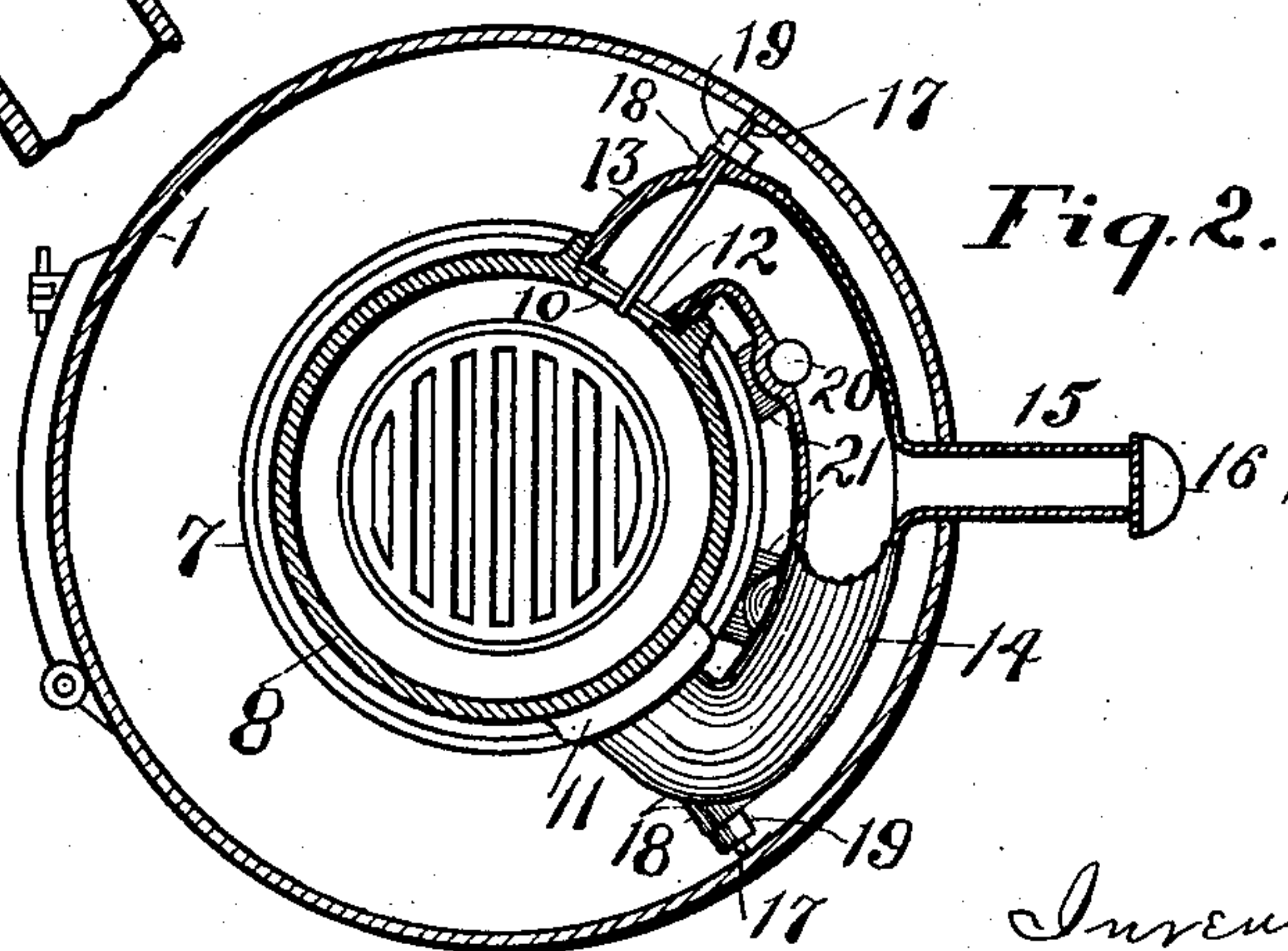


Fig. 2.

Witnesses.  
Walter Bourman  
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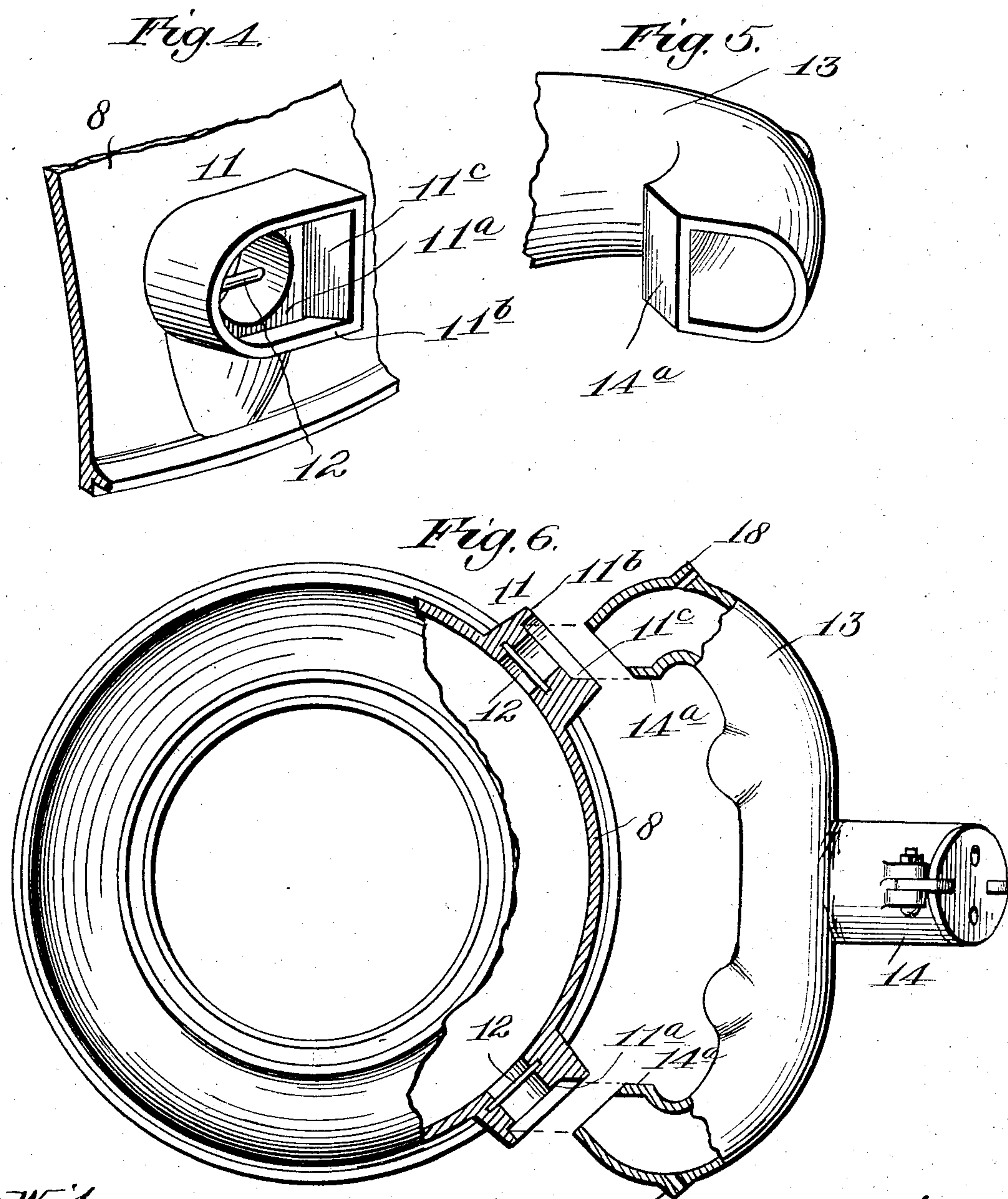
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2 SHEETS—SHEET 2.



Witnesses.  
Robert Everett,  
James L. Norris, Jr.

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*Frank Fieberger*  
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*Att'y.*



# UNITED STATES PATENT OFFICE.

FRANK FIEBEGER, OF AKRON, OHIO.

## MEANS FOR SECURING AIR-BLAST DEVICES TO FURNACES.

SPECIFICATION forming part of Letters Patent No. 751,389, dated February 2, 1904.

Application filed September 3, 1903. Serial No. 171,715. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK FIEBEGER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have  
5 invented a certain new and useful Improvement in Means for Securing Air-Blast Devices to Furnaces, of which the following is a complete specification.

My invention has a general relation to furnaces in which currents of air are introduced into the combustion-chamber thereof with a view of effecting the highest possible perfection obtainable in the combustion of the fuel, and it relates especially to the means  
15 whereby the ducts by which the currents of air are introduced into the combustion-chamber are retained in place.

The object of my invention is to provide means whereby the pipe or duct through  
20 which currents of air are conducted to the burning fuel in the combustion-chamber may be readily attached and removed and when attached will afford such means for their retention as will render impossible their unintentional displacement or removal.

Another object is to render the joint between the combustion-chamber and the air-conveying duct as perfect as possible in order to prevent the escape of the gases, smoke, and  
30 dust incident to the combustion of fuel into the air-space surrounding the combustion-chamber.

In the drawings, in which similar reference-numerals indicate like parts in the different  
35 figures, Figure 1 is a side elevation of a furnace with a portion of the casing broken away to better illustrate the position and operation of my device. Fig. 2 is a section of Fig. 1 at the line X, and Fig. 3 is an enlarged sectioned view of the joint between the combustion-chamber and the air-duct. Fig. 4 is an  
40 elevation of a portion of the furnace-dome, showing one of the bosses for one of the branches of the air-duct. Fig. 5 is a similar view of one end of one of the branches of the air-duct; and Fig. 6 is a plan, partly in section, showing the relation of the branches of the air-duct to the bosses carried by the dome,

the branches of the air-duct being slightly removed from the bosses of the dome. 50

In the drawings, 1 represents the outer casing of the furnace, which is made up of a series of rings of thin sheet metal united by bands 2. From the upper ring of this casing projects pipes 3, by which the heated air is  
55 conveyed to the rooms to be heated by the furnace. In the front portion of the casing are doors 4 and 5, by which access is had to the interior for the purpose of feeding in fuel and removing ashes, respectively. Centrally within this casing 1 is an ash-pit 6, on  
60 which rests a fire-pot 7, the upper portion of which is covered by a dome 8. Upon this dome 8 is the radiator 9. The fire-pot 7, dome 8, and radiator 9 form the combustion-chamber of the furnace. At substantially equal distant points in the rear of the dome 8 the latter is provided with a pair of bosses  
65 11, each of which is formed with an opening 10, communicating with the interior of the dome. The opening 10 is surrounded by a seat 11<sup>a</sup>, the latter being surrounded by a flange 11<sup>b</sup>. The inner wall of said flange 11<sup>b</sup> has its inner face extending at an angle, as at 11<sup>c</sup>, with  
70 respect to the seat 11<sup>a</sup>. The arrangement of the bosses with respect to each other is such that the inner walls of the flanges have that portion of their inner faces adjacent to one another parallel, or substantially so, and which, as shown, extends at an angle, as at 11<sup>c</sup>, with  
80 respect to the seat 11<sup>a</sup>. The dome 8 is usually made of cast metal, and when casting it a bar 12 is placed across the opening 10, and the metal surrounds and retains the bar 12 in position. The bosses 11 are adapted to receive  
85 the inturned ends of branches 13 of an air-duct 14, made in substantially the shape of an arc of a circle substantially concentric with the center of the fire-pot. The inturned ends of the branches 13 of the air-duct 14 extend at  
90 such an angle so that they will enter simultaneously in the bosses 11 and when inserted in the bosses 11 will be surrounded by the flanges 11<sup>b</sup> and bear against the seats 11<sup>a</sup>, and the openings of the branches 13 will register with  
95 the openings 10. A portion of the inner side



of the inturned ends of the branches 13 of the duct 14 extends at an angle with respect to the edges of the said ends, as at 14<sup>a</sup>, and by such an arrangement the portions 14<sup>a</sup> of the inturned ends of the branches 13 will extend parallel or substantially parallel to one another. The portions 14<sup>a</sup> of the inturned ends of the branches 13 correspond to the inner faces 11<sup>c</sup> of the inner walls of the flanges 11<sup>b</sup>, and said portions 14<sup>a</sup> are adapted to rest against the inner faces 11<sup>c</sup> of the flanges 11<sup>b</sup> when the ends of the branches 13 of the conduit 14 enter the bosses 11. By such a construction the ends of the branches will readily enter the bosses, and an efficient joint between the conduit and the dome will be obtained. Furthermore, by such an arrangement when it is desired the branches 13 can be readily removed from the bosses 11. From the central outside portion of this air-duct 14 extends inlet-pipe 15, closed on its outer end by a damper 16. Substantially centrally within the inturned ends of the branches 13 of the air-duct 14 is placed a hooked bolt 17, the hooked end of which is arranged to engage the bolt 12, which extends across the opening 10 in the dome 8. Where the bolt 17 issues from the outer shell of the air-duct 14 there is provided a flattened seat 18, on which is designed to rest a nut 19, whose rotation on the bolt 17 will draw inward the ends 13 on the air-duct 14 and firmly hold them in position. From various positions of the duct 14 depend pipes 20, integral with the duct 14, which are arranged to connect with air-inlets 21, projecting from the sides of the fire-pot 7, so that air entering the pipe 15 will be distributed into the body of the fuel, in the fire-pot 7 by means of the pipe 20 and 21, as well as over the surface of the burning fuel, by means of the inturned ends 13 of the duct 14. In placing the bolts 17 in place they are customarily placed in position from the interior of the fire-pot while the furnace is being erected. By this construction I obtain a neat reliable means for holding the air-duct 14 in proper place which is capable of almost instantaneous removal. The removal of the nut 19 from the immediate vicinity of the hot fire-pot renders its turning on the bolt 17 easy of accomplishment, as it is not near enough to be burned by the fire.

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

1. A furnace-dome provided with a pair of bosses having openings communicating with the interior thereof, said bosses further provided with seats surrounding the openings, flanges surrounding the seats and the inner faces of the inner walls of the flanges substantially parallel with each other, in combination with an air-duct provided with a pair of branches having inturned ends adapted to en-

ter said bosses, said inturned ends of said branches having portions thereof extending substantially parallel to one another, said portions adapted to engage the inner faces of the inner walls of said flanges, and means for securing the ends of the branches in the bosses.

2. A furnace-dome provided with a pair of bosses having openings communicating with the interior thereof, said bosses further provided with seats surrounding the openings, flanges surrounding the seats and the inner faces of the inner walls of the flanges substantially parallel with each other, in combination with an air-duct provided with a pair of branches having inturned ends adapted to enter said bosses, said inturned ends of said branches having portions thereof extending substantially parallel to one another, said portions adapted to engage the inner faces of the inner walls of said flanges, bolts extending across the opening of the bosses and having their ends embedded in the wall surrounding the opening, and means engaging with the bolts for securing the ends of the branches in the bosses.

3. A furnace-dome provided with a pair of bosses having openings communicating with the interior thereof, said bosses further provided with seats surrounding the openings, flanges surrounding the seats and the inner faces of the inner walls of the flanges extending substantially parallel with each other and at an angle with respect to the seats, in combination with an air-duct provided with a pair of branches having inturned ends extending at an angle with respect to the other portions of said branches, said inturned ends adapted to enter said bosses and having portions thereof extending substantially parallel to one another and at an angle with respect to the edges of said ends, said portions adapted to engage that portion of the inner faces of the flanges which extends at an angle with respect to the seats of the flanges, and means for securing the inturned ends of the branches in the bosses.

4. In combination, a boss having an opening, a seat surrounding said opening and a flange surrounding said seat, the inner face of the inner wall of said flange extending at an angle with respect to said seat, a pipe having its end inturned at an angle with respect to the remaining portion of the pipe and adapted to be seated in said boss, said inturned end of said pipe having a portion thereof extending at an angle with respect to the edge of the said pipe and adapted to engage the angular inner face of said flange, and means for securing the pipe to the boss.

5. In combination, a boss having an opening, a seat surrounding said opening and a flange surrounding said seat, the inner face of the inner wall of said flange extending at an angle with respect to said seat, a pipe having



its end intumed at an angle with respect to the remaining portion of the pipe and adapted to be seated in said boss, said intumed end of said pipe having a portion thereof extending at an angle with respect to the said pipe and adapted to engage the angular inner face of said flange, a bolt extending across the opening in the boss and having its ends embedded in the wall of the opening, and means engag-

ing the bolt for removably securing the pipe to the boss.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

FRANK FIEBEGER.

In presence of—

C. E. HUMPHREY,  
BESSIE M. CROOK.