W. MILLER.

FURNACE CASING TOP.

APPLICATION FILED MAY 4, 1910.

985,619. Patented Feb. 28, 1911.

Fig. 1.

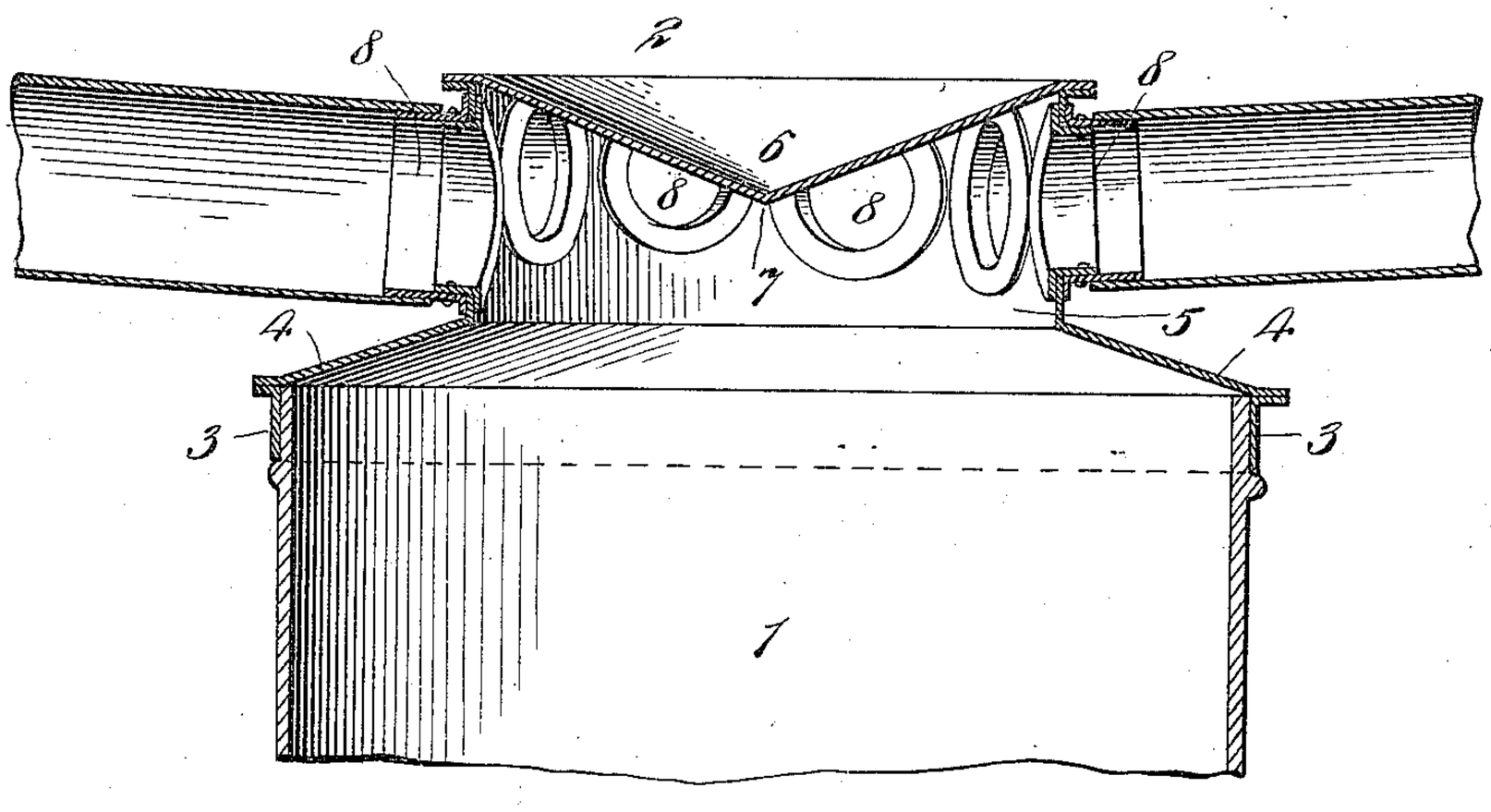
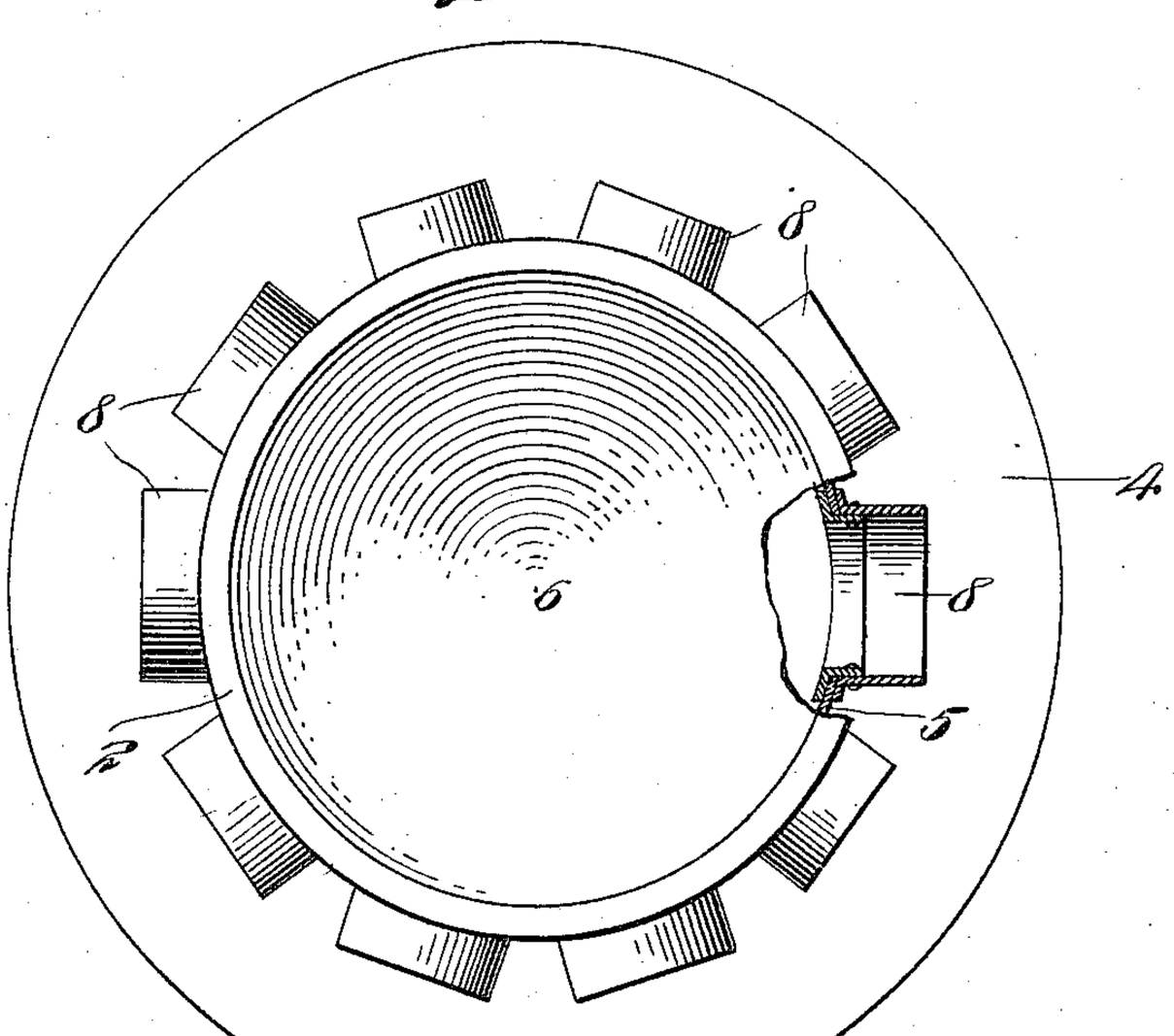



Fig 2.

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# UNITED STATES PATENT OFFICE.

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## FURNACE-CASING TOP.

985,619. Specification of Letters Patent. **Patented Feb. 28, 1911.**

Application filed May 4, 1910. Serial No. 559,302.

*To all whom it may concern:*

Be it known that I, WILLIAM MILLER, a citizen of the United States, and resident of the borough of Brooklyn, in the county of Kings and city and State of New York, have invented certain new and useful Improvements in Furnace-Casing Tops, of which the following is a specification.

In the ordinary furnace casing for hot-air furnaces used for heating dwellings and the like, the flues which receive the heated air from the furnace and conduct it to the various rooms and floors to be heated enter the casing near the outer margin thereof. The casing tops as ordinarily constructed are either flat through the entire area or have a slightly upwardly and inwardly inclined wall through which the flues extend, said wall extending inwardly from the outer margin of the casing top. In both of these arrangements it is found that some of the flues receive air of a higher temperature than others, owing to the differences in temperature of the various parts of the furnace over which the air travels before it reaches the top of the furnace. This variable heating of the air accounts for the fact that in air heating furnaces for household use some flues seem to "draw" better than others and deliver air at a higher temperature than other flues. This is manifest from the fact that in the ordinary arrangement of the flues the air travels straight up the sides of the furnace casing top and directly into the nearest flue. In furnaces with flues arranged as has heretofore been the practice it is practically impossible to have the air in all the flues of a substantially uniform temperature for the reason that the various parts of the furnace over which the air travels are not of the same temperature.

It is the main object of this invention to so construct the furnace casing top that the air will be brought together in an equalizing chamber in order to bring it all to a uniform temperature before it passes to the flues.

Another object of the invention is to so connect all of the flues to a central equalizing chamber that each flue will take its proper proportion of air after the temperature of the air has been equalized by a co-mingling of the air in the equalizing chamber.

In the drawings Figure 1 is a vertical sectional view of the casing top and a portion of the furnace casing; and Fig. 2 is a plan view thereof, a portion of the casing being shown in horizontal sectional view.

Referring to the various parts by numerals 1 designates the upper end of the furnace casing, which, of course, may be of any suitable construction. To the upper end of this casing is fitted the casing top 2. This top consists of an annular depending flange 3 adapted to fit the upper end of the casing top; the upwardly and inwardly inclined wall 4 which extends inwardly and upwardly from the upper edge of the flange 3. This upwardly and inwardly inclined deflector wall 4 may be of any desired length, and to its upper edge is connected the upwardly extending vertical flange 5 which forms the side wall of a dome or co-mingling chamber. This chamber may be of any suitable diameter, and the size thereof will be properly proportioned to the capacity of the furnace and the number of flues to be supplied with air. The upper end of this chamber or dome portion is closed by a top plate 6, said top plate being downwardly and inwardly inclined on its lower surface to a central point 7, said under surface being in the nature of an inverted cone. This plate is shown as being made of sheet metal dished on its upper surface, but, of course, it may be constructed in any suitable manner and of any suitable material.

Entering the dome part or co-mingling chamber through the vertical wall thereof are the flue connecting pipes 8, said pipes entering said wall preferably near its upper edge in order that there shall be no appreciable space between the upper sides of said flue connections and the under surface of the distributing wall. The object of this arrangement is that there shall be no dead air space in the co-mingling chamber above the flues. It is manifest that as many flues as may be desired may be connected to the co-mingling chamber, due regard being had, of course, to the air heating capacity of the furnace.

In operation the heated air rises in the casing, strikes the deflector wall 4, and by it is directed into the co-mingling chamber. In this chamber the currents of air of different temperatures are co-mingled and the temperatures thereof equalized. The air then contacts with the distributing surface of the top and is by it directed outwardly

into the flues. It is manifest that from this construction each flue will receive its proper proportion of the air in the co-mingling chamber, and that all of the air delivered to the flues will be of a uniform temperature. The flues are all brought into the co-mingling chamber slightly downwardly inclined so that the air will naturally rise slightly in passing out through said flues.

I prefer to arrange the flues equal distances apart around the dome, but, of course, this is not at all necessary, and they may be arranged in any convenient position. The height of the wall 5 of the dome part is preferably equal to the diameter of the largest flue leading from the dome. The smaller flues are arranged near the upper edge of the said vertical wall as heretofore described.

I have found in actual practice that air heating furnaces having a casing top of the ordinary construction and operating to supply the flues with air of varying temperatures have been entirely cured of this defect by applying thereto my peculiar form of top, and that after the application of my top to said furnaces the air supplied to the flues has been of uniform temperature, and that the flues have each received a uniform supply.

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

1. A furnace casing top formed with means for securing it to the upper edge of a furnace casing and provided with an elevated central contracted co-mingling chamber having a vertical side wall and a top downwardly and inwardly inclined on its inner or lower surface to form a distributing wall and a series of flue connections entering said co-mingling chamber through the vertical wall thereof, and an upwardly and inwardly inclined deflector wall extending from the upper edge of the furnace casing to the lower edge of the said co-mingling chamber.

2. A furnace casing top formed with means for securing it to the upper edge of a furnace casing and provided with an elevated central contracted co-mingling chamber having a vertical side wall and a top downwardly and inwardly inclined on its inner or lower surface to form a distributing wall, and a series of flue connections entering said co-mingling chamber near the upper edge of the vertical side wall of said chamber close to the outer margin of the said distributing wall, and an upwardly and inwardly inclined deflector wall extending from the upper edge of the furnace casing to the lower edge of the said co-mingling chamber.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 28th day of April 1910.

WILLIAM MILLER

Witnesses:
WM. R. DAVIS,
F. R. MILLER.