

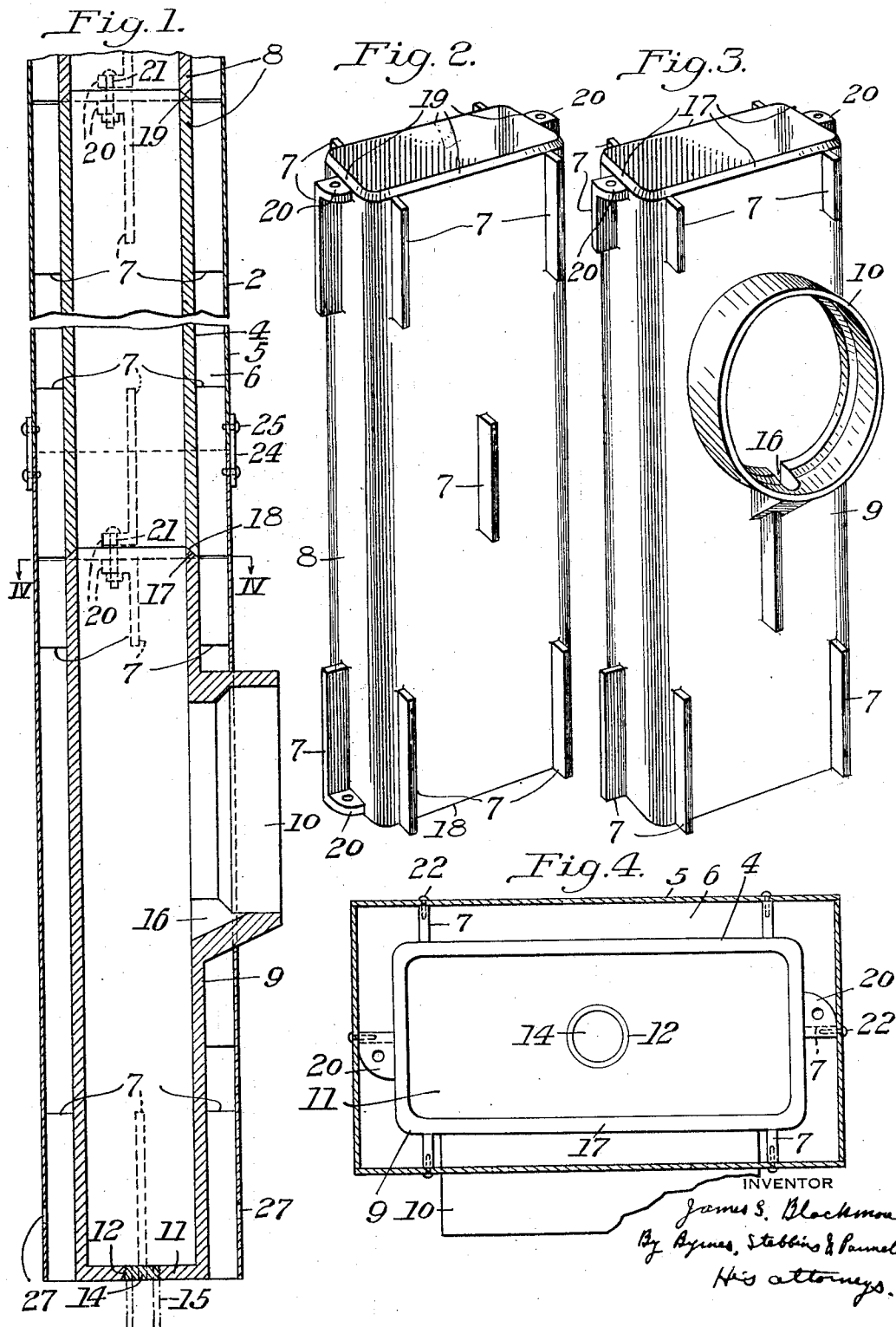
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VENT PIPE

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VENT PIPE

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My invention relates to vent pipes and more particularly to vent pipes for products of combustion in residential, store and office buildings.

Where temporary heaters burning a fuel are installed in residential, office and/or store rooms, the problem of disposing of products of combustion is present. In many cases where gas and high grade fuel oils are burned the products of combustion are liberated directly into the room. The presence of such products of combustion pollutes the air by liberating quantities of smoke, carbon monoxide, carbon dioxide and water. The presence of the water increases the humidity of the room considerably. It is an established fact that persons remaining in such an atmosphere for considerable periods of time suffer some physical discomfiture.

Where the products of combustion are led away by a vent pipe or chimney, the exposed pipe or chimney is often unsightly and inconvenient in that its presence renders the zone through which it extends unsuitable for other purposes, such as shelving, movement of persons, and the like.

Where the vent pipe extends into a partition wall, fire regulations require that the vent pipe be surrounded by a masonry wall. If the partition wall is in a completed building, the remodeling of the building, to provide a masonry or ceramic chimney flue, which must in most cases extend through to the basement of the building for its own support, is exceedingly expensive. Also, the dimensions of such flues or chimneys are generally in excess of the thicknesses of partition walls, so that a chimney placed in a partition wall projects from one or both sides thereof. For small heaters, such as gas and oil burners, the temperature and volume of the products of combustion are not so great as to require a standard sized chimney. However, the adjacent frame timbers of the building must be separated from the passageway through which the products of combustion move by a body of insulating material.

I provide a vent pipe for use in partition walls in which an inner sectional metallic column is surrounded by an external metallic

column so that a heat insulating body of air separates the two columns. The dimensions of the external casing are such that it may be inserted in a standard partition wall without projecting beyond the faces of the wall. My vent pipe can be made with a width of less than four inches, which corresponds to the width of standard studding, and, at the same time, provide a column of insulating air between the inner and outer vent column, which air column is thick enough to maintain the outer column below a temperature which might be dangerous to surrounding timbers and the like. Means are provided for insuring a uniform spacing between the inner and outer columns.

To prevent the water of condensation existing in the vent pipe from following down a pipe connected at a flue opening in the vent, after a flame has been extinguished or materially reduced, I provide drainage means in the flue opening for the vent pipe and I also provide a chamber for collecting the water of condensation. If desired, means may be provided for discharging the condensed water from the vent pipe. In other cases the water of condensation remains in the vent pipe and is later revaporized upon a subsequent heating of the vent pipe.

The accompanying drawing illustrates the present preferred embodiment of the invention, in which

Figure 1 is a broken vertical sectional view of a portion of a vent pipe embodying my invention,

Figure 2 is a perspective view of one of the sections constituting the inner column,

Figure 3 is a similar view of a section having a flue opening for the attachment of a pipe, and

Figure 4 is a horizontal sectional view of the vent pipe taken substantially along the section line of Figure 1.

Referring to the drawing, a vent pipe 2 embodying my invention comprises an internal column 4 constituting a passageway for products of combustion and an external column 5 which is spaced from the internal column 4 a sufficient distance to provide a heat insulating column 6 of air between the columns 4

and 5. The columns 4 and 5 are each constituted by a plurality of metallic sections placed end to end. Spacing blocks 7 are carried by one of the columns, preferably the inner column, for separating the columns 4 and 5, although it is to be understood that the spacing blocks need not be integral with either column if desired.

The inner column 4 is constituted by a plurality of sections 8 of substantially uniform shape and size and a section 9 having a flue opening or thimble 10 for the connection of a pipe leading to a burner. Where the size of the connected burner makes it possible, the section 9 is placed at the bottom of the column 4. The weight of the vent pipe is such that it may rest upon floor joists without the necessity of continuing the column downwardly to the bottom of the building for its own support, as is necessary in a chimney of masonry structure.

The bottom of the section 9 is closed by an end wall 11 in which a threaded opening 12 is formed. The opening 12 may be closed by a plug 14 or the opening may be left open if desired. As products of combustion, particularly those resulting from the burning of gas, contain considerable quantities of water vapor, there is a considerable amount of water of condensation when the vent pipe cools either by extinguishing the burner or materially reducing the flame. Some of the water of condensation collects along the walls of the vent pipe and tends to drip downwardly along the walls, while some of the water of condensation settles directly to the bottom of the vent pipe. Unless provision is made for caring for the water of condensation, it tends to flow out at the bottom of the vent pipe and discolor adjacent objects such as floors and partition walls. By closing the end of the section 9, such water of condensation is trapped and remains in the section until it is subsequently reheated when the water re-vaporizes and escapes through the vent pipe. If the opening 12 is left open, it may be connected by a drain pipe 15 to a waste pipe so that the water of condensation passes directly out of the pipe. In neither case, however, does the water of condensation leak out of the vent pipe over adjacent building structures.

The water of condensation dripping down the walls of the vent pipe tends to collect around the flue opening 10 and, unless provision is made for preventing it, the water falls at the connected pipe down into the burner. For preventing movement of water along the connected pipe, I provide the flue opening 10 with a drainage passageway 16 in which the water may collect and flow back into the section 9.

The upper end of the section 9 is provided with a tapered or chamfered surface 17 which cooperates with a complementary sloping edge 18 on one of the sections 8. The oppo-

site end of each section 8 is provided with a tapering surface 19, similar to the surface 17 on the section 9. Accordingly, when the sections 8 and 9 are assembled in end to end relation, the complementary edges seat in each other and prevent accidental displacement of the sections. For further clamping the sections, certain of the spacing blocks 7 are provided with perforated ears 20, preferably disposed at the ends of the flue, through which clamping bolts 21 extend. The sections 8 and 9 are made of thin metal, preferably by a casting operation.

The sections 5 are made up of sections of thin sheets of metal, either cast or stamped, which are secured to certain of the spacing blocks 7 by screws 22 extending into the ends of the blocks 7, although it is to be understood that other securing means may be used within the spirit of the invention and scope of the appended claims. The sections comprising the column 5 may be slipped over the sections 8 as units or they may be assembled around the column 4 as it is built up. By reason of the flue opening 10 in the section 9, the portion of the column 5, surrounding it, must be assembled in situ. The sections of the column 5 are connected by plates 24, through which securing means 25, such as bolts, extend. The lower portion of the column 5 is provided with openings 27 through which air may pass to and from the insulating space between the inner and outer columns 4 and 5, respectively.

A vent pipe embodying my invention may be made with an overall dimension of less than four inches, which is the standard thickness of partition studding and at the same time provide an air column of at least half an inch between all portions of the inner and outer columns. It is to be understood, however, that the foregoing dimensions are given by way of illustration and are not limitations of the invention. The presence of the air column between the inner and outer metallic columns provides sufficient heat insulation to insure that the outer column is maintained below a temperature to ignite abutting framing timbers and the like. The vent pipe is insertible into a standard building partition without projecting beyond the surfaces thereof. This construction eliminates bulky masonry and ceramic structures such as constitute the chimneys heretofore used in connection with burners connected to vent pipes.

While I have shown and described the present preferred embodiment of the invention, it is to be understood that it may be otherwise embodied within the spirit of the invention and the scope of the appended claims.

I claim as my invention:

1. A metallic vent section having a flue opening therein said opening being restricted by an inwardly projecting flange extend-

ing approximately entirely around the opening, and a passageway formed in a wall of said section adjacent said flue opening and extending through said inwardly projecting
5 flange for draining accumulations of liquid from said opening.

2. A vent structure comprising an internal column of metallic sections, adjacent ends of said sections each bearing a combined spacer
10 and connection, means for securing said connections together, and an external column surrounding the internal column and maintained in spaced relation with respect thereto by said spacers.

15 In testimony whereof I have hereunto set my hand.

JAMES S. BLACKMORE.

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