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CHIMNEY INSULATION

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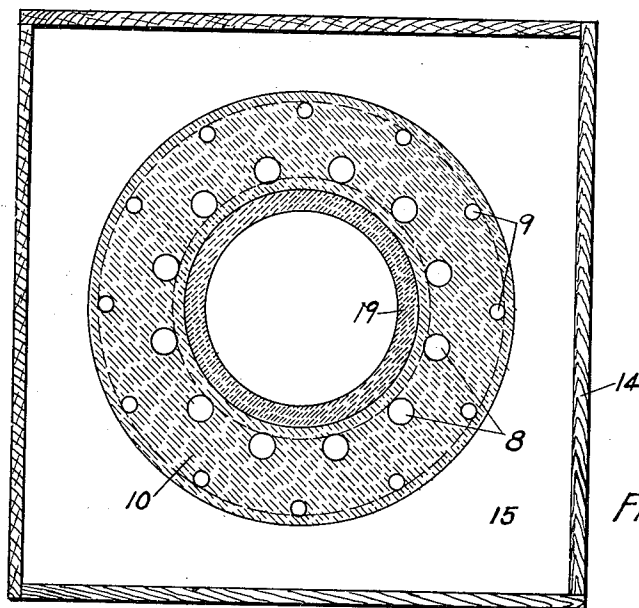


FIG. 1

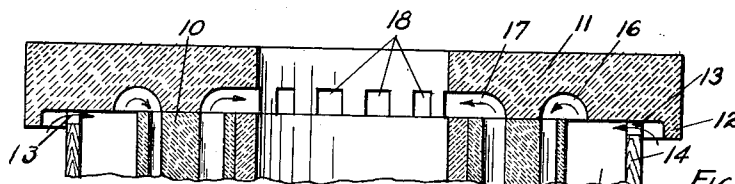


FIG. 2

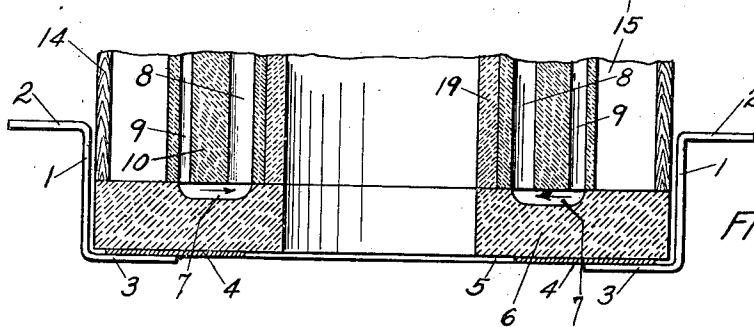


FIG. 3

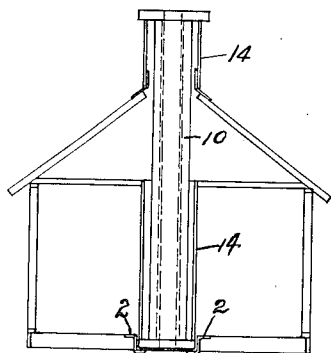


FIG. 4

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CHIMNEY INSULATION

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6 Claims. (Cl. 72-94)

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My present invention relates to chimney construction and more particularly to the prevention of heat transfer from the interior of the chimney to any surrounding structure. Among the objects of this invention are the provision of means for the easy fabrication of chimneys of the type indicated; the provision of means for the introduction of outside cold air through the chimney wall for the purpose of cooling same; the provision of a structure which can be easily, rapidly, and accurately built up into a completed structure; and such further objects, advantages, and capabilities as will hereafter appear and as are inherent in the construction disclosed herein. My invention further resides in the combination, construction, and arrangement of parts illustrated in the accompanying drawings and, while I have shown therein what is now regarded as the preferred embodiment of this invention, I desire the same to be understood as illustrative only and not to be interpreted in a limited sense.

In the drawings annexed hereto and forming a part hereof,

Fig. 1 represents a transverse section through a chimney constructed in accordance with my invention at a point anywhere between the base plate and the cap plate;

Fig. 2 represents a vertical section through the upper part of the chimney;

Fig. 3 represents a similar section through the lower portion of the chimney; and

Fig. 4 is a more or less diagrammatic section of a house showing the relation of the chimney housing to the body of the chimney.

Reference will now be made in greater detail to the annexed drawings for a more complete description of this invention. For supporting the chimney structure, a plurality of hangers 1 are provided and these have arms 2 which extend out over and rest on the top of joists, not shown in the present drawings. These hangers 1 have arms 3 extending inwardly toward the interior part of the chimney, and on these arms 3 rests a plate 4 having a central opening 5 for the passage of the smoke flue which extends up inside of the chimney. Since the plate 4 is spaced from the latter to the hangers 1 and from this to the joists. On top of the plate 4 rests a block 6 of an aggregate formed from "vermiculite" and cement. This block 6 extends inwardly into contact with the flue leading from the heating plant and serves as a heat insulator for preventing the transference of heat from the flue to any adjacent woodwork. In the upper surface of this

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block is formed a channel 7 which extends around the central hole of the block, concentrically therewith, this groove serving to connect the channels 8 and 9 running longitudinally through the sleeve 10, molded from the same materials as the block 6 but in slightly different proportions. While I have specified "vermiculite" and cement as the materials from which these units are fabricated, it will of course be understood that other suitable materials may be used.

In building the chimney, the units 10, having their ends ground off smooth, are stacked one on top of another with the channels or ducts 8 and 9 in alignment and their lower ends opening into the groove or channel 7. When the chimney is built up to the desired height above the roof, the cap or cover 11 is placed thereon; said cap having a downwardly depending flange 12 around its periphery to prevent rain from blowing in through the openings 13 spaced around the upper edge of the housing 14 which may be made of plywood or other suitable material. At its lower edge, this housing 14, in an occupied room, rests upon the block 6 and encloses, between the housing and the chimney proper, a compartment 15 which extends through the entire occupied space, but preferably not through the attic. The housing 14 above the roof rests on a metal flashing which prevents water from getting inside the house at this point. Fig. 4 shows the insulating material omitted between the roof and the attic floor. If this were used in a house of two or more stories, the insulation would extend throughout the entire occupied space.

The cap 11 is molded with openings 16 and 17 in its under face to serve as air-carrying ducts, the openings 16 connecting the compartment 15 with the channels 9, while the openings 17 connect the channels 8 with the interior of the chimney, as shown at 18. Hence, as the products of combustion and the heated air rise through the chimney, they aspirate air from the ducts or openings 17, causing it to enter through the openings 13 and pass through the channels 16, 9, 7, and 8. Drawing this air in from the outside has a tendency to keep the inside of the housing 14 cooled and passage of the air through the channels 8 and 9 tends to keep the units 10 cooled off, keeping them cooler in the outer portions than the inner. The channels 8 are larger than the outer channels 9 because, as the air moves down through the channels 9 and up through the channels 8, it gradually becomes warmer and expands and therefore needs larger channels in which to travel.

If there should be any tendency for soot to collect, this can be avoided by turning the openings 17 in the opposite direction and venting them through the outer periphery of the cap or cover 11.

The units 10 from which this chimney is constructed are preferably made in different lengths for convenience in building. These units have a glazed lining 19, the insulating medium being molded about the same. Preferably the units are encased in a sheet metal casing or they are reinforced by means of an expanded metal tube into which the insulating medium, in a moist condition, is poured. In order to mold the units in the expanded metal, it is necessary to have the latter surrounded by a retainer of some sort, such as a sheet metal tubular member capable of being opened longitudinally along one or more lines to make possible the removal of the sleeve after the insulating material has hardened. The channels 8 and 9 may be molded in the units 10, if desired, but it is believed more economical to drill them through these units with a set of gang drills.

The longitudinal channels through the units 10 may be lined up in various ways but it is believed that the simplest way is to have one or more rods of a size to fit moderately closely within the longitudinal channels through the units 10 and then pass such rod or rods down through the upper unit and into the lower unit, thus assuring substantially perfect alignment of the channels. Instead of providing the groove 7, the channels 8 and 9 can be connected by diagonal grooves in the block 6.

It is of course understood that the specific description of structure set forth above may be departed from without departing from the spirit of this invention as disclosed in this specification and as defined in the appended claims.

Having now described my invention, I claim:

1. A chimney comprising a base block having an approximately circular groove formed in its upper surface, a plurality of units stacked thereon in longitudinal alignment, said units having channels in the interior thereof which are placed in alignment when the units are stacked, and a cap on top of the upper unit, said cap having openings formed in its under face to connect one series of the channels with the interior opening of the chimney and another series of channels with the exterior air, the channels in the bottom unit opening into the groove in the base block.

2. A ventilated chimney having air channels extending longitudinally thereof within the material of the chimney, a supporting base for the body of the chimney, said base having at least one groove therein into which said channels open at their lower ends, and a cap at the upper end of the chimney covering the upper ends of the channels and provided with grooves furnishing communication between the channels and the surrounding air.

3. A chimney construction comprising a chimney body, a housing surrounding it and spaced therefrom, a bracket-supported base block supporting the chimney body and housing, said base block having a hollow in its upper surface, the

chimney body having substantially vertically extending ventilating channels opening at their lower ends into said hollow and some of them opening at their upper ends into the chimney cavity and the others opening at their upper ends into the space between the housing and the chimney body, and a cap covering the body and housing.

4. A chimney fabricated from heat insulating material and provided with ventilating channels extending longitudinally thereof, a housing surrounding and spaced from the heat insulating material, a base block on which the body of the chimney rests, and a cap resting on the body of the chimney, said housing having channels admitting air from outside of the chimney to the space between the housing and the insulating material, there being communication through the ventilating channels between the housing and the interior of the chimney.

5. A ventilated chimney having air channels extending longitudinally thereof within the material of the chimney, a supporting base for the body of the chimney, said base having at least one groove therein into which said channels open at their lower ends, and a cap at the upper end of the chimney covering the upper ends of the channels and provided with grooves furnishing communication between the channels and the surrounding air, said channels being arranged partly in the outer portion of the body of the chimney and partly in the inner portion thereof, the air circulating downwardly in the outer channels and upwardly in the inner channels and establishing a thermal differential between the inner and outer surfaces of the chimney body.

6. A ventilated chimney comprising a body of thermally insulating material having air channels extending longitudinally thereof within the material of the chimney, a supporting base for the body of the chimney, said base having at least one groove therein into which said channels open at their lower ends, and a cap at the upper end of the chimney covering the upper ends of the channels and provided with grooves furnishing communication between the channels and the surrounding air, said channels being arranged partly in the outer portion of the body of the chimney and partly in the inner portion thereof, the air circulating downwardly in the outer channels and upwardly in the inner channels and establishing a thermal differential between the inner and outer surfaces of the chimney body by reason of the thermal insulating quality of the material of the chimney body.

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