

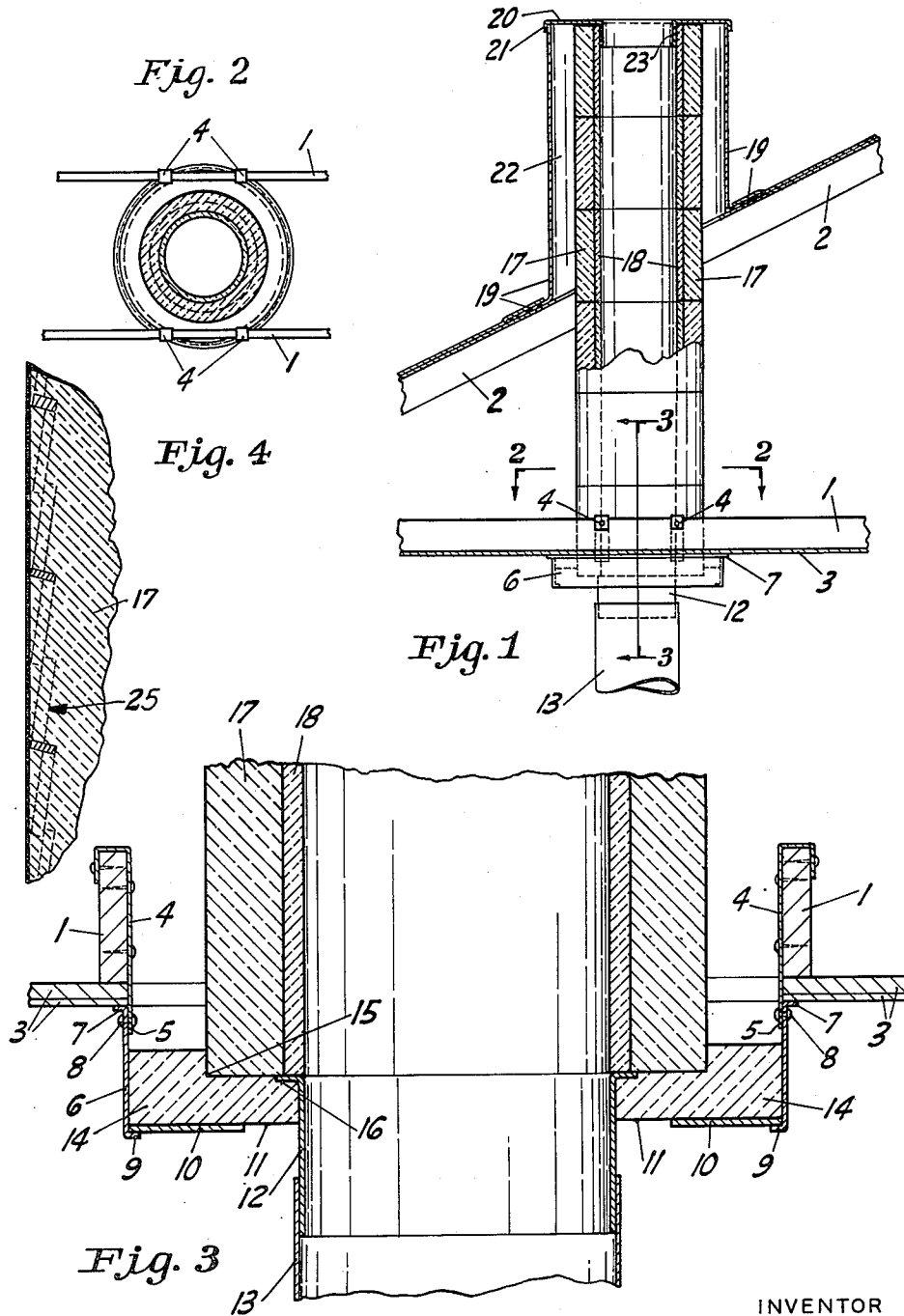
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CHIMNEY AND MEANS FOR SUPPORTING SAME

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CHIMNEY AND MEANS FOR SUPPORTING
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My present invention relates to the construction of a chimney for carrying products of combustion from a stove or the like out through a hole in the roof and to the means for supporting same from the house structure. Among the objects of this invention are the provision of an improved chimney which is so constructed as to transmit as little as possible of the heat of the flue gases to the wooden structural elements of the house; the provision, in a structure of the character indicated, of means for preventing water from running down the outside of a flue and causing staining of wall paper, plastering, or other house surface finishing surrounding the flue, or the floor or floor covering below the flue; the provision of a new and efficient means for supporting a chimney of the nature indicated; the provision of improved means for preventing transmission of heat from a chimney to the wood-work of a house; 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 limiting sense.

In the drawings annexed hereto and forming a part hereof,

Fig. 1 is a fragmentary section of parts of a house, including a partial section of a chimney in accordance with my present invention;

Fig. 2 represents a cross-section substantially along the plane indicated by the line 2-2, Fig. 1;

Fig. 3 represents a longitudinal section of the lower end of a chimney in accordance with this invention, including a section of parts of the supporting means for the chimney; and

Fig. 4 is a fragmentary sectional view, on a considerably enlarged scale, illustrating the expanded metal reinforcement for the molded insulating material.

Reference will not be made in greater detail to the annexed drawings for a more complete description of this invention. The joists of the ceiling are indicated by the numeral 1 and, in Fig. 1, the rafters are shown at 2. On the under side of the joists 1 is applied the fishing material or materials, such as lath, plaster, and paper, or plasterboard and paper, or other suitable materials, the same being indicated at 3. To support the chimney from the adjacent joists 1, a plurality of hangers, preferably four in number, indicated in the drawings at 4, are placed over the joists 1 and secured thereto by suitable fastening means, as nails, and have their lower ends extending below the ceiling, as indicated at 5. To the lower ends of these hangers is secured a

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thimble 6 of sheet metal of circular or rectangular form. At the present time, a circular shape is believed to be preferable. The upper end of this thimble is flanged outwardly, as shown at 7, and suitable securing means 8 fasten the thimble to the lower ends 5 of the hangers 4.

At its lower end, the thimble is flanged inwardly, as shown at 9, and this flange supports an annular disc 10 which is spaced outwardly, as indicated at 11, from the stainless or porcelain enameled steel thimble 12. A flue or smoke pipe 13 is shoved upwardly around the thimble 12, fitting the same fairly closely. The gap 11 between the thimble 12 and the annular disc 10 constitutes a heat break between these metal parts which prevents conduction of heat from the thimble to the annular disc.

An annular disc 14, shouldered as indicated at 15 and having a slight recess for the reception of the flange 16, rests on the annular disc 10 and forms a support for the heat-insulating chimney element 17 which is molded about the refractory element 18. It is clear from Fig. 1 that these chimney elements are made up in units comprising the inner refractory element 18 and the outer thermal insulator 17. This thermal insulation is compounded from "vermiculite" and Portland cement in the ratio of approximately 6 to 1. Since the composition is molded on the refractory, the latter constitutes an inner supporting member for the composition and it is necessary to provide only an outer mold within which to form the units 17. For convenience in assembly, these units are made 6", 12", and 18" in length, most of them being 12". Preferably, an expanded metal liner is put inside of the mold so that, when the fluid composition of "vermiculite" and Portland cement is poured in, the expanded metal becomes, upon removal of the mold, a reinforcement for the composition as best shown in Fig. 4 in which the expanded metal reinforcing shell is indicated by the reference numeral 25. This tends to hold the composition against breakage. It also permits ready escape of the liquid in the composition during the hardening process and subsequently when heated.

The ring 14 is made up of "vermiculite" and Portland cement in the ratio of approximately 4 to 1, since a stronger structure is required because of the weight supported thereon. A unitary hood and flashing 19 surrounds the chimney and is spaced therefrom. Preferably the chimney is also spaced from the roof through which a hole is cut to permit the passage of the chimney without contact with the surrounding wooden structure. However, this construction has been found to be a sufficiently good insulator that the chimney can be safely used in contact with wood or other combustible material.

An annular disc 20, provided with a flange 21 which surrounds the hood, extends across the

space 22 and the upper end of the chimney 17, coming down inside of the latter. For this purpose, it is provided with a flange or cylindrical part 23 which acts as a liner for the upper portion of the refractory 18. Preferably, a little space is allowed between the annular disc 20 and the upper end of the chimney to permit expansion of the latter as it is heated by the gases from the fire in the room below. As an alternative to the metal disc or cap, I have considered using a concrete cap having a flue opening therethrough and spaced upwardly from the insulation sufficiently to permit passage of air upwardly from the attic and outwardly under the edges of the cap. Preferably the ends of the sections 17, 18 of the chimney are ground flat so that they fit together in substantially gas-tight contact, this preventing leakage of flue gases between the sections.

While I have specified certain compositions for parts of this construction, it will be understood that such are intended merely as illustrative and that such mixes may be departed from without departing from this invention. Also, 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 construction unit for a flue of the character described comprising a body of thermal insulating material of a character such that transmission of heat and radiation thereof to adjacent combustible materials will be reduced to a point that combustion of the said materials will be substantially impossible due to fire in the flue. a refractory lining about which the body is molded, and a reinforcing metal jacket of expanded metal within which the thermally insulating body is molded.

2. A flue for the purpose indicated fabricated from similar units having flat ends and comprising a thermally insulated body having a refractory lining and a reinforcing metal band of expanded metal surrounding the body.

3. A flue and its support for the purpose indicated comprising a body formed from thermal insulating material molded about a refractory lining and surrounded by a metal reinforcement of expanded metal, in combination with a metal thimble flanged at its upper end, metal supporting means connected to the framework of a building, a thermal insulating ring surrounding said thimble and the lower part of the flue, and a metallic support upon which said ring rests, said metallic support being laterally spaced from said thimble and being connected to the wooden framework of the building by said metal-supporting means.

4. A structure of the nature indicated for use in a frame building, comprising hangers attached to joists of the building and extending below the ceiling, a flanged metal sleeve attached thereto and extending downwardly from the ceiling, a substantially flat metal annulus within the sleeve and supported on a flange thereof, an annulus of thermally insulating material fabricated from "vermiculite" and Portland cement within the sleeve and resting on said metal annulus, an outwardly flanged thimble within the opening of the thermally insulating material and having its flange resting thereon, said thimble extending downwardly for the attachment of a smoke pipe, and a chimney resting on and supported by said

thermally insulating annulus, there being a gap between the metal annulus and the thimble serving as a thermal insulator between the thimble and the sleeve, said chimney being made primarily of "vermiculite," Portland cement and water, lined with a refractory material.

5. In a structure for the purpose indicated, a chimney having a thermally insulating exterior and a non-corrodible interior, an outwardly flanged thimble for connection of a stove pipe, the flange of said thimble having the bottom of the chimney resting thereon, an annulus of thermal insulation surrounding the thimble and supporting the chimney, and metallic means supporting the annulus, said metallic means being spaced from the thimble and from the exterior of the chimney, the thimble being positioned with relation to the interior of the chimney to result in any moisture which runs down the interior of the chimney moving to the interior of the thimble rather than to the exterior thereof, the thermally insulating material being made from a mixture of "vermiculite," Portland cement and water, and the chimney body having a layer of expanded metal embedded in its outer surface.

6. A flue and its supporting means comprising metal-strap supporting means, to be attached to the framework of a wooden building, a metal sleeve attached to said supporting means and supported thereby, said sleeve having at its lower end an inwardly extending flange, a flat metal annulus within said sleeve and supported by said annulus, a heat insulating annulus fabricated from "vermiculite" and Portland cement, with water added, resting on the metal annulus and extending inwardly from said sleeve, said insulating annulus having a recess in its inner, upper edge for the reception of an end of a flue, an outwardly flanged thimble within said insulating annulus with its flange resting on the upper face thereof, and a flue, fabricated from units having a body part made from the "vermiculite"-cement mixture with a lining of a refractory material and an outer tubular sleeve of expanded metal embedded in the outer surface of the "vermiculite"-cement body, supportingly carried in said recess.

7. A flue for carrying products of combustion from a stove out through a surrounding wooden structure comprising a series of units built up into a unitary structure, each unit comprising a body fabricated from a mixture of "vermiculite" and Portland cement with a lining of refractory material and a layer of expanded metal embedded in the external surface of the unit, the expanded metal serving to hold the "vermiculite"-cement mixture against breakage and holding the parts in place in event of fracture of the body.

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