June 23, 1936. D. BROWN 2,045,117

FLOOR AND ROOF CONSTRUCTION

Filed Aug. 3, 1935

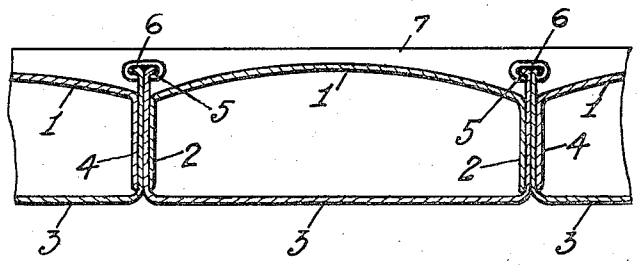


Fig. 1.

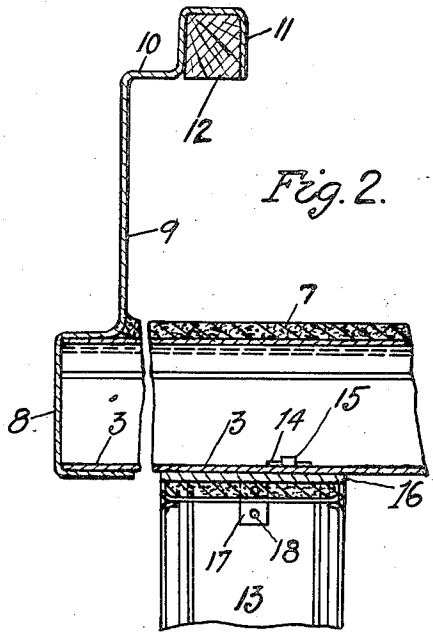


Fig. 2.

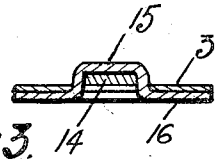


Fig. 3.

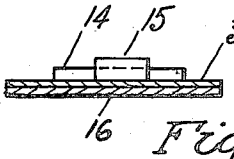


Fig. 4.

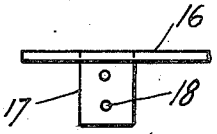


Fig. 5.

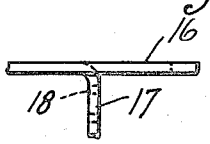


Fig. 6.

Donald Brown INVENTOR.

BY

H. Lee Helms

ATTORNEY.

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FLOOR AND ROOF CONSTRUCTION

Donald Brown, Newcastle-upon-Tyne, England, assignor of twenty-five per cent to Thorvald N. Garson, Staten Island, N. Y.

Application August 3, 1935, Serial No. 34,526
In Great Britain February 4, 1933

6 Claims. (Cl. 72—70)

This invention relates to floors and roofs for buildings, and has for its object to provide an improved system of construction wherein standardized elements of pressed or drawn sheet metal are employed with consequent reduction in cost, labor and time for erection as compared with brick, stone or concrete buildings.

The primary object of the invention is to provide a building construction in which the floor and roof members may be assembled and locked in position without the use of connecting members other than the units themselves. That is to say, bolts, screws, and welding operations are eliminated in assembling the floors and roof, so that the members may be very rapidly constructed and after construction may be rapidly disassembled for re-erection at another place.

In a constructional system in accordance with my invention the floors and roof are formed of standardized sheet metal elements assembled to form abutting cavity panels, each panel comprising a ceiling plate with upstanding flanges along its side edges and an arched plate interposed between said flanges to maintain them spaced and in parallel relationship, said panels being interlocked side by side by C-shaped strips which engage with, and throughout the length of, inturned lips on the upper edges of the abutting upstanding flanges of adjoining ceiling plates, said panels being closed at their ends by end plates.

The invention will be described with reference to the accompanying drawing, in which

Fig. 1 is a transverse section of the floor or roof.

Fig. 2 is a vertical section of the floor and roof showing the end of one panel and the upper portion of a supporting wall.

Figs. 3 and 4 are sectional elevations at right angles showing one method of attaching the ceiling or roof to the wall.

Figs. 5 and 6 are elevations at right angles showing one method of attaching sealing plate to the upper portion of a supporting wall.

Referring to the drawing, the ceiling and upper floor or roof are formed of sealed horizontal panels as shown in Figs. 1 and 2, each panel comprising an arched plate 1 with depending flanges 2 bearing on plate 3 with upstanding flanges 4 which are lipped at 5 and held together by C-shaped strips 6 which engage said lips throughout the length of said lips. A layer 7 of bitumen or like plastic filling material is applied over the tops of the arched plates 1 and the C-shaped strips 6 to form the floor or roof.

Where the span of a roof or floor is considerable, the flanges of members 1 and 3 are increased in depth to carry the load and reduce deflection.

The roof is conveniently graded to drain towards a central point, and the drainage may be discharged by a pipe (not shown).

The ends of the upper floor and roof panels are closed by end plates 8 which overlap the ends of the plates 1, 3, said end plates being of channel form and of depth equal to the total thickness of the roof or floor. The end plates 8 bind and hermetically seal the ends of the upper floor and roof panels and form airtight cavities. The upper floor and roof panels can be similarly filled in with suitable material of a non-conducting nature.

The end plates 8 of the roof panels may be extended upwards to form a vertical parapet 9 around the roof. The upper edge of the parapet may be flanged as shown at 10 and formed with an inverted channel 11 and fitted with a horizontal wood location bar 12.

The upper floor and roof panels 3, 1, are located in proper position and anchored to the supporting walls and partitions which may be of any suitable construction, but are illustrated at 4 as being vertical formed of vertical panels as described in the specification of my co-pending application filed February 2nd, 1934—Serial No. 709,452. The parts 3, 1 are anchored to the wall and partition panels by wedges 14 passed through loop 15 punched out of sealing plates 16 of the wall and partition panels, said loops projecting inwards through holes punched at intervals in the plates 3 of the upper floor and roof panels as shown best in Figs. 2, 3, and 4.

The sealing plate 16 is anchored to the upper portion of supporting wall 13 by clips 17 having punched holes 18 which correspond to holes punched in the wall 13, said clips are punched out of plate 16. Drift pins (not shown) may be employed to anchor clips 17 to wall 13.

It will now be seen that by my invention I provide a system of floor and roof construction employing standardized elements of pressed or drawn sheet metal, such standardized elements being suitable for any size of floor or roof and making it possible for an architect to design any size of floor or roof having component parts the sides of which are multiples of the standard elements. The floors and roof are composed of closed cavity panels which, being airtight, are not subject to internal corrosion. Moreover, the still air within said panels will act as thermal insulation. As the abutting panels provide a practically continuous flat surface with no exposed raw edges, plastering of the ceiling is un-

necessary. The necessary aperture for pipes and electric wiring can be readily punched or drilled in the ceiling plates and flanges of the panels during manufacture. The construction is fireproof and can be completely erected without the use of rivets or like fastening means, the floor and roof panels being interlocked in course of erection. My improved method of erection makes it possible to take down the structure piece by piece without damaging the plates or other elements.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, what I claim and desire to secure by Letters Patent, is as follows:

1. A floor or roof construction comprising standardized sheet metal elements assembled to form abutting cavity panels, each panel comprising a ceiling plate with upstanding flanges along its side edges and an arched plate interposed between said flanges to maintain them spaced and in parallel relationship, said panels being interlocked side by side by C-shaped strips which engage with, and throughout the length of inturned lips on the upper edges of the abutting upstanding flanges of adjoining ceiling plates, said panels being closed at their ends by the plates.

2. A floor or roof constructed in accordance with claim 1 in combination with depending side flanges formed on the arched plates which flanges abut against the upstanding side flanges of the ceiling plates.

3. A floor or roof construction constructed in accordance with claim 1 in combination a layer of plastic sealing agent applied over the tops of the arched plates and the C-shaped clips to form the upper surface of the floor or roof.

4. A roof constructed in accordance with claim 1 wherein the end plates which close the ends of the panels are extended upwards to form a vertical parapet around the roof.

5. A floor or roof construction in accordance with claim 1 comprising means for tying the floor or roof panels to the ceiling plates provided on the tops of the supporting walls and partitions, comprising wedges bearing on the ceiling plates of the panels and passed through loops formed on said ceiling plates and which project through apertures in said ceiling plates.

6. A floor or roof construction in accordance with claim 1 in combination with means for tying the ceiling plates to the supporting walls and partitions, comprising clips having holes for the reception of drift pins to connect with holes provided near the top of the supporting walls and partitions.

DONALD BROWN.