Dec. 5, 1950 R. STEMMONS ET AL 2,532,466

REINFORCED SHEET METAL ROOF

Filed July 21, 1947

Fig. 1

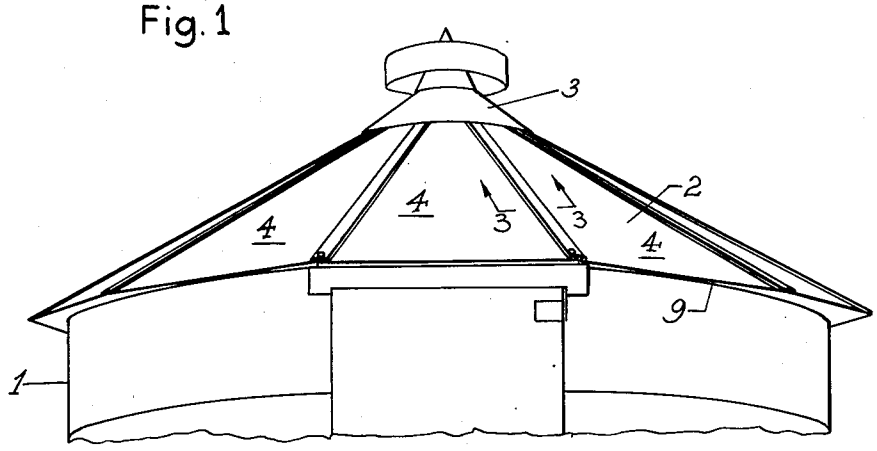


Fig. 2

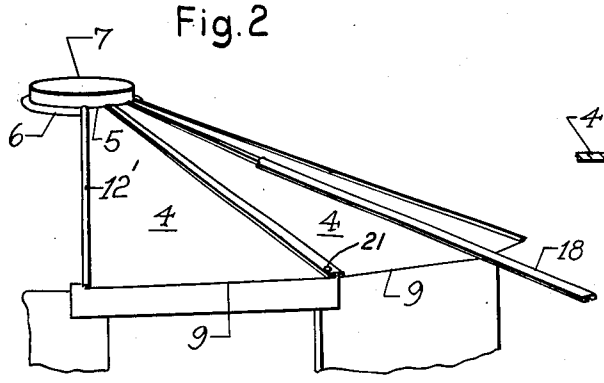


Fig. 3

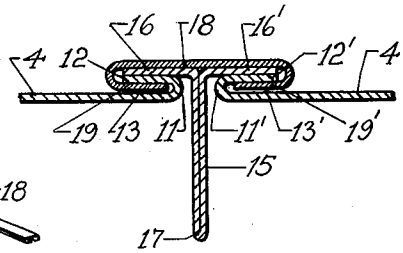
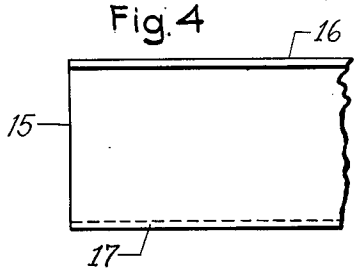


Fig. 4



INVENTORS
Robert Stemmons and
Walter L. Edel
BY
Arthur J. Robert
Atty.

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REINFORCED SHEET METAL ROOF

Robert Stemmons, Middletown, Ohio, and Walter L. Edel, Louisville, Ky., assignors to Clayton & Lambert Manufacturing Company, Louisville, Ky., a corporation of Delaware

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8 Claims. (Cl. 108—32)

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This invention relates to a roof structure for a building of the knock-down type, and relates in particular to a re-enforced roof embodying a joist or rafter which is secured thereto.

The use of sheet metal in forming a roof has the disadvantage that light gauge metal is easily flexed or deformed, and, therefore, it is not practical to provide a span of any great length for a thin sheet metal roof. Furthermore roofs of this type usually are designed so that they may be assembled by unskilled labor, and, therefore, the provision of any re-enforcement which requires fitting at the time of assembly is undesirable as it complicates the assembly of the roof and increases the cost thereof.

It is an object of the present invention to provide a roof structure of sheet metal embodying re-enforcing members located at the juncture of adjacent sheets and which may be readily assembled.

A further object is the provision of a roof structure having a relatively light weight rigid re-enforcing member assembled thereto.

Still another object is the provision of a roof structure embodying a prefabricated light weight rigid re-enforcing member which may be assembled thereto without the use of special tools and which imparts rigidity to the roof structure.

In accordance with the present invention, we provide a roof built up of sheets of metal, the opposite edges of which are formed to be hooked together by a suitable interlocking member, and we provide a re-enforcing joist or the like adapted to be received between adjacent roof sheets and having means whereby said joist member may be secured in position by said common interlocking member. In a preferred embodiment, a roof joist is made of sheet metal folded double and having its edges oppositely turned so as to provide a T-beam structure, the wings of the T being suitably received and secured by the interlocking member.

The invention will be described in greater detail in connection with the accompanying drawing in which is illustrated a preferred embodiment of the invention by way of example and wherein:

Figure 1 is a side elevation showing an assembled roof made in accordance with the present invention,

Figure 2 is a view similar to Figure 1 illustrating the method of assembly of the roof structure,

Figure 3 is a section taken on line 3—3 of Figure 1, and

Figure 4 is a fragmentary view in side elevation

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showing a joist constructed in accordance with the present invention.

Referring to the drawing, there is shown a structure 1, such as a silo, grain bin, corn crib, or the like which supports the roof 2 in any suitable manner, and a ventilator 3 may be secured to the roof. As illustrated, the roof is in the form of a multiface pyramid, each face of which is formed from a sheet or plate 4 of generally trapezoidal shape. The central edges 5 may be suitably secured to a flange 6 of a ventilator ring 7, and the peripheral edges 9 may overhang the silo walls, and are secured to the silo walls by suitable clips (not shown). The opposite edges, which in the modification shown extend substantially radially, are doubled back at 11, 11' to provide hooked portions, the hooked ends 12, 12' lying substantially parallel to the surface of the sheet to provide channels 13, 13'.

A joist member indicated generally by the numeral 15 is located between adjacent hooked edges 11, 11' and preferably has two laterally extending portions or wings 16, 16' overlying the hooked ends 12, 12' respectively. The joist preferably is made of a single sheet of metal folded double at 17 to provide a trunk portion, and having the edges thereof oppositely bent to provide the wing portions 16, 16'. The joist member preferably is of lesser length than the radial edge of a roof sheet so as to avoid interference between the trunk thereof and the silo wall. A connector member 18, preferably in the form of a C-channel, has hooked ends 19, 19' which are received within the channels 13, 13' respectively and tie together the adjacent roof sheets 4, and joist members 15.

The assembly of the roof structure now will be described. A sheet 4 is secured to the flange 6 of ventilator ring 7, and to the silo wall. The next adjacent roof sheet then is placed next to the first sheet, a joist 15 is inserted therebetween with the trunk extending between the edges thereof and the wing 16, 16', overlying the bent edges 12, 12'. A C-channel strip 18 now is applied to the overhanging edges, as illustrated in Figure 2 with the hooked ends 19, 19' received within the channels 13, 13', and is slid longitudinally toward the center until its outer end lies flush with the overhanging edges of the roof sheets. The latter sheet then may be secured to the ventilator ring and silo wall. This manipulation is repeated for each roof sheet applied, until the last sheet is in place, a joist member being inserted between the first and last roof sheet substantially as described. The channel

strip 18 ordinarily is held in place by its frictional engagement with the roof sheets. If desired, a bolt 21 or the like may be passed through a suitable hole at the end of each channel member 18, the bolt passing between adjacent roof plates, which may be notched, if desired, to allow the bolt to pass, into a roof clip to prevent removal of the channel strip.

The construction illustrated and described provides a reenforcement for the roof sheets which enables the use of light gauge sheet material for the roof without danger of buckling or denting thereof. The joist members are easily and inexpensively made, and as no special tools are required for assembling the roof, this work can be done by unskilled labor. Thus, the structure may be sold in knock-down condition, as it is easily erected by the purchaser.

Various modifications may be made in the invention without departing from the spirit or scope thereof.

Having described our invention, we claim:

1. A reenforced sheet metal structure comprising a plurality of sheets having the opposite edges thereof bent to form hooked edges; a reenforcing member having a laterally extending portion overlying the proximate hooked edges of adjacent sheets and a median portion extending therefrom and received between adjacent sheets; and a connector strip having hooked edges overlying said laterally extending portion and interlocking with the hooked edges of said adjacent sheets.

2. A roof for a silo or the like comprising a plurality of segment shaped sheets having the radial edges thereof bent to form hooked edges; a T shaped joist having a trunk portion received between adjacent sheets and having wing portions overlying said adjacent hooked edges; and a connector channel strip having hooked edges overlying said wing portions and having the hooked edges thereof interlocking with the hooked edges of said sheets.

3. A structure as described in claim 1 wherein said reenforcing member is of lesser length than the hooked edge of a sheet.

4. A structure as described in claim 1 wherein said reenforcing member comprises a double sheet providing the median portion and having the edges thereof oppositely bent to provide the laterally extending portion.

5. A roof for a silo or the like comprising a plurality of sheets, an annular flange secured to said sheets at one end adjacent the center of said roof; said sheets being supported at the opposite end to provide an overhanging edge, the opposite edges of said sheets being bent to provide hooked edges; a joist having a portion received between adjacent sheets and having laterally extending portions overlying said adjacent hooked edges; and a connector channel strip having hooked edges overlying said laterally extending portions and having the hooked edges thereof interlocking with the hooked edges of said adjacent sheets.

6. A structure as specified in claim 1 wherein said reenforcing member comprises a sheet folded double to provide the median portion and having the edges oppositely bent to provide the laterally extending portion.

7. In a reenforced sheet metal structure: at least two metal sheets, each having a marginal edge reversely bent to provide a channel-like hook, said sheets being arranged to form adjacent sections of said structure with the bight of the channel-like hook of one sheet adjacent but slightly spaced from the bight of the channel-like hook of the other sheet; a reenforcing member having a laterally extending portion closely overlying the reversely bent parts of said adjacent channel-like hooks and a median portion extending therefrom into the space between adjacent bights; and a connector strip overlying said laterally extending portion and arranged with its opposite edges interlocking with the channel-like hooks of both of said sheets.

8. A reenforced sheet metal structure presenting adjacent reversely bent sheet metal edges providing channel-like hooks with the bights of the hooks in slightly spaced relation; a reenforcing member having a laterally extending portion closely overlying the reversely bent parts of said adjacent channel-like hooks and a median portion extending therefrom into the space between adjacent bights; and a connector strip overlying said laterally extending portion and arranged with its opposite edges interlocking with the channel-like hooks of both of said sheets.

ROBERT STEMMONS.
WALTER L. EDEL.

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