

Jan. 15, 1929.

1,699,074

J. F. LOUCKS
BUILDING CONSTRUCTION

Filed Nov. 17, 1927

2 Sheets-Sheet 1

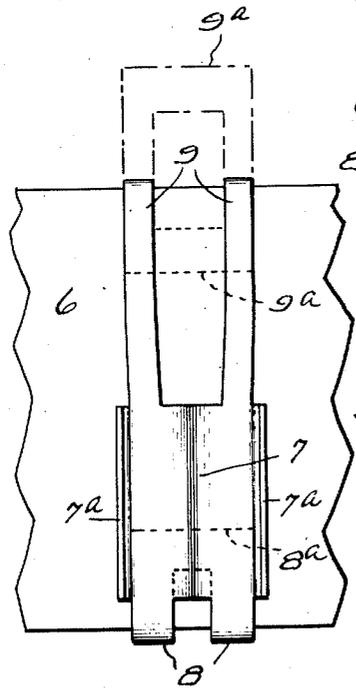
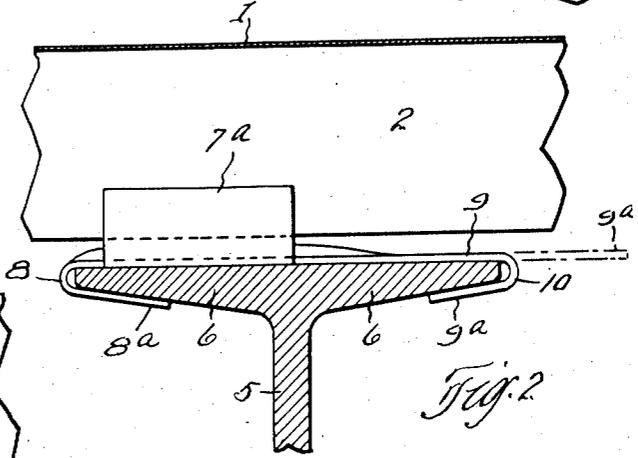
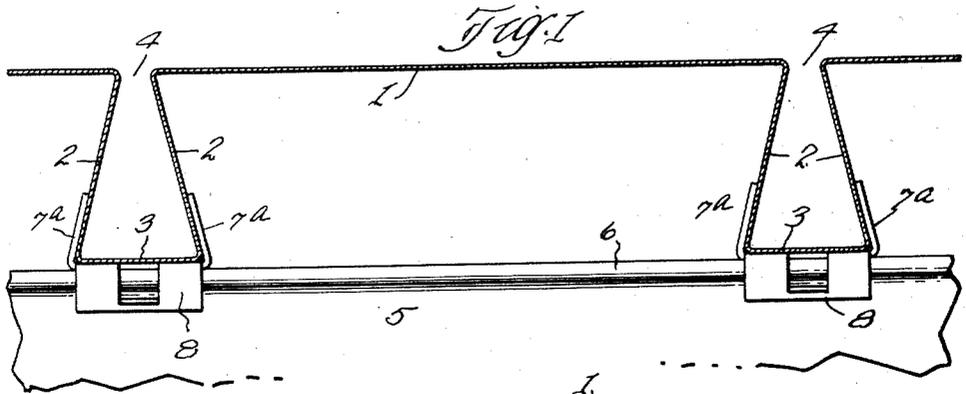


Fig. 3

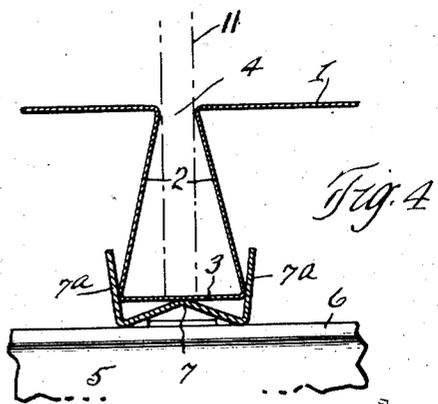


Fig. 4

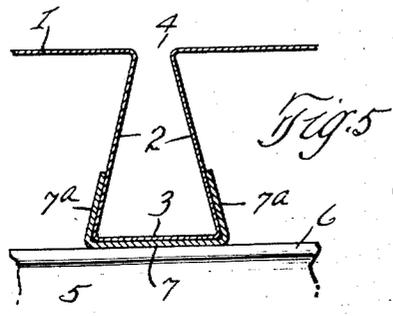


Fig. 5

Inventor
James F. Loucks,
By *Hull, Brock West,*

Attorney.

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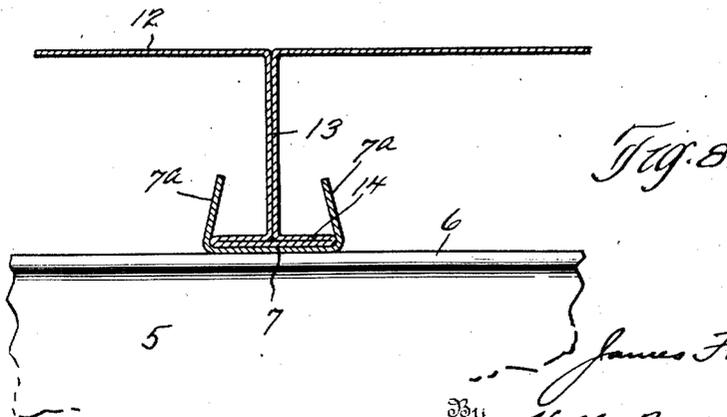
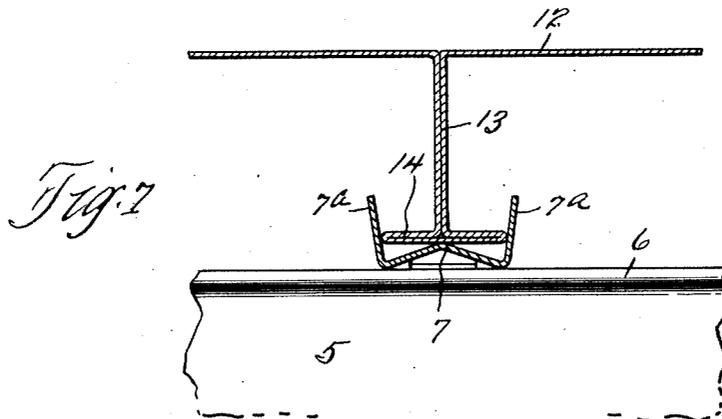
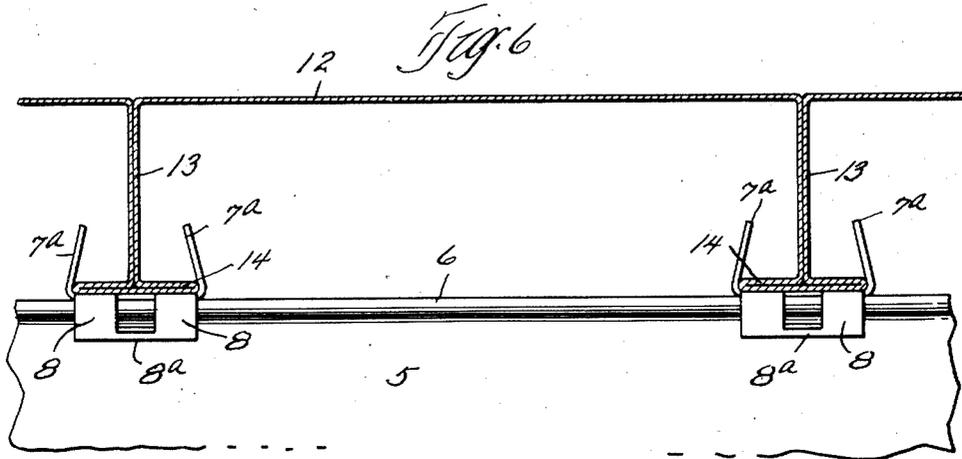
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J. F. LOUCKS

BUILDING CONSTRUCTION

Filed Nov. 17, 1927

2 Sheets-Sheet 2



Inventor

James F. Loucks,
Hull, Brock West,

Attorney

Patented Jan. 15, 1929.

UNITED STATES PATENT OFFICE.

JAMES F. LOUCKS, OF CLEVELAND, OHIO, ASSIGNOR TO HOLORIB INCORPORATED, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

BUILDING CONSTRUCTION.

Application filed November 17, 1927. Serial No. 233,854.

This invention relates to means for securing to supporting beams sheet metal foundations having hollow ribs extending from one side thereof. More particularly, the invention consists in providing clamping and securing means for sheet metal constructions of the general type shown in the patent granted jointly to Harry Gillett and myself on February 3, 1926, No. 1,574,586.

It is the general purpose and object of the invention to provide a clamping device which is particularly adapted for ready and convenient application to the ribs of sheet metal foundations and which will provide effective means for supporting the foundations from purlins or other beams.

I realize the foregoing objects, and other and more limited objects which will appear hereinafter, in and through the construction and arrangement of parts shown in the drawing, wherein Fig. 1 represents a detail in transverse section through one form of sheet metal foundation showing the manner in which the same is clamped or applied to a joist or purlin; Fig. 2 a detail in section through an I-beam and the sheet metal foundation thereabove, showing the manner in which the latter is secured to said beam; Fig. 3 a detail in plan of one of my clamping devices, showing the manner in which the same is applied to a joist or purlin; Fig. 4 a detail in transverse section showing the positions of the bottom of a rib and of the clamping device prior to the final clamping operation; Fig. 5 a view similar to Fig. 4 showing the clamping device in its final and operative position with relation to the rib; Fig. 6 a view, similar to Fig. 1, showing a metal foundation having a different form of ribs projecting therefrom; and Figs. 7 and 8 are details in transverse section of such modification, the said views being similar to Figs. 4 and 5 respectively.

Describing by reference characters the parts shown in Figs. 1 to 5, inclusive, 1 denotes a flat metal sheet of which the foundation is formed, the same being provided with hollow triangular ribs projecting from one side thereof, the sides of the ribs being indicated at 2 and the bottoms at 3, there being slots 4 between the tops of the ribs and the metal sheets.

5 denotes the web and 6 the flanges of a beam on which the aforesaid sheet is to be

supported. The beam may be of any of the ordinary commercial shapes, the one shown herein being an I beam. For the purpose of securing the sheet, either to an I beam such as shown, or to the top flange of a channel beam, I provide a sheet metal clamp, the said clamp having an upwardly projecting base 7 and slotted longitudinal extensions thereof. One of such extensions is bent to form a hook, indicated at 8, which hook is so shaped as to engage the edge of one of the flanges 6. Where the metal foundation is to be used for roofing purposes, the hook 8 will engage the upper edge of the flange of the beam or purlin. The opposite extension, comprising the branches 9, is bent around the edge of the other flange 6, where I beams are employed, the positions of the parts before bending being shown in dot-and-dash lines on Figs. 2 and 3. The hook formed by bending the extension 9 is indicated at 10. Where the clamps are used with channel beams, the extensions 9 are bent downwardly along the webs of such beams.

It will be noted that the ends of the extensions 8 and 9 are joined, as shown at 8^a and 9^a. This prevents the ends from separating or spreading during the operation of flattening the base 7, under conditions to be explained hereinafter.

Reference has been made hereinbefore to the upwardly projecting base 7. As will appear from Fig. 4, this base is projected upwardly or arched from each side thereof; and from each side there projects a flange 7^a, each flange 7^a making with the portion of the bottom adjacent thereto an angle slightly less than the angle between the sides 2 and the bottom 3 of the rib which is to be received within such clamp. The over-all width of the bottom 7 is equal to the width of the base 3 of the rib which it receives.

With the parts constructed and arranged as described, the clamps will be applied to beams or purlins such as shown herein by slipping the hooks over the upper edges of the flanges 6 thereof (where the beams or purlins are used for roof construction) and bending the lower ends around and beneath the bottoms of the flanges. The clamps having been so applied to the beams or purlins and in proper spaced relation to receive the ribs therewithin, the metal foundation will be applied, positioning the ribs between the side

flanges of the clamps, as shown in Fig. 4. After having been so positioned, a suitable tool (indicated in dot-and-dash lines at 11 on Fig. 4) is introduced into each slot 4, the bottom of which tool engages the bottom 3 of the rib above the center of the arch 7. Then by hammering or otherwise exerting downward pressure through the tool upon the bottom of the rib and upon the arch 7, the base of the clamp will be straightened, as shown in Fig. 4, and, because of the fact that the angle between each side 7^a and the portion of the base adjacent thereto is less than the angle between each side 2 and the bottom 3, the flange 7^a will firmly clamp the sides of the ribs.

In the modification shown in Figs. 6, 7 and 8, the metal sheet 12 is provided with inverted T-shaped ribs formed therewith and projecting from one side thereof, the shank of such a T being shown at 13 and the base at 14.

The clips which I employ for securing ribs of this character to a beam or purlin 5 are of the same character as those shown in the preceding views.

As will appear from the drawing, the arch or upward projection of the base 7 and the inclination of the side flanges 7^a are such that, when the ribs 13, 14 are pressed downwardly by a suitable tool within the clamps, the straightening out of the arched bases 7 causes the flanged sides 7^a to engage the sides of the bases 14 of the ribs inserted therebetween with the upper ends of the sides extending above such bases. The side flanges 7^a are shown as longer than need be employed for engaging the bases 14 of the ribs 13; but, by using such flanges, only one style of clamping device need be kept in stock for both types of ribs shown herein.

By the construction of clamp shown and described herein, I am enabled to apply the same very quickly and conveniently to the purlins or other joists by which the ribs of the sheet metal foundation are to be supported; to insert the ribs within the seats provided therefor in such clamp; and, by a simple operation, to firmly secure the ribs in the seats formed by the clamps.

Having thus described my invention, what I claim is:—

1. A sheet metal clamping device for securing to a beam a sheet having a hollow triangular rib projecting therefrom, the said clamping device having means whereby it may be applied to a beam and provided with an upwardly projecting base having upwardly projecting flanges at each side thereof, the angle between each flange and the adjacent portion of the upwardly projecting base being slightly less than the angle formed between the bottom and each side of such rib, whereby the rib may be inserted between such flanges and the bottom of the rib and the base of the

clamping member pressed downwardly thereby to spring the flanges inwardly into engagement with the sides of such rib.

2. A sheet metal clamping device for securing to a beam a sheet having a hollow rib projecting therefrom, the said clamping device having means whereby it may be applied to a beam and provided with an upwardly projecting base having upwardly projecting flanges at each side thereof, whereby the rib may be inserted between such flanges and the bottom of the rib and the base of the clamping member pressed downwardly thereby to spring the flanges inwardly into engagement with the sides of such rib.

3. A sheet metal clamping device for securing to a beam a sheet having a hollow triangular rib projecting therefrom, the said clamping device having an upwardly projecting base and a flange projecting upwardly from each side of such base and each forming with a portion of the base adjacent thereto an angle slightly less than the angle between the bottom and each side of said rib, the said device having an extension adapted to be hooked about one edge of the flange of a beam and having an extension from the opposite end thereof which is adapted to be bent downwardly about the opposite edge of such beam.

4. A sheet metal clamping device for securing to a beam a sheet having a hollow rib projecting therefrom, the said clamping device having an upwardly projecting base and a flange projecting upwardly from each side of such base, the said device having an extension adapted to be hooked about one edge of the flange of a beam and having an extension from the opposite end thereof which is adapted to be bent downwardly about the opposite edge of such beam.

5. A sheet metal clamping device for securing to a beam a sheet having a hollow triangular rib projecting therefrom, the said clamping device having an upwardly projecting base and a flange projecting upwardly from each side of such base and each forming with a portion of the base adjacent thereto an angle slightly less than the angle between the bottom and each side of said rib, the said base having at one end thereof a slotted extension formed into a hook adapted to embrace one edge of the flange of a beam and having a slotted extension at its opposite end which is adapted to be bent downward about the opposite edge of said beam.

6. A sheet metal clamping device for securing to a beam a sheet having a hollow rib projecting therefrom, the said clamping device having an upwardly projecting base and flanges projecting upwardly from opposite sides of such base and each adapted to engage a side of the rib inserted therebetween when the base is flattened, the said device having means whereby it may be secured to such beam.

7. A sheet metal clamping device for securing to a beam a sheet having a hollow triangular rib projecting therefrom, the said clamping device having means whereby it
 5 may be applied to a beam and provided with an upwardly arched base and side flanges extending from opposite sides of said base, the flanges and base being adapted to receive the bottom of the rib and to secure the rib in place
 10 by the operation of springing the central portion of the arch downwardly thereby to swing the upper ends of the flanges inwardly thereby to engage the sides of the rib, and means for securing the said clamping device
 15 to the said beam.

8. A sheet metal clamping device for securing to a beam a sheet having a hollow rib projecting therefrom, the said clamping device having an upwardly projecting base provided with an upwardly projecting flange at
 20 each side thereof, there being slotted longitudinal extensions of such base, the end of each extension being closed and one of such extensions being formed into a hook to engage a
 25 flange at one edge of such beam and the other extension being substantially straight whereby it may be bent into engagement with the opposite edge of the load-carrying surface of such beam.

9. A sheet metal clamping device for securing to a beam a sheet having a rib projecting therefrom, the said clamping device having means whereby it may be applied to a beam and being provided with an upwardly projecting base having upwardly projecting
 30 flanges at each side thereof so shaped as to firmly clasp said rib when its upwardly projecting base has been straightened or flattened down.
 35

10. A sheet metal clamping device for securing to a beam a sheet provided with a
 40 rib projecting therefrom, the said rib having a widened base and being connected to the sheet by a portion of less width than said base, the said clamping device having means
 45 whereby it may be applied to a beam and being provided with an upwardly projecting base having an upwardly and outwardly projecting flange at each side thereof, the said base and the said flanges being so shaped
 50 that, by flattening or straightening out the base, the flanges will move inwardly to an extent to engage the said rib above the bottom or base thereof and clamp the said rib
 55 firmly to the said device.

In testimony whereof, I hereunto affix my signature.

JAMES F. LOUCKS.