Aug. 21, 1928. 1,681,830

H. E. WHITE

FASTENING MEANS FOR METAL ROOF DECKING

Filed May 25, 1927

Fig. 1.

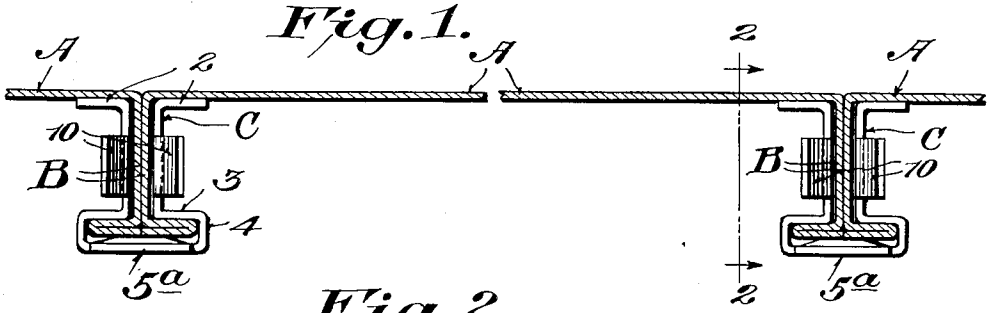


Fig. 2.

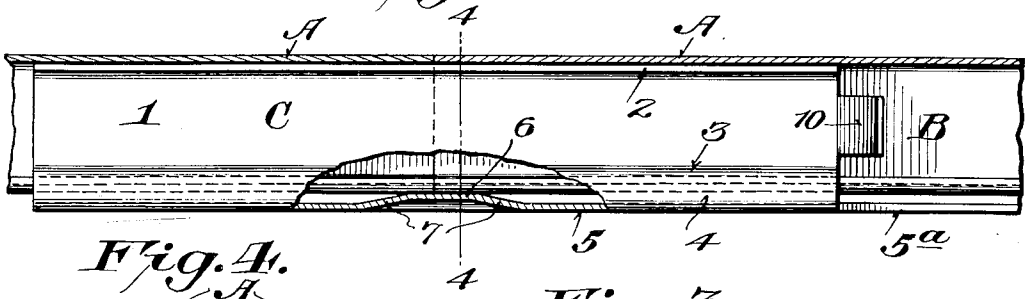


Fig. 4.

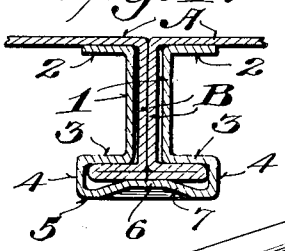


Fig. 3.

Fig. 6.

Fig. 5.

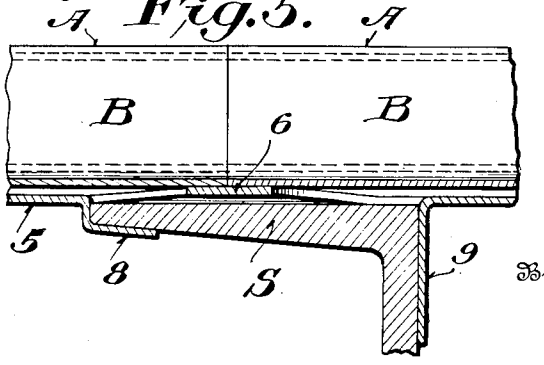


Fig. 7.



Inventor

H. E. White,

By D. T. Wolhampter

Attorney

Patented Aug. 21, 1928. 1,681,830

UNITED STATES PATENT OFFICE.

HERBERT E. WHITE, OF YOUNGSTOWN, OHIO, ASSIGNOR TO THE TRUSCON STEEL COMPANY, OF YOUNGSTOWN, OHIO, A CORPORATION OF MICHIGAN.

FASTENING MEANS FOR METAL ROOF DECKING.

Application filed May 25, 1927. Serial No. 194,175.

This invention relates to metal roof decking, and more particularly to a novel and practical form of fastening device that may function as a coupling for the roof sections between the roof supports or purlins and also as an anchor for connecting the sections to the supports.

To that end the invention contemplates a simple, practical and reliable form of fastening device or clip having features of construction which facilitates its application to the roof forming sheets, and which will be held in firm engagement with the reinforcing elements at the meeting edges thereof thereby avoiding slipping or shifting of the clip when acting as a coupling between the roof supports, and also possessing structural features which enable the clip to be interlocked with a purlin or other roof support where the deck crosses over the purlins. In that connection another feature of the clip is to provide the same with structural characteristics which provide the additional strength necessary for making a rigid splice between supports.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a cross-sectional view illustrating the application of the invention to adjoining deck plates or units.

Figure 2 is a vertical sectional view taken on the line 2—2 of Fig. 1.

Figure 3 is a detail perspective view of the improved clip.

Figure 4 is a vertical cross-sectional view taken on the line 4—4 of Fig. 2.

Figure 5 is a detail sectional view illustrating the application of the clip to the roof forming plates where they cross a purlin or roof support.

Figure 6 is a detail bottom plan view of the clip with the holding tongues struck out therefrom.

Figure 7 is a side elevation of the clip shown in Fig. 6.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

In the construction of metal roof decking which consists of sheets or sections of metal provided with flanged edge portions, or ribs at the undersides thereof, it is especially desirable that means be provided for readily and quickly connecting the edges of the sections thereby not only to facilitate application and installation, but to provide means for adequately supporting the sections at the joints. Accordingly, the present invention contemplates a novel clip or fastening device in the nature of a sleeve for telescopically fitting over the depending flanges or ribs of adjoining sections for holding them together to resist lateral separation and at the same time providing connecting means and anchoring means where the necessity for such function occurs.

Referring to Fig. 1 the metal plates or sheets constituting the deck are designated generally as A and are preferably formed at their undersides with the longitudinal reinforcing ribs B extending throughout their length. These ribs may be formed in any suitable manner, and quite obviously may assume different cross-sectional shapes, but a practical rib construction is shown in the drawings as an example. These reinforcing ribs not only stiffen the sheet A but also provide a convenient means for receiving the clip elements designated generally as C.

In the form of clip or fastening device C shown in the drawings, the same primarily consists of a metallic body formed from a single piece of metal to conform generally to the shape of the ribs B. Although the ribs in the drawing are shown as of a substantially T-shaped formation, nevertheless, it will be understood that it is within the scope of the invention to make the body of the clip of any cross-sectional shape or design to telescopically fit over the ribs, but in all cases certain distinctive features and characteristics are preserved to attain the various objects heretofore set forth. These features include a sleeve-like body comprising the wall or web members 1 formed at their upper edges with the offset deck engaging head flanges 2 and having at their lower ends the tubular base or equivalent portion 3 which manifests itself in the present embodiment in the form of what may be termed a tolerance loop including the offset cuff portions 4 which are connected by a bottom wall 5. This bottom wall is provided with an intermediate raised

or deflected portion providing an abutment 6 for frictionally engaging with the bottoms of the ribs B and insuring a tight non-slipping fit between the clip and the deck plates. This feature is one of much practical importance since it will be observed that the loop 3 is preferably made larger than the part of the rib intended to be embraced thereby so that when the clip is applied to the ribs there will be sufficient tolerance and yield or spring in the raised portion 6 to permit of the flanges 2—2 being forced upwardly into firm and positive engagement with the undersides of the deck plates while at the same time the loop itself has a positive frictional engagement with the bottoms of the ribs. Thus, this arrangement provides for an extended frictional engagement between the clip and the deck plates, assuring a tight and practical fit between the clip and the deck plates which will prevent accidental movement or gripping of the clips where the joints occur between purlins or roof supports. Also this formation of the clip provides sufficient tolerance to readily adapt the clip to slight inequalities in the sections of the deck or ribs and insures a snug fit under all conditions of use.

In connection with the raised abutment 6 it will be observed from Figs. 6 and 7 that the inclined ends 7 thereof may be cut to provide bendable keeper tongues 8 and 9 so that when the clip is arranged at a roof support or purlin these tongues may be bent downward as shown in Figs 6 and 7 and applied to a purlin as shown in Fig. 5. That is to say, the tongues 8 and 9 are spaced so that when they are deflected or bent downward they will straddle the purlin or roof support S, and the tongue 8 may be clenched or bent around one edge of the purlin thereby to prevent lifting of the roof sheets as well as cooperating with the tongue 9 to prevent longitudinal shifting. When the clips are used between joints the tongues 8 and 9 need not be bent down out of the plane of the inclines 7, but their provision as an integral part of the clip renders the same useful for location between supports as well as at the supports.

As will also be seen from Fig. 3 of the drawings the bottom wall 5 of the clip is provided with an extension 5^a and one end of the walls 1—1 are provided with the outturned wings 10. The extension 5^a and the wings 10 cooperate to facilitate the placing of the sheets, because, in installing the clips the end of the clip opposite the wings 10 may be fitted over the deck sheets which have already been joined and then left to project slightly beyond the edge of such joined sheets so that the next adjacent sheets to be laid may be fitted together and guided into the space between the walls, through the aid of the base extension 5^a and the wings 10.

From the foregoing it will be apparent that the present construction provides a clip or coupling for connecting adjacent deck sheets or plates in such a way that the clip is frictionally held to the sections thereby preventing slipping or sliding of the clips. As a matter of fact, the clips must be driven to their final position after they have been located and the sections have been preliminarily coupled together in the manner above described in connection with the base extension 5^a and the wings 10. Furthermore, the structural features and characteristics described render the clip of more or less universal application in the respect that they may be used either between roof supports or at the supports.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invetnion and scope of the appended claims.

I claim:—

1. A fastening device for metal roof deck plates having depending abutting flanged rib elements at their undersides, comprising a body conforming to the shape of and telescoping over the rib elements of adjacent plates, said body having the intermediate portion thereof pressed inwardly to provide an abutment for engaging the undersides of the ribs.

2. A fastening device for metal roof deck plates having rib elements at their undersides, comprising a body conforming to the shape of and telescoping over the rib elements of adjacent plates, said body comprising web portions, flanges offset from the web portions and a loop portion at the bottom of the webs of greater depth than the bottom of the ribs, and means at the bottom of the loop for frictionally engaging the undersides of the ribs to wedge the body on the ribs.

3. A fastening device for metal roof deck plates having rib elements at their undersides, comprising a body conforming to the shape of and telescoping over the rib elements of adjacent plates, said body including spaced web portions, flanges offset outwardly from the upper edges of the web portions, and a base of looped formation formed at the bottom of the web portions, means at the bottom of the base portion for frictionally engaging with the ribs, and means at one end of the body for assisting in guiding adjoining sections into the same.

4. A fastening device for metal roof deck plates having rib elements at their undersides, comprising a body conforming to the shape of and telescoping over the rib elements of adjacent plates, said body including

spaced web portions, flanges offset outwardly from the upper edges of the web portions, and a base of loop formation formed at the bottom of the web portions, means at the bottom of the base portion for frictionally engaging with the ribs, and means at one end of the body for assisting in guiding adjoining sections into the same, said means comprising flared guiding wings carried by the ends of the web portions and an extension formed from one end of the base.

5. A clip for connecting metal roof deck sections having rib elements at their undersides, either at or between the location of the roof supports, comprising an elongated body conforming to the shape of and telescoping over the rib elements and having a relatively loose fit with said rib elements at the ends thereof thereby to facilitate initial application of the clip to the deck sections, and means at the medial portion of said clip for frictionally engaging said sections at the joint thereby to provide a positive frictional interlock between the sections and the clip.

6. A clip for connecting metal roof deck sections having rib elements at their undersides, comprising a body conforming in shape to and adapted to telescope over the rib elements and including web portions and head flanges offset therefrom, said web portions being united by a tolerance loop having means for receiving the rib elements of adjoining sections loosely to facilitate initial assembly and provided at the intermediate part of its bottom portion with a rib engaging abutment for frictionally engaging the ribs and providing a positive frictional interlock between the same and the clip.

7. A sleeve clip for connecting adjoining sections of metal roof deck plates having rib elements at their undersides, comprising an elongated body formed from a single plate of metal and having a frictional rib engaging abutment pressed inwardly from the bottom at one face thereof and also having tongues cut from the body and adapted to be deflected in a direction opposite the abutment to provide a holding engagement with a roof support.

In testimony whereof I hereunto affix my signature.

HERBERT E. WHITE.