Oct. 9, 1951 J. B. DE ANGELIS 2,570,326

FASTENING DEVICE FOR SHEET MATERIAL

Filed Dec. 30, 1946

Fig. 1.

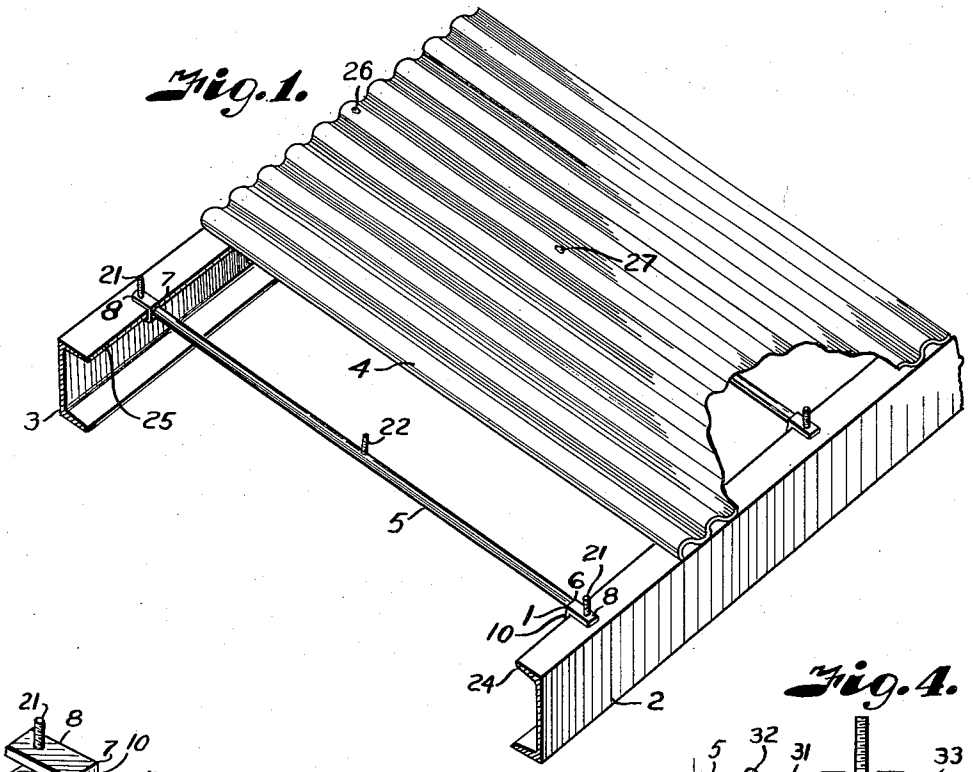


Fig. 2.

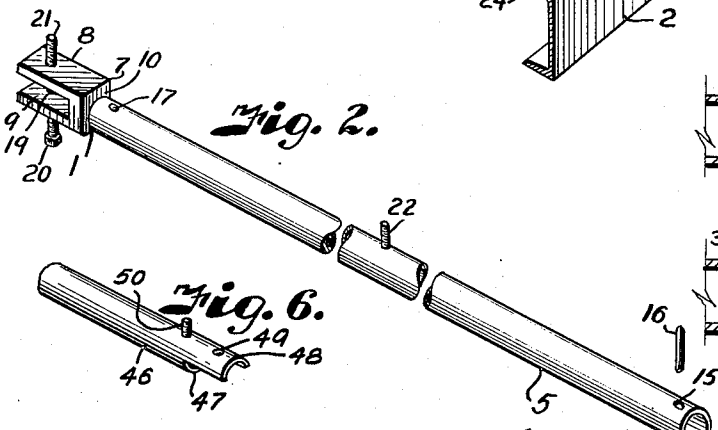


Fig. 3.

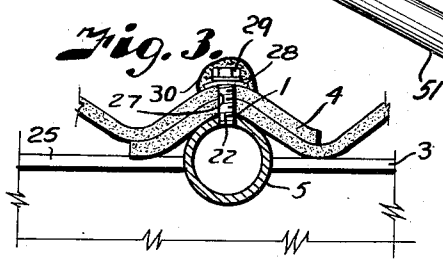


Fig. 4.

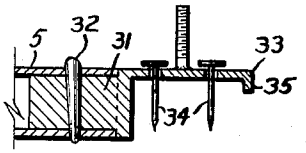


Fig. 5.

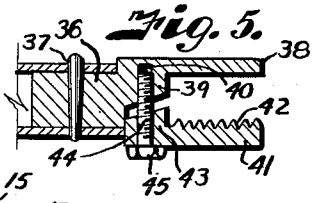
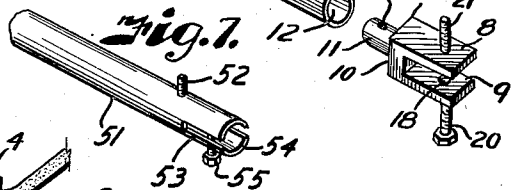


Fig. 6.

Fig. 7.



Inventor

Joseph B. De Angelis.

By

Fishburn & Mullendore

Attorneys

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FASTENING DEVICE FOR SHEET MATERIAL

Joseph B. De Angelis, Trenton, N. J.

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4 Claims. (Cl. 189—35)

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This invention relates to fastening devices, and more particularly to a device for fastening sheet material to a supporting structure, such as a roof or side wall of a building.

Heretofore in fastening corrugated sheets to supporting structures, it has been necessary to work from the under side or inside of the structure, as well as the outside, for fastening the sheet to the supporting structure. In building constructions where the walls and roofs are of considerable height, it is necessary to build a scaffolding under the roof structure so that the workmen may have access to the under side of the sheet material, and this is also true of siding material, it being necessary to build a scaffolding on the inside as well as the outside to fasten the corrugated sheet to the supporting structure.

It is, therefore, the principal object of the present invention to provide a fastening device which may be utilized for fastening sheet material to a roof structure from the top of the structure, and siding material from the outside only of the structure.

Other objects of the invention are to provide a device running parallel with the sheet material and having its respective ends engaging the supporting structure, having stud bolts for extending through the corrugated sheet for fastening the sheets to the supporting structure; to provide removable ends for the fastening device so that the devices may engage the supporting structure; to provide means for clamping the ends to the supporting structure; and to provide a device of this character which is simple, economical to manufacture and efficient in operation.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of my fastening device showing the same attached to a supporting structure with parts of the sheet material broken away to better illustrate the invention.

Fig. 2 is a perspective view of the fastening device with one end shown in disassembled relation.

Fig. 3 is a transverse cross section through the fastening device and corrugated sheets showing the sheets attached to the fastening device.

Fig. 4 is a sectional view of a modified form of invention particularly illustrating nails for fastening the device to a supporting structure.

Fig. 5 is a further modified form of invention

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showing a removable clamping jaw for the end of the fastening device.

Fig. 6 is a fragmentary perspective view of a further modified form of the invention.

Fig. 7 is a fragmentary perspective view of a further modified form of the invention.

Referring more in detail to the drawings:

1 designates a fastener embodying the features of my invention adapted to be attached to purlins 2 and 3 here shown to be substantially U-shaped channel members comprising a supporting structure for a roof 4 comprising corrugated sheets of material. While my invention is particularly adapted for fastening a roof structure composed of corrugated sheets, it will also be understood that it may be used for fastening siding to building structures.

The fastening device consists of an elongated member 5 here illustrated to be a tube, although a rod or other structure may be utilized. Forked members 6 and 7 are provided to be removably mounted on the respective ends of the tubular member 5 to clamp the device to the purlins. The forked members have arms 8 and 9, respectively, connected by bars 10 provided with outwardly extending members 11 which are welded or otherwise suitably secured to the bars. The members 11 are adapted to engage in the open ends 12 of the tubular member 5, the outwardly extending members having openings 13 aligning with openings 15 in the respective ends of the tubular member adapted to receive pins 16 and 17 for securing the forked members on the tubular member 5. The arms 9 of the forked members 6 and 7 are provided with threaded openings 18 and 19 adapted to receive the threaded shanks of bolts 20 for clamping the ends to the purlins.

The arms 8 of the forked members are provided with upwardly extending threaded studs 21 and the tubular member 5 is also provided at substantially the center thereof with an upstanding threaded stud 22, although any number of studs may be supplied as desired.

In using a device constructed as described, the forked end members are secured to the tubular member by the pins 16 and 17 and the respective forks engaged over the flanges 24 and 25 of the purlins 2 and 3, respectively, by turning the tubular member slantwise so that the forked members are inserted over the flanges. The rods are placed at spaced distances and are adapted to fit in the corrugations of the sheets 4 of the roofing material. The bolts 20 are screwed into the openings 18 and 19 of the arms 9 of the forked members 6 and 7 to engage against the under

side of the flanges 24 and 25 of the purlins to hold the fastening device in place and prevent slipping on the purlins. The sheets of material are lapped over a corrugation as best illustrated in Fig. 3 and the corrugations provided with mating openings 26 in the respective ends and an opening 27 in substantially the center thereof. The pins 21 of the forked members are adapted to engage in the openings 26 of the corrugated sheets and the pin 22 in the opening 27 of said sheets. Washers or the like 28 may then be applied to the threaded stud bolts and nuts 29 applied to the bolts. The nuts and washers may be covered with a waterproof material, such as putty, cement or the like 30, also as illustrated in Fig. 3.

Fig. 4 illustrates a modified form of end for the rod or tubular member 5 which comprises an extension 31 adapted to be inserted into the ends of the tubular member and fastened by pins 32, as in the preferred form of the invention. An arm 33 is provided with openings adapted to receive nails or the like 34 for fastening the end members 31 to a wood structure (not shown). The end of the arm 33 is turned transversely to form a flange 35 to engage over the wood supporting structure.

Fig. 5 illustrates an end member having an extension 36 for engaging in the open ends of the tubular member and adapted to be secured thereon by pins 37. The end member has an arm 38 provided with an offset portion 39 having a threaded bore 40. A removable jaw 41 having teeth 42 is provided for cooperating with the arm 38 to provide the forked member as in the preferred form of the invention. The base portion 43 of the jaw 41 is provided with an opening through which a threaded shank 44 of a bolt 45 extends to secure the jaw 41 to the arm 38. When this form of clamping forked member is applied to the flanges of the purlins 2 and 3 as in the preferred form of the invention, the teeth 42 will engage the under side of the flanges to prevent slippage on the purlins.

Referring to the modified form of invention shown in Fig. 6, 46 represents an elongated member adapted to be extended between the purlins 2 and 3 and has a cut-out portion as indicated at 47, forming an extension 48 having an opening 49 and an upstanding stud 50 on each end of the member 46 which extends through the sheeting 4 for securing the sheeting to the fastening device. as in the preferred form of the invention. This type of fastener is also adapted for use with wooden purlins or the like and may be fastened to the purlins by nails as in the form of invention shown in Fig. 4.

The invention shown in Fig. 7 consists of a tubular member 51 adapted to engage the purlins 2 and 3 and is provided with upstanding studs 52 adapted to be inserted through the sheeting 4 for fastening the sheeting thereto as in the preferred form of the invention. The respective ends of the tubular member 51 are provided with slots 53 which engage the flanges 24 and 25, respectively, of the purlins 2 and 3. In attaching these devices to the purlins the members 51 are placed at an angle so that the slots will engage over the flanges and then the tubular members 51 straightened to the desired place. The lower portions 54 of the slotted ends are provided with openings adapted to receive a set screw or the like 55 for securing the fasteners rigidly to the purlins.

It will be obvious from the foregoing that I have provided an improved fastening device for sheeting material adapted to be supported on a roof or siding structure which may be assembled from the top of the roof or outside of the structure without the necessity of scaffolding on the inside of such structure.

What I claim and desire to secure by Letters Patent is:

1. A structural assembly comprising, in combination, a plurality of laterally spaced supports, an elongated member extending between the supports, forked members removably mounted on the ends of the elongated member and having upper and lower arms engaging the supports, means securing the arms of the forked members to the supports, a plurality of covering sheets overlying the supports and overlapping at their mating edges, said sheets having a plurality of aligned spaced openings therein, said elongated member underlying and engaging said sheets in alignment with the openings therein, upstanding threaded studs on said elongated member and the upper arms of the forked members extending into the aligned openings in the sheets, and means engaging said studs and sheets and retaining said sheets on the support.

2. A structural assembly comprising, in combination, a plurality of laterally spaced supports, an elongated tubular member extending between the supports, forked members at the ends of the tubular member and having upper and lower arms engaging the supports, shanks on the forked members and extending into the ends of the tubular member, means removably fastening said shanks in said tubular member, means securing the arms of the forked members to the supports, a plurality of corrugated sheets overlying the supports, the crown of one corrugated sheet overlapping the crown of a mating sheet and having aligned spaced openings in said crowns of the corrugations, said elongated tubular member underlying and engaging the crown of the overlapped corrugations of the sheets in alignment with the openings therein, upstanding threaded studs on said elongated tubular member and the upper arms of the forked members extending into the aligned openings in the sheets, and nuts engaging said studs and sheets and retaining said sheets on the supports.

3. A structural assembly comprising, in combination, a plurality of laterally spaced supports, an elongated tubular member extending between the supports, forked members at the ends of the tubular member and having engagement with the supports, means removably securing said forked members to said tubular member, means securing the forked members to said supports, a plurality of corrugated sheets overlying the supports, the crown of one corrugated sheet overlapping the crown of a mating sheet and having aligned spaced openings in said crowns of the corrugations, said elongated tubular member underlying and engaging the crown of said overlapped corrugations of the sheets in alignment with the openings therein, upstanding threaded studs on said elongated tubular member and the forked members extending into the aligned openings in the sheets, nuts engaging said studs and sheets and retaining said sheets on said supports, and a sealing material covering said nuts.

4. A structural assembly comprising, in combination, a plurality of laterally spaced purlins having laterally directed flanges thereon, an elongated tubular member extending between the purlins, forked members having shanks engaged in the ends of said tubular member, means clamping the forked members to the flanges of said

purlins, a plurality of corrugated sheets overlying the purlins, said corrugated sheets overlapping at their mating edges and having aligned spaced openings in selected corrugations, said elongated tubular member underlying and engaging the sheets in alignment with openings therein, upstanding threaded studs on said elongated tubular member and forked members extending into aligned openings in the sheets, and nuts engaging said studs and sheets and retaining said sheets on the purlins.

JOSEPH B. DE ANGELIS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
834,409	Ropp	Oct. 30, 1906
849,664	Deeds	Apr. 9, 1907
1,477,657	Meyer	Dec. 18, 1923
1,574,329	White	Feb. 23, 1926
2,015,129	Voight et al.	Sept. 24, 1935
2,223,400	Bigelow	Dec. 3, 1940
2,419,005	Bochot	Apr. 15, 1947
2,419,663	Swope	Apr. 29, 1947

FOREIGN PATENTS

Number	Country	Date
232	Great Britain	1865
347,925	Great Britain	May 7, 1931
823,539	France	Oct. 18, 1937