Oct. 7, 1947. H. H. DOE 2,428,361

ROOFING

Filed Dec. 31, 1945 3 Sheets-Sheet 1

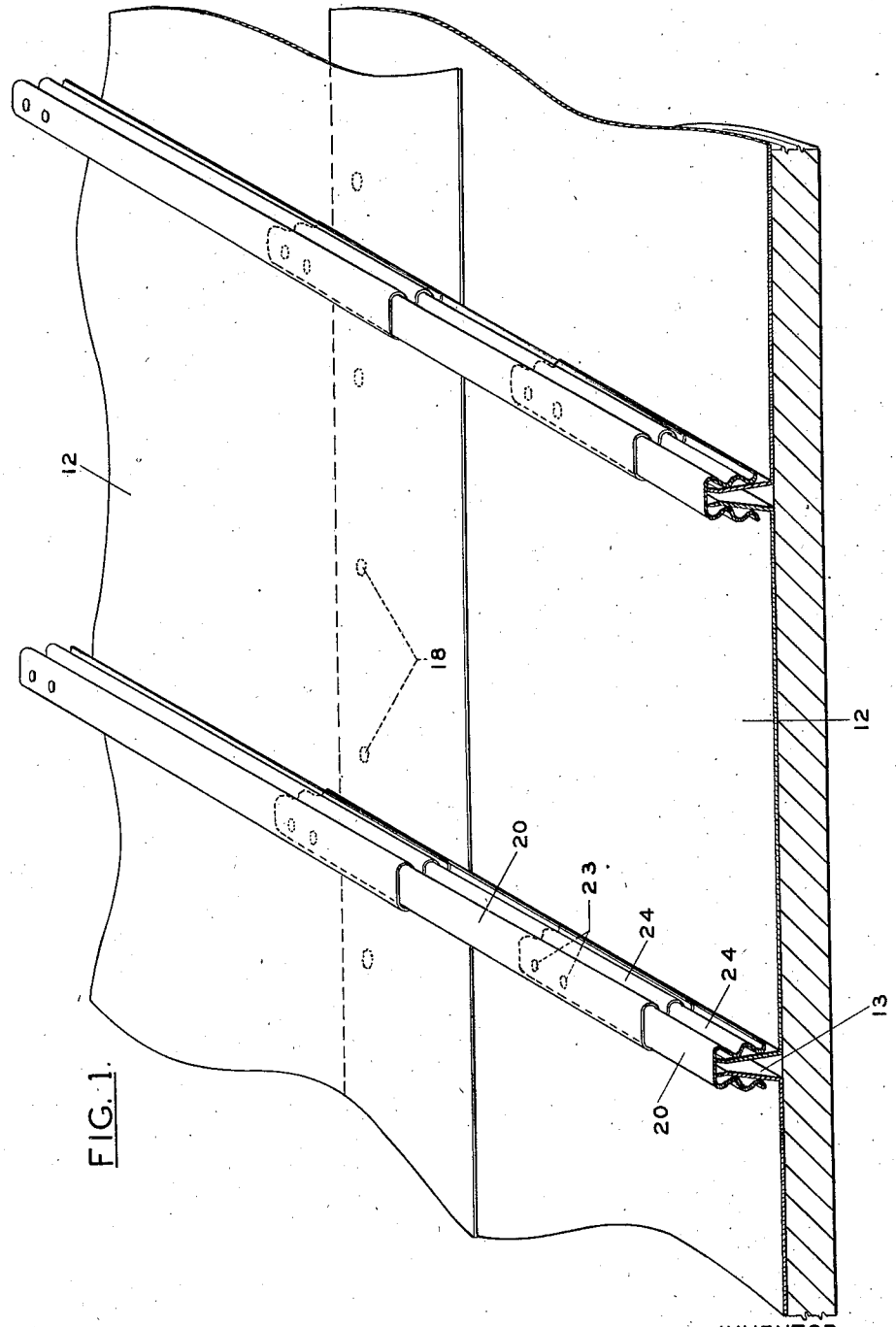

FIG. 1.

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Oct. 7, 1947. H. H. DOE 2,428,361

ROOFING

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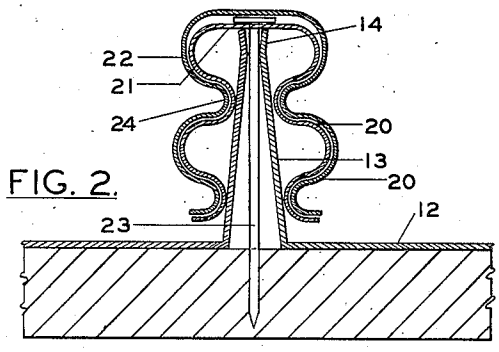


FIG. 2.

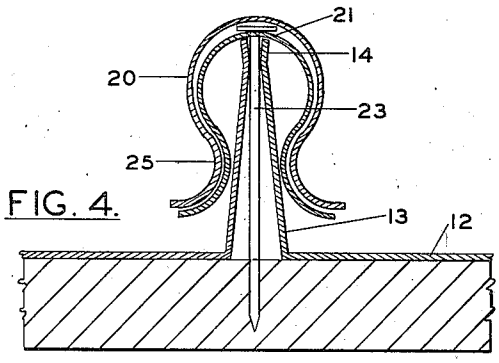


FIG. 4.

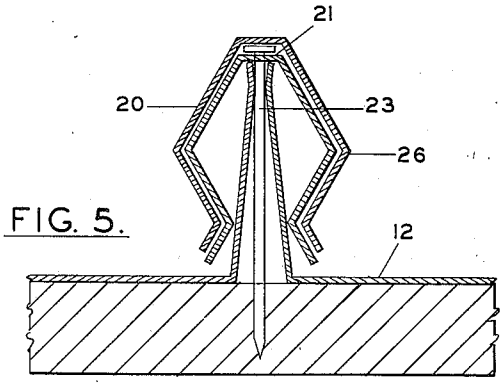
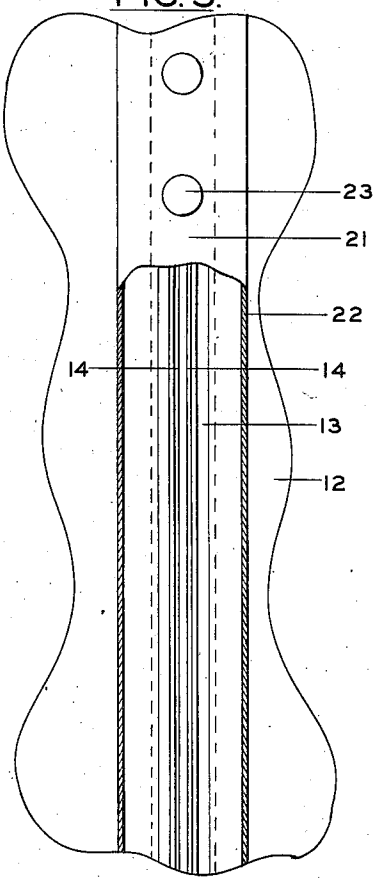


FIG. 5.

FIG. 3.



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Oct. 7, 1947. H. H. DOE 2,428,361

ROOFING

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FIG. 7.

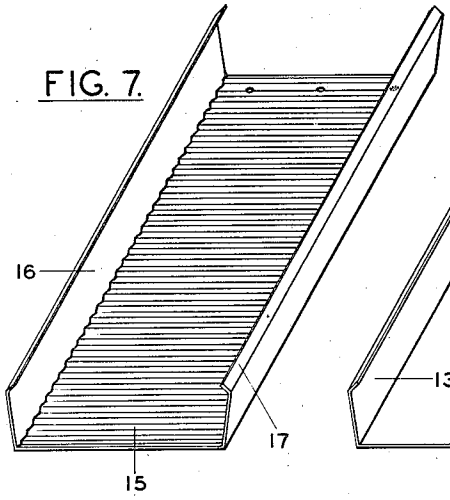
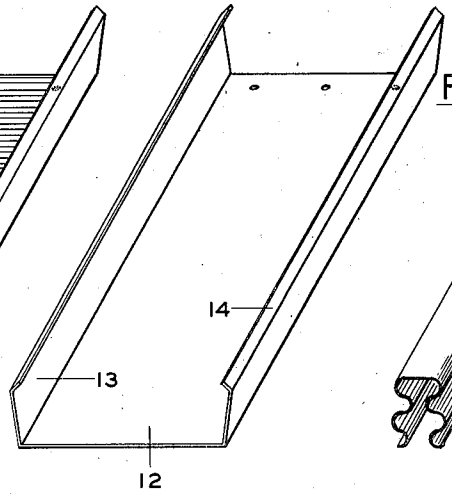


FIG. 6.



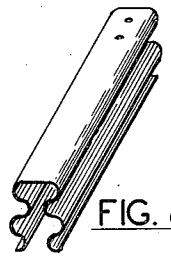


FIG. 8.

FIG. 9.

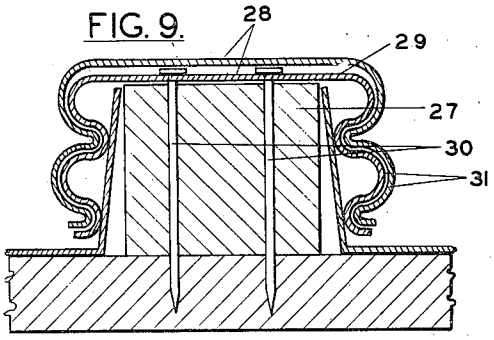


FIG. 10

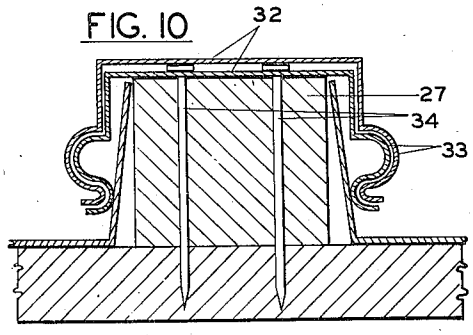
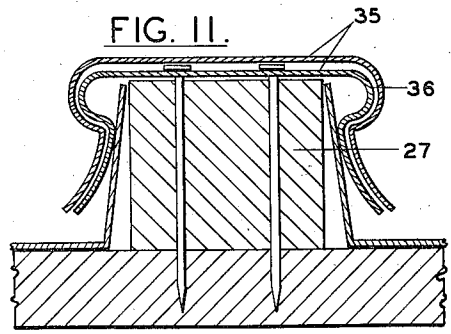


FIG. 11.



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Patented Oct. 7, 1947

2,428,361

UNITED STATES PATENT OFFICE

2,428,361

ROOFING

Hans H. Doe, Milwaukee, Wis.

Application December 31, 1945, Serial No. 638,574

6 Claims. (Cl. 108—21)

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The invention relates to roofing and/or siding.

Those types of roofing or siding in which metallic roofing or siding sheets have their side edges upturned or flanged, either to form a standing seam or a batten seam have often not proven satisfactory because their construction has been such that sufficient free lengthwise movement due to contraction or expansion of the sheets has not been permitted. Also, in case of standing seam roofs, destructive total area horizontal movement has often been unintentionally allowed. Either of these faults lead to quick failure of the roof. Furthermore, the joints of the standing seam or batten seam roofing or siding have been formed or finished on the job, making the labor cost of such roofing or siding a large part of the total cost.

In my prior United States Letters Patent No. 2,356,833, dated August 29, 1944, these difficulties have been overcome by the joint structure therein shown and described which includes a plurality of spaced clips by which the roofing sheets or plates are held down against the roof. The object of the present invention is to simplify and improve the construction of the above mentioned patent by eliminating the clips and using cover members to function both as covers and hold down means for the roofing or siding plates and further increasing the hold down area. With the structure herein described, the roofing or siding plates are not only held in their applied positions, but permitted free lengthwise movement due to temperature change any horizontal movement in any sheet is prevented from affecting or exerting pressure on the next adjoining sheet.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a perspective view of a roofing structure embodying the invention;

Fig. 2 is an enlarged detailed vertical sectional view through the seam or joint;

Fig. 3 is a detailed plan view of the joint, parts being broken away and parts shown in section;

Fig. 4 is a view similar to Fig. 2 showing certain modifications;

Fig. 5 is a view similar to Fig. 2 showing another modification;

Fig. 6 is a perspective view of one of the roofing sheets;

Fig. 7 is a view similar to Fig. 6 showing certain modifications;

Fig. 8 is a perspective view of one of the cover members;

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Fig. 9 is a vertical sectional view similar to Fig. 2 wherein the plates are spaced apart and their upturned edges are associated with a batten strip;

Figs. 10 and 11 are views similar to Fig. 9 showing modifications thereof.

Referring to Figs. 1 to 8 of the drawings, the roofing or siding material is in the form of plain sheet metal 12 with upturned or flanged sides 13 having inwardly inclined upper edge portions 14, as shown in Fig. 6, or of sheet metal having transversely extending corrugations in its body 15 with upturned or flanged sides 16 having inwardly inclined upper edge portions 17, as shown in Fig. 7, the corrugations serving to strengthen the sheet when made of thin gauge metal. The sheets or plates of definite predetermined lengths are associated together lengthwise by overlapping the lower end of an upper plate with the upper end of a lower plate which upper end is secured to the frame of the roof by nails 18 or other suitable fastening means, as shown in Fig. 1. Thus lengthwise expansion of each plate is permitted. Lengthwise extending lengths of assembled plates are arranged next to similar sets of assempled plates at each side and are joined together by cover members 20 secured to the roof, so that they are free to move lengthwise relative to each other and relative to the roofing plates.

The cover members 20 are of definite predetermined length preferably considerably less than that of the roofing or siding plates as shown by comparison in Figs. 6 and 8 and are made of sheet metal formed to provide a hood or channel structure whose top or web 21 abuts the out turned top of the edges 14 or 17 of the roofing plates and whose sides or flanges 22 abut or yieldingly engage the sides 13 or 16 of the roofing plates. These cover members are associated together lengthwise by overlapping the lower end of an upper cover member with the upper end of a lower cover member which upper end is secured to the frame of the roof or siding by long nails 23 which pass through the top or web of this end of the cover member and thereby cause this cover member to exert a hold down action on the adjoining plates and also permit the relative lengthwise movement of the cover plates to each other and to the roofing or siding plates, and since these cover members yieldingly engage the sides of the roofing or siding plates, lateral expansion of the plates is also permitted. In order that these cover members when assembled together and secured to the roof or siding as above noted may act as a continuous lengthwise extending

hood or channel the sides 22 have a slidably interlocking connection with each other. This interlocking connection may be in the form of a series of interlocking lengthwise extending curved corrugtions 24, as shown in Figs. 1 to 3, or a single curved flange connection 25, as shown in Fig. 4, or a sharply bent V-type corrugation 26, as shown in Fig. 5. With such interlocking connections the interlocking of the lower unfastened end of an upper cover member with the upper fastened down end of a lower cover member acts to bring the remainder of each of the cover members into hold down relation with the top edges of the sides of the roofing or siding plates. As shown in the drawings, these cover members are preferably tapered lengthwise, being wider at the end (here shown as the lower end) which interlocks with the upper end of the lower cover member than at their upper end, this taper or difference in section between the ends of said cover members being preferably equal to twice the thickness of the metal sheet from which said cover members are formed.

The edge portions 14 or 17 of the roofing or siding plates are bent inwardly so as to provide a space to permit quick and ready insertion of the nails 23, but the sides of the plate may be formed continuous or all in one plane, if desired, it being noted that these sides form an obtuse angle relative to the base portion of each plate.

The cover members 20 may be pre-formed, and their flanged sides will permit their interlocking engagement with each other by snapping or pushing down the upper cover member over the lower fastened down cover member. It will also be noted that the flanged or corrugated construction of the sides of these members provides one or more air pockets, which act to stop capillary action of moisture or water and thus prevent this moisture or water creeping up over the tops of the sides of the roofing plates.

The cover members above described may be formed at the factory or in some instances cover strips initially formed to a readily stackable form may be finished formed at the site of the work.

In those cases where it is desired to more widely separate adjoining sections of the roofing or siding from each other as by a batten strip 27, the joints shown in Figs. 9 to 11 may be used.

In Fig. 9 the tops 28 of the cover members 29 are made wider so as to extend over the tops of the strips 27 as well as the sides of the roofing or siding plates and may be secured to the strips at one end by nails 30 which may also fasten said strip to the roof frame. Except for the top edge, the sides of the roofing plates are free of the strips 27. As in the first form, the sides 31 and the cover members 29 are corrugated and similarly associated with each other and with the roofing or siding plates.

The cover members 32 are similar to the members 29 except that only a single interlocking corrugation 33 is provided at each side at the lower edge, and these members are anchored by nails 34 to the strips 27 and to each other and to the plates in a manner similar to the first described form.

The cover members 35 are similar to the cover members 32 except that the grooved interlocking connection 36 between adjoining cover members is at the upper portions of the sides of said members instead of the bottom portion.

The cover members 29, 32, and 35 may in each instance be brought into engagement with their adjoining member by being snapped or pushed down over said member, and in each instance the cover members and roofing or siding sheets are free to move lengthwise relative to their adjoining members and to each other.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the claims.

What I claim as my invention is:

1. A joint structure for roofing or siding in which the covering sheet metal material has upturned flanged sides extending from its base at an obtuse angle comprising cover members engaging the top edges of the spaced upturned sides of adjoining sections of said material to exert a hold down pressure substantially the length of said members while permitting relative lengthwise movement between said sections and relative sliding movement between said cover members and said section to permit contraction and expansion of said sections without danger of buckling of the sheet material or of loosening said cover members, means for anchoring one end only of each cover member to the roof or siding, and means for connecting adjoining cover members together.

2. A joint structure for roofing or siding in which the covering sheet metal material has upturned flanged sides extending from its base at an obtuse angle comprising cover members engaging the top edges of the spaced upturned sides of adjoining sections of said material to exert a hold down pressure substantially throughout the length of said members while permitting relative lengthwise movement between said sections and relative sliding movement between said cover members and said sections to permit contraction and expansion of said sections without danger of buckling of the sheet material or of loosening said cover members and having direct engagement with the sides of said upturned sides of said sheet material, and means for anchoring one end only of each cover member to the roof or siding, adjoining cover members having an interlocking connection with each other, permitting lengthwise movement thereof relative to each other.

3. A joint structure for roofing, siding, and the like in which the covering sheet metal material has upturned flanged sides extending from its base at an obtuse angle comprising cover members engaging the top edges of the spaced upturned sides of adjoining sections of said material to exert a hold down pressure substantially throughout the length of said members while permitting relative lengthwise movement between said sections and relative sliding movement between said cover members and said sections to permit contraction and expansion of said sections without danger of buckling of the sheet material or of loosening said cover members and having direct engagement with the sides of said upturned sides of said sheet material, and means for anchoring one end only of each cover member to the roof or siding, the sides of said cover members being grooved to form an interlocking connection between adjacent cover members.

4. A joint structure for roofing or siding in which the covering sheet metal material has upturned flanged sides extending from its base at an obtuse angle comprising cover members engaging the top edges of the spaced upturned sides of adjoining sections of said material to exert a hold down pressure substantially throughout the length of said members while permitting relative lengthwise movement between said sections and

relative sliding movement between said cover members and said sections to permit contraction and expansion of said sections without danger of buckling of the sheet material or of loosening said cover members, said cover members having lengthwise corrugated side portions interlocking adjoining ends of said members together, and means for anchoring one end only of each cover member to the roof or siding.

5. A joint structure for roofing or siding in which the covering sheet metal material has upturned flanged sides extending from its base at an obtuse angle comprising cover members engaging the top edges of the spaced upturned sides of adjoining sections of said material to exert a hold down pressure substantially throughout the length of said members while permitting relative lengthwise movement between said sections and relative sliding movement between said cover members and said sections to permit contraction and expansion of said sections without danger of buckling of the sheet material loosening said cover members, batten strips interposed between the flanged sides of said sections and free for the most part thereof, said cover strips for the space between said adjoining sections completely covering the tops of said batten strips and extending into engagement with said upturned sides, means for anchoring one end only of each cover member to the batten strip covered thereby, and an interlocking hold down connection between adjoining cover members.

6. A joint structure for roofing or siding in which the ocvering sheet metal material has upturned flanged sides extending from its base at an obtuse angle comprising cover members engaging the top edges of the spaced upturned sides of adjoining sections of said material to exert a hold down pressure substantially the length of said members while permitting relative lengthwise movement between said sections and relative sliding movement between said cover members and said sections to permit contraction and expansion of said sections without danger of buckling of the sheet material or of loosening said cover members, means for anchoring one end only of each cover member to the roof or siding, the adjoining cover members overlapping so that one of the cover members covers the anchored end of the other cover member.

HANS H. DOE.

REFERENCES CITED

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

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Number	Name	Date
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