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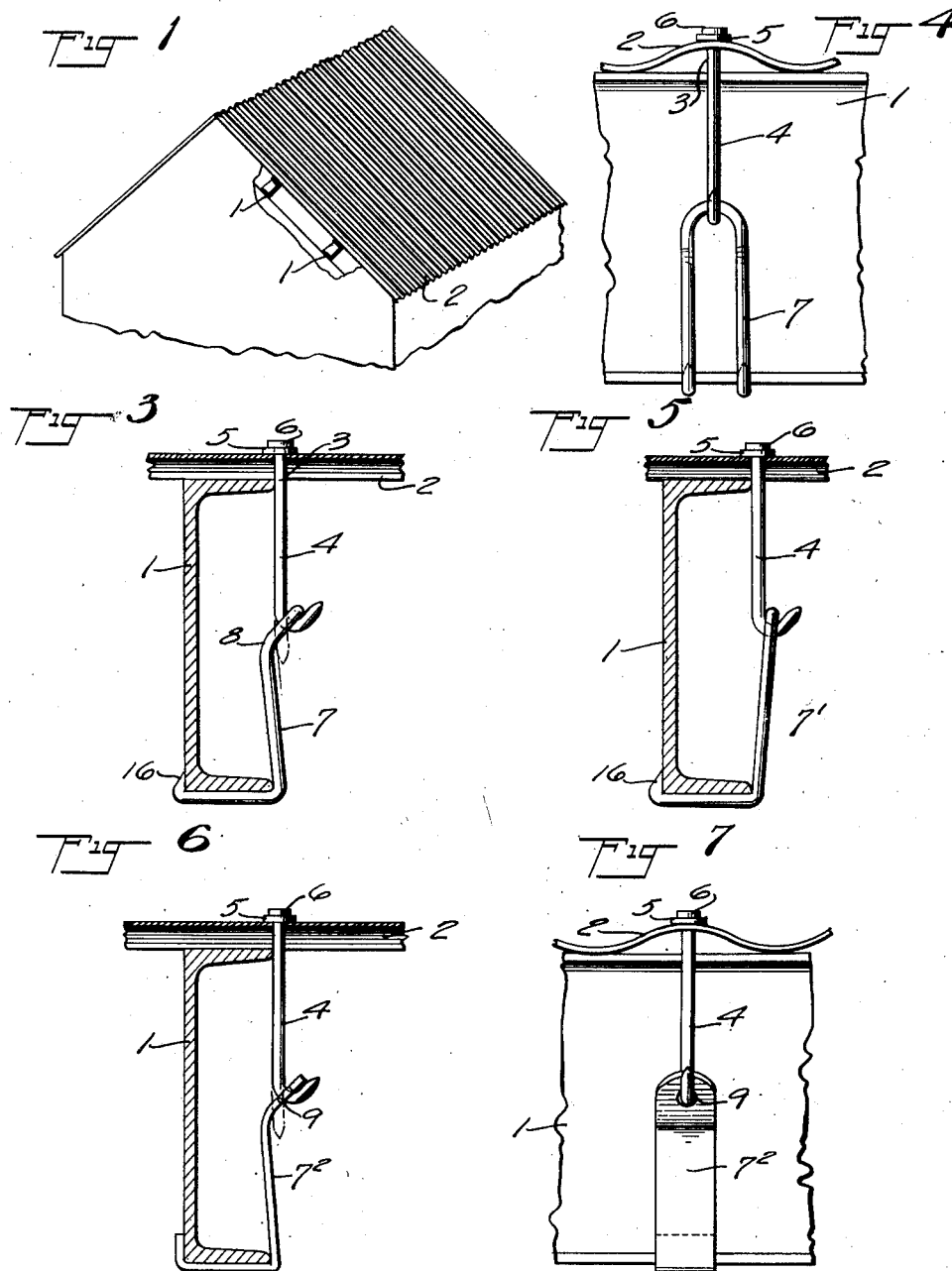
G. C. JONES

1,540,339

FASTENER

Filed Oct. 14, 1922

2 Sheets-Sheet 1



INVENTOR
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BY
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ATTORNEY

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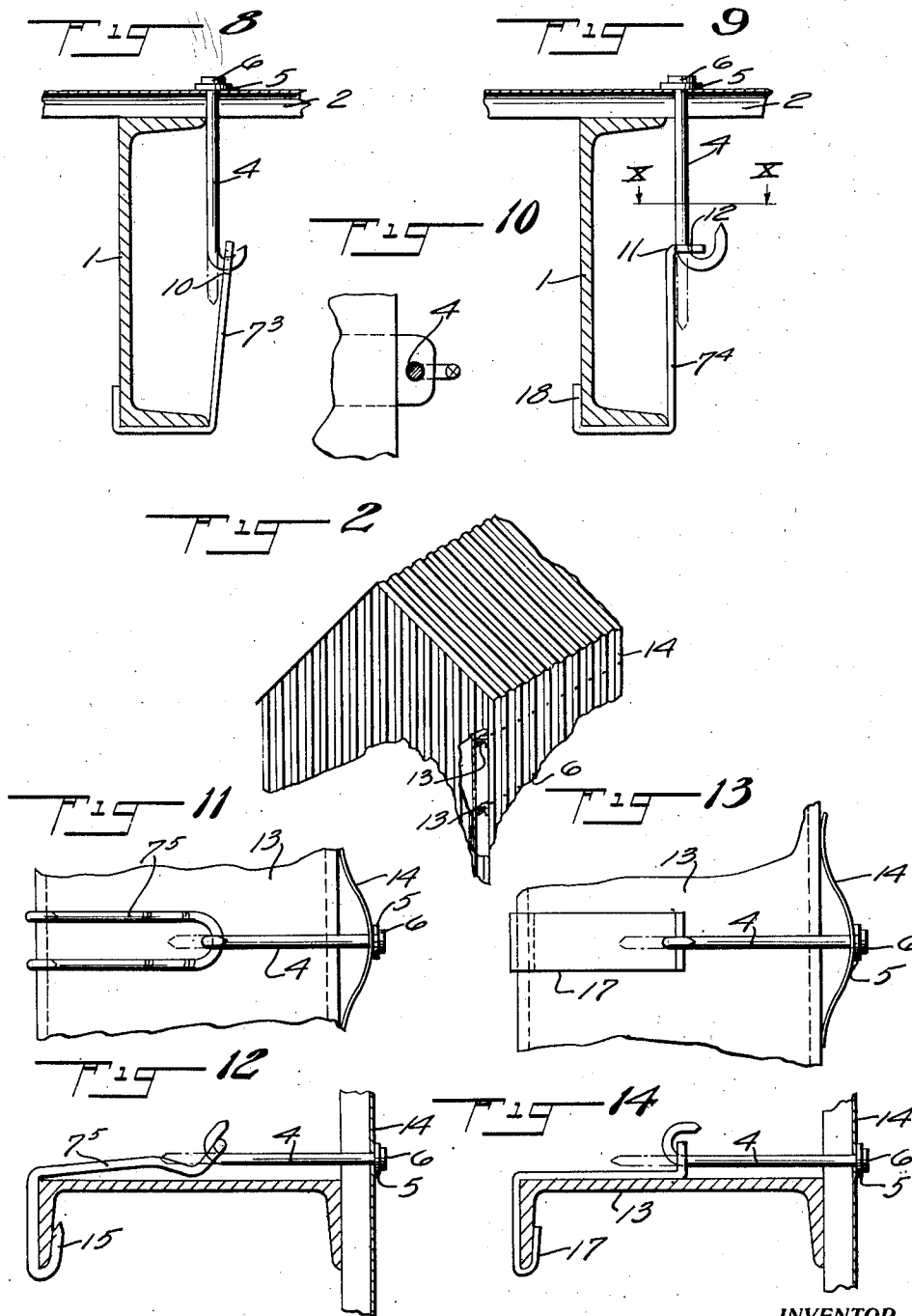
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UNITED STATES PATENT OFFICE.

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FASTENER.

Application filed October 14, 1922. Serial No. 594,475.

To all whom it may concern:

Be it known that I, GEORGE C. JONES, a citizen of the United States, and a resident of Grand Concourse, in the county of Bronx and State of New York, have invented a new and useful Fastener, of which the following is a specification.

This invention relates to fasteners and particularly to fasteners for sheet like material, such for instance, as sheet like roofing or siding, which is laid on or against supports, or building members, such for instance as metallic or concrete, into which an ordinary nail or an article simulating an ordinary nail cannot be driven.

At the present time many buildings, especially industrial buildings, are constructed with a metallic or concrete frame work, and are often covered, both roof and sides, with sheet like material, such as boards, plain or corrugated asbestos, or plain or corrugated sheet metal, and the floors of various sheet materials are also laid on the metallic or concrete members. It is of course obvious that such roofing, siding and flooring must be securely fastened to the members upon or against which it rests.

Heretofore the fastening means has generally included rivets or threaded bolts and nuts and required, first, the formation of an orifice in the covering or building member or generally both, and second, the insertion and subsequent heading of the rivets or tightening of the nuts on the bolts, such operations requiring generally the simultaneous co-operative effect of two skilled workmen, one on one face of the material, and another on the other face of the material.

Applicant's object is to provide a fastener for use where a body must be fastened to a nail impenetrable member, such as where roofing, siding or flooring must be fastened to the nail impenetrable members of a building having metallic or otherwise nail impenetrable members, such as concrete, which may be applied either in a manner as closely approximating as possible the application of nails for fastening the roofing, siding, flooring and other attached bodies of an ordinary wooden frame building, that is, a building the frame work and members of which are constructed of resilient nail penetrable material, or may be applied in a manner more like the application of bolts, that is to say in so far as bolts are positioned in previously formed orifices.

It is a further object of applicant's invention to provide a means for fastening bodies to the members of structures of the type specified which does not necessarily require the simultaneous co-operative efforts of two workmen.

It is a further object of applicant's invention to provide a means of fastening of the type specified which does not require what is ordinarily recognized as skilled workmen for the proper installation thereof.

It is a further object of applicant's invention to provide a means of fastening of the type specified which will be comparatively inexpensive.

Further objects and advantages will appear as the description of the particular physical embodiment selected to illustrate the invention progresses, and the novel features of the invention will particularly be pointed out in the appended claims.

In describing the invention in detail, and the particular physical embodiment selected to illustrate the invention, reference is had to the accompanying drawings, wherein I have illustrated a particular preferred physical embodiment of my invention, and wherein like characters of reference designate corresponding parts throughout the several views, and in which:

Figure 1 is a fragmentary perspective view of a building illustrating the application of my invention to the fastening of a roof covering; Fig. 2, is a fragmentary perspective view of a building illustrating the application of my invention to the fastening of siding; Fig. 3, is a fragmentary cross sectional view of a purlin non-penetrable by an ordinary nail, showing sheet roofing material held in place by a device embodying my invention; Fig. 4, is a side view of the parts as shown by Fig. 3; Fig. 5, is a view similar to Fig. 3, but illustrating a different form of my invention; Fig. 6, is a view similar to Fig. 3, illustrating still another form of my invention; Fig. 7 is a side view of the device as shown in Fig. 6; Fig. 8, is a view similar to Fig. 3 illustrating still another form of my invention; Fig. 9, is a view similar to Fig. 3, of still another form of my invention; Fig. 10, is a cross sectional view of the plane indicated by line X—X of Fig. 9, viewed in the direction of the arrows adjacent the ends of said line; Fig. 11, is a fragmentary plan view illustrating the application of my invention of 1st form com-

parable with that shown in Fig. 3 as applied to fastening a siding as shown in Fig. 2; Fig. 12, is a side view of the device as shown by Fig. 11; Fig. 13, is similar to Fig. 11, but illustrating the application of the form of my invention comparable with that shown in Fig. 9; Fig. 14, is a side view of the device as shown by Fig. 13.

Merely as an illustration of a device embodying my invention and in order to more clearly describe my invention I have in the drawings selected the cases of the attachment of roofing to the roof structure of a building and the attachment of siding to the side structure of a building.

Referring particularly to Fig. 1, numeral 1, designates purlins, metallic in the form illustrated and in the form illustrated being shown as channels, although applicant does not wish it to be understood that his invention is usable solely with metallic purlins, or with metallic purlins of channel section or indeed of any particular material non-penetrable by a nail, or indeed to any particular section, and particularly does not wish to exclude purlins made of such material as concrete or ferro-concrete or purlins corresponding to ordinary angle iron.

On the purlin 1, is laid the roof covering or sheeting or sheetlike material 2, which may be of any appropriate form or material. As will hereinafter more fully appear the material may either be penetrable or non-penetrable by an article such as an ordinary and well known nail. In the structure illustrated I have shown the covering as corrugated sheet metal, as I apprehend my invention will be most often used in connection with such material, but I do not desire to exclude other material penetrable or non-penetrable by an article such as an ordinary and well known nail as usable with a device embodying my invention, and particularly I do not desire to exclude a roof covering or wood or plain sheet metal or plain or corrugated asbestos.

In practice the sheet like material 2 is ordinarily laid in sections upon the purlins 1, and it is necessary to securely fasten the sheet like material 2 to the purlins 1. My invention contemplates the fastening of the sheet like material 2 to the roof purlins 1 by a device in one form as shown by Figs. 3 and 4. By reference to Fig. 3 the sheet like material 2 will be seen as resting upon the channel iron 1, which corresponds to the purlin of Fig. 1. The sheet like material 2 has an orifice 3 formed therein, through which a nail like member 4 extends, closely adjacent one edge of the purlin 1. The orifice in sheet like material 2 may be formed in any well known or desirable way, the method depending upon the nature and thickness of the material 2. If this material is of the proper nature and thinness the nail

like member 4 may be driven through the sheet like material 2 to form the orifice 3, but if the sheet like material 2 is of such material or of such thickness that it seems undesirable or inexpedient to drive the nail like member 4 either supported or unsupported through the sheet like material 2 then the orifice 3 may be formed by any of the methods or means well known which are most appropriate for use with a material of the nature of the sheet material 2 to be acted upon having due regard for the thickness of the material 2, which is being used.

The form of my invention as shown by Figs. 3 and 4 includes a nail like body 4, which initially is perfectly straight, as indicated by the dotted lines at the lower end of the member 4. This member 4 has a washer 5 surrounding it and disposed between the head 6 of the member 4 and the sheet-like material 2. This member 4, as hereinbefore indicated is passed through an orifice 3 made by the member 4 or previously made by some other means in the sheet like material 2 closely adjacent the edge of the purlin 1. This purlin forming the support for the sheet like material 2.

The form of my invention as shown by Figs. 3 and 4 also includes what I will designate as a purlin or support engaging member 7. In the form shown in Figs. 3 and 4 this member 7 is formed of wire of a general U shape as best shown in Fig. 4, and the legs of the U are bent once at any angle so as to lie along the lower face of the purlin 1, and then are again bent at an angle to engage the back of the purlin 1, thus being formed so that the member 7 has a good hold upon purlin 1. The purlin or support engaging member 7 has also at 8 a bend formed therein as best shown by Fig. 3.

After the nail-like member 4 having the washer 5 thereon is passed through the orifice 3 in the sheet-like material 2 the purlins engaging member 7 is engaged with the purlin and the end of the nail like member 4 is passed between the legs of the member 7 and then by any suitable means or method the lower end of the nail-like end of the member 4 is bent up into the form as shown by full lines in Fig. 3 and in such a way that a tension is caused in members 4 and 7, and a slight straightening of the bend 8 may be caused.

By fastening the sheet-like material 2 to the purlin 1, by the means hereinbefore described the sheet-like material 2 is held to the purlin 1 firmly, but resiliently. This is so because the bend 8 in the purlin engaging member 7 causes the purlin engaging member 7 to act as a resilient member, so that the covering 2 is held resiliently to the purlin so that if the covering tends

to move away from the support due to wind or air in motion, or by reason of expansion or contraction due to changes in temperature, the bend 8 gives slightly, but when the force of the wind or the force due to the changes in temperature ceases, then the elasticity of the bend 8 brings the covering down again into firm contact with the purlin, so that the form of the member 7 causes it to act as a resilient connector of nail-like member 4 to purlin 1. This resilient feature is of great importance and I desire in general to employ the means as shown by Figs. 3 and 4 for fastening sheet-like material as 2 to a purlin or support because a building covering is exposed to high winds and extreme changes of temperature. The effects of these forces is most pronounced in the case of sheet metal with which my invention will probably be most frequently used, consequently a fastener of such material must be so devised generally as to allow slight distortions due to such causes but still maintain a firm hold of the material and bring it back to its permanent position after the effect of such temporary forces has disappeared.

A further important feature of my invention resides in the use of the washer 5. This washer may be of any appropriate material but I prefer to use a resilient or malleable material that is a material which will distort under a slight force so that the washer will act as a means of excluding water which may be upon the sheet material 2 from the orifice 3. I prefer to make the washer 5 of lead.

Although for rapidity and convenience, it is best to have a workman on one side of the covering 2 and another workman on the other side of the covering 2, the one to drive the nails through the covering or to position the nails in a previously formed orifice in the covering, and the other to apply the purlin engaging member and to bend the ends of the nails, nevertheless one workman may drive a number of nails through the sheet material 2 or position a number of nails in previously formed orifices in the sheet material 2 and then go to the other side of the sheet material 2, and complete the operation by applying the purlin engaging members so that it is not absolutely necessary to have the simultaneous co-operative efforts of two workmen.

The nail member 4 of the form of my device as shown by Figs. 3 and 4 may well be the ordinary, say eight or ten penny nails of commerce for most work, although it should preferably be galvanized before use, in order to lengthen its life. It must be made of material of such size and strength that it may be driven through the covering as 2, whenever the method of driving is adopted, rather than the method of

inserting the nail in a previously formed orifice. Of course I desire to have it understood that the member 4 may be an ordinary nail of commerce or may simulate such article, but I desire to have it understood also that I do not desire to exclude forms of the member 4 other than cylindrical or with a head such as 6 which is not integral with the remainder of the body 4.

In Figs. 5 to 10 inclusive I have illustrated possible modifications of my fastening means. In each of these figures I have illustrated the member 4 as of exactly the same construction as member 4 as shown in Figs. 3 and 4. The purlin engaging member in each of the Figures 5 to 10 inclusive is different from that as shown in Fig. 3. In Fig. 5, the purlin engaging member 7' is practically identical with the purlin engaging member of Fig. 3, except that bend 8 has been omitted. The purlin engaging member 7² of Fig. 6 is substantially identical with that of Fig. 3 except that the member 7² is formed of sheet material rather than wire, and has an orifice 9 formed therein for the reception of the end of member 4. The purlin engaging member 7³ of Fig. 8 corresponds to the purlin engaging member 7' of Fig. 5 except that the member 7³ of Fig. 8 is formed of sheet material rather than of wire and has an orifice 10 to receive the end of member 4. The purlin engaging member 7⁴ of Fig. 9 is made of sheet material and the bend 11 instead of being a slight angle is approximately a right angle, and an orifice 12 is formed in the right angled portion to receive the end of the member 4.

In Fig. 2, the members 13 correspond to the members 1 of Fig. 1, they are horizontal members spaced suitable distances apart vertically of the side of the building and may be called girts. These girts 13 are the members or supports to which the siding 14 is attached just as the roof covering 2 is attached to purlins 1. The nature of this siding 14 may be understood by considering that the statements made hereinbefore in regard to the nature of covering 2 are equally applicable as a description of the siding 14.

In Fig. 11, I have shown the girts 13 the siding 14 and my fastener comprising the member 4 and the girt engaging member 7⁵, which is substantially identical with the member 7 of Fig. 3 except that as it is positioned on the other side of the channel from that shown in Fig. 3, the end 15 is bent at a different angle from the end 16 of the purlin engaging member 7 of Fig. 3.

In Figs. 13 and 14 I have merely illustrated the use of a purlin engaging member substantially similar to purlin engaging member 7⁴ of Fig. 9, except that as it is used with siding.

Of course it is understood that the principle underlying my invention and as exhibited by Figs. 3 and 10 inclusive is equally applicable for use in designing the fastenings not only for the roof coverings as 2 of Fig. 1, but also for fastening other bodies to their supports, as siding 14 of Fig. 2.

Although I have particularly described the construction of one physical embodiment of my invention, and explained the operation and principle thereof, nevertheless, I desire to have it understood that the form selected is merely illustrative, but does not exhaust the possible physical embodiments of the idea of means underlying my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In combination: sheet like material; a nail impenetrable member upon which the said material rests; a washer; a nail like member for forming an orifice in said material and lying in said orifice with the head thereof bearing against the washer and the washer bearing against the face of said material remote from the first mentioned member, the said nail-like member having its end remote from the head formed into a hook and a member hooked about the said hook and engaging the first mentioned member.

2. In combination: sheet like material formed with an orifice therein; a nail impenetrable member upon which the said material rests; a nail like member lying in said orifice with the head on the side of said material remote from the first mentioned member, the said nail-like member formed with a hook and a member hooked about the said hook and engaging the first member.

3. In combination: sheet like material; a nail impenetrable member upon which the said material rests; a washer of yieldable material; a nail like member for forming an orifice in said material and lying in said orifice with the head thereof bearing against the washer and the washer bearing against the face of said material remote from the first mentioned member, the said nail-like member having its end remote from the head formed into a hook and a general U-shaped member resting in the hook with its free ends engaging the first mentioned member.

4. In combination: sheet like material; a nail-impenetrable member upon which the said material rests; a washer of yieldable material; a nail like member for forming an orifice in said material, and lying in said orifice with the head thereof bearing against the washer and the washer bearing against the face of said material remote from the first mentioned member, the said nail-like member having its end remote from the head formed into a hook and a general U-shaped resilient member resting in the hook with its free ends engaging the first mentioned member.

5. In combination: sheet like material; a nail impenetrable member upon which the said material rests; a washer of yieldable material; a nail like member for forming an orifice in said material and lying in said orifice with the head thereof bearing against the washer and the washer bearing against the face of said material remote from the first mentioned member, the said nail-like member having its end remote from the head formed into a hook and a general U-shaped member resting in the hook, the legs of said U formed with a slight bend whereby their resiliency is increased and formed with upturned portions whereby they engage with the first mentioned member.

6. In combination: a sheet like material formed with an orifice therein; a nail impenetrable member upon which the said material rests; a nail like member lying in said orifice with the head on the side of the material remote from the first mentioned member, the said nail-like member formed with a hook and a resilient member hooked about the said hook and engaging the first member.

7. A connector of the character described including a member formed to engage around and partially embrace the free edge of a structural element and a coating member having a head adapted to engage upon the outside of a metal sheet through which said member passes, said members being so formed that strain may be applied to reduce the distance between the head of one member and the structural element engaging portion of the other member at one side of the structural element and intermediate the edge of the structural element and the sheet.

GEORGE C. JONES.