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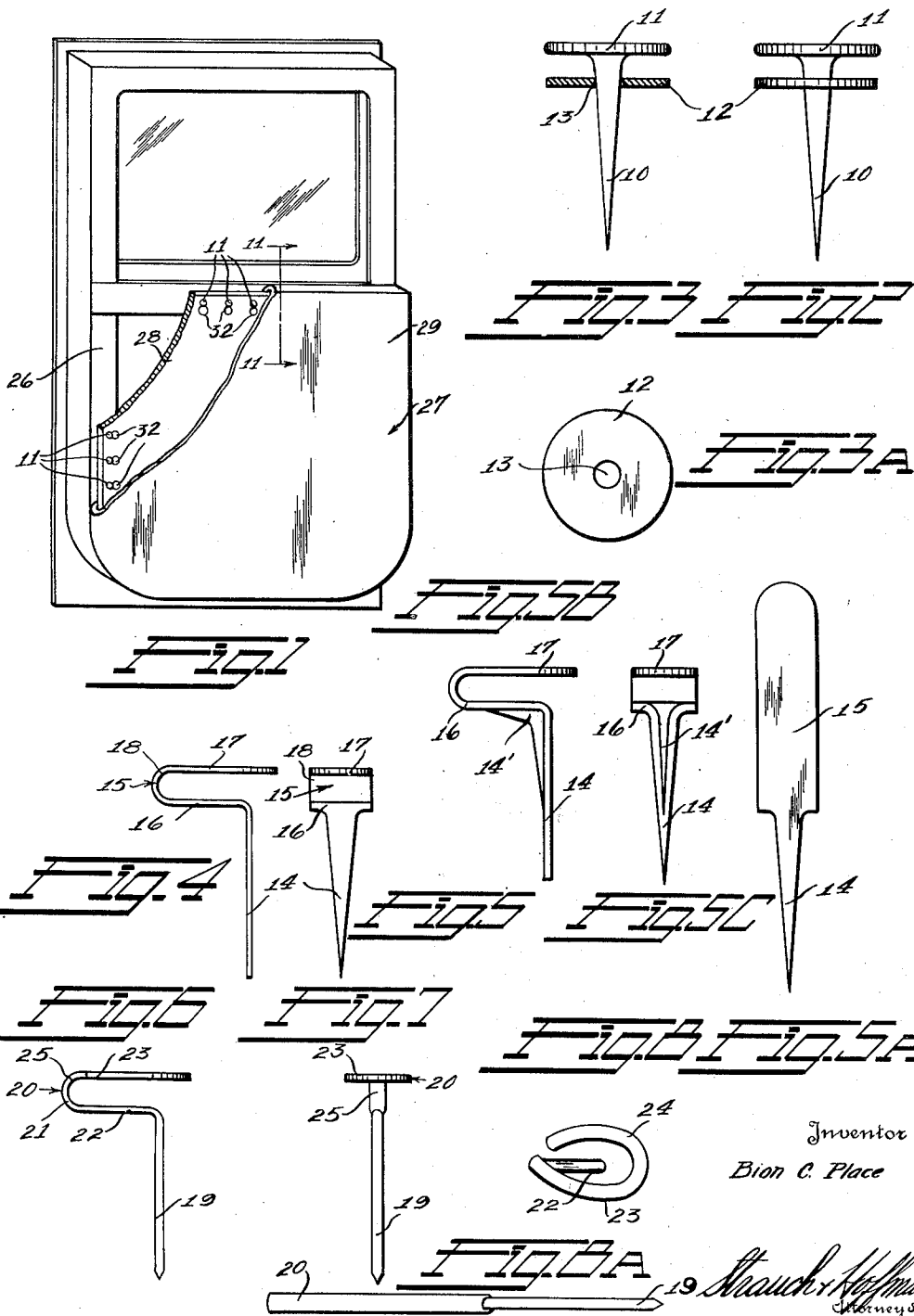
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1,970,335

GRIPPING TACK

Filed Jan. 12, 1931

2 Sheets-Sheet 1



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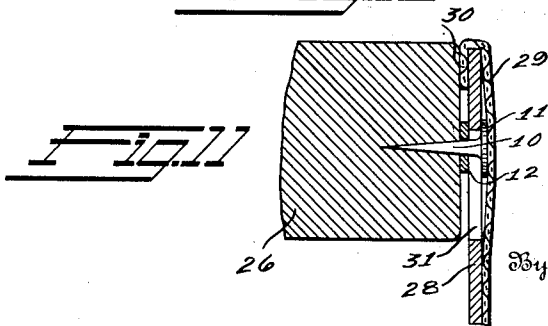
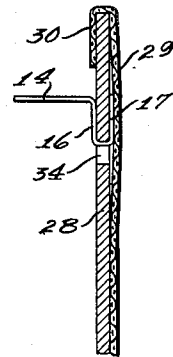
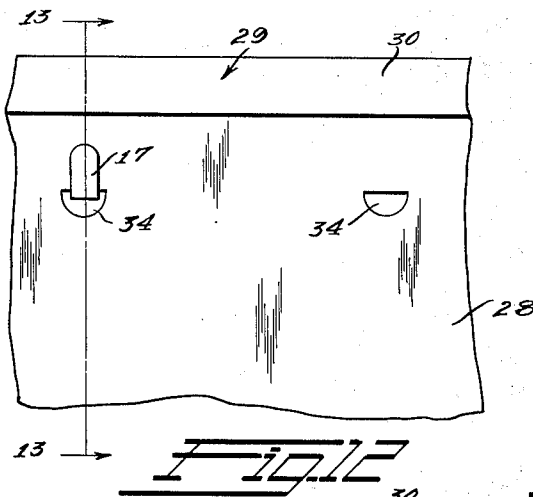
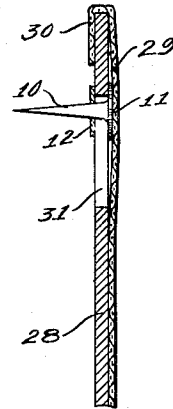
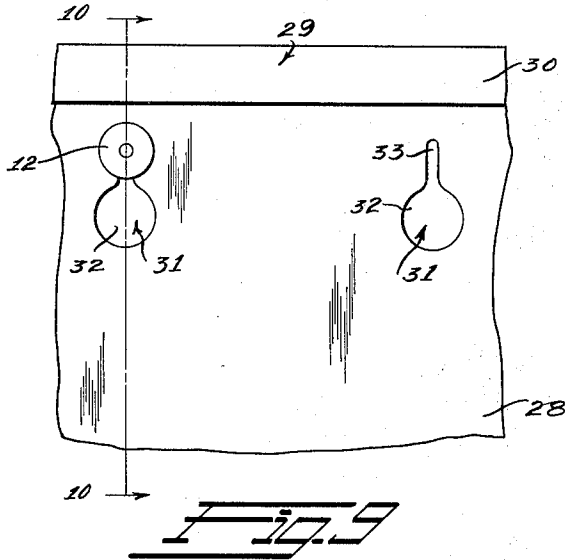
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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GRIPPING TACK

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Application January 12, 1931, Serial No. 508,325

2 Claims. (Cl. 45—138)

This invention relates to a gripping tack designed for the purpose of securing trim, or similar material, to the interior of automobile or similar bodies or for analogous purposes, to novel arrangements including such tacks, and to a method of securing trim panels by means of such tacks.

More particularly, the invention relates to a fastener of the type that does not completely penetrate the material that is secured thereby, so that the fastener is invisible when in use.

Trim panels for automobile bodies generally include a relatively stiff foundation of fibrous or similar material, and a suitable fabric covering for the exposed surface thereof. Several methods are at present followed in securing such panels to wooden or composite bodies by means of driven fasteners. In one of these, it is not necessary to assemble the fasteners and the panels prior to the application of the fabric covering for the panel. Panels are secured, in accordance with this method, by using brads or driven fasteners having a head that is only slightly larger than the shank of the fastener. The brads are driven through the fabric covering and through the foundation of the panel. In order to conceal the small head of the fastener the fabric trim material is then pulled over said small head of the brad so as to cover the same. The hole thus made in the fabric is, however, visible to a close observer, especially when a higher grade material, such as broadcloth is used, or when any material that has substantially no pile, is utilized as the covering for the panel. Furthermore after the panel is secured in this manner the brads have very little holding force on the panel. If the panel expands by reason of the action of moisture, or, if it be subjected to an unusually heavy blow at any time, the heads of the brads are forced through the fiber and the panel is thus loosened. This method with its stated limitations cannot be used when the panel is covered with imitation leather, or with leather, since the holes formed in such material by the brads in passing through the trim panel can not be concealed.

In order to avoid the stated objections to the procedure just outlined, it has been heretofore proposed to combine the driven fasteners with a continuously extending metal molding by welding or otherwise. Such molding is applied to the foundation of the trim panel before the covering material is applied to the exposed surface thereof. This construction is quite expensive, compared to the arrangement utilizing the brads, and it is further objectionable in that the protruding fasteners are assembled with respect to the foundation

of the panel before the application of the covering material, and because said fasteners are assembled with respect to the panel at all times prior to the actual application of the panel to the supporting structure. There is accordingly a consequent liability of penetrating the covering of other panels that may be passing through the factory in the process of construction, assembly and transportation.

To avoid the obvious objections to the constructions just referred to, a third arrangement has been used in practice. Said arrangement consists in the provision of a channel shaped recess, formed during the construction of the body, within which the edges of the panels are slipped so as to hold said panels in assembled relation with respect to the body. This arrangement likewise is not entirely satisfactory in that it requires a special formation of the body to which the panels are applied, and is correspondingly costly.

This invention aims to provide a fastener and a method of securing trim panels free of the above objections, which panels may be covered prior to the application of the fasteners thereto, and in which the fasteners are firmly assembled and interlocked with the foundation of the panel after the completion of the panel, though they do not penetrate the outer panel covering.

A further object of the invention is to provide an improved way of assembling the tacks, used to secure trim panels to composite automobile or similar bodies, after the covering material has been applied to one side of the foundation of such panel, in such manner that the tacks may be individually applied to the foundation of the panel prior to the driving thereof into the supporting structure.

A still further object of the invention is to provide a trim panel ready for application to a composite body in which the tacks are applied to the foundation of the panels through openings that permit the passage of the heads of the tacks after the covering material has been applied to one face of the foundation, so that said material covers said openings or perforations, and in which the tacks abut the opposite sides of the foundation adjacent said openings or perforations in a manner to prevent rocking of the fastener during application to the panel, or the inadvertent disassembly of the tack from the foundation during the application of said panel.

A still further object of the invention is to provide a tack for securing trim material having a hook-shaped head providing a pair of arms that contact with opposite sides of the foundation of

the panel and cooperate to grip the foundation of the panel therebetween.

A still further object of the invention is to provide a tack having a pointed shank and a head and means cooperating with said head to grip the material between the head and said means, which means may assume the form of a washer driven upon the tapered shank of the tack, utilizing the taper ordinarily an inherent characteristic of pointed shanks as the means for retaining said means in spaced relation to the head of the tack.

A still further object of the invention is to provide an arrangement by securing trim material to automobile or similar bodies that includes fasteners, in the form of tacks, that may be assembled with respect to the trim material from the rear or uncovered face thereof as individual units, whereby trim materials of any form and size may be readily applied without requiring the use of moldings or similar special arrangement presenting the awkward problem of applying the molding or the like to shapes of various kinds before able to secure the trim material.

A still further object of the invention is to provide a method of attachment of trim material, by means of driven fasteners, in which the fasteners are associated with the trim material in such a way as to permit the expansion or contraction of the material without causing buckling or bulging of the panel secured by the driven fasteners.

Still further objects of the invention will appear as a description thereof proceeds with reference to the accompanying drawings in which:

Figure 1 is a perspective view of an automobile door with a trim panel secured in position in accordance with this invention and showing one application of said invention.

Figure 2 is an enlarged side elevational view of one form of gripping tack.

Figure 3 is an enlarged side elevational view, the washer driven on the shank of the fastener being shown in section to clearly illustrate the way in which the washer is assembled on the tack.

Figure 3a is a plan view of the washer.

Figures 4 and 5 are side elevational views of a modified form of gripping tack.

Figure 5a is a view of the blank from which this fastener is formed.

Figures 5b and 5c are views similar to Figures 4 and 5 showing a slight modification of the fastener of said last named figures.

Figures 6 and 7 are respectively side elevational views, as seen from two directions at right angles to each other, of a further modification.

Figure 8 is a plan view of the fastener of Figures 6 and 7.

Figure 8a is a view of the blank from which this fastener is formed.

Figure 9 is a fragmentary rear view of a trim panel perforated to receive a gripping tack of the present invention after the covering material has been applied to the exposed surface of the panel, one tack being in applied position.

Figure 10 is a sectional view taken on the plane indicated by line 10—10 in Figure 9.

Figure 11 is an enlarged section taken on the line 11—11 of Figure 1 showing the complete assembly.

Figure 12 is a fragmentary view of the rear of a trim panel showing the application of the modified forms of fasteners to said panel.

Figure 13 is a sectional view taken on the plane indicated by the line 13—13 in Figure 12.

Like reference characters indicate like parts throughout the several figures.

The fastener of the present invention includes a pointed shank, designed to be driven into a wooden or similar structure, a head designed to contact with one side of the material secured by the fastener, and further means adapted to contact with the material on the other side thereof.

One form of such a fastener is illustrated in Figures 2, 3 and 3a and comprises a pointed shank 10 having a head 11 integrally formed with said shank in well known manner. The shank 10 is tapered. In order to provide a means to contact with the other side of the material, a washer 12 provided with an opening 13 is driven along the tapered shank of the pin, until the washer is wedged on said shank so as to be immovably secured thereto. The opening 13 is made of such size that when the washer is immovably wedged on said shank it is spaced from the under surface of the head 11 of the tack a space substantially equal to the thickness of the material to which the fastener is to be applied in a manner hereinafter described. Or, if desired, the collar formed by the washer 12 may be integrally formed during the manufacture of the tack, this invention requiring only a tack having a head and a collar spaced from said head and rigidly secured to the shank of the tack.

A fastener of another form having characteristics similar to the fastener just described, is illustrated in Figures 4, 5 and 5a. This fastener is formed from a flat strip of metal in the form shown in Figure 5a. The blank is stamped from the sheet metal so as to provide a tapered tongue 14 extending away from the end of the elongated relatively wide portion 15. The blank of this figure is bent into the form of Figures 4 and 5, the tapered tongue 14 providing the shank of the fastener, while the relatively wide elongated portion 15 is bent into the form of a hook, the arms 16 and 17 of which are spaced apart an amount substantially equal to thickness of the material to which the fastener is to be applied, as hereinafter described. Arm 17 of the hook is designed to contact with the outer surface of the foundation of the panel, while the arm 16 engages the inner surface thereof. The bight 18 of the hook is spaced substantially laterally from the shank 14, and the arm 17 preferably extends beyond the shank 14 to provide a wide and relatively long bearing surface on the outer side of the foundation of the panel. This spacing of the bight 18 from the shank 14 and the length of the arms 16 and 17 may be varied within wide limits to meet the conditions under which the fastener is used.

If desired, the angle between the tongue 14 and the arm 16 may be strengthened by forming a corrugation or rib 14' extending across said angle. Said corrugation preferably is of maximum depth opposite the corner of the angle and tapers gradually in both directions from said corner as illustrated in Figures 5b and 5c. Such corrugation or rib will greatly stiffen the tack at said corner maintaining the proper angular relation between arm 16 and tongue 14 in driving the fastener. The stiffening of the fastener in the manner just described may be extended further along the tongue and arm, and the angle between the arms 16 and 17 may also be similarly stiffened as may be desired.

A further fastener having somewhat the same characteristics as those just described, is illus-

trated in Figures 6, 7, 8 and 8a. Said fastener is formed from an elongated blank of relatively narrow width illustrated in Figure 8a. Said blank is provided with a portion 19 which is tapered toward one end and a wider portion 20 adjacent the other end, though as illustrated in this figure the portion 20 is relatively narrow in width. The fastener of Figures 6, 7 and 8 is formed from the blank just described by forming a hook head 21 from the portion 20 by bending the blank as illustrated in these figures. Hook-shaped head 21 provides an arm 22 to engage the under surface of the foundation of the panel and an arm 23 to engage the outer surface thereof.

In order that the fastener may have a firm wide contact with the foundation, the portion 20 forming the arm 23 is bent into the form of a loop 24 providing a relatively wide lateral bearing surface that will maintain the fastener from tilting laterally, when the pointed shank 19 is driven into the wooden or similar supporting structure. The bight 25 of the fastener of this form is preferably spaced substantially laterally of the pointed shank 19 and the arm 23 preferably extends beyond said shank, though said arm, as well as arm 23, may be varied in length to suit the conditions under which the fasteners are used.

If desired, the fastener just described may be formed from wire of uniform cross section from end to end by bending said wire to form portion 19, the hook-shaped head 20 and the loop 24 forming a part of said head. In order to limit the protrusion of the loop 24, when constructed in this manner, the material constructing said loop may, if desired, be flattened after the fastener has been bent into form so that the projection of this part of the head beyond the surface of the material secured by it may be minimized.

Gripping tacks, such as just described, are intended particularly for securing trim panels to parts of automobile or similar bodies, for example. The fasteners may be used to secure covered trim panels to automobile doors, such as shown in Figure 1. At the present time, many such doors include a wooden frame 26 adapted to receive a driven fastener. A panel 27 covers the inside of the lower portion of the door, said panel generally including a relatively stiff foundation 28 of cardboard or suitable material, the outer surface of which is covered by a suitable cloth or fabric covering 29, the edges 30 of which are folded around the edges of the foundation 28 so as to completely conceal the foundation. Generally, the fabric covering is glued at its edges to the foundation 28.

It is important that the fabric covering 29 be unperforated and the problem is presented of securing the covered panel in position without perforation of said outer fabric covering, and of avoiding the necessity of assembling the fasteners with respect to the foundation prior to the application of the covering fabric. To this end, the foundation 28 is provided at regularly spaced intervals adjacent the edges thereof with keyhole slots 31, when the type of fastener illustrated in Figures 2, 3 and 3a is to be used. The enlargement 32 of keyhole slot 31 is made of a size sufficient to permit the passage of the head 11 of the gripping tack of Figure 2, so that said head may be arranged between the fabric 29 and the side of the foundation that is covered by said fabric. The smaller portion 33 of the slot 31 is made of sufficient size to receive the portion of the shank of the fastener that is dis-

posed between the head 11 and the washer 12.

The fastener of Figure 2 is applied to the panels, after they have been completed by the application of the fabric material to the outer surface thereof and after said fabric material has been cemented or glued to the foundation 28. Of course, the keyhole slots 31 are put in the foundations prior to the application of the fabric material which, when it is applied, conceals said slots.

The fastener of Figure 2 is assembled with respect to the covered panels just referred to by inserting the head 11 in the enlarged portion 32 of the keyhole slot, and then moving the portion of the shank between the washer 12 and the head 11 into the narrow portion 33 of said slot. The washer 12 is spaced from the head 11 so that the material, adjacent the smaller portion 33 of the slot, is gripped between said washer and the head 11 so that the fastener is held in fixed position, when it is moved in the said narrow portion of the slot. If desired the portion of the shank of the fastener between the washer 12 and the head 11 may be roughened to prevent possibility of movement of the fastener in the narrow portion of the slot, or the washer 12 may be provided with projections to engage the fabric material for the same reason.

As illustrated in Figure 1 the panel is provided around its entire periphery with a series of substantially equally spaced keyhole slots 31. In applying the panel to the supporting structure, each keyhole slot is individually provided with a gripping tack in the manner just described. The panel, with the gripping tacks in position, is then brought opposite the frame that is designed to receive it, and the fastener is driven into the wooden supporting structure 26. In view of the fact that the material on the foundation immediately adjacent the keyhole slots is gripped over a relatively wide area it will be readily understood that the fastener is maintained from tilting laterally during the application of the panel and during the driving of the tapered shank into the wooden supporting structure. Inasmuch as the hammer blows to drive the fasteners into position are directed against a fastener that grips the fibrous foundation over a relatively large area as just stated, there is no possibility of cutting the fiber when driving the tapered shank of the fastener into the wood. At the same time the wide heads of the fastener contacting with the outer side of the foundation insure against the possibility of the trim panel being torn loose from the supporting structure after it has been applied. It will be observed further that since the fastener grips the fibrous material adjacent the narrow portion of the keyhole slots expansion and contraction of the fiber will be permitted, avoiding buckling or bulging of the panels between the fasteners.

When fasteners of the form shown in Figures 4 to 8 inclusive are used a smaller opening 34 may be formed in the foundation. Said openings may be of any desired form. The fasteners being inserted therethrough by tilting the hook-shaped head. The ends of arms 17 or 23 may then be entered through said opening at an acute angle to the surface of the foundation, and said arms may then be moved into position between the fiber 29 and the foundation 28. If desired, the transverse dimension of opening 34 may be made wider than the head of the fastener so as to permit expansion and contraction of the material between the arms 16 and 17.

Figures 12 and 13 illustrate a fastener such as shown in Figures 4 and 5 in assembled relation to a trim panel ready for application to the supporting structure. It will be readily understood that the fasteners illustrated in Figures 6, 7 and 8 may be applied to the foundation of trim panels in precisely the same way in which the fastener of Figures 4 and 5 are shown applied thereto.

- 10 The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

20 What I claim as my invention is:—

1. A composite structure consisting of a supporting structure, a trim panel having a stiff

foundation and a covering of finish material applied over one face thereof, and fasteners having hook-shaped heads contacting in operative position with opposite sides of the foundation and gripping the portions thereof adjacent perforations therein through which the hook-shaped heads can be passed after the finish material has been applied over said first named face of the foundation, said fasteners having a rigid stem and a penetrating point to make its own passage into the supporting structure when forcibly driven into said supporting structure.

2. The combination defined in claim 1 in which said hook-shaped head consists of a narrow metallic strip in the form of a loop to provide a wide bearing for one side of said foundation, a portion disposed into parallelism to said loop to contact with the other side of the foundation and a shank disposed so that the end remote from the loop extends at right angles to said loop.

BION C. PLACE.

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35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150