

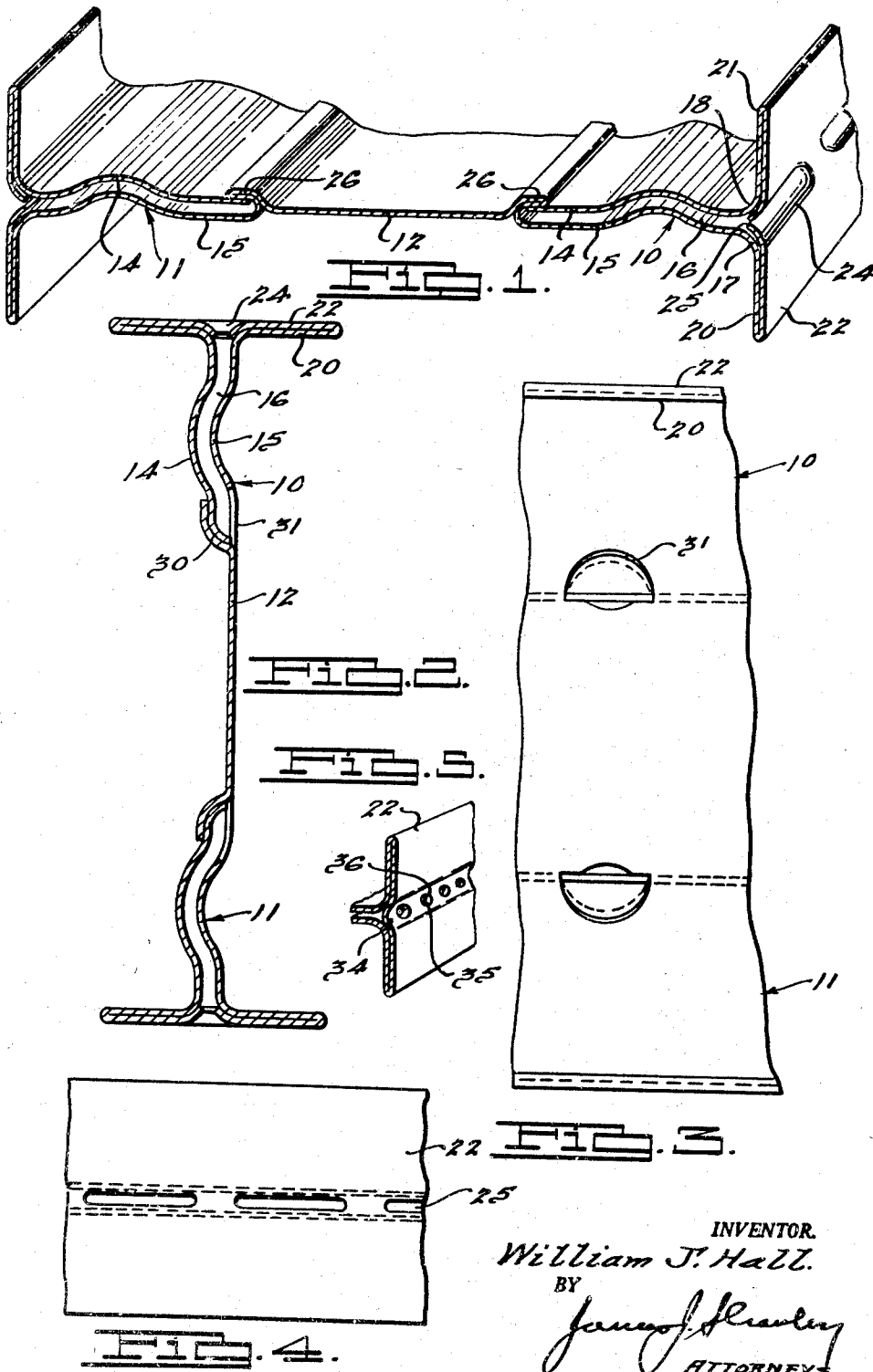
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METAL NAILING BEAM

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METAL NAILING BEAM

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The invention relates to building materials or structures and it has particular relation to steel or metal beams.

In certain respects the invention is related to my copending application for patent Serial Number 516,001, filed December 29, 1943.

One object of the present invention is to provide an improved type of nailing beam in the form of an I-beam structure, which may be manufactured inexpensively from sheet metal.

Another object of the invention is to provide a simple structure having nail receiving grooves or spaces at each side of the beam, which can be constructed from a single or integral piece of sheet metal without requiring fastening means such as welds, rivets or bolts.

Another object of the invention is to provide an I-beam structure of strong character, having nail receiving and clinching grooves or spaces at each side of the beam.

Other objects of the invention will become apparent from the following description, from the drawing to which it relates and from the claims hereinafter set forth.

For a better understanding of the invention reference may be had to the accompanying drawings wherein:

Figure 1 is a cross-sectional and perspective view illustrating a nailing beam constructed according to one form of the invention;

Figure 2 is a cross-sectional view of a nailing beam constructed according to another form of the invention;

Figure 3 is a side view of the structure shown by Figure 2;

Figure 4 is a plan view of one face of either of the beams shown by Figures 1 and 2.

Figure 5 is a fragmentary view showing nail receiving openings in the face of the beam.

Referring to Figure 1, the beam illustrated comprises spaced T-formations 10 and 11, joined together by a single thickness web portion 12 so as to form an I-beam. Each of the T-formations comprises leg laminations 14 and 15 which are spaced to provide a nail receiving groove or space 16. These legs respectively have their outermost portions flared outwardly as indicated at 17 and 18 and the flared portions merge into lower laminated parts 20 and 21 of the crossing part of the T-formation. These lower laminations are reversely bent at their outer edges and jointly form an integral cover lamination 22 constituting the exposed face of the beam.

At its center, this cover or outer lamination is formed with spaced elongated depressions 24

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overlying and partly projecting into the nailing space and such depressions serve as nail guiding means when a nail is to be driven. The sides of each depression slope or taper towards the nail receiving space underneath, and at the bottom of the depression a slit 25 is provided so that the point of the nail may more easily be driven into the nailing space. When the nail is driven through the slit, the metal at opposite sides of the slit can spread to accommodate the nail, and this is true over a substantial range of nail sizes. It will be noted that the sides of the depressed portion of the cover may spread apart to permit any expansion required.

The intermediate web portion 12 is shown as integral with the leg laminations 15 of both T-formations and hence the web portion constitutes a continuation of these laminations. At the inner edge of each leg lamination 14, the web 12 or leg 15, however it may be considered, is reversely folded, as indicated at 26, so as to form a folded lip or bead embracing or engaging the outer side of the leg lamination 14 at its inner edge. Hence, the inner edges of the laminations 14 are locked in position. The folded over lips 26 may be bent over into engagement with the laminations 14 after the beam is otherwise formed, and it follows that the nailing space in each T-formation is closed at its inner end and that the width of the nailing space is predetermined and maintained by the folded over lips. Therefore, when a nail is driven into the nail receiving space, the leg laminations are held against undesirable spreading so as to insure good frictional engagement with the nail. It will be noted that the legs of the T-formations are bent or corrugated so as to effect bending or clinching of the nail when it is driven into the nailing space.

In the constructions shown by Figures 2 and 3, the metal web portion 12, instead of being folded into engagement with the leg laminations 14, has spaced, struck-out tongues along each edge portion and these tongues are bent into embracing relationship with the edges of the leg laminations. Striking out of the tongues 30 leaves recesses 31 at the inner edges of the leg laminations 15 and the bending of the legs is such that nails driven into the nailing space can project through the openings. Nails driven intermediate the tongues 30 may, if necessary, pass under the inner edge of leg 14 without going through the web or through leg 15. In this structure, the tongues 30 initially may be bent beyond their positions shown and then after the leg laminations 14 are in proper locations, the tongues may be bent backwardly or

toward the openings 31 until they engage the leg laminations.

It should be observed that the inner edges of legs 14 extend substantially to the plane of web 12 and this is desirable in that greater resistance to movement of the legs 14 inwardly, that is, towards the web center, is provided. In other words, greater resistance to shifting of leg 14 inwardly relative to leg 15 is obtained and as a result the beam has greater stability.

In the construction shown by Figure 5, which is applicable to either beam, the outer cover laminations instead of having spaced and slitted depressions, has a single depression 34 provided with nail holes 35. The tapered sides of the depression act as means for guiding the nails towards the bottom of the depression. Slight, local depressions 36 at each nail hole practically complete the nail guiding process, so that if the point of a nail is pressed into the depression it is automatically guided into a nail opening.

Although more than one form of the invention has been illustrated and described in detail, it will be apparent to those skilled in the art that various modifications may be made without departing from the scope of the appended claims.

What is claimed is:

1. A one piece sheet metal nailing beam comprising a pair of spaced T-formations having their leg portions directed towards each other, each T-formation comprising laminations, one lamination of one leg being integrally joined to one lamination of the other leg by a single thickness web, the inner edges of the other leg laminations being fastened to the edges of said web, respectively and the laminations of each leg portion being spaced apart to receive and grip nails which may be driven therebetween.
2. A one piece sheet metal nailing beam comprising a pair of spaced T-formations having their leg portions directed towards each other, each T-formation comprising laminations, one lamination of one leg being integrally joined to one lamination of the other leg by a single thickness web, the inner edges of the other leg laminations being fastened to the edges of said web, respectively, by struck-out tongues on the web engaging the ends of such other leg laminations and the laminations of each T-formation being adapted to receive and grip nails driven therebetween.
3. A one piece sheet metal nailing beam comprising a pair of T-formations each having both its leg and crossing part laminated with the laminations of the leg spaced to receive and grip nails driven therebetween and with the outer lamination of the crossing part having a depression overlying the nail receiving space, said T-formations being disposed with the crossing parts away from each other and the legs projecting towards each other, and a single thickness web portion joining a lamination of one leg to a lamination of the other leg, the inner edges of the other leg laminations being fastened to the edges of said web, respectively, by bent portions of the web.
4. A one piece sheet metal nailing beam comprising a pair of T-formations each having both its leg and crossing part laminated with the laminations of the leg spaced to receive and grip nails driven therebetween and with the outer lamination of the crossing part having a depression overlying the nail receiving space, said T-formations being disposed with the crossing parts away from each other and the legs projecting towards each other, the laminated leg of each T-formation

being deformed transversely of the leg so that a nail driven into the nail receiving space is clinched in position and a single thickness web portion joining a lamination of one leg to a lamination of the other leg, the inner edges of the other leg laminations being fastened to the edges of said web, respectively, by bent portions of the web.

5. A one piece sheet metal nailing beam comprising a pair of T-formations each having both its leg and crossing part laminated with the laminations of the leg spaced to receive nails and with the outer lamination of the crossing part having a depression overlying the nail receiving space, said T-formations being disposed with the crossing parts away from each other and the legs projecting towards each other, a single thickness web portion joining a lamination of one leg to a lamination of the other leg, and tongues struck out from the web and engaging the ends of the other leg laminations, the openings in the web resulting from forming said tongue being so located at the termination of the nailing space as to allow the pointed end of the nail to enter said opening.

6. A one piece sheet metal nailing beam comprising a pair of spaced T-formations having their leg portions directed towards each other, each T-formation comprising laminations, one lamination of each leg being integrally joined to the other by a single web thickness, the adjacent ends of the other leg laminations being fastened to the edges of the web respectively by bending portions of the web into embracing relation with the outer side of said other leg laminations and the laminations of each leg portion being adapted to receive and grip nails driven therebetween.

7. A nail receiving beam having a T portion constructed from laminations so as to provide a laminated leg and laminated crossing or face part, the outer lamination of the face part of the beam having a depression or groove overlying the leg so as to locate nails to be driven into the beam, the bottom of the depression being provided with spaced nail receiving openings and the metal around each opening being countersunk so as to guide the nails into the openings.

8. A nail receiving beam having a T portion constructed from laminations so as to provide a laminated leg and laminated crossing or face part, the outer lamination of the face part of the beam having a depression or groove overlying the leg with the sides of the groove tapered or converging so as to guide nails to the bottom of the depression, the bottom of the depression having spaced nail receiving openings and the metal at each opening being tapered to the opening so that a nail may be guided first to the bottom of the depression by the sides of the latter and then into an opening by the tapered metal adjacent the latter.

9. A one-piece sheet metal nailing beam comprising a pair of spaced T-formations having their leg portions directed toward each other, each T-formation comprising laminations, one lamination of one leg being integrally joined to one lamination of the other leg by a single thickness web, the inner edges of the other leg laminations being fastened to said web by bent portions of the web which engage the inner edges of said other leg laminations and the laminations of each leg portion being adapted to receive and grip nails driven therebetween.

10. A one-piece sheet metal nailing beam comprising a T-formation having a laminated leg portion and a laminated crossing part extending

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along the outer edge of the leg portion, the laminations of the leg portion being adapted to receive and grip nails driven therebetween, one leg lamination having a continuation along its inner edge extending inwardly beyond the inner edge of the other leg lamination, and the inner edge of the other leg lamination being fastened to said continuation by a bent portion of the continuation which engages and embraces the inner edge of said other lamination.

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