

Aug. 15, 1944.

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2,355,955

SELF-CLINCHING NAIL

Filed Oct. 20, 1943

FIG. 1.

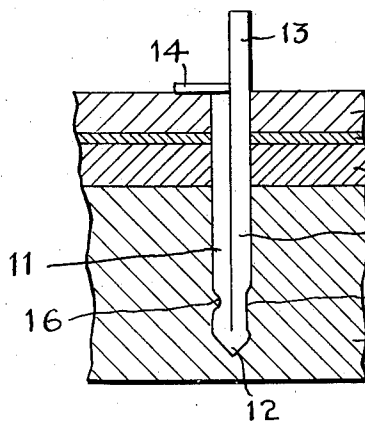


FIG. 2.

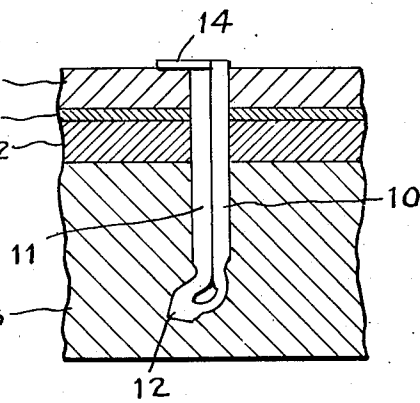


FIG. 3.

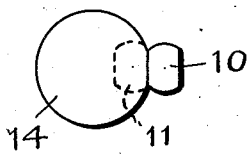


FIG. 4.

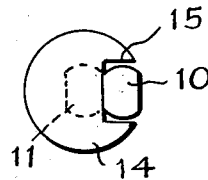


FIG. 5.

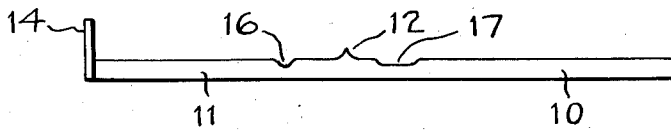
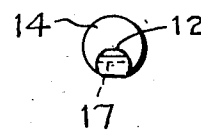


FIG. 6.



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2,355,955

SELF-CLINCHING NAIL

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Application October 20, 1943, Serial No. 507,223

5 Claims. (Cl. 85—10)

The invention relates to self-clinching nails.

In modern building construction the walls and/or roof of a building may be formed of laminated layers of materials having insulative properties, moisture repellent properties, fire resistant properties and others. Unlike the fibrous structure of lumber these materials because of their physical characteristics present inadequate holding qualities whereby the laminations may be properly united through ordinary nails or screws. It is therefore the particular object of this invention to provide a simple means for efficiently and permanently accomplishing the union of these elements. While as heretofore stated the invention is particularly applicable to modern building construction it will be apparent it may be used in any and all instances where it is desired to provide a nail that will automatically clinch itself within the transverse section of the material into which it is being driven or on the remote side of the material into which it is to be driven.

Other objects and advantages will become apparent as this specification proceeds. Referring to the drawing forming a part thereof and in which a preferred form of the invention is illustrated:

Fig. 1 is an elevational view of the nail showing it partway driven in the material which is shown in section;

Fig. 2 is a similar view showing the nail completely driven and clinched;

Fig. 3 is a top plan view of the nail;

Fig. 4 is a top plan view illustrating an alternate form for the head of the nail;

Fig. 5 is an elevational view of the partially formed blank from which the nail is made; and

Fig. 6 is an end elevation.

This application is a continuation in part of my copending application, Serial No. 482,026, filed April 6, 1943.

Referring again to the drawing the nail comprises two legs, a driving leg 10 and an auxiliary leg 11. These legs are integral with each other and a driving point 12 is preferably formed in the region where they are bent back on each other. The two legs are shown as being in line with and contiguous to each other for their length and are free of each other except at their lower connected portion.

Prior to the nail being driven as illustrated in Fig. 1, the driving leg 10 extends upwardly beyond the free end of the auxiliary leg 11 as indicated at 13. The auxiliary leg 11 is provided at its upper end with a motion arresting portion

or head 14. The head 14 is integral with and formed as part of the auxiliary leg (which I prefer to call the "headed leg") and has sufficient inherent strength to arrest the movement of the auxiliary leg when the head contacts the surface of the material into which the nail is being driven. As shown in Figs. 1, 2, 3, 5 and 6 the head 14 may be offset in relation to the auxiliary leg. However if desired it may be located centrally in relation to its leg 11 and notched as indicated at 15 in Fig. 4 for the passage of the driving leg 10.

The headed leg 11 is preferably provided with a weakened portion or indentation 16 somewhat above the connecting portion 12 to make it weaker than the headed leg, although the driving leg 10 may have a longitudinally extending weakened or depressed portion 17 just above the connecting portion to assist in supplying the necessary degree of flexibility to this leg, as it should bend near its lower end when clinching. When the nail reaches the position of Fig. 1 its motion is arrested by virtue of the head 14 contacting against the surface of the material into which it is being driven. Further driving of the extension 13 will cause the headed leg 11 to bend at the indentation 17 as shown in Fig. 2. Naturally the end of the driving leg will tend to follow and the nail is thus firmly clinched in the material. The longitudinally extending weakened portion 17 in the driving leg is one means to permit of its more readily bending and provides for the stretch and distortion in the metal during the bending.

As illustrated in Figs. 1 and 2 the nail is driven into and secures together a plurality of laminations which would be used in modern building construction. The reference numeral 20 may indicate an asbestos shingle, 21, a sheet or sheets of paper or some other analogous material, 22, a layer of gypsum, and 23 a sheet of fibrous material to which the other laminations are secured. As illustrated in Figs. 1 and 2 the nail is clinched within the body of the sheet of fibrous material. Thus it is not necessary that any part of the nail nor any marking from the nail show on the reverse side in order to cause the clinching, and there is no possibility of moisture from the inside following the path of the nail and deteriorating the material. However if desired the nail could be clinched entirely in the open on the reverse side of the material into which it is being driven.

Attention is directed to Figs. 5 and 6 which show the partially formed blank for the nail. The body of the nail is here shown as formed

from round stock which is flattened as indicated in Fig. 6. In the flattening or rolling process the driving point 12 and the indentation 16 and the depression 17 may be formed. The driving point 12 being formed where the legs are bent back on each other provides extra metal for strengthening purposes in this region.

It is understood that the foregoing illustration is given in order that my invention and the best way of producing the same may be readily understood but at the same time this example is not to be taken as a limitation, as the device may be modified in many particulars without departing from the spirit of my invention.

I claim:

1. A self-clinching nail comprising a pair of shafts joined together in close proximity to their lower ends, one of said shafts being provided at its upper end with a head formed integral therewith and having sufficient strength and area substantially to arrest the movement of the nail when said head contacts the material into which the nail is being driven, the other of said shafts having a driving portion extending beyond said head, said headed shaft being substantially in line with and in contiguous relation to the driving shaft throughout its length prior to the nail being

driven, and the two shafts so functioning in relation to each other that continued driving of the driving portion, after said head has contacted the material into which the nail is being driven, will cause the driving shaft to become distorted relative to the headed shaft adjacent its lower end, whereby the nail will be locked into the material into which it is being driven.

2. A structure as specified in claim 1, in which the head is approximately round and is slotted to permit the passage of the driving shaft.

3. A structure as specified in claim 1 in which the nail is formed of flattened round stock bent back on itself to form the two legs.

4. A structure as specified in claim 1, in which the two shafts are bent out of a single piece of stock and one of the shafts is weakened adjacent the lower end where the two shafts are united.

5. A structure as specified in claim 1, in which the two shafts are bent out of a single piece of stock and both shafts are weakened, with the zone of weakness of one of the shafts at least in part lying adjacent an unweakened portion of the other shaft before the nail is driven into place, whereby the nature of the distortion is controlled when the nail is driven into place.

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