

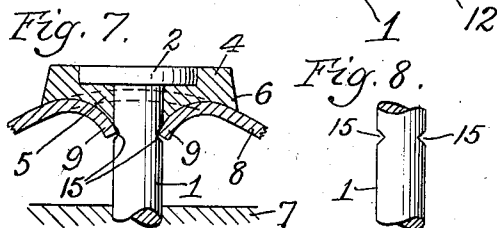
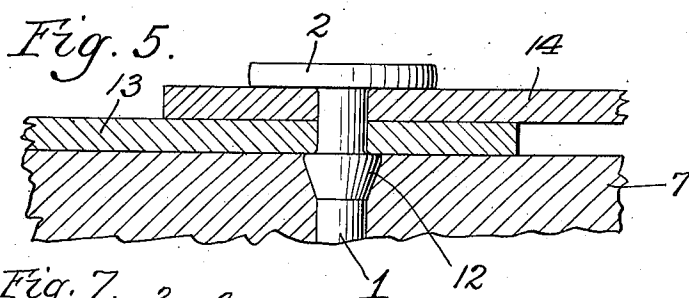
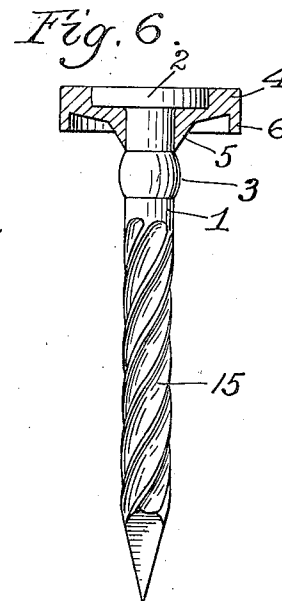
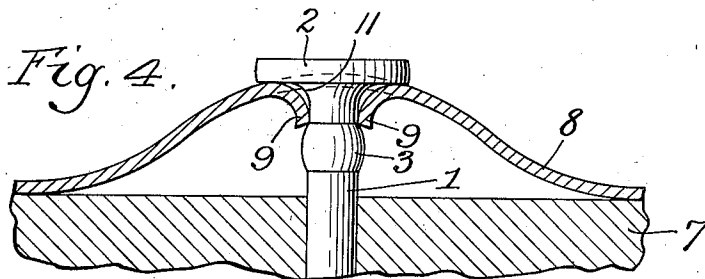
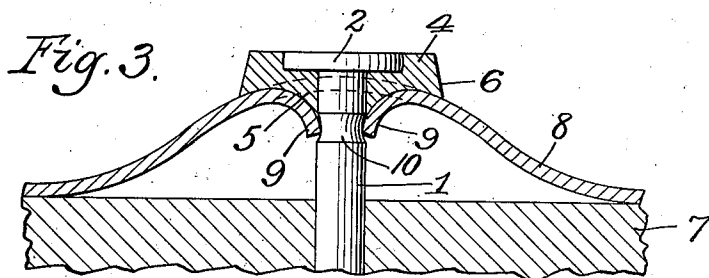
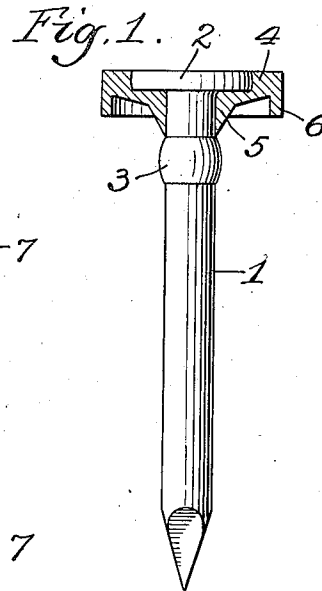
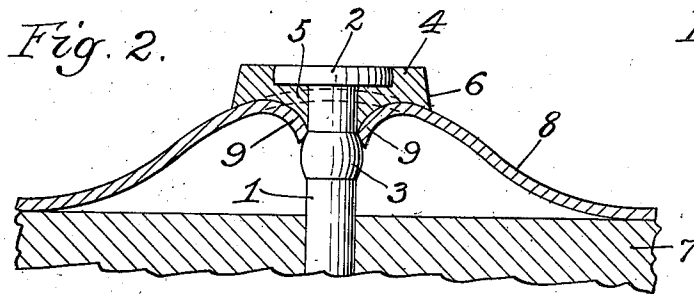
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ROOF CONSTRUCTION

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UNITED STATES PATENT OFFICE

2,111,110

ROOF CONSTRUCTION

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4 Claims. (Cl. 108—33)

This invention relates to a roof construction, to the members of which it is formed and to the method of forming it.

One object of the invention is to provide in connection with a roof means whereby a water or wear resistant sheathing or covering can be secured in place so as to prevent leakage and to prevent displacement of the parts.

Another object is to provide a metallic covering for roofs and walls in which the metallic covering is itself held in place by nails or screws shaped so that the metallic roofing and the nail or screw, whichever is used, are keyed together and separation is prevented.

Another object is to provide means for similarly keying together non-metallic material.

Other objects will appear from time to time in the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawing, wherein:—

Figure 1 is a side elevation of one form of nail or fastening member to which a sealing head has been applied, the head being shown in section;

Figure 2 is a sectional detail of a portion of roofing in which the nail of Figure 1 is used;

Figure 3 is a section similar to Figure 2 showing a modified form of nail;

Figure 4 is a section generally similar to Figures 2 and 3 but showing a further modification in which a nail, generally like that of Figures 1 and 2, but without the sealing member, is used;

Figure 5 illustrates a further modification; and Fig. 6 is a side elevation of a driving screw shown with a sealing head;

Fig. 7 is a section similar to Fig. 3 illustrating a further modification;

Fig. 8 is a detail of the nail shown in Fig. 7.

Like parts are designated by like characters throughout the specification and drawing.

One form of fastening member which is used in carrying out the invention is illustrated in Figure 1. As there shown it comprises a nail having a shank 1 and a head 2. The head may be of any desired shape. Below the head and separated from it, the shank is enlarged as at 3. The nail may be used satisfactorily as shown in Figure 4 without a sealing head or portion. As shown in Figure 1, however, an enlarged sealing head 4 is used. This may be of lead or other material, preferably softer than the nail and its head. As shown it has a fillet-like portion 5 surrounding the shank and extending toward or to the enlargement 3. The head may also be provided with a downwardly depending skirt 6,

which as shown is straight sided but may be flared or have other shape.

As shown in Figure 2 a nail such as that of Figure 1 has been driven into a wall, roof or other building member 7. Upon this building member is mounted a metallic sheathing such as the typical corrugated iron covering often used on buildings, which comprises sheet-like members 8. In driving a nail through such sheathing a perforation may be made before to receive the nail or the nail may be driven directly in to form its own perforation. Whichever is done, around the perforation the sheathing is inwardly bent as at 9. When the nail has been driven sufficiently in, the enlargement 3 passes the edges 9 of the perforation and these spring or otherwise fit in above the enlargement, thus keying the nail to the sheathing. Any force tending to withdraw the nail from the member 7 tends to pull up or out on the edges 9 of the perforation and this is resisted because these edges cannot readily be pulled upward. The nail and the roofing are thus keyed together and separation of the nail from the roofing is prevented.

If, as shown in Figure 2, the nail carries the sealing head, when the nail is pounded into place the lead is distorted somewhat and assumes in general the position and condition indicated in Figure 2.

In the modified form of Figure 3, the nail is generally similar to that of Figures 1 and 2 but instead of an enlargement 3 it has a depression, preferably a continual annular depression, 10, formed about the shank and below and separated from the head. As the nail is driven into place the inner edges of the perforation 9 fit into the depression or groove 10 and the nail is thus keyed in place generally in the same manner as that shown in Figure 2.

As shown in Figure 4 the nail itself is the same as shown in Figures 1 and 2 but the sealing head has been omitted. The roofing member 8 is keyed to the nail by the engagement of the edges 9 of the perforation with the enlargement 3. In the nail shown in Figures 1, 2 and 3 the head is relatively flat both on top and bottom. This is not an essential feature and it might be rounded. As one modification, a fillet 11 is shown in the nail of Figure 4 which tapers out from the shank to join the head. The invention is not limited to any particular construction of nail head.

Figure 5 shows a further modification. Here the nail is generally the same as that shown in Figure 4 since the sealing portion is omitted. Instead of an enlargement of the shape shown

in Figures 1, 2 and 4, a modified shape 12 may be given to the enlargement or it may be given the same shape as that of the earlier figures. As shown in Figure 5, however, the nail is used in securing in place flat, or relatively flat, sheathing members and while it may be used to hold in place one or more, there are shown in Figure 5 two such flat sheathing members 13 and 14. Their edges overlap slightly and the nail is driven through the edges of the two pieces. As shown, the enlargement 12 has passed below or inside of the two pieces 13 and 14 and the lower member 13 is engaged upon or in contact with the top or outer portion of the enlargement 12.

Figure 6 shows a driving screw. It is a member generally similar to that shown in Figure 1 except that a thread 15 is formed on a portion of the shank. Otherwise it has the enlargement 3 and the sealing head 4. A screw of this general type might have an enlargement of any desired size and shape or a depression, such as that shown in Figure 3.

Whether a nail or screw is used and whether the screw is a driving screw or one intended to be screwed in place by means of a tool such as a screw driver, the fastening member comprises in general some shank-like part, shaped to key with the roofing or sheathing with which the fastening member is used, and the shape of this portion of the shank of the fastening member is such that when driven or screwed into place it is keyed with the sheathing with which it is used and the two are engaged and held together.

While we have herewith shown and described a practical operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of the invention and we wish, therefore, that our showing be taken as in a sense diagrammatic.

In the modified form shown in Figures 7 and 8, the nail may have several notches 15 instead of the annular depression of Figure 3. Portions of the flange 9 will engage in the notches 15 and key the nail in place in the same manner as that of Figure 3.

The use and operation of the invention are as follows:

When a wall, roof or other structural member is to have some form of sheathing secured to it, a fastening member of one of the types suggested is used and may be driven or screwed into place. The sheathing is first put in place, perforations may or may not be formed, and the nails or screws are forced through the sheathing into the studding or other parts of the structure and the fastening member is driven far enough in so that the edges of the perforation in the sheathing member engage and key together with the keying portion of the fastening member. Thereafter the fastening members are held to the sheathing and cannot be removed from it accidentally.

When the form of nail shown in Figure 6 is used, as it is driven the threads impart rotary motion to the nail so that the sealing head 4, 5 and 6, if one is used, is ground to a seat by the harder material of the roofing 8 and thus the sealing member is not merely pounded into contact with the sheathing 8 but is actually ground into a sealing fit, penetrating the perforation in the sheathing and fitting therein closely and also fitting closely as a result of the ground fit with the remaining part of the sheathing which it contacts. The keying of the inbent edges 9 of the roofing 8 with the enlargement 3 is the same

whether the drive screw of Figure 6 or the nails of Figures 1, 3 and 4 are used.

Where the word "keying" is used it is to be taken as meaning the interlocking or interengagement of the parts mentioned. For example, the inner edges 9 of perforations formed through the member 8 interlock or key with the enlargement 3, preventing the separation of the parts, or the same edges 9 interlock or key with the depression 10. The expression is to be understood with the meaning indicated, where it occurs in the specification and in the claims.

The word "wall" is to be understood as meaning a wall, partition, roof or any other similar structural member upon which sheathing is applied. The invention is not limited to the fastening means and to the wall or roof construction as applied to any particular position, whether vertical, horizontal or inclined.

As shown in Figures 2, 3 and 4, the sheathing 8, while it might be of many materials, will ordinarily be of metal and it has a certain amount of flexibility, elasticity or "spring", that is to say, when it is deformed it tends to some degree at least to "spring" back to or toward its original shape or position. Thus when the hole is perforated the edges of the hole tend to "spring" back, and when the edges are displaced by the shank of the nail or even more so by the enlargement 3, they "spring" against the nail and the enlargement, where the latter is used, and when free to do so, "spring" back toward their original position. Thus the sheathing, and particularly the edges 9 of the perforation, because of their own elasticity and "springing" qualities, when free to do so, spring in above the enlargement 3 when it has passed low enough to permit this springing. Similarly the edges 9 "spring" into the depression or groove 10 when the shank of the nail has passed far enough through the perforation to bring the groove in line with the edges.

Even quite inelastic materials will "spring" in or fit in after the passage of a depression. As shown in Figure 5, the sheets 13 and 14 might be of metal or paper or any one of the various composition roofings, wall materials, shingles, tiles or the like and these also tend to regain their original shape and position after the passage of the enlargement or after the passage of the shank of the nail.

We claim:

1. In combination in a structure, a frame member, a sheathing member and a fastener for fastening them together, said fastener having a head and a shank of generally rounded cross section, said sheathing being perforated with a generally rounded perforation and having uniformly about said perforation inwardly bent edges, said fastener extending through said perforation, engaging said sheathing and said frame member, and provided with a member keying with the inbent edges of said sheathing, said fastener provided with a sealing portion of material softer than itself, said sealing portion surrounding the fastener and the perforation in the sheathing when the fastener is in final position and sealing said perforation, said sealing portion terminating at approximately the upper margin of said keying member, and being held against displacement thereby.

2. In combination in a structure, a frame member, a sheathing member and a fastener for fastening them together, said fastener having a head and a shank of generally rounded cross sec-

tion, said sheathing member being perforated with a generally rounded perforation and having uniformly about said perforation inwardly bent edges, said fastener extending through said perforation, engaging said sheathing and said frame member, and provided with a member spaced away from the ends of said fastener keying with the inbent edges of said sheathing, said fastener provided with a sealing portion of material softer than itself, said sealing portion surrounding the fastener and the perforation in the sheathing when the fastener is in final position and sealing said perforation, the shape of the upper surface of the sheathing member about the said fastener being the same as that of the under surface of said sealing portion.

3. In a fastener seal, a nail having a shank and a head, a bulbous enlargement formed on said shank and spaced away from said head, a ring of relatively soft material having a peripheral skirt portion, and a generally tubular sleeve

adapted to be tightly fitted about the under surface of said head and about said shank between said head and said enlargement and terminating at approximately the upper margin of said enlargement and being held in place thereby.

4. A nail having a shank and a head, a bulbous enlargement formed on said shank and spaced away from said head, a ring of relatively soft material having a peripheral skirt portion, and a generally tubular sleeve tightly fitting about the under surface of said head and about said shank between said head and said enlargement, said enlargement being adapted to key with the edges of material through which the fastener is driven, the tubular member terminating at approximately the upper margin of said enlargement and being held against displacement thereby.

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