Jan. 9, 1945. A. H. FAY, JR 2,367,109

FASTENING DEVICE

Filed July 31, 1941

Fig. 1.

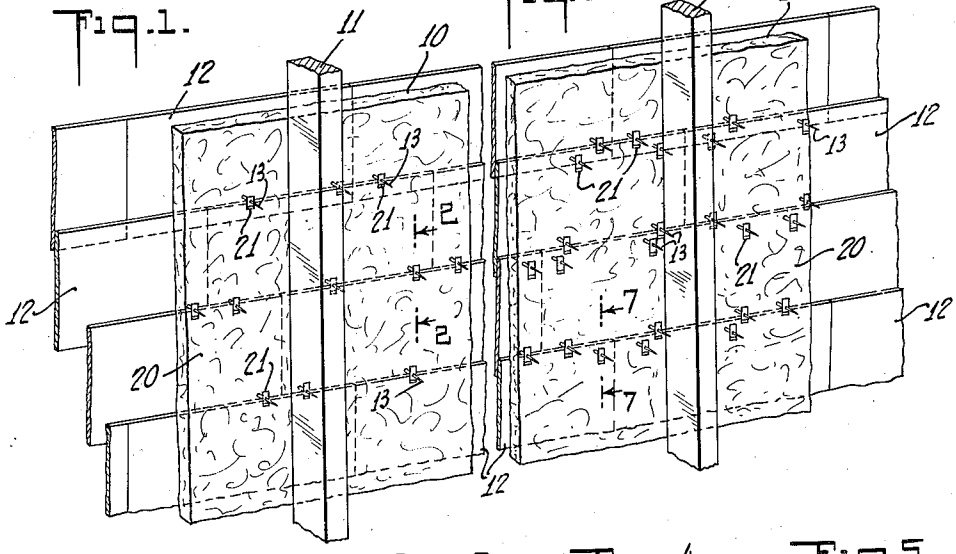


Fig. 6.

Fig. 2.

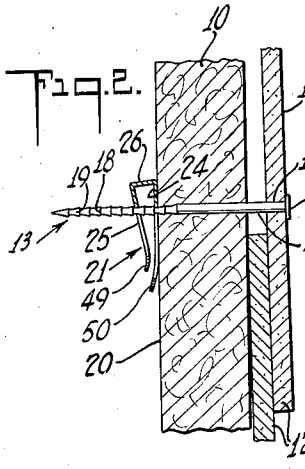


Fig. 3.

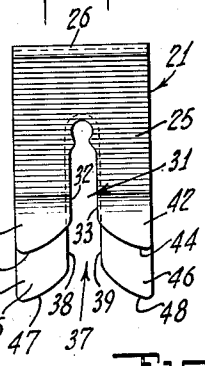


Fig. 4.

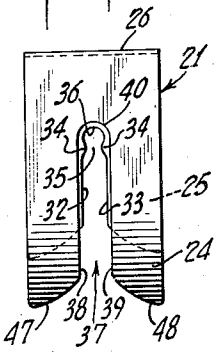


Fig. 5.

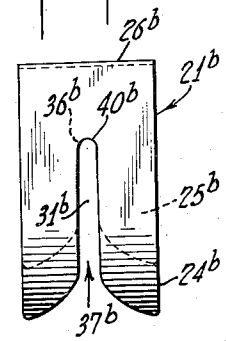


Fig. 7.

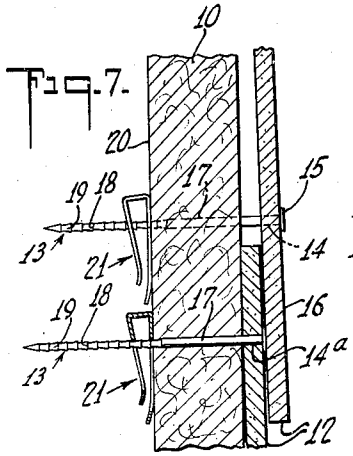


Fig. 9.

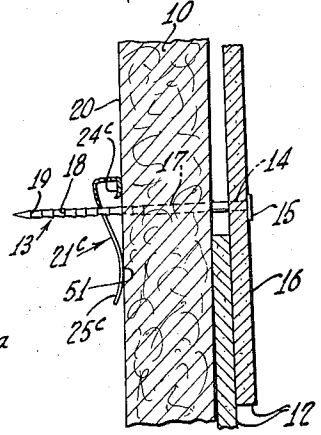
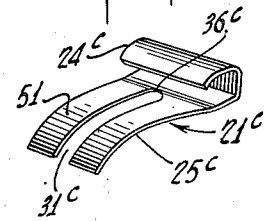


Fig. 8.



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FASTENING DEVICE

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Application July 31, 1941, Serial No. 404,801

3 Claims. (Cl. 85—36)

This invention relates to fastening devices for roofing and siding construction and is more particularly concerned with the provision of novel means for securing shingles to sheathing or other supporting surfaces of the type characterized by a low degree of nail holding power.

The steadily growing demand for insulation of homes and other building structures in recent years has led to the use of fiber insulation board as a substitute for wood sheathing. These boards are generally made by felting them from an aqueous suspension of wood pulp or other fibrous material on well-known forms of board-forming machines. Usually these sheathing boards are made in a thickness of approximately $\frac{25}{32}$". Fiber insulation board as thus produced is sufficiently rigid to serve as sheathing, applied to studs spaced, in accordance with customary building practice, on 16" centers. However, owing to the fact that fiber insulation board is relatively soft and porous and, therefore, has a relatively low degree of nail-holding power as compared with the nail-holding power of natural wood, the outer coverings for exposure to the weather applied over such sheathing have had to be a size which is equal in length to or a multiple of the spacing between the studs so that the covering might adequately be held in place with nails driven into the studs. With covering units of a length which is not a multiple of the spacing between the studs and especially those which are smaller than the spacing between the studs, furring strips must be applied horizontally over the sheathing, the covering units being held in place by nails driven into the furring, but this requirement of furring out renders the construction too costly for general use.

An object of the invention is to provide means to make possible the securement of covering units such as asbestos-cement shingles, or asphalt composition shingles, directly to fiber insulation sheathing and which will serve to hold such covering units when applied to areas of the sheathing intermediate the studs.

In accordance with the present invention, there is provided a simple, efficient and economical clip designed so as to be readily applied in locking engagement with the shank of a nail for dependable and highly effective attachment of shingles to sheathing material of the character described.

Another object of the present invention is to provide a novel nail fastening clip that is readily sprung into locking engagement with the nail shank by manually applied pressure or by means of an ordinary tool, such as a hammer.

A further object is to provide a tension clip device of simple, practical design for effectively holding a shingle nail against displacement from the sheathing.

An additional object is to provide an integral, metallic clip that is adapted for simple and effective application over the shank of a nail or other fastener to securely retain said nail or other fastener against displacement from a fixed position.

Various other objects and advantages of the invention will be more clearly apparent from the detailed description which is to follow and from the accompanying drawing in which

Fig. 1 is a fragmentary rear view in perspective of a shingle and sheathing construction utilizing fastening means of the present invention;

Fig. 2 is a cross-section taken along line 2—2 of Fig. 1;

Fig. 3 is a top plan view of one form of clip that may be employed in the practice of the invention;

Fig. 4 is a bottom plan view of the clip shown in Fig. 3;

Fig. 5 is a bottom plan view of a modified form of clip;

Fig. 6 is a view similar to Fig. 1 illustrating the application of the clips in an alternative method of attaching shingles to insulated sheathing;

Fig. 7 is a cross-section taken along line 7—7 of Fig. 6;

Fig. 8 is a perspective view of another form of clip; and

Fig. 9 is a view similar to Fig. 2 showing the application of the modified form of nail holding clip of Fig. 8.

Referring now more particularly to Fig. 1, the reference numeral 10 designates the fiber insulation board applied as a sheathing, being nailed directly to wood studs 11, which generally are spaced on 16" centers. These boards are generally factory cut in standard widths and of various lengths. The sheathing 10 is applied so that horizontally adjacent panels are in abutting relation along their vertical edges at approximately the vertical center of a stud. Siding shingles 12, such as the substantially rigid, asbestos-cement type, are laid over the sheathing 10 in overlapping courses. These shingles may be of any desired length independent of the spacing between studs and, in accordance with

the invention, may be fastened directly to the sheathing 10 at any point without requiring nails to be driven into the studs or the use of furring strips over the sheathing for holding nails driven thereinto. Thus, where the shingles 12 are of the asbestos-cement type, these are generally provided with properly located pre-formed nail holes 14 through which a nail 13 may be driven into the sheathing 10 until the nail head 15 is substantially flush with the outer shingle surface 16. The proper type and size of nail 13 suitable for this purpose may be selected from many different types available in the market. However, it is essential that the type of nail selected shall have a shank 17 which is considerably longer than the combined thickness of several overlying shingles and the sheathing, so that the shank may extend a distance beyond the inner face 20 of the sheathing sufficient to be operatively engaged by the fastening clip, as will be hereinafter described. It is also desirable, though not essential, that the shank 17 be provided with lateral projections spaced along the shank from the pointed end of the nail to at least the point of its emergence from the inner face 20 of the sheathing, for a purpose to be more fully described hereinafter. The lateral projections may also extend over the remaining length of the nail shank. One type of nail 13 suitable for the purpose is the annular ring type illustrated in Figs. 2, 7 and 9, wherein the metal over a considerable portion of the shank 17 is distributed to form a plurality of annular shoulders 18 and intermediate frustro-conical annular rings or grooves 19.

In accordance with the invention, the annular ring portion of the nail shank adjacent the face 20 of the sheathing is engaged by a spring clip which has a portion bearing on the face 20 and a portion which, when placed under tension, will exert sufficient resistance to prevent displacement of the nail. These clips are applied from the interior of the building, each clip being individually positioned adjacent the inner sheathing face 20 and then driven over the projecting nail shank 17 so as to embrace said shank and securely anchor it in fixed position, as will be more fully described hereinafter.

One form of clip suitable for this purpose is shown in Figs. 3 and 4. These clips may be stamped out of spring or cold rolled steel and then formed over a die. In this embodiment, the clip, designated by the reference numeral 21, comprises a substantially U-shaped body having a base or inner portion 24, an outer portion 25, and a bridging portion 26 integrally connecting the inner and outer portions at one end thereof, the length of the portion 25 being preferably somewhat less than the length of the base 24. The outer portion 25 is bifurcated, from its end opposite the connecting portion 26, for a substantial part of its length to define a longitudinal slot 31 having substantially parallel sides 32—33. The upper end of the slot comprises a substantially semicircular portion 36 and inwardly extending protuberances 34 forming a constricted throat 35. The bearing or base portion 24 is similarly bifurcated to form the longitudinal U-shaped slot 37 having substantially parallel sides 38—39 which run for the entire length thereof from the open end to the arcuate closed end 40. As shown in Figs. 3 and 4, the width of slot 37 is somewhat greater than the width of the overlying slot 31. The width of the slot 31, between its open end and the constricted throat 35, is slightly greater than the least diameter of the annular nail rings 19, while the diameter of the semicircular opening 36 is substantially the same as the least diameter of the nail rings 19, and the width of the throat 35 is slightly less than the least diameter of the annular nail rings 19.

In use, the clip 21 is positioned over the portion of the nail shank 17 protruding from the inner face 20 of sheathing 10 so that the clip base 24 bears on the sheathing surface 20 and a portion of the slot 37 embraces the said nail shank. Manual finger pressure or several light taps of an instrument such as a hammer, applied to the clip end 26, will slide the clip 21 over the shank 17 at right angles to the axis thereof until the shank is received in the semicircular opening 36. After the shank 17 is engaged within the opening 36, any tendency toward lateral displacement of the shank 17 toward the open end will be prevented by the constricted throat 35 serving as a tong-like barrier. Because the slot width adjacent the open end is slightly greater than the least diameter of the shank 17, the slot sides 32—33 will slide into engagement with an annular groove 19, thus easing the traverse of the clip 21 for the remainder of the slot distance. At the same time the nail shank 17 is held against any tendency toward longitudinal displacement by the abutment of the slot sides 32—33 against one annular shoulder 18. The resilience of the spring steel or cold rolled steel enables the bifurcations or legs 41—42 of the outer portion 25 to spring apart sufficiently to permit the reception of the nail shank 17, responsive to the spreading force exerted thereby.

It should be noted that the legs 41—42 of the outer portion 25 terminate respectively in arcuately curved ends 43—44 which converge inwardly toward the slot sides 32—33. The similarly formed legs 45—46 of the inner or base portion 24 terminate respectively in arcuately curved ends 47—48 which converge inwardly toward slot sides 38—39. While the thus formed ends 43—44 and 47—48 aid in applying the clip 21 over the nail shank 17, by directing the reception of the latter within the aligned slots 31 and 37, it is to be understood that these ends may be arbitrarily shaped in any other manner, such as the square ends shown in Fig. 8. It is to be further noted that these ends 43—44 and 47—48 may have a slightly upward bend or tilt, as at 49 and 50, in a manner analogous to the forepart of a ski, in order to enable the clip 21 to readily ride over the rough, fibrous sheathing surface 20 without gouging into or striking any slight obstruction thereon.

When the clip 21 is driven over the nail shank 17, the outer portion 25 becomes compressed toward the base 24 and is thereby placed under tension and is maintained under this tension by the restraint of one of the shoulders 18 on the nail. This tension thus exerts an axial pull on the nail in the direction of the point of the nail, this pull being transmitted through the nail head 15 to the surface of the superimposed shingle 12 and in turn, a direct bearing force is exerted against the underlying shingle, thus causing the latter to press or bear up against the sheathing 10. One method of nailing the overlying courses of shingles to the sheathing, which takes advantage of the bearing force exerted by each overlying shingle, as described above, is to provide a plurality of spaced nailing perforations 14, usually three in number, near

the bottom exposed edge of the shingle (see Fig. 1). No other perforations need be provided, since the overlying shingle will effectively hold the overlapped upper margin of the underlying shingle against the sheathing, forming a permanent weatherproof exterior covering that is substantially tight, rattle-proof or vibration-proof under the action of severe wind storms or other external forces. If desired, however, the nails may also be driven through one or more perforations 14a provided near the top edge of each shingle and each of the nails similarly anchored by one of the holding clips.

In Fig. 5, a modified embodiment of the clip, 21b, is shown. This form differs from the clip 21 illustrated in Figs. 3 and 4 in that the slot 37b is of the same width as the aligned slot 31b, both slots having parallel side edges for the entire length thereof. The width of the slots 31b and 37b is slightly less than the least diameter of the nail shank 17. With this form of clip, the side edges of the slots exert a frictional as well as tensional action on the shank of the nail, and accordingly may be used in connection with smooth shank nails. If desired, however, the lower slot 37b may be of a width slightly greater than the width of slot 31b. With this latter arrangement, the slot 37b will have no frictional gripping engagement with the nail shank 17, thus merely serving to permit the reception of the nail shank along the length of the slot.

When this type of clip is driven over the nail shank 17, the slots 31b and 37b will simultaneously be sprung apart sufficiently to permit the clip to be moved until the nail is positioned at closed ends 36b and 40b. The clip is placed under tension during its traverse over the shank 17 when the outer portion 25b is forced toward the inner or base portion 24b and maintained substantially in this compressed position by the engagement of the clip with one of the restraining shoulders 18 on the nail shank 17. This tensioning serves to effectively anchor the nail 13 against any tendency toward lateral or longitudinal displacement.

Still another form of clip, indicated at 21c, is shown in Figs. 8 and 9 where the inner or bearing portion 24c preferably extends just short of the closed end 36c of the nail shank receiving slot 31c. The outer or nail engaging portion 25c is formed near its outer end with a curved portion 51, which may serve as an additional bearing surface for the clip when it is under the tension provided by the engagement of the clip with one of the shoulders 18 on the nail 13. The slot 31c is the straight, U-shaped type illustrated in Fig. 5, and is of a width which is slightly less than the least diameter of the nail shank 17. If desired, the slot may be formed with a constricted throat area, as in the clip 21.

It is readily apparent that the aforedescribed clips may be conveniently handled by the workman on any construction job and are simply and effectively applied without requiring any special tools. These clips may be manufactured in a number of sizes and dimensions depending upon the nails or other fasteners which may be used.

While the present invention has been described and illustrated in connection with its application to an external wall construction composed of asbestos-cement shingles laid over fiber insulation sheathing board, it is to be understood that various other combinations of shingles and sheathing may be used in a wall or roofing construction and that the present invention will find utility wherever it is desirable or necessary to increase the holding power of a nail, screw or other forms of fasteners. The clip of the present invention is adaptable also to assembly line production of automobiles, radios and refrigerators where the fastening of two metal parts or plastic and metal is a common problem.

I claim:

1. A fastening device comprising a resilient metal body having spaced portions approximately parallel and connected at one end, an open-ended slot on one of said portions to engage a fastener shank, said spaced portions normally tending to spread apart when compressed, whereby to provide resistance to displacement of said fastener shank.

2. A fastening device comprising a resilient metal body having spaced portions connected at one end and extending in the same general direction, aligned open-ended slots on both of said spaced portions to engage a fastener shank, said spaced portions normally tending to spread apart when compressed, whereby to provide resistance to displacement of said fastener shank.

3. A fastening device comprising a resilient body having spaced portions connected at one end and extending in the same general direction, an elongated slot on one of said portions, an elongated slot on the other of said portions in substantial alignment with the first named slot and having projections forming a restricted throat adjacent one end thereof, said spaced slotted portions being adapted to engage a fastener shank immediately adjacent its point of emergence from a structure through which said fastener is projected, and slidable over said fastener shank at right angles to the axis thereof.

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