Feb. 13, 1945. W. S. MILES ET AL 2,369,595

WALL CONSTRUCTION

Filed Dec. 31, 1940

Fig. 1.

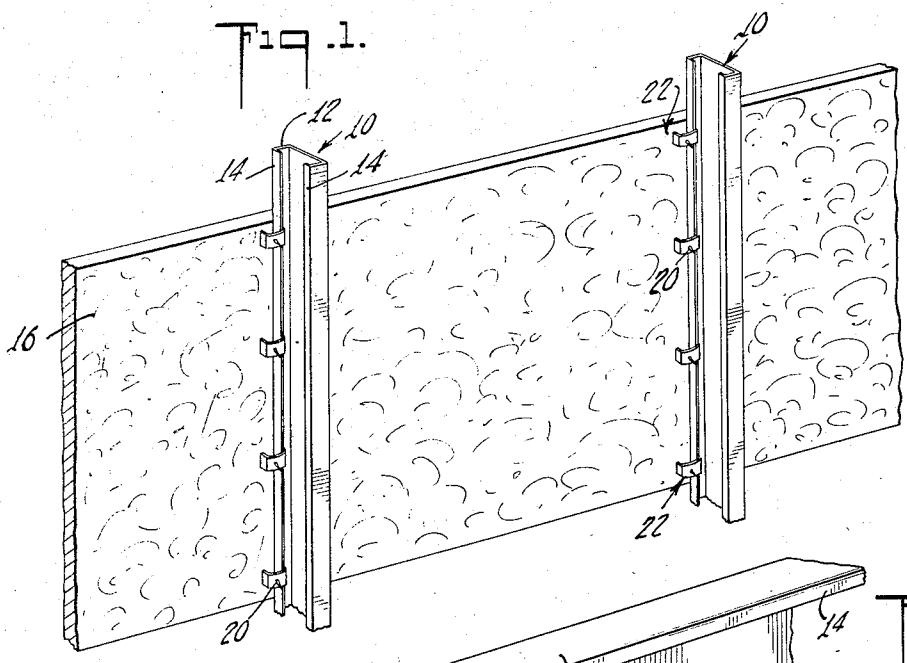


Fig. 2.

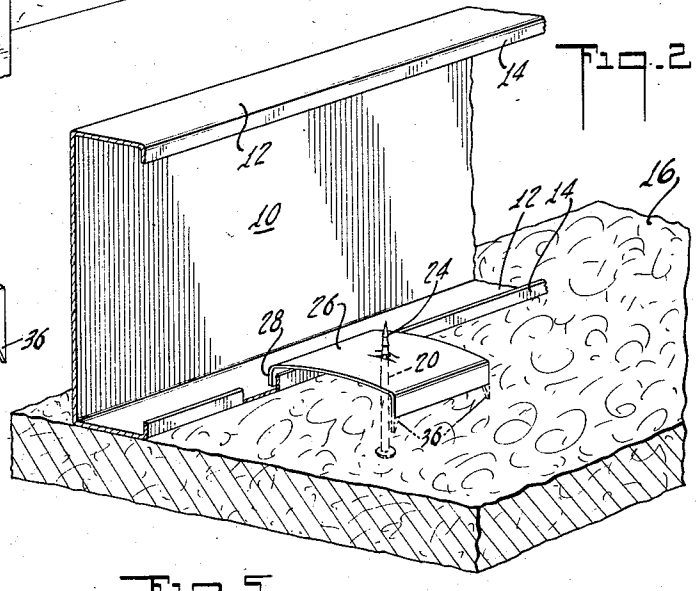


Fig. 3.

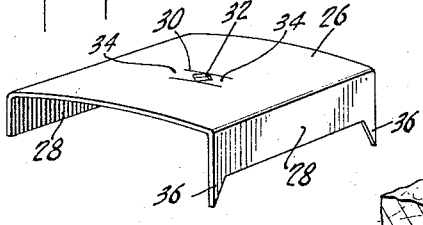


Fig. 4.

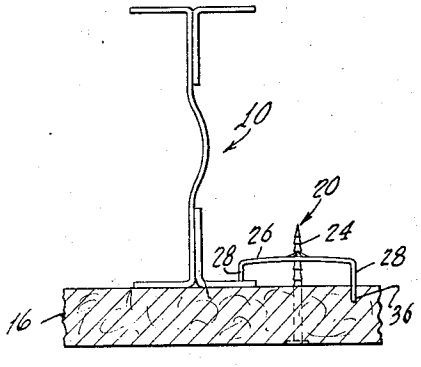


Fig. 5.

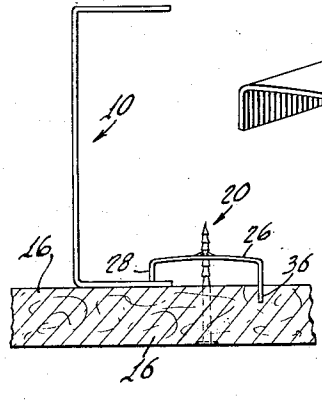
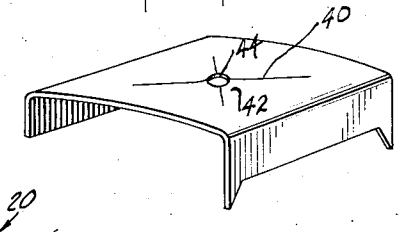


Fig. 6.



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WALL CONSTRUCTION

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Application December 31, 1940, Serial No. 372,434

7 Claims. (Cl. 72—118)

Our present invention relates to building constructions, and more particularly, to an improved, relatively low cost building wall or partition and to the method of forming the same. It will be understood that the terms "wall" and "partition" are employed herein in a generic sense to denote both inner and outer side walls and walls such as roofs, ceilings, and the like.

An object of the instant invention is the provision of an improved wall or partition structure comprising supports or studs formed of steel channels or the like, which are not adapted to receive the usual fastening element ssuch as nails, and means attaching suitable sheathing to said supports. The invention has been found to have a particular field of use in wall structures including fibre board as a sheathing material. However, the invention is equally applicable where other types of sheathing, such as the conventional boarding, are used, the principal feature of the invention residing in the novel method and means of attachment of the sheathing to supports of the type referred to.

Another object of the invention is the provision of a novel fastening device of particular utility in the erection of structures of the type referred to above.

Our invention will be more fully understood and further objects and advantages thereof will become apparent when reference is made to the more detailed description thereof which is to follow and to the accompanying drawing, in which:

Fig. 1 is a rear elevation of a portion of a wall constructed in accordance with the invention;

Fig. 2 is a fragmentary view on an enlarged scale, partly in section and partly in perspective;

Fig. 3 is a perspective view of a locking member in accordance with the instant invention;

Figs. 4 and 5 are sectional views illustrating the applicability of the invention to supporting members of various shapes; and

Fig. 6 is a perspective view of a modified form of locking member.

Referring now to the drawing, and particularly to Fig. 1, there is shown a wall structure which, for the purposes of illustration, comprises an exterior vertical wall. However, as will be understood, the invention is equally applicable to roof walls and to interior walls of various types. The wall includes framing members such as metal studs 10 comprising channels including flanges 12 against which sheathing or other facing or finishing panels, all of which are referred to herein as "sheathing," are to rest. In the embodiment shown in Fig. 1 the channels 10 include re-entrant flanges 14 which serve to stiffen and reinforce the studs. Secured to the studs is sheathing 16 comprising boards or panels of any suitable dimensions and character. However, as previously stated, the invention has been found to have a primary field of use in connection with fibre board sheathing material, and for this reason such material, in the relatively large sizes in which it is conventionally marketed, as, for example, sheets 4' in width and 8' or more in length, has been illustrated.

In accordance with the invention, sheathing 16 is secured to the studs 10 by nails or the like 20, which are driven through the sheathing adjacent the edge of a flange of each stud 10. Nails 20 are of a sufficient length to project a substantial distance to the rear of the sheathing to receive a locking member 22, hereinafter to be fully described. Nails 20 may be of the smooth-shank type, but preferably carry barbs 24 as depicted particularly in Fig. 2. In lieu of nails, other types of barbed fasteners may be used, for example, threaded members such as bolts or screws. However, as illustrated, a barbed-shank nail of the type now conventionally employed in the art for securing asbestos-cement shingles is preferred.

Locking member 22 (see particularly Figs. 2, 3, and 6) may be of different specific forms. However, in each case it is formed from a relatively thin spring steel or other resilient metal stock and includes a preferably slightly outwardly bowed central section 26 and projecting legs 28. One of the legs 28 suitably includes integral prongs 36 of any desired shape. In the form shown in Figs. 2 and 3 the central section 26 is provided with cuts 30 defining aperture 32 and substantially parallel-sided spring tongues 34. The width of the aperture between the ends of spring tongues 34 is somewhat less than the smaller diameter of the shanks of nails 20. In the modification of Fig. 6, cuts 40 define triangular spring tongues 42 and a central aperture 44, the latter of somewhat smaller diameter than the nail shank. As will be understood by those skilled in the art, further variations of the spring tongues may be employed.

In the construction of the wall assembly, after the nails 20 are driven through the sheathing board adjacent the stud or furring strip 10, a locking member 22 is placed on each nail 20, with the end of the nail projecting through apertures 32 or 44, and is forced onto the shank of the nail in any suitable manner until the free ends of tongues 34 or 42 bite into, or rest beneath the barbs of, the nail. The locking member is positioned so that one of its legs engages flange 12 of the stud and the other leg, including the prongs 36, engages the rear face of the sheathing. The locking member is then forced further onto the nail shank by application of pressure on central section 26 on opposite sides of the project-

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ing nail. The application of the force is continued until the legs of the locking member tightly bind against the flange of the stud and the sheathing, respectively, and prongs 36 penetrate into the sheathing. Preferably, simultaneously with the inward movement of the locking member force is applied to the nail to draw it through the sheathing as far as permitted by its head. Due to resiliency of the material of which the locking member is made, when the pressure is relieved the tongues 34 or 42 lock beneath the barbs of the nail shank, or bite into the shank if a smooth nail is used, and the legs 28 are maintained in their binding engagement with the sheathing and stud flange.

The forcing of the locking member onto the nail shank into its final position and the simultaneous drawing of the nail through the sheathing as far as permitted by its head are accomplished in a single operation and preferably through the use of tools such as are shown and described in our formerly copending application Ser. No. 367,198, filed November 26, 1940, now Patent No. 2,293,743. That is, a tool is used including a claw to engage the nail shank and exert force thereon to draw the same through the sheathing, and also including a jaw to engage the center portion of the locking member and force the same toward the sheathing. Sufficient clearance is provided between the tines of the jaw to avoid interference with the operation of spring tongues 34 or 42, which slide down the nail and upon release of the forcing pressure engage by spring action beneath the barbs of the shank or bite into the shank in the event a smooth-shank nail is employed, as previously described.

Referring now to Figs. 4 and 5, the applicability of the invention to metal studs of other shapes than that disclosed in Fig. 1 is illustrated. As evidenced by these figures, the invention may be employed with studs or framing members of various shapes as long as a flange or other extending portion is provided against which a leg of the locking member may bind. The form of the locking member including legs 28 permits the member to straddle elements of the studs, such as the stiffening flanges of the stud of Figs. 1 and 2.

Having thus described our invention in rather full detail, it will be understood by those skilled in the art that these details need not be strictly adhered to, but that various changes and modifications will suggest themselves without departing from the scope of our invention as defined by the subjoined claims.

What we claim is:

1. A wall structure comprising spaced, substantially nail-impenetrable supporting members carrying sheath and means securing said sheathing to said members, said means comprising fasteners including elongated barbed shanks penetrating the sheathing and extending a substantial distance therebeyond and in proximity to said supporting members and locking members each comprising an outwardly bowed spring metal member having an opening receiving said shank and prongs at opposite sides of said openings resiliently engaging said shank and legs resiliently engaging a face of said sheathing and a supporting member, respectively.

2. A wall construction comprising spaced metal supports carrying sheathing and means securing said sheathing to said supports, said means comprising fasteners including elongated barbed shanks penetrating the sheathing and extending a substantial distance therebeyond and in proximity to said supports and locking members each comprising an outwardly bowed spring metal member having an opening receiving a shank and oppositely directed spring locking prongs resiliently engaging beneath barbs of the shank and terminal portions in binding engagement with a support and said sheathing, respectively.

3. A wall construction comprising spaced metal studs including an extending flange, sheathing material carried by said studs and resting against the flanges of said studs, and means securing said sheathing material to said studs, said means comprising fasteners including barbed shanks penetrating said sheathing material and extending a substantial distance therebeyond and in proximity to the edges of said flanges, and outwardly bowed spring locking members each including opposed spring locking prongs engaging an extending shank beneath the barbs thereof and including portions in resilient binding engagement with said sheathing and the flange of a stud, respectively.

4. A wall construction comprising spaced flanged studs carrying fibre board sheathing against the flanges thereof, means securing said sheathing to said studs, said means comprising fasteners including elongated barbed shanks penetrating the sheathing and extending a substantial distance therebeyond adjacent the edge of the flanges, and locking members each comprising an outwardly bowed spring metal member including an aperture receiving the shank of a fastener and opposed spring locking prongs adjacent said aperture resiliently engaging beneath the barbs of said shank, said locking member including legs in binding engagement with a flange of a stud and the sheathing, respectively.

5. A wall construction comprising spaced flanged studs carrying fibre board sheathing against flanges thereof, means securing said sheathing to said studs, said means comprising fasteners including elongated barbed shanks penetrating the sheathing and extending a substantial distance therebeyond adjacent the edge of said flanges, and locking members each comprising an outwardly bowed opposed spring metal member including an aperture receiving the shank of a fastener and spring locking prongs adjacent said aperture resiliently engaging beneath barbs of said shank, said locking member including legs in binding engagement with a flange of a stud and the sheathing, respectively, said leg engaging the sheathing including prongs penetrating into said sheathing.

6. A resilient locking member for cooperation with the shank of a fastener comprising an outwardly bowed central section and legs projecting therefrom, said central section including an aperture for the reception of a fastener element and opposed resilient locking tongues terminating at said aperture.

7. An article of manufacture comprising a resilient metal member including an outwardly bowed central section and legs projecting therefrom, said central section including an aperture for the reception of a fastener element and opposed resilient locking tongues terminating at said aperture, and one of said legs including projecting prongs.

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CERTIFICATE OF CORRECTION.

Patent No. 2,369,595. February 13 , 1945.

WILLIAM S. MILES, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 59, claim 1, after the word "carrying" strike out "sheath" and insert instead --sheathing--; line 67, same claim, for "openings" read --opening--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of September, A. D. 1945.

Leslie Frazer
First Assistant Commissioner of Patents.

(Seal)

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