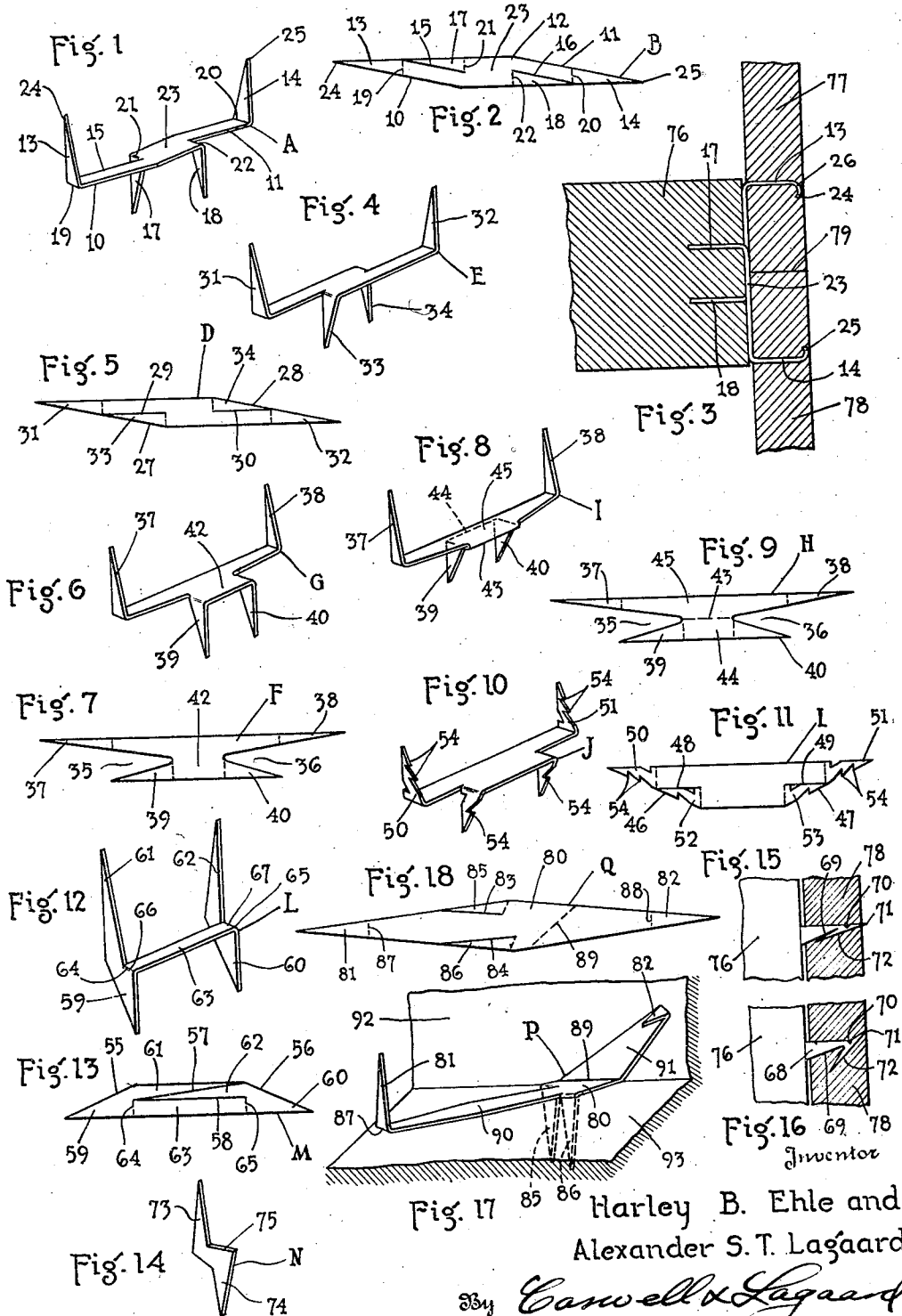


March 19, 1935.

H. B. EHLE ET AL
FASTENER FOR WALL BOARD

1,995,173

Filed June 21, 1932



Harley B. Ehle and
Alexander S. T. Lagaard

By *Carwell & Lagaard*
Attorneys

UNITED STATES PATENT OFFICE

1,995,173

FASTENER FOR WALL BOARD

Harley B. Ehle, Wayzata, and Alexander S. T. Lagaard, Minneapolis, Minn.; said Lagaard assignor to said Ehle

Application June 21, 1932, Serial No. 618,414

8 Claims. (Cl. 72-118)

Our invention relates to fasteners for wall board or for any adjoining objects and has for its object to provide a fastener by means of which shrinkage at the joint of adjoining sheets of wall board or adjoining objects may be prevented to eliminate cracks therebetween.

An object of the invention resides in providing a fastener which may be securely attached to studs of wood frame buildings and by means of which the wall board may be rigidly mounted.

An object of the invention resides in providing a fastener having prongs extending from two sides thereof, the prongs on one side being attached to the studs and the prongs on the other side to the wall board.

Another object of the invention resides in constructing the fastener of sheet metal and in stamping the prongs therefrom, some of the prongs being bent outwardly from the fastener from one side thereof and others from the other side thereof.

An object of the invention resides in providing a fastener with a pair of prongs extending from one side and another pair of prongs extending from the other side, one pair of prongs being embraced within the other.

A still further object of the invention resides in spacing the inner prongs a distance apart such that a hammer head is formed between the prongs whereby the prongs may be simultaneously driven into the studs by hammering upon said hammering head.

An object of the invention resides in constructing the fastener from a narrow strip of metal and in shearing the prongs from the edges of the strip inwardly toward the medial line thereof.

Another object of the invention resides in constructing the fastener to form two staples integrally connected together and facing in opposite directions.

A feature of the invention resides in shearing the strip from which the fastener is made along lines on a bias to form prongs along both of the lateral edges of the strip and in further severing the strip along parallel lines to form other prongs, the prongs on one of the lateral edges extending in the same direction and the prongs along the other lateral edge extending in the opposite direction.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawing:

Fig. 1 is a perspective view of a fastener for wall

board illustrating an embodiment of our invention.

Fig. 2 is a developed view of the blank from which the fastener shown in Fig. 1 is constructed.

Fig. 3 is a fragmentary plan sectional view illustrating the method of attaching adjoining sheets of wall board to a wood stud through the use of our invention.

Fig. 4 is a view similar to Fig. 1 showing a modification of the invention.

Fig. 5 is a view similar to Fig. 2 of the blank used in constructing the form of the invention shown in Fig. 4.

Figs. 6 and 7 are views similar to Figs. 1 and 2 of another form of the invention.

Figs. 8 and 9 are views similar to Fig. 1 of still another form of the invention.

Fig. 10 is a perspective view of a fastener formed with prongs having barbs for holding the wall board applied thereto.

Fig. 11 is a developed view of the blank from which the fastener shown in Fig. 10 is constructed.

Fig. 12 is a perspective view of still another form of the invention.

Fig. 13 is a developed view of the blank used in the construction of the fastener shown in Fig. 12.

Fig. 14 is a perspective view of a fastener having individual points.

Figs. 15 and 16 are fragmentary sectional views of a wall illustrating another form of fastener for holding the wall board attached to the studs.

Fig. 17 is a perspective view of a portion of two intersecting walls showing another form of our invention applied thereto.

Fig. 18 is a developed view of the fastener shown in Fig. 17.

In the use of wall board in frame buildings, considerable difficulty has been encountered in the joining of the wall board along the studs. After the wall board has been installed and the joint puttied up, cracks form along the joints due to expansion and contraction of the wood of the studs. The present invention provides a fastener by means of which the adjoining edges of the wall board are held permanently in fixed position so as to prevent shrinkage and the formation of cracks.

Our invention proper consists of a fastener which we have indicated in its entirety at A in Fig. 1 and which is constructed from a blank B shown in developed form in Fig. 2.

This blank is constructed from a strip of material which is cut along two lines 10 and 11 on a

bias to leave a body portion 12 and to form two pointed prongs 13 and 14 at the ends thereof. The body portion 12 is sheared along lines 15 and 16 which are parallel to the lines 10 and 11 and which form other prongs 17 and 18 whose points extend in the same direction as the points of the corresponding prongs 13 and 14. The prongs 13 and 14 are bent upwardly along transverse lines 19 and 20 as best shown in Fig. 1 while the prongs 17 and 18 are bent downwardly along transverse lines 21 and 22 as shown in the same figure. The two prongs 13 and 14 are spaced apart a distance slightly less than the width of the studs on which the same are to be applied, while the prongs 17 and 18 are spaced apart a distance somewhat less than the width of the hammer head to be used in driving the same to form a head 23 on which the fastener may be struck by the hammer to drive the same into the object on which the board is to be applied. The fasteners A may be constructed in a punch press or similar machine and are stamped out of sheet metal from narrow strips of the width of the blank shown in Fig. 2.

For the purpose of illustrating the application of the invention to a building, a single stud 76 of the building has been shown and to which two sheets of wall board 77 and 78 are to be applied, the said sheets being joined along the line 79.

In the use of the fasteners a number of the fasteners are applied to the studs at regular intervals from two or three inches apart up to a foot apart, depending upon the type of wall board and the rigidity of construction desired. In applying the fasteners, each fastener is grasped by one or the other of the prongs 13 and 14 and held transversely of the stud with the prongs 17 and 18 centered relative thereto. The intervening portion 23 of the body 12 of the fastener which is disposed between the two prongs 17 and 18 and which forms a hammer head is then struck with an ordinary carpenter's hammer which drives the two prongs 17 and 18 into the stud proper. The body 12 then lies upon the outer surface of the stud, the two prongs 17 and 18 being buried therein and the two prongs 13 and 14 extending outwardly therefrom near the lateral edges of the stud. After the fasteners have been applied to all of the studs the wall board may be erected. This is accomplished as follows: A sheet of wall board is first placed in proper position over the studs with the various prongs 13 and 14 of the fasteners engaging the same at the proper locations. A block of wood is then placed upon the wall board and the wall board driven against the prongs 13 and 14 by giving the blocks blows with a hammer which causes said prongs to enter the wall board and to pass completely through the same. The lengths of the prongs 13 and 14 are such that the extreme sharpened ends or points 24 and 25 thereof project slightly beyond the surface of the wall board when the wall board has been properly applied. The block used is then successively moved about all of the edges of the wall board and the same driven up tight against the studs by hammer blows applied to the block until all of the fasteners extend through the board. After the wall board is in proper position each of the projecting points 24 and 25 may be clinched by a light hammer blow upon the exterior surface of the wall board which does not mar the wall board and which causes the points to form a hook 26 (Fig. 3) which becomes imbedded within the wall board without leaving any visible mark whatsoever from the exterior surface of the wall board. After the fasteners

have been applied and the wall board secured thereto, the joints between the adjoining sheets of wall board may be sealed through a suitable putty and in any suitable manner as is now well known in the art. If desired, a strip of metal foil may be applied to the joint and securely cemented in place thereon to prevent the formation of cracks in the joint.

Wall board may be mounted upon the studs with our improved fasteners without the use of nails and the labor required in putting up nail holes is hence entirely eliminated. Due to the fact that a metal strip formed by the body 12 of the fastener spans across the joint between adjoining sheets of board movement of the adjoining parts of the wall board is hence minimized and the formation of cracks in the putty used to seal the joint is prevented.

In Figs. 4 and 5 we have shown a construction which is similar to that shown in Figs. 1 and 2. In this form of the invention the blanks are indicated at D and the finished fastener at E. The blank D is constructed from a narrow strip of sheet metal which is sheared along lines 27 and 28 on the bias and which is further severed at 29 and 30 along the medial line of the strip to form the prongs 31, 32, 33 and 34. The prongs 31 and 32 are bent outwardly from the strip in one direction, while the prongs 33 and 34 are bent outwardly from the strip in the opposite direction. The fastener E is applied to the wall board in exactly the same manner as the fastener A and functions in like manner.

In Figs. 6 and 7 we have shown a modification of the invention in which the fastener may be constructed from a fairly wide strip of sheet metal and the prongs formed by punching instead of by shearing. The blank from which the fastener illustrated in Fig. 7 is formed is indicated at F and the finished fastener at G. The blank F is provided at its two ends with two V-shaped notches 35 and 36 which are so shaped as to form prongs 37, 38, 39 and 40. The prongs 39 and 40 are bent outwardly from the blank in one direction while the prongs 37 and 38 are bent outwardly therefrom in the opposite direction. The hammer head 42 formed between the two prongs 39 and 40 in this form of the invention is offset from the portion of the body from which the two prongs 37 and 38 issue so that a somewhat greater degree of care is required in applying the fasteners G than would be required with either of the other two forms of fasteners heretofore described.

To overcome the difficulty encountered with the fastener G in that the hammer head 42 is offset from the major portion of the body portion, a fastener such as indicated at I in Fig. 8 may be employed. This fastener is formed from a blank H shown in Fig. 9 which is similar in configuration to the blank F. This blank is, however, folded along a line 43 to cause the portion 44 of the body of the blank on one side of the line of fold to overlie the portion 45 on the other side thereof. The prongs 39 and 40 are bent downwardly from the blank while prongs 37 and 38 are bent upwardly the same as with the fastener G. This fastener has the disadvantage of having two thicknesses of metal between the wall board and the stud, though the said fastener may be driven equally as easy as the fasteners A or E.

A fastener similar to the fastener G is shown in Fig. 10 and is indicated by the reference character J. This fastener is formed from a blank

K shown in Fig. 11. The blank K is stamped along two lines 46 and 47 on the bias and is sheared along lines 48 and 49 extending medially of the strip from which the fastener is constructed. This construction leaves prongs 50 and 51 which are bent in one direction and prongs 52 and 53 which are bent in the other direction. The prongs 50, 51, 52 and 53 may be formed with barbs 54 which assist in holding the wall board securely applied to the fastener on the stud. The fasteners J shown in Fig. 10 when applied with certain types of wall board, serve to hold the same properly attached without the necessity of clinching of the sharpened points thereof. In such case the prongs 50 and 51 are made of a height somewhat less than the thickness of the wall board and do not project through the same.

In Figs. 12 and 13 I have shown still another form of fastener which is designated by the reference character L. This fastener is formed from a blank M which is constructed from a narrow strip of metal sheared along lines 55 and 56 on the bias and along longitudinally extending lines 57 and 58 to form prongs 59, 60, 61 and 62. The body of the fastener which is indicated at 63 is bent along lines 64 and 65 so that the prongs extend outwardly from said body in both directions, as clearly shown in Fig. 12. The fastener L is constructed somewhat narrower than the width of the stud and is applied to the stud by driving the prongs 59 and 60 into the same. This is accomplished by applying the hammer to the shoulders 66 and 67 formed where the metal is bent along the lines 64 and 65.

Instead of clinching the points of the prongs into the wood, a special type of prong may be employed, such as illustrated at 68 in Fig. 15. The prong 68 is constructed with a slit 69 which extends in oblique relation in respect thereto. In addition a notch 70 is provided which is disposed in advance of said slit and near the extreme point 71 of the prong. The slit 69 forms a barb 72 which lies along the body of the prong proper. When the fastener shown in Fig. 15 is used with a fairly firm wall board, the point 71 is caused to project slightly outwardly beyond the surface thereof. By striking the said point with a hammer the barb 72 is thrown outwardly as designated in Fig. 16 to cause the same to become imbedded into the body of the wall board proper, whereby the wall board is firmly held attached to the studs.

In Fig. 14 we have shown a type of fastener which may be used on intermediate studs where no joints occur. This fastener is constructed of sheet metal being stamped from the same and is indicated at N. The fastener N is constructed with two prongs 73 and 74 issuing in opposite directions and offset with respect to one another. In the construction of this fastener a shoulder 75 is formed which provides a hammer head by means of which the prong 74 may be driven into the stud. This fastener may be used on studs intermediate the edges of the wall board and where double fasteners are not required.

Where the edges of the wall board are joined in the corner of a building forming a reentrant angle a fastener such as shown in Fig. 17 and indicated at P is employed. This fastener is constructed from a blank Q illustrated in Fig. 18 which is sheared from sheet metal to form a body portion 80 substantially diamond shape in form and two end prongs 81 and 82. The body portion 80 is further sheared along longitudinal lines 83 and 84 to form two intermediate prongs 85 and 86.

The prongs 81 and 82 are bent outwardly from the body 80 along lines 87 and 88 in one direction while the prongs 85 and 86 are bent outwardly from the body in the other direction. The body proper 80 is also bent along a diagonal line 89 to form two portions 90 and 91 making a right angle with one another and fitting along the reentrant angle formed between the two studs designated at 92 and 93. It will be noted that the two portions 90 and 91 are offset with respect to one another and that one of the prongs 81 and 82 issue outwardly from each of these portions. This permits of attachment of the respective sheets of wall board without interference. Both of the prongs 85 and 86 issuing from the portion 90 permit of securing the fastener to the studs by driving with a hammer.

The advantages of my invention are manifest. An extremely simple and inexpensive fastener is provided whereby wall board may be permanently and firmly secured to the studs of frame buildings without the use of nails or by means of which any two adjoining objects may be fastened together. The fasteners leave no perceptible marks upon the exterior of the wall board thereby greatly reducing the amount of work necessary to finish up the wall board after the same has been applied. By means of the connecting portion of the fastener extending between the adjoining sections of the wall board, shrinkage of the wall board is prevented and the formation of cracks along the joint of the wall board entirely done away with. The fasteners can be constructed at a nominal cost and by machinery such as is now readily available for the purpose.

Changes in the specific form of our invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of our invention.

Having described our invention, what we claim as new and desire to protect by Letters Patent is:

1. A fastener comprising a narrow strip of sheet metal having its ends severed along lines on a bias to form end prongs, the points of said prongs being disposed at the opposite lateral edges of said strip, said prongs being both bent outwardly from the strip on the same side thereof, said strip being sheared along other lines parallel to said first named lines and extending toward the center line of the strip to form other prongs, the points of the second named prongs being disposed at the same lateral edges of the strip as the points of the first named prongs adjacent thereto.

2. A fastener for attaching wall board to wood studs comprising a strip of sheet metal adapted to extend across the studs, prongs bent outwardly from said strip near the lateral edges of the stud and adapted to enter the wall board and other prongs bent from said strip in the opposite direction to said first named prongs and being spaced apart a distance less than the transverse dimension of a hammer head, the intervening portion of said strip forming a head connecting said last named prongs together through which said last named prongs may be simultaneously driven into the stud by a hammer.

3. A fastener for application to the stud of a building comprising a strip of metal extending across the stud, triangular shaped prongs issuing outwardly from the strip intermediate its ends and lying parallel to each other and to the grain of the wood of the stud for entry into the stud, and other prongs issuing outwardly

from the ends of the strip for engagement with sheets of wall board applied to the studs.

4. A fastener for attaching wall board to wood studs comprising a strip of sheet metal adapted to extend across the studs, prongs bent outwardly from said strip near the lateral edges of the stud and adapted to enter the wall board and other prongs bent from said strip in the opposite direction to said first named prongs and being spaced apart a distance less than the transverse dimension of a hammer head, the intervening portion of said strip forming a head connecting said last named prongs together through which said last named prongs may be simultaneously driven into the stud by a hammer, said head being of a width greater than the width of the portions of the strip connecting the outer prongs with the head.

5. A fastener constructed from a blank formed from a narrow strip of sheet metal of the shape of a rhomboid, said blank being sheared along two lines commencing at two of the opposite edges thereof and extending toward one another and in the same general direction as the other two edges of the blank to form two triangular shaped portions at the center of the blank there being two triangular shaped portions at the ends of the blank, said portions being bent out of the plane of the fastener to provide prongs issuing therefrom.

6. A fastener constructed from a blank formed from a narrow strip of sheet metal of the shape

of a rhomboid, said blank being sheared along two lines commencing at two of the opposite edges thereof and extending toward one another and in the same general direction as the other two edges of the blank, the ends of the blank and the severed portions thereof being bent out of the plane of the fastener to form prongs issuing therefrom.

7. A fastener comprising a narrow strip of sheet metal, two triangular prongs formed from the metal adjacent one edge of the strip and having an edge of each prong formed from the edge of the strip, and two other prongs formed from the metal of the strip adjacent the other edge of the strip, the second named prongs each having an edge formed from the edge of the strip, said prongs being bent outwardly from the strip, said strip being equal in width to twice the base dimension of said prongs.

8. A fastener constructed from a blank formed from a narrow strip of sheet metal of the shape of a rhomboid, there being two triangular shaped portions at the ends of the blank, said blank being sheared along a line commencing at one of the edges thereof and extending toward the opposite edge of the blank substantially parallel to the other edges of the blank to form another triangular shaped portion, said triangular shaped portions being bent out of the plane of the fastener to provide prongs issuing therefrom.

HARLEY B. EHLE.

ALEXANDER S. T. LAGAARD.