April 18, 1939. F. KULLMER 2,154,944

STRUCTURAL MEMBER

Filed March 16, 1938 2 Sheets-Sheet 1

Fig. 1.

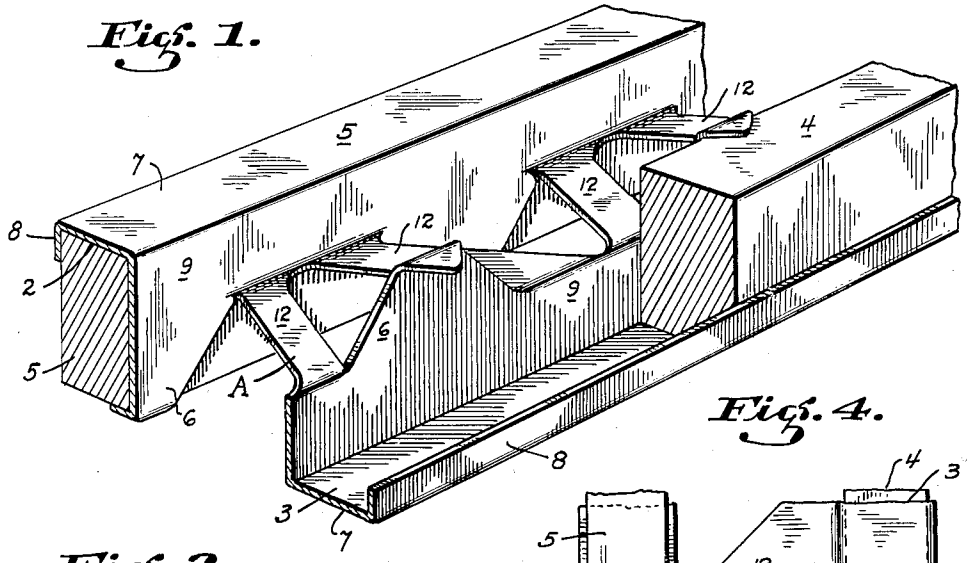

Fig. 2.

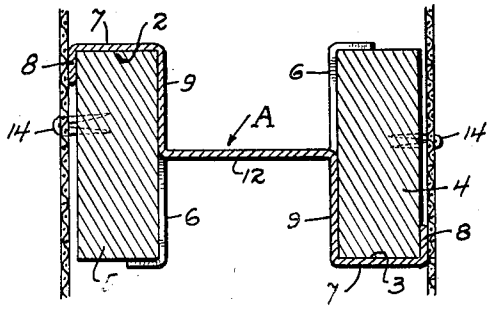

Fig. 3.

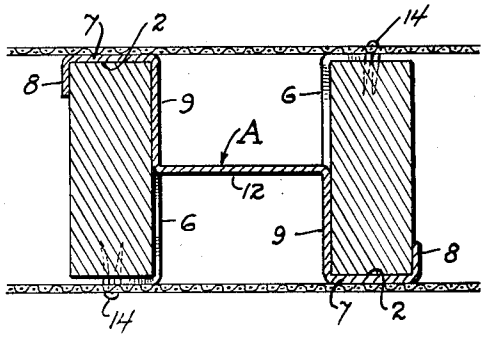

Fig. 4.

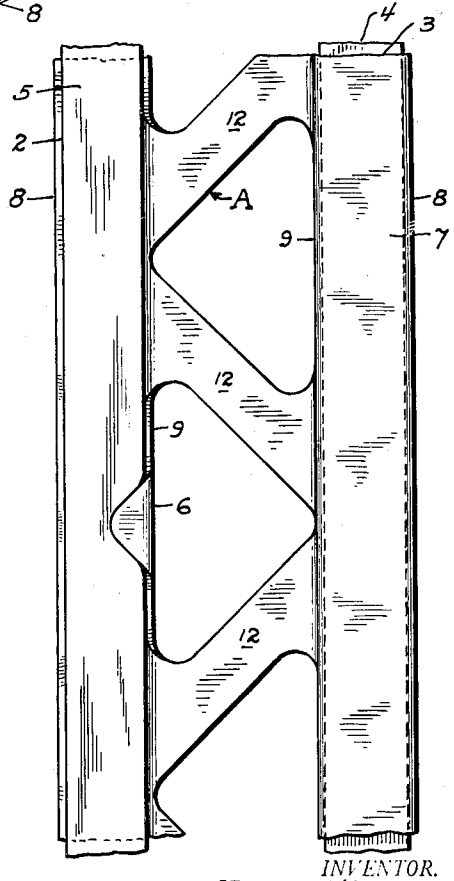

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Fig. 5.

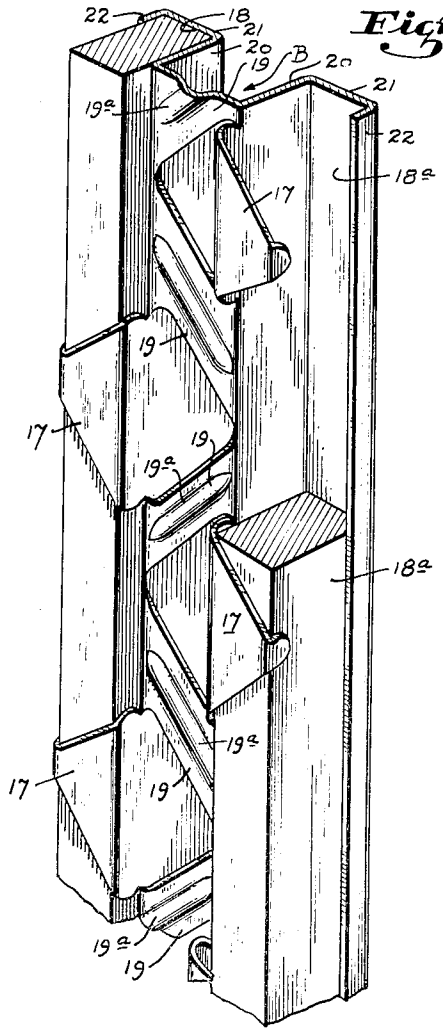


Fig. 6.

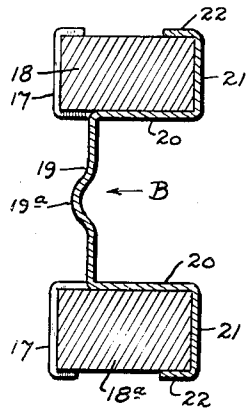
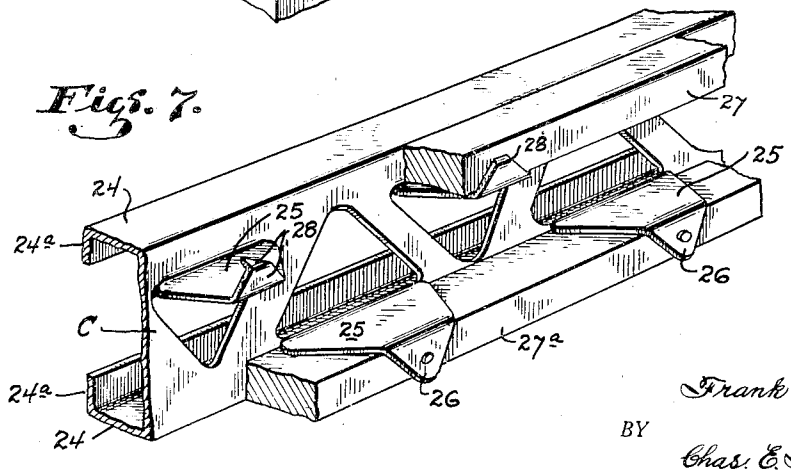


Fig. 7.



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Patented Apr. 18, 1939

2,154,944

UNITED STATES PATENT OFFICE

2,154,944

STRUCTURAL MEMBER

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Application March 16, 1938, Serial No. 196,196

5 Claims. (Cl. 189—40)

This invention relates to a structural member which may be used as a wall or partition stud, as a ceiling joist, roof rafter, etc., in the construction of buildings, and particularly to a structural member which is formed from sheet metal and which has combined with it nailing strips to permit direct attachment of plaster lath, baseboards, molding strips, etc.

The object of the present invention is generally to improve and simplify the construction and operation of structural members of the character described; to provide a structural member made from a strip of sheet metal to form one or more connected parallel channels to receive nailing strips; to provide a web portion which may be cut to form a plurality of tongues which are adapted to be bent over the nailing strips to secure them in their channels and against removal from the structural member; to provide a structural member of the character described in which the nailing strips are so embraced by the metal of the structural member that splitting when nails are driven into the strips is practically eliminated; to provide a structural member of sheet metal with nailing strips attached thereto which may be used as a wall stud and may be placed crosswise or parallel in the wall, depending upon whether it is an outside wall or a partition structure; and further, to provide a structural member of the character described in which the nailing strips are equally accessible when the structural member is used as a stud, whether the stud is placed crosswise or longitudinally in the partition or wall.

The structural member is shown by way of illustration in the accompanying drawings, in which

Fig. 1 is a perspective view of a portion of the structural member, said view also showing the nailing strips;

Fig. 2 is a horizontal cross-section showing the structural member placed crosswise in a wall structure;

Fig. 3 is a similar section showing the structural member placed longitudinally in a partition structure;

Fig. 4 is a side elevation of the structural member and the nailing strips attached thereto;

Fig. 5 is a perspective view of a portion of a structural member showing a modified form thereof;

Fig. 6 is a horizontal cross section of the same; and

Fig. 7 is a perspective view of another form of the structural member.

Referring to the drawings in detail, and particularly to Figs. 1 to 4, a structural member is disclosed which consists of a central web section A, on opposite sides of which are formed channel sections 2 and 3, provided for the reception of nailing strips 4 and 5. The web portion is cut to form a series of triangularly-shaped tongues 6 which are bent over the nailing strips to secure them in their respective channels. One face of each nailing strip is fully covered by the metal 7 forming a portion of each channel. A flange 8 covers a portion of the outer face of each nailing strip, while the other faces are partially covered or embraced by the inner faces 9 of the channels and by the bent-over tongues 6. All faces of each nailing strip are thus wholly or partially embraced by the metal of the structural member, and any danger of splitting the nailing strips when driving nails, staples, or like fastening means into them is thus practically eliminated.

The nailing strips are made of wood, or a similar material, and as such, stiffen and reinforce the structural member without any material increase in weight. The structural member itself is formed from sheet metal which, due to the mode of bending employed, materially increases rigidity and strength. The triangularly-shaped tongues cut from the central web portion of the structural member are bent from opposite sides of the web and over the nailing strips, and thus form a web consisting of angularly disposed truss arms 12 whereby the channel sections are left connected, without any material reduction in strength. Besides that, openings are formed between the truss arms which permit piping, conduits, wiring, etc., to be run through the walls, ceilings, etc., in which the structural members are employed. Last but not least, if the nailing strips are treated with a fireproofing compound, a substantially fireproof building will result, as structural members of the type here disclosed are employed in steel-frame structures where both the exterior and the interior walls and partitions, together with the ceilings, are covered with metal lath and plaster.

In Fig. 1 is will be noted that the channel sections of the structural members are reversed with relation to each other. This is important, as it permits the structural member when employed as a wall stud to be placed crosswise of the wall structure, for instance on outside or bearing walls, as shown in Fig. 2, and it also permits the structural member to be placed parallel to the wall, as in partition walls such as shown in Fig. 3, thus permitting the construction of walls of

varying thickness by means of the same structural member. It will further be noted that, regardless of whether the studs are placed crosswise or parallel in the wall, the utility of the nailing strips will not be impaired, as either the faces or the edges of the nailing strips will be presented for the reception of nails or other fastening means when the lath indicated at **14** is applied.

In Fig. 5 a modified form of the structural member is disclosed. In this instance a central channel having a web B and side flanges **20—20** is disclosed. These flanges are bent at right angles as shown at **21**, and again bent at right angles as at **22**. A main central channel with two side channels to receive nailing strips as shown at **18** and **18***a* is thus formed, said nailing strips being secured to a tongue **17** cut from the central web B in the same manner as described in the structure shown in Fig. 1. The form of structure shown in Fig. 5 secures the nailing strips better, if anything, than the structure shown in Fig. 1, as the tongue **17** embraces portions of three of the sides of the nailing strips, thus securing them more rigidly and preventing splitting when nails are driven into the same. The truss arms **19** left in the web after the tongues have been cut and bent over the nailing strips may be ribbed as shown at **19***a* to increase their rigidity, and the same may obviously be done with the truss arms shown at **12** in Fig. 1.

In Fig. 7, another modification is shown. In this instance the sheet metal from which the structural member is formed is bent to form a single channel having a web C, and side flanges **24**, the said flanges being stiffened by inturned flanges **24***a*. The web is cut in the same manner as previously described to form a plurality of triangularly-shaped tongues **25** which are bent at their outer ends as shown at **26** to receive the nailing strips indicated at **27** and **27***a*. The bent-over ends **26** of the tongues may be perforated to permit nails to be driven through, so as to secure the nailing strips, or they may be formed with prongs as shown at **28**, which may be driven into the nailing strips. In either instance, the nailing strips are rigidly secured. In all instances the nailing strips will preferably be treated with a fireproofing compound; and while wood is generally employed, other materials may obviously be employed. I furthermore wish it understood that although certain other features of the invention have been more or less specifically described and disclosed, nevertheless changes may be resorted to within the scope of the appended claims, and the specific materials and finish may be such as the maker desires or varying conditions indicate.

Having thus described and illustrated my invention, what I claim and desire to secure by Letters Patent is:

1. A combination wall stud and nailing strip comprising a stud made from a strip of sheet metal and bent to form a pair of continuous channel sections and an intermediate connecting integral web, a nailing strip disposed in each channel, and tongues of metal cut in the web and bent over the nailing strips to secure them in their respective channels.

2. A combination wall stud and nailing strip comprising a stud made from a strip of sheet metal and bent to form a pair of continuous channel sections and an intermediate connecting integral web, a nailing strip disposed in each channel, said channels partially embracing three sides of the nailing strips, and tongues of metal cut in the web and bent over the nailing strips to partially embrace the fourth side of each nailing strip.

3. A combination wall stud and nailing strip comprising a stud made from a strip of sheet metal and bent to form a pair of continuous channel sections and an intermediate connecting integral web, said channels being disposed in the same plane as the web but being reversed with relation to each other so that one channel faces upwardly and the other downwardly with relation to the web, a nailing strip disposed in each channel, and tongues of metal cut in the web and bent over the nailing strips to secure them in their respective channels.

4. A combination wall stud and nailing strip comprising a stud made from a strip of sheet metal and bent to form a central channel section and a pair of channel sections one on each side thereof, said last named channel being reversed with relation to the first named channel, a nailing strip disposed in each side channel, and tongue members cut from the web of the central channel and bent outwardly and over the nailing strips to secure them in their respective channels.

5. A combination wall stud and nailing strip comprising a stud made from a strip of sheet metal and bent to form a web and a pair of continuous side flanges, a nailing strip disposed parallel to each flange, and tongues cut from the web and bent over the nailing strips to secure them to the stud.

FRANK KULLMER.