Aug. 15, 1933. J. A. MacLEAN 1,922,814

FLOOR CLIP AND THE METHOD OF MAKING SAME

Filed Feb. 9, 1931 2 Sheets-Sheet 1

Fig. 1.

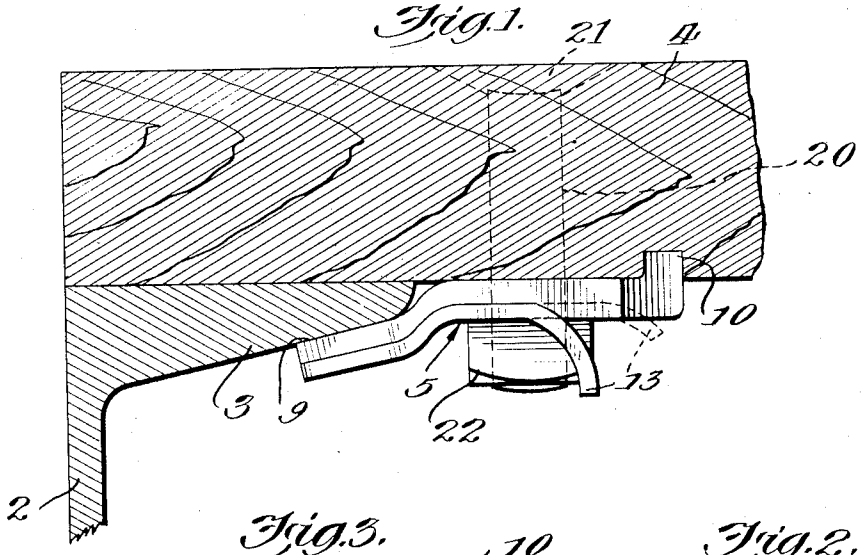


Fig. 3.

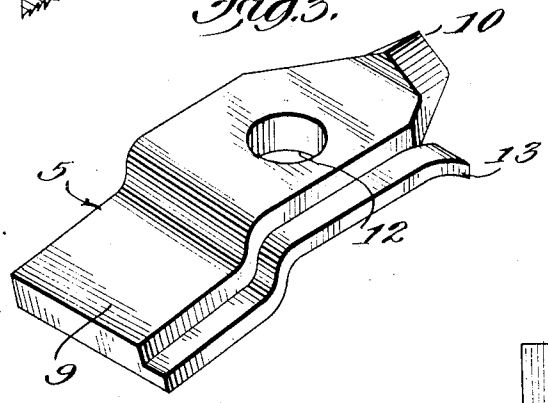


Fig. 2.

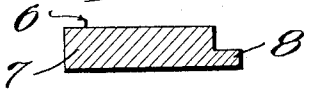


Fig. 4.

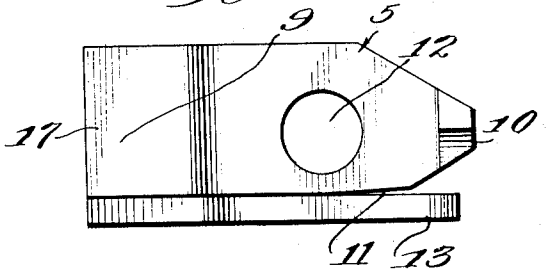


Fig. 5.

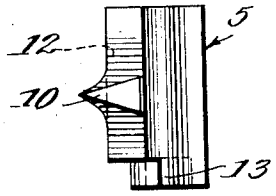
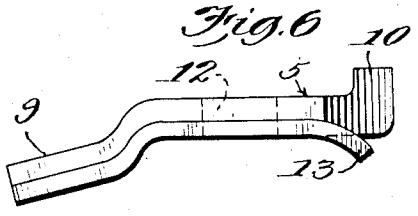


Fig. 6.



Inventor:
John A. MacLean
By Williams, Bradbury,
McCaleb & Hinkle.
Attys.

Aug. 15, 1933. J. A. MacLEAN 1,922,814

FLOOR CLIP AND THE METHOD OF MAKING SAME

Filed Feb. 9, 1931 2 Sheets-Sheet 2

Fig. 7.

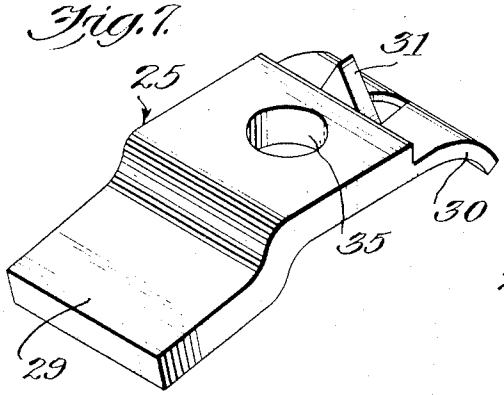


Fig. 8.

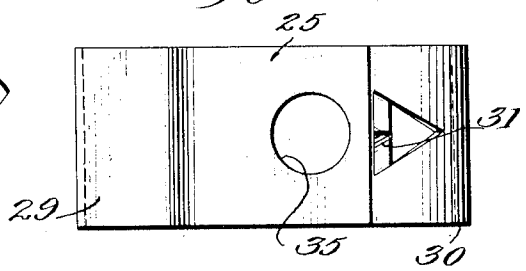


Fig. 10.

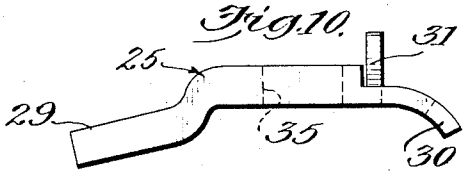


Fig. 9.

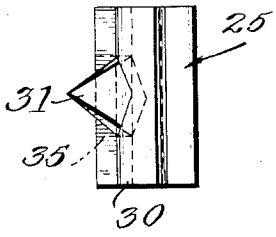


Fig. 12.

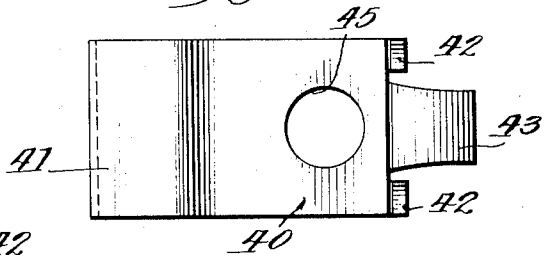


Fig. 11.

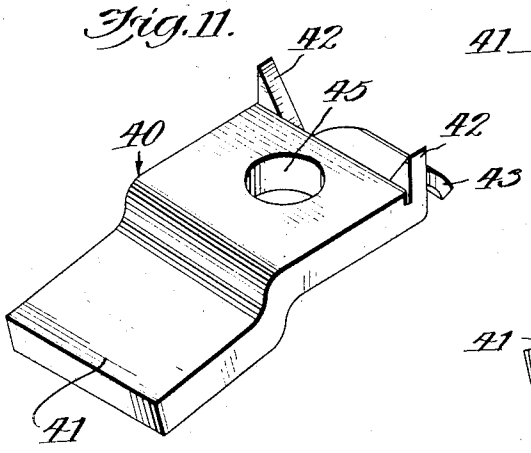


Fig. 14.

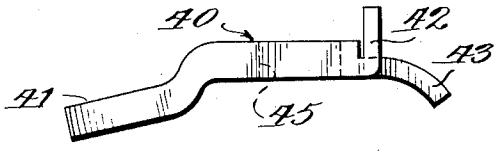


Fig. 15.

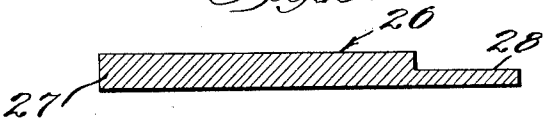
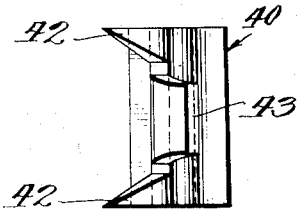


Fig. 13.



Inventor:
John A. MacLean
By Williams, Bradbury
McCaleb & Hinkle.
Attys.

Patented Aug. 15, 1933 1,922,814

UNITED STATES PATENT OFFICE

REISSUED MAY - 6 1941

1,922,814

FLOOR CLIP AND THE METHOD OF MAKING SAME

John A. MacLean, Chicago, Ill., assignor to MacLean-Fogg Lock Nut Company, Chicago, Ill., a Corporation of Illinois

Application February 9, 1931. Serial No. 514,478

16 Claims. (Cl. 29—148)

My invention relates to means for securing floor boards and more particularly wooden floor boards or planks to a supporting structure of the steel beam type.

An object of the present invention is to provide an improved floor clip for securing floor boards to a supporting beam or sill.

Another object of the invention is to provide a clip which is simple in construction and at the same time provide a clip which effectively secures the floor boards to a supporting sill.

Another object of the invention is an improved method of constructing a clip of the above type from a bar of rolled metal stock.

Another object of the invention is the improved method of constructing a clip of the above type from predetermined lengths or widths of metal bars of the desired cross sectional form which provides for a minimum amount of tooling when fabricating such lengths or widths into their final form.

Another object of the invention is the improved method of constructing a clip of the above type from predetermined lengths or widths of metal bars of the desired cross-sectional form which provides the clip fabricated from such lengths or widths with integral means for locking the nut which clamps the clip in securing position against rotation.

With these and other objects in view, the invention consists of novel details of construction and arrangement of parts as will be more fully hereinafter disclosed and particularly pointed out in the appended claims.

For a more complete understanding of my invention reference may be had to the accompanying drawings in which several forms of my invention are illustrated and in which;

Fig. 1 is a fragmentary vertical section of a floor construction showing the application of one of the devices of my invention;

Fig. 2 is a transverse sectional view of the rolled metal bar from which one form of the device of my invention is fabricated;

Fig. 3 is a perspective view of the clip associated with the floor construction of Fig. 1.

Fig. 4 is a top plan view of the clip illustrated in Fig. 3.

Fig. 5 is a right end elevation of Fig. 4.

Fig. 6 is a side elevation of Fig. 4.

Fig. 7 is a perspective view of another form of clip applicable to a floor construction as illustrated in Fig. 1.

Fig. 8 is a top plan view of the clip illustrated in Fig. 7.

Fig. 9 is a right end elevation of Fig. 8.

Fig. 10 is a side elevation of Fig. 8.

Fig. 11 is a perspective view of still another form of a clip applicable to the floor construction illustrated in Fig. 1.

Fig. 12 is a top plan view of the clip illustrated in Fig. 11.

Fig. 13 is a right end elevation of Fig. 12.

Fig. 14 is a side elevation of Fig. 12, and

Fig. 15 is a transverse sectional view of the rolled metal bar from which the form of clips shown in Figs. 7 and 11 may be fabricated.

Referring now to the drawings and particularly to Figs. 1 to 6 inclusive in which one form of the invention is illustrated, the reference character 2 indicates the side sill of a railway car and which extends longitudinally thereof and usually comprises an I beam or a U beam having a horizontally disposed upper sill flange 3. The sill 2 is adapted to support the floor boards extending across the car, one of which is indicated by the reference character 4 and secured thereto by means of a clip indicated generally by the reference character 5. The clip 5 is fabricated from a predetermined length of a rolled metal bar 6 of the form illustrated in transverse section in Fig. 2 and consists of a main body portion 7 of rectangular cross-section and a narrow integrally formed rib formation 8 extending laterally from a side of the same.

The clip 5 is fabricated from a predetermined length of the bar 6 by means of a suitable shearing and forming operation to provide the same with an offset portion 9 at one end thereof to position this portion 9 out of the plane of the body of the clip and at the proper angle so as to conform to the angle of the lower face of the sill flange 3 while the horizontal body of the clip 5 bears against the underside of the board 4. A toothed or prong formation 10 is formed at the forward end of the body of the clip by the shearing and forming operation and is bent upwardly at right angles to the body of the clip. This tooth or prong 10 is adapted to be forced into the underside of the floor board 4 when the clip is in securing position to prevent rotation of the clip. A portion of the rib formation adjacent the forward end of the clip is sheared from the body of the same as indicated at 11 in Fig. 4 to a point adjacent the axis of the bolt opening 12 in the clip. This sheared portion forms a wing member 13 having its free end arcuately formed and directed downwardly and provides means for locking the nut which secures

the clip in fastening position against rotation as will presently be described.

As illustrated in Fig. 1 the board 4 is provided with a bolt hole 20 adjacent the edge of the sill flange 3 and is adapted to receive the bolt 21 which extends therethrough. This bolt 21 in combination with the clip 5 secures the floor board 4 to the sill 2 against movement. The clip 5 as provided with the bolt opening 12 for the passage of the bolt 21 may now be placed on the same and positioned to permit the angularly disposed offset 9 to contact the lower face of the sill flange 3. A nut 22 may now be threaded on the bolt 21 and threaded home to force the tooth or prong 10 into the underside of the board 4 and place the horizontal body of the clip 5 in firm contact with the underside of the board 4 and in the plane of the upper face of the sill 2 which includes the sill flange 3. The wing 13 may now be bent down by engaging the downwardly directed forward portion of the same by a suitable tool from its position indicated in dotted lines in Fig. 1 to its locking position. When in locking position the wing 13 lies adjacent one side of the nut 22 as clearly illustrated in Fig. 1 and prevents rotation of same and by the use of the clip 5 the board 4 is firmly held in contact with the upper face of the sill 2, and the tooth or prong 10 thus embedded in the underside of the board 4 in turn prevents rotation of the clip when in fastening position. The wing 13 integral with the clip provides locking means for the nut 22 and prevents the same from working loose by reason of the fact that the wing 13 forms an integral part of the clip 5 and lies in close proximity to a face of the nut 22.

Referring now to Figs. 7 to 10 inclusive I illustrate therein a modified form of clip for securing the board 4 to the sill 2 in the construction illustrated in Fig. 1. The form of clip illustrated in Figs. 7 to 10 is indicated generally by the reference 25 and is fabricated from a predetermined width of rolled metal bar 26 of the form illustrated in transverse section in Fig. 15 having a main body portion 27 and a reduced extending portion 28.

The clip 25 is fabricated from a transverse section of the bar 26 which is of predetermined width and by means of a suitable shearing and forming operation is shaped to provide the clip 25 with an offset portion 29 adjacent one end to position the same out of the plane of the body of the clip and also at the proper angle so as to conform to the angle of the lower face of the sill flange 3 illustrated in Fig. 1. The reduced extended portion of the bar 26 provides the clip 25 with a wing member 30 which has struck up there from and preferably at right angles by means of the shearing and forming operation a tooth or prong formation 31 adjacent the body of the clip which is adapted to be forced into the underside of the board 4 to prevent rotation of the clip when in fastening position. The free end of the wing member 30 is arcuately formed and directed downwardly and provides means for locking the nut which secures the clip 25 in fastening position against rotation. The clip 25 is also provided with a bolt opening 35 to provide for the passage of a bolt there through. The application of the clip 25 to the structure of Fig. 1 of the drawings is the same as previously described and permits the offset portion 29 to firmly contact the sill flange 3 and the prong 31 to become firmly embedded in the underside of the board 4 when the nut 22 is threaded home. The wing member 30 provides means for locking the nut 22 and may be engaged by a suitable tool and bent down to place the edge of the wing 30 in contact with a face of the nut 22 to prevent the same from becoming loosened. By the use of the clip 25, the board 4 may be held in firm contact with the upper face of the sill 2 and the prong 31 integral with the clip prevents rotation of the same when in fastening position and the wing 30 when forced into locking position prevents the nut from working loose.

Referring now to Figs. 11 to 14 inclusive I illustrate therein another modified form of clip for securing the board 4 to the car sill 2 in the construction illustrated in Fig. 1. The form of clip illustrated in Figs. 11 to 14 is indicated generally by the reference character 40 and is fabricated from a transverse section of the rolled metal bar 26 and is provided with an angular offset 41 adapted for engagement with the under face of the sill flange 3. The reduced extended portion of the transverse section in this instance is sheared and formed to provide a pair of diametrically opposite teeth or prongs 42 struck up from the same and at right angles thereto and a wing member 43 positioned between the teeth 42 having an arcuate downwardly directed end portion which facilitates the engagement of a suitable tool for bending this arcuate end into locking engagement with the nut to permit the same from loosening. The clip 40 is also provided with a bolt opening 45 for the passage of a bolt as 21 and the clip when placed thereon with its offset portion 41 in contact with the under face of the sill flange 3 and the nut 22 associated with the bolt 21 threaded home, the prongs 42 will be forced into the underside of the board 4 to prevent rotation of the clip 40. With the nut threaded home the wing member 43 may now be bent down to place the arcuate end of the same in contact with a face of the nut to lock the same and prevent it from loosening.

The strains, jars and twists to which cars are subjected would inevitably cause rotation of the usual clip and the working loose of the nut such as 22, but by virtue of the prong or prongs with which the clips are equipped and which are effectively embedded in the underside of the board 4 will prevent such rotation of the clip. The locking means integrally formed with the clips when moved into engagement with the nut after being threaded home provide means which effectively locks the nuts and prevents them from working loose due to such strains, jars and twists as just pointed out.

While I have illustrated and described the floor clip and its various modifications associated with a floor construction applicable to a railway car it is to be understood that they are applicable for use in securing the boards of a floor in various constructions. Neither do I wish to be limited to the exact structures as shown as changes and modifications will readily suggest themselves and I therefore aim to cover all such changes as come within the spirit and scope of the appended claims.

I claim:

1. In combination with a sill for supporting a floor board, a clip having a body portion engaging the underside of said board and another portion engaging under the sill flange, fastening means securing said clip to the sill and floor

board and means integral with said clip for locking said fastening means.

2. In combination with a sill for supporting a floor board, a clip having a body portion contacting the underside of said board and another portion engaging under the sill flange, said clip having means engaging the board to prevent its rotation, fastening means for securing the clip to the sill and floor board and means integral with said clip for locking said fastening means.

3. In combination with a sill for supporting a floor board, a clip having a body portion contacting the underside of said board and an offset portion lying below the plane of the body portion contacting beneath the sill flange, a bolt for securing the clip to the sill and the board and locking means integral with the clip and directed downwardly from the body of the clip to contact a face of the nut on the bolt.

4. In combination with a sill for supporting a floor board, a clip having a body portion contacting the underside of the board and an offset portion angularly disposed relative said body contacting under the sill flange fastening means for securing said clip to the sill and board and means integral with the body engaging said board to prevent rotation of said clip and integrally formed downwardly extending means on said clip contacting the fastening means to lock the same against movement.

5. The method of making a fastening clip which consists in shearing a blank of predetermined length from a metal bar having a rectangular cross-section and a laterally extending rib and simultaneously forming said blank to provide the clip with a downwardly directed rib portion and upwardly extending prong and an offset portion angularly displaced with relation to the body of the clip.

6. The method of making a fastening clip which consists in shearing a blank of predetermined length from a metal bar having a body of rectangular cross-section and a laterally extending rib and simultaneously shearing and forming said blank to provide the clip with a downwardly directed tongue comprising a portion of said rib and an upwardly extending prong comprising the oppositely biased end of the section.

7. The method of making a fastening clip which consists in shearing a blank of predetermined length from a metal bar having a body of rectangular cross-section and a laterally extending rib and then simultaneously shearing and forming said blank to provide the clip with a downwardly directed tongue comprising a portion of said rib, an upwardly extending prong formed of the oppositely biased end of the section and an offset portion angularly displaced with relation to the body of the clip.

8. The method of making a clip of the character described which consists in shearing a predetermined width from a metal bar having a portion of rectangular cross-section and an extended portion of reduced thickness and simultaneously forming said blank to provide an offset portion angularly disposed relative to the body, striking up from the reduced extension adjacent said body and directing the forward portion of said extension downwardly.

9. The method of making a clip of the character described which consists in shearing a predetermined width from a metal bar having a portion of rectangular cross-section and an extended portion of reduced thickness and for simultaneously forming said blank to provide a prong struck up from a portion of said extension adjacent the said body and directing the forward portion of said extension downwardly and providing a portion of said body with an offset to dispose the same angularly with respect to horizontal portion of the same.

10. The method of forming floor clips for securing a floor to a structural member, comprising forming a metal member having a section of a thickness suitable for a floor clip and an integral section attached thereto of a lesser thickness suitable for a bendable nut lock, cuting said metal member into suitable lengths, forming apertures in said member for bolts, and turning up a portion of said section of lesser thickness into position to be utilized as a nut lock.

11. In a floor clip for securing floors to structural frame members, an integral metal member having an attaching flange provided with an aperture for receiving a securing bolt to secure said member, a frame engaging flange carried by said clip, an offset in said clip adjoining said attaching flange and frame engaging flange and bringing said frame engaging flange into a different plane, whereby the flooring may be located on one side of the frame and the clip may engage the opposite side of the frame, and an integral extension of said clip adapted to be bent up into engagement with a nut on the securing bolt for securing the nut in predetermined position by engagement with the flat surfaces on the nut.

12. In a floor clip for securing floors to structural frame members, an integral metal member having an attaching flange provided with an aperture for receiving a securing bolt to secure said member, a frame engaging flange carried by said clip, an offset in said clip adjoining said attaching flange and frame engaging flange and bringing said frame engaging flange into a different plane, whereby the flooring may be located on one side of the frame and the clip may engage the opposite side of the frame, and an integral extension of said clip adapted to be bent up into engagement with a nut on the securing bolt for securing the nut in predetermined position by engagement with the flat surfaces on the nut, and integral pointed means carried by said clip for engaging in the floor and preventing rotation of said clip.

13. A floor clip for car flooring or the like, comprising an integral metal member having a supporting body forming an attaching flange and having a bolt aperture, said body having an offset and a frame engaging flange carried by said offset, and an integral extension of said body formed of lesser thickness and adapted to be bent, said extension being provided with a bendable part for engaging the nut of the securing bolt and securing said nut in predetermined position.

14. A floor clip for car flooring or the like, comprising an integral metal member having a supporting body forming an attaching flange and having a bolt aperture, said body having an offset and a frame engaging flange carried by said offset, and an integral extension of said body formed of lesser thickness and adapted to be bent, said extension being located at the end of said clip and having an integral pointed prong punched out of said extension for engagement in the wood, said extension being bendable into engagement with the nut of a securing bolt for locking the nut.

15. A floor clip for car flooring or the like, comprising an integral metal member having a supporting body forming an attaching flange and having a bolt aperture, said body having an offset and a frame engaging flange carried by said offset, and an integral extension of said body formed of lesser thickness and adapted to be bent, said extension being located at the end of said body and formed into a pair of pointed prongs at each side extending into engagement with the wood, and the central part of said extension forming a lug adapted to be bent up into engagement with a nut to lock the nut of a securing bolt.

16. A floor clip for car flooring or the like, comprising an integral metal member having a supporting body forming an attaching flange and having a bolt aperture, said body having an offset and a frame engaging flange carried by said offset, and an integral extension of said body formed of lesser thickness and adapted to be bent, said extension being located along the side of said clip and having a cut between a part of said extension and the body of said clip, whereby the end of said extension forms a bendable lug located adjacent the aperture and adapted to be bent up into engagement with the nut of a securing bolt to locate the nut in predetermined position.

JOHN A. MacLEAN.