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FLOOR CLIP

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2 SHEETS—SHEET 1

Fig. 1.

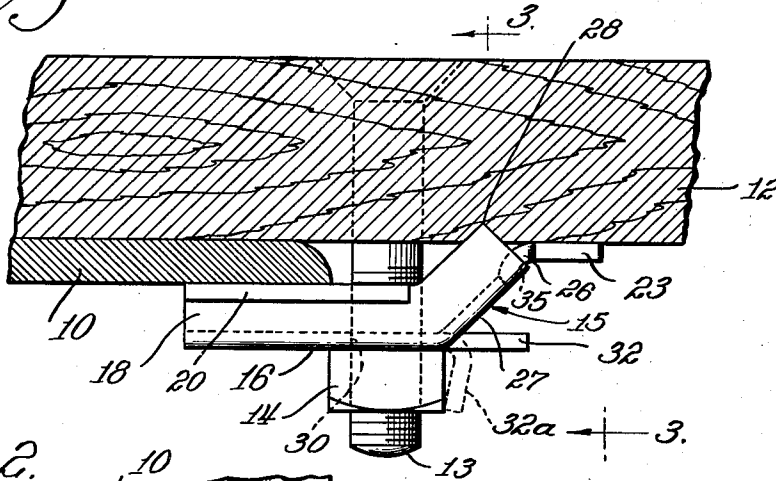
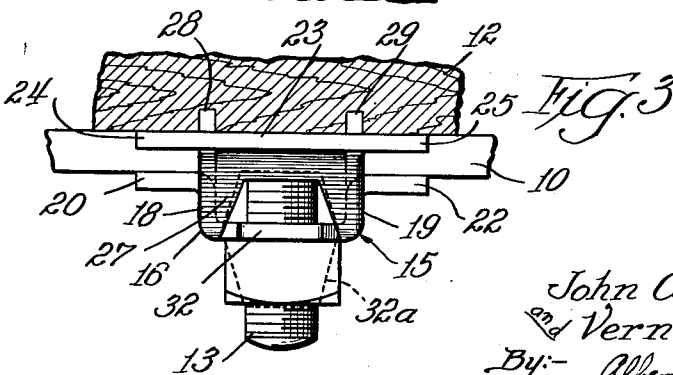
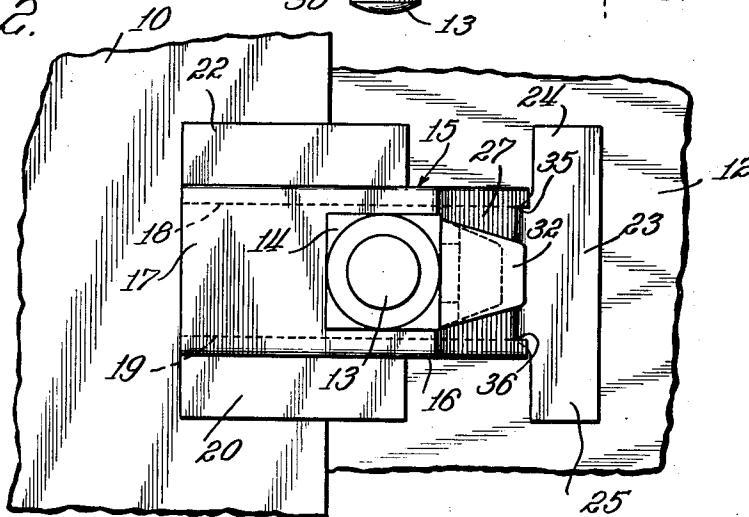


Fig. 2.



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FLOOR CLIP

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2 Claims. (Cl. 189—35)

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This invention relates to floor clips and more particularly to metal floor clips of the type adapted to use for removably securing wood floor boards to metal framework, such as the sill structure of railway cars.

Floor clips of the class referred to must be strong and substantially rigid. Light weight and low cost are also desirable attributes. Generally, they include sill and floor engaging portions and have a bolt hole in the mid-portion for accommodating a bolt by which they are secured in place. Other desirable elements of such floor clips are prongs which dig into the floor boards to prevent turning of the clip and an integrally formed nut-locking part.

Because of the strength and rigidity of metal of a given weight and having a channel section, it is a general object of our invention to provide a floor clip structure including the sill and floor engaging portions and having rotation preventing prongs and an effective nut-locking element all readily manufacturable at low cost from material having a channelled sectional shape.

Another object of our invention is to provide a floor clip structure in which the channelled sectional shape of the material is advantageously utilized for economically producing the various desired parts of the clip.

As another object the invention has within its purview the provision of a floor clip structure of the character discussed which may be cut successively from channel stock without waste.

Our invention has for a further object the provision of a floor clip made of material having a channelled section and also having relatively large sill and floor engaging surfaces.

Other objects and advantages of our invention will appear from the following detailed description and the accompanying drawings in which similar characters of reference indicate similar parts throughout the several figures.

Referring to the two sheets of drawings:

Figs. 1 and 2 are, respectively, side elevational and plan views depicting a preferred embodiment of our floor clip wherein it is shown in its application to the floor structure of a railway car;

Fig. 3 is an end view of the structure shown in Figs. 1 and 2, viewed substantially as indicated by the line 3—3 in Fig. 1 and the accompanying arrows;

Figs. 4 and 5 are, respectively, side elevational and plan views similar to Figs. 1 and 2 and depicting a modified form of our floor clip; and

Fig. 6 is an end view of the floor clip shown

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in Figs. 4 and 5, wherein the clip is viewed substantially as indicated by the line 6—6 in Fig. 4 and the accompanying arrows.

In the disclosed embodiments of our invention which are depicted herein for illustrative purposes, the floor clips are shown in operative position with a frame member, such as a side sill 10 of a railway car and a floor board 12 for securing of the floor board to the side sill. In each instance the floor clip is secured in place by a bolt 13 which extends through the floor board and the floor clip and is provided with a coacting nut 14 on the floor clip end thereof.

In the preferred embodiment of our invention which is illustrated in Figs. 1 to 3, inclusive, a floor clip 15 has a body portion 16 of channel section which includes a longitudinally extending web 17 and integral side walls 18 and 19. The side walls 18 and 19 are of substantially uniform and equal height. At one end flanges 20 and 22 project outwardly from the side walls 18 and 19, respectively, at their edges remote from the web 17 and extend along those side walls to provide a sill engaging part of the clip having a substantial surface area for contacting a frame member such as the sill 10.

At the other end of the clip, and spaced as well as offset from the flanges 20 and 22, is a floor engaging portion 23 integral with the web and extending longitudinally therefrom. In order to increase the floor engaging area of the portion 23, it is preferably provided with side wings 24 and 25 extending laterally beyond the web and its adjoining side walls. The floor engaging portion 23 also extends longitudinally from the end of the web 17 and beyond the ends of the side walls 18 and 19, desirably being joined to the web by an integral curved portion 26 (Fig. 1). Although in offset relationship, the sill and floor engaging surfaces of the clip are substantially parallel. Intermediate those portions, the body portion of the clip, including the web and side walls, is obtusely bent to provide an angularly disposed intermediate portion 27. Preferably, the flanges 20 and 22 terminate short of the obtuse angular bend in the body portion, so that the side walls 18 and 19, without the adjoining flanges 20 and 22, form parts of the angularly disposed portion 27.

The ends of the side walls 18 and 19 are so cut with respect to the other parts of the clip and to the angularity of the obtuse bend of the body portion, and the extent of those side walls toward the floor engaging portion 23 is such that corners 28 and 29 project beyond the floor en-

gaging surface of the portion 23 in a direction away from the clip body. Those projecting corners are adapted to dig into the wooden floor boards, as shown in Figs. 1 and 3, to serve as prongs for preventing rotational movement of the floor clip relative to the floor and sill. In the disclosed embodiment of our invention, the side walls 18 and 19 extend to positions adjacent the floor engaging portion 23 and have their ends cut substantially at right angles to the web of the clip body.

The sill engaging end of the clip body is longer than either the floor engaging portion or the angularly disposed intermediate portion in order to provide substantial surface engagement with the sill and space displaced from the sill for a bolt hole 30 through the web 17 through which the bolt 13 extends when the clip is mounted. Such floor securing bolts 13 preferably have flat heads which are countersunk into the surface of the floor, and the nut 14 is applied to the clip end thereof and drawn firmly into place for securing the parts together.

In order to prevent the nut 14 from becoming loosened in service, we have provided an integral nut-locking element comprising a deformable press-out 32 cut on adjoining sides from the web of the angularly disposed portion 27 and integrally joined to the web along a line adjacent the obtuse angular bend. The transverse cut defining the end of the press-out 32 is spaced from the adjacent end of the angularly disposed portion. Prior to the application of the clip, the press-out 32 desirably extends outwardly in substantially parallel relationship to the web of the sill engaging portion of the clip as shown in Fig. 1. After the nut 14 is tightened, securing the clip in place, the press-out 32 is deformed to a position such as that indicated at 32a in Fig. 1 in which it engages the side of the nut, thereby securing and locking the nut in its tightened position. Desirably, the press-out 32 is tapered so as to become narrower toward the floor engaging end portion 23 of the floor clip; thus taking less material from the angularly disposed intermediate portion 27.

The structure of the floor clip disclosed in Figs. 4 to 6, inclusive, of the drawings is quite similar to that of the floor clip shown in Figs. 1 to 3, inclusive, and similar reference characters refer to like parts throughout the various views. The structure of the floor clip shown in Figs. 4 to 6 is such that it may be made from preformed channel stock with successive floor clips cut from the stock without appreciable waste of material. The side flanges have been eliminated from the side walls of the sill engaging portion and the wings have been omitted from the sides of the floor engaging portion.

As shown in Fig. 5, a floor engaging portion 33 is provided at the end of the web of the angularly disposed intermediate portion 27. This floor engaging portion desirably tapers inwardly towards its projecting end and is of a width narrower than that of the web so that in cutting successive floor clips from a strip of preformed channel stock, the floor engaging portion of one clip is taken from the web of the sill engaging portion of an adjacent clip, forming a cut-out notch 34 at the end of the web of the sill engaging portion of each successive clip.

It is considered desirable in both forms of clips to sever the end portion of the web from the side flanges for a short distance adjacent the floor engaging portion as indicated at 35 and 36, so as to provide for a smoothly curved connecting por-

tion and the proper projecting length of the rotation preventing corners 28 and 29. The severing at 35 and 36 extends only to the level of the transverse cut forming the end of the press-out 32 so that the web is strong at this region. This is to be seen in Figs. 1 and 4.

From the foregoing description of the structure and arrangement of our disclosed floor clips, it may be readily appreciated that we have not only taken advantage of the characteristic rigidity of material having a channel section, but have also utilized the various parts of the channel in such a way that all of the desirable floor clip elements and functions are provided in a relatively simple and effective structure which may be readily manufactured. That is, the web of the channel is extended to provide the floor engaging portion and has the nut-locking press-out taken therefrom in the angularly disposed intermediate portion of the floor clip. The side walls not only provide their rigidity to the structure, but are utilized for the sill engaging portion of the clip and to provide the rotation preventing prongs.

The form of our floor clip which is disclosed in Figs. 1 to 3 is desirably formed from cut blanks of suitable sheet material, while the form of our floor clip which is shown in Figs. 4 to 6 is adapted to manufacture by cutting blanks for the clips successively from a strip of stock.

While we have illustrated a preferred embodiment of our invention, many modifications may be made without departing from the spirit of the invention, and we do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of all changes within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States, is:

1. A floor clip comprising a sill portion formed as a channel, a floor portion offset from the sill portion, and an intermediate portion extending at an obtuse angle between the floor and sill portions so as to connect them and being formed as a channel having sides terminating adjacent the floor portion as rotation-preventing prongs, the web of the channel merging with the floor portion and being severed from the sides of the channel for short distances from the floor portion and being depressed with respect to the remainder of the web into a smoothly curved connection region between the floor portion and intermediate portion, the web of the channel of the intermediate portion providing a nut-locking press-out formed entirely from said web by being severed on three sides, one line of severing running across the web in spaced relation to its end adjacent the floor portion at the beginning of the aforesaid curved depressed connecting region.

2. A floor clip comprising a sill portion formed as a channel provided with outwardly directed flanges engageable with the sill, a floor portion having a width comparable to that of the sill portion as provided by its flanges but being planar so as to be engageable throughout its width with the floor, and an intermediate portion extending at an obtuse angle between the floor and sill portions so as to connect them in offset relation and comprising a flange-free channel shaped as an angular extension of the sill portion except for the flanges of the latter, the web of the channel of the intermediate portion merging with the floor portion, the ends of the sides of the channel being free of the floor portion and constituting rotation-preventing prongs adapted to project

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into the floor, the web of the channel of the intermediate portion being severed from the sides of the channel for a short distance from the floor portion and being depressed with respect to the rest of the web of the intermediate portion into a smoothly curved connecting region between the floor portion and intermediate portion and bringing the floor portion closer to the rotation-preventing prongs formed by the ends of the sides of the intermediate portion, the web of the channel of the intermediate portion providing a nut-locking press-out formed entirely from said web by being severed on three sides, one line of sever-

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ing running across said web in spaced relation to its end adjacent the floor portion at the beginning of the aforesaid curved depressed connecting region.

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