

Dec. 30, 1941.

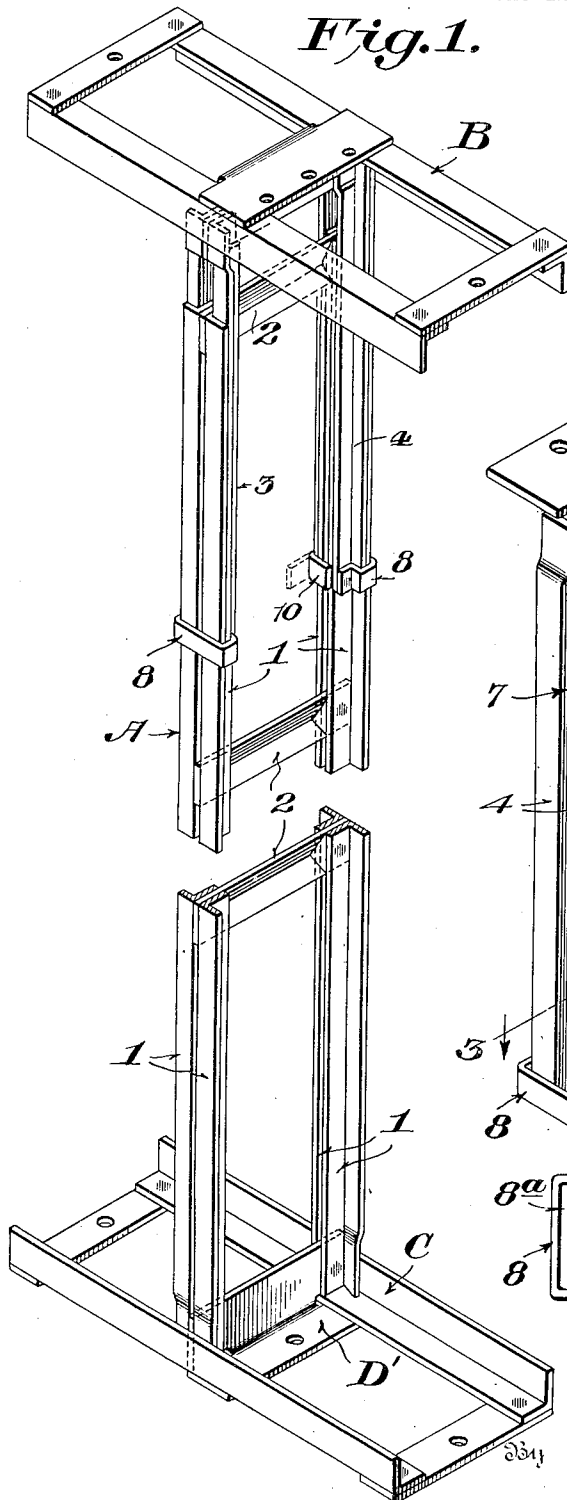
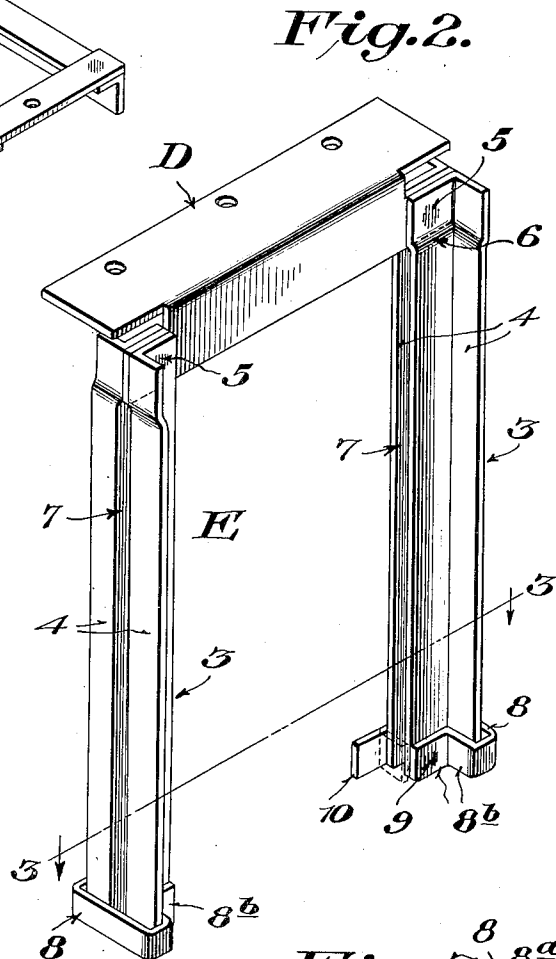
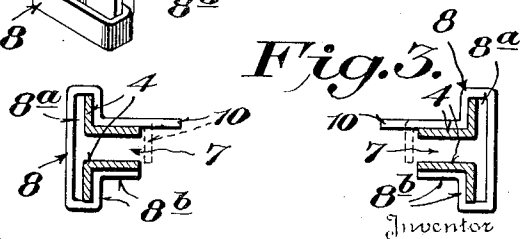
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2,268,485

STEEL STUDDING

Filed June 12, 1939

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 4.

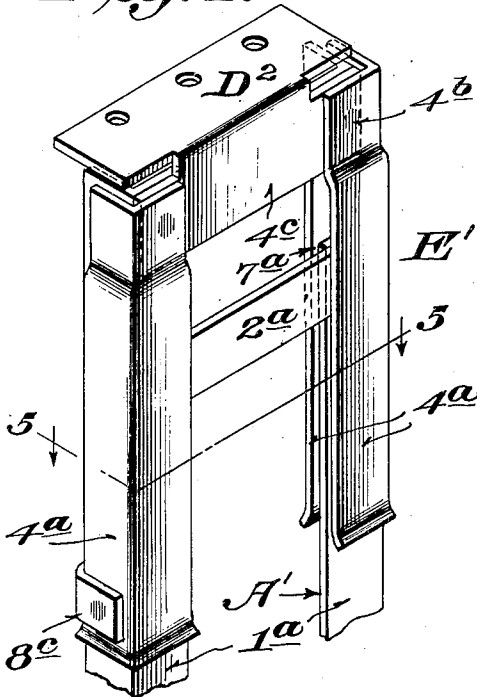


Fig. 6.

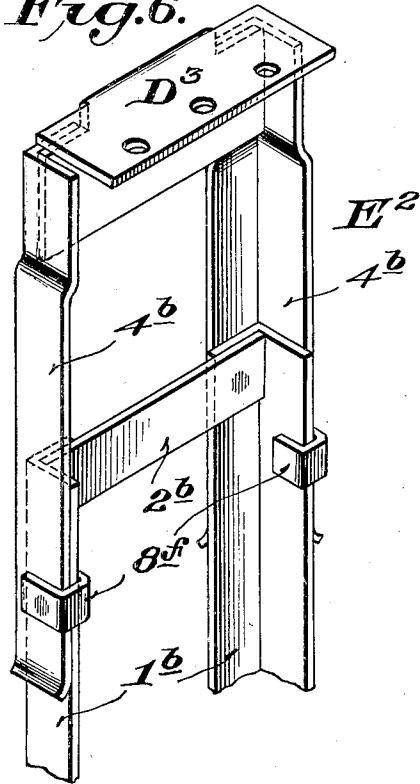
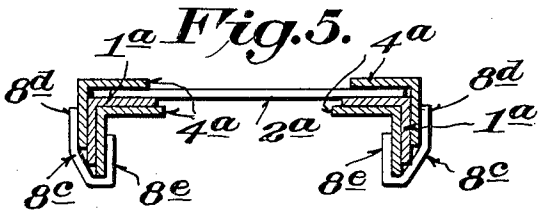


Fig. 8.

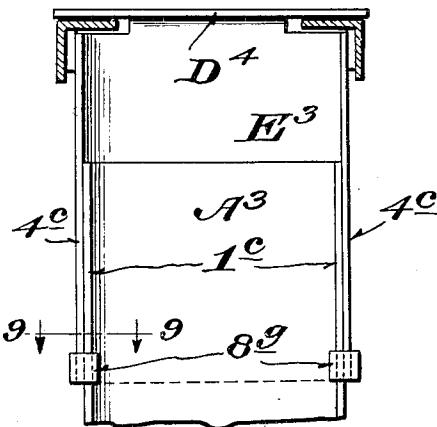
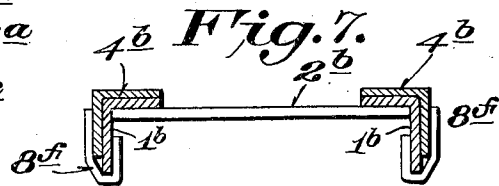
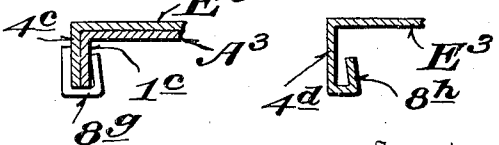


Fig. 9. Fig. 10.



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UNITED STATES PATENT OFFICE

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STEEL STUDDING

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Application June 12, 1939, Serial No. 278,778

6 Claims. (Cl. 72—115)

This invention relates to steel studding of the type used in building fireproof partitions and the like, and has particular reference to a novel, extensible shoe for connecting the studding with a ceiling or floor track.

To that end, the invention contemplates a combination stud and extensible shoe wherein the opposite chords of the stud are composed of one or more angle members connected by transverse web elements to form a fabricated stud of double channel formation, that is of substantially I-beam cross section, or on the other hand to provide a stud of single channel formation, together with a sliding shoe whose arm members consist of spaced angles arranged to straddle the chord members. In the case of the double channel stud, the angles forming the legs or arms of the shoe are adapted to fit within the included angles of the members which form the chords of the stud. In the case of the single channel stud the angle members of the shoe respectively engage within and without the angles forming the chords of the stud. In other words, they telescopically embrace the single angle chord members on both sides. In both cases, that is, in connection with the double channel stud or the single channel stud, the angle members forming the arms or legs of the shoe slidably embrace or straddle the chord or chords of the stud. The arms, consisting of angle members, are joined at one end of the shoe with suitable means for engaging the track.

A further object of the invention is to increase the effectiveness of the connection between the shoe and the stud by providing a strap secured to the angles of the shoe in such a way that the strap embraces the related flange or flanges of the member or members constituting the chords of the stud.

With the above and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts, hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings in which:

Figure 1 is a perspective view of a stud and shoe combination constructed in accordance with one form of the invention.

Figure 2 is a perspective view of the shoe detached from the stud.

Figure 3 is a horizontal sectional view taken on a line 3—3 of Figure 2.

Figure 4 is a perspective view of a modified form of shoe used in connection with a single channel.

Figure 5 is a section taken on the line 5—5 of Figure 4.

Figure 6 is a perspective view of a further modified form of shoe.

Figure 7 is a horizontal cross section of the shoe shown in Figure 6.

Figure 8 is a detail elevation of a further modification.

Figure 9 is a detail section taken on the line 9—9 of Figure 8.

Figure 10 is a detail section of a modified form of shoe flange.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

As shown in Figure 1, the studding designated generally as A, is intended to cooperate with a ceiling track B and a floor track C. At each end of the stud, suitable means is provided for interlocking the same with the track. The track interlocking means shown in the drawings is designated generally as D and D', and is intended to be merely typical of any form of track interlocking means, because the essence of the present invention resides in the manner in which the track interlocking means broadly is connected to the stud. The particular type of track interlocking means is described and claimed in my co-pending application, Serial #221,430 filed July 26, 1938.

As will be apparent from Figure 2, the track interlocking means D is made as a part of the extensible shoe designated generally as E. This shoe is intended to adjustably engage the stud so that the effective length thereof, between the ceiling and floor tracks, may be varied as circumstances require.

Referring to the stud A, it will be observed that the same includes opposite chord members, each of which consist of angle members 1—1, having their inner flanges connected by web elements 2. Thus, in cross section, the stud A is of substantially I-beam formation and by reason of the spacing of the angles due to the web elements, a nail receiving slot is provided.

The adjustable shoe E includes the track interlocking means D previously referred to, said track interlocking means, being provided at opposite sides thereof with the arm or leg members 3. These members preferably consist of a pair of angle members 4—4 arranged back to back, and welded or otherwise secured as indicated at

5 to the opposite sides of the vertical flange of the track interlocking means D. As shown in Figure 2, for example, the inner flanges of the angle members 4 may be slightly offset where they are secured through the track interlocking means D, thereby to increase the width of the slot 7 formed therebetween. It will, of course, be understood that the same result may be obtained by placing metal shims on each side of the flange of the track interlocking means D at the point where the arms are welded thereto. In other words, the angle members 4-4 which constitute the arms 3, are arranged so as to provide a space therebetween which permits each arm to straddle the inner flanges of the angle members 1-1 of the stud. It will, therefore, be apparent that when the shoe is assembled to the stud, the arms 3-3 will slidably engage within the included angles of the members 1. That is to say, the angle members 4-4 of the shoe slidably nest within the inner valleys formed by the inner sides of the angle members 1-1. In this way, the arms 3-3 of the shoe E slidably engage the inner faces of the chords of the stud, and, it will of course be understood, that by slidably adjusting the arms 3-3 relative to the chord members, including the angles 1-1, the effective height or length of the stud may be controlled.

To further increase the effectiveness of this method of attaching the shoe to the stud, suitable straps or strips 8 may be applied to each pair of angles 4-4 constituting an arm of the shoe. As will be apparent from Figures 2 and 3, the straps 8 have their body portion offset from the outer face of the outer flanges of the angles 4-4 thereby to provide a space 8^a for receiving the oppositely extending flanges of the angle members 1-1 forming the chords of the stud. The arm portions of the straps are bent inwardly in angular formation as indicated at 8^b, so that the straps may be conveniently welded or otherwise secured to the inwardly projecting flanges of the angle members 4-4 as indicated at 9 (Fig. 2).

Another feature of the strap members 8 resides in the provision thereon of means for positively interlocking the shoe with the stud within reasonable limits, so that while the shoe may be slidably interlocked with the stud, it cannot be accidentally separated therefrom, as for example, during handling in shipping and erecting. That is to say, one end of the strap may be extended as indicated at 10 to provide a lug so that in effect, the said lug is a continuation of the wall 8^b which is welded to the inner flange of the angle member 4. Before the shoe is applied to the stud, the lug 10 assumes the position shown in full lines in Figure 2. After the shoe is applied to the stud, the lug 10 may be bent at right angles to its original position by a hammer blow. When so bent, the lug occupies a position which substantially obstructs the slot 7 and thus constitutes an abutment for engaging one of the web members 2. Figure 1 of the drawings shows the extension or tongue in locking relation to one of the web members 2 in full lines. In Figures 2 and 3, the tongue is shown in the position that it occupies when the shoe is fitted to the stud.

All of the foregoing description applies to a double channel stud, and with a view to illustrating the application of the invention to a single channel stud, reference may be first had to Figures 4 and 5.

In Figure 4 the adjustable shoe is designated generally as E', and consists of the opposite arm members, each consisting of the angle members 4^a connected at their upper end by the angular track interlocking member D². The angle members 4^a constituting each of the arms of the shoe assume a relative nested relation to each other, but are spaced apart due to the fact that the upper ends thereof are welded as at 4^b to the opposite faces of the vertical portion 4^c of the track interlocking means D². That is to say, the angle members 4^a constituting each arm of the shoe are spaced from each other as indicated at 7^a to thereby slidably and telescopically receive the single angles 1^a of the stud A'. As will be observed from Figures 4 and 5 the said stud A' is of the single channel type, that is, the opposite chords thereof merely consist of single angle members connected by the transverse web elements 2^a. It will, of course, be understood that the space 7^a between the relatively nested angles 1^a constituting the arms of the shoe is sufficiently great between the inwardly projecting flanges of the angles to accommodate the extra thickness due to the web elements 2^a overlapping the inwardly projecting flanges of the stud angles 1^a. This is apparent from Figure 5.

Since the arms of the shoe shown in Figures 4 and 5 are welded or otherwise secured to the track interlocking member D², they are relatively rigid therewith and effectively embrace both sides of the angle members 1^a forming the opposite chords of a single channel stud. However, to increase the effectiveness of the engagement, the said angle members 4^a constituting the arms of the shoe may be connected by the relatively transversely disposed straps 8^c, whose ends are preferably welded respectively to the outer face of the outer angle member of each arm as indicated at 8^d and also to the inner face of the inner angle as indicated at 8^e.

According to the embodiment of the invention shown in Figures 4 and 5, it will be apparent that the shoe E' includes a pair of angle members which are so spaced as to slidably receive therebetween the chord members of a channel stud. By adjusting the position of the shoe relative to the stud, the effective length of the latter may be altered.

Figure 6 of the drawings shows a further modification of the invention wherein the shoe E² has the arms thereof made of the single angle members 4^b whose upper ends are welded or otherwise connected to one flange of the track interlocking member D³. The said angles 4^b constituting the arms of the shoe are provided with the transversely disposed strap members 8^f which are of substantially U-shape, thereby to engage the outwardly projecting flanges of the angles 1^b forming the chords of a single channel stud. The angles 1^b are connected by the web member 2^b. It will, therefore, be apparent that in this form of the invention, the straps 8^f perform the same functions as the straps 8 and 8^c respectively of Figures 2 and 4.

As further illustrating the utilization of strap members for connecting the shoe with the stud without the necessity of wiring, reference may be made to Figures 7, 8, and 9 wherein a solid single channel stud A³ is used in conjunction with a solid channel shoe E³. The flange 1^c of the stud channel A³ are telescopically engaged by the flanges 4^c of the shoe E³. It will also be observed that the shoe E³ is provided with the track

interlocking means D⁴. At a suitable location the flanges 4^c of the shoe are provided with the strap members 8^s which are also of substantially U-shaped formation and serve to engage the inner faces of the flanges 1^c constituting the opposite chords of the channel stud A³.

From Figure 10, it will be observed that the shoe E³ may have the stud engaging straps or members 8^b made integrally therewith. That is to say, the strap members may be formed integrally with the shoe, either in the form of a continuous flange, or by lugs integral with the flange 4^d, to serve the same purpose as the straps 8^s.

According to all form of the invention, the adjustable shoe includes the stud engaging arms connected by the track interlocking means D or its equivalent. In the examples shown, the said track interlocking means D or its equivalent includes an angular member whose normally vertical flange carries the arms of the shoe. This angle is provided at opposite ends with outwardly opening notches which permit of the member D or its equivalent being twisted into interlocking engagement with the inwardly directed flanges of the angles constituting the chord members of the track sections. In other words, the shoe including the notched angle D or its equivalent is fitted between the chord members of the track at an oblique angle with the notches registering with the flanges of the track so that when the shoe is twisted about its longitudinal axis, the notched angle becomes interlocked with the track as the entire shoe assumes a position transversely of the track, or at right angles thereto.

From the foregoing, it will be apparent that all forms of the invention provide studs with adjustable shoes whose chord engaging arms are in the form of angle members, and that in all forms of the invention, the arms may be provided with a strap or its equivalent to assist in the effective engagement between the shoe and the stud. In addition to this advantage, the strap also eliminates the necessity of wiring the shoe to the stud and, therefore, renders this feature of the invention particularly adapted to solid channel shoes and solid channel studs as shown in Figure 8.

Without further description, it is believed that the features and advantages of the invention will be readily understood by those skilled in the art, and it will, of course, be understood that the changes in the form, proportion and minor details of construction may be resorted to without departing from the invention defined by the appended claims.

I claim:

1. In a stud construction, a channel stud including opposite chord members, a shoe adjustably engaging the stud, said shoe comprising connected arms each including an angle member having a flange disposed at right angles to the plane of the web of the stud, and a strap member fixed to said flange and bent inwardly to engage a face of the chord member opposite the face engaged by the flange.

2. A channel stud including opposite chord members connected by a web element, and a shoe adjustably engaging the stud, said shoe comprising connected arms, each arm comprising angle members having portions thereof spaced apart to slidably telescope a portion of the chord of the stud.

3. A channel stud, including, chord members connected by a web element, and a shoe adjustably engaging the stud, said shoe comprising connected arms, each including a pair of angle members having portions thereof spaced apart to slidably and telescopically receive a portion of the chord of the stud, and straps carried by the arms of the shoe for embracing portions of the chords of the stud.

4. A channel stud, including, chord members, each consisting of angle members arranged back to back and connected by transverse web elements, and a shoe adjustably engaging the stud, said shoe comprising connected arms, each including angle members arranged back to back and spaced to provide a slot for receiving portions of the angle members forming the chords of the stud.

5. A double channel stud, including, opposite chord members connected by a web, and a shoe adjustably engaging the stud, said shoe comprising connected arms, each arm including angle members having their adjacent flanges spaced to provide a slot to straddle the web of the stud adjacent the chords.

6. A fabricated channel stud including chord members connected by spaced web elements, and a shoe adjustably engaging the stud, said shoe comprising connected arms each consisting of spaced members of angular cross section thereby providing inwardly disposed and outer laterally disposed flanges, said laterally disposed flanges engaging an inner face of the related chord member, and a strap connected to each arm, said strap having one end thereof normally projecting beyond the inner edge of one of the inwardly disposed flanges of the arm to form a lug adapted to be bent into obstructing relationship to a web element of the stud.

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