This invention relates to structural building elements, and more particularly to novel means for facilitating the erection of a fireproof stud system. Steel studding usually consists of fabricated beams made up of comparatively light metal parts which must be anchored to the ceiling and floor, frequently using track sections at one or both points.

According to the present invention, it is proposed to provide means associated with each stud which will permit of its being placed between the ceiling and floor tracks in an initially oblique position and then twisted or turned at right angles to the tracks to become automatically locked in place. That is to say, a special object of the invention is to provide novel means associated with the opposite ends of the stud for accomplishing an automatic interlock with the tracks, thereby expediting erection and effecting saving in time and labor.

A further object of the invention is to provide a novel form of adjustable shoe and a slotted clip which may be used respectively at the top and bottom of the stud, or vice versa, and which in either case may become interlocked with the track sections by twisting or rotating the stud engaged therewith from an initial oblique position to an ultimate transverse position, namely, the position that the stud is to occupy in the completed structure. In that connection it will be also understood that the adjustable shoe may be used at opposite ends of the stud, or, on the other hand, the slotted anchoring clips may be used at opposite ends of the stud since in both cases they may be interlocked with the tracks by twisting or turning. In some cases the slotted anchoring clips may be incorporated as a fixed part of the stud at the time the latter is fabricated, and when this form of clip interlocking means is used, the studding may be made in sections and connected by splicing sleeves which telescopically fit over the chord members of the stud to permit relative adjustment of the stud sections to suit different partition heights. As further illustrating the wide application of the novel feature of twisting or turning the stud into final position, the invention also contemplates providing the clip directly with arms in the nature of the splicing sleeves so that the clip may be adjustable on the stud in the same manner as the shoe. In that connection, however, it may be pointed out that when the clip is provided with arms of this type, it is not necessary to wire the arms to the chords or flanges of the stud but the sleeve like arms telescopically fit over the said chords or flanges.

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 arrangements of parts hereinafter more fully described, illustrated and claimed.

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

Figure 1 is a perspective view of the stud system including the ceiling and floor tracks connected by a stud having track engaging means at its ends in accordance with the present invention.

Figure 2 is a detail vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a top plan view of the ceiling track and stud shown in Figure 1, with the stud and its interlocking means in its initial oblique position relative to the track.

Figure 4 is a perspective view similar to Figure 1 showing the use of track interlocking elements of the anchor clip type at each end of the stud, together with extensible splicing sleeves arranged medially of the stud sections.

Figure 5 is a top plan view of a track section with the stud and its track interlocking means arranged obliquely thereof prior to being twisted to its final transverse position.

Figure 6 is a side elevation of a stud, with the ceiling and floor tracks in section and illustrating the use of the extensible top shoe in connection with splicing sleeves to enable a wider range of adjustment in the length of the stud.

Figure 7 is a detail horizontal cross sectional view taken on the line 7—7 of Figure 6 and illustrating one of the splicing sleeves.

Figure 8 is a side elevation of a single section stud with the tracks in cross-section, showing the adjustable anchor clip at the top of the stud.

Figure 9 is a perspective view of a portion of the adjustable anchor clip shown in Figure 8.

Figure 10 is a cross sectional view taken on the line 10—10 of Fig. 8.

Figure 11 is a side elevation of a modified form of adjustable anchor clip made from one-piece channel stock and applied to a one-piece channel stud.

Figure 12 is a side elevation of the construction shown in Figure 10.

Figure 13 is a perspective view of a modified form of combined clip and sleeve unit.

According to the embodiment of the invention shown in the drawings, the ceiling track is designated generally as A, the floor track B, the stud C and the adjustable top shoe for the stud is.
identified generally as D. At the bottom of the stud there is provided a slotted anchor clip E, which, although useful in connecting the bottom of the stud with the floor track B in the particular combination shown in Figure 1, may also be used at the upper end of the stud for connecting the top thereof with a ceiling track A, as will later appear.

In connection with the shoe D and clip E, a distinctive characteristic in common is that both of these elements permit of first applying the same, including the stud, at an oblique angle to the ceiling and floor tracks and within the channel provided therein, and then from this initial position, the entire stud may be turned or twisted into right angular relation with both tracks whereupon they automatically become locked in anchored or set position.

Referring first to the ceiling and floor tracks A and B it may be pointed out that these elements are of channel cross-section and in the embodiment shown preferably consist of opposite flanges or chord members, for example, the angle iron A—1—1, connected by the transverse web between the legs C and D. The stud C may be of the same general construction as the ceiling and floor tracks, that is, the stud may be of channel formation just described, or it may be of substantially I-beam formation in cross section as shown in the drawings. In either event the stud C comprises the opposite flange portions or chords 3—3 connected by a transverse web member or members 4, the ends of the latter being welded or otherwise secured to the chord members whether they comprise a single L-shaped channel or two L-shaped channels arranged back to back.

In practice, the ceiling track A may be secured to the joist in any suitable manner with the channel portion thereof facing downwardly toward the floor track B. The said floor track in turn may be secured to the floor with its channel facing upwardly. When the two tracks are secured in their relative and vertically aligned positions, the novel adjustable shoe D may be made to interlock with the ceiling track A in a manner now to be described.

The said shoe D is preferably of substantially U-shaped formation, although in use at the top of the stud it assumes the position of an inverted U. Therefore, the said shoe D comprises the arms 5—5 which may be of channel formation and elastically or adjustably embrace the chords 3—3 of the stud, the said arms being connected by a stepped or shoulders transverse web portion 6. That is to say, the web portion 6 includes a substantially straight or flat intermediate portion 7 while the ends thereof are bent downwardly as indicated at 8 and thence outwardly as indicated at 9 where they connect with the arms 5. This formation (1—2) permits the shoe to fit within the channel provided by the ceiling track A and enables the shoe to be inserted into the track from beneath or below the same. The portion 7 of the shoe is provided with suitable keeper means in the form of the struck up projections or opposite directed lugs 8 of which form keeper openings or slots 11 to receive the horizontal legs of the channel members 1 of the ceiling track. In other words, the projections 10—10 are so made that the portions thereof which connect with the part 7 are spaced apart and less distance between the adjacent edges of the horizontal flanges of the angle members 1—1 which constitute inwardly facing abutments on the track. On the other hand, the outer portions of the struck out projections or lugs 16—16 are long enough to overlie the upper edges of the horizontal legs of the angles 1—1 when the shoe is in final position. In order to apply the shoe to the selected track it will thus be apparent that the shoe must be initially or originally held at an obtuse angle to the longitudinal axis of the track and the lugs 10 must be inserted within the space between the edges of the horizontal legs of the channels 1. Then by twisting or turning the entire shoe until the latter is disposed at right angles to the ceiling track, the lugs 10 become interlocked with the track A. The arms 5—5 may be sprung apart when forced over the stud and to insure permanent engagement therewith, after adjustment, they may be secured to said chords by twisting wire about them or by nails or other fastenings driven through the slots in the arms and into the space between the chord angles.

It will, of course, be understood that the shoe D may be applied to the track A in the manner above described before the stud C is inserted in the legs 5—5 thereof, or, on the other hand, according to the usual custom, the shoe D may be first applied to the end of the stud and the entire assembly applied and then rotated to final position.

The anchor clip E at the bottom of the stud is preferably of substantially L-shaped cross-section and thus includes the flanges 12 and 13. The flange 12, according to one form of the invention has its end portions welded or otherwise secured to the stud, and the opposite edges of the flange 12 near the flange 13 are slotted or cut away as indicated at 14 to receive the form of recesses or slots to receive the horizontal legs of the channel members 1 of the floor track B. In practice, the clip E may be interlocked or connected with the floor track B in the same way as the shoe D. That is to say, the stud carrying a clip E may be first obliquely disposed within the floor track B with the slots 14 opposite the horizontal legs of the channels 1 and then the stud may be turned or twisted until it moves into a position at right angles to the track. In this way the stud becomes automatically locked with the floor track B.

From the foregoing it will be apparent that when studs with plain ends are used the adjustable shoe D may be applied to both the upper and lower ends of the stud, or, on the other hand, the opposite ends of the stud may be both equipped at the time of making with the slotted anchor clips E. In other words, both ends of the studs may be equipped with similar types of interlocking means or with different forms of interlocking means as shown in the drawings. In either case the function and result are the same, namely, that by twisting or turning the stud relative to the track in applying the same the stud becomes interlocked with the track. The advantage of using shoes D at both ends of the stud, or a shoe at one end and an anchoring clip at the other, is to render the stud of adjustable length, as, for example, by sliding the arms along the track to move the stud to the selected point before securing the arms to the chords. Short sections of studs C1 and C2 may be made up with the slotted anchor clips E at one end and 70. In this case, the stud sections may be connected and spaced distance between the adjacent edges of the horizontal flanges of the angle members 1—1 which constitute inwardly facing abutments on the track. On the other hand, the
preferred to connect them by the splicing shoes F which telescopically fit over the opposite chord members of the stud.

The splicing sleeves F are preferably made of suitable gauge metal including a body portion 15 having its side portions 17 folded inwardly toward each other and terminating in the offset substantially parallel flange portions 14. The splicing sleeves F are, of course, open at the ends and are intended to conform in cross-section to the shape of the chords of the stud. The cross-sectional formation of the splicing sleeves above referred to is particularly intended to cooperate with chords made to give the stud a substantially I-beam cross section. However, it will, of course, be understood that if the chords of the stud are of angle or L-shaped formation, it is within the scope of the invention to change the cross-sectional shape of the splicing sleeve F accordingly.

Where maximum extensibility of the stud is required the arrangement shown in Fig. 6 may be resorted to. According to this modification the stud sections C' and C" are not only connected by the splicing sleeves F, but an end of one of the stud sections may be fitted with an adjustable shoe D of the type previously described, including the track interlocking means, for securing the stud to the track. The splicing sleeves F may be secured to the chords of the stud in any suitable manner to prevent shifting thereof. That is to say, they may be wired to the chords or a nail or other fastening may be used to wedge the sleeve to the chord by placing the fastening between a portion of the sleeve and its embraced chord, or where the chord consists of angles back to back, the fastening may be wedged in the space between the angles of the chord by placing a fastening at the lower end of the sleeve or even driving it through the body 16 of the sleeve and into the space between the angles of the chord.

Where the slotted anchor clips E are used, it is desirable to bend the flanges of the chords slightly inwardly by a hammer blow or the like as indicated at 30 so that the twisting of the chord in the channel of the track may be facilitated. It will, of course, be understood that since the angle members of the track sections are made of metal they are inherently resilient, and, during the twisting of the stud, the angles will yield sufficiently to permit the stud to move from its initial oblique position to the final transverse position.

Figures 8 and 9 of the drawings illustrate the embodiment of the anchor clip to perform the same function as the adjustable stud. That is to say, the anchor clip E' including the flanges 12a and 12c and having the side slots 14a has the flange portion 12a spot welded or otherwise rigidly secured to arm members F' which are in the nature of sleeves for engaging over the chords or flanges of the stud C'. The arms F' include a body portion 20 having the side portions 21 thereof folded inwardly and then bent at right angles as indicated at 22 to provide attaching flanges. These flanges embrace the opposite sides of the flange 12c and may be spot welded or otherwise securely thereto. If desired, the body 23 may be slotted as indicated at 23 to bring the edge of the flange 12a flush with the outer surface of the body.

It will, of course, be understood that the anchor clip E' is provided with two arms F' so that in effect the completed unit is of inverted U-shape formation. The arms F' have, of course, the telescoping engagement with the chords or flanges of the stud C', and, therefore, the anchor clip E' may be adjusted relative to the stud. Because of the telescopic fit between the arms F' and the chords or flanges of the stud, and since the arms F' are connected to the clip, it is unnecessary to wire or otherwise fasten the arms to the stud inasmuch as the telescopic engagement between the parts prevents spreading or shifting of the arms F'.

Figures 11 and 12 of the drawings illustrate a further modified form of anchor clip E' which may be used in conjunction with a stud C' of channel formation, that is, a rolled channel as distinguished from a fabricated channel. The anchor clip E' consists of a body portion 24 having side flanges 25 for any engaging the flanges 26 of the stud C'. The upper end of the body 24 is bent at right angles as indicated at 27 and has its opposite edge portions formed into lugs 28 which overlie the inwardly extending notches or recesses 29 intended to receive opposite abutment portions of the track A'. In this construction it will be apparent that the anchor clip E' is made of one-piece and is so formed that it may slidably engage the stud C' to be adjustable thereon. The manner of applying the form of anchor clip E' to the track is the same as that employed in connection with other forms of the clip or the adjustable shoe, that is, the desired interlock is obtained by turning or twisting the anchor clip from an oblique to a right angular position relative to the track.

Figure 10 illustrates a further modification of the combined anchor clip and sleeve construction wherein the unit is made of inverted-V-shape and in one piece. That is to say, the anchor clip portion E' is formed integrally with the side sleeves F'. The anchor clip E' has the web portion 30 formed with rounded corners 31 so as to easily fit within the track and the body of the web is cut away at the opposite edges and displaced or struck up transversely to provide the slotted portions 32 and the track interlocking extensions 33. The sleeves or arms F' are of such cross sectional shape as to slidably and telescopically embrace the chords of the stud.

From the foregoing, it will be apparent that the present invention provides a fabricated metallic studding system which admits of a wide variation of application in actual use because of its adjustability, and also because of the facility with which the studs may be interlocked with the tracks at the time of installation. Moreover, the present system, enables the manufacturer of the stud to make the stud sections in more or less standardized lengths and carry them in stock, while at the same time enabling them to be quickly adapted to any given specification with the range of adjustability provided by the novel construction.

I claim:

1. A stud system for partitions and the like including in combination, upper and lower track sections comprising spaced chord members, a stud, and track interlocking means carried by the opposite ends of the stud and having keeper means adapted to become interlocked with the chord members by twisting the stud on its longitudinal axis.

2. A stud system for partitions and the like including in combination, a track having inwardly facing abutments, a stud, and means connected with the stud and including transversely aligned slots for interlocking with said abutments upon a partial rotation of the stud on its longitudinal axis relative to the tracks.

3. A stud system for partitions and the like.
including in combination, a track having inwardly facing abutments, a stud, and means engageable with the stud and having a transverse web formed with out-turned lugs providing recesses for interlocking with said abutments upon a partial rotation of the stud relative to the tracks.

4. A stud system for partitions and the like including in combination, a track having spaced abutments, a stud comprising a plurality of sections, each including opposite chord members, means at the end of one of said sections connected therewith and having keeper means for engaging with the said abutments of the track to hold the stud section interlocked therewith, and splicing sleeves for connecting said stud sections to vary the effective length of the studs, said splicing sleeves telescopically embracing and clasping the chords of said stud sections to maintain the same in adjusted position.

5. A stud system for partitions and the like including in combination, a track having spaced abutments, a stud comprising a plurality of sections, each including opposite chord members, means at the end of one of said sections connected therewith and having keeper means for engaging with the said abutments of the track to hold the stud section interlocked therewith, and splicing sleeves for connecting said stud sections to vary the effective length of the studs, said splicing sleeves telescopically embracing and clasping the chords of said stud sections to maintain the same in adjusted position.

6. A stud system for partitions and the like including in combination, a track having spaced abutments, a stud comprising a plurality of sections, each including opposite chord members, means at the end of one of said sections connected therewith and having keeper means for engaging with the said abutments of the track to hold the stud section interlocked therewith, and splicing sleeves for connecting the intermediate portions of the chords of said stud sections to maintain the same in adjusted position.

7. A stud system for partitions and the like, including, in combination, a track presenting inwardly facing abutments, a stud having flanges, and means for connecting the stud to the track, said means including a member having keeper means for engaging said abutments and also having arms carried by said member for telescopically embracing and clasping said member to the flanges of the stud.

8. A stud system for partitions and the like including in combination, a track having spaced abutments, a stud comprising a plurality of sections, each including opposite chord members, means at the end of one of said sections connected therewith and having keeper means for engaging with the said abutments of the track to hold the stud section interlocked therewith, and splicing sleeves for connecting said stud sections to vary the effective length of the studs, said splicing sleeves telescopically embracing and clasping the chords of said stud sections to maintain the same in adjusted position.