Oct. 3, 1933. E. R. BOYLE 1,929,302

CHANNEL CLIP

Filed Oct. 26, 1931

Fig. 1

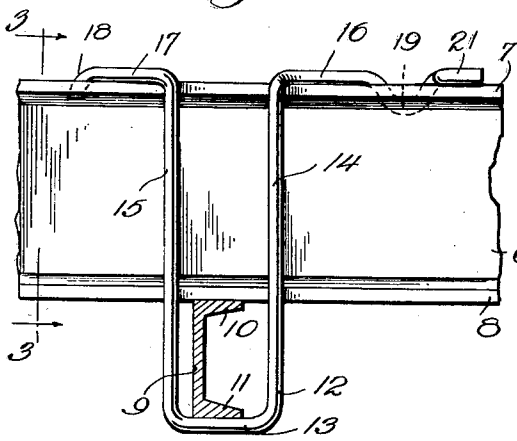


Fig. 2

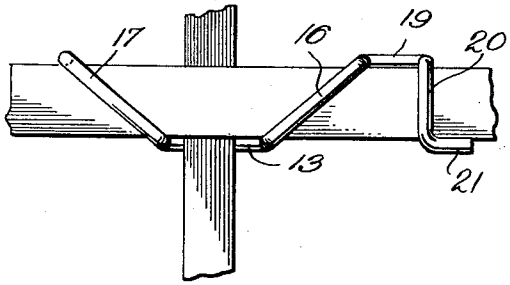


Fig. 3

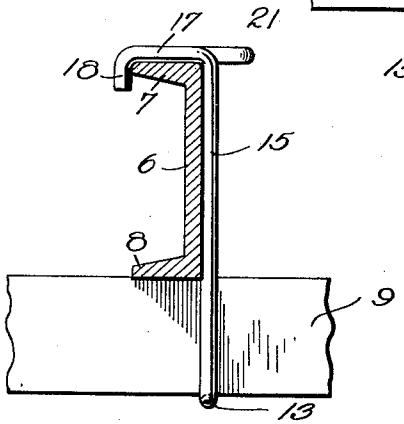


Fig. 4

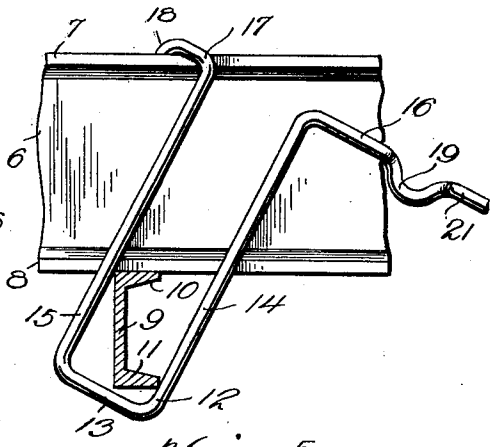
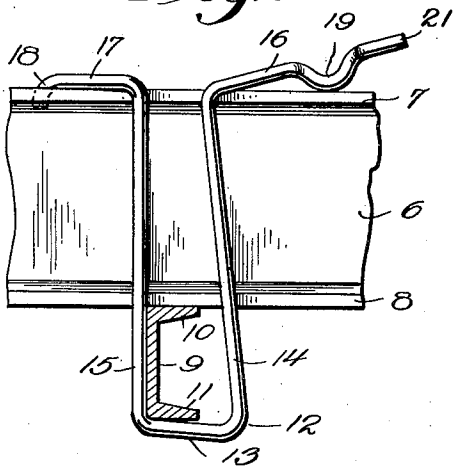


Fig. 5



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Patented Oct. 3, 1933 1,929,302

UNITED STATES PATENT OFFICE

1,929,302

CHANNEL CLIP

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Application October 26, 1931. Serial No. 571,202

8 Claims. (Cl. 189—35)

This invention deals with improvements in channel clips widely used in building construction. Extensive use is now being made of metal channel bars in the building up of a partition, ceiling or the like. Such bars are assembled in intersecting series to form a skeleton or backing on which there is applied a partition, ceiling or the like made of lath and plaster or its equivalent composition sheet material. The ordinary widths of the customary channel bars are approximately one and one-half inches and three-quarter inches. The larger size is first set in place in a parallel series and the smaller size channel bars are then attached in a parallel series against the flanges of the larger channel bars and generally intersecting the latter bars at right angles. Suitable attaching means or clips are required to hold the smaller bars in place against the larger bars. The smaller bars serve to support metal lath and plaster or the like, and it is, therefore, necessary that the ties or clips shall be able to sustain a load of about one hundred pounds.

In the fabrication of a building structure as above indicated the cost is largely determined by the amount of labor and time required to place the clips in position. Ordinary methods require the laborer to apply the clips by hand and fasten them by means of a tool either a hammer or pliers. The time required to perform these operations necessarily limits the amount of work that can be expected of the laborer.

My improved clip has been designed to provide from slightly flexible but otherwise stiff wire, an integral clip which may be applied to the structure in such a way as to provide a wide margin of safety in the sustaining of the necessary load. The design of the article is such as to minimize the prospect of its being twisted out of shape during its use.

A further object of my invention is to provide a device which may be applied without the use of any tools whatsoever.

It follows from the design of the improved clip that a large number may be securely put in place in the minimum amount of time and by relatively unskilled labor.

Not only are economies in the use of this clip developed from its novel form and manner of application but it is also possible to make the clip by relatively simple operations from cheap material. It has been found that the economies effected in manufacture are supplemented by the fact that the weight of the arcticle is approximately half of that of competing articles with a consequent advantage in the costs of raw materials and transportation of the finished product.

As illustrating the preferred form of my invention I have shown it in the accompanying drawing in which

Fig. 1 is a side elevation of the clip assembled as a fastening between two intersecting channel bars;

Fig. 2 is a top plan view of the same;

Fig. 3 is a transverse vertical section taken on the line 3—3 of Fig. 1 but with the flanges of the bar extending in the opposite direction;

Fig. 4 is a side elevation partly in section showing the clip as it is applied and

Fig. 5 is a similar view showing the clip in intermediate position before its final adjustment or locking.

By way of example I have shown in the accompanying drawing a channel bar 6 having upper and lower flanges 7 and 8 (see Fig. 3) extending to one side. A series of these bars 6 are generally attached to the building structure in parallel arrangement and serve to hold a similar series of bars 9. The bars 9 are usually half the size of the bars 6. An upper flange 10 and lower flange 11 extend generally to one side of the bars 9. The flange 10 is adapted to rest against the flat outer surface of the flange 8 of the larger bar 6, in the manner shown in Figs. 1 and 3.

My improved clip denoted generally by the numeral 12 is proportioned to serve as a fastening to hold the channel bar 9 in position against the edge of the channel bar 6. The clip 12 comprises a transverse bottom 13 and parallel members 14 and 15 extending at right angles to the member 13 for a distance substantially the sum of the widths of the channel bars. The members 13, 14 and 15 lie in a common plane and in the event that the bars 9 are suspended beneath the horizontal bars 6, these members constitute a stirrup for supporting the bars 9.

The free upper ends of the members 14 and 15 are extended at right angles thereto to provide shoulders 16 and 17 respectively. These shoulders are in a plane at right angles to the plane of the stirrup. The shoulders are inclined to each other at an angle. As indicated in Fig. 2 I have found it satisfactory to place the shoulders 16 and 17 at substantially right angles in their common plane although this angular relation may be varied within wide limits and still accomplish its particular advantage. By giving these shoulders such an angular relation it is possible to tilt transversely the shoulder 17 over the upper flange

of the bars 6 while the shoulder 16 is substantially parallel to the plane of the side surface of the bar 6. The shoulder 17 then becomes a pivot around which the stirrup may be rocked to bring the shoulder 16 above the level of the upper flange 7 of the bar 6 and thus permit the shoulder 16 to be swung over the latter so that the plane of the stirrup coincides with the side wall of the bar 6 and the shoulders 16 and 17 are in splayed position diagonally across the flange 7 thus increasing their hold upon the upper bar and preventing rocking of the shoulders or their accidental dislodgment.

The shoulder 17 ends in a downwardly extending detent 18. This detent contacts with the edge of the flange 7 during the operation of applying the clip and thus prevents the shoulder 17 from slipping off of the flange. The detent 18 forms a lock against inadvertent dislodgment as will be evident from Fig. 3.

The opposite shoulder 16 ends in a bight 19 which extends downwardly in the same manner observed as to the lock 18 but with the added advantage of a smooth curved lower edge which will permit the bight 19 to ride easily across the flange 7 in the attaching operation. A lever 20 extends forwardly from the bight 19 in the horizontal plane determined by the shoulders 16 and 17. A finger piece 21 is provided at the forward end of the lever 20 and serves to give a convenient purchase on the clip for locking it into position.

The clip is readily made from ordinary steel wire preferably about one-eighth of an inch in diameter. This wire is quite stiff so that it will retain its shape during manipulation and under ordinary loads. It has sufficient flexibility to permit manipulation in the manner shown in Fig. 5 during the final operation of locking the clip in place. At the same time by disposing the several members in planes intersecting at right angles it is possible to obtain the maximum fastening capacity. For example, when used in the construction of a ceiling where the load upon the individual clips may approximate one hundred pounds, the weight is carried as a direct longitudinal tension along the stirrup members 14 and 15.

The use of the clip as above described is clearly illustrated in Figs. 4 and 5. The workman holds the lower bar 9 with its flange against the lower edge of the bar 6 and passes the members 14 and 15 upwardly around the bar 9. The shoulder 17 is slipped transversely over the upper flange 7 and the detent 18 brought down beyond the flange thus locking the clip against removal from the bar 6. In this position the shoulder 17 extends transversely across the flange 7 and the shoulder 16 is consequently substantially parallel to the side wall of the bar 6 in the general manner indicated in Fig. 4.

By grasping the finger grip 21 the shoulder 16 can be raised above the flange 7 of bar 6 while the member 14 springs inwardly toward member 15. As shown in Fig. 5 the bight 19 is allowed to rest upon the flange 7 and by means of the finger grip 21 can be pushed across the flange until it springs down into place beyond the latter. During this operation the shoulder 17 swings horizontally around into its final position as shown in Fig. 2 where the detent 18 and the member 15 exert a frictional grip upon the opposed vertical surfaces of the channel bar. In like manner the shoulder 16 is under tension and clamps the detent 19 and member 14 similarly against the channel bar.

The lever 20 extends transversely of the bar 6 in the horizontal plane of the shoulders 16 and 17 while the finger grip 21 extends in the vertical plane of the members 14 and 15.

The bar 9 is, therefore, held tightly against the lower edge of the bar 6 by tension between the part 13 and the opposing parts 16 and 17. The clip is constrained from dislodgment by means of the peculiar grip exerted by the detents 18 and 19 and the tension of shoulders 16 and 17.

The splayed or angular relation between the shoulders permits the shoulder 17 to be used as a pivot during the fastening operation before the shoulder 16 is brought over the upper bar. By bringing the lever 20 forwardly across the bar and providing the finger grip 21, sufficient leverage can be exerted upon the member 14 and shoulder 16 to spring the detent 19 over the edge of the flange 7 and into locking position beyond the latter.

In showing the application of the clip to the channel bars, Fig. 3 represents the usual method of applying the clip against the flat surface of the web of the bar 6 and allowing the lock 18 and detent 19 to drop over the free edge of the flange 7. However, it is immaterial in which direction the flanges extend and in Figs. 1, 4 and 5 the clip has been shown as applied over the opened side of the channel bar with the lock 18 and detent 19 extending over the opposite side surface of the web. Fig. 2 shows the operation to be the same for either arrangement of the channel bar 6.

The above description and illustration are made solely for the purpose of example. The proportions and details of the device may be varied and its materials may be modified without departing from the scope of the appended claims.

What I claim is:

1. A spring wire clip for channel bars comprising a stirrup, a pair of shoulders extending from the ends of the stirrup in a plane at right angles to that of the stirrup, locking means on the free end of each shoulder and operating means connecting with one of said locking means, one of said shoulders being angularly disposed relative to the other shoulder to permit unrestricted pivotal movement of the stirrup around the second mentioned shoulder.

2. A spring wire clip for channel bars comprising a stirrup, a pair of divergent shoulders extending from the ends of the stirrup in a plane at right angles to that of the stirrup, a detent on the free end of one shoulder, a depending bight on the free end of the second shoulder and operating means connecting with said bight.

3. A spring wire clip for channel bars comprising a stirrup, a pair of divergent shoulders extending from the ends of the stirrup in a plane at right angles to that of the stirrup, a detent on the free end of one shoulder, a lever and a depending bight connecting said lever with the end of the second shoulder.

4. A spring wire clip for channel bars comprising a stirrup, a pair of divergent shoulders extending from the ends of the stirrup in a plane at right angles to that of the stirrup, a detent on the free end of one shoulder, a lever, a depending bight connecting said lever with the end of the second shoulder and a finger grip on the end of the lever.

5. A spring wire clip for channel bars comprising a stirrup, the shoulders of said stirrup being

bent into a plane at right angles to that of said stirrup, one of said shoulders being bent back upon itself in the said plane to form an open bight and said bight and the free extremity of the other shoulder being bent down to form detents in a plane parallel to that of the stirrup.

6. A spring wire clip for channel bars comprising a stirrup, a pair of divergent shoulders extending from the ends of the stirrup in a plane at right angles to that of the stirrup, locking means on the end of one shoulder, means on the other shoulder for twisting the stirrup around said locking means and a bight on said other shoulder for holding the clip in torsional tension.

7. A spring clip for channel bars comprising a stirrup, a shoulder extending laterally from one end of the stirrup, and adapted to rest on a support, a lock on the end of the shoulder, a second shoulder extending laterally from the other end of the stirrup in the same plane with the first shoulder but at an angle thereto, means connected with said second shoulder for rocking the stirrup around the contact of the first shoulder with its support as a pivot, and means on said second shoulder for locking the latter to the support against reverse movement.

8. In combination with a supporting channel bar, a spring clip comprising a stirrup, a shoulder extending laterally from one end of the stirrup and adapted to rest on the bar, a lock on the shoulder for gripping the bar, a second shoulder extending laterally from the other end of the stirrup in the same plane with the first shoulder but at an angle thereto, a lever connected to the second named shoulder for rocking the stirrup around the first shoulder as a pivot to bring the second shoulder over the bar and a lock between the lever and second named shoulder for holding the latter on the bar.

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