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K. J. UNWIN

2,559,573

METAL FRAME WITH INSERTED PINS

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Fig. 1.

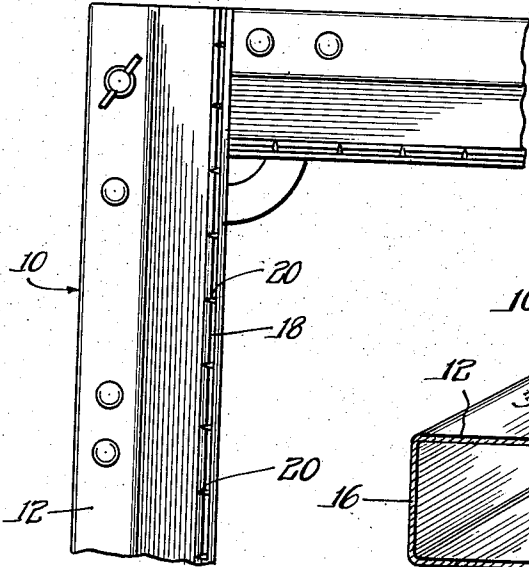


Fig. 2.

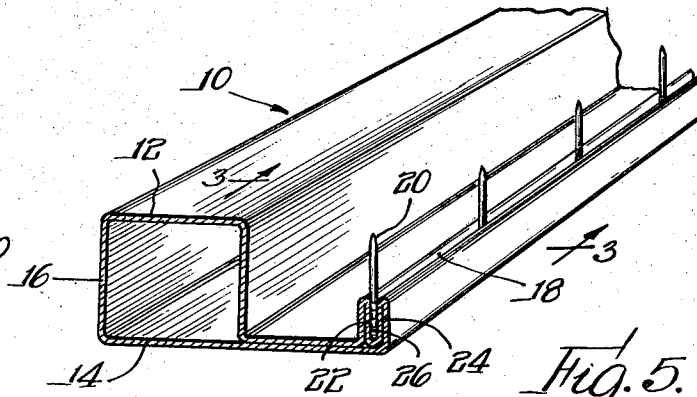


Fig. 3.

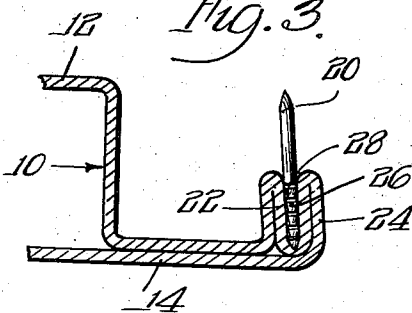


Fig. 4.

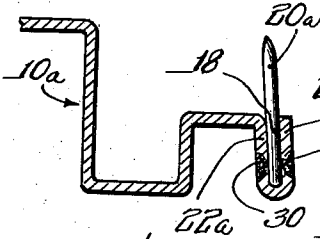


Fig. 5.

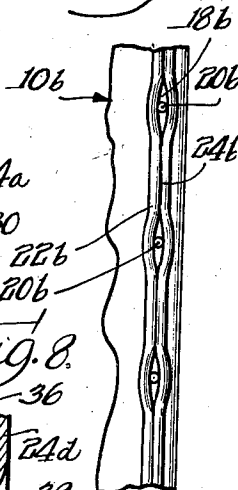


Fig. 6.

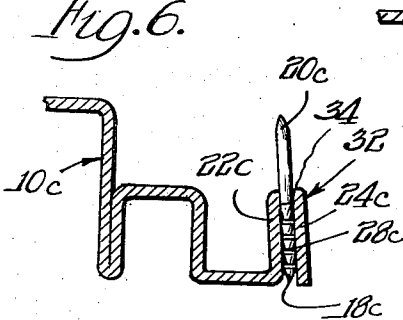


Fig. 7.

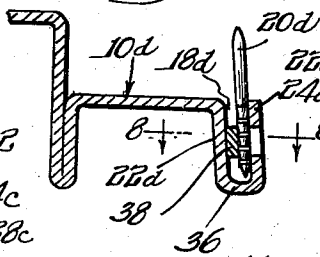
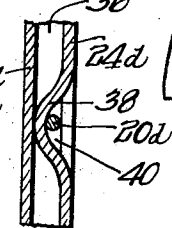


Fig. 8.



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METAL FRAME WITH INSERTED PINS

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Application March 11, 1948, Serial No. 14,327

13 Claims. (Cl. 45—24)

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The present invention relates to new and useful improvements in stretching frames for curtains and other materials, and more particularly, to improvements in the frame or molding members of such stretching frames and to the manner of securing the fabric impaling pins thereto.

Heretofore it has been common practice to form the molding or frame members from wood, each of these members having a plurality of impaling pins arranged in spaced relationship along the inner margin thereof. In the use of these wooden frame members the mounting of the impaling pins is a relatively simple operation in that a portion of each pin may be readily driven into the wooden member.

In addition to the above described type of frame or molding members, there are metallic frame members which have been proposed, such as that described in my pending application Serial No. 774,940, wherein the impaling pins are mounted in a non-metallic insert which is secured to the metal frame members.

In the above described types of frame members the firmness with which the pins are secured to the frame members depends upon the properties of the wood or non-metallic substance in which they are embedded. Obviously, since the wood or non-metallic substance is considerably softer than the pin to permit mounting of the pin therein, the pins often become loose under constant use. Furthermore, such materials are often affected by atmospheric and climatic conditions and have a tendency to shrink or expand, with the result that the securing or impinging action of the material upon the pin is impaired.

Therefore, it is one of the important objects of the present invention to provide a curtain stretcher having frame or molding members formed of a non-corrosive metal, each frame member having an integrally formed mounting groove or recess to accommodate a plurality of metallic pins.

It is a further object of the present invention to provide a frame or molding member which is provided with a recess or channel for the mounting of impaling pins designed to constantly impinge and securely mount the impaling pins in position therein.

It is still a further object of the present invention to provide a curtain stretcher of the type heretofore described which is made of a deformable metal and provided with a resilient mounting channel or recess for accepting an impaling pin, the metallic channel being permanently deformed thereafter to insure firm gripping and

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holding of the impaling pins against movement relative to the frame member.

It is still a further object of the present invention to provide a curtain stretcher of the above type wherein a minimum number of parts are used and which may be manufactured relatively inexpensively by well known manufacturing methods.

The invention still further aims to provide a curtain stretcher of the type heretofore described wherein the frame or molding members are formed of aluminum or other non-corrosive metal and which, by reason of its design, provides a very strong and durable frame member.

These and other objects and advantages of the invention will be more fully understood by a reading of the following detailed description with reference to the drawing wherein:

Figure 1 is a fragmentary plan view showing one corner of a stretching frame with an upright frame member and an upper horizontal frame member in position;

Figure 2 is an enlarged, perspective view of one of the frame members shown in Figure 1;

Figure 3 is a vertical, sectional view of a frame member taken along the line 3—3 in Figure 2;

Figure 4 is a vertical, sectional view showing another embodiment of the frame member with the impaling pin secured in a slightly different manner;

Figure 5 is a partial plan view showing the impaling pins secured in slightly different manner from that shown in Figures 3 and 4;

Figure 6 is a vertical, sectional view showing a modified form of the invention;

Figure 7 is a vertical, sectional view showing still another method of securing the impaling pins in the frame member; and

Figure 8 is a sectional view taken along the line 8—8 in Figure 7.

Referring now to the drawing more in detail wherein like reference numerals have been used to designate like parts throughout the various figures, it will be seen that the frame member designated generally by the numeral 10, and shown in Figures 1 to 3, inclusive, consists of a hollow body portion which includes an outer or a front face or a wall portion 12 and a rear face or wall portion 14. Along the outer edge of the frame member 10 the front and rear faces 12 and 14, respectively, are connected by an outer, vertical wall portion 16. The front and rear faces 12 and 14, respectively, are formed to provide a channel or recess 18 which is adapted to accept the impaling pins 20. The channel 18

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preferably has converging side walls, the smallest width of the channel being less than the diameter of the impaling pins 20 so that upon the insertion of the impaling pins 20, the pins are retained therein by the clamping force provided by the double side walls 22 and 24 of the channel or recess 18. Side walls 22 and 24 are disposed at an acute angle to a line normal to a plane parallel to the faces 12 and 14 of the molding member so as to dispose the impaling pins 20 angularly to insure retention of the fabric mounted thereover. To insure the retention of the impaling pins 20 in the channel 18, the pins 20 may be provided with a roughened surface as at 26 in their entering ends, as best seen in Figure 3. The roughened surface may take any form and, as seen best in Figure 3, a series of annular shoulders 28 has been provided to engage the wall surfaces of the side walls 22 and 24. By roughening the pin in this manner at its entering end, the pin is secured against axial and rotative movement within the channel. It should be noted at this point that the embodiment shown in Figures 1 to 3, inclusive, employs a channel having double side walls. This form is preferable in that the double wall provides additional strength and greater clamping force on the pins to resist loosening of the pins 20 with continued use.

In Figure 4 is shown a frame member 10a which may be made from sheet material or, if desired, may be extruded or made from tubular stock in a manner similar to the embodiment shown in Figures 1 to 3, inclusive. Frame member 10a is provided with a channel 18a adjacent one end, the channel preferably having a width less than the width of the pin 20a so as to clampingly engage the entering end of a pin when it is inserted therein. However, the pin has been shown as not being roughened at its entering end as with pin 20, described above. Instead, pin 20a is secured by spot welds, shown generally at 30 to retain the pin within channel 18a against axial and rotative movement relative to the frame member 10a.

In Figure 5 is shown still another method of securing impaling pins to a metallic frame member. The frame member 10b is provided with a channel 18b like the embodiments heretofore described, and pins 20b mounted therein. These pins 20b may be of the type shown in Figure 4, although they are preferably formed with a roughened surface at their entering end portions, as described relative to the embodiment shown in Figures 1 to 3, inclusive. In addition to the impinging or clamping action of the side walls of the channel 18b on the entering end of the pin 20b for retention of the pin against movement relative to the channel, side walls 22b and 24b are compressed or collapsed, thereby causing the side walls 22b and 24b to more securely engage the pins. This collapsing of the side walls can be accomplished by squeezing the deformable material with a pair of pliers or like instrument or by rolling the side walls between rollers. The compressing of the side walls against the pins causes metal to flow into the recesses of the roughened surface, thereby positively securing the pin against movement relative to the frame member.

Figure 6 shows still another method of securing a pin in a metallic frame member 10c wherein an inverted channel member 32 is provided with spaced apertures 34 in the bight portion connecting the side walls 22c and 24c. As de-

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scribed in previous embodiments, side walls 22c and 24c are shaped to converge toward the open end of the channel 18c formed by them so that upon passing pin 20c through aperture 34 between flange members 22c and 24c, the pin is clampingly engaged, to be retained against any unauthorized movement relative to the frame member 18c. Shoulders 28c are provided to insure more positive securement by the flange members 22c and 24c.

Figures 7 and 8 disclose a still further method of securing impaling pins of a curtain stretcher device to a frame member, as contemplated by the present invention. Frame member 10d is provided with a channel 18d defined by walls 22d and 24d and bight portion 36. Sheared from one of the side walls is a plurality of holding arms or straps 38 forming a pocket with the side wall from which they are sheared large enough to accept the entering end of the pin 20d. The pin is embedded in this pocket designated generally by the numeral 40 and the side walls 22d and 24d compressed, thereby collapsing the holding arm 38 into holding engagement with the pin 20d.

In selecting the material for the frame member and the impaling pins, it is desirable that the frame member be made of a softer material than the pin itself. Such a combination might include an aluminum frame member with brass or steel pins. This insures the proper engagement of the pin into the material of the channel member upon insertion therein. It should be noted, however, that in the event the channel member is made of material harder than the impaling pin, the method of securing the pin disclosed in Figures 4, 5 and 7 and 8 will be most effective.

From the foregoing description, it will be apparent that the present invention contemplates an improved stretcher frame of a very practical design and of strong construction. The frame member consists of metal extruded or formed from sheet material into the desired shape with the channel or recess for mounting the impaling pins. The flanges or walls of the channel converge toward the open end of the channel so as to firmly grip and secure an impaling pin inserted therein. In addition to the retention of the pin by the channel walls, additional means have been disclosed for insuring positive securement of the pins, such as welding, deformation of the channel after mounting of the pins, or the provision of deformable sheared out holding arms.

While certain forms of a stretcher device have been shown and described for purposes of illustrating the invention, it is to be clearly understood that changes in construction and arrangement of parts may be made without departing from the spirit of the invention, and that the scope of the invention is determined by the following claims.

The invention is hereby claimed as follows:

1. A frame member for a curtain stretcher or the like comprising a sheet metal body portion having rear edges determining a plane, a U-shaped channel portion formed from said body portion and arranged longitudinally of said body portion and transversely of said plane, and a plurality of impaling pins mounted in said channel portion and gripped by the side walls of said channel portion.

2. In a frame member for a stretching frame for curtains and other materials comprising a sheet metal body portion having rear edges determining a plane having a U-shaped channel

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disposed along one edge thereof and transversely of said plane, a plurality of impaling pins mounted in said channel, the side walls of said channel converging toward each other adjacent the opening of said channel, said converging side walls securing said pins in said channel.

3. A frame member for a curtain stretcher or the like comprising a sheet metal body portion having rear edges determining a plane, a U-shaped channel portion formed from said body portion adjacent a margin thereof and transversely of said plane to provide a mounting groove, a plurality of impaling pins, said impaling pins mounted in said channel portion and gripped by the side walls thereof, the leading end of each of said impaling pins having a roughened surface to insure positive engagement with said side walls of said channel portion.

4. A frame member for a curtain stretcher or the like comprising a sheet metal body portion having rear edges determining a plane, a U-shaped channel portion integral with and extending longitudinally along one margin of said body portion and transversely of said plane to provide a mounting groove, and a plurality of impaling pins mounted in said channel, the side walls of said channel member being compressed after insertion of said pins therein to clampingly engage the ends of said pins in fixed position relative to said body portion.

5. In a frame member of the type described in claim 1 wherein the edge of the side walls of said channel portion comprise double thicknesses of material thereby strengthening said channel portion to insure gripping engagement of said pins with continued use of the frame member.

6. A frame member for a curtain stretcher or the like comprising a strip of sheet material having rear edges determining a plane and having a U-shaped channel formed in said strip along a longitudinal margin thereof and transversely of said plane, the side walls of said channel converging in a direction away from their integrally joined ends, and a plurality of impaling pins mounted in said channel, the converging side walls of said channel engaging said pins to retain them in fixed position therein.

7. A frame member for a curtain stretcher or the like comprising a molding member having rear edges determining a plane having a mounting groove formed along a margin thereof and transversely of said plane, and a plurality of impaling pins having their leading ends mounted in said groove and gripped by the side walls thereof.

8. In a frame member of the type set forth in claim 7 wherein the side walls of said mounting groove are compressed to cause further impingement of the side walls of said mounting groove about the leading ends of said impaling pins.

9. In a frame member of the type described

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in claim 7 wherein said impaling pins in addition to being gripped by the side walls of said mounting groove, are spot welded to at least one wall of the mounting groove to positively secure and position said impaling pins relative to said molding member.

10. A frame member for a curtain stretcher or the like comprising a body portion, a U-shaped channel portion formed from said body portion and extending longitudinally thereof to provide a mounting groove, said mounting groove having a plurality of spaced apertures intermediate the side walls of said groove, and a plurality of impaling pins mounted in said channel portion with a portion extending through said apertures, said impaling pins gripped by the side walls of said channel portion to secure said impaling pins against loosening relative to said body portion.

11. A frame member for a curtain stretcher or the like having a sheet metal body portion, a U-shaped channel portion formed from said body portion and arranged longitudinally thereof, said channel portion having pin receiving aperture means opening frontally of said frame member, and a plurality of pins received in said pin receiving aperture means of said channel portion and spaced from one another longitudinally of said frame member, the side walls of said channel portion individually gripping said pins.

12. A frame member for a curtain stretcher or like comprising a sheet metal body portion, a channel portion formed from said body portion and opening at least in part frontally of said frame member, and a plurality of substantially straight impaling pins received in said channel portion and spaced from one another longitudinally of said frame member, the side walls of said channel portion individually gripping said pins.

13. A frame member for a curtain stretcher or the like comprising a sheet metal body having a front portion, a channel along one edge of said body and integral therewith, said channel extending forwardly generally in the direction of the front portion of said body but terminated short thereof, said channel opening at least in part frontally of said frame member, and a plurality of substantially straight pins received in spaced relation in said channel and extending forwardly therefrom, the side walls individually gripping said pins.

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The following references are of record in the file of this patent:

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Number	Name	Date
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