Oct. 10, 1939. W. D. FERRIS 2,175,688

TRUSS BRACE CONSTRUCTION

Filed May 11, 1938

FIG. 1.

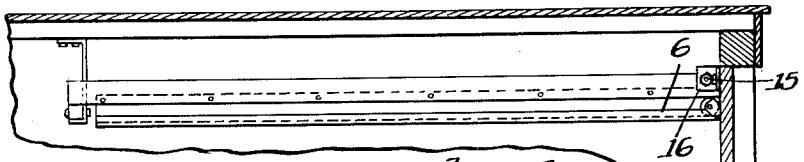


FIG. 2.

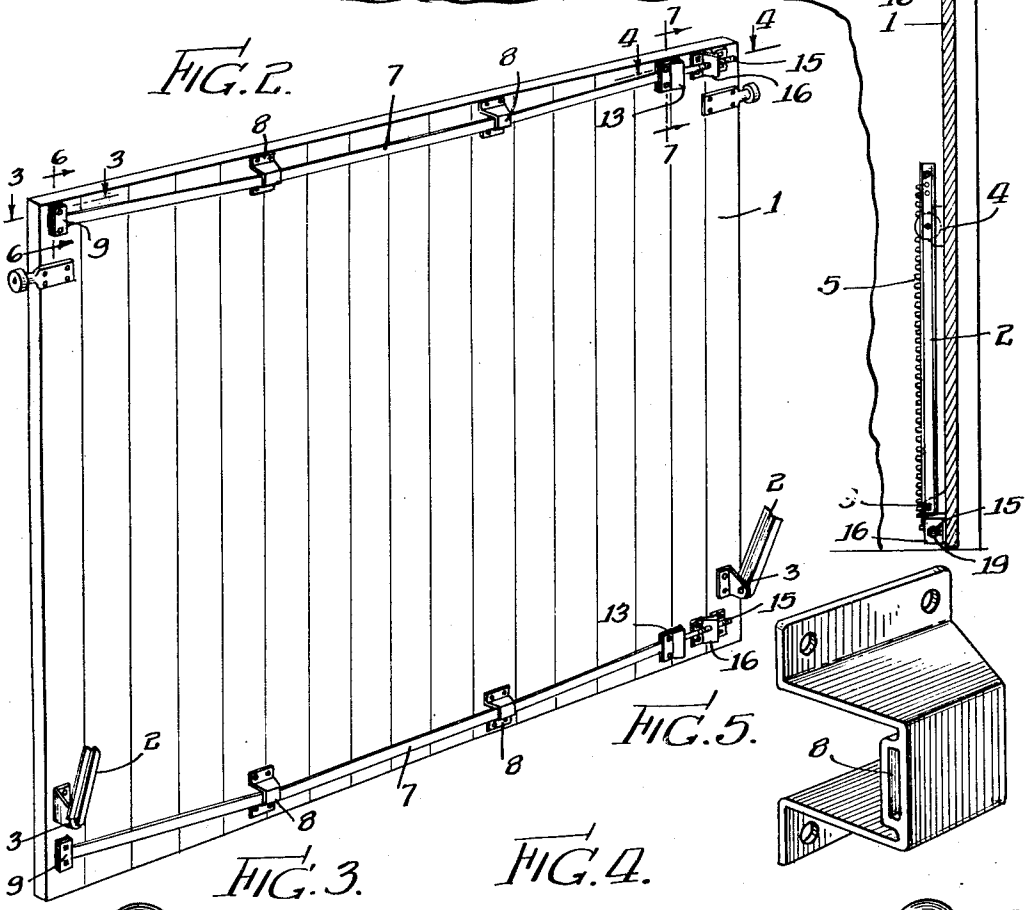


FIG. 5.

FIG. 3.

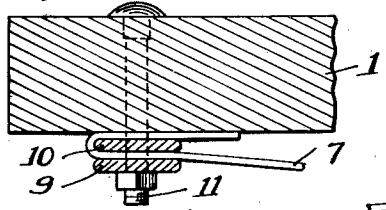


FIG. 4.

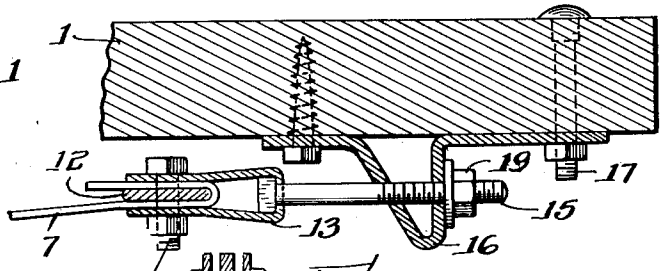


FIG. 6.

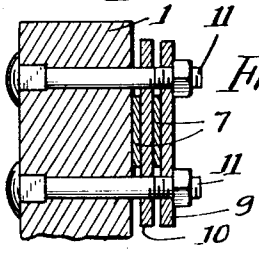
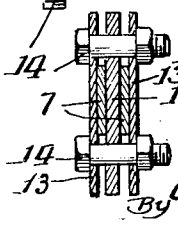


FIG. 7.



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TRUSS BRACE CONSTRUCTION

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7 Claims. (Cl. 20—38)

This invention relates to trusses for structural work, or truss brace construction, for various purposes, but more especially for use in connection with garage doors.

Generally stated, the object of the invention is to provide a novel and improved construction and arrangement whereby an adjustable truss construction is provided that obviates the necessity of using certain things heretofore considered necessary in devices of this character.

It is also an object to provide a novel and improved construction whereby flat strap metal can be used economically and advantageously as a substitute for metal rods, in a manner obviating the necessity of punching any holes in the strap metal, and whereby trusses or braces can be provided of different lengths in a simple and convenient manner, for different purposes, but more especially for use on garage doors of the kind that open into an overhead horizontal position.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and desirability of a truss brace construction of this particular character.

To the foregoing and other useful ends, the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawing, in which—

Fig. 1 is a vertical section of a garage door and the adjacent portions of the building, showing a truss construction embodying the principles of the invention, applied to the upper and lower ends of the door.

Fig. 2 is a perspective of the said door.

Fig. 3 is an enlarged detail section on line 3—3 in Fig. 2 of the drawing.

Fig. 4 is an enlarged detail section on line 4—4 in Fig. 2 of the drawing.

Fig. 5 is a perspective of one of the parts of the said truss brace construction.

Fig. 6 is an enlarged detail section on line 6—6 in Fig. 2 of the drawing.

Fig. 7 is a similar view on line 7—7 in Fig. 2 of the drawing.

As thus illustrated, the invention is shown in connection with a garage door 1, consisting of a single rectangular rigid section, which can be all in one piece, or made of several pieces rigidly secured together in any suitable or well known manner. This door is supported by arms 2 that are pivoted at 3 on the lower portion of the door, inside the latter, and are pivoted on the building at 4, and that are subject to the tension of springs 5 that assist in opening the door, and that serve to cushion the downward or closing movement of the door. As shown, the upper end of the door is provided with means for engaging horizontal tracks 6, upon which the upper end of the door slides inwardly while it is assuming its overhead or horizontal position. When the door is in its overhead horizontal open position, it is supported at the opposite sides thereof, and the middle portion is liable to sag downwardly.

Therefore, a truss brace construction is preferably applied to the top or upper end of the door, and also the bottom or lower end of the door, consisting of a flat piece of strap metal 7, anchored at its ends, and supported in one or more metal brackets or saddles 8 at intermediate points, thus preventing the middle portion of the door from sagging in the open position thereof. As shown, two saddles 8 are employed, but it is obvious that only one or any desired number can be employed, depending on the circumstances of different cases. One end of each strap is anchored as shown in Figs. 3 and 6 of the drawing, by doubling the end of the strap backward and clamping it between the door and the metal plates 9 and 10, which are clamped together by the bolts 11 extending through the door. Thus, a very strong anchorage is obtained, without the necessity of punching holes in the strap. At its other end, the said strap is anchored in the manner shown in Figs. 4 and 7 of the drawing, this end portion of the strap being bent around and turned back over the intermediate clamping plate 12, and clamped against the latter by the side portions of the sheet metal clip 13, two bolts 14 being inserted at the sides of the metal strap 7, to clamp the latter firmly in place, in the manner shown. The clip 3 is swivelled on the head of a bolt 15, which latter is inserted through the sheet metal bracket 16, which is secured to the door by bolts 17, and by screws 18, of any suitable or desired character. By turning the nut 19 on said bolt, the flat strap metal truss member can be tightened, and put under tension, sufficiently to prevent sagging of the door when the latter is in its overhead horizontal position. However, such tightening or tensioning of the two trusses is desirably not sufficient to warp or bow the door outwardly when it is in its vertical or closed position. Preferably, a flat strap metal truss member and its anchoring and adjusting means are applied to the top portion of the door, and the bottom portion of the door, but another truss brace can be applied midway between the top and bottom of the door, if such is necessary or desirable.

As shown, the door is supported by the arms 2 and the track 6, as explained, but it is obvious that the truss brace construction shown and described can be applied to doors supported by other means, but nevertheless having a vertical closed position and a substantially horizontal overhead open position, and regardless of how the door is supported or mounted, it may be provided with one or more of the truss braces shown and described to prevent sagging of the middle of the

door when the latter is in its overhead or open position.

It will be seen, therefore, that the use of long threaded rods, and turnbuckles, and things of that kind, is not necessary. The flat metal straps used as the truss members can be coiled and packed in boxes with the other portions of the hardware, a thing that cannot be done with ordinary threaded iron rods, and hence the invention provides an adjustable truss brace construction that can be packed and shipped in a much more convenient manner. The flat strap metal truss members do not need to be punched or provided with holes, as the ends of the strap are anchored effectively without using perforations therein. It is easy to cut off the ends of the metal strap, where such is necessary, but that need not be done, for doors of different widths, inasmuch as the end portions of the strap are bent back in the anchorage provided for the end portions of the strap, and this alone is enough to take care of the difference in widths of different doors, for the folded back end portion of the strap can be either short or long without interfering with the effectiveness of the truss brace thus formed and provided.

While the truss brace construction constituting the invention is shown and described in connection with a garage door, it is obvious that it can be used on other structures, and for other purposes, without departing from the principle of the invention.

Thus with the construction shown and described, it is obvious that the truss strap **27** can be cut from a long length of strapping, and does not need any puncturing, or any upsetting or enlargement of the ends thereof, in order to serve its purpose and operate in the manner shown and described. In other words, the flatwise pressure exerted on the superposed folded end portions of the strap is sufficient to anchor the ends of the latter, for the purpose shown and described, or wherever a truss of this kind may be found to be necessary or desirable.

Furthermore, with the construction shown and described, the invention provides a method which obviates the necessity of running any portion of the strap **7** through any portion of the door **1** or other structure to be held rigid by the truss. The truss strap **7** is simply a section cut from a length of ordinary flat metal strapping. Thus, by merely using the expedient of folding the opposite ends of the strap back upon itself, in effect, more or less, trusses of different lengths can be provided for any given width or door or other structure, or trusses can be provided for doors or other structures of different widths, but in any event the truss is all at one and the same side of the door or other structure, and is entirely inside the latter. Hence there is no occasion to perforate the door or other structure for the insertion of the strap through any portion of the door or other structure, the bolts **11** and **17** being the only portions of the anchoring means for the truss that extend through the door.

What I claim as my invention is:

1. In a truss brace construction, in combination with a structure to be held rigid by the truss, a flat truss strap consisting of a section cut from a length of ordinary flat metal strapping, foldable at its ends for structures of different widths, together with anchoring means for screw clamping the folded ends of the strap, having rigid points of connection with said structure, or for trusses of different lengths for any given width of structure, thereby obviating the necessity of any perforation of the strap, or of upsetting or enlarging the ends thereof, and by said clamping means obviating the necessity of running the ends of said strap through any portion of said structure.

2. A structure as specified in claim 1, said clamping means comprising a transverse bar insertable in the fold of the end portion of the strap, clamping means engaging the folded portion of the strap, extending beyond the edges of the latter, and bolts extending through the bar and clamping means, outside the opposite edges of the strap, whereby the latter is clamped tightly and held by a frictional pressure only.

3. A structure as specified in claim 1, said clamping means comprising a transverse bar insertable in the fold of the end portion of the strap, clamping means engaging the folded portion of the strap, extending beyond the edges of the latter, and bolts extending through the bar and clamping means, outside the opposite edges of the strap, whereby the latter is clamped tightly and held by a frictional pressure only, said clamping means comprising a flexible member having opposing jaws embracing the strap and bar, and adjustable means engaging the head of said flexible member, and adjustable to tighten the truss.

4. A structure as specified in claim 1, said clamping means comprising a tranverse bar insertable in the fold of the end portion of the strap, clamping means engaging the folded portion of the strap, extending beyond the edges of the latter, and bolts extending through the bar and clamping means, outside the opposite edges of the strap, whereby the latter is clamped tightly and held by a frictional pressure only, said clamping means comprising another bar parallel with said first mentioned bar, said bolts when tightened serving to clamp the folded end portion of the strap directly against said structure.

5. A structure as specified in claim 1, the ends of the strap being folded back between the body of the latter and said structure, with one end clamped directly against the structure, and with the other end spaced from the latter, together with screw adjustment means for connecting this spaced end to one of said rigid points of connection, for tightening the truss to the required tension thereof.

6. A structure as specified in claim 1, said screw clamping means comprising parallel bolts disposed at opposite sides of each folded end portion of the strap.

7. A structure as specified in claim 1, one of said fixed points of connection comprising a pair of parallel bolts extending through said structure and through the clamping means at opposite sides of one end portion of the strap, and the other fixed point of connection comprising a bracket suitably fastened to said structure, together with a screw adjustment connection between said bracket and the other folded end portion of the strap.

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