Nov. 17, 1953

H. C. LAU

2,659,432

LOAD RETAINING STRIP

Filed March 18, 1950

Fig. 1.

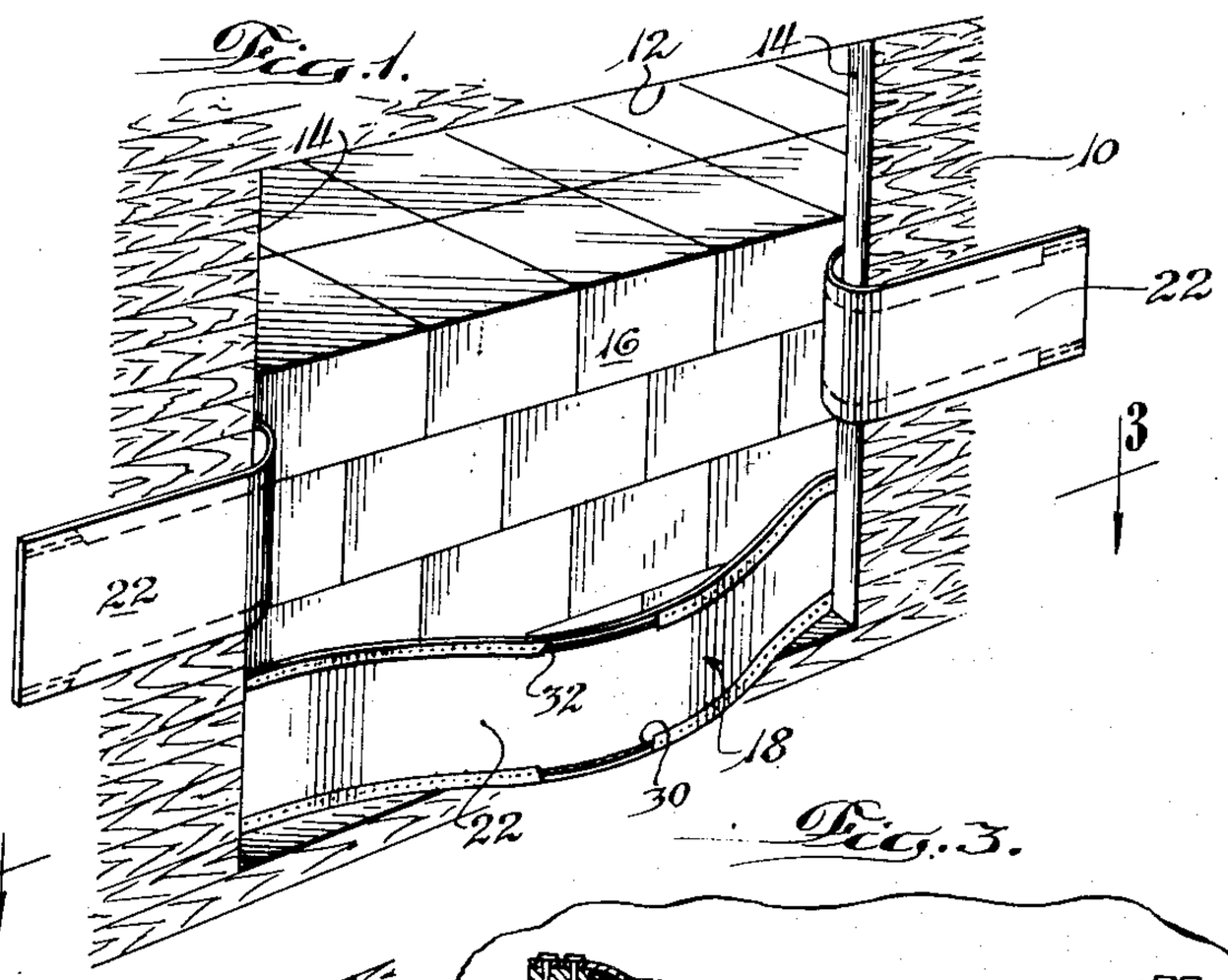


Fig. 5.

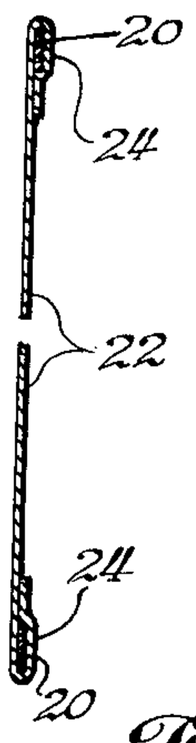


Fig. 3.

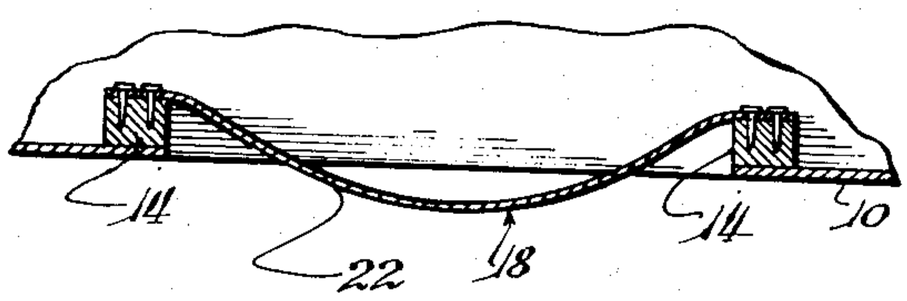


Fig. 2.

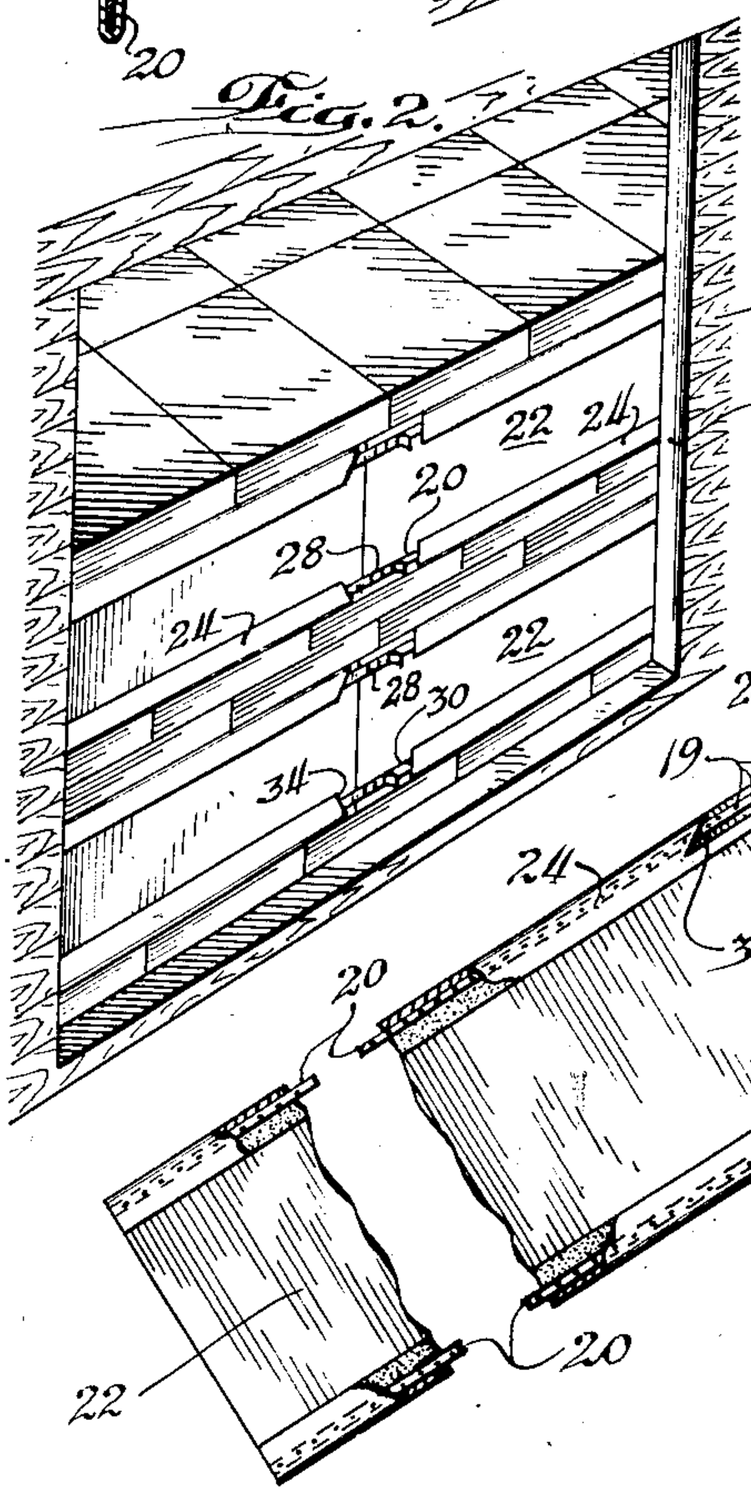


Fig. 4.

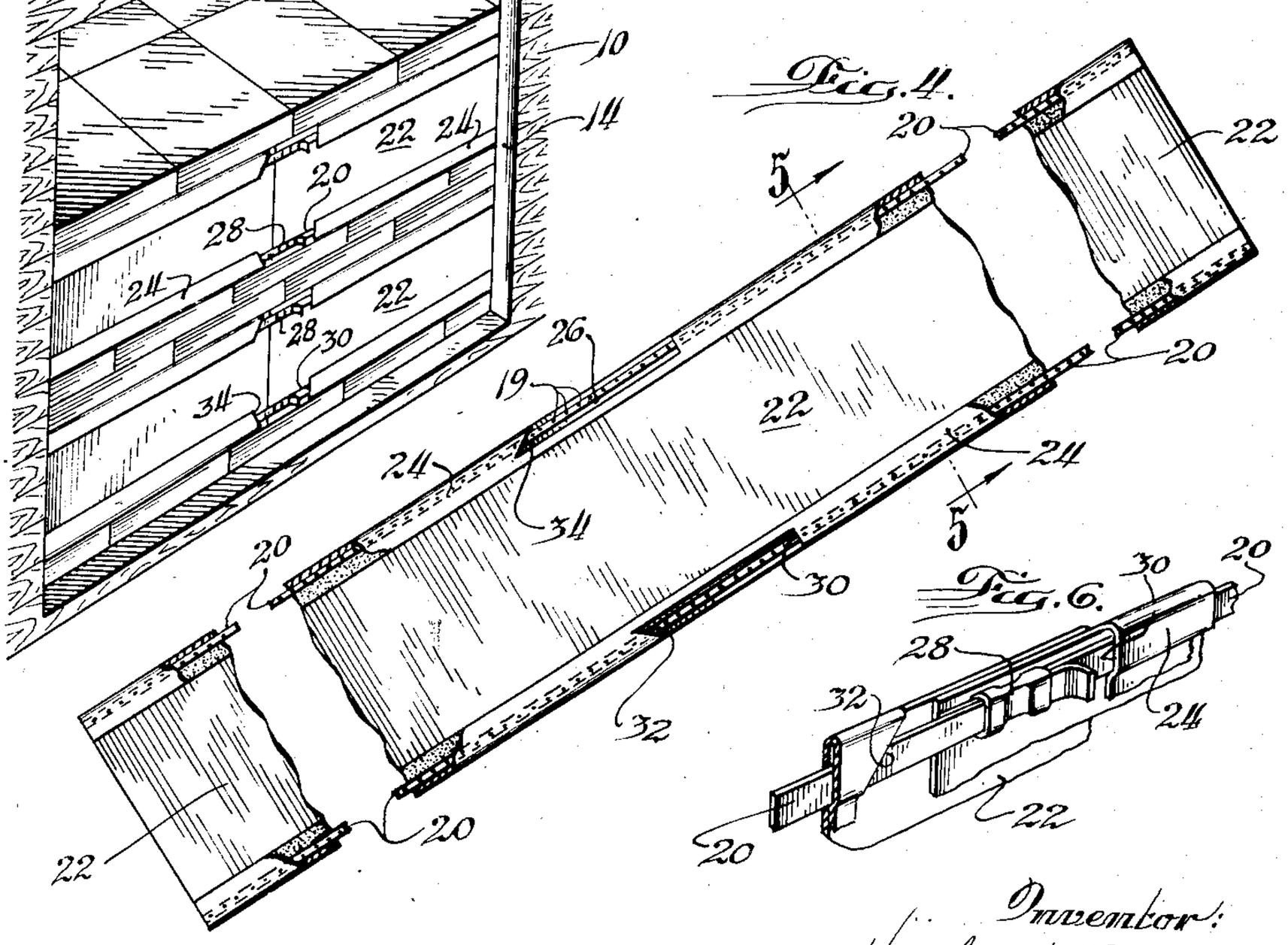


Fig. 6.




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## LOAD RETAINING STRIP

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2 Claims. (Cl. 160—368)

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The present invention relates to a load retaining strip of prefabricated construction adapted to be disposed transversely of the doorway of a railway freight car or like vehicle between the load and the door for preventing shifting of the load into the doorway.

When railway freight cars are loaded with boxes, sacks or general merchandise there is a tendency for a portion of the load to work its way sideways into the door opening. The forces bringing about this sidewise movement do not alone usually cause damage although such movement may result in the doors being wedged so that they cannot easily be opened. Serious damage does result, however, because of endwise shocks to which the cars are periodically subjected in that these endwise acceleration forces cause the load to shift in an endwise direction within the car quite quickly. If a box or other portion of the load has worked its way into the door opening such an endwise shock frequently brings a portion of the load violently against one of the door jambs with the result that severe damage is often encountered from this source.

In the past this problem has been solved by what are known as load retaining strips. These comprise one or more bands of comparatively thin strip steel which are nailed to the doorway on each side so that they extend across the doorway in a horizontal direction and over which heavy paper is wrapped. Sometimes the strips are prefabricated so that a pair of parallel steel bands are connected by a web of paper and handled as a single unit. Customarily such strips are nailed into place before the load is placed in the car or at least before the loading of the car is complete, since it is necessary for the workman to be inside the car while putting the retaining strips in place. These retaining strips, although their strength need not be great, nevertheless serve the useful purpose of preventing the load from shifting sideways since the forces causing such shifting are seldom very great. Even if the load does shift to some extent in a sidewise direction a subsequent longitudinal violent displacement does not bring the load against the door jambs but instead causes it to slide against the steel bands back into the interior of the car.

The disadvantage, of course, of load retaining strips as described is that once the strips are in place the man who secures them must climb out over the tops of the strips and the remaining portion of the load must be boosted over the

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strips and into the car. The placement of the final portion of the load, therefore, is difficult.

The present invention solves this problem by retaining the advantages of such load retaining strips while at the same time greatly facilitating their use and the loading of a car. Accordingly, one object of the present invention is to provide a novel prefabricated load retaining strip adapted to be disposed across the doorway of a freight car or like vehicle to prevent injuring the load against the door jambs, which strip may be installed prior to loading but nevertheless presents no interference to the movement of the load through the doorway during the loading operation.

A further object is to provide such a strip economically so that it may be discarded after one use.

Other objects and advantages will become apparent from the following description of a preferred embodiment of my invention which is illustrated in the accompanying drawings.

In the drawings:

Fig. 1 is a perspective view of a doorway of a railway box car showing the strips which comprise the present invention at one stage of their use;

Fig. 2 is similar to Fig. 1 but shows the doorway and strips together with a load at the completion of a loading operation;

Fig. 3 is a horizontal sectional view looking in a downwardly direction substantially along the line 3—3 of Fig. 1;

Fig. 4 is a plane view of a prefabricated retaining strip, laid out, as it is manufactured and supplied to the loader;

Fig. 5 is a transverse sectional view which may be considered as taken in the direction of the arrows substantially along the line 5—5 of Fig. 4; and

Fig. 6 is a detail of one edge of the strip near the horizontal center thereof at the completion of a loading operation.

A freight car 10 has a doorway 12, at each side thereof along the vertical edges of which are provided jambs 14. Normally, sliding doors are arranged on the outside of the car so that they can be moved inwardly to cover the opening 12. However, they are not shown in this figure since their illustration would add nothing to an understanding of the invention. In Fig. 1 a number of boxes or cartons 16 are shown within the freight car and it is these boxes which the strips of the present invention prevent from shifting outwardly to where they are in longi-

tudinal alignment with the door jambs 14. These strips which form the subject matter of the present invention are indicated at 18 and are shown in greater detail in Fig. 4.

By referring to Fig. 4 it will be seen that a pair of spaced steel bands 20 extend in a longitudinal direction, such that they are parallel. Although steel strip for these members may be of varying width and gauge, for this purpose I prefer that they be formed of cold rolled steel approximately three-quarters of an inch wide by .020 inch thick. I prefer for this purpose to use steel strip which is already perforated with holes 19 approximately three-quarters of an inch apart so that nails may be easily inserted therethrough for securing them in place to a railway car doorway.

The two strips 20 are joined by a web 22 of kraft paper and for this purpose I have found to be satisfactory paper of this type of a base weight of 100 pounds and a thickness of approximately .009 inch. Such paper has a tensile strength of approximately 80 pounds per inch longitudinally and 40 pounds transversely. Paper having different specifications, of course, may be used if desired.

The sheet of paper is wider than the space between the strips; so there is a portion 24 at each edge which is folded over and secured to the strip and to a portion of the web therebeyond in face to face relationship by an adhesive, thereby covering both faces of the strips 20 while anchoring these strips to the web 22. This makes an integral prefabricated assembly of the two steel bands 20 and paper web 22 which is easy to handle. For a purpose to be pointed out presently, the edge 24 of the paper web 22 prior to being folded over and glued to the bands 20 has a longitudinal slot formed therein at each side near the center. These slots are spaced inwardly from the edges of the paper strip a matter of three-quarters of an inch or so with the result that when the edge portions 24 of the strip are folded over and glued in place the steel bands 20 at the center will be exposed on one side because the slot 26 previously referred to registers with the position of these bands. In other words, there is formed in effect a window near each edge of the sheet at the longitudinal center which exposes the bands 20 on one side for a distance of approximately fourteen inches or so.

Such a composite retaining strip is secured across a doorway in the following manner. One end of the strip is nailed to one side of the doorway at the inside with the band exposing windows 26 out and with the strip in approximately horizontal position. This is done by means of two or more nails which extend through the band perforations 19 previously referred to which are near that end of the band. The other end of the strip is then similarly secured by nails to the opposite side of the doorway but instead of being secured with the bands tight as is customary with retaining strips, it is arranged to have a considerable bow at the center. The retaining strip is made somewhat longer than the transverse dimension of the doorway in order to permit this.

After the strip has been secured in place at both ends in this manner it is cut with a pair of tin snips or similar shears through the middle from top to bottom so that the cut passes through and severs both the top and bottom steel bands 20 as well as the paper web which connects these bands. The two free end portions which are thus formed are then bent outwardly and back-



wardly and are secured to the outside of the car in any suitable manner, after which the load is moved into the car and properly placed.

In Fig. 1 of the drawings the lower strip is shown nailed in place before the cutting operation, whereas the upper strip shows the positions of the half strips after cutting and folding.

After the load has been moved into the car and properly distributed the two strip ends are again folded inwardly and overlap somewhat. The steel strip free ends are pulled away from the paper so that these strips extend through the cut out portions or windows 26. The free ends of the two paper webs 22 at the center of the doorway are then overlapped, after which the two steel bands 20 at the top or bottom are overlapped, tensioned and secured with a seal 28 in a well-known manner. The other two band ends 20 are then similarly tensioned and sealed.

The result of this operation is shown in Fig. 2.

From the above description of the device of the present invention and its operation it will be seen that the retaining strips may be secured at the sides of the car doorway while the car is empty and that they do not interfere with the loading of the car and that further the sealed joint 28 at the center of the steel bands is insulated from the load by two thicknesses of heavy paper.

The advantage of nailing the retaining strip in place in an uncut condition and then subsequently dividing it in half is that this method insures that the two strips which are subsequently to be overlapped, tensioned and sealed will be in alignment. If one half of the strip were simply nailed to the doorway on one side and the other half were then nailed at the other side it would take a considerably higher degree of skill and care to see to it that these separate strips would be in alignment so that the subsequent tensioning and sealing operation could be conducted in a satisfactory manner without wrinkling or tearing the paper. It is also apparent that the cost of a retaining strip of this type is only slightly greater than that of a conventional strip, the additional cost arising from the fact that the strip is a few inches longer and requires the use of the seal joints 28 at the center. Neither of these excess cost factors is of course of any consequence when compared to the greater facility with which the device of the present invention may be used as compared with the more conventional retaining strip.

Although retaining strips of this type may be manufactured in a number of ways, it has been found that in production the kraft paper may be taken from a roll and passed through a machine which cuts the windows 26. After this operation it may be passed through a machine which feeds the bands 20 continuously along each edge of the continuously fed paper and which glues and rolls over the side members 24 so as to confine the bands 20. In order to facilitate passage of the strip through such a machine without tearing, it is preferred that one end of the window, that is, the leading edge as the retaining strip is formed, be cut off square as indicated at 30 while the trailing end 32 be tapered inwardly somewhat as shown at 34. The retaining strip in endless bulk form thereafter passes from the machine and is cut to length to form individual retaining strips. Although other processes may be used for the fabrication of these retaining devices the above general scheme is proposed as one which is known to be satisfactory.

Having described my invention what I claim

as new and useful and desire to secure by Letters Patent of the United States is:

1. A prefabricated load retaining strip comprising a pair of parallel, spaced apart, flexible steel bands connected by a heavy paper panel, said panel having integral flaps attached thereto at both side edges at fold lines, said flaps extending beyond said bands a distance greater than the width of said bands, each of said flaps having a cutout portion near its center for exposing the center portions of said bands when said flaps are folded over said bands, said flaps being adhesively secured in face to face relation to said bands and to said panel, said bands and said panel being of substantially the same length, and said bands being perforated adjacent their ends to facilitate securement of said band ends to the sides of a doorway.

2. A prefabricated load retaining strip adapted to be secured at its ends along vertical nailing lines at each side edge of a doorway of a freight car, comprising a panel of flexible sheet material having a length appreciably greater than the distance between said nailing lines, said panel being bowed when its ends are nailed in place along



said nailing lines, said panel having its longitudinal edges joined to integral flaps along parallel fold lines, a pair of tension members narrower than said flaps lying against said panel adjacent said fold lines and covered by said flaps overlying said tension members and being attached to said panel, said flaps having cutout portions at approximately their longitudinal centers to expose said tension members, said flaps being folded over and adhesively secured to said tension members and panel and providing double-ply edges for said strip enclosing said tension members excepting at said cutout portions, and said strip and tension members being transversely severable between said cutouts and rejoinable in taut condition, thereby providing double thickness of said strip at the line of joining.

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