Jan. 8, 1929. 1,698,574

T. R. WINCHELL

REENFORCING METAL STRAP FOR CLEATED CASES

Filed Feb. 5, 1926

Fig. 1

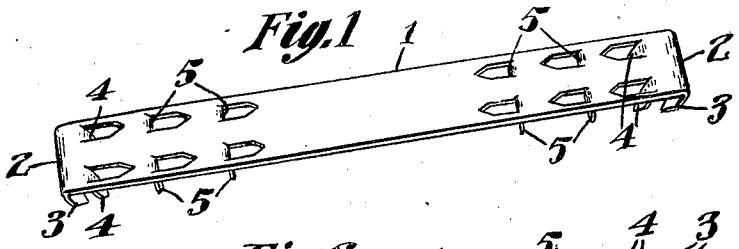


Fig. 2

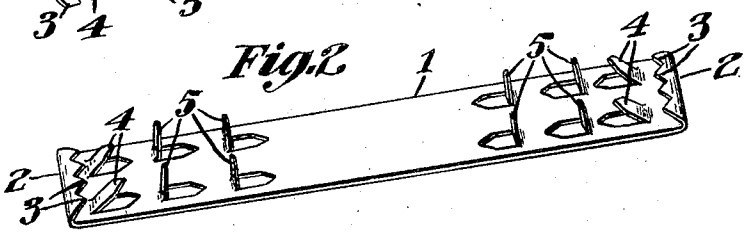


Fig. 3

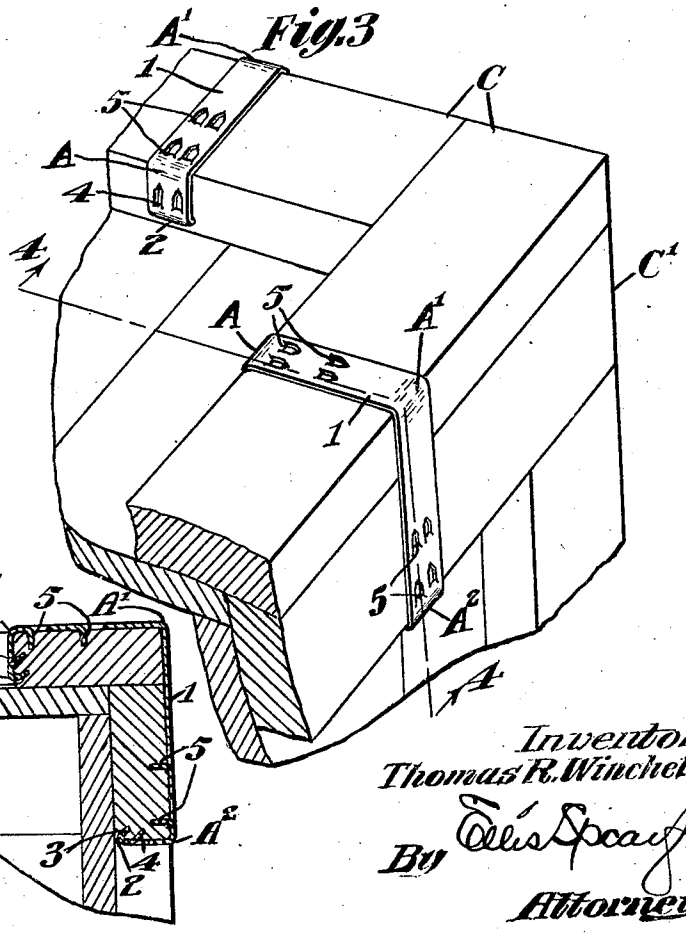
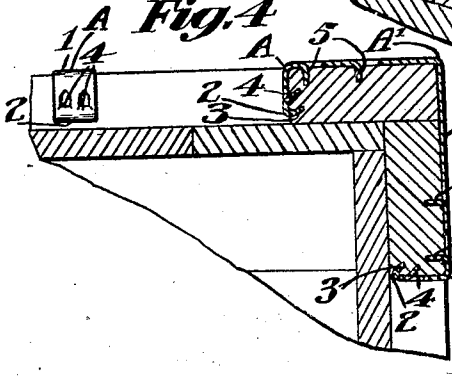


Fig. 4



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UNITED STATES PATENT OFFICE.

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REENFORCING METAL STRAP FOR CLEATED CASES.

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This invention relates to a metal reenforcing strip for shipping crates, and particularly for plywood cases which have thereabout a framework of heavier cleated construction.

Heretofore, many attempts have been made to produce clamps, stiffeners or fasteners to reenforce the joining of the cleats, or to secure the cover to the container either with or without the use of nails, screws or other fasteners, which must be forced some distance into the heart of the cleats, always with the risk of splitting the same or of protruding on the inside of the case with likelihood of damage to its contents. All of these devices with which I am familiar, however, have been so constructed that their means for attachment to the framework have been no more effective, if as effective, as nails or screws, the shortness of the barb or other penetrating means, or the relation of the same to the body of the fastener making them liable to be dislodged under strain.

One of the most common methods of reenforcing a cleated case was to pass a metal strap entirely therearound. This strap, however, could be used only on the extreme ends of the cleated case, since to obtain the necessary support for the strap it must pass over and outside of the cleats. If used elsewhere on the case, added cross cleats would have to be secured to the plywood case to lie under the strap in order that it might have proper support.

To overcome these difficulties, I have devised my present invention. My reenforcing strap consists of a relatively short body of pliable metal which may be bent to conform to the framework of the case. These straps may obviously be of different shapes and lengths, but are all secured by the same means and in the same manner to the inside surface of the cleat nearest to the plywood panels, at any point where reenforcement of the framework is desired.

It will be obvious that if the cleat on one member of the case is clamped firmly to its adjoining cleat on another member, all the advantage of the ordinary strap is achieved. My reenforcing straps may be used at any point of union of the members of the case, and are particularly effective near the corners where the greatest strain on the case is met. (See Fig. 3.)

My invention gives greater support than the ordinary strap or any other device for the same purpose with which I am familiar, greatly reduces the amount of material required, and results in a decrease of the labor now required to apply the ordinary strap. With the increased strength of the container which results from the use of my invention, heavier loads may be carried, thus increasing the use of plywood cases. The cleats also may be made of lighter weight lumber but the same are so firmly and tightly united to each other that they are quite as effective as heavier cleats which are not reenforced. Thus, my invention also results in a saving of material.

My reenforcing strap is further improved by the barbs which I provide on the inner face thereof. These barbs are so positioned on the strap, and the angle thereof with relation to the plane of the strap is such that the connection with the case is so firm and permanent that the strap is not dislodged or twisted even under the most unusual strain. So long as the ends of the strap are securely anchored, the strap cannot lift from the surface of the cleat or the barbs pull out. I have therefore devised a method of so anchoring the straps behind the cleat that the two ends thereof have an equal opposite drawing action which is effective to firmly clamp the cleats in the proper relation to each other.

I have disclosed in the accompanying drawings an illustrative embodiment of my invention. Throughout the specification and drawings like reference numerals are used to indicate corresponding parts, and in the drawings:

Fig. 1 is a top view of my reenforcing strap.

Fig. 2 is an inside view showing the barbs.

Fig. 3 is a perspective of a corner of a plywood case showing my reenforcing strap attached to the cleated framework thereof, and

Fig. 4 is a section on the line 4—4, of Fig. 3.

The strap 1 is of any flexible metal, but is preferably of sheet iron or steel. This strip is upturned at each end, as shown at 2, and these upturned ends are toothed, as shown at 3. It will be noted that these toothed ends are bent at an acute angle to the plane of the strip (Figs. 1 and 2).

A relatively short distance inward from these toothed ends 3 I provide one or more barbs 4, which are also struck from the metal to lie at an acute angle to the plane of the strip. Some distance from this first series of barbs 4 and nearer the center of the strap, I provide still other barbs or series of barbs 5 which are at approximately right angles to

the plane of the flat strap. Between the barbs 4 and 5 there should be left a space or area of sufficient size to permit the strap to be folded at that point upon the edge of the cleat to which it is to be attached.

The barbs 4 and 5 and the toothed ends 3 of the strap are made by placing the blank 1 in a die press with dies formed to make barbs of any shape desired or at any angle to the surface of the blank.

It will be obvious that there may be any number of barbs 5 but these barbs should be so positioned on the blank that they will not interfere with the lines of fold.

The toothed ends 3 and the barbs 4 are provided at acute angles to the plane of the strap so that when driven into the wood they will lie at right angles to the strap and their grip of the wood will not be easily disloged. I have discovered that unless these barbs are at an angle less than a right angle to the place of the strap, when the barbs are driven into the wood they tend to spread until they are at an obtuse angle to the plane of the strap and are thus very easily pulled out or dislodged from their position in the wood.

In applying my reenforcing strap to the case, the strap is placed on the flat surface of one of the cleats C or C^1, as the cleat C for example, Fig. 3, with the ends having the toothed edge 3 and the spurs 4 projecting over the inner edge of the cleat a distance equal approximately to the thickness of the cleat The barbs 5 on the strap are then driven into the cleat and the projecting end thereof bent behind the cleat along the line of fold A in Fig. 3, and its barbs 4 and toothed end 3 driven into the inside edge of the cleat. The strap is then bent over as indicated at A′ in Fig. 3 on the other cleat C′ and its barbs 5 driven into the cleat, the end of the strap projecting in this case as it did on the other cleat C. This end is then bent over the edge of the cleat C′ along the line of fold A^2 in Fig. 3 and its barbs 4 and toothed edge 3 driven into the under edge of that cleat.

An important feature of my invention lies in the attaching of the barbed ends back of or to the inside or under faces of the cleats. The entrance of the barbs 3 and 4 into the wood on the inside surface, together with the barbs 5 on the outside of the cleats, form an unusually firm and lasting attachment to the wood. Such a fastening to the woodwork at either end of the strip obviously produces a joining of the two cleats C and C^1 which it would be impossible to weaken without deliberate application of force for this purpose, and which would require either a cutting or breaking of the strip 1 or the deliberate removal of the barbs from the surfaces they have penetrated. The angle of the barbs 3 and 4, reenforced as they are by the barbs 5, prevents any loosening thereof by any strain or stress resulting from rough handling of the case. The joining is also so close and tight that it is impossible for any gapping between the cleats to exist or for the position of the cleats with relation to each other to be varied. When applied, as in Figs. 3 and 4, the barbed ends 3 exert an equal opposite drawing effect on the cleats C and C^1 to which they are applied, effective to firmly draw the cleats towards each other as well as to definitely fix the position of the reenforcing strap itself on the cleats.

My reenforcing straps may be used at any point of union of the members where reenforcing is required, and are particularly effective near the corners (see Fig. 3).

If desired, the strap may be made long enough to permit its toothed ends 3 to be forced between the plywood body of the case and the cleat. In this case, the part of the strap passing between the plywood body of the case and cleat would have rather short sharp barbs bent sharply back toward the center of the strap. These barbs will prevent the end of the strap from being withdrawn and the strap would have to be cut to open the case, thus making the same pilfer proof. In this case, the ends of the strap may if desired be flat with barbs projecting from one or both sides or the ends may be round with barbs projecting from its entire surface.

I do not limit myself to any kind or number of barbs, nor as to the position they occupy on the metal strip. Various modifications may obviously be made in the size, shape and position of the barbs and the areas between the same without departing from the spirit of my invention if within the limits of the appended claim.

What I therefore claim and desire to secure by Letters Patent is:

In a packing case structure having a double cleated edge, a fastener disposed transversely of the edge thereof and folded to the edge angle, the opposite ends of said fastener being overfolded on the inner edges of any pair of intersecting cleats, straight prongs on said overfolded ends disposed at an acute angle thereto, said acutely disposed prongs being adapted to engage said inside edge of said cleats whereby said adjoining cleats engage said inner edges with an equal opposite drawing action effective firmly to clamp said cleats to each other.

In testimony whereof I affix my signature.

THOMAS R. WINCHELL.