June 5, 1928. 1,672,108

T. R. WINCHELL

REENFORCING METAL CORNER FOR CLEATED CASES

Filed Feb. 5, 1926 2 Sheets-Sheet 1

Fig. 2

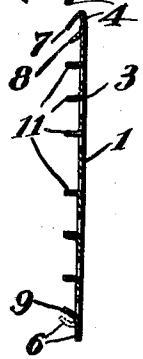


Fig. 1

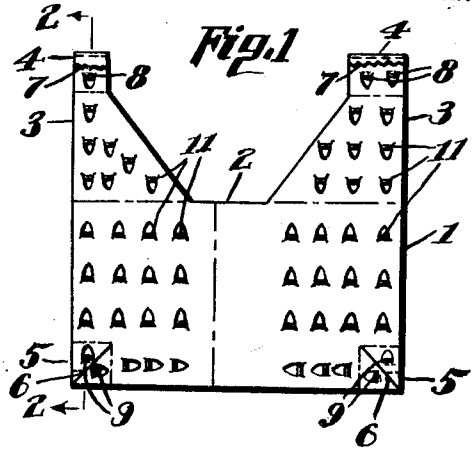


Fig. 3

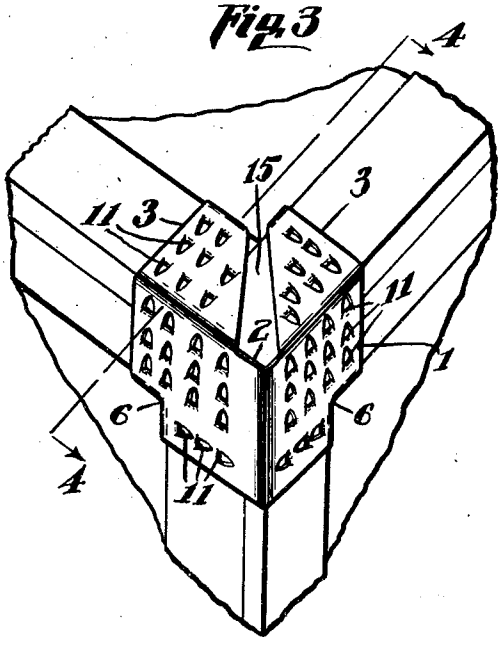
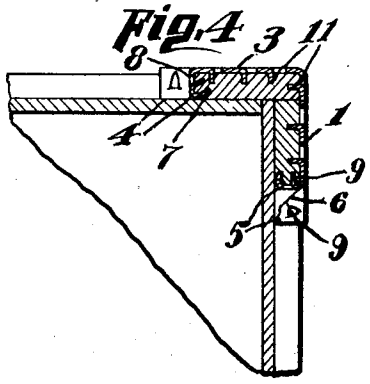


Fig. 4



Inventor
Thomas R. Winchell

By Ellis Spear

Attorney

June 5, 1928.

1,672,108

T. R. WINCHELL

REENFORCING METAL CORNER FOR CLEATED CASES

Filed Feb. 5, 1926

2 Sheets-Sheet 2

Fig.6

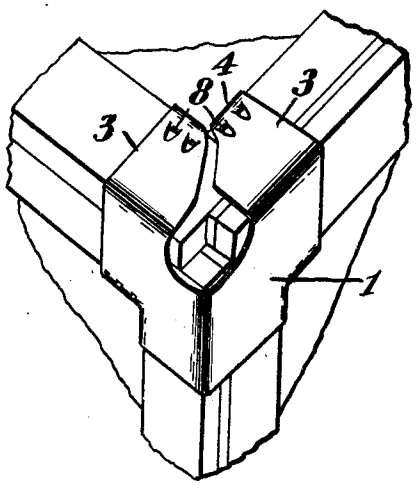


Fig.5

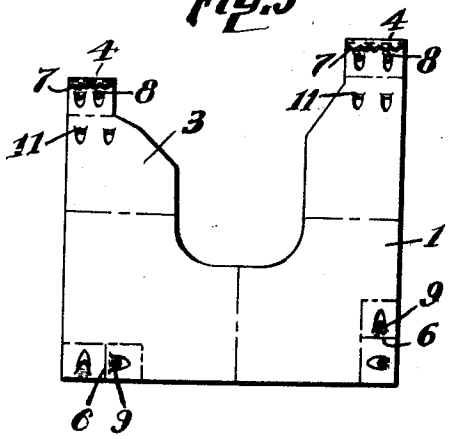


Fig.8

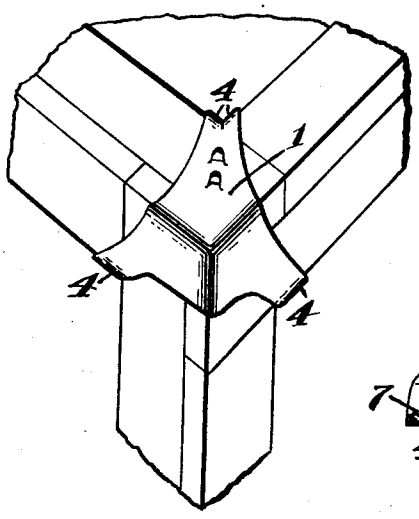
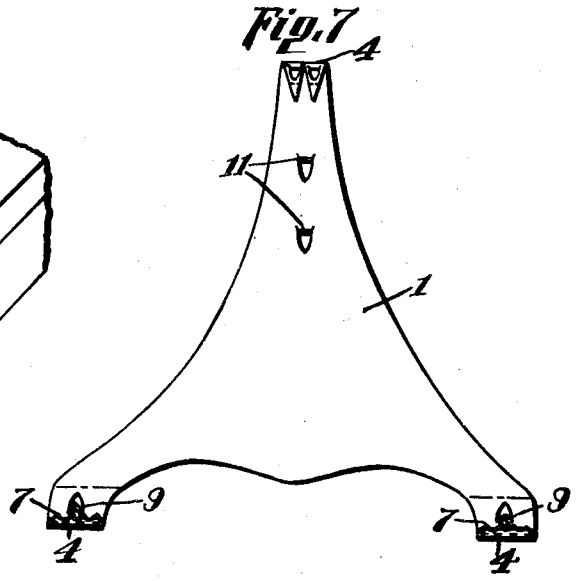


Fig.7



Inventor
Thomas R. Winchell

By Edmund Spear

Attorney

Patented June 5, 1928. 1,672,108

UNITED STATES PATENT OFFICE.

THOMAS R. WINCHELL, OF PORTLAND, MAINE.

REENFORCING METAL CORNER FOR CLEATED CASES.

Application filed February 5, 1926. Serial No. 86,152.

This invention relates to a reenforcing device for the corners of cleated shipping cases and particularly to a simple metal device which may be attached over the framework to fasten the several cleats tightly to each other and to protect the same from strain and consequent damage during transit.

My invention is adapted for use on cleated plywood cases and other cases of similar cleated construction. Such cases require about the outer edges thereof a reenforcing framework constructed of cleats of heavier stock than is used in the body of the case. This reenforcing of the framework is required particularly at the corners of the cases as the corner of a case is subjected to the greatest strain and is nearly always the first part to give way. If the corner can be held intact the lifetime of the whole case is greatly increased. Heretofore it has been impossible to use plywood or similar cases in the field where heavy or difficult loads are required, because for such loads a plywood case is not adequate unless provided with an extremely heavy reenforcing frame which obviously adds greatly to the weight and cumbersomeness of the case.

It is the object of my invention to provide means of so attaching and protecting the cleats at their corners that the weight and amount of framework heretofore required may be very materially decreased. This not only results in a saving in lumber, but makes the finished case when ready for shipment very much less in weight than has heretofore been possible.

Heretofore, many attempts have been made to produce clamps, stiffeners or other reenforcing means for the joints or for securing the cover to the container either with or without the use of nails, screws or other such fastenings, which must necessarily be forced some distance into the heart of the wooden members, always with the risk of splitting the same or of protruding on the interior of the case with damage to the contents. All of these devices with which I am familiar, however, have been so constructed that their action is in fact no more effective, if as effective as nails or screws, and while more or less satisfactory, are on account of the shortness of the barb or other penetrating means, and the method of attaching the same to the case, likely to be dislodged under strain. By the use of none of these devices, so far as I am advised, has it been possible to decrease the weight or volume of framework required.

To overcome these many difficulties I have devised my present invention. My device consists of a blank of pliable metal which may be bent or ironed to conform to the shape of the corner to be protected and reenforced. My corner, in addition to protecting the wood from outside attack, also produces a closer binding of the cleats. This comparatively simple device has many advantages. Not only does the metal corner protect the case from damage while in transit and thus lengthen the life and usefulness of the case, but the actual strength of the case is also greatly increased, whereas the labor and assembling cost are reduced. The ease with which my corner is applied to and removed from the case materially lessens the time required to assemble and close the cases. My corner iron used on the eight corners of the box clamps all sides and ends thereof firmly together and consequently every other unit of the box is equally firmly clamped to its adjoining unit.

My corners may obviously be of different shapes according to the construction of the case upon which they are to be used. Regardless of their shape, however, they are all secured to the case by the same means and in the same manner. Regardless of the shape of the corner, however, or the number of faces of the case to be covered the corners are all stamped from flat stock which, because of its pliable nature, may readily be folded or ironed to the contour of any corner to which it is to be applied. The spurs or pointed barbs which attach the corner to the framework are made by placing the blank in a die press with dies formed to make barbs of the desired shape and at the desired angle to the surface of the blank.

An important feature provided by my invention is that all the extremities of the corner are attached to the cleats on the back or inside faces thereof. These extremities are provided either with barbs or have upturned toothed ends. In order to have these barbs at right angles when they are driven into the wood after the blank has been bent so that they overlie the inside face of the cleat, I have discovered that it is of advantage to have them struck up at an acute angle to the plane of the body of the corner.

I have illustrated in the accompanying drawings several embodiments of my inven-

tion. Throughout the specification and drawings like reference characters are used to indicate corresponding parts, and in the drawings:

Fig. 1 shows one form of my corner which may be folded to conform to the corner of the framework.

Fig. 2 is a side view showing the angle at which the barbs lie.

Fig. 3 shows the metal corner in place and the relation of the different faces or areas with reference to the cleats.

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

Fig. 5 is a view of a corner which is intended to be used on a case having interlocking corners.

Fig. 6 shows this corner in place, and

Figs. 7 and 8 show still another embodiment of my invention, in this case the metal of the device being ironed to the desired shape.

The blank stamping 1 shown in Fig. 1 is of any flexible metal, but is preferably of sheet iron or steel.

In such a corner as is disclosed in Fig. 3, it will be apparent that on one of its sides there is a greater area of cleat framework to be covered by the metal protecting device than on its other side. In order to avoid the necessity of differently constructed plates for oppositely constructed corners, in one of which the left side will have the larger area and in the other the right side, I have cut away this blank at the point marked 2. This portion 2 of the plate may be so positioned with reference to the corner that it can be folded to fit and smoothly overlie all sides of the corner whether the greater area be to the right or left of the point of fold.

On either side of this edge 2, I provide projecting flanges 3 which are adapted to overlie the top surface of the cleat. These flanges have projecting ends 4 which may extend beyond the edge of the top cleat and to be bent upon this edge and driven into the back of the cleat.

The opposite corners 5 of the plate are slit at 6 so that they too may be bent back of their respective cleats as shown in Fig. 3.

The projecting ends 4, as shown in Fig. 1, have toothed upturned edges 7 which lie at an acute angle to the surface of the plate. Spaced a short distance inward from these upturned edges 7, are one or more barbs 8 which lie at substantially the same angle with reference to the plate as do the upturned ends 7. The barbs 9 on either side of the split corner 5 are also at an acute angle to the surface of the plate.

Any desired number of additional barbs 11 may be provided on the plate as shown in Figs. 1 and 2, but these may all be at right angles to the surface thereof provided they are not placed too near any point of bend or fold of the plate. It is, of course, desirable that no barbs be placed at any point where the plate will be folded over or at any corner of the case. If, however, barbs should be placed near this line of fold, they should be at less than a right angle to the plate, this being necessary in order to have them lie at that angle when they have been driven into the wood. The line of vertical fold varies according to whether the larger surface area is to the right or left thereof, but regardless of where the plate is bent vertically, it is preferable not to place any barbs just below the edge 2 as shown in Fig. 1.

In applying the form of corner shown in Figs. 1–4 inclusive, the edge 2 is placed in its proper position near the top edge of the cleat according to whether the larger area of framework is to the right or left of the corner. The barbs 11 on this area of the plate are then driven into the wood. The metal is then bent vertically around the corner and the barbs 11 on that surface are driven into the wood. The split corners 5 are next folded below the cleats they overlie and their spurs 9 hammered into place.

The flanges 3 are then bent over the top edge and the barbs 11 on their inner face driven into the wood. The projecting ends 4 are then bent behind the cleats and their acute angled barbs 8 and toothed ends 7 are forced into the wood. The driving action tends to raise these barbs 8 and the toothed edge 7 to approximately right angles. If the barbs were, however, at right angles when they were positioned above the back of the cleat before being driven into the wood, when so driven they wuld lie at an obtuse angle and could therefore readily be drawn out or loosened by any strain on the cleat.

As shown in Fig. 3 there is a slight area 15 on the top surface of the cleat which is not covered. This is not important, however, as the joint of every cleat is covered and the greatest advantage is derived from the ability to use the same plate on either corner regardless of whether the larger area lies to the right or left.

I have more particularly referred to the embodiment of my invention disclosed in Figs. 1 to 4 inclusive, in the above description. The same principles of construction, however, apply to the corner plates shown in the remaining figures. The plates shown in Figs. 5 and 6 are intended for use on an interlocking type of case for which purpose it is necessary that the flanges 3 be of different lengths, and lefts and rights would be required to take care of the difference in the area of the two sides of the corner of the case.

In the form shown in Figs. 7 and 8, the metal plate may be ironed to the proper shape to overlie the corner of the case in satisfactory form.

All of these embodiments possess the toothed ends 4 adapted to be attached to the inside or back of the cleats. Where required, these ends are slit and a suitable number of barbs 8 supplied. Wherever possible I use the toothed end 7. It should be borne in mind, however, that wherever the barbs are on a surface which is near a line of fold, as for example, on the back of the cleats, these barbs and upturned ends must be at an acute angle so that when hammered into the wood of the cleat they lie at an angle which does not permit them readily to be withdrawn or dislodged under strain.

The fact that the plates are secured back of the cleats not only gives greater holding power in itself, but also prevents the flanges or body of the plate from being lifted when subjected to a severe strain and so tends to prevent the barbs in the surface of the flange and the body from leaving the wood. If the barbs are held intact in the wood, the plate obviously cannot be loosened or dislodged.

Generally, it is preferable for my corner plates to have barbed surfaces. However, the barbs may be omitted and the extremities of the plate fastened back of or under the cleat by nails or tacks.

It is possible to carry the toothed ends and the edges entirely back inside of the cleat and force them into the wood between the cleat and the wall of the case. In this case it would be very difficult, if not impossible, to remove the corner without cutting the same. Such a use, however, would render the case entirely pilfer proof and the same would be thoroughly sealed against opening during transit.

Various changes with regard to the shapes and sizes of the flanges and the number and position of the barbs may obviously be resorted to, all without departing from the spirit of my invention if within the limits of the appended claims.

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

1. A reenforcing plate for a cleated shipping case comprising a flexible flat metal blank cut away to form a truncated notch having a flange at either side thereof, there being beneath the truncated edge of said notch an area on which said body is adapted to be folded longitudinally about the vertical edge of a cleat, said truncated edge being adapted to be so adjusted with reference to said cleat edge that said plate can be adjusted so that its body on either side of said line of fold will cover a greater or less area of cleat surface whether the same lies to the right or left of said cleat edge, said flanges being adapted to be bent transversely on the plane of said truncated edge so that they will overlie the top surface of the corner cleats and having end portions adapted to be bent upon said flanges so that they overlie the inside or under edge faces of the cleat to which they are to be attached.

2. A reenforcing plate for a cleated shipping case comprising a flexible flat metal blank cut away to form a truncated notch having a flange at either side thereof, there being beneath the truncated edge of said notch an area on which said body is adapted to be folded longitudinally about the vertical edge of a cleat, said truncated edge being adapted to be so adjusted to said cleat edge that said plate can be adjusted so that its body on either side of said line of fold will cover a greater or less area of cleat surface whether the same lies to the right or left of said cleat edge, said flanges adapted to be bent transversely on the plane of said truncated edge so that they will overlie the top surface of the corner cleats, and having end portions adapted to be bent upon said flanges so that they overlie the inside or under edge faces of the cleat to which they are to be attached, the inner faces of said body blank and flanges having barbs struck therefrom at predetermined points and at right angles to the plane thereof, an upturned toothed edge on the ends of said flanges and a barb spaced inwardly therefrom, said toothed edge and said barbs on said end portions of said flange being at an acute angle to the planes thereof so that when driven into the wood of the inner or under face of said cleats they lie at right angles thereto.

3. A reenforcing plate for a cleated shipping case comprising a flexible flat metal blank cut away to form a truncated notch having a flange at either side thereof, there being beneath the truncated edge of said notch an area on which said body is adapted to be folded longitudinally about the edge of a cleat, said truncated edge being adapted to be so adjusted with reference to said cleat edge that it can be adjusted so that said plate area on either side of said line of fold will cover a greater or less area of cleat surface whether the same lies to the right or left of said cleat edge, said flanges adapted to be bent transversely on the plane of said truncated edge so that they will overlie the top surface of the corner cleats, and having end portions adapted to be bent upon said flanges, so that they overlie the inside or under edge faces of the cleat to which they are to be attached, the lower corners of said body blank being slit so that they may be folded over upon said cleat to lie against the inside or under surfaces thereof near the wall panel of said case, and an upturned toothed edge on the ends of said flanges.

4. A reenforcing plate for a container comprising a flexible flat metal blank cut away to form a truncated notch having a flange at either side thereof, there being beneath the truncated edge of said notch an

area on which said body is adapted to be folded longitudinally about the edge of a cleat, said flanges adapted to be bent transversely on the plane of said truncated edge so that they will overlie the top surface of the corner cleats, and having end portions adapted to be bent upon said flanges, so that they overlie the inside or under edge faces of the cleat to which they are to be attached, the lower corners of said body blank being slit so that they may be folded over upon said cleat to lie against the inside or under surfaces thereof.

5. A reenforcing plate for a container comprising a flexible flat metal blank cut away to form a truncated notch there being beneath the truncated edge of said notch an area on which said body is adapted to be folded longitudinally about the edge of a cleat, the lower corners of said body blank being slit so that they may be folded over upon said cleat to lie against the inside or under surfaces thereof near the wall panel of said case, and an upturned toothed edge on the ends of said flanges.

6. A reenforcing plate for a container comprising a flexible flat metal blank adapted to be folded longitudinally about the edge of a cleat, the lower corners of said blank being slit so that they may be folded over upon said cleat to lie against the inside or under surfaces thereof.

In testimony whereof I affix my signature

THOMAS R. WINCHELL.