May 22, 1928. 1,670,840

R. W. CHALMERS

SHIPPING BOX CONSTRUCTION

Filed May 5, 1924

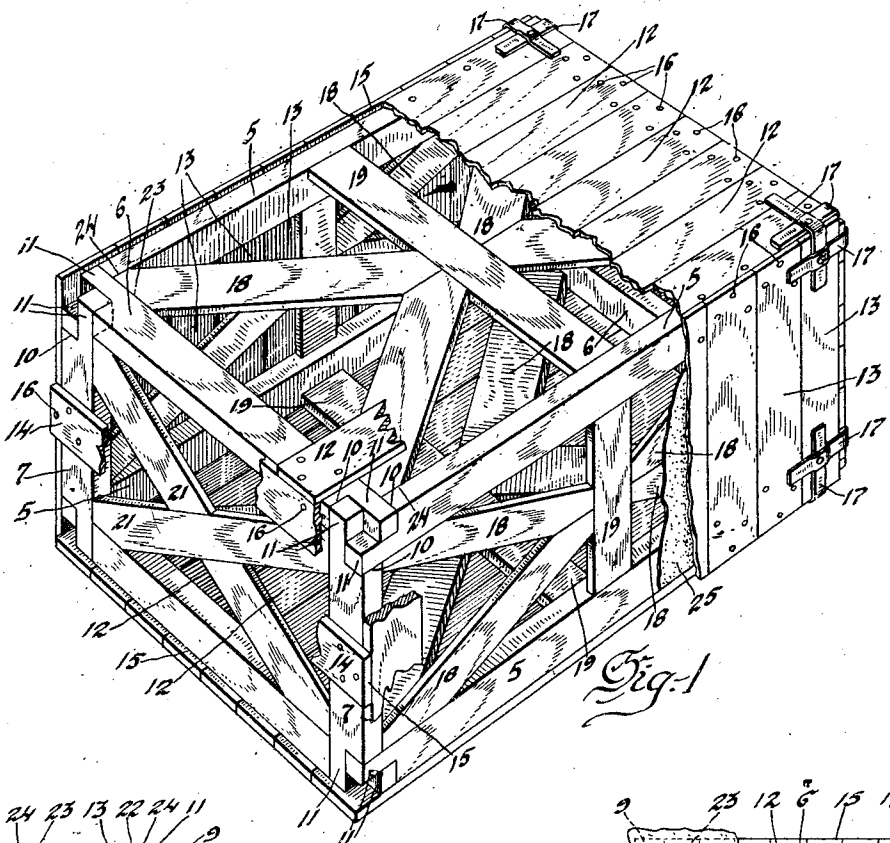


Fig. 1

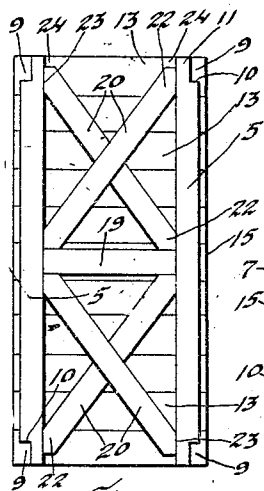


Fig. 2

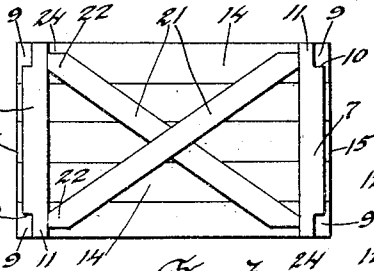


Fig. 3

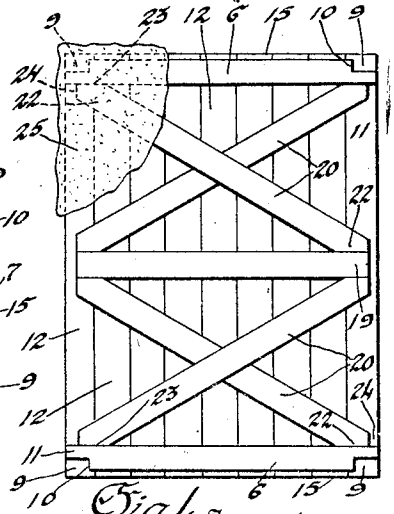


Fig. 4

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UNITED STATES PATENT OFFICE.

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SHIPPING-BOX CONSTRUCTION.

Application filed May 5, 1924. Serial No. 711,089.

My invention relates to boxes designed especially for use in shipping automobiles in substantially their assembled condition, that is with the wheels only, and the top, the steering wheel and the windshield removed; that is the invention contemplates a comparatively large box, and one which of necessity must possess great strength in order that the motor vehicle contained therein may be properly guarded from injury during the shipment thereof. My invention is particularly efficacious in the shipment of automobiles by sea in which as is well known the boxes or cases within which goods are shipped are commonly subjected to rough handling, and have to be inordinately strong in order to withstand the stresses which they are called upon to bear.

My invention, however, relates to shipping box or case structure, and not to such supporting holding and positioning means as are commonly provided in order to prevent movement of the automobile within the box; and as a matter of course a box made in accordance with my invention may be used for shipping parts of automobiles; such as engines, frames, assembled running gears without bodies, etc., and in fact for any service wherein a box having enhanced strength and resistance to such stresses as it may meet, is required.

The principal object of my invention as will be inferred from the premises is to provide a shipping box of the class referred to which will have strength in excess of the strength heretofore commonly inherent in such boxes; that end being attained by certain features of construction, arrangement and co-operation of the elements which go to form the box, all as will hereinafter and at length more fully appear. A further object of my invention is to provide such a box which is made up of wall sections each complete in itself, and of proper dimensions and construction to form a side, an end or a top or bottom of a finished box; so that said parts, sections, or panels may be made up as completed units and shipped flat or knocked down from the place where they may be made to the best advantage, to the place where they are to be used, and there assembled. Incidently, automobiles are commonly boxed by positioning them properly upon the bottom of their box or case, and then building up the internal supporting structure for holding them in place in the box, and placing the sides and ends of the box about them; so that the making of the box from separate panels or sections not only facilitates the manufacture, shipment and storage of box parts and material but provides for the building up, as it were, of the box about the device to be shipped with a minimum of waste as regards the labor necessary to effect the boxing of the same for shipment.

With the above and other objects of invention in view my invention consists in the improved shipping box illustrated in the accompanying drawing, described in the following specification, and particularly claimed; and in such variation and modifications thereof within the scope of the concluding claims, as will be obvious to those skilled in the art to which my invention relates.

In the drawing accompanying and forming a part of this specification and wherein the preferred embodiment of my invention is illustrated:

Figure 1 is a view showing my improved shipping box in perspective, the external sheathing or boards surrounding and enclosing the internal frame thereof being broken away to better show various features of the box.

Figure 2 is a view showing one of the side sections or panels which go to form the box, as seen from within the box, this view showing a different form of bracing than that shown in Figure 1.

Figure 3 is a view showing one of the end wall sections likewise as seen from within the box.

Figure 4 is a similar view showing the bottom or top section, the bracing in this view differing somewhat from the bottom and cover bracing in Figure 1.

Referring now to the drawing, the reference numerals 5 designate four longitudinally extending frame members all identical in form with one another; 6 designates four transverse frame members likewise identical each with the other; and 7 a like number of similar upright members or corner posts; said several members being in fact all alike except as regards their length. These frame members are joined together at their ends, and extend along the several corners of the box, as shown; and they ob-

viously extend at right angles to one another at each of the corners in the completed box.

Each frame member is cut partly away at its ends whereby outwardly opening recesses 9 right-angular in form are provided at the ends of the said members. The inner transverse walls of the recesses provide shoulders at 10, and the extremities of the frame members which extend along the recesses form tenons 11 which extend beyond the shoulders as shown. The shoulders and tenons are square or substantially so, and of substantially the same areas, as shown; the recesses being secured by cutting away substantially one half of the frame members at their ends, and throughout the length of the tenon thus formed, as will be understood.

It follows from the construction above described that in the completed box the transverse shoulder of each frame member at every corner thereof abuts against the inner edge of another frame member extending at right angles thereto, that the tenon of the first mentioned frame member extends past and contacts with, or overlaps, the tenons of the second mentioned as well also as that of a third frame member extending at right angles to both said first mentioned and to said second member, and that the extremity of the tenon of the first mentioned frame member contacts with or rests upon the transverse shoulder of said third frame member. This occurs, as will be appreciated, at every corner of the box, and provide joints of more than usual strength at the several corners; as five of the six areas of contact are disposed at right-angles to one another, and the two areas which are parallel are spaced apart from one another; it being appreciated that the several contacting areas are held in engagement throughout in the box in its assembled and completed form.

The frame-work above described is surrounded and enclosed by sheathing made up of a plurality of boards upon or in each face of the box, the boards being fastened to the frame members and the ends of the boards at each end of each face being also fastened to the outer edges of the outside boards of adjoining faces or wall sections throughout and along the several edges of the box. Thus the boards 12 in the upper and lower faces are fastened at their ends to the nearer and further transverse members 5 of the frame, the ends of the boards 13 to the upper and lower longitudinally extending frame members at each side of the box, and the boards 14 which form the end wall sections are likewise fastened at their ends to the upright frame members or corner posts of the box regarding it as it appears in Figure 1 of the drawing.

The recesses at the ends of the frame members obviously provide a frame structure wherein the outer edges of members lie all in a single plane, as regards each face of the box, and the sheathing boards contact with said edges along all edges of the box; and the particular arrangement of the boards above described provides sheathing wherein the boards in every three faces which meet at the several corners extend in three different directions at right angles to one another. Thus, and regarding the upper corner of the box nearest the observer, the boards 12 run at right-angles to the boards 13 of the side of the box at the right, and at right angles also to the boards 14 of the nearer end of the box; and the same is obviously true as regards every corner of the structure.

The three way framing with butt joints at the transverse shoulders 10 and lap joints provided by the tenons 11 in itself provides an extremely strong box construction, and the strength of the box is much more increased by the three way arrangement of the sheathing boards above referred to and the fact that the sheathing is in direct contact with the outer edges of the frame members throughout the entire frame structure; and still greater strength is imparted to the box by causing the ends of the boards in each face thereof to extend beyond the outer edges of the frame members to which said ends are fastened a distance approximately equal to the thickness of the sheathing, as indicated at 15, and nailing the extremities of the boards to the outer edges of the outside boards of adjoining faces by rows of nails 16. Suitable metallic straps 17 are also preferably provided at the several corners to further strengthen the structure and protect the corners; the separate straps always running across the grain of the sheathing boards in one face, and longitudinally of the grain in another face, as will be understood.

The description thus far has proceeded as though the box structure referred to was built up piece by piece, or rather as though the frame was first erected and the sheathing then applied thereto. As a matter of fact my improved box may be built up in that way; although as stated in the preamble hereof I prefer to form the box in sections each complete in itself, and each of proper shape and size to form a top or bottom, a side or an end wall of the finished box. This permits the walls or sections which go to form the boxes, if made in a locality remote from the place of use, to be shipped knocked down, and at reduced freight rates, or if made where used to be stored in a minimum of space; and permits also the building up of the box around an automobile resting upon the bottom thereof as also hereinbefore referred to. Such side,

end and top or bottom wall sections are shown Figures 2, 3 and 4, each being complete in itself and each comprising a plurality of boards the ends of which are secured to frame members formed as aforesaid, and the outer edges of which are spaced inward from the extremities of the boards distances 15 corresponding with the thickness of the sheathing. In completing a box from such wall sections all that is required, after placing the sections in proper relation to one another, is to drive the rows of nails 16 through the extremities of the boards of each section and into the outer edges of the outside boards of adjoining sections, as will be understood.

My improved shipping box is preferably provided with internal diagonal and belt or girth bracing associated with the several wall sections two forms being illustrated in the drawing. That is, in Figure 1, the sides and top and bottom sections are provided with diagonal brace members 18 extending from the middle of a central transverse bar 19 to the end frame members 5; whereas in Figures 2 and 4 double cross bracing 20 is placed between a like transverse bar and the frame members at the ends of the sheathing boards. The bracing of the end sections is shown as the same in Figures 1 and 3 and comprises diagonal members 21 extending between the frame members 5 to which the ends of the sheathing boards of the sections are fastened.

The ends of the diagonal brace members are right-angular in form, as shown at 22 in Figures 2 to 4; and they are fastened to the sheathing with one of each of the several pairs of edges thus provided, as indicated by the reference numeral at 23, in contact with the inner edges of the frame members to which the sheathing boards are fastened. The other edges 24 of the ends of the braces are spaced inward from the ends of the frame members, and from the side edges of the sections, a distance corresponding with the thickness of the frame members; so that in the finished box this second edge will abut against the side of the frame member of an abutting wall section, as shown in Figure 1; from which it follows that the bracing in addition to strengthening the wall section with which it is associated and to which it is fastened in the preferred method of forming the box acts also to position the frame members of adjoining section and cooperate with said frame members to further strengthen the box at the corners thereof.

If deemed necessary or desirable sheets of paper or other material 25 may be secured in place between the sheathing and the brace members during the assembling of said parts to form the wall sections, this being done to make the box more impervious to moisture, which is especially desirable in shipment by sea.

Having thus described and explained my invention I claim and desire to secure by Letters Patent:

1. In a box of the class described, a wall section comprising a plurality of boards of equal length arranged side by side, and two frame members only, said members extending one across each end of said assemblage and to which members the ends of said boards are fastened; the lengths of said frame members corresponding, approximately, with the width of said section, and the arrangement thereof being such that their outer edges are spaced in from the extremities of the boards substantially the thickness of the boards; the outer edges of said frame members being recessed at their ends to provide shoulders and tenons substantially square in form, and of substantially equal areas, the lengths of the tenons being substantially twice the width and thickness thereof.

2. In a box of the class described, a wall section comprising a plurality of boards of equal length arranged side by side, and two frame members only, said members extending one across each end of said assemblage and to which members the ends of said boards are fastened; the lengths of said frame members corresponding, approximately, with the width of said section, and the arrangement thereof being such that their outer edges are spaced in from the extremities of the boards substantially the thickness of the boards; the outer edges of said frame members being recessed at their ends to provide shoulders and tenons substantially square in form, and of substantially equal areas, the lengths of the tenons being substantially twice the width and thickness thereof; and brace members fastened to said boards and the ends of which are right angular in form, one side of each end abutting against the inner edge of a frame member adjacent one end thereof, and the other side of said end being at right angles to and spaced inward from the extremity of the frame member in question, and from the adjacent side edge of the section, substantially the thickness of the frame member.

3. In a box of the class described, frame members one and only one end of which extends along each edge of the box, and the end of each of which members overlaps the ends of two other frame members at the several corners of the box; shoulders, one upon each frame member, and each of which shoulders abuts against the inner edge of another frame member at the extremity thereof; and sheathing enclosing said frame members and comprising a plurality of

boards upon each face of the box, the boards upon every three faces which meet at the several corners of the box running in three different directions.

4. In a box of the class described, frame members one and only one of which extends along each edge of the box, and the ends of which members are recessed to provide a transverse shoulder at each end of each frame member, and a tenon extending beyond said shoulder; each shoulder abutting against the inner edge of the tenon of another frame member, the tenon of the first mentioned frame member extending beyond the shoulder thereof and overlapping the tenon against which the shoulder abuts, and also overlapping the tenon of a third frame member; and sheathing enclosing said frame members and comprising a plurality of boards upon each face of the box, the boards upon every three faces which meet at the several corners of the box running in three different directions and the ends of the boards of each face extending beyond the frame members at said ends, and being fastened to the outer edge of the outside board of an adjoining face of the box.

5. In a box of the class described, frame members one and only one of which extends along each edge of the box, and the end portion of each of which members overlaps similar end portions of two other frame members at the several corners of the box; and sheathing enclosing said frame members and comprising a plurality of boards upon each face of the box, the boards upon every three faces which meet at the several corners of the box running in three different directions and the ends of the boards of each face extending beyond the frame members at said ends, and being fastened to the outer edge of the outside board of an adjoining face of the box.

In testimony whereof I affix my signature.

RAYMOND W. CHALMERS.