July 28, 1953 R. WIERSHING 2,646,910

TRACTOR TRANSPORT BOX

Filed Sept. 8, 1949 2 Sheets-Sheet 1

Fig. 1

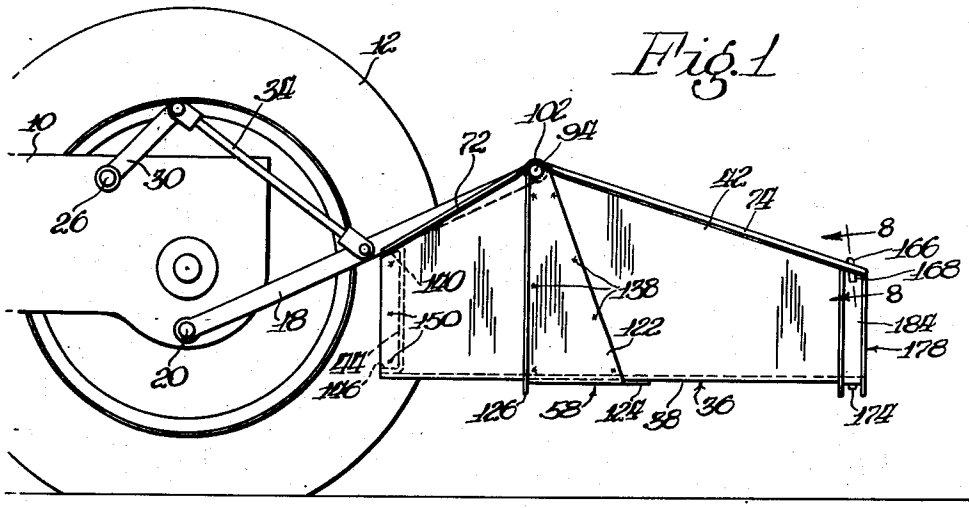


Fig. 2

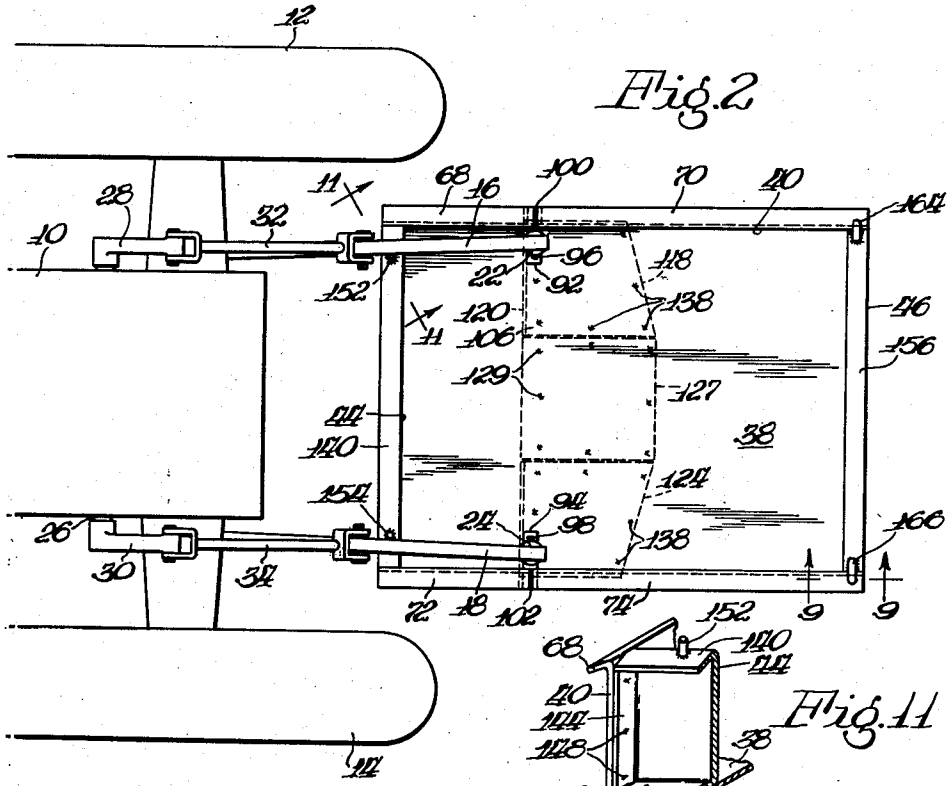
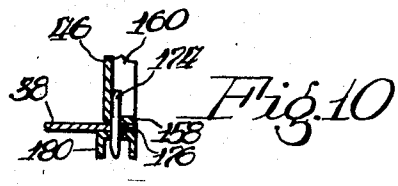


Fig. 11

Fig. 10



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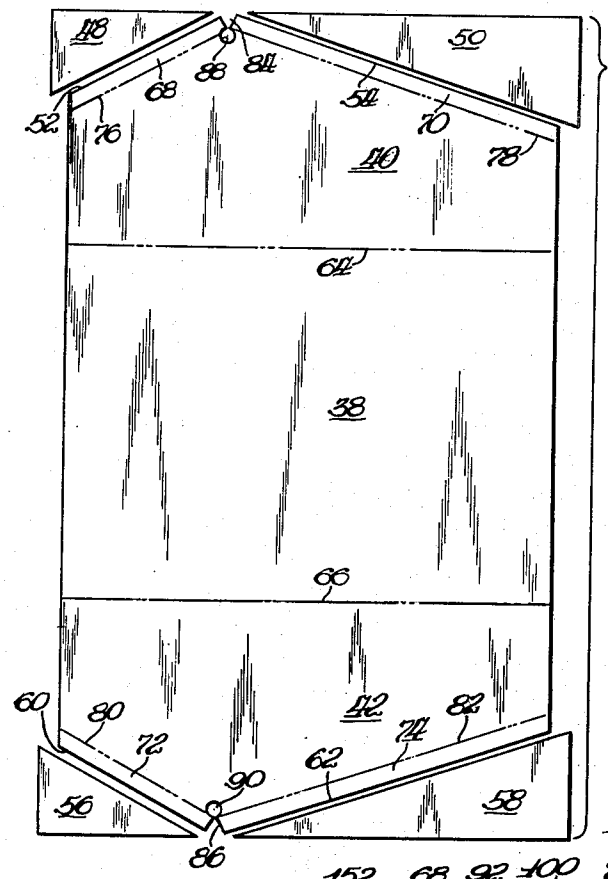


Fig. 3

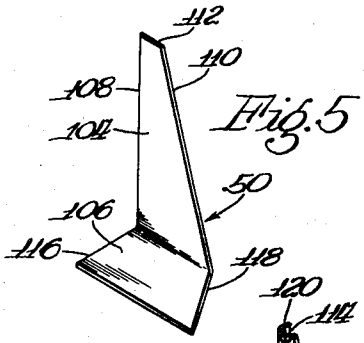


Fig. 5

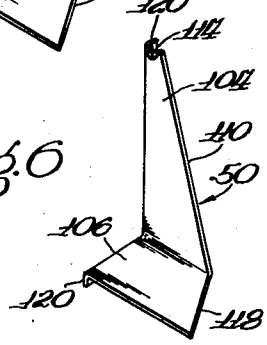


Fig. 6

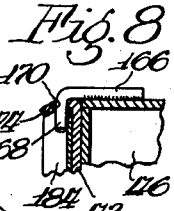


Fig. 8

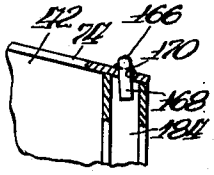


Fig. 9

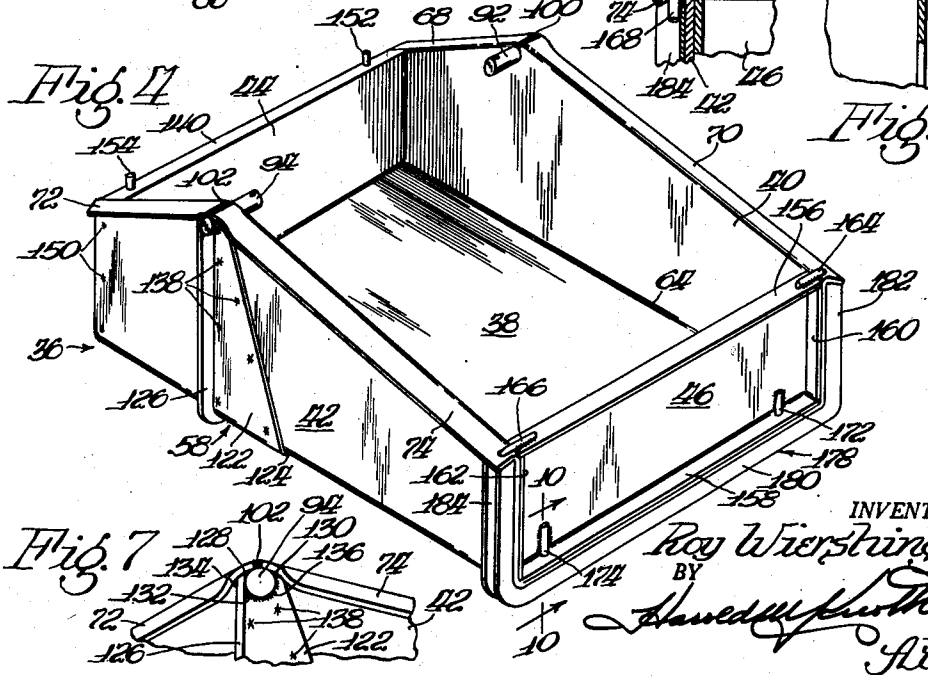


Fig. 4

Fig. 7

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TRACTOR TRANSPORT BOX

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Application September 8, 1949, Serial No. 114,479

4 Claims. (Cl. 224—42.44)

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This invention relates to a tractor transport box and more particularly to a light weight sheet metal box that can be attached to the draft or equivalent carrying structure of various types of agricultural tractors to enable such tractors to carry medium sized loads.

Transport boxes of the general class referred to are known. The principal object of the present invention is to improve the general design and construction of transport boxes of this character to the end that they may be simply and economically produced and marketed at low cost. In this respect, it is a feature of the invention to produce a box of a single rectangular sheet of metal bent to provide a floor and opposite side walls, and to utilize portions trimmed off the sheet metal in the formation of the box as reinforcing members for the side walls and portions of the box floor, thus minimizing the amount of waste or scrap ordinarily left over because of the peculiar shape of these boxes.

A still further feature of the invention resides in the provision of improved means for mounting or carrying the box on the draft arms of a tractor of the Ford or Ferguson type, or on equivalent or comparable carrying structure of tractors of other types. Specifically, the mounting means takes the form of a pair of coaxial pins or trunnions carried respectively in the side walls of the box and secured to these side walls by portions of the respective reinforcing members and flanges on the upper edges of the box side walls.

The foregoing and other important objects and desirable features inherent in and encompassed by the invention will become apparent as a preferred embodiment of the invention is disclosed in detail in the following description and accompanying sheets of drawings in which:

Figure 1 is a side elevational view of the rear portion of a tractor of the type referred to and having the transport box carried thereon in carrying position.

Figure 2 is a plan view of the structure shown in Figure 1.

Figure 3 is a view showing the development of the box from a rectangular piece of sheet metal.

Fig. 4 is a perspective view of the box.

Figure 5 is a perspective view of one of the reinforcing members as it appears in a preliminary stage of its formation.

Figure 6 is a similar view of the same member in its completed form.

Figure 7 is an enlarged fragmentary view showing the mounting of one of the trunnion pins and its relation to the flanges of the side wall and the associated reinforcing member.

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Figure 8 is an enlarged fragmentary sectional view taken on the line 8—8 of Figure 1 and showing the upper mounting at one side of the endgate.

Figure 9 is a fragmentary sectional view on the same scale and of the same structure as in Figure 8, this view being taken along the line 9—9 of Figure 2.

Figure 10 is a fragmentary sectional view taken on the line 10—10 of Figure 4 and showing one of the mounting pins for the lower edge of the endgate.

Figure 11 is a fragmentary perspective view taken generally along the line 11—11 of Figure 2 and showing one of the front corners of the box.

The rear portion of the tractor illustrated in Figures 1 and 2 may be considered typical of either of the types mentioned above and comprises a longitudinal body 10 carried on a pair of rear traction wheels 12 and 14, the left hand wheel 14 being omitted from Figure 1. This tractor has a pair of laterally spaced rearwardly extending draft arms 16 and 18 pivoted at their forward ends at a point beneath the axis of the rear wheels, as indicated at 20 in Figure 1. The rear ends of the arms are provided respectively with mounting portions comprising apertured spherical members 22 and 24, the details of which are familiar to those acquainted with the type of tractor referred to. The tractor is provided with conventional power lift mechanism which includes a transverse rockshaft 26 having power arms 28 and 30 respectively at its ends. These arms are connected by links 32 and 34, respectively, to intermediate portions of the draft arms 16 and 18. It will be appreciated that rocking of the rockshaft 26 effects raising and lowering of the arms 18. The box is indicated in its entirety by the numeral 36 and comprises a floor 38, a right hand side wall 40, a left hand side wall 42, a front wall 44 and a removable rear wall or endgate 46.

The floor 38 and side walls 40 and 42 are formed from a single piece of rectangular sheet metal, the development of which is shown in Figure 3. In the formation of the side wall 40 triangular portions 48 and 50 are sheared therefrom, leaving the side wall 40 with a pair of angularly related upper edges 52 and 54. The formation of the other side wall 42 is accomplished by shearing off triangular portions 56 and 58 respectively, similar to the triangular portions 48 and 50, thus providing the side wall 42 with angularly related upper edges 60 and 62. The side wall portions 40 and 42 are bent upwardly respectively along the lines 64 and 66 at

opposite sides of the floor portion 38, the sheet metal at this stage assuming an inverted tunnel form. The edges 52 and 54 of the side wall 40 are respectively flanged at 68 and 70 and the upper edges 60 and 62 of the side wall 42 are respectively flanged at 72 and 74. In Figure 3, the lines along which the upper portions of the side walls are bent to provide the flanges 68, 70, 72 and 74 are designated respectively by the numerals 76, 78, 80 and 82.

In order that the formation of the flanges 68 and 70 may be simply and easily accomplished, the portion of the side wall at the junction of the angularly related edges 52 and 54 is notched, as indicated at 84 in Figure 3. The corresponding portion of the other side wall 42 is similarly notched, as at 86. The side walls 42 and 40 are respectively apertured at 88 and 90, to receive trunnion pins or cross elements 92 and 94. These pins serve to mount the box 36 on the draft arms 16 and 18, the pins passing respectively through the apertured spherical members 22 and 24 in the arms (Figure 2). Those familiar with the type of tractor structure illustrated will appreciate that the mounting of the forward ends of the arms 16 and 18 on the tractor includes provision for limited lateral movement of the arms, whereby the arms may be moved toward each other sufficiently to accommodate connection with the pins 92 and 94. The pins 92 and 94 receive locking members such as cotter pins 96 and 98, respectively, to maintain the carrying connections.

The flanges 68 and 70 on the side wall 40 are respectively substantially coextensive with the upper edges of that side wall and, when the flanges are formed to project generally normally to the outer surface of the side wall, the portions thereof proximate to the notch 84 substantially meet and lie in close proximity to accommodate a seam weld as indicated at 100 in Figures 2 and 4. The flanges 72 and 74 on the other side wall 42 are substantially related and may be joined by a seam weld at 102 (Figures 1, 2, 4 and 7).

Although in general the flanges 68, 70, 72 and 74 are preferably bent downwardly at an acute angle to the planes of the side walls to which they are adjoined, thus giving these side walls greater strength, the portions of the flanges proximate to the welds at 100 and 102 are preferably normal to the side walls, so that the trunnion pins 92 and 94, respectively received in the apertures 88 and 90 are overhung by the associated joined flanges (Figures 4 and 7).

As mentioned above, it is one of the principal features of the invention to minimize waste or scrap in the production of each box. To this end, the triangular portions 50 and 58 are utilized as reinforcing members respectively for the side walls 40 and 42 and proximate portions of the floor 38. The triangular portion 50 is bent to L shape as shown in Figure 5 and is thus provided with an upright leg 104 and a transverse or horizontal leg 106. The reinforcing member thus provided is disposed with its narrowest apex or tip upwardly so that the upright leg 104 has front and rear downwardly diverging edges 108 and 110. A small portion of the tip or apex of the longer leg of the L is sheared off so that the upper end of the upright leg is straight across and wide enough, as at 112, to accommodate the formation therein of a substantially circular aperture or notch 114 which is the same size as the apertures 88 and 90. The diverging edges 108 and 110 continue into the relatively wider horizontal leg 106, so that the leg 106 is similarly provided with inwardly diverging edges 116 and 118; the area of the horizontal leg 106 is thus substantial and increases toward the free end thereof. As shown in Figure 6, the reinforcing member made from the triangular portion 50 is flanged along its forward edges 108—116 to provide a continuous flange 120 which increases the strength of the reinforcing member.

The reinforcing member made up of the triangular portion 50 constructed as shown in Figures 5 and 6 is positioned at the outer surface of the right hand side wall 40, with the apertures 88 and 114 in alinment to receive the right hand trunnion pin 92. The other triangular portion 48 is provided in a manner similar to that of the portion 50, the two triangular portions, when completed, being symmetrical and the portion 58 comprising a left hand reinforcing member having an upright leg 122, a transverse or horizontal leg 124 and being flanged along its front edge at 126. As best shown in Figure 2, the horizontal legs 106 and 124 underlie substantial portions of the floor 38 but do not themselves overlap. A rectangular plate 127 may be secured, preferably by spot-welding at 129, to that portion of the floor between the legs 106 and 124.

The upper end of the upright leg 122 of the left hand reinforcing member is apertured in a manner similar to the aperturing of the right hand member at 114, for registration with the left hand side wall aperture 90. The upper ends of the flanges 120 and 126 on the reinforcing members are respectively proximate to or overhung by the side wall upper edge flanges 68 and 72. As best shown in Figures 4 and 7 the three associated flanges come together in a zone at the apex of the downwardly diverging side walls of the respective upper edge to provide a pocket in which the outer projecting end portion of the trunnion pin 94 (or 92) is received. The flanges 72, 74 and 126 are welded to circumferentially spaced portions of the pin 94, as at 128, 130 and 132, respectively. In addition, the upper end of the flange 126 may be welded at 134 to the proximate portion of the flange 72. Further, the remaining circumferential portion of the pin 94 may be welded to the face of the upright leg 122 of the left hand reinforcing member, as indicated at 136. The proximate portions of the flanges 68, 70 and 120 at the right hand of the box are similarly arranged with respect to the right hand trunnion pin 92. In addition, the reinforcing members are preferably spot-welded to the proximate side wall and floor portions, as indicated in Figures 1, 2 and 4 by the numeral 138.

The front wall 44 is a rectangular sheet flanged at all four of its edges, the upper, lower and right hand flanges being illlustrated in Figure 11 at 140, 142 and 144. The lower flange is preferably spot-welded at 146 to the floor and the right hand flange is preferably spot-welded at 148 to the forward portion of the right hand side wall 40. The right hand flange is preferably spot-welded at 150 (Figures 1 and 4) to the forward portion of the left hand side wall 42. The upper flange 140 is preferably at an acute angle to the plane of the wall 44, the angle being such that the flange 140 readily accommodates the upward and rearward inclination of the arms 16 and 18 when the box is in carrying position.

As previously stated, the arms 16 and 18 are mounted for limited lateral swinging. In order that the swinging may be eliminated so that the

box is centered behind the tractor, the front wall 44 carries means in the form of a pair of upstanding lugs 152 and 154 respectively engageable with the arms 16 and 18.

The endgate 46 is provided respectively with upper and lower flanges 156 and 158 and with opposite end flanges 160 and 162 (Figure 4). The upper endgate flange 156 is provided at opposite end portions thereof with retainers 164 and 166, these being preferably welded to the flange 156. As best shown in Figures 8 and 9, the retainer 166 is preferably in the form of a rod bent to L shape and having a depending leg 168 receivable in an aperture 170 in the rear portion of the right hand side wall flange 74. The other retainer is similarly constructed and similarly received by an aperture in the right hand side wall upper flange 70.

The lower flange 158 has a pair of mounting members in the form of upright pins 172 and 174 preferably welded to the endgate 46 and passing respectively through suitable apertures in the flange 158. As best shown in Figure 10, the rear portion of the floor 38 is provided with an aperture 176 for receiving the left hand endgate pin 174. The opposite side of the floor 38 is provided with a similar aperture (not shown) for receiving the right hand endgate pin 172.

The rear end of the box is reinforced, preferably by a U-shaped channel member 178 which has its bight 180 underlying the rear portion of the floor 38 and opposite legs 182 and 184 respectively overlying and rigidly secured, as by welding, to rear portions of the side walls 40 and 42. As suggested in Figure 10, the bight 180 of the channel member is apertured to receive the endgate pins 172 and 174. As suggested in Figures 1 and 9, the upper portions of the channel respectively accommodate the endgate retainers 164 and 166.

Figure 9 shows that the depending portion 168 of the retainer 166 is inclined downwardly and rearwardly. This arrangement insures against accidental upward movement of the endgate. The locking capacity of the inclined retainers 164 and 166 increases in direct proportion to rearward horizontal loading applied to the endgate 46.

It will be seen from the foregoing description that the transport box may be economically constructed. In view of the relationship of the various flanges and the association of the reinforcing members 50 and 58 with the side walls and bottom, the material used may be relatively light weight, such as ten or twelve gauge. The ultilization of the reinforcing members gives the side walls and bottom or floor double thickness where needed. The pocket formation of the flanges surrounding or embracing the trunnion pins is important from the standpoint of providing convenient means for mounting the pins and combining simplicity and relatively great strength at the points at which the box is mounted on the draft arms. Of particular importance is the utilization of the elongated triangular parts or portions 50 and 58 for the formation of the reinforcing members cut scrap or waste to a minimum, since only the smaller triangular portions 48 and 56 need be discarded. In general, the box provided according to the present invention eliminates high cost in manufacture and enables the boxes to be produced and marketed at a price well within the means of the average purchaser.

Other objects and features of the invention not specifically enumerated herein will undoubtedly occur to those versed in the art, as likewise will numerous modifications and alterations in the preferred embodiment of the invention illustrated, all of which may be achieved without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. A transport box of the character described, comprising: a horizontal floor; a pair of elongated side walls joined to and extending upwardly from the floor; each side wall having inner and outer surfaces, opposite ends, and a pair of angularly related upper edges meeting at a junction intermediate said ends and diverging respectively toward said ends so that at least one of said edges inclines downwardly toward one end; means including a pair of flanges respectively on and along the upper edges of each side wall, said flanges on each side wall projecting outwardly to overhang the outer surface of that side wall and substantially meeting at the junction of the related upper edges; means providing apertures respectively through the side walls and alined on a transverse horizontal axis immediately below the junctions of the related upper edges; a pair of trunnion pins projecting outwardly respectively through the apertures to be overhung by the meeting flanges; a pair of side members respectively lying along the outer surfaces of the side walls and apertured to respectively receive the trunnion pins, each member having an upright, outwardly projecting flange lying closely alongside the associated trunnion pin and substantially meeting one of the related upper edge flanges to provide, with the associated upper edge flanges, a box-like structure partially surrounding the associated trunnion pin; and each of said trunnion pins being welded to the associated upper edge flanges and to the associated member flange.

2. The invention defined in claim 1, further characterized in that: each side member is rigidly secured to its associated side wall, and has a bottom, inward extension lying below and rigidly secured to the floor.

3. A transport box of the character described, comprising: a horizontal floor; a pair of elongated side walls joined to and extending upwardly from the floor; each side wall having inner and outer surfaces, opposite ends, and a pair of angularly related upper edges meeting at a junction intermediate said ends and diverging respectively toward said ends so that at least one of said edges inclines downwardly toward one end; means including a pair of flanges respectively on and along the upper edges of each side wall, said flanges on each side wall projecting generally normal to said side wall to overhang one of said side wall surfaces and substantially meeting at the junction of the related upper edges; means providing an aperture in each side wall immediately below the associated meeting flanges, said apertures being alined on a transverse horizontal axis; a cross element passed through each aperture and projecting in the same direction as the associated flanges so as to be closely overhung by said flanges; a side member lying along each side wall on the surface thereof overhung by the associated flanges, said side member being apertured to receive the associated cross element and having a flange projecting in the same direction as the associated upper edge flanges and substantially meeting at least one of said upper edge flanges so that all the associated flanges form a pocket into which the associated cross element is received; and means securing each cross element to the associated pocket-forming flanges.

4. A transport box of the character described, comprising: a horizontal floor; a pair of elongated side walls joined to and extending upwardly from the floor; each side wall having inner and outer surfaces, opposite ends, and a pair of angularly related upper edges meeting at a junction intermediate said ends and diverging respectively toward said ends so that at least one of said edges inclines downwardly toward one end; means including a pair of flanges respectively on and along the upper edges of each side wall, said flanges on each side wall projecting from said side wall to overhang one of said side wall surfaces and being substantially coextensive with the related upper edges at the junction of said edges; means providing an aperture in each side wall immediately below the junction of the respective upper edges and overhung by the associated flanges, a cross element passed through each aperture and projecting in the same direction as the associated flanges so as to be closely overhung by said flanges; a side member lying along each side wall on the surface thereof overhung by the associated flanges, said side member having a flange projecting in the same direction as the associated upper edge flanges and substantially meeting at least one of said upper edge flanges alongside the associated cross element so that all the associated flanges form a pocket into which said associated cross element is received; and means securing each cross element to the associated pocket-forming flanges.

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