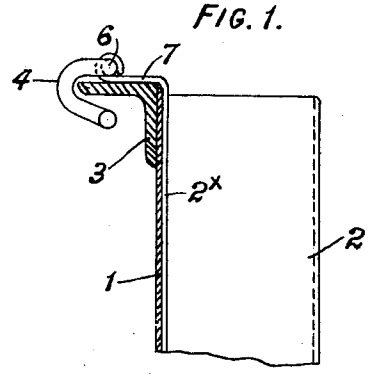
April 25, 1933. B. THOMAS ET AL 1,906,191

BOX AND SHELVES AND PARTITIONS THEREFOR

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FIG. 1.



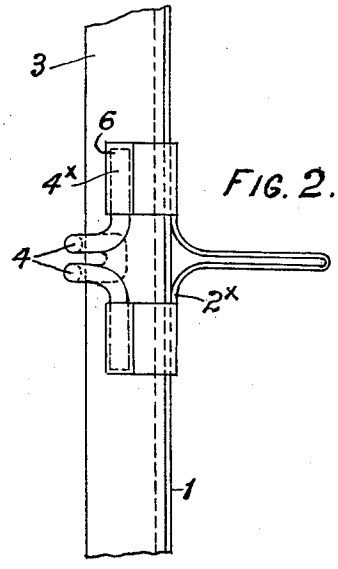
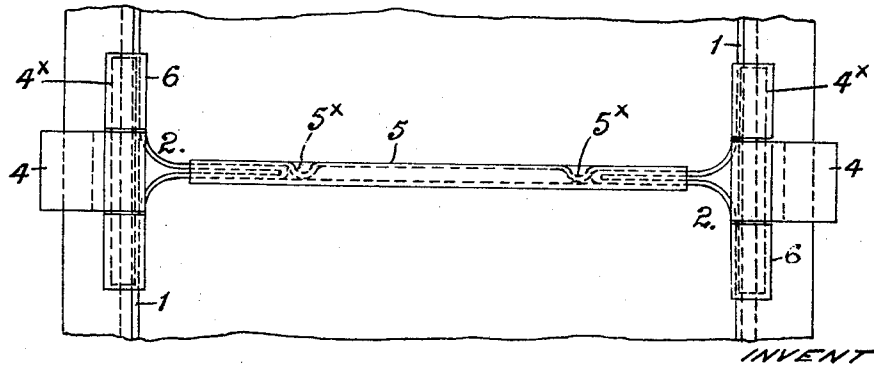


FIG. 2.

FIG. 5.



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BOX AND SHELVES AND PARTITIONS THEREFOR

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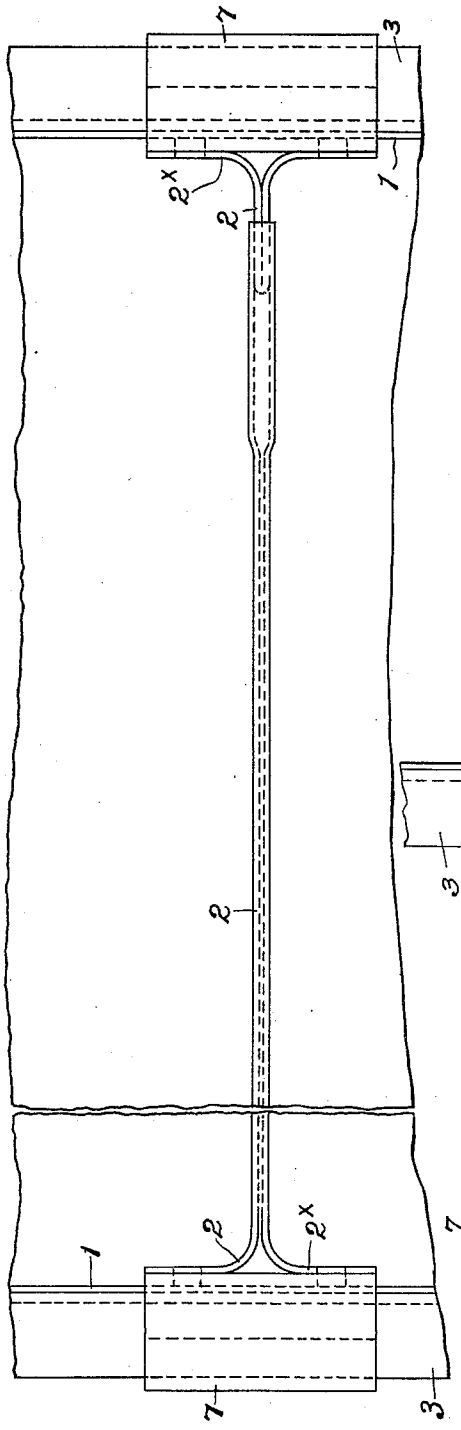


FIG. 7.

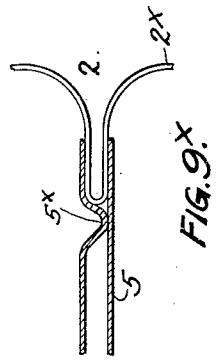


FIG. 9.x

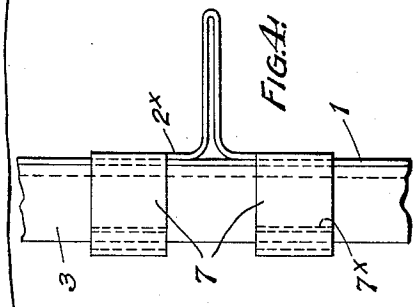


FIG. 4.

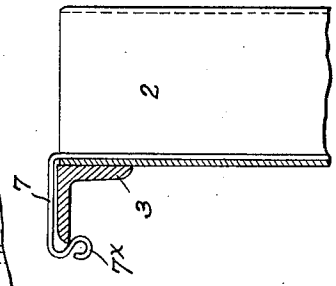


FIG. 3.

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BOX AND SHELVES AND PARTITIONS THEREFOR

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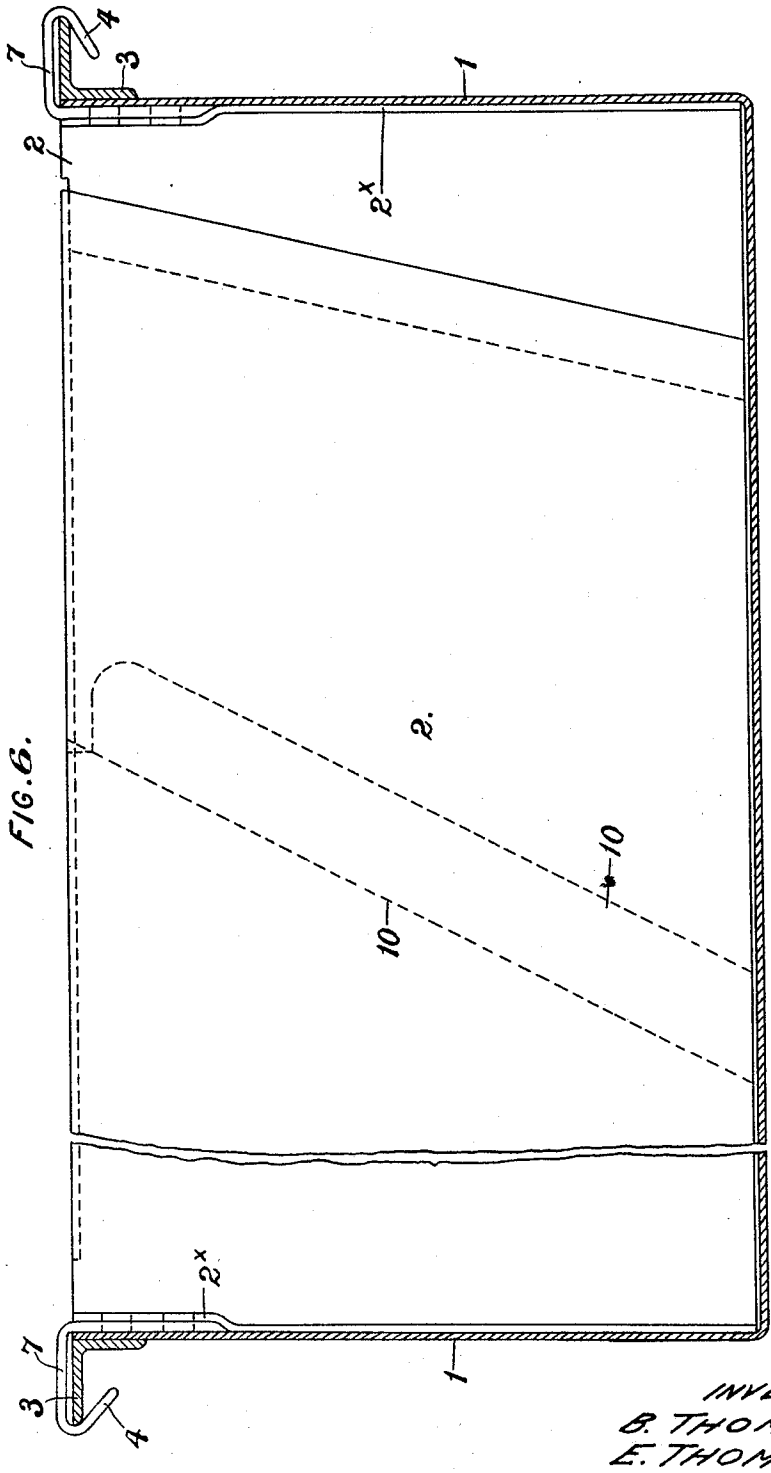


FIG. 6.

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FIG. 8.

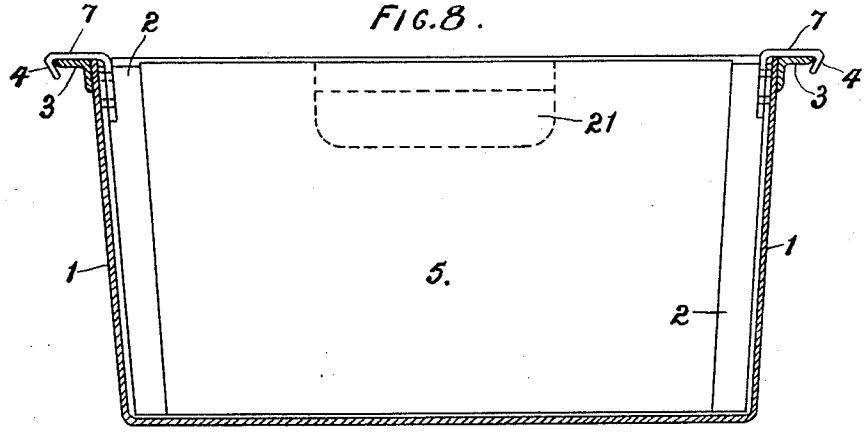
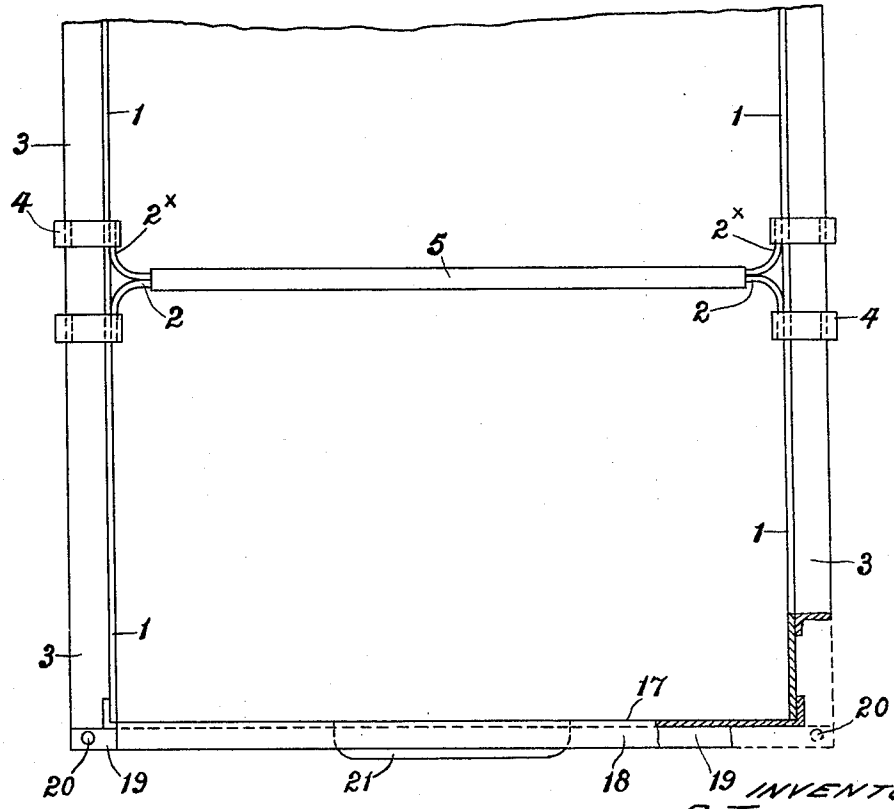


FIG. 9.



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BOX AND SHELVES AND PARTITIONS THEREFOR

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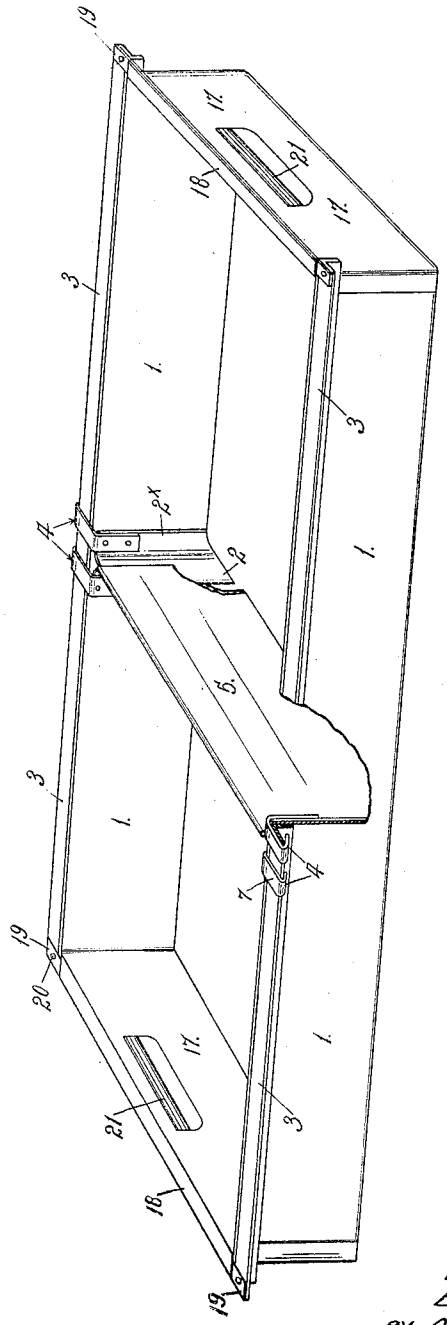


Fig. 10.

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UNITED STATES PATENT OFFICE

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BOX AND SHELVES AND PARTITIONS THEREFOR

Application filed April 25, 1929, Serial No. 358,116, and in Great Britain May 1, 1928.

This invention has reference to boxes or holders, and partitions for same, for holding or storing "stores" or for other purposes of a similar character in which one or more movable or adjustable partition is or are used, whereby the box or holder can be divided into two or more spaces or compartments to accommodate various quantities of stores, or different kinds or species of stores or articles; and it relates more particularly, but not exclusively, to the case where wing-shaped devices are used at the ends of the partition and come next the inside surfaces of the box.

In the storing of articles in boxes such as are used in works for holding engineers' and like stores of various kinds, the practice is to have a multiplicity of boxes arranged on racks, one above the other, the boxes being readily placed in position or removed as desired for various purposes; and it is also, in some cases, the practice to employ boxes divided up into chambers or compartments by using adjustable partitions in them, so that the boxes cannot only be divided up into sections or separate compartments, but these may be of different capacities; and this invention relates to this type of box, and to the construction of the partition which form the separate compartments, by which they not only can be readily changed in position, but when changed, they will be rigidly held in position, and without any fastening means; and to this end each partition is made in parts, which are so formed that when they are placed in position, the act of placing them in position causes the parts to act on one another and press them apart so that the ends of same—which preferably are in the form of wing members—come against and are pressed onto the sides or interior surfaces of the box, and grip same and are rigidly held by the frictional grip.

In construction, one of the separate parts of the partition within the wing end members is adapted to fit onto another, and to act on same so as to press the parts apart, and so press the wing end members onto and grip the sides or inner surfaces of the box; and in one form the partition comprises a partition part proper or separating member, and two end or wing pieces, which are of a springy character, and lie on the inside surfaces of opposite plates of the box; and the partition proper may consist of a folded or double sheet, the ends of which are spaced slightly apart, and are adapted to fit over the inwardly projecting edges or webs of the wing or side pieces, which are more or less of T form, with curved parts extending from the two side flanges or wings to the web, in which the metal is folded upon itself. The sheets of the folded or double partition between their ends may be secured together by electric weld spots or in other suitable manner, which when the partition is in place come up against or very nearly to the web of the wing members, so that when they are pressed and slide into position in the box, the spot welds or parts in or on the end of the partition will engage with the webs of the wing pieces and press them onto the inner surfaces of the box against which they bear, so that a very firm hold or frictional engagement of the whole partition within the box is produced.

Further, the springy sheet metal wing members—which may be made by folding a sheet, and then spreading out the two outer edges or parts—are, at their upper ends, provided with a hook which is adapted to lie over an outwardly projecting flange provided on the upper edges of the sides of the box; and when the hooks are engaged with the flanges of the box, they hold the wing members vertically, and when a partition is being shifted, the hooks and wing members can be slid along the sides of the box without tilting or moving out of position, and then fixed in any position required, as described.

In some cases the hooks will be formed on or rigidly connected to the upper edge of the wings, and project out horizontally, and at the point which lies over the edge of the flange of the box side, the hook is turned in angularly or as desired, so that it engages the flange edge; and then the wing member is moved downwards in a circular manner into position on the inside of the box.

The flanges of the box may be provided by an angle bar fixed on the upper part of the

front and back plate of same; they may be formed integral with material of which the box itself is made.

The wing devices or members formed or constructed in this way can be used in connection with any kind of box or shelving, in connection with which they are applicable or can be advantageously employed.

As stated, the hooks not only have the effect of enabling the wing members to be slid along the sides for adjustment, but they hold them steady in the vertical position, so that when moved to any position and let go, the wings or flanges are truly vertical; and so the partition ends can be easily slid over them, and the whole partition quickly fixed in position, in which they will be firm or rigid.

As above stated, the box angle pieces may be provided on the top external edges of the box sides, and they may be detachable, secured by screws or the like, or permanently fixed on the outside; and at the ends of the box there may be a similar angle member.

In some cases, as in the case of boxes for export, it is desirable that the parts should be capable of lying, so that they occupy small "tonnage" on board ship, and the upper angle frames can be placed and packed closely together; and to this end, the boxes or trays may be made of dished form.

In some cases, instead of there being separate end or wing pieces used in connection with and engaged by the edges of the intervening partition part proper, which consists of a folded sheet, or double sheet, there are only two parts, each consisting of a part partition itself, and a wing member or formation; and the two meeting edges of the partition part are made in the manner above described, namely, the edge of one part is open, i. e. the sheets are spaced apart, and this edge will fit over and engage the edge of the other part either vertically, or in an inclined manner or as desired; the parts or edges of the spaced part being provided with spot welds as above described. And both partition parts may be provided with spot welds at different parts, so that the two sheets or folds will be firmly secured together; and the outer ends or edges of the partition parts are bent outwards, and formed into flanges or wings, to which the hooks above specified, which pass over the upper angle flanges of the box or holders are secured. Thus, when the hook of one partition portion is engaged with the flange of the angle bar, and moved down round and about same into position, the other partition portion is similarly engaged with the angle bar flange and moved down, the spread apart meeting edge of the one will pass down or slide over the edge of the other partition part.

The construction of partitions, wing pieces, and hooking or engaging and supporting devices may be used in connection with any kind of box body or holder to which they are applicable.

In the case where the holders are in the form of metal shelves, the flanges of the holder with which the hooks of the partition engage; and along which they can be slid when it is desired to vary the capacity or size of a compartment is a downwardly extending right angle flange at the front of the holder; and the hook being rigid or hinged, and its inner part lying over the face of the flange, and its end bent back, and lying over the edge of the flange, and behind it.

The drawings hereto annexed illustrate the various modifications of the invention.

Of these drawings, Figures 1 and 2 are cross section and plan respectively, showing one form of partition and box, and the connection of same.

Figures 3 and 4 are cross section and plan of a slight modification.

Figure 5 is a plan showing a slightly modified form of hook and hook pin bearings.

Figure 6 is a transverse section of a box, and Figure 7 is a plan of a modified form of construction of partition and hook connection.

Figures 8 and 9 are cross section and plan of a complete box or tray. Figure 9^x is a broken sectional view, partly in elevation, of a detail.

Figure 10 is a perspective view, partly broken out, illustrating the application of the invention.

Referring to the drawings, 1 are the side plates of a box, to which the invention is applied, and 5 is the metal partition proper consisting of a folded or double sheet; 2 are the wing devices, which are of a springy character, and the wings proper 2^x of which lie on the inside surface of the fronts and backs 1 of the box; 3 are the box flanges which in the case shown are in the form of angle bars secured to the upper edges of the plates 1, by screws; or electric welding, or in other similar way; and 4 are the hook devices proper which are carried by or connected with the upper parts of the wing devices 2.

When the flanges are formed out of the upper edges of the side metal 1, these edges may be double thickness, or beaded by folding the metal, or simply consist of one thickness bent outwards.

In the case where the hooks are fixed in the wing pieces as hereinafter described in connection with the drawings, the hinging point of the wing pieces with the box side flanges, is at the same level as the top of the box side.

In most cases shown, the partition proper 5 consists as stated of a folded sheet, and bend being at the top, and the front and back ends of the two parts are slightly spaced apart and adapted to fit over, and be in contact with the outside surface of the vertical

inwardly extending web portion of the wing pieces 2, so that they will be frictionally held together, and thus the parts made a fairly tight fit with one another.

Between these points or ends of the partition 5 which fit over the springy wing devices, the double plates will be secured together at points by spot weldings 5^x or the like; and in Figure 9^x, which is a detail. The spot welds 5^x connect the two plates of the division 5 together, and they are placed at such a position from the edges of same, that when the partition is pushed down over the webs of the wing members 2, they press upon the edges of these members, and force these outwards, so the wings 2^x are pressed on to the sides of the box, and are put and kept under strain or tension so that a permanent frictional grip between the wings proper and the sides of the box is effected and maintained, and when the parts are in place the partition cannot be shifted; but when it is required to change the position of a partition, by lifting off the part 5, the wing members are liberated, and they can be easily slid along the box edge of the position required, when the partition part 5 is then placed in position over them as before described.

With regard to this pressing of the wing devices 2 on to the inside surfaces of the box, instead of the weld spots of the partition 5 being adapted to do this, if the two folded sheets of the partition are secured together by rivets at the right place, the rivets will effect this purpose; or, the partition may be formed in any way which, when it is pressed down into position, the wing devices will be pressed apart.

In the case shown in Figures 1 and 2, the hook 4 consists of bent wire rod, the hook proper being a doubled or folded part of the wire or rod, whilst the other parts 4^x are parallel with the side of the box, and form hinged parts of the hook; these ends fitting in hollow bent over or rolled portions 6 formed on the ends of the strips 7, which are continuations of the side members 2^x of the wing devices 2, the plates from which these parts are formed, being cut so as to produce this construction; but the parts 7 may be made of separate plates or strips and secured by spot welding or rivets to the inside surfaces of the wings 2^x.

In Figures 3 and 4 the strip portions 7 of the wings 2 extend completely across the upper web of the angle bar 3, and their ends are in the form of a roll 7^x, and when in place are adapted to lie under the edge of the angle bar as shown; and in placing the wing devices 2 in position, they may be inclined or tilted, and then when the parts 7^x are under the edge of the angle bar, which then forms the hinging point and devices 2 are moved down so as to lie against the side of the box or tray portion 1, and thus constitute holding hooks. In this case the hinging point is at the same level as the top of the box side.

In the construction shown in plan in Figure 5, the hinge portions 4^x of the hooks lie in tubular parts 6 on the devices 2, which are formed similarly as in Figures 3 and 4.

In this Figure 5 the partition 5 consists of a folded or doubled sheet, and its two edges are adapted to fit over and grip the webs of the wing devices 2.

In the construction shown in Figures 6 and 7, the hooks are made of a piece of sheet metal, and when in position they are bent over the outer edges of the angles 3; and in this construction, the webs of the wing devices 2 extend inwards to points which overlap one another, and the edges of one of the wing webs lie close together, whilst the plates of the adjacent end of the other wing web are spread out, and they are so formed, that when pressed down into position, they will lie over and engage by their springiness the outer surface of the web of the other wing device.

In the act of placing these parts in position, the wings will be tilted up at an angle, and the hooks 4 will be passed over and under the angles 3, and then by moving the wings will be tilted up at an angle, and the hooks 4 will be passed over and under the angles 3, and then by moving the wings down into their normal position as shown in Figures 6 and 7—the right hand wing devices being first so moved—the outer spread part 2^x of the other wing device will be passed over the other wing edge 2, and take the position shown in Figure 6.

In the particular case shown, the hooks 4 are formed of a plate 7, which is secured by rivets or welding to the wings of the wing devices 2.

In the construction shown in Figures 6 and 7, the engaging ends of the two wing web portions are to one side as shown, but they may be in the centre as indicated by the dotted lines 10.

With regard to the construction of the box or holder, shown in Figures 8 and 9, it is desirable that they should be capable of being placed and packed closely together, so that they will occupy small tonnage on board ship; and an illustration of this form is given in these Figures, in which the bodies of the tray are tapered so that they can fit and lie largely one within another, the flanges 3, standing above one another, when packed.

In the particular construction shown, the wing devices 2 are of the kind shown and described with reference to Figures 3 and 4, over which fits the partition part 5, but they may be of any other suitable form.

In this case angles 3 extend beyond the end plates 17, which are bent outwards and constitute a horizontal flange 18, under which is laid a strip of metal 19, and to which it is

secured; and the ends of the strip lies over the projecting ends of the angle bars 3, to the top member of which it is secured by a rivet or spot weld 20, as shown in the left hand corner of Figure 9.

The handles for the boxes are formed by forming cuts 21 in the end plates 17, the metal lying within forming a tongue which is rolled up, so that its upper edge will come under the edge of the flange 18, thus forming a round smooth handle.

What we claim is:—

1. Partition means for open top boxes comprising wing members carried by and movable with respect to opposing walls of the box, and a partition slidably cooperating with the wing members, said partition serving to force the wing members into frictional contact with the walls of the box.

2. Partition means for open top boxes or the like comprising wing members, means cooperating with the edges of the box to hold the wing members in position within the box, partitions including spaced elements to embrace the wing members in relative sliding movement of the partitions and wing members, said wing members holding the partitions transverse the box as a division plate.

3. Partition means for open top boxes including wing members, means for supporting the wing members to bear against and project inwardly from opposing side walls of the box, and a partition slidably fitted over and embracing the wing members and movable vertically of the wing members to provide a division plate for the box.

4. Partition means for open top boxes including wing members, means for supporting the wing members to bear against and project inwardly from opposing side walls of the box, and a partition slidably fitted over and embracing the wing members and movable vertically of the wing members to provide a division plate for the box, said partition serving to force the wing members into frictional contact with the inner surfaces of the box walls to maintain the division plate rigidly in position.

5. Partition means for open top box members including wing elements, hook members cooperating with the upper edges of the box walls to support the wing elements on the inner surfaces of the side walls of the box, and a partition vertically and slidably co operating with the wing elements to arrange said partition transversely of the box as a division plate.

6. Partition holding means for open top boxes including wing members bearing against the inner surfaces of the walls of the box and extending inwardly from such walls, means connected to the wing members and interlocking with the upper edges of the walls of the box to hold the wing members in position, and a double wall partition to fit over and slidably cooperate with the wing members to provide for holding said partition transverse the box as a division plate.

7. Partition holding means for open top boxes including wing members bearing against the inner surfaces of the walls of the box and extending inwardly from such walls, means connected to the wing members and interlocking with the upper edges of the walls of the box to hold the wing members in position, and a double wall partition to fit over and slidably cooperate with the wing members to provide for holding said partition transverse the box as a division plate, the movement of the partition in slidable cooperation with the wing members serving to force said wing members apart to compel frictional contact between the wing members and the inner surface of the box walls.

8. Partition means for open top boxes including wing members, means carried by the wing members to engage the upper edges of the walls of the box to support the wing members within the box and transversely thereof, and partitions slidably cooperating with the wing members and adapted to force the wing members into frictional contact with the walls of the box, said partitions and wing members providing a box division.

In testimony whereof we have signed our names.

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EUSTACE THOMAS.