

Oct. 21, 1952

C. R. ROSS

2,614,715

CONTAINER PARTITION STRUCTURE

Filed April 1, 1949

3 Sheets-Sheet 1

Fig. 1.

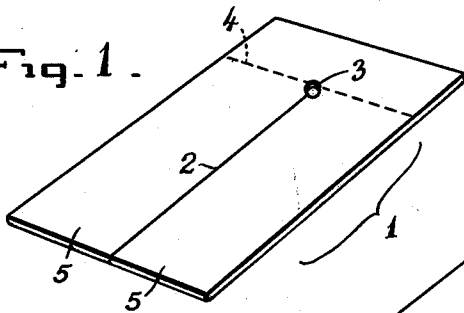


Fig. 2.

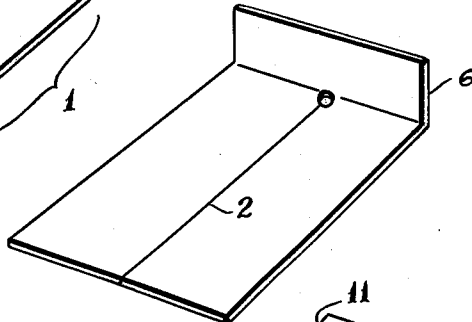


Fig. 3.

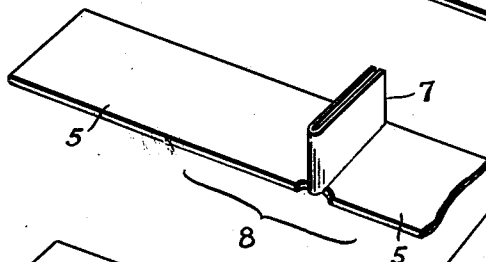
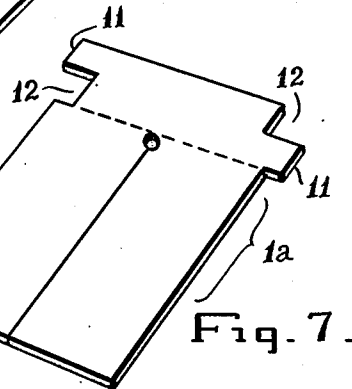
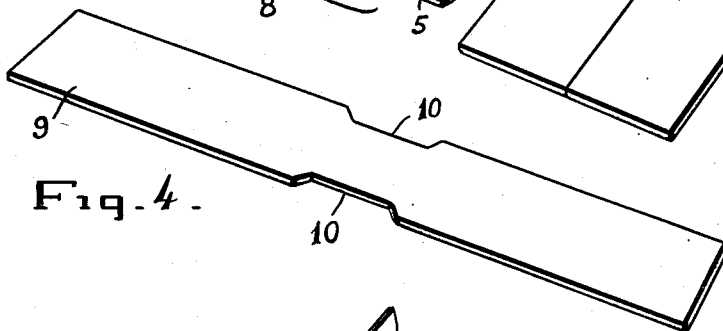


Fig. 4.

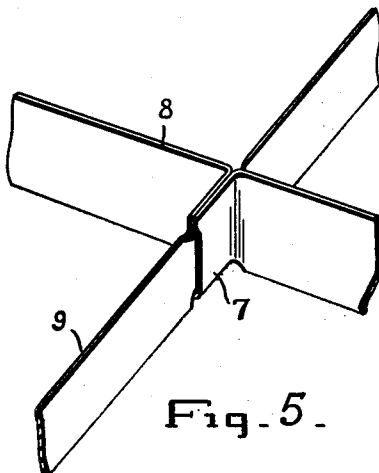


Fig. 5.

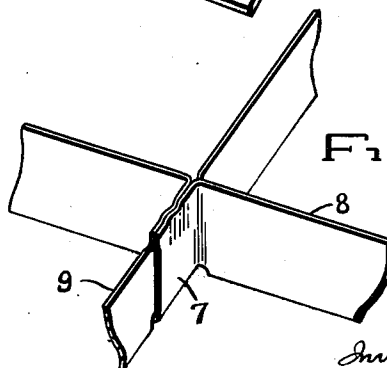


Fig. 6.

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Fig. 8.

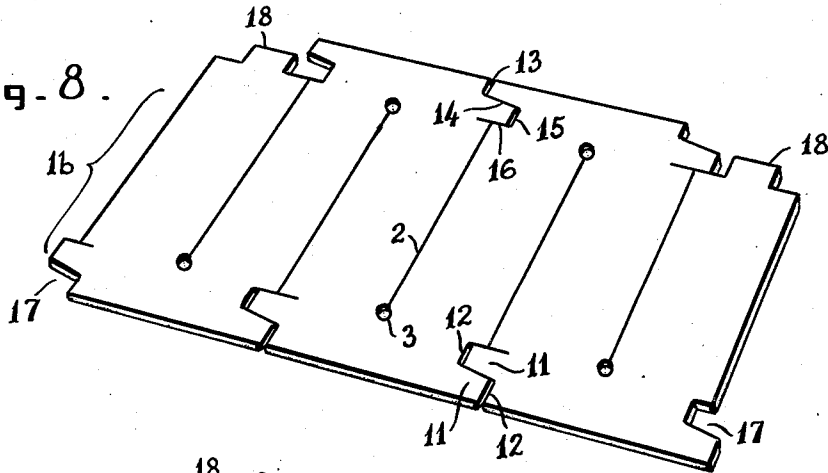


Fig. 9.

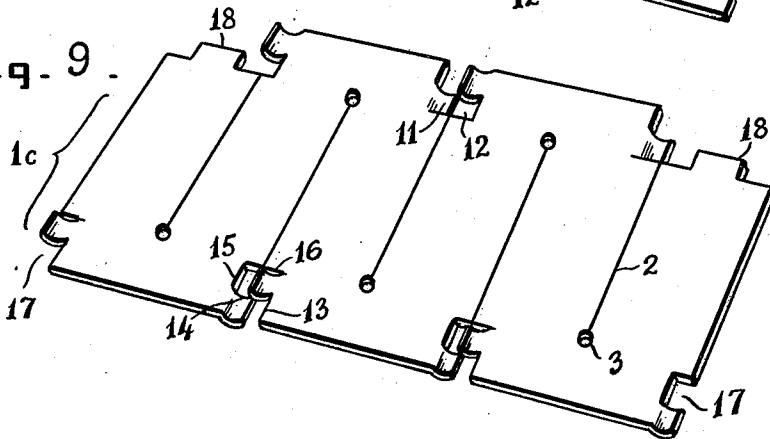
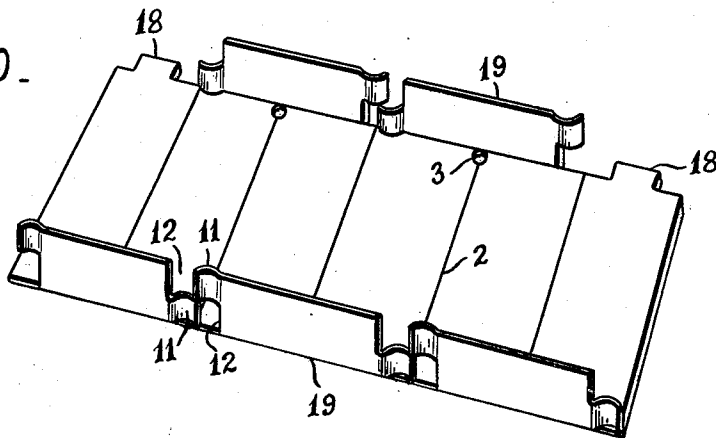


Fig. 10.



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Fig. 13.

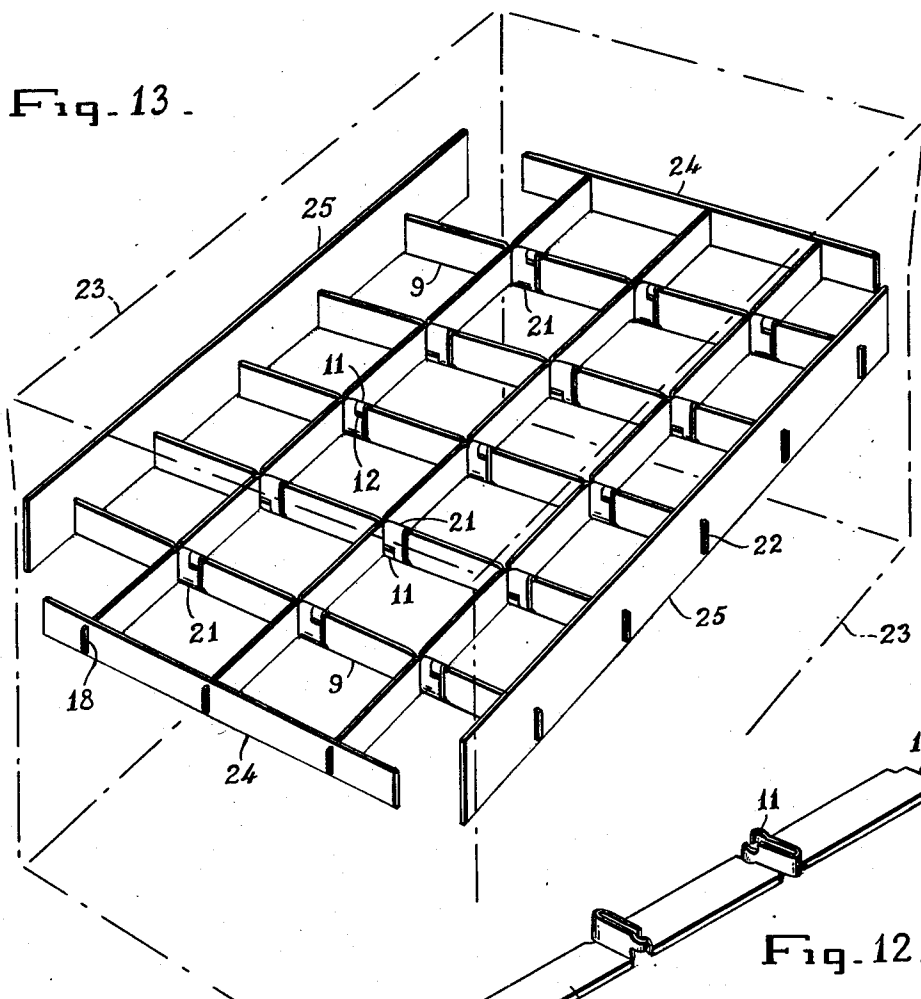


Fig. 12.

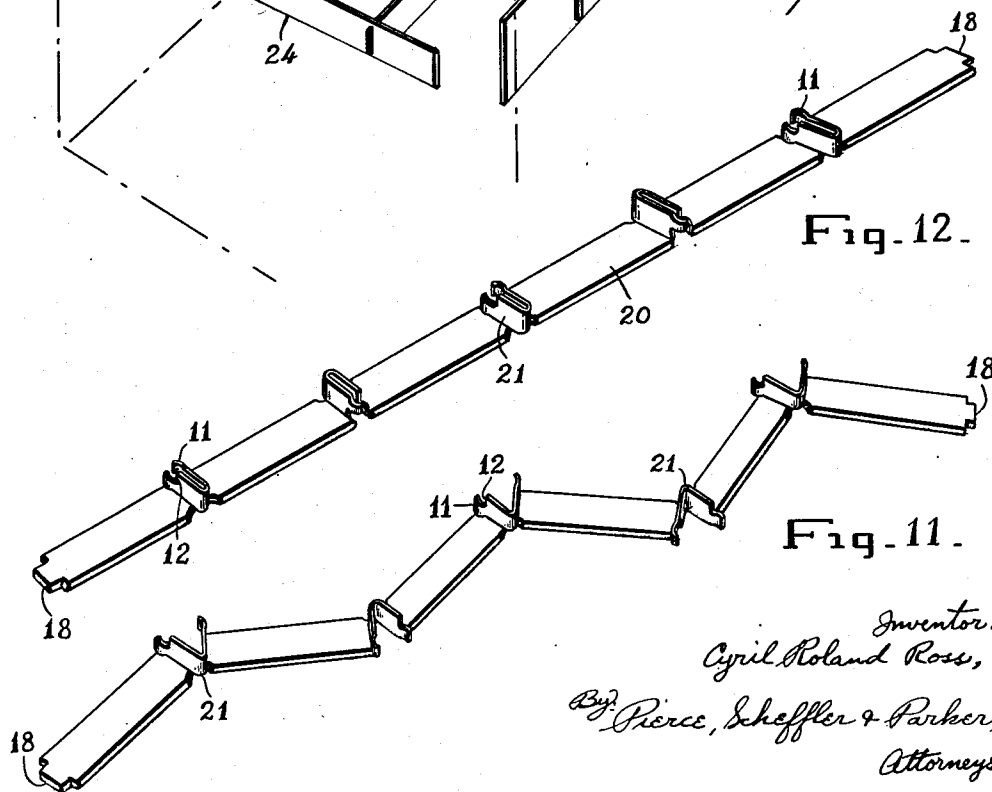


Fig. 11.

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UNITED STATES PATENT OFFICE

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CONTAINER PARTITION STRUCTURE

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5 Claims. (Cl. 220—22)

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This invention relates to partition structures. Structures may be formed of two or more jointed parts of strip or plate formation in a variety of ways, such as by welding, riveting or by notching the parts to fit together. When the members are notched they must not be too greatly weakened thereby. When riveting or welding is employed considerable time is required to fabricate the structure. For example, crates include division members, for furnishing skeleton compartments for bottles or other containers, made of strip formation, rods, or other elements lying crosswise to each other.

The main object of this invention is to provide an improved form of jointed structure including two or more members of which at least one is formed from a plate.

According to the present invention there is provided a method of forming a member for a jointed structure consisting in subjecting a plate to cutting, expanding and pressing processes to assume a shape including at least one U-shaped clip adapted to receive a separate secondary member which is joined by the clip to the first member. The secondary member of any desired shape and section to fit the clip may merely rest in or be secured in the clip. If the latter it may be retained by applying pressure to the walls of the clip, by one or both of said walls or by tongue means.

Also according to the present invention there is provided a method of forming a member for a jointed structure or division member for a crate or the like, consisting in forming a substantially rectangular plate to a predetermined size with shaped corners and a slit extending inwardly from one edge parallel with opposite side edges, said shaped corners forming at least one tongue and notch, pressing this part of the plate into a plane at right angles to the plate, extending the plate to open out the slit and then subjecting it to a shaping operation to form an elongated strip with a U-shaped clip having at least one tongue and notch. The method of forming a member for a jointed structure, crate or the like may consist in forming a rectangular piece of plate to a predetermined size with shaped corners and slits parallel to each other passing inwardly from opposite edges alternately, each slit at its outer end being shaped to angular formation so as to subsequently form at least one tongue and notch and pressing the slit edges into a plane at right angles to the plate, extending the plate longitudinally to open out the slits and then subjecting the extended plate to pressing operations to

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provide an elongated strip member with U-shaped clips at intervals with projecting tongues and notches.

The method of forming a division structure for crates may consist in forming a number of elongated main division members according to the foregoing paragraph and locating said members at spaced intervals at right angles to plain secondary division members with the U-shaped clips embracing the latter so that all the division members are in one plane, and then pressing the clip tongues around the secondary division members into the notches.

A division structure for a crate may include one or more elongated main division members furnished with one or more U-shaped clips in its length, said clips lying at right angles to the strip on one face thereof but in the same plane with a tongue on at least one side of the clip to be pressed around a secondary division member inserted into the clip at right angles to the main division member so that the tongue locks it in position and enters a notch on the other side of the clip. A division member may be furnished with a number of U-shaped clips arranged at predetermined intervals and such clips may open onto the upper and lower edges of the member alternately to receive cross secondary division members from above and below the main division member. The secondary division members may be furnished with shallow notches where each clip of a main division member is adapted to be located.

Referring now to the accompanying drawings in which—

Fig. 1 is a perspective view of a plate after the first or slitting operation for forming a single clip;

Fig. 2 is a plate after the second or bending operation;

Fig. 3 is a perspective view of the formed member;

Fig. 4 is a perspective view of a notched secondary member;

Fig. 5 shows the two members joined together;

Fig. 6 shows the two members held at their joint by crimping;

Fig. 7 is a perspective view of a plate after the first slitting and shaping operation for forming a single clip with tongues and notches;

Fig. 8 is a perspective view of a plate after the first slitting and shaping operation for forming several clips with tongues and notches;

Fig. 9 is a perspective view of a similar plate but with the tongues partly curved;

Fig. 10 is a perspective view of the plate after the second or bending operation;

Fig. 11 is a perspective view of the third elongating operation;

Fig. 12 is a perspective view of the finished member, and

Fig. 13 is a perspective view of an assembled jointed structure forming division members for a crate.

In a particular embodiment of this invention shown in Figs. 1 to 6, a plate 1 of metal is cut to a substantially rectangular shape and a predetermined size according to the length and depth of member required. A slit 2 is then formed extending from one edge to terminate a given distance from the opposite second edge and running parallel with the two remaining edges. The slit can terminate in a small hole 3 to prevent cracking or tearing of the plate during further operations. The second edge is turned up at right (or other) angles to the plate and the bending line 4 is through the small hole at right angles to the slit. The plate is then extended in its own plane to open the slit until the plate parts 5 divided by the slit become aligned with each other and the third bent up part 6 bends in line with the slit to form a U-shaped clip 7. This clip lies on one face of the finished member 8 and at right angles thereto unless it is additionally bent into a desired position. If required the second edge is bent to a less (or greater) angle than a right angle and then the aforesaid two parts 5 are not opened out to an aligned position but into a V-formation with the clip at the juncture projecting outwardly (or inwardly) from said parts. A separate secondary member of any desired section, it could be a strip 9 or plate or rod, may be inserted into the clip to merely rest therein or be secured in any convenient manner. The walls of the clip could be squeezed in firmly as shown in Fig. 5 to grip the secondary member, be indented or deformed or crimped as shown in Fig. 6. The secondary member is shown notched at 10 for location and/or fastening purposes, but this is optional.

In a modification shown in Fig. 7, the plate 1a is cut to form two (there may be more) tongues 11, and is also notched at 12 to receive the tongues, on the clip for turning over to hold a secondary member in position. Either of the members may also have tongues or other integral parts for securing the member or members to a structure or other part.

In another embodiment of this invention shown in Figs. 8 to 12, a plate 1b of metal is cut to a substantially rectangular shape and a predetermined size according to the length and depth of member required. Slits 2 are then formed in the plate from each longitudinal edge to run inwardly alternately from opposite edges and adapted to terminate short of the opposite edge. At the commencement each slit is of angular formation, e. g., the slit is first cut inwardly at 13 from the longitudinal edge for a short distance, secondly almost at right angles at 14 to run almost parallel to the said longitudinal edge, thirdly at 15 at right angles inwardly, fourthly at 16 at right angles back parallel with the longitudinal edge and the second slit 14 (for a less distance than the latter) and then the main part of the slit runs straight across the plate parallel with the end edges to terminate in a small hole 3 short of the other longitudinal edge. The inner

end of the long slit terminates short of the longitudinal edge of the plate in alignment with the fourth angular slits 16 adjacent said edge. The angular formations of the slits are made to cut out tongues 11 and receiving notches 12. When the slits are being made from the opposite edges in the above manner by a pressing or stamping operation, two of the corners 17 of the plate are cut away to be complementary to the angular parts of the slits and the other longitudinal edge is cut away to form end fixing tongues 18 at the corners. The plate shown in Fig. 8 is flat but the pressing tool may be modified to form the plate 1c as shown in Fig. 9 so that the tongues 11 are given a curvature which facilitates the later operation of bending the tongues over during assembly. Apart from this minor feature the two plates are identical and further operations are alike and are shown and described according to the modified plate. The longitudinal edges are next turned upwardly to form parts 19 as shown in Fig. 10 to be at right angles to the plate and the bending line in each case is on the aforesaid fourth slits 16 which lie parallel with the longitudinal edges. The next operation comprises extending the plate longitudinally in its own plane as shown in Fig. 11 so that the slits open out to form a skeleton structure which is then pressed so that it is developed into an elongated member 20 shown in Fig. 12. The member is of a predetermined length and a depth equal to the distance between the slits with narrow U-shaped clip members 21 at spaced intervals in the length of the member. The clip members project at right angles to the member on one face thereof. The clips alternate in that they open alternately on the upper and lower edges of the member and each have a tongue 11 and notch 12 side by side on each side of a clip. Each tongue is opposite a notch on the other side of the clip and thus eventually a notch can receive a tongue.

A number of main members 20 constructed as above can be associated with cross secondary members 9 (with end tongues 22) which are of plain formation other than slight notches 10 formed in their upper and lower edges to accommodate the clips. This ensures that the clips when in position cannot slide on a secondary member. Secondary members are fitted into the various clips and then the clip tongues are bent over the edges of the secondary division members, within the shallow recesses and then into the notches in the other part of each clip. This tongue bending operation can be carried out in a press. Thus a division structure shown in Fig. 13 comprising a number of main and secondary division members can be built up without any welding and riveting and clipped securely together by means of the integral clips on the main division members. The structure can be associated with a crate 23 in any desired manner such as by fitting the tongued ends 18 of the division members through slots in the frame members 24, 25 of the crate and turning, swaging, or riveting the end tongues over to lock the division members into position. The frame members 23, 24 may be secured in the crate structure in any desired manner.

It will be understood a main division or other member can be formed with one clip or any desired number of clips intermediate its ends depending upon what size and type of division or other structure is required. A joint or joints can be formed readily in the above manner between two or more members to suit the requirements

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and a transverse or secondary member need not extend on both sides of a main member.

What I claim is:

1. A partition structure adapted for insertion into a receptacle for dividing the same into a plurality of compartments, said structure comprising at least one main division member and at least two secondary division members, each main division member comprising at least three alined flat division sections integrally joined to each other through alternate flat U-shaped clips which extend laterally from the plane of said division sections, said U-shaped clips each comprising two flat walls lying parallel to each other, each clip wall being integral with one division section along one edge thereof and being integral with its other clip wall along another edge thereof, and each secondary division member comprising a flat strip seated in a clip between the two walls thereof.

2. A partition structure according to claim 1 in which one wall of the U-shaped clip has an integral tongue extending from the upper edge thereof and bent across the edge of the secondary division member seated therein.

3. A partition structure according to claim 1 in which one wall of said U-shaped clip has an integral tongue extending from the upper edge thereof and bent across the edge of the secondary

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division member seated therein and the other wall has a notch therein receiving said bent over tongue.

4. A partition structure according to claim 1 in which said secondary division member has a shallow-recess in one edge thereof which straddles the closed end of the U-shaped clip.

5. A partition structure according to claim 1 in which one wall of the U-shaped clip has an integral tongue extending from the upper edge thereof and bent across the edge of the secondary division member seated therein and in which the secondary division member has shallow recesses in the opposite edges thereof one of which recesses straddles the closed end of the U-shaped clip and the other of which straddles said tongue.

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