To all whom it may concern:

Be it known that I, HORACE B. COLLINS, a citizen of the United States, residing at Oklahoma city, in the county of Oklahoma and State of Oklahoma, have invented certain new and useful Improvements in Knockdown Boxes, Crates, and like Constructions, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to boxes, crates, trunks, and other like articles, and particularly to means for joining one wall of the structure with a second wall extending approximately at right angles to the first wall.

The object of my invention is to provide a box, crate, trunk or like structure with side, end, top and bottom walls, and to provide very simple means whereby these several walls may be connected to each other, the means permitting the several walls to be detachably connected.

A further object is to provide an interlocking joint for boxes, crates, etc., which may be very cheaply and easily made from cheap metal.

And a further object in this connection is to so construct the box, crate, or other structure with walls of wood, composite, or other like material, with sheet metal connecting members adapted to have interlocking engagement with each other.

My invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a sectional view of a box, crate or like construction showing one form of my invention.

Figure 2 is a like view of Figure 1, but showing a modified form.

Figure 3 is a transverse sectional view of a completed crate constructed in accordance with the invention as illustrated in Figure 2.

Figure 4 is a detail fragmentary perspective view of the upper corner of a box or crate as illustrated in Figure 3 showing the manner in which the top is formed to engage with the body of the crate.

Figure 5 is a fragmentary section on the line 5—5 of Figure 4.

While my invention is adapted particularly for use in connecting the sides, bottom, and top walls of crates, boxes, etc., it is also adapted for more general application and, therefore, I have illustrated in Figure 1, the simplest embodiment of my connecting means, which is adapted to be used wherever two walls disposed approximately at right angles to each other are to be connected.

In this figure I have illustrated two connecting members designated respectively A and B, each of these connecting members being made of sheet metal.

The sheet metal of the member A is formed to provide parallel portions 10 and 11. The portion 10 extends parallel to the portion 11, then is angularly bent at 12, then inwardly extended as at 13 and then bent to form an approximately T-shaped slot 14, the portion 11 of course forming a continuation of the wall of this slot. Of course it will be understood that the portions 10 and 11 and the walls of the slot itself are formed of piece of sheet metal, bent into the form described. The member B comprises the oppositely disposed parallel portions 15 and 16, which are angularly bent as at 17, so as to extend toward each other and are then bent to form the T-shaped head or tongue 18, which is adapted to fit into and have sliding engagement with the T-shaped slot 14. It will be obvious from Figure 1 that these two members A and B may be interlocked with each other and that when so interlocked, the walls 10 and 11 and the walls 15 and 16 will be disposed at right angles to each other. These connecting members A and B may be formed as the terminal ends or side walls of a metallic structure, that is, a structure made of sheet metal.

In Figure 2 I show a construction wherein these members A and B, instead of being integral with and formed as the terminal ends of a metallic structure, are separate from two walls placed at right angles to each other, these walls C and D being made of wood, composition, or any other suitable material. In this case the members A' and B' are formed as metallic strips and correspond, as far as construction goes, with the members A and B previously described, the two portions 10 and 11 embracing the wall D while the portions 15 and 16 embrace the wall C; these members A' and B' being attached to these walls C and D by means of transverse bolts 19. Of course where these members are attached to the walls C and D of wood, composition, or other like material, it is desirable that the walls C and D shall extend inward the full length of the
members A' and B', as a consequence, the wall D may be cut away at 20 to accommodate that portion of the member A' which forms the T-shaped slot or groove for the reception of the tongue on the member B'.

As above shown, this construction may be applied to all sorts of structures wherein walls are intended to be disposed at right angles to each other and held in detachable interlocking engagement, but the device is particularly applicable as a means for connecting the side, end, top and bottom walls of a knock-down box, crate or like structure, or connecting the end walls to the side walls or the bottom wall to the side and end walls. A structure of this character is illustrated in Figures 3 and 4. The end walls are designated C and the side walls are designated D. These side walls and end walls are illustrated as formed of wood, composition, or other like material. Coating with the side and end walls are a top wall and a bottom wall. The top wall only is illustrated in Figure 4, this wall being designated E. The bottom wall is the same as the top wall. For the purpose of connecting the top wall to the side and end walls of the box I attach to the upper edge of the wall C a strip of metal 28 bent to form a T-shaped flange 24. This flange and the base flange are cut away as at 26 to permit the engagement of the wall D with the wall C. The top wall E is formed with a longitudinal slot 26 on its under face, this slot being T-shaped in cross section to provide a portion 27 to receive the flange 24, one wall of this slot, however, terminating short of the end of the member E as shown in Figure 5 at 28. In this construction it is obvious that the top may be slid into place and that the bottom may also be slid into place. While I have heretofore referred to the members D as being the side walls and the members C as the end members, it will be obvious that the terms "side" and "end," "top" and "bottom" are purely relative. Nor do I wish to be limited to the construction illustrated in Figure 4 as a means for connecting the "top" and "bottom" members to the body of the box. While in Figure 4 I have illustrated the top E as being formed with a groove cut out of the top, it is obvious that the margin of the top may be cut away in the same manner as is the margin of the end member C and a metallic member corresponding to the member A' to be used to the same effect. Inasmuch as the cross section of the margin of this board E with the metallic strip attached thereto is to be the same as the cross section of the member C in Figure 2 with metallic strip A', it is not believed necessary to illustrate this construction.

In assembling a box, the bottom is first engaged with the end boards and then the top board E is engaged with the end members as illustrated. It will be understood that one end of each of the grooves 14 should be closed or otherwise formed with a stop 21 to prevent the pushing of the corresponding tongue beyond a point of accurate alignment. The structure may be further strengthened by perforating the strips of metal which form the member B' and forming projecting lugs 22 or pins in the corresponding portions of the members A' which will enter these perforations in the member B', thus relieving strain on the metallic strips.

It will be seen that in the first place the means illustrated forms a very convenient manner of connecting two walls to each other which may be applied in a large number of different circumstances and, furthermore, it is to be particularly noted that where the side walls of the structure are to be made of wood, composition, or other like material, that my invention does away with the necessity of forming grooves in the wood or other material of the wall itself, and of forming tongues in the wood of the other wall. I am aware that it is old to form boxes, crates and like structure with tongue and groove joints and with a dovetail tongue extending into a corresponding dovetail groove, but I do not claim this and it is obvious that by forming the ends of the box or other structure with the members A' and B' that I eliminate the necessity of tonguing and grooving the side walls, very greatly reducing the cost of construction, permit the parts to be readily assembled and interlocked and secure a very rigid engagement between the parts. Furthermore it will be obvious that these members A and B and A' and B' may be struck up or otherwise formed from sheet metal at a very small cost, that these members may initially be made of long pieces or lengths of material and then these lengths may be readily cut to fit any sized box, crate or trunk, thus cheapening the cost of construction very greatly. While I have illustrated T-shaped grooves to receive T-shaped tongues, it will be obvious that this is only one of many forms which these tongues and grooves might have in cross section and that I do not wish to be limited to the exact form of these interlocking members.

Having described my invention, what I claim is:

1. A construction of the character described including walls disposed at right angles to each other, one of said walls extending across the end face of the other wall closely adjacent said wall, and means for connecting said walls comprising sheet metal connecting members, each of said members having parallel sides engaging the sides of
one of said walls, an end portion engaging the end of said wall, one of said members having one of its side portions extended inwardly toward the other side portion of said member to form a T-shaped slot, the T-shaped slot portion of said member being braced by engagement with the end portion and inner surface of the side member from which it extends, the other connecting member having its side portions extended inwardly to provide a T-shaped tongue, said tongue being insertible in said slot, the outer surface of the first mentioned side portion of the first mentioned connecting member engaging the inwardly extending side portions of said second mentioned connecting member, a T-shaped tongue carried by the upper and lower edges of certain of said walls, the ends of said tongues being cut away adjacent the T-shaped slots to permit application of the T-shaped connecting members, and top and bottom members connecting said walls, said top and bottom members having T-shaped slots adapted to receive T-shaped tongues carried by the upper and lower portions of said walls.

3. Means for connecting the walls of containers comprising a pair of sheet metal connecting members, one of said members being substantially U-shaped in cross section and having the opposed portions of its sides adjacent the end wall of said member extended inwardly, said opposed portions terminating adjacent each other to substantially form a resilient T-shaped tongue, the remaining member being U-shaped in cross section, and having a portion of one wall extended inwardly of the side wall of said member, and then extended parallel to said side wall to substantially form a T-shaped slot, inwardly of the side wall of the second mentioned member, whereby the connection of said members to each other is disposed inwardly of one of the walls of the container.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

HORACE B. COLLINS.

Witnesses:

JOHN H. HALLEY,

EMILY JOHNSTON.