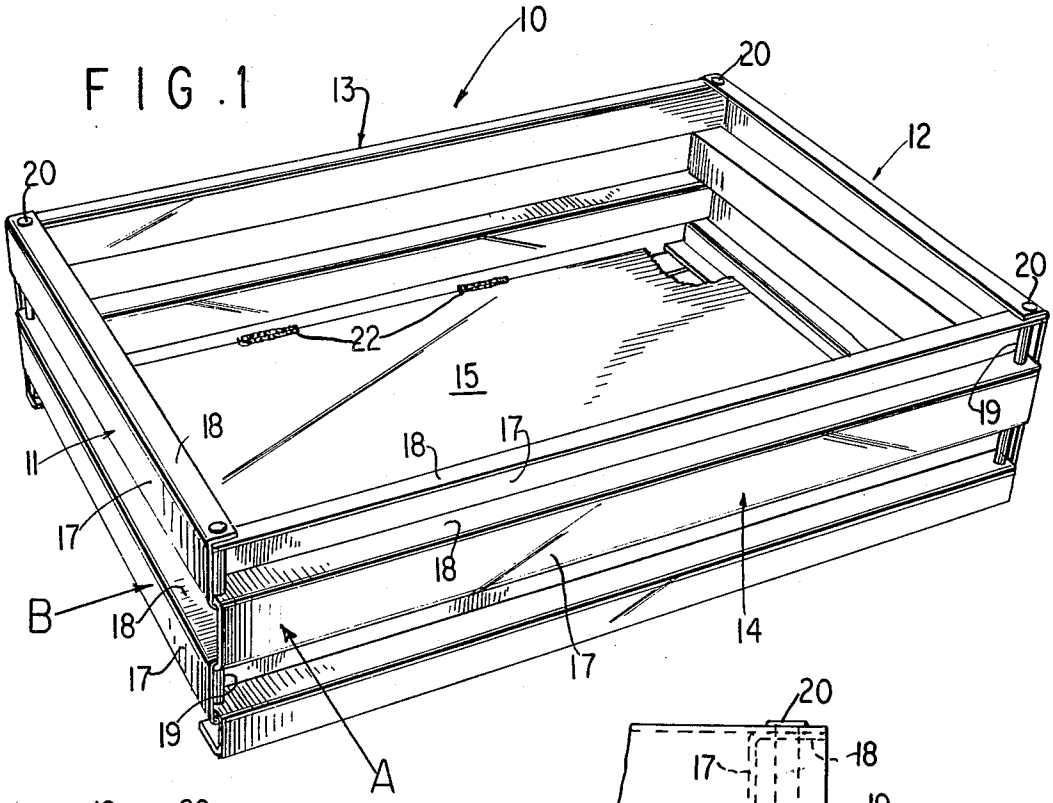
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ANNEALING BOX

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FIG. 1



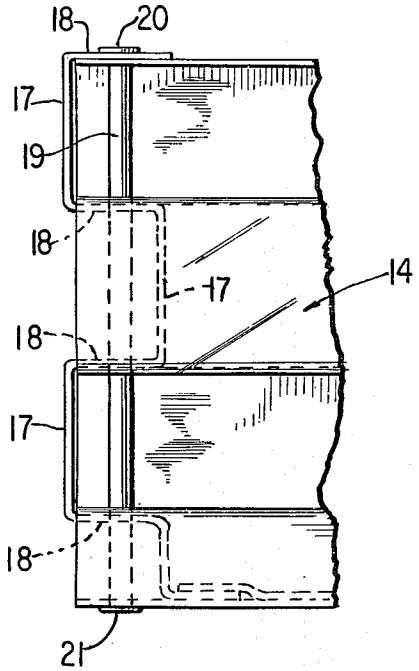


FIG. 2

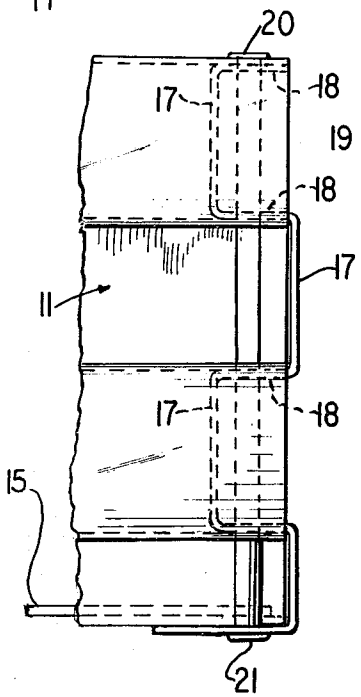


FIG. 3

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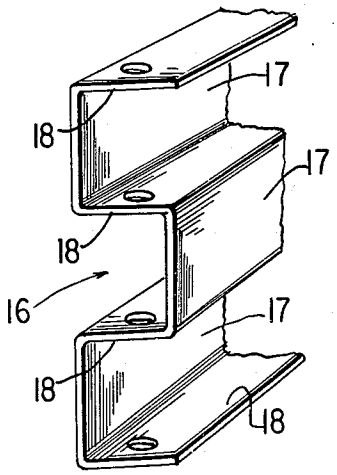


FIG. 4

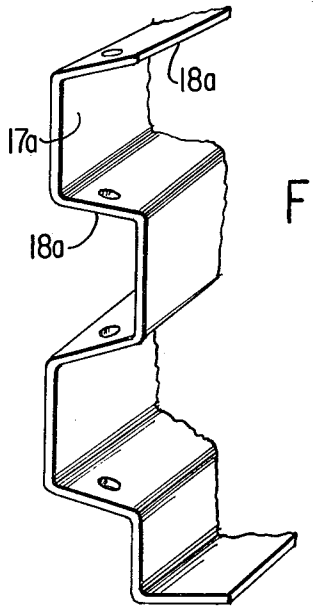


FIG. 5

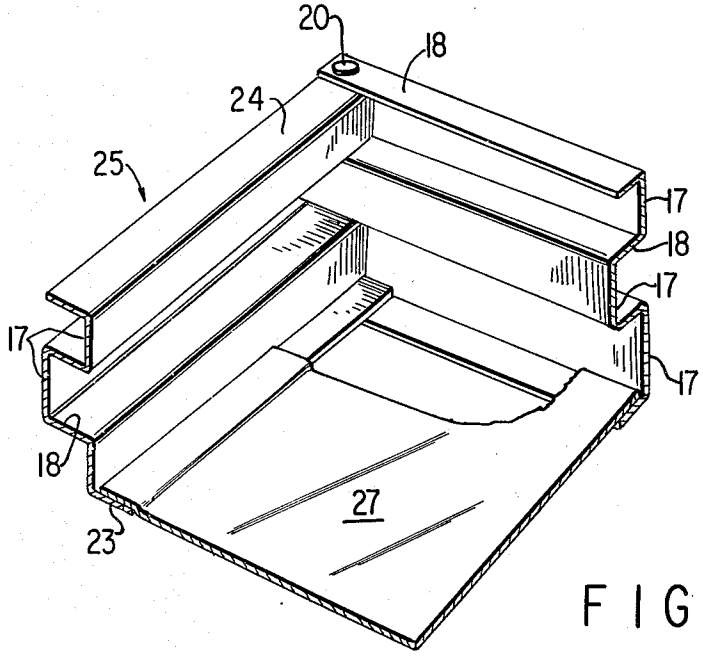


FIG. 6

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ANNEALING BOX

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Filed Mar. 11, 1968, Ser. No. 711,948
Int. Cl. F27d 15/00; B65d 7/12, 7/42
U.S. Cl. 263—49 8 Claims

ABSTRACT OF THE DISCLOSURE

An annealing or heat treating box where the side walls are formed of similarly shaped corrugated strips with the corrugations having flat bottom faces and the ends of the side walls are meshingly engaged at their ends. Pins are passed through the assembled ends of the side walls and a bottom wall is then fastened to the bottom edges of the side walls.

The present invention relates to an annealing or heat treating box for carrying metal parts through an annealing furnace or the like, more particularly, to the side wall construction of such an annealing box.

The conventional rectangular tray-like containers used for conveying metal parts through heat treating furnaces are either one-piece castings or are made up of several pieces which are hinged together at the corners by means of lugs and pins. The one-piece casting has no flexibility and is of necessity made of fairly heavy sections. Repeated heating and cooling of the containers will set up destructive stresses between the outer members and the center portion of the tray. Such stresses generally result in premature failure of the container. When the annealing boxes are made of relatively light fabricated members, the same destructive stresses may develop between the loads and the parts of the trays engaging the loads. Where the trays are assembled so that there is some play between the fabricated parts, the trays are not rigid and may be susceptible to failure at the hinge connections between the several components. In order to produce satisfactory annealing boxes, many complex and elaborate structures have been devised. However, they have not been satisfactory for all purposes since they are either too expensive to fabricate or may fail prematurely.

One of the objects of the present invention is to provide an improved annealing box.

A further object of the present invention is to provide an annealing box fabricated from formed sheet material.

A still further object of the invention is to provide an annealing box wherein the side walls are pivotally interconnected at their ends in such a manner as to result in a substantially rigid structure.

In one aspect of the present invention, the annealing box may comprise a rectangular open container having first and second opposed pairs of upstanding side walls. The side walls have similar configurations and are formed with corrugations having flat bottom faces. The ends of the corrugated side walls are meshed assembled and are secured with pin means passing through the meshed ends. A bottom wall is then suitably fastened to the bottom edges of the side walls whereby a substantially rigid tray-like container is formed.

Other objects, advantages, and features of the invention will become apparent upon reference to the accompanying description and drawings, which are exemplary.

In the drawings:

FIG. 1 is an overall perspective view of an annealing box constructed in accordance with the present invention;

FIG. 2 is a side elevational view of a corner of the box shown in FIG. 1 and looking in the direction indicated at A;

FIG. 3 is an end elevational view of the same corner of FIG. 1 and looking in the direction indicated by the arrow B;

FIG. 4 is a broken perspective view of an end portion of a side wall showing the configuration of the strip;

FIG. 5 is a view similar to that of FIG. 4 but showing a modification in the configuration of the strip; and

FIG. 6 is a broken perspective view showing a different arrangement of assembly.

As illustrated in FIG. 1, the annealing box is indicated generally at **10** and comprises end walls **11** and **12** interconnected at their ends with side walls **13** and **14**. A bottom wall **15** is provided so that the assembly defines a rectangular open, tray-like container. The side walls all have identical configurations and are fabricated from rolled or otherwise shaped strips of sheet metal of a suitable thickness or gage.

As may be more clearly seen in FIGS. 2 through 5, the shape of each side wall is essentially that of a series of corrugations having flat bottom surfaces. As shown in FIG. 4, the wall **11** has corrugations indicated generally at **16** with each corrugation having a flat bottom face **17** and side faces **18**. In the annealing box as illustrated in FIG. 1, the side faces of the corrugations are at substantially right angles to the bottom faces, the end wall side faces being on top of the mating side faces of the side walls **13**, **14**. In FIG. 5 there is illustrated a modified configuration of the side and end walls wherein side faces **18*a*** are inclined outwardly with respect to the bottom face **17*a***. The angular relation of the sides to the bottoms of the corrugations will permit easier forming in some circumstances.

The ends of the side walls are then engaged as shown in FIGS. 1 through 3 so that the corrugations of one wall nest within the corrugations of the adjoining wall. As also seen in FIGS. 2 and 3, the end of one side wall is against the corresponding bottom faces of the corrugations of the other side wall. As a result of such a close fit, there is a minimum of play between the interconnected side walls.

A pin means **19** can be passed through aligned openings in the meshed side faces of the corrugations of the side walls in a manner as shown in FIGS. 1 through 3. The ends of the pin are flattened as shown at **20** and **21** so as to retain the pin in position. The pin also may be made in two parts and inserted from the bottom and top, the inner ends of the pins being bent to hold the same in assembled relation. The bottom wall **15** can then be welded as indicated at **22** to the bottom flanges of side walls **13** and **14**. The ends of the bottom wall engaging ends walls **11** and **12** are offset upwardly as may be seen at **23** in FIG. 1 so as to be positioned over the bottom flanges on the end walls **11** and **12**. Because of the offset fit, the bottom wall will then rest directly upon the bottom flanges of side walls **13** and **14** and may be readily fastened thereto. The bottom wall also can be furnished loose and thereafter welded or fastened as desired.

FIG. 6 illustrates a form wherein the top side face **24** of the end wall **25** is turned outwardly, the bottom side face **23** being turned inwardly. In such an instance, the bottom wall **27** may have an offset portion where it overlaps the side face **23**.

While the construction as described above is primarily intended for an annealing box, the same construction can be used for other types of open, tray-like containers.

Thus, it can be seen that the present invention provides an annealing or heat treating box which is readily fabricated from a minimum of components. It can be furnished in knock-down form. Since the configurations

of the side walls of the box are the same, it will only be necessary that strips of the formed metal be cut to the appropriate length, punched at the ends to provide holes for the pins, and then assembled with a bottom wall. While the annealing box is assembled primarily with pin connections at the corners thereof, the interfitting of the rectangular-like corrugations will provide a substantially rigid structure.

It will be understood that various details of construction and arrangements of parts can be changed without departing from the spirit of the invention.

What is claimed is:

1. A heat treating box comprising a rectangular open container having first and second opposed pairs of upstanding side walls, said side walls having similar configurations including corrugations which interfit with each other with the corrugated side walls being meshingly engaged at their ends, pin means at each corner passing through the meshed ends of the corrugated side walls, so that the side walls will be interlocked with each other.

2. A heat treating box as claimed in claim **1** having the side faces of the corrugations substantially at right angles to their bottom faces.

3. A heat treating box as claimed in claim **2** having the ends of the corrugations substantially in abutting relationship so that the side walls support each other at their ends.

4. A heat treating box as claimed in claim **2** having the width of said corrugation bottom faces substantially twice the width of the corrugation side faces.

5. A heat treating box as claimed in claim **1** having a bottom wall welded to the bottom edges of said side walls.

6. A heat treating box as claimed in claim **1** having means for retaining said pin means in position.

7. A heat treating box as claimed in claim **1** having one pair of side walls with inwardly extending flanges at the bottom edges thereof, the ends of said bottom wall associated with said one pair of side walls being offset to receive said flanges whereby the bottom wall will rest on the bottom of the other pair of side walls.

8. A heat treating box as claimed in claim **1** having a bottom wall attachable to the bottom edges of the side walls.

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U.S. Cl. X.R.

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