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BAFFLE WALL STRUCTURE FOR SHEET DRYING OR BAKING OVENS

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FIG. 1.

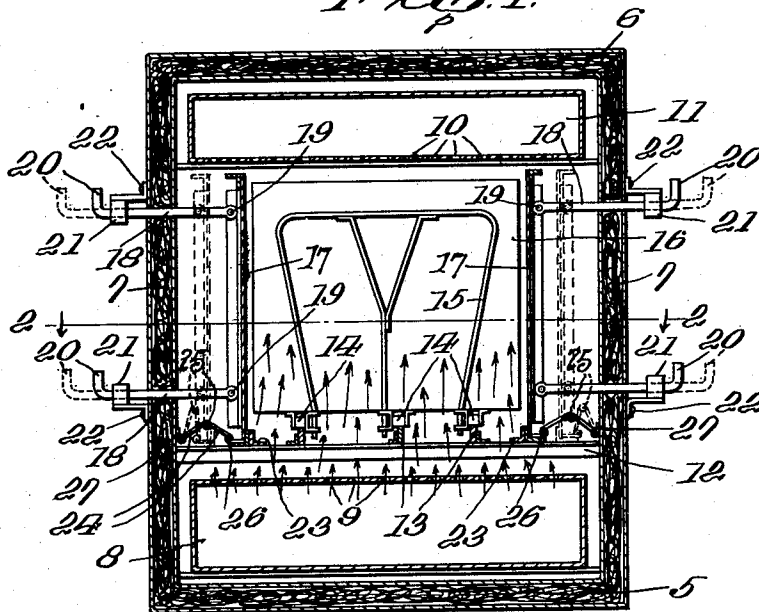
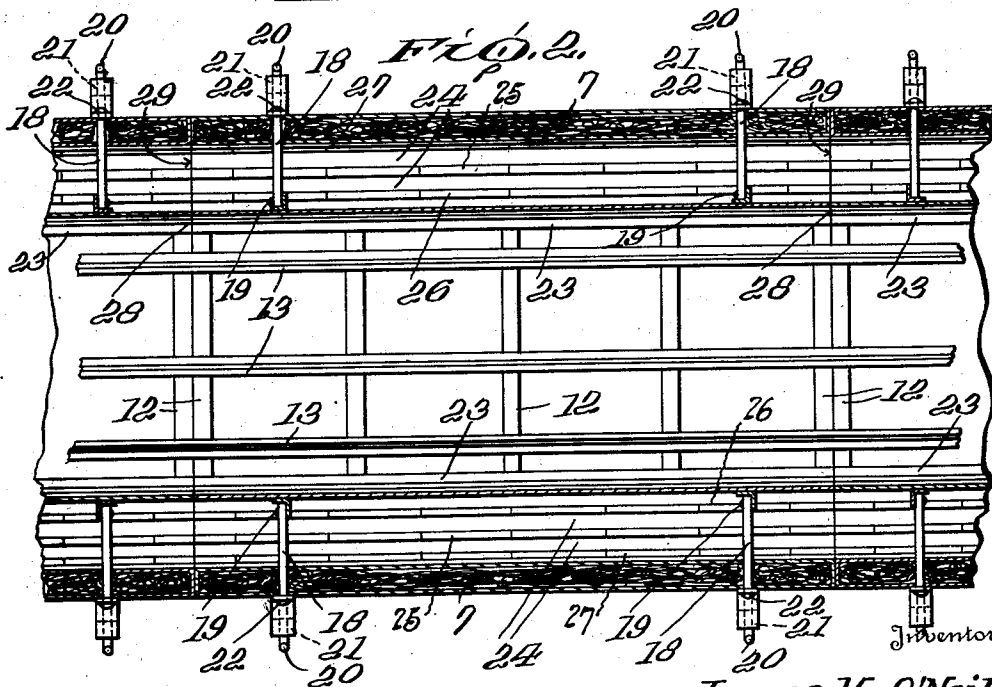


FIG. 2.



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BAFFLE WALL STRUCTURE FOR SHEET
DRYING OR BAKING OVENSJames H. O'Neil, Syracuse, N. Y., assignor to Con-
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12 Claims. (Cl. 34—150)

The invention relates generally to oven structures and more particularly to oven structures wherein provision is made for baking or drying lacquer or enamel protective or decorative coatings on the metal sheets from which can bodies are formed, and it primarily seeks to provide an oven of the character stated wherein is included a novel form and arrangement of baffle wall structure effective to assure passage of the treating air through between the sheets, rather than in part through and in part about side edge portions thereof without contacting the coated face portions.

In ovens of the character stated the sheets to be dried or baked are conveyed through the oven chamber on an endless conveyor, travelling in generally parallel spaced relation supported by bail-like members carried by the conveyor. Such ovens have chambers therein of uniform, fixed dimensions and at least as wide or somewhat wider than the widest sheets intended to be conveyed. In these ovens the treating air usually is introduced in the bottom and drawn away at the top, and considerable difficulty has been experienced in obtaining desired uniformity in results by reason of the fact that free space is provided along the oven chamber at each side of the conveyed sheets, through which side spaces treating air short circuited the sheets and failed to pass in treating contact between the sheets.

It is therefore an object of the invention to provide an oven structure including baffle walls placed in close proximity to the lateral edges of the travelling sheets so as to compel the treating air to pass through between the sheets and not freely about the side edges thereof.

Another object of the invention is to provide an oven structure of the character stated in which there is included baffle walls of the character stated, and novel means for adjustably mounting the walls so that they can be made to cooperate properly with sheets of varied widths.

Another object of the invention is to provide novel adjustable bottom space closing elements movable with the baffle walls and effective to prevent treating air passing up outside of the baffle walls.

Another object of the invention is to provide bottom space closing elements of the character stated which are hingedly connected with the adjustably mounted walls and with the oven structure in a manner for automatically causing them to assume the proper cooperative relation

to the walls as movement of adjustment is imparted to the latter.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more fully understood by following the detailed description, the appended claims and the several views illustrated in the accompanying drawing.

In the drawing,

Figure 1 is a vertical cross sectional view illustrating an oven structure embodying the invention, an adjusted position of the baffle walls being shown in dotted lines;

Figure 2 is a fragmentary horizontal section taken on the line 2—2 on Figure 1.

In this disclosure the invention is illustrated as embodied in a more or less conventional form of oven structure and it is to be understood that the inventive features may be embodied in ovens of various designs and shapes. The herein disclosed form of oven includes the usual bottom 5, top 6 and side or flanking walls 7, defining a longitudinal chamber through which sheets are conveyed for air treatment while being disposed in generally parallel spaced relation transversely of the chamber.

A longitudinal duct 8 is suitably supported at the bottom of the chamber and is provided along its upper surface with apertures 9 through which the treating air is directed upwardly to be received through downwardly directed apertures 10 into a take-away duct 11 suitably supported in the upper portion of the chamber in the manner clearly illustrated in Figure 1.

The invention is designed particularly for drying or baking lacquer, enamel or other protective or decorative coatings on large metallic sheets intended to be formed into can bodies. In such uses hot air is directed through the treating chamber for proper treating contact with the coated surfaces of the travelling sheets, but it is to be understood that the invention may be embodied in ovens intended for other types of air treatment of sheets.

The oven structure herein illustrated includes the usual cross supports 12 whereon longitudinal rails 13 are supported, and these rails serve to support the effective flight 14 of an endless conveyor which may be of any conventional form including the usual bail-like supports 15 for holding the travelling sheets in generally parallel spaced relation.

In the practical development of the invention there are provided side baffle wall units 17 disposed in spaced relation to the side walls of the

oven structure and in parallel relation to the lateral edge portions of the travelling sheets. Each baffle wall structure 17 is supported on a plurality of supporting and placing rods 18 which are secured as at 19 to the wall structures 17 and extend outwardly through the side walls 7, being equipped at their outer extremities with handle portions 20. The extended ends of the rods 18 are slidable in bearings 21 secured as at 22 to the oven structure. It will be obvious that by manipulation of the rods 18 the spaced relation of the baffle wall structures 17 can be varied at will.

Stop members 23 are mounted on the cross supports 12 and serve to limit the inward movement of the baffle wall structures and thereby assure against interference of these structures with the sheet conveyor.

Along each side of the oven bottom baffles are provided, and each bottom baffle is composed of a pair of longitudinal plates or sections 24 which are hinged together as at 25, one said section being hinge connected as at 26 to the respective baffle wall structure, and the other of said sections being hinge connected as at 27 to the adjacent side wall 7 of the oven.

It will be observed by reference to Figure 2 of the drawing that the baffle wall structures and the bottom baffles or side space closing means are arranged in independently movable, longitudinally aligned sets, the baffle wall sets being arranged in close end to end relation as at 28, and the bottom baffle sets being arranged in similar close end alignment as at 29.

It will be obvious that by positioning the baffle wall structures 17 so that they will closely approximate the lateral edge portions of the travelling sheets, the bottom baffles 24 serving to prevent passage of air upwardly between said wall structures and the adjacent walls 7 of the oven, the treating air will be compelled to pass upwardly, through between the travelling sheets and will not be permitted to short circuit the travelling sheets and pass upwardly about side edge portions thereof.

The particular construction and arrangement of the bottom baffles 24 permit them to partake of movement of adjustment of the side baffle wall structures 17 and assure the desired distribution of the treating air regardless of the adjustment of said wall structures.

It is of course to be understood that the details of structure and the arrangement of parts may be variously changed and modified without departing from the spirit and scope of the invention.

I claim:

1. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close generally parallel proximity to and beside edge portions of said uprightly travelling sheets, and means closing the spaces intervening the baffle wall structures and said chamber flanking walls so as to cause the treating air to pass through between the sheets and not short circuit about edge portions thereof.

2. In an oven structure of the character de-

scribed wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close proximity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, and means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces.

3. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close proximity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, and means adjustably mounting said baffle wall structures and said space closing means to adapt them for cooperative relation with travelling sheets of different sizes.

4. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close proximity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, and means for simultaneously altering the positioning of said baffle wall structures and said space closing means to adapt them for cooperation with travelling sheets of different sizes.

5. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close proximity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, and means

adjustably mounting said baffle wall structures and said space closing means to adapt them for cooperative relation with travelling sheets of different sizes, said baffle wall structures and said space closing means being arranged in independently movable longitudinally aligned sets.

6. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close proximity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, and means operable from without the oven structure for altering the positions of the baffle wall structures and the space closing means to adapt them for cooperation with travelling sheets of different sizes.

7. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close proximity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, and means operable from without the oven structure for altering the positions of the baffle wall structures and the space closing means to adapt them for cooperation with travelling sheets of different sizes, said space closing means being attached to said baffle wall structures and movable therewith.

8. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures supported in the chamber in close proximity to edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, and means adjustably mounting said baffle wall structures and said space closing means to adapt them for cooperative relation with travelling sheets of different sizes, said baffle wall structures and said space closing means being arranged in independently movable longitudinally aligned sets, and each said space closing means comprising a plurality of longitudinally extending plates

hinged together and to the respective baffle wall structure and the adjacent chamber defining wall.

9. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures supported in the chamber in close proximity to edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, each said space closing means comprising a plurality of longitudinally extending plates hinged together and to the respective baffle wall structure and the adjacent chamber defining wall.

10. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close proximity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, and means operable from without the oven structure for altering the positions of the baffle wall structures and the space closing means to adapt them for cooperation with travelling sheets of different sizes, said space closing means being attached to said baffle wall structures and movable therewith, and said position altering means including handle rods attached to the baffle wall structures and extending through and slide guided on oven wall structures.

11. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures supported in the chamber in close proximity to edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, means adjustably mounting said baffle wall structures and said space closing means to adapt them for cooperative relation with travelling sheets of different sizes, said baffle wall structures and said space closing means being arranged in independently movable longitudinally aligned sets, each said space closing means comprising a plurality of longitudinally extending plates hinged together and to the respective baffle wall structure and the adjacent chamber defining wall, and means for altering the positions of the baffle wall structures

and the space closing means to adapt them for cooperation with travelling sheets of different sizes and including handle rods attached to the baffle wall structures and extending through and slide guided on oven wall structures.

12. In an oven structure of the character described wherein are provided means including chamber flanking walls defining a longitudinal chamber, means for conveying sheets through the chamber and holding them disposed uprightly and transversely of the chamber in generally parallel spaced relation, means for directing treating air across the path of travel of the sheets, baffle wall structures coextensive at least in depth with the depth of the uprightly travelling sheets and supported uprightly in the chamber in close prox-

imity beside edge portions of the travelling sheets and in parallel spaced relation to adjacent chamber flanking walls of said oven structure, means closing the spaces intervening said baffle wall structures and said adjacent walls to prevent free passage of air through said spaces, means operable from without the oven structure for altering the positions of the baffle wall structures and the space closing means to adapt them for cooperation with travelling sheets of different sizes, and means for limiting the distance through which the baffle wall structures can be moved toward the conveying means so as to avoid interference with free movement of the latter.

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