Sept. 27, 1927. 1,643,756

W. B. SULLIVAN

CARBURIZING BOX

Filed Sept. 18, 1925 2 Sheets-Sheet 1

Fig. 1.

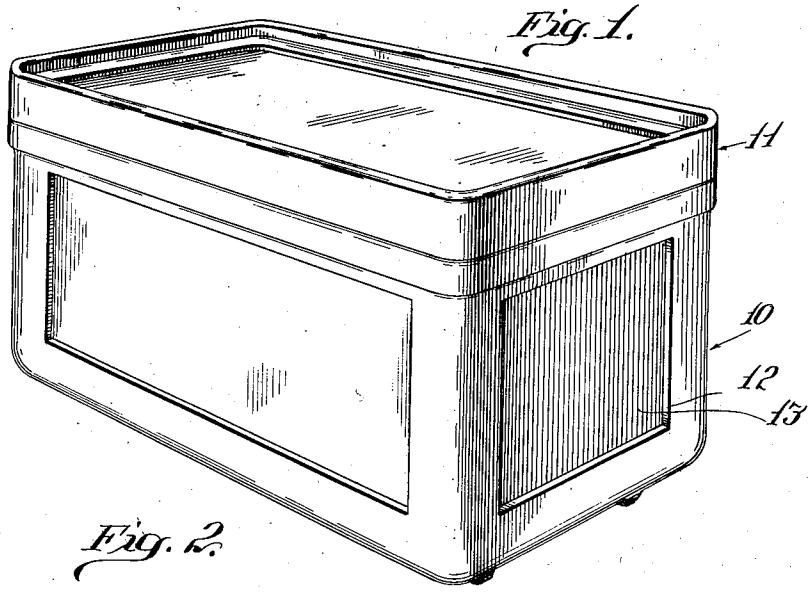


Fig. 2.

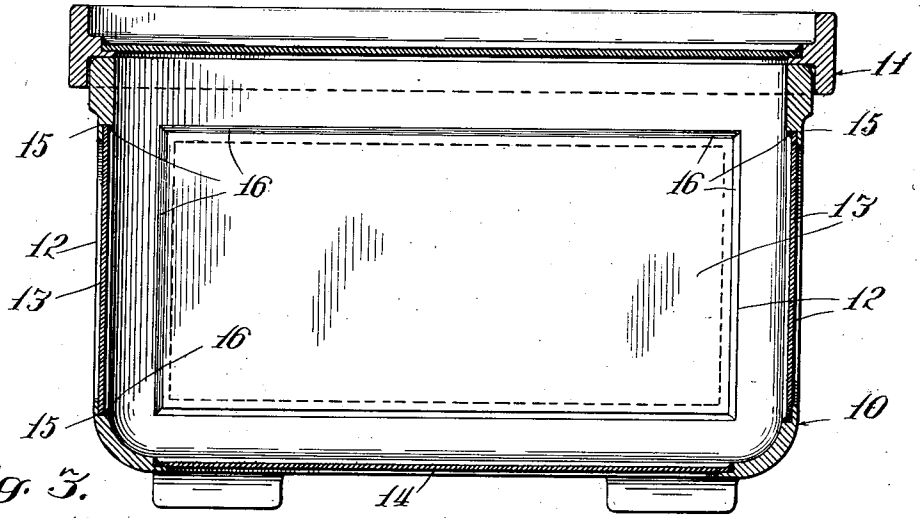
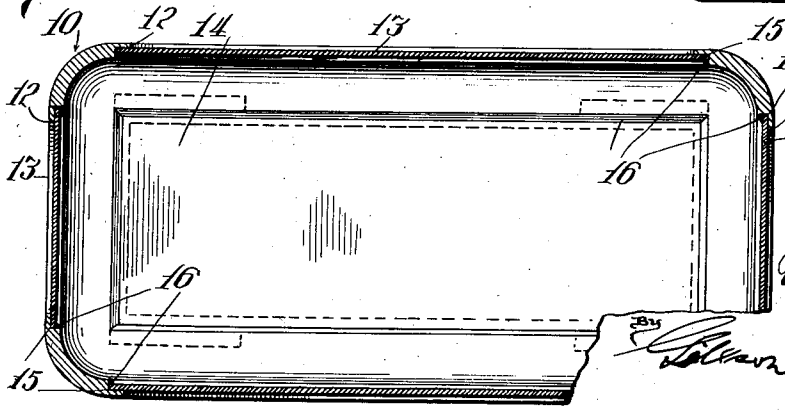


Fig. 3.



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Fig. 4.

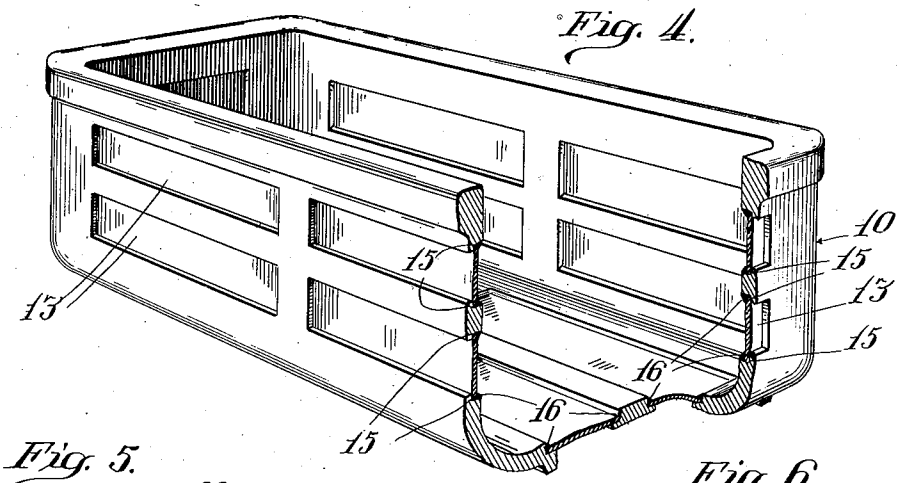


Fig. 5.

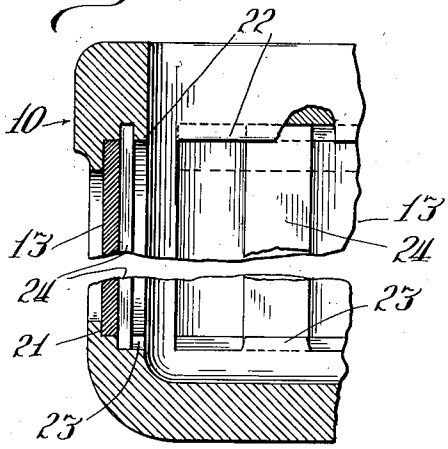


Fig. 6.

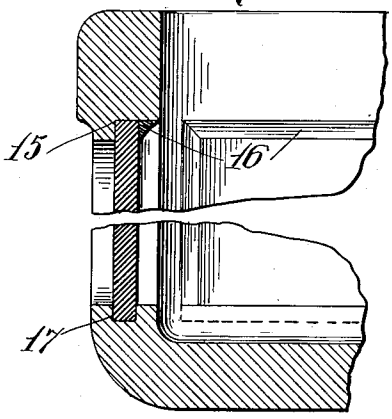


Fig. 7.

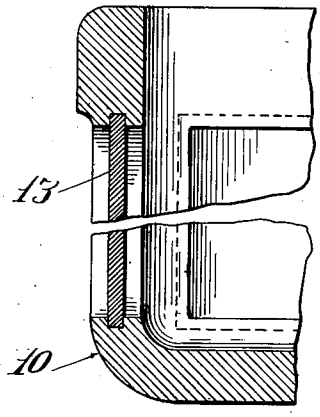


Fig. 8.

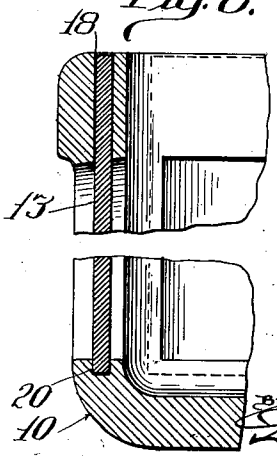
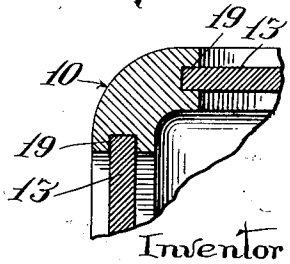


Fig. 9.



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Patented Sept. 27, 1927. 1,643,756

UNITED STATES PATENT OFFICE.

WILLIAM B. SULLIVAN, OF DETROIT, MICHIGAN, ASSIGNOR TO CHROBALTIC TOOL COMPANY, A CORPORATION OF ILLINOIS.

CARBURIZING BOX.

Application filed September 18, 1925. Serial No. 57,236.

The invention relates to boxes or containers for performing the operation of carburizing the surfaces of steel elements, for the purpose of increasing their hardness.

Such boxes have usually been formed of cast metal in order to give them adequate strength to endure the hard usage and the intense heat to which they are subjected. Boxes thus made are objectionable because of their great weight, but largely because the carburizing operation is unduly prolonged by the slowness with which heat is transmitted through their walls.

Attempts have been made to utilize sheet metal boxes for this purpose, but when made of such material they are quickly distorted by rough handling and by the warping action of the heat.

The objects of the present invention are to secure adequate strength to withstand rough handling and yet avoid the extreme weight of the old cast metal box, while providing for the rapid transmission of heat to the interior of the box.

These objects are attained by forming the box of a cast metal frame having ports in its walls for the admission of heat, such ports being closed by thin metal panels which may be either removably secured within the ports or permanently secured either by having the framing cast upon them or by being welded thereto after the casting operation.

Preferred embodiments of the invention are hereinafter described, and are illustrated in the accompanying drawings, in which

Fig. 1 is a perspective of the improved box, showing a single panel closed port in each of its walls and in its cover;

Fig. 2 is a central vertical longitudinal section of the box as shown in Fig. 1;

Fig. 3 is a plan section of the box;

Fig. 4 is a view in perspective of the box without the cover, some portions being broken away and a plurality of panel closed ports being shown in each wall;

Fig. 5 is a detail vertical section of the box showing means for removably securing the panels in place;

Fig. 6 is a similar view showing the panels secured by welding;

Fig. 7 is a detail section showing one of the panels secured within the box frame in the casting operation;

Figs. 8 and 9 are detail vertical and plan sections, respectively, of a modified form in which the panel is held within the channels formed in the margins of the ports.

As illustrated in Figs. 1 and 2, the box comprises a body portion 10 and a cover 11, each being formed of a cast metal frame having in its walls ports, as 12, each port being closed by a thin panel 13 of sheet or other metal (Fig. 3). A panel 14 is shown for closing the port in the bottom of the box. There may be a single port in each wall of the box, as shown in Figs. 1 to 3, or smaller and more numerous ports may be provided, as shown in Fig. 4.

The ports may be rabbeted along their margins, as indicated at 15, and the panels may be secured, after being seated against the instanding face of the rabbet, by a welding operation, as indicated at 16.

As shown in Fig. 6, there may be formed along one of the margins of the port a groove or channel, as shown at 17, into which one margin of the panel may be entered, the welding operation being resorted to at one or more of its other margins to secure it in place.

In the construction illustrated in Figs. 8 and 9, the side and end walls of the cast frame of the box are channeled from their upper margins, the channels being continued along the side margins of the ports and into the bottom margin thereof, as indicated at 18, 19 and 20. The panel 13 is inserted into this channel, fitting within the grooved side and bottom margins of the port.

In the constructions illustrated in Figs. 4 and 5, the margins of the port are rabbeted, as shown at 21, and back of the rabbet there is formed along the top and bottom margins of the port, lugs 22, 23. The panel 13 having been seated within the rabbet of the port, retaining bars 24 are slid into position back of the lugs 22, 23, thus removably securing the panel in place.

As shown in Fig. 4, the panels may be cast in to the framing of the box.

While preferred forms of construction have been shown and described, any means for securing the panels in place, either removably or permanently, will come within the broader scope of the invention.

I claim as my invention—

1. A carburizing box comprising a cast metal frame having openings in its walls,

sheet metal panels fitted within the openings, and a cover for the box formed of cast metal and having an opening within which is fitted a sheet metal panel.

2. A carburizing box comprising a cast metal frame having openings in its walls, sheet metal panels removably fitted within the openings, and a cover for the box formed of cast metal and having an opening within which is removably fitted a sheet metal panel.

3. A carburizing box comprising a cast metal frame having apertures in its walls, the margins of such openings being rabbeted, sheet metal panels fitted within the openings, and locking means for removably securing the panels in place.

4. A carburizing box comprising a cast metal frame having apertures in its walls, the margins of such openings being rabbeted and provided with lugs formed on the frame at opposite sides of the openings and facing and spaced apart from the seat of the rabbet, sheet metal panels fitted within the openings, and retaining bars adapted to fit between alined lugs and the panels.

5. A carburizing box comprising a cast metal structure having a sheet metal panel.

In testimony whereof I affix my signature.

WILLIAM B. SULLIVAN.