April 5, 1932. E. A. HOOPER 1,852,750

CLEANING OR PLATING TANK

Filed Oct. 8, 1931 2 Sheets-Sheet 1

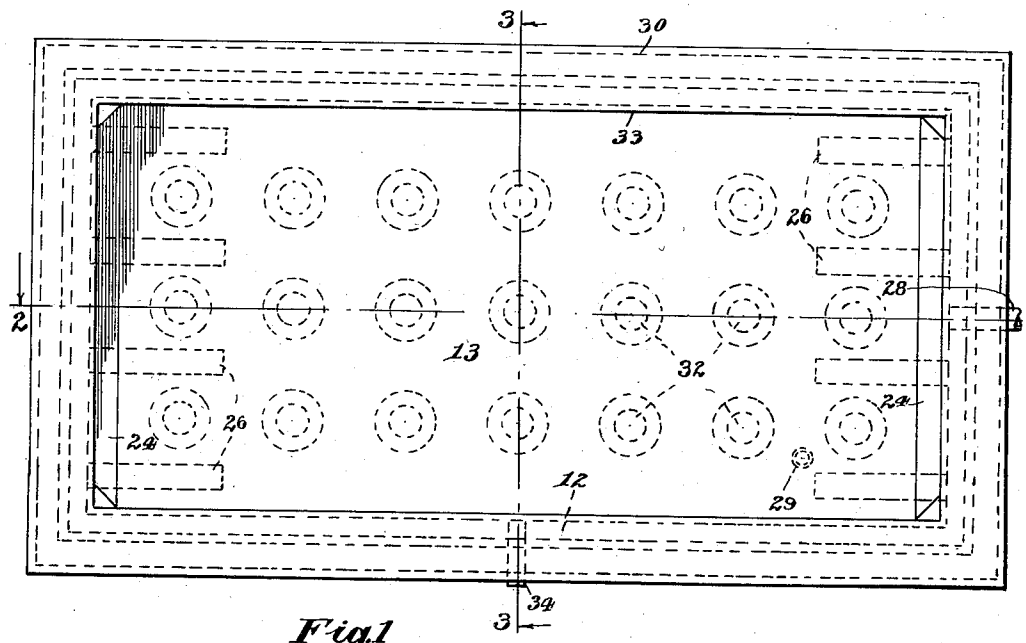

Fig. 1

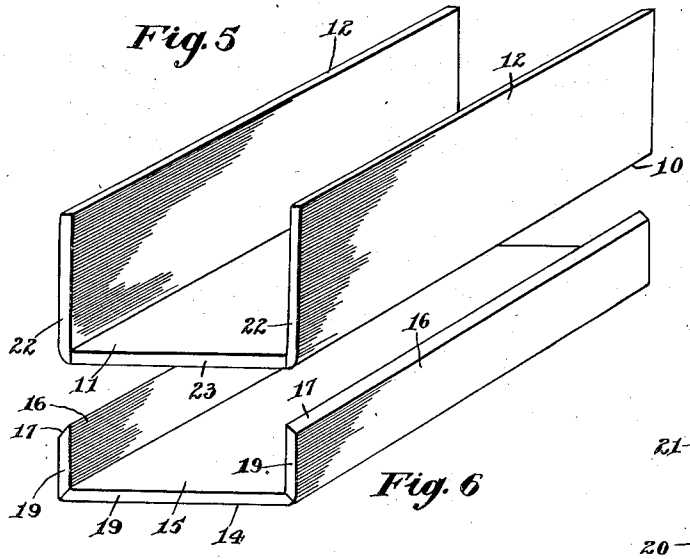

Fig. 5

Fig. 6

Fig. 7

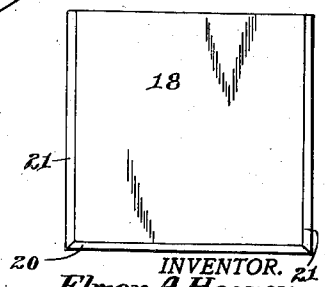

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Fig. 3

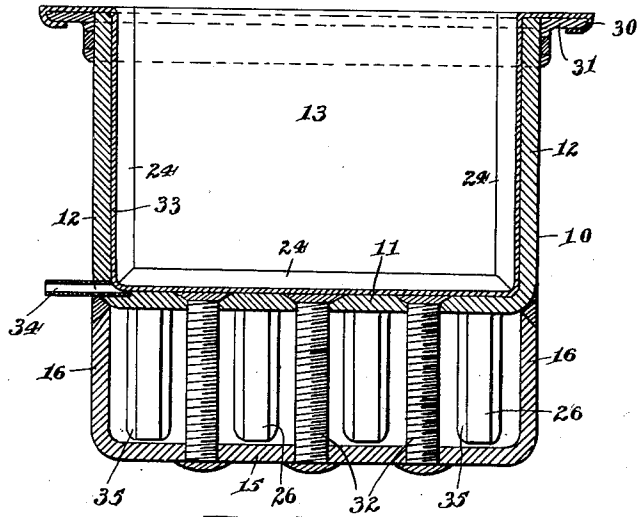


Fig. 2

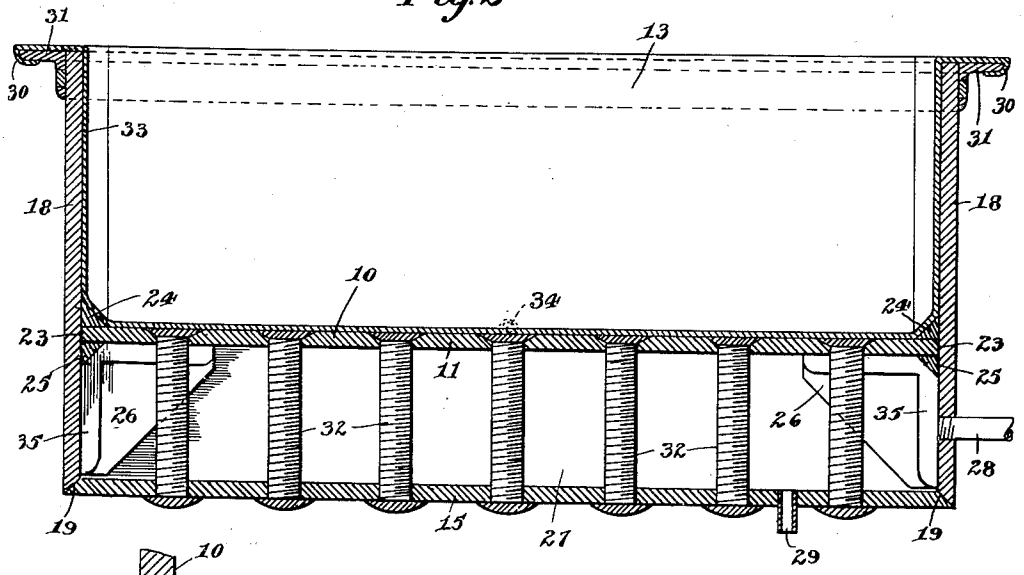
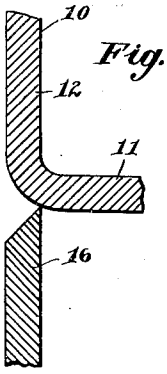


Fig. 4



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UNITED STATES PATENT OFFICE

ELMER A. HOOPER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE McCATHRON BOILER WORKS CO., OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT

CLEANING OR PLATING TANK

Application filed October 8, 1931. Serial No. 567,683.

This invention relates to new and useful improvements in metal cleaning, plating and pickling tanks such as are used in the metal industry in the process of finishing metal articles. The invention more especially relates to tanks for the above purpose, which are adapted to be heated so as to provide a hot cleaning, plating or pickling solution.

The invention resides in the novel construction of a seamless, rivetless steam jacketed tank for the above purpose adapted to be constructed of relatively few sheets of suitable fabricated iron, the adjoining edges of which are finished and electrically welded in a way to form a seamless, rivetless steam jacketed tank; also to provide reinforcing threaded stay bolts in the heating chamber so as to prevent the spaced-apart bottom walls thereof from spreading or becoming distorted.

Further to provide angular iron braces in the heating chamber in a way to further secure the end members to the bottom of the plating tank, and to so construct and arrange these angular pieces that they may be welded and thus secured in position before the bottom member of the heating chamber is applied.

The invention further provides for the use of a relatively thin sheet metal lining such as lead for the plating tank, which is preferably positioned above the steam chest, and further to provide a drain from between the walls of the plating tank and its sheet metal lining, so that in case the latter becomes punctured, wears through or otherwise leaks, the said defect will immediately become apparent by the escape of water or steam from beneath the lining.

With these and other objects in view, the invention resides and consists in the construction and novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion, size, and minor details of construction within the scope of the claims may be resorted to without departure from the spirit, or sacrificing any of the advantages of the invention.

Similar characters of reference denote like or corresponding parts throughout the several figures of the accompanying drawings forming a part of this specification and upon which

Fig. 1 shows a top plan view of my improved metal cleaning or pickling tank;

Fig. 2 is a vertical longitudinal section taken on line 2 of Fig. 1;

Fig. 3 is a vertical cross section taken on line 3—3 of Fig. 1;

Fig. 4 is an enlarged sectional view showing one of the two longitudinal connecting edge portions of the two U-shaped members of the tank;

Fig. 5 shows a perspective view of the upper and larger U-shaped tank member;

Fig. 6 shows a perspective view of the lower U-shaped member and for forming the steam chest; and

Fig. 7 shows one of the two end plates which are electrically welded to the ends of the two U-shaped members, when positioned one upon the other.

My improved cleaning tank is formed of four main sheet iron parts, a sheet lead lining, a series of braces, and a series of stay bolts, all of which are assembled in the manner illustrated in the drawings to form two separate compartments, one above the other. The upper and larger one forms the cleaning or plating tank and the lower one the steam chest. A suitable electrolytic, or other solution, according to the particular class of work to be treated is contained within the upper tank, while steam or other means is employed in the lower chest and whereby the solution in the upper tank is heated.

Referring in detail to the characters of reference marked upon the drawings, 10 represents the upper and larger U-shaped sheet iron member which forms a bottom 11 and two side portions 12—12 of the upper or cleaning tank 13. 14 represents a similar U-shaped sheet iron section which is preferably not as deep as the upper section though is the same length and breadth. It comprises a bottom 15 and parallel side members 16—16,

the upper longitudinal edges of which are beveled as indicated by 17, see Figs. 4 and 6. In the assembling of the tank, the upper section 10 is positioned on the lower section by aligning and positioning the lower longitudinal corners of the upper section upon the inner top edges of the lower member, as illustrated in Fig. 4. The ends of the two members 10 and 14 are thus also positioned in alignment so that the end plates 18—18 may be positioned against the ends in a way to enclose the same. In this connection it will be seen that the edges of the two ends of the bottom member are beveled in slightly as at 19 to receive the correspondingly beveled edge portions 20 and 21 of the end plates; whereas the edges 22 of the ends of the sides 12—12 of the top member 10 are similarly beveled to likewise accommodate the beveled edges 21 of the end plates 18; whereas the edges 23 of the ends of the bottom of said top member are cut straight, to fit against the inner face of the end plates 18, see Fig. 2.

In assembling the structure I first secure the end plates 18—18 to the ends of the top member 10 in a way to close the said ends and form of the three members, the plating tank 10, the said members being secured together by electrically welding all joints between the three members, as indicated by the several welds 24, as for instance, the horizontal and vertical welds between the ends of the bottom and inner face of the end plates by employing a welding rod which electrically welds the two members together and forms a corner filling 24 around the ends of the upper tank and a similar filling 25 across the under side of the bottom of the top member and against the inner face of the end plate. These three members 10, 18—18, having been assembled as described, braces 26 of which there may be any desired number are next electrically welded to the under side of the bottom 11 of the tank and to the inner face of the end members as is clearly shown in Figs. 1, 2 and 3, and indicated by 35.

The bottom U-shaped sheet iron member 15 is next placed in position upon the bottom member and between the edge portions of the end plates whereby the abutting beveled edges on the said members are electrically welded to form the steam chamber or steam chest 27 beneath the cleaning tank. This chest is provided with a steam inlet pipe 28 and an outlet pipe 29, each of which may be provided with suitable valves, not shown, to regulate the flow of steam through the chest. A flange 30 is provided around the top edge of the tank, the same being formed by a strip of angle iron 31 that is secured to the sides and ends of the tank, as shown in Figs. 1, 2 and 3. As the steam chest 27 may be subjected to severe steam pressure, I provide a series of stay bolts 32 which are positioned and welded in tapped holes of the two bottom members 11 and 15, the top ends of said stay bolts after being welded are chiseled off flush with the face of the bottom 11 as shown in the drawings. These stay bolts are preferably arranged in rows and the brace members 26 are preferably positioned intermediate of end portions of the stay bolts. The tank 10 is provided with a relatively thin sheet metal lining 33, such for instance as sheet lead which is snugly fitted to the inner walls of the tank and has its upper edge portion disposed over the top flange and turned down under the end portion thereof.

A pipe connection 34 is provided in the wall of the tank to the space between the wall and lining, as a means of detecting and locating leaks in the lead lining, and whereby any solution that leaks through the lining will run out of the pipe and thus indicate that a leak exists. Whereupon the tank is emptied and water supplied through the said pipe 34 under pressure, which finds its way between the lead lining and steel tank and comes through any holes that are present in the lead.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A cleaning tank formed of two U-shaped sheet metal members positioned one upon the other with their bottoms in spaced relation to each other and welded together along their adjoining edges, plates welded to and enclosing the ends of the two members in a manner to form an upper cleaning tank and a closed steam chest beneath, a metal lining within the plating tank, and an outlet pipe extending through the wall of the tank from the space between said wall and the lining.

2. A cleaning tank formed of two U-shaped sheet metal members positioned one upon the other with their bottoms in spaced relation to each other and welded together along the adjoining edges, plates welded to and enclosing the adjacent ends of the two members in a manner to form an upper cleaning tank and a closed seeam chest beneath, a flange surrounding the top edge of the tank, a sheet metal lining within the plating tank and extended up and over said flanged top edge, and an outlet pipe extending through the wall of the tank from the space between said wall and lining.

3. A seamless, rivetless steam jacketed cleaning tank formed of two U-shaped sheet metal members positioned one upon the other with their bottoms in spaced relation to each other and welded together along their adjoining edges, plates welded to and enclosing the adjacent ends of the two members in a manner to form an upper cleaning tank and a closed steam chest beneath, the edges of the ends of said U-shaped members being beveled, plates, one for each end, having beveled edges to engage the beveled edges of the U-shaped members to enclose the ends of the

tank and steam chest, the said adjoining edge portions of the members being electrically welded.

4. A seamless, rivetless steam jacketed cleaning tank formed of U-shaped sheet metal members positioned one upon the other with their bottoms in spaced relation and welded together along the adjoining edges, plates welded to and enclosing the two ends of said members in a manner to form an upper cleaning tank and a closed steam chest beneath, brace plates secured to the bottoms of one of the said U-shaped members and end members, and stay bolts secured in the bottom of the said U-shaped members to hold them in spaced relation.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 2nd day of October, A. D. 1931.

ELMER A. HOOPER.