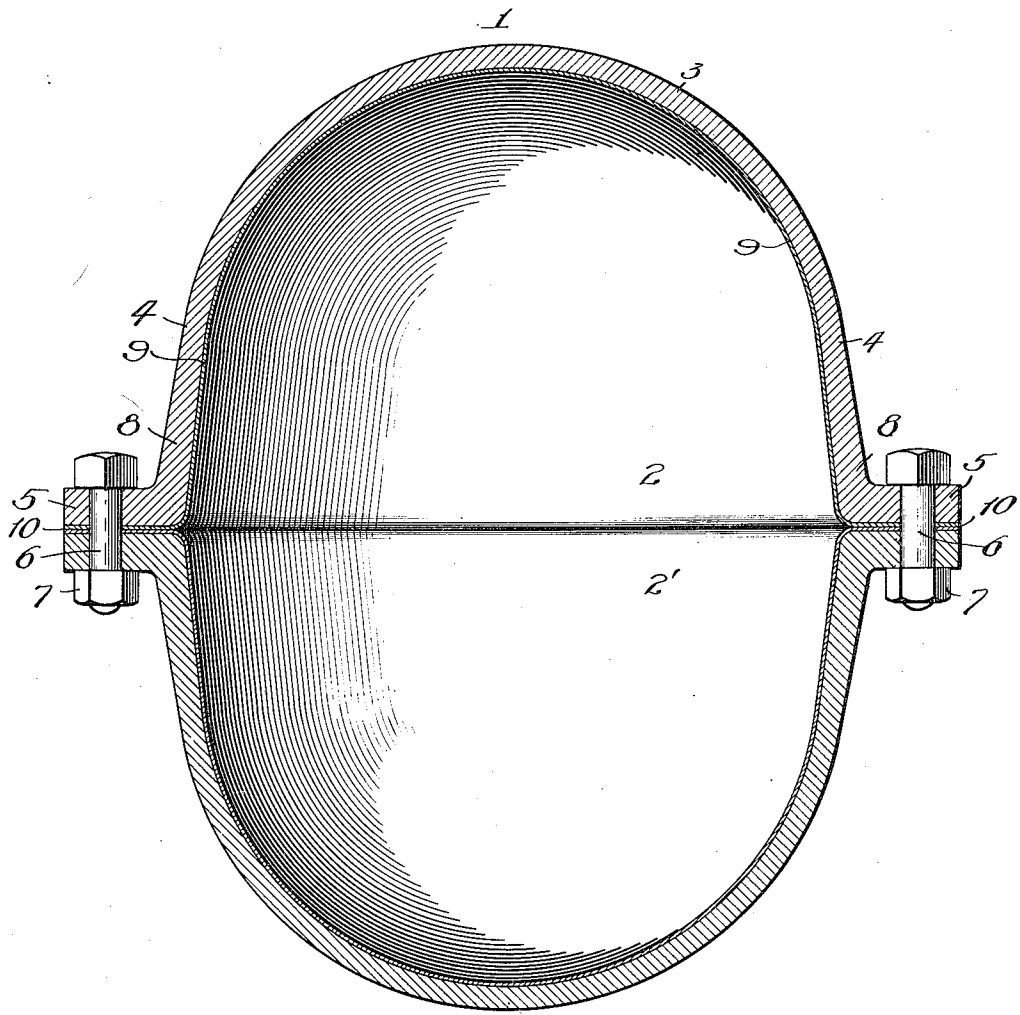
H. M. SMITH.

MIXING TANK FOR CARBONATORS.

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1,165,210. Patented Dec. 21, 1915.



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UNITED STATES PATENT OFFICE.

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MIXING-TANK FOR CARBONATORS.

1,165,210. Specification of Letters Patent. Patented Dec. 21, 1915.

Application filed September 28, 1910. Serial No. 584,169.

To all whom it may concern:

Be it known that I, HORACE M. SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mixing-Tanks for Carbonators, of which the following is a specification.

This invention relates to mixing tanks for carbonators and aims to produce a tank of this character which shall be strong and durable, which shall present a pleasing appearance to the eye and can be manufactured more readily and cheaply than other forms of carbonator tanks heretofore employed.

It is well known to those familiar with the art that mixing tanks for carbonators consist usually of a cast shell which is lined with tin. Tin particularly is employed for lining these tanks because it is not attacked nor affected by the carbonic acid which is present in quantities when the tank is in use. Mixing tanks of various forms have heretofore been employed, but so far as I am aware these tanks have been of such shape that in lining them it was necessary to build up a lining of sheet tin sections. These sections were cut to the desired shape and then soldered together at their edges thereby producing a number of soldered seams. The cutting of the sheet tin to fit the interior of the tank and the soldering of the same together, involve considerable time and expense, and furthermore, each seam provided in a tank lining increases the liability of leakage and the escape of carbonic acid or gas through the lining into the outer shell of the tank where it will attack the iron.

The tank which forms the subject matter of the present invention is composed of duplicate sections and is so shaped that a lining for each section thereof can be spun out of a solid sheet of tin and fitted into each cast section or shell without cutting the lining or soldering any seams. The cast shell of the present tank, furthermore, is made thickest at the point where the greatest strength is required and gradually tapers away to the thinnest portion where the least strength is required.

Various other objects and advantages of the present tank will become apparent as it is better understood from the following description when taken in connection with the accompanying drawing which illustrates a preferred embodiment of the invention.

On the drawing the tank which is designated generally as 1 is shown in vertical section, said view being taken approximately on the longitudinal axis of the tank. As will be evident from the drawing the tank is composed of duplicate sections 2 and 2′, respectively. Since the two sections are substantially alike a detail description of one will be sufficient for an understanding of the invention.

Referring to the upper section 2, it will be seen that it comprises a spherical portion 3 forming one end of the tank which merges into a frusto-conical portion 4 whose smaller end forms a continuation of the spherical portion 3. The larger open end of the frusto-conical portion is turned outwardly to provide a radial peripheral flange 5 extending entirely around the same and provided at intervals with holes through which the bolts 6 pass, said bolts being equipped with nuts 7 to draw the sections of the tank together and firmly unite them.

Each section shaped as above described, is preferably made of cast iron, and the tapered formation of the sections renders it easy to draw the patterns out of the sand, thus reducing the time and expense of casting to a minimum. The walls of the frusto-conical portion gradually increase in thickness from the edge of the spherical portion to the flange 5. This thickened portion 8 is thickest and strongest adjacent the flange and at the point where the greatest strength is needed. The thickening of the side wall at this point also avoids a sharp corner at the juncture of the flange and permits the grain of the metal to change direction gradually when the hot iron cools thus preventing blow-holes and materially strengthening the structure at the juncture of the flange.

In order to protect the cast shell from the action of the carbonic acid in the tank, there is provided the usual lining 9 of tin which is shaped to conform to the interior of the cast shell. It is well known to those familiar with the spinning of metal that it is very difficult to spin a cylindrical receptacle such as would fit within an ordinary cylindrical tank, and consequently the cylindrical tanks

which have heretofore been employed to a large extent, have been lined by cutting sheet tin and soldering the same within the cast shell. As has been heretofore stated, each soldered seam in the lining increases the cost of production of the tank, and also increases the liability of leakage in each tank thus equipped. A lining which tapers inwardly from its open end and terminates in a spherical bottom such as is adapted to fit within each of my tank sections is, however, very easy to spin, and the cost of production of such a spun lining is much less and the wearing qualities much greater than that of any built-up or sectional lining employed previous to my invention. The flanges 10 may be formed upon the open end of the lining section either before or after it has been placed in the cast shell.

When two cast shells are provided as above described, and are lined with solid seamless tin linings, they may be securely fastened together by a series of bolts 6 connecting the radial flanges, with the result that the completed tank possesses a smooth interior entirely free from seams and devoid of solder. The exterior of the tank when formed in this manner presents a smooth and pleasing appearance to the eye.

What I desire to claim is:

A mixing tank for a carbonator, composed of two cast metal sections of similar form, each comprising a spherical end portion extending into a frusto-conical portion in an unbroken curve and terminating in an outwardly extending radial flange, the material of said frusto-conical portion increasing in thickness from said spherical portion to the outer periphery of said flange, each of said sections being provided with a single piece lining of spun metal, substantially uniform in thickness throughout, disposed contiguous to the inner surface of said section and having integral flanges corresponding to and overlying the flanges of said sections, and means for securing the flanges of said sections together with the flanges of the spun metal linings firmly held in coöperative relation, whereby a fluid-tight joint between the sections is formed.

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