

PUBLISHED
MAY 25, 1943.
BY A. P. C.

M. VON SCHWARZ
SEAMLESS DRUM FOR USE IN HIGH-PRESSURE
BOILERS AND THE LIKE
Filed Oct. 31, 1939

Serial No.
238,039

2 Sheets-Sheet 1

Fig. 1.

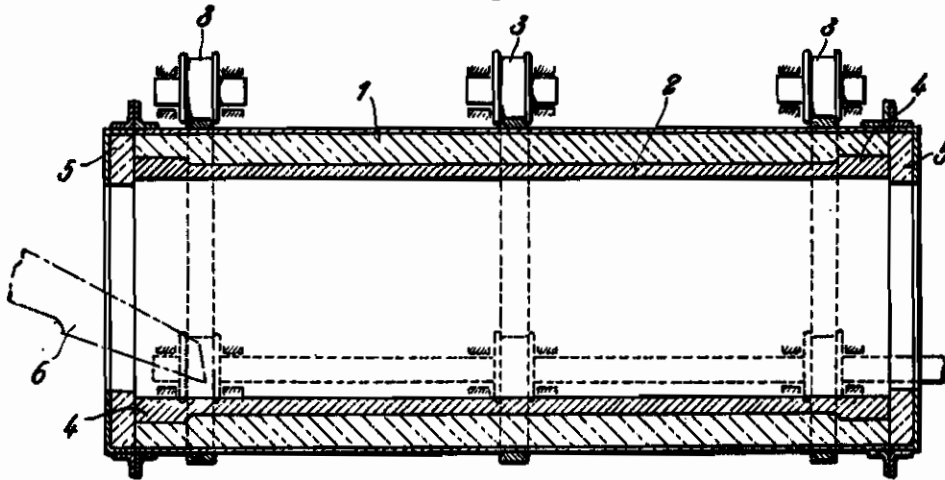
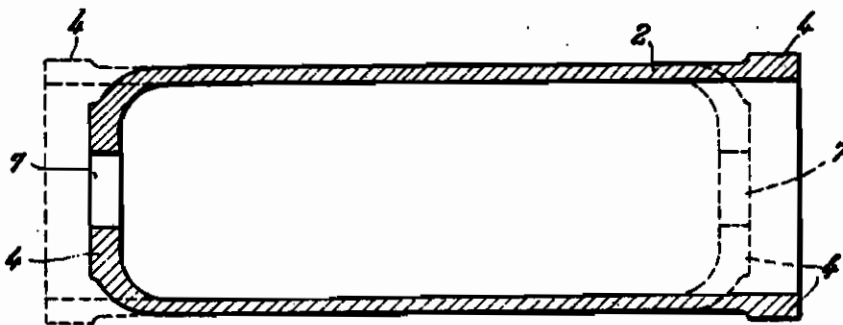


Fig. 2.



Inventor:
Maximilian von Schwarz,
Bailey & Carson
Attorneys

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Fig. 3.

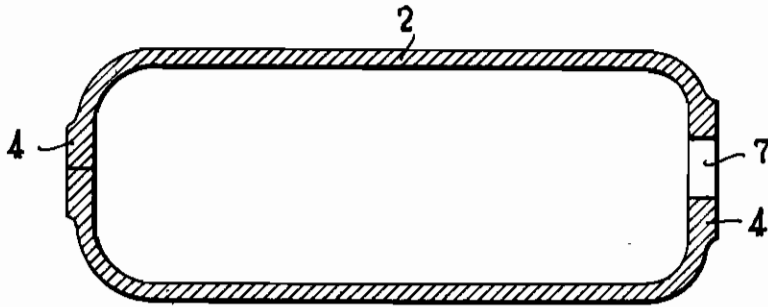
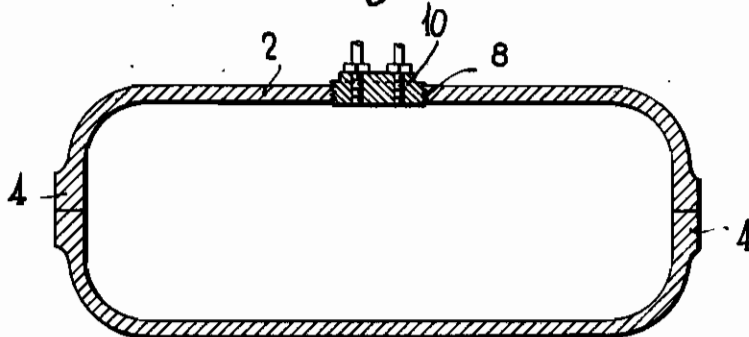


Fig. 4.



Inventor
Maximilian von Schwarz,

By *Barley & Carson*
Attorneys

ALIEN PROPERTY CUSTODIAN

SEAMLESS DRUM FOR USE IN HIGH-PRES- SURE BOILERS AND THE LIKE

Maximilian von Schwarz, Freiberg/SA, Germany;
vested in the Alien Property Custodian

Application filed October 31, 1938

This invention relates to a seamless drum, or drum-like cylindrical hollow body, intended for use in high-pressure boilers and the like. The characteristic features of this improved drum or body are, in the first place, that it has been obtained by the centrifugal casting method and is so contracted at its end portions that these portions form partly or completely closed drum bottoms. The end portions of the hollow body may be reinforced at their outer circumferential surface in order to obtain drum bottoms which are at least partly thicker than the wall of the drum body, and the entire drum may consist of a kind of steel able to withstand a very high heat or (and) able to withstand in a substantial degree the action of gases, vapors, liquids and other substances able to attack the material of said body or drum. Another feature of drums designed according to this invention is that their inner surface is smooth.

In order to render it possible to comprehend fully the essence and importance of the invention it is thought proper to dwell in a certain measure on the manner in which seamless drum-like vessels or receptacles have been manufactured up to now. This has been done by subjecting a solid block of steel, or another suitable material to a boring or pressing or rolling or drawing action whereby a tubular body is obtained which then must be turned off at its outer and its inner circumferential surface and its thereafter partly or completely closed either at only one end or at both ends by internal flanging. Drums for the purposes in view must have in their bottom so-called manholes which, if the drum is intended for use in high-pressure steam-boilers, but also if it is intended to be used as reaction vessel or the like in the carrying-out of a chemical process or the like, must be reinforced at the rim in order to increase the strength or resistibility of the drum bottoms, as requisite in the respective case. The manufacture of such drums in the just stated manner is expensive and requires very much time. In view of the continually increasing demand for drums of the type stated it is very desirous and important to design them in such a manner that the time of manufacture is considerably shortened and the manufacturing costs are essentially diminished. The present invention constitutes a complete solution of the problem.

The solution starts from a tubular member or body obtained by the known centrifugal casting method and being then subjected to the action of

a forging press or the like by which the ends of the body are flanged inwardly, or contracted respectively, the outer and the inner circumferential surfaces being turned off or ground off or otherwise worked in any appropriate manner either prior to said contracting operation or thereafter for the purpose of obtaining smooth surfaces free from the impurities present especially at the inner surface, as well as from gas bubbles and the like.

The invention is illustrated diagrammatically and by way of example on the accompanying drawings on which Figure 1 is an axial section through a casting mold as used in the centrifugal casting method, and Figure 2 is an axial section through a partly finished drum designed according to this invention, some portions being indicated merely by dotted lines, all as fully dealt with hereinafter.

1 in Fig. 1 denotes the rotary casting mold which is supported on, and rotated by roll 3. The mold is cylindrical and contains still the (already cold and solid) tubular body 2 obtained by the centrifugal casting method. The clear width of the mold is at its ends slightly larger than in the main portion or body whereby the drum 2 is provided with outer reinforcements 4. At the ends of the mold are annular closing members 5. While the mold is rotated in known manner by a suitable driving device with appropriate speed the liquid metal is introduced into it either at only one end or at both ends by a ladle 6, as indicated in dotted lines at the left-hand end of Fig. 1. The mold is rotated, of course, with such a speed that the centrifugal force arising projects the liquid metal against the inner surface of the mold 1 so as to form therein the inwardly smooth wall of the drum.

The mold may be a chill mold or a suitably lined one.

When the drum body has been produced and has cooled down so as to have become solid it is removed from the mold, whereafter it is contracted at its ends by transforming these latter into a sort of inwardly directed flanges constituting either only partly closed drum bottoms or completely closed one, as requisite in the case concerned. In the example shown in Fig. 2 the bottoms are only partly closed, there being left large apertures 7 forming manholes, the rims of which are reinforced by the portions 4, as clearly shown in the drawing. The bottoms of the drum may however be closed completely.

MAXIMILIAN VON SCHWARZ.