Feb. 21, 1939. C. C. WARREN 2,148,223

APPARATUS FOR FORMING SEAMLESS MILK CAN COVERS

Original Filed June 15, 1937

Fig. 1

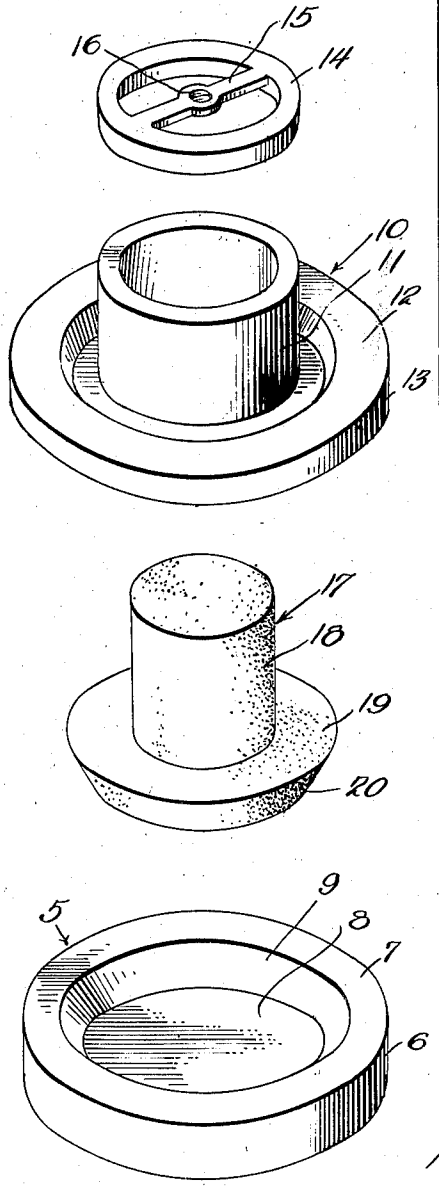


Fig. 2

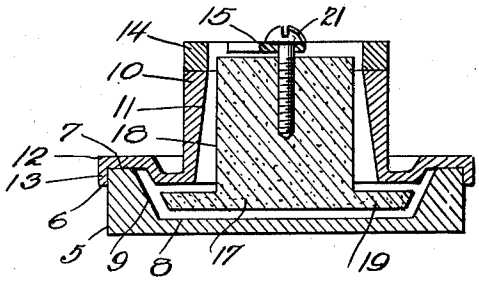
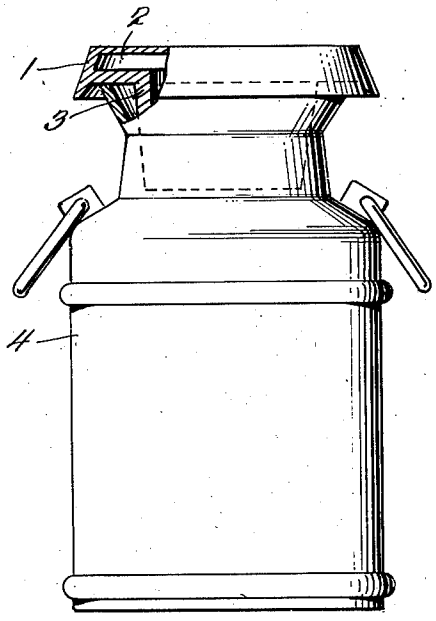


Fig. 3



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APPARATUS FOR FORMING SEAMLESS MILK CAN COVERS

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Original application June 15, 1937, Serial No. 148,370. Divided and this application November 3, 1937, Serial No. 172,618

2 Claims. (Cl. 22—113)

This application is a division of my co-pending application Serial No. 148,370, filed June 15, 1937, for Method and apparatus for molding seamless hollow ware articles.

This invention relates to a method and apparatus for the forming of seamless hollow ware articles, and has reference more particularly to milk can covers.

This invention further relates to an improved material used in the formation of the molding apparatus for making such hollow ware articles.

This invention further contemplates the formation of cast metal articles, preferably made of light metal such as aluminum or alloys thereof.

The method broadly contemplates the casting of an article having a hollow interior portion, the major body portion of which is restricted, in such manner that the mold section may be removed from the outside and from within the finished article with a minimum of effort and in such manner that the material which forms the inner section of the mold may be used again.

The particular molding material employed in the formation of the molding apparatus constitutes an important part of this invention. It is important in casting hollow articles having a restricted body portion, to employ an inner mold section which is substantially rigid and at the same time may be removed through the restricted opening in a facile manner.

In order to obtain the above result, my invention contemplates the use of a molding material made up of a mixture of plaster of Paris and a fibrous material. The fibrous material may be asbestos or the like. The asbestos and plaster of Paris are used in equal proportions and mixed to form a stiff paste. Thereafter, the mixture is packed into suitable forms defining the shape of the mold section desired and then placed in an oven to be thoroughly dried. The mold section thus obtained is then sandpapered to obtain a smooth surface to thus provide a smooth surface to the article to be cast.

A mold section formed in the above manner is substantially rigid and upon completion of the casting operation, the outer mold section is removed and the inner mold section and the article are together placed in a vat of water where the water will turn the inner mold section into a pasty pulp. The pasty pulp can then be readily removed, leaving the molded article free of the mold. The pulp thus removed can again be used in making new molds or forms.

In order to illustrate the present invention as applied to a specific article, the present invention will be more specifically described in connection with a milk can cover, having a hollow enlarged top portion and a restricted body portion.

In the construction of milk can covers of the type referred to above, the usual practice has been to form the can cover of a plurality of parts which are welded or riveted to form the finished cover. The presence of joints of any form in a milk can cover is highly objectionable in that the joints may be easily ruptured and furthermore provide a gathering place for dirt and other foreign matter. With my improved method of casting, it is possible to provide a seamless can cover which is of maximum strength and has an internal surface free of crevices.

Thus the principal object of my invention is to provide an improved milk can cover and method of forming the same.

Another object of the invention is to provide a seamless milk can cover having a structure affording maximum strength with a minimum of material and having an internal surface free of crevices which would prevent thorough cleaning thereof or assist in the adherence of dirt or other foreign matter.

A further object of the invention is to provide a cover of the type referred to which may be manufactured in a simple and economical manner.

Other objects and advantages of the invention will appear as the description of the drawing proceeds. I desire to have it understood, however, that I do not intend to limit myself to the particular details shown or described, but that I intend to include as part of my invention all such obvious changes and modifications as would occur to persons skilled in this art.

For accomplishing the above objects of the invention, a seamless milk can cover has been constructed as herein shown and described, and for a complete understanding of the invention, reference is to be had to the following description considered with reference to the accompanying drawing.

In the drawing:

Fig. 1 is an exploded view in perspective of the mold employed for forming the milk can cover.

Fig. 2 is a vertical sectional view of the cover forming mold.

Fig. 3 is a view of the finished seamless cover as applied to a milk can, a portion of the figure being broken away.

Referring to the drawing in detail, and more

particularly to Figure 3, 1 denotes the finished can cover having a hollow interior portion 2, and a restricted body portion 3, fitting within the neck portion of a milk can generally denoted as 4. The method of forming the milk can is covered in the co-pending application referred to above.

Referring to Figures 1 and 2, which discloses the molding apparatus for forming the cover, 5 denotes the lower portion of the outer mold section having a vertical outer wall 6, a horizontal annular upper portion 7, and a depressed central portion 8 and an inclined wall portion 9.

The upper portion of the outer mold section is designated generally at 10, having an upstanding substantially cylindrical body portion 11 whose inner surface is frusto-conical, a horizontal flange portion 12 adapted for rest on horizontal portion 7 of the lower mold section. Said horizontal portion 12 has a depending vertical wall portion 13 which frictionally engages the outer vertical portion 6 to hold the two portions of the outer mold sections in assembled relationship.

Resting on the upper surface of the vertical wall of the upper section 10 is a ring-like frame member 14, having a cross bar 15 and having a screw threaded opening 16 in the central portion thereof. The inner core member 17 comprises a generally cylindrical body portion 18 and a horizontally extending rim portion 19. The periphery of the rim portion 19 is tapered as at 20 for cooperation with the inclined wall 9 of the lower portion of the outer mold section.

As seen in Figure 2, the cylindrical portion of the core member is of smaller diameter than the cylindrical portion of the outer mold section to provide a space therebetween for the formation of the restricted portion of the can cover. The lower portion of the core member fits within the depressed portion of the lower portion of the outer mold section and is of such size relative to the depressed portion so as to leave a space between the inner core member and the outer sections. The inner core member is held in such spaced relationship by screw 21, which passes through the screw threaded opening 16 and is embedded in the inner core member as seen in Figure 2.

It is important at this time to disclose the material of which the molding apparatus is formed, the particular material used forming an important part of this invention.

Specifically, my invention contemplates the use of substantially equal parts of asbestos fibre and plaster of Paris. These two ingredients are mixed to produce a stiff paste, then packed into the desired forms and then placed into an oven to be thoroughly dried. The mold forming sections are then removed and sandpapered to obtain a smooth surface. A mold formed in the above manner can be readily softened by insertion of the same in a liquid bath.

Although I have disclosed the ingredients as being asbestos fibre mixed with plaster of Paris, my invention contemplates the use of other ingredients which have the same or similar characteristics as the specific ingredients mentioned above and which will function in the same manner to obtain the desired results.

Members 5, 10 and 17 may be made of the plastic material described in the preceding paragraphs, but as herein disclosed, only the inner core member is made of plastic material and the outer mold sections may be made of the metal usually employed in molding apparatus. The mold sections are so shaped that the outer sections may be readily stripped from the finished cover even though made of metal as clearly disclosed in the drawing.

The manner of forming the lid is as follows: The mold sections are assembled as disclosed in Figure 2, the molten metal from which the cover is formed is poured in through frame member 14 until the molten metal reaches the top edge of core 17. The metal is allowed to cool, after which the outer sections are removed. This is done by removing the lower portion of the outer mold sections which is readily removable due to its frictional engagement with the upper portion of the mold section, removing screw 20 which will permit removal of frame member 14 and the upper portion 10. The cover with the core member therein is then inserted into a liquid bath which turns the core member into a pasty pulp, permitting the same to be poured out, thus leaving the finished seamless cover, the same being shaped to snugly yet removably fit in the neck and mouth of the milk can.

Thus, it is seen that the construction herein shown and described is well adapted to accomplish the objects of the present invention. It will be understood, however, that the invention may be embodied otherwise than here shown and that in the embodiment illustrated, certain changes in the construction and arrangements may be made. Therefore, I do not wish to be limited precisely to the construction herein disclosed except as may be required by the appended claims considered with reference to the prior art.

Having thus described the invention, what is claimed is:

1. Molding apparatus for forming seamless milk can covers which comprises a lower mold section, an upper mold section, having a vertical flange for detachably engaging a portion of the lower mold section, said upper mold section having a reduced vertically extending substantially cylindrical portion, a frame member resting on said vertical portion of the upper mold section, and an inner core member spaced from the aforesaid mold sections and having means for detachably connecting the inner core member to the frame member said means comprising a threaded bolt.

2. Molding apparatus for forming seamless milk can covers which comprises a lower mold section having a depressed central portion, an upper mold section having a substantially cylindrical body portion terminating at its lower end in a substantially horizontal flange, said flange having a portion thereof overlying the depressed portion of the lower mold and spaced therefrom, the outer edge portion of said flange having detachable engagement with the lower mold section, an inner core member having a cylindrical body portion and a laterally extending rim portion lying in the space between the upper mold flange and the depressed portion of the lower mold section, and means for holding the inner core member in spaced relation to the upper and lower mold sections.

CALVIN C. WARREN.