F. H. RICHARDS.

MILK CAN.

APPLICATION FILED OCT. 30, 1901.

899,762.

Patented Sept. 29, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

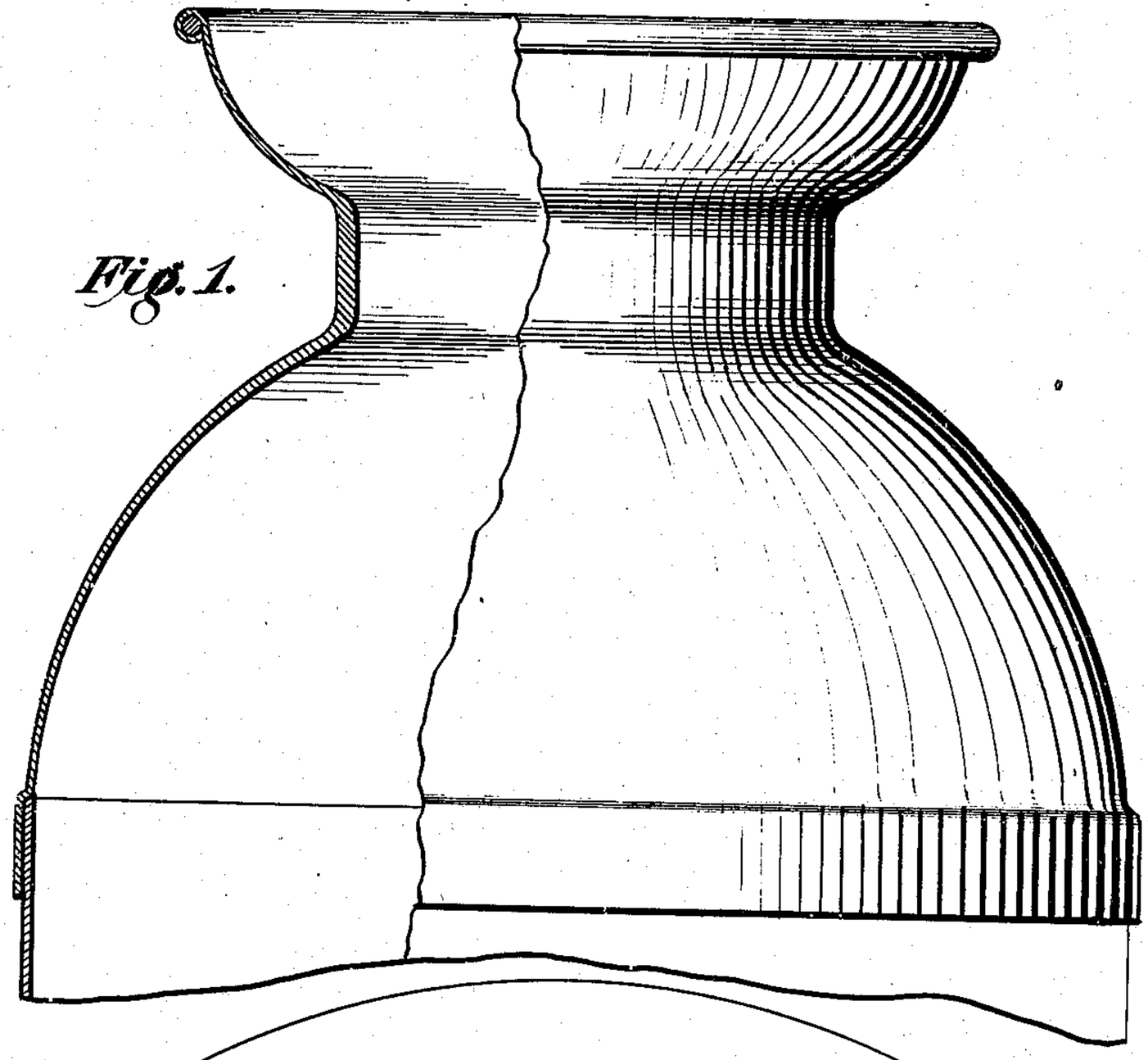
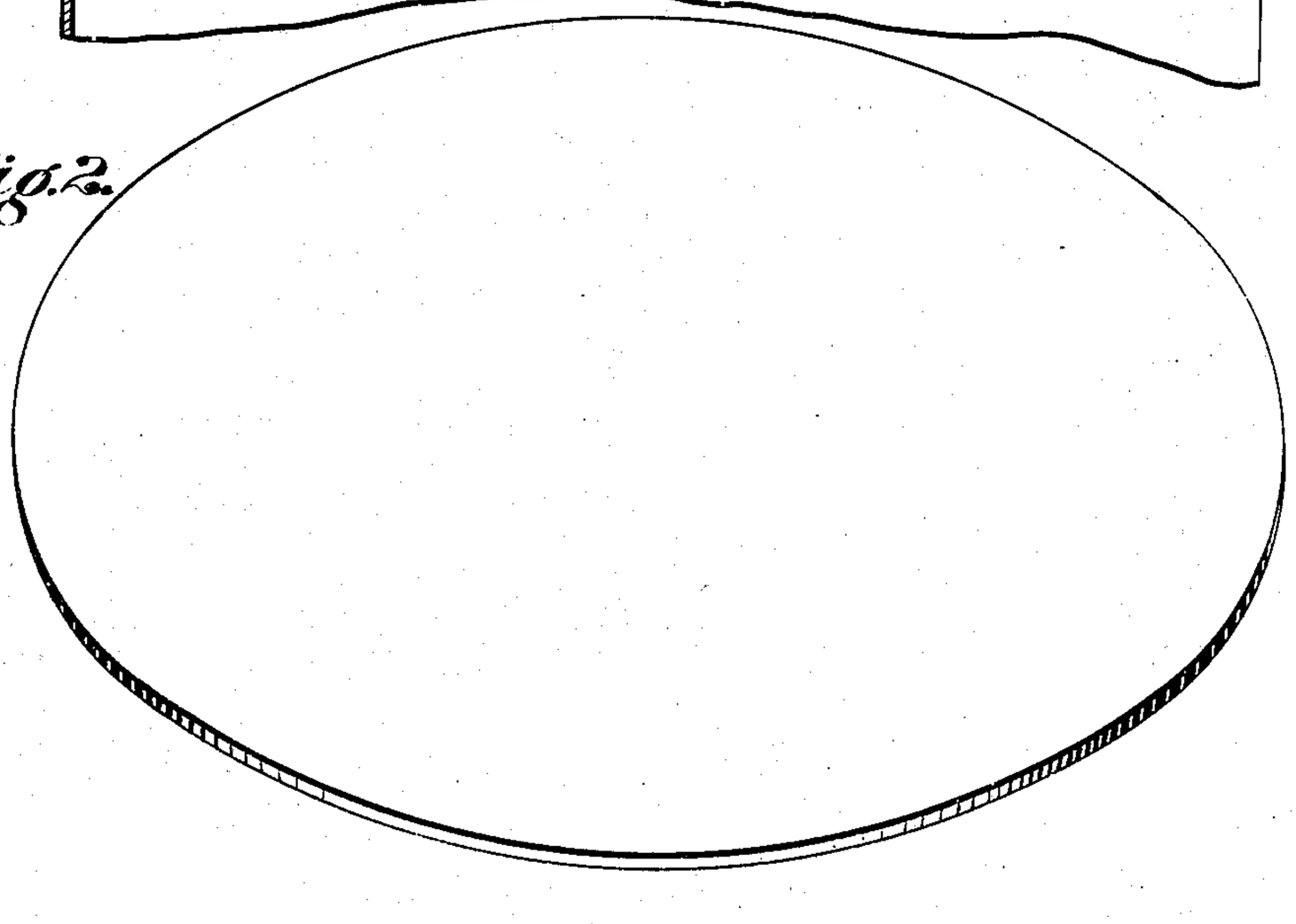


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

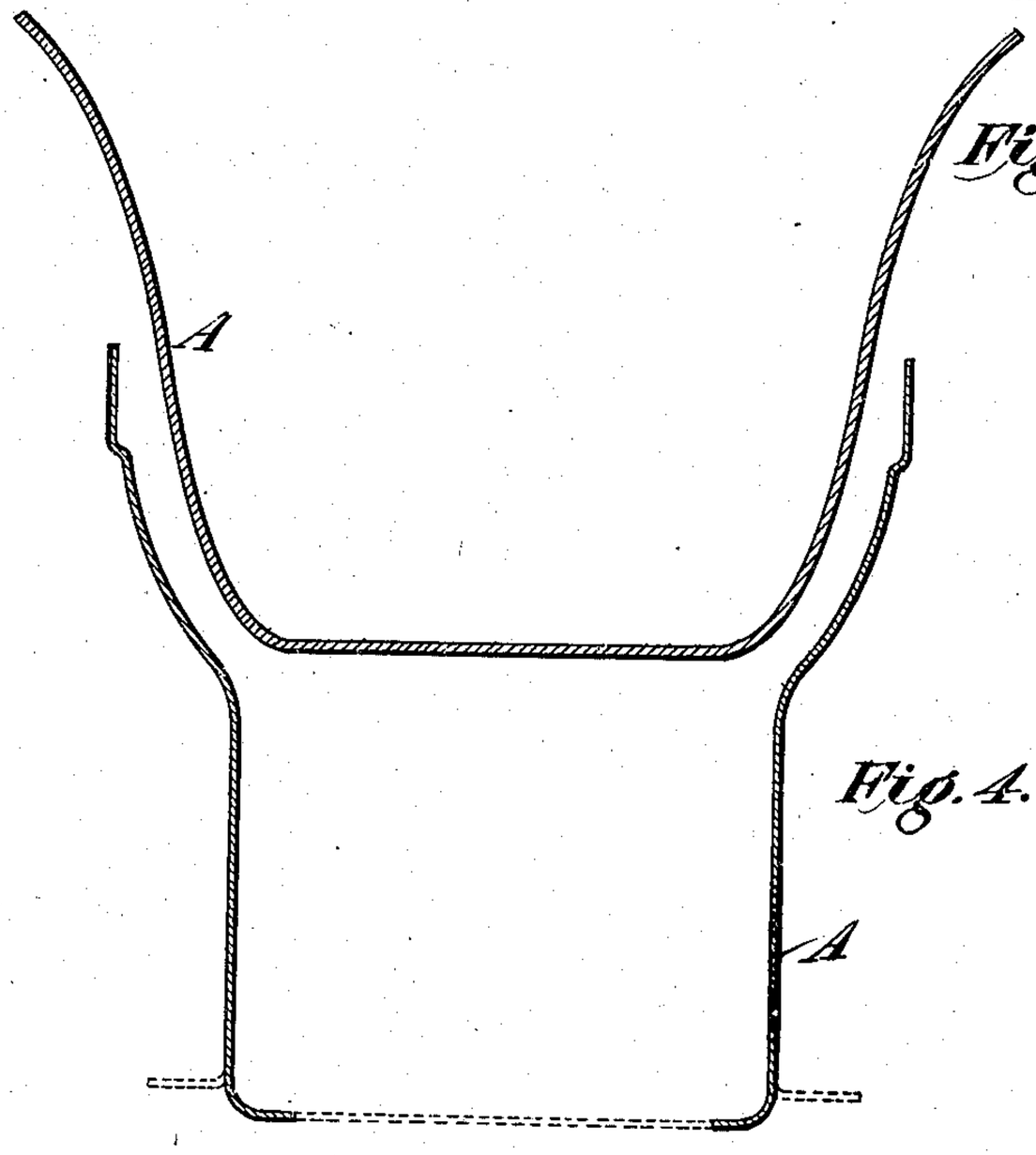


Fig. 6.

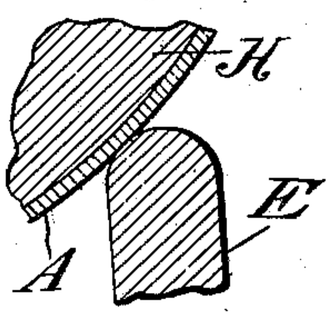


Fig. 4.

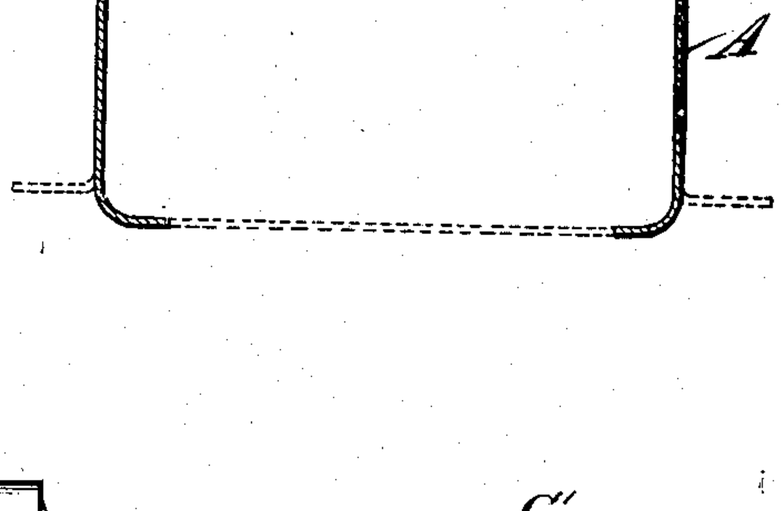
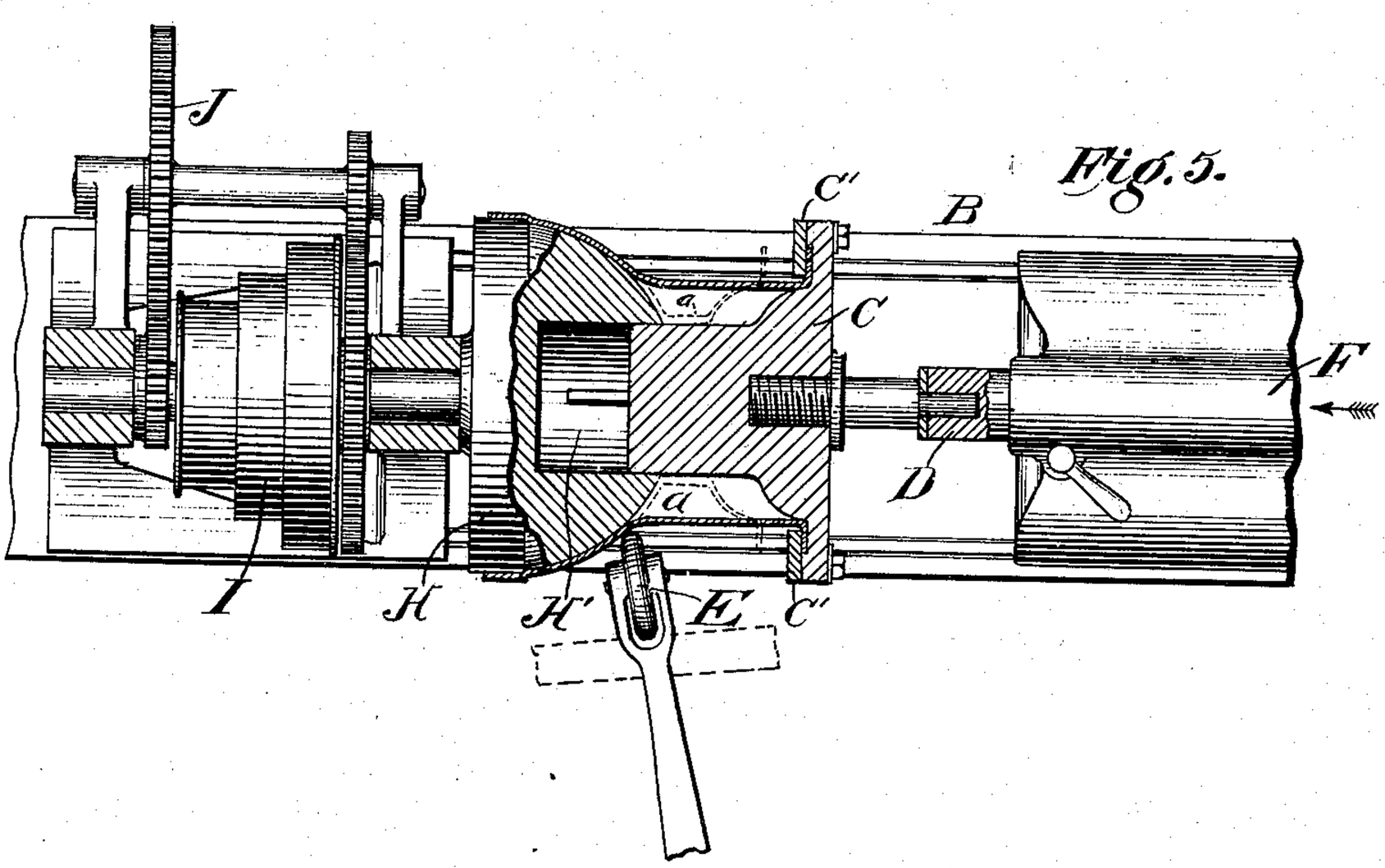


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

MILK-CAN.

No. 899,762. Specification of Letters Patent. Patented Sept. 29, 1908.

Application filed October 30, 1901. Serial No. 80,488.

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Milk-Cans, of which the following is a specification.

This invention relates to milk-cans, one object of the invention being to provide a milk-can with an improved reinforced neck.

A further object of the invention is to provide a one-piece structure forming the upper part of a milk-can with a thickened neck, thereby to reinforce such neck and prevent the twisting or distorting of such neck and also prevent elasticity of the metal at this point.

Another object of the invention is to furnish the neck of a milk-can with increased thickness by thickening the metal of which such neck is composed during the shaping of such neck.

In the drawings accompanying and forming a part of this specification, Figure 1 is a partly sectional view of a part of a milk-can having a breast, bowl, and thickened neck formed in one piece. Fig. 2 is a perspective view of a disk from which such article may be made. Figs. 3 and 4 are sectional views illustrating steps in the formation of the article. Fig. 5 is a partly sectional view of one and a simple form of apparatus which may be used to carry out this improved process, and Fig. 6 is a detail, on an enlarged scale, showing the use of one form of spinning tool.

Similar characters of reference designate corresponding parts in the different figures of the drawing.

In order that a clear understanding may be had of the present improvement, a brief reference will be made to the prior art as I am aware of it.

It is a well-known fact in the trade that a drop of foul milk will, in a short railroad journey, foul many gallons of pure milk. Consequently it is absolutely necessary that a milk-can be thoroughly cleansed so that no impure particles shall remain within the same. Many patents have been issued for improvements in milk-cans, but all, with two exceptions, have disclosed structures having joints or seams in the upper part thereof, from which it is a difficult matter to remove such impure particles, especially when this joint or seam is located at the underside of the neck where it is not readily accessible.

It is understood by those familiar with the milk-can business that a milk-can having its breast, bowl, and neck of an integral structure is practically perfect for cleansing purposes; in other words, such a structure, being seamless, is without crevices for the reception and retention of impure particles of matter. Such a can was patented and has been from time to time placed upon the market, but, owing to its structure and the way in which it was made, its disadvantages are greater than its advantages. That is to say, while it was without seam or joint, and therefore readily cleansible, nevertheless the neck was very elastic, so that in use it quickly became distorted or twisted out of shape, while also at times permitting the bowl to become crushed on the breast. Not only this, but owing to the elasticity of the neck the covers would jar loose, jump partially out and turn sidewise, during the jolting of railroad cars and wagons, thus permitting dust, dirt, and impure particles of matter to mingle with the milk. This elasticity is due to a large extent to the thinness of the metal of the neck, resulting from the drawing out of the article from a disk, this drawing operation rendering the metal at the neck portion much thinner than the metal of the original disk. These disadvantages more than offset the one great advantage of providing a seamless breast, neck, and bowl, consequently such patented structure never met with any great success in the market, as it too frequently had to be sent to the shop for repairs, its life even then being comparatively short. Subsequent to the issue of this patent many patents have been issued for improvements in milk-cans, but only one of which, however, has contemplated the reinforcing of the neck of an integral bowl, neck, and breast of a milk-can, and this by means of an independent and separate band located around such neck; it not having been thought possible, so far as the art discloses, up to the time of such invention, to provide a seamless bowl, neck, and breast with a reinforced neck, whereby all the advantages of a seamless structure could be obtained without any of its disadvantages. The structure set forth in the one patent to which I have just

referred does not, however, provide a one-piece bowl, neck, and breast in which the metal of the neck itself is utilized to strengthen such neck; on the contrary, the neck is reinforced by the use of an independent and separate band placed around the same, usually after the breast, bowl, and neck are completed, thus requiring additional time, labor, and expense to complete the can. By my improvement I am able to reinforce the neck without the use of an independent and separate band, and to reinforce such neck during the forming and shaping thereof.

To furnish this improved article of manufacture I may first provide a hollow or tubular shell or blank, and then suitably shape it to form a breast, neck, and bowl, which shaping operation is effective to work the breast and bowl or mouth in such manner as to form a neck of increased thickness as compared with the thickness of the bowl and breast metal.

In making this improved can I first prepare, by some suitable means, a blank adapted for conversion into the finished article, and subject this blank to treatment to form the neck of relatively thick and firm construction, whereby the entire article is produced with the proper qualities and strength in the respective parts thereof. According to one mode of treating this blank, I may take a disk, and by a series of steps well-known in the art, draw the same by successive stages into a tubular blank or shell. Two of such stages are shown in Figs. 3 and 4, that shown in Fig. 4 illustrating the last drawing operation.

When the hollow or tubular blank is in readiness for the proper shaping thereof into the finished article, this is preferably done by subjecting such blank to the graduated operation of spinning, some suitable apparatus being used for this purpose. In the drawings is illustrated a simple form of such an apparatus. The partially formed blank A having been mounted in place on the spinning lathe B, the elongation of the neck portion of the article is resisted by suitable means, shown in the apparatus disclosed in the drawings as a tool or die C and plunger D, comprising a part of hydraulic means, whereby longitudinal extension of said neck portion is prevented during the reduction of the same to the smaller diameter indicated by the dotted lines *a* in Fig. 5. The spinning tool or wheel E (various forms of which may be used) operates on but a small area at a time, and as this operation extends over the entire area to be reduced the metal is gradually beaten or driven in little by little, thus ultimately bringing all of the metal in a given area of relatively large diameter into a corresponding area but of a much smaller diameter; and in this way a given quantity of metal, distributed over a given length of the larger blank, is brought into a corresponding or shorter length of the smaller and completed article, and by this means the smaller article is necessarily thickened through the compression of the metal from a large area into a much smaller area. At the same time, of course, the metal is firmly condensed and solidified, and an article of superior stability and reliability obtained.

In the present instance, during the forming or shaping operation just set forth, the blank may also be subjected to endwise pressure, which assists in giving the neck its increased thickness. This pressure is obtained in the apparatus shown in the drawings by hydraulic means, and for this purpose a suitable plunger D, projecting into a cylinder F carried by a head adjustable on guide-ways of suitable framework, is provided, which plunger is rotatable relatively to such head and carries a forming tool or die C provided with a clamping ring C′ for clamping one part, as for instance the bowl or mouth-end of the blank, such tool having at one part the shape which the bowl is to have, and at another part a diameter corresponding to the interior diameter of the neck after it is finished. The opposite end of the blank, as for instance the breast, is carried by a suitable tool H having a shoulder against which a shoulder in the breast rests. One of these tools, shown as the tool H, is provided with a recess or chamber H′ into which the other tool slides, it being splined thereto, whereby both of the tools rotate together. Any suitable means may be provided for rotating the tools forming the lathe head. In the present instance this means is shown as a set of pulleys I and gearing J, the pulleys being adapted to impart one speed to the lathe, and the gearing a different, such for instance as a slower speed.

In forming the article with an apparatus substantially similar to that shown, the blank is placed upon the lathe in the manner shown in Fig. 5, and the lathe head started, whereupon during the rotary movement of the blank the spinning tool is brought into use to properly shape the blank. During this shaping of the blank the flowage of the metal longitudinally is not only restricted but the tool is gradually forced, by hydraulic pressure acting on the plunger D, into the chamber H′ of its companion tool H, whereby the metal blank is placed under endwise pressure, thus insuring a condensation of the metal at and adjacent to the neck and a consequent thickening thereof, the metal of the bowl and breast also being somewhat thickened as they approach such neck.

From the foregoing, it will be seen that I am able to provide an improved article of manufacture comprising an integral breast,

neck, and bowl of a milk-can, with such neck reinforced without the use of an independent strip or band.

Having described my invention, I claim—

1. A receptacle comprising a breast and a bowl or mouth, each flaring outwardly but in opposite directions to each other and connected by an integral condensed metal neck of increased thickness in cross section as compared with the major part of the bowl or breast.

2. A milk can comprising a bowl and a breast flaring outwardly in opposite directions and connected by a condensed metal one piece neck of increased thickness in cross section as compared with the metal of such bowl and breast.

3. A milk can comprising a bowl or mouth and a breast integrally connected by a condensed metal one-piece neck, the metal of which is of uniformly greater thickness than the metal of such breast and bowl.

4. A milk can comprising a breast and a bowl, each flaring outwardly in a direction opposite to the other and connected by a condensed metal neck integral with such breast and bowl, the metal of said breast or bowl, or both, increasing in thickness toward the juncture point thereof with the neck, and said neck having increased thickness in cross section as compared with the major part of the metal of said bowl or breast.

5. A milk can comprising a bowl and a breast, each flaring outwardly in a direction opposite to the other and connected by an integral condensed metal neck, the metal of which neck and of the bowl and breast adjacent to their juncture points with such neck having increased thickness in cross section as compared with the thickness of the remainder of such structure.

6. A receptacle of the class described having a bowl and a breast integrally connected by a neck having approximately double the thickness of a large part of such bowl and breast.

7. A milk can having a bowl or mouth and a breast integrally connected by a neck having greater thickness in cross section than that of a large part of the breast and bowl.

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Witnesses:
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B. C. STICKNEY.