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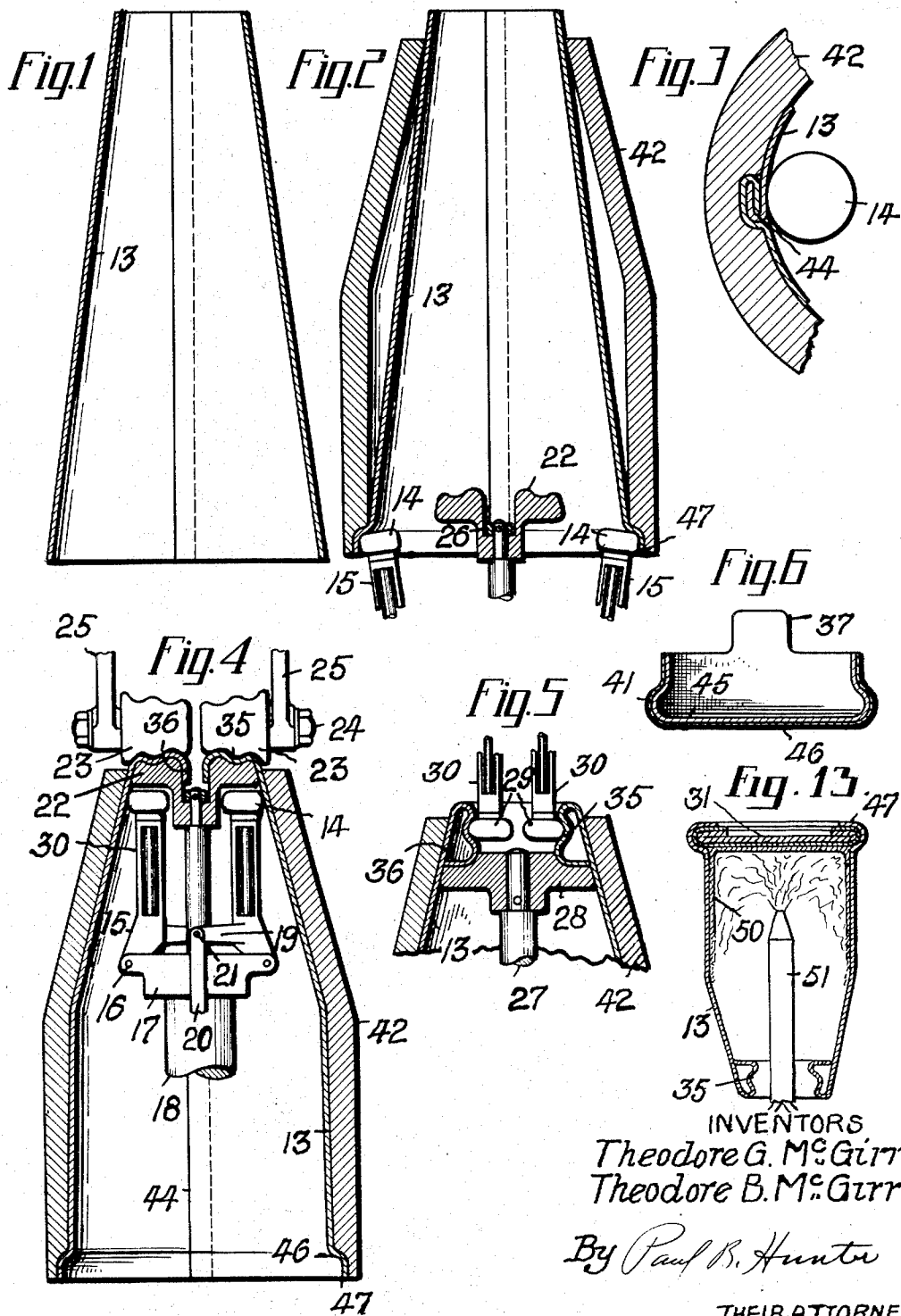
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TRANSPARENT CONTAINER

Filed April 2, 1938

2 Sheets-Sheet 1



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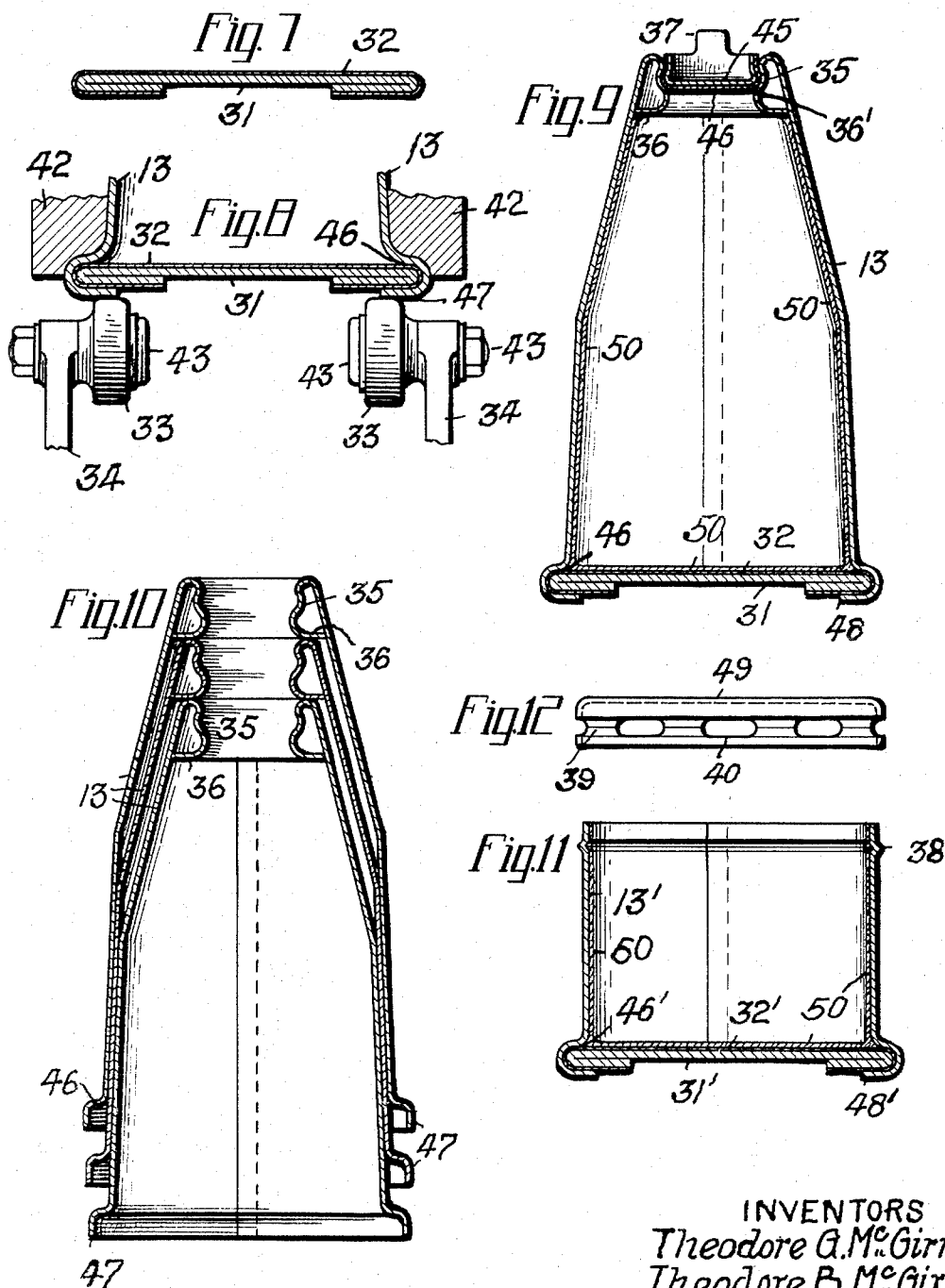
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2,235,963

TRANSPARENT CONTAINER

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5 Claims. (Cl. 229—5.5)

Our invention relates to containers, and more particularly to that class known as transparent containers.

1. One object of our invention is to provide a container fabricated from sheet cellulose material that is transparent.

2. Another object of our invention is to provide a container that is light in weight, tough in texture and that is unbreakable.

3. Another object of our invention is to provide a container that is adaptable to hold either liquids or dry materials.

4. Another object of our invention is to provide a container which insulates the contents from all parts of the container itself and which thus may be utilized in handling articles of food.

5. A further object of our invention is to provide a container which may be fabricated near the source of supply of the material, where it would be printed with suitable advertising matter and nested, then shipped to the distributor where the bottoms would be inserted and containers filled and capped.

The invention comprises a novel construction combination and arrangement of parts hereinafter more especially described and illustrated in the accompanying drawings, which refer particularly to the preferred exemplary embodiments of the invention. However as many changes could be made in the above construction and many widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the description drawings and claims shall be interpreted as illustrative and not in a limited sense. Referring to the drawings, the same part of the several figures thereof have corresponding reference characters.

Fig. 1 in the drawings shows a vertical section view of the hollow frustrum, constituting a step in forming the container.

Fig. 2 in the drawings shows a vertical section view of frustrum in the mold, body spinners starting to form body portion thereof.

Fig. 3 in the drawings is an enlarged fragmentary horizontal section of the vertical seam of frustrum and mold.

Fig. 4 in the drawings shows a vertical section view of frustrum and mold with the body spinner having completed body, spinners having made first step in forming neck.

Fig. 5 in the drawings is a horizontal section showing the neck spinners after they have completed the neck.

Fig. 6 in the drawings shows a vertical section of the container cap.

Fig. 7 in the drawings is a vertical section of the bottom of the container.

Fig. 8 in the drawings shows the bottom spinners after they have completed their function.

Fig. 9 in the drawings shows a vertical section of the container showing the bottom and cap in place.

Fig. 10 in the drawings shows a vertical section of the method of stacking the partly completed container.

Fig. 11 in the drawings shows a vertical section of another form of container.

Fig. 12 in the drawings shows side elevation of cover for same.

Fig. 13 illustrates the coating of the interior of the container.

The container which we have invented to meet the objects stated above consists of a sheet of Celluloid, Cellophane or similar cellulose materials cut to proper shape, which after being immersed in a warm agnerus-glycerine solution is then formed into a frustrum, as shown in Fig. 1 of the drawings. The frustrum is held in form by its overlapping edges being formed into a seam 44, as shown in Fig. 3 of the drawings. With the frustrum thusly formed, it is inserted in the slightly heated mold 42 and from the large end thereof, is inserted a plurality of body spinners 14. These are rotatively mounted on the pivotal levers 15 which are free to move toward the side wall 13 of the frustrum or away therefrom, through the swivel pins 16 and connection 17 which is secured to the rotating shaft 18. The pivotal levers 15 have bell crank arms as a part thereof 19 to which are connected links 20 through the pins 21.

The links 20 through the bell crank arms 19, impart the pressure necessary to press spinner rolls 14 against the side wall 13 of the frustrum while the shaft 18 is rotating and moving into the container.

The spinner rolls 14 contacting the side wall 13 start to rotate against said side wall 13 with increasing pressure. This rotation of the spinner rolls 14, under the pressure imparted to it, has a peening effect on the side wall areas 13 of the frustrum and they elongate under it, until they reach the wall of the mold 42 by which time the spinners 14 have advanced in a screw like line, allowing the spinner rolls to reach new portions of the side wall 13 in advance of that just acted upon.

Loosely mounted upon the shaft 18 is a head or

anvil 22 which co-operates with the spinner rolls 23 of sinuous contour in making the first step to form the neck of the container, as shown in Fig. 4 of the drawings. A collar 26 holds the anvil in place on the shaft 18.

Thus as the body spinners 14 reach the position shown in Fig. 4, the spinner rolls 23 which are in rotation circumferentially with regards to the container and are also free to rotate on the studs 24 secured in the pivotal arms 25 are moved in the direction of the neck of the container, and as they move forward, they also move in toward the vertical axis of the container, rotating all the while because of their contact with the side wall 13 thereof. This twofold action of the neck spinning rolls 23 causes that portion of the frustum extending out of the mold as shown in Fig. 2 of the drawings to be spun over, and in conjunction with the anvil 22 causes it to be formed as shown in Fig. 4 of the drawings into a sinuous throat portion.

This operation having been completed the neck spinners 23 and co-acting parts move back and away from the container. The shaft 18 is also withdrawn from the opposite end of the container. When the shaft 18 has been withdrawn from the large end of the container, an arbor 27 is inserted therein having a head 28 secured to its extremity.

The spinners 29, which are also being rotated circumferentially with relation to the container are rotatably mounted on the pivotal levers 30, which move forward and guided by a cam (not shown) they are caused to move toward the vertical axis of the container, thereby turning the throat portion into place with the throat lower flange 36 abutting the container walls.

After the neck has been formed as shown in Fig. 5 of the drawings, the spinner rolls 29 are moved in toward the vertical axis again and in that position are withdrawn from the container. This movement permits the spinners 29 to pass out through the neck of the container without touching it.

The containers are now ready for printing and for nesting as shown in Fig. 10.

While we have shown here spinning rolls as a method of stretching the side wall of the container to the form shown in Fig. 10, we do not mean to restrict ourselves to that particular method solely, as compressed liquid or air, a mandrel or any other means that would accomplish the same results would be satisfactory. The container is now ready to have a bottom put in, so a bottom consisting of a circular disc of cardboard or other material 31, to which is laminated Cellophane or some other moistureproof material 32, bent back upon itself as a reinforcement to the bottom, as shown in Fig. 7 of the drawings, is put in large open end of the container, where it seats itself upon the offset portion 46 of the side wall 13 thereof, with the extension 47 which is to be formed over and about the bottom, extending at right angles thereto.

Then the bottom spinning rolls 33 which rotate upon the studs 43 secured in the pivotal arm 34 move forward. These rolls like the others just described are being rotated circumferentially with relation to the container at relatively high speed. Thus the forward motion of the spinners 33 while only slight is enough to cause a drawing in of the container side wall 13. As the rolls move from the rim of the container, toward the vertical axis thereof, they actually only operate

upon a small area at a time and their path is helical. When in their innermost position, they are as shown in Fig. 8 of the drawings.

We do not mean, however, to limit ourselves to this method solely, as any other means such as folders acting in conjunction with pressure members would accomplish the same result. The offset in the mold 42 engaging the flange 47 at the bottom of the container would act in conjunction with such pressure member, so that all the pressure would be applied outside the container and in direct line between such pressure member and the end of the mold 42 enabling the joint to be completed without the use of collapsible mandrels within the container.

The bottom of the container having been put in place, the container is ready to be sterilized. This is done by placing it bottom side up, upon a suitable conveyor (not shown) and as it is being moved along a spray nozzle 51 is inserted into it through the neck opening thereof. This nozzle, which is slowly rotated, discharges a fine spray of a medium, consisting of cellulose nitrate, certain gums and plasticizers and a high lacquer solvent which covers the entire inside of the container, as indicated at 50 and being of such a character, renders the container completely moistureproof and at the same time provides an insulating medium that prevents the contents from coming in contact with any part of the container itself. The action of the medium in covering the entire inside of the container, provides a most effective means of sterilizing the container making it possible thereby to use the container for materials used as articles of food.

It is understood that the various seams of the container, even though they be locked in place, may have a solvent or an adhesive applied to them, to further aid their making a tight seal so that they would hold either liquids or powder.

The container cap, as shown in Fig. 6 of the drawings, is made from cardboard 45, which may be laminated with Cellophane 46 or any other moistureproof materials of like character and is cup shaped. It has on its upstanding sides a convex molding 41 which fits the circular concaved groove 35 in the neck of the container. This convexed portion 41 snaps over the rounding in the neck of the container by reason of the slight difference in the center distances in the cap and the container neck, is held firmly down upon the seat 36' formed by small diameter at the lowest portion of the neck.

The cap is provided with a tab 37, which permits its removal from the container by reason of its causing a shearing action in disengaging the molding in the cap from the recess in the neck of the container.

The container shown in Fig. 11 is another form which may be made. This has a reinforced bottom as has the container previously described, but the side walls in this container are parallel and have therein, near the top, a circumferential outwardly extending V shape projection 38.

The cover 49 shown in Fig. 12 has also an outwardly extending V shape groove 39 which fits over the projection 38 in Fig. 11, and is provided with apertures 40, which when the cover is in place on the container shown in Fig. 11, tends to seize the sidewalls of the container and hold tighter thereto.

It must be understood that it is not absolutely necessary to have the apertures 40. The cap may be made without them as well.

What we claim as new and desire to cover by Letters Patent is:

1. In a container of the character described, a transparent wall structure having its lower edge portion outwardly offset in the form of an annular flange provided with a depending skirt portion for receiving the container bottom and having its upper edge portion of sinuous contour and turned inwardly and downwardly for forming the container throat, the lower portion of said throat having an outwardly projecting annular flange for abutting the interior wall of the container, the sinuous contour of said throat providing an annular groove for conformably receiving a cover in sealing relation.

2. In a container of the character described, a transparent wall structure having its lower edge portion outwardly and downwardly offset for receiving the container bottom and having its upper edge portion of sinuous contour and turned inwardly and downwardly for forming the container throat, the sinuous contour of said throat providing an outwardly indented groove for suitably receiving a cover, said container having a reinforced bottom adapted to be held by the lower offset edge portion of said wall structure and having a cap provided with an annular projection for conformably engaging the groove in said throat.

3. A container comprising transparent side walls having the upper portions thereof turned inwardly and downwardly to form the container throat portion, the lower end of said throat portion having an outwardly directed flange abutting said side walls, whereby said throat portion is spaced radially inwardly from the said side walls, said throat portion having an annular recess substantially midway of the height thereof to provide a seat for a cap having an external annular pro-

tuberance for snugly engaging therein in locking relation.

4. A container comprising transparent side walls having the upper portion thereof turned inwardly and downwardly to form the container throat portion, said throat portion having a lower outwardly projecting flange abutting said side walls, said flange maintaining the inner wall of said throat portion spaced radially inwardly from the said side walls, said throat portion having an annular recess substantially midway of the height thereof to provide a seat for a cap having an external annular protuberance for snugly engaging therein, the diameter of said throat below said seat being less than that thereabove to provide a firm stop for the cap.

5. A container having transparent side walls of cellulosic material and adapted to be shipped in unassembled form comprising, a tubular body portion having a frustum shaped upper portion and an outwardly offset bottom retaining lower edge portion, said lower edge portion having a depending skirt, said construction enabling a number of such body portions to be nested, and a separate bottom member adapted to constitute a closure for the lower end of the tubular body portion, the skirt of the offset lower edge portion of said body portion being capable of being bent inwardly into engagement with a part of said bottom to hold the latter in place, the upper part of said body portion being turned inwardly and downwardly to form a throat, the lower edge of said throat being formed with an outwardly extending flange for abutting the inner wall of said body portion to retain the main portion of said throat spaced inwardly therefrom, said throat main body being of contour suitable for snugly receiving a cover.

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