

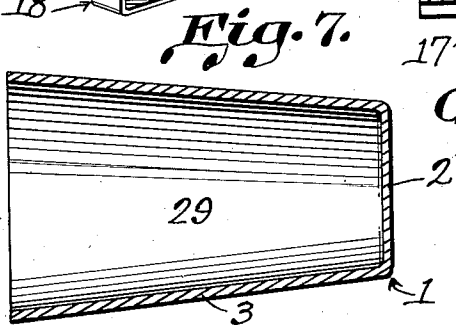
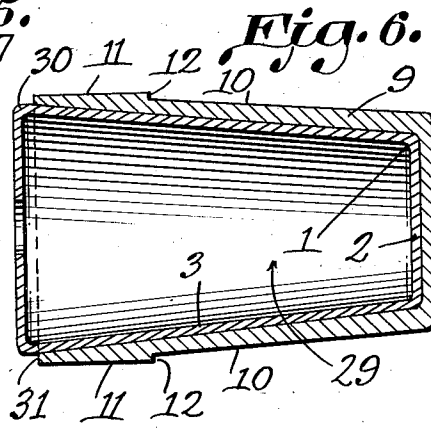
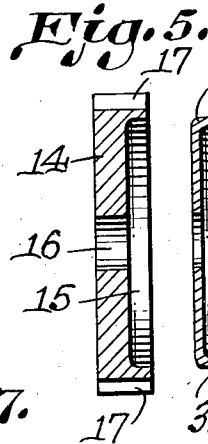
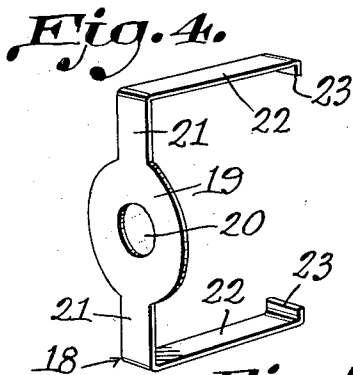
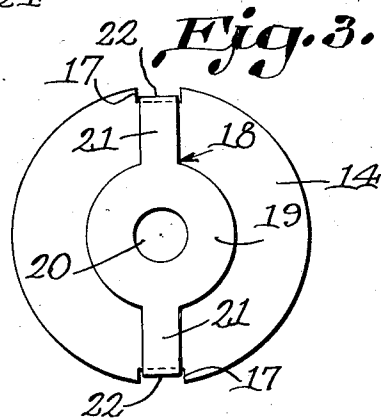
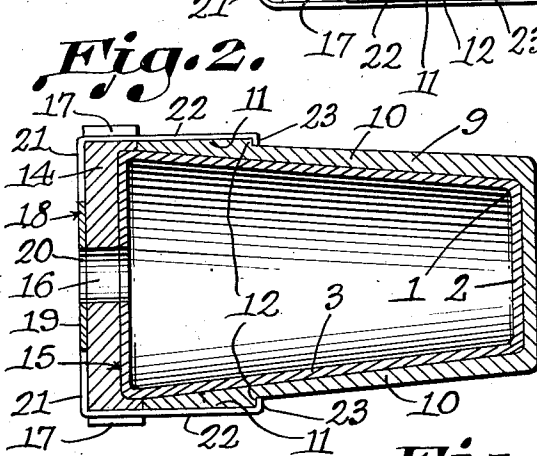
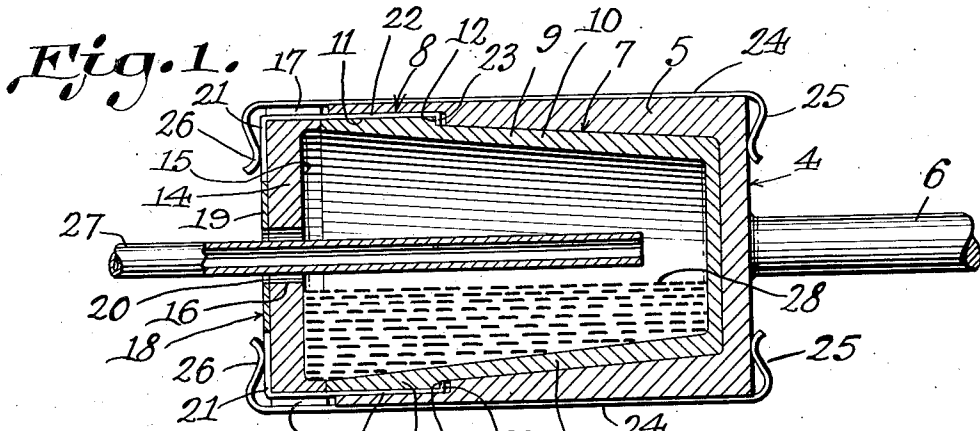
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METHOD OF AND MACHINE FOR MAKING CONTAINERS

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METHOD OF AND MACHINE FOR
MAKING CONTAINERS

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2 Claims. (Cl. 18—26)

This invention aims to provide a novel machine for making a container, and to supply a novel process for making the container.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawing:—

Fig. 1 shows, in vertical longitudinal section, a device constructed in accordance with the invention, the parts showing as they will appear when the process of making the container is about to be begun;

Fig. 2 is a vertical longitudinal section, showing the core with the partially completed container therein;

Fig. 3 is an end elevation of the structure shown in Fig. 2;

Fig. 4 is a perspective view of the grip;

Fig. 5 is a vertical transverse section of the closure for the core;

Fig. 6 is a vertical longitudinal section of the core, with the partially completed container therein;

Fig. 7 is a longitudinal section of the completed container.

The article produced in the machine, and by the process, hereinafter described, is a container of any desired kind, shown at 1 in Fig. 7, and for convenience disclosed as a tumbler, made of a cellulose acetate compound, the constituent ingredients of which are such that it will neither burst into flame, nor explode when flame or a high degree of heat is applied to it, it being necessary to exercise considerable care in order to get the container to burn at all. A slight draft of air will extinguish the burning container, and it melts, rather than burns. In the respects stated, and in others, the container differs from one made of celluloid. The container is odorless and tasteless, and it tends to contract as it cools.

The container 1 embodies a bottom 2 and a wall 3, and it is to be understood that, although the container is shown in the form of a tumbler,

the machine may be used for making many articles other than tumblers.

The machine comprises a hollow rotor, denoted as a whole by the numeral 4. The rotor 4 is a composite structure, comprising a hollow body 5, the outer surface of which is cylindrical, the body 5 being closed at one end and open at the opposite end.

A means is provided for turning the rotor 4 about a horizontal axis, and this means may be of any desired kind. As shown, but not of necessity, the rotor 4 is turned on a horizontal axis, by means of a horizontal shaft 6, secured to the closed end of the body 5.

If a tumbler is to be made, the inner part of the cavity of the body 5 may be tapered, as shown at 7, and this construction may be resorted to, regardless of the shape of the article which is to be manufactured. The outer portion of the cavity of the body 5 is cylindrical, as shown at 8.

The numeral 9 marks a hollow core, including a tapered part 10 and a cylindrical part 11. The tapered part 10 of the core 9 fits closely in the tapered part 7 of the cavity in the body 5 of the rotor, and the cylindrical part 11 of the core 9 is received in the cylindrical part 8 of the cavity of the body 5. The external diameter of the cylindrical part 11 of the core 9 is somewhat less than the diameter of the cylindrical part 8 of the cavity in the body 5, to leave room for certain fastening devices, hereinafter described in detail, but designated sufficiently, for this point in the description, by the numeral 22. At the inner end of the cylindrical part 11 of the core 9, a shoulder 12 is formed.

A closure disk 14 fits against the open end of the core 9. In the inner surface of the closure disk 14, there is a recess 15. The closure disk 14 is provided with a central opening 16, communicating with the recess 15. There are notches 17 in the edge of the closure disk 14.

The closure disk 14 may be held on the end of the hollow core 9 in any desired way. If preferred, recourse may be had to a resilient, metal, U-shaped grip 18, which is shown in Fig. 4. The grip 18 comprises a hub 19 having a hole 20 so located as to register with the opening 16 of the closure disk 14. The hub 19 has opposite extensions 21, provided with arms 22, arranged at right angles to the extensions, the arms 22 terminating in inwardly extended fingers 23. The parts 19 and 21 extend across the outer surface of the closure disk 14, the arms 22 are located in the notches 17 of the closure disk 14, and they extend along the outside of the cylindrical

part 11 of the core 9, the fingers 23 being engaged with the shoulder 12. In this manner, the closure disk 14 is held on the end of the core 9.

When the core 9 is mounted in place in the body 5 of the rotor, the core is held in the body by resilient clamps 24, in the form of strips, extended longitudinally of the body 5 on the outside thereof, the clamps having fingers 25 which engage the closed end of the body 5, and the clamps having fingers 26 which bear on the parts 21 of the grip 18, both the core 9 and the disk 14 being secured in the position shown in Fig. 1. The clamps 24 extend through the notches 17 in the edges of the disk 14.

A suction pipe 27 extends through the hole 20 of the grip 18 and through the opening 16 of the closure disk 14, into the hollow core 9. The diameter of the suction pipe 27 is considerably less than the diameter of the hole 20 and the opening 16, and, therefore, there is an air inlet in the disk 14, about the suction pipe 27.

In practical operation, the core 9 is taken out of the body 5, and the closure disk 14 is removed from the core. The core 9 then is set up vertically, with its open end uppermost, like a cup. A quantity of the liquid that forms the container 1 is placed in the vertically disposed core 9. Enough of the liquid, marked by the numeral 28 is used, so as to just form the article as disclosed in Fig. 6. The closure cap or disk 14 is secured to the core 9, by means of the grip 18, and the core 9 is turned from its vertical position, into a horizontal position, the core being inserted into the body 5, and the parts being held together, as in Fig. 1, by the clamps 24. The suction pipe 27 is inserted through the openings 16 and 20, and the device is ready for use.

By means of the shaft 6, the rotor 4 is turned slowly about a horizontal axis, say at about three and one-half revolutions a minute. Each time that the rotor 4 makes a revolution, a thin film of the liquid 28 is deposited on the side wall of the core 9, and the liquid finds its way, also, across the closed inner end of the core 9. Gradually, the speed of rotation is increased to about fifty turns per minute, but the rotation, at no time, should be fast enough to cause the accumulating film to loop back on itself and form air bubbles. The suction through the pipe 27 draws out the volatile constituents of the mixture, air being drawn into the core 9, through the openings 16 and 20. The volatile matter drawn out is largely of a solvent nature, and the drying and the hardening of the article is promoted by the operation of the suction pipe 27.

At the proper time, which may be ascertained readily by experiment, the suction in the pipe 27 is stopped, and the rotation of the shaft 6 is stopped. The pipe 27 is withdrawn, the clamps 24 are taken off, the core 9 is removed from the body 5, the grip 18 is detached, the closure disk 14 is taken off, and the core 9, with the contained article 29, appears as shown in Fig. 6. Owing to the presence of the recess 15 in the closure disk 14, the article 29 has, at one end, a slight projection 30, shown in Fig. 6. This projection 30 may be cut off along the end 31 (Fig. 6) of the core 9, and the completed article, as shown in Fig. 7, may be slipped out of the core 9.

Having thus described the invention, what is claimed is:—

1. A method of forming a container out of liquid, which comprises partially closing the open end of a horizontal, cup-like core, to retain the liquid at a predetermined height in the core, and to leave an axial opening in the partially closed end of the core, above the liquid, rotating the core at such speed that the liquid will coat the inside of the core including the partially closed end thereof, without filming across and closing the opening, admitting air through the opening, and simultaneously conducting away, through the opening, from an intake point remote from the opening, the vapors created by the evaporation of the liquid.

2. In a machine for forming containers out of liquid, a rotor comprising a body, a horizontal, hollow, removable, cup-like core inserted into the body, the core comprising a side wall having a closed end and an open end, the core being so shaped internally as to contain the liquid and give the desired form to the container, a detachable closure for the open end of the core, means engaging the closure and the body for holding the closure on the core, the closure having a central opening, the closure retaining the liquid in the core at a depth no greater than the distance between the opening and the lower portion of the side wall, the core being so shaped internally that the completed container can be removed when the closure is detached from the body, a suction pipe extended through the opening and prolonged within the core, the opening being of greater diameter than the pipe, to form an air inlet in the closure, about the pipe, and to facilitate the removal of the closure, and means for supporting the rotor and the body for rotation about a horizontal axis.

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