Oct. 17, 1939. R. C. FENNER 2,176,216

CONTAINER AND METHOD OF MAKING THE SAME

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Fig. 1

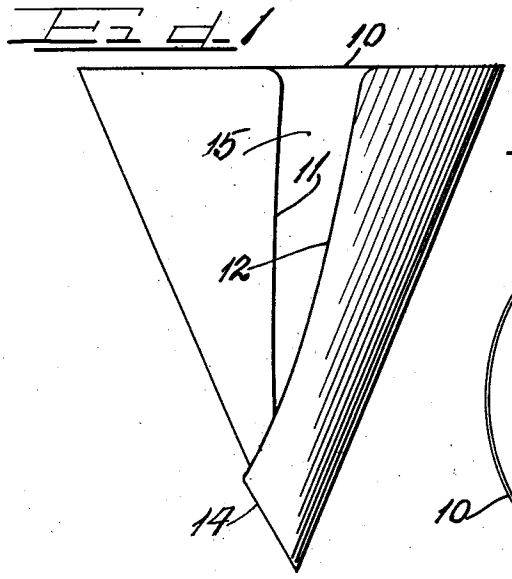


Fig. 2

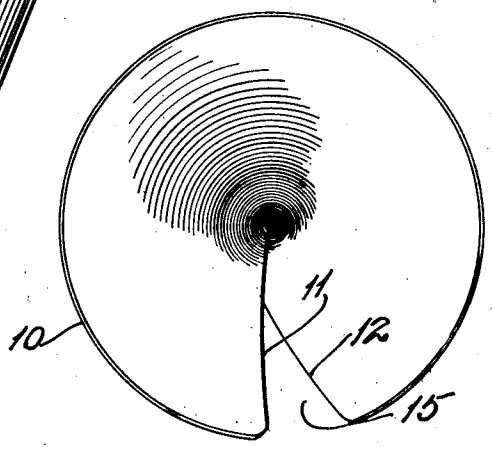


Fig. 3

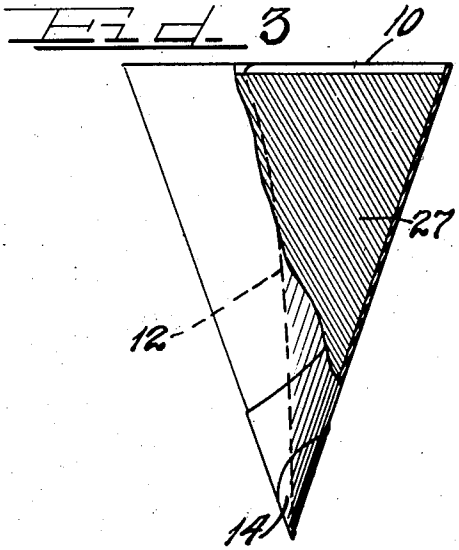
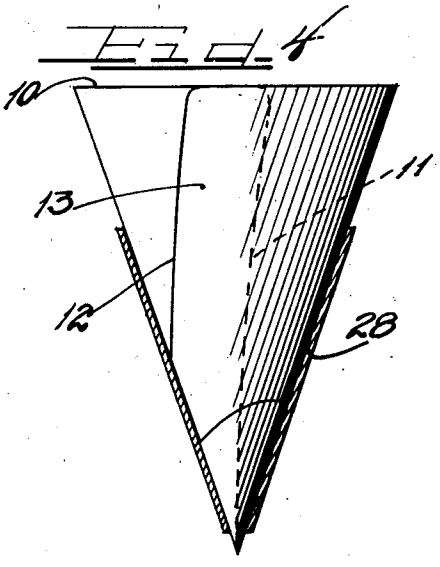


Fig. 4



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Fig. 5

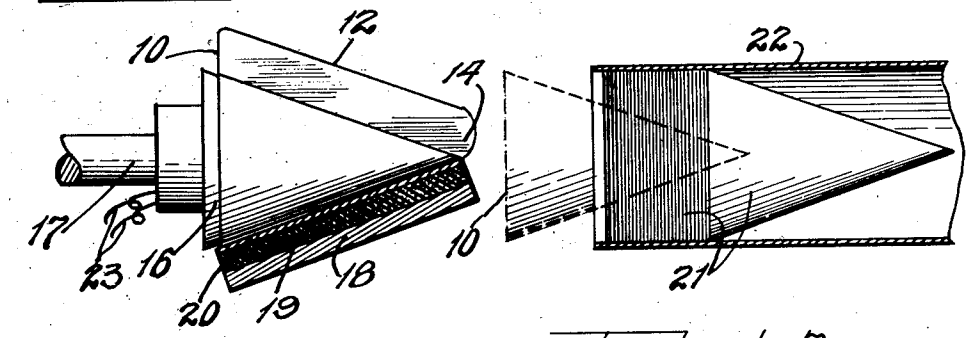


Fig. 7

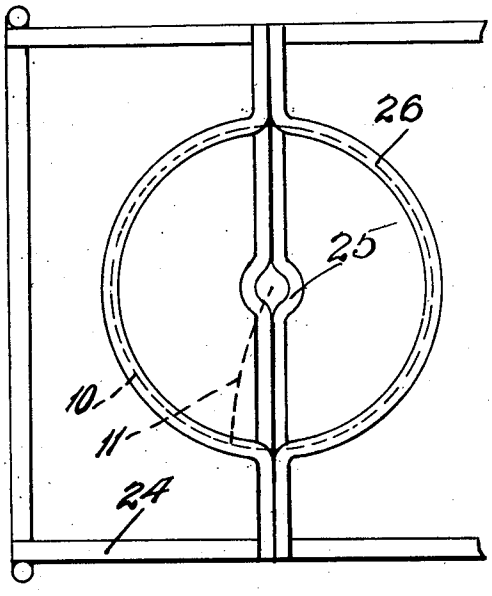
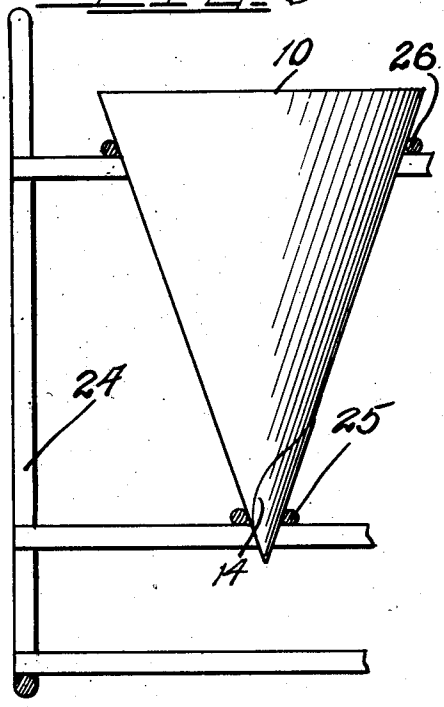


Fig. 6



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CONTAINER AND METHOD OF MAKING THE SAME

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12 Claims. (Cl. 93—36.1)

This invention relates to improvements in a container and method of making the same, and more particularly to a container of the character made of paper or some similar fibrous material sufficiently economical to warrant disposition of the container after a single usage, the invention being highly desirable both as a medium for packaging frozen confections such as ice creams and sherbets, for example, and also as a medium for containing a liquid, when associated with a suitable holder, although the invention may have other uses and purposes as will be apparent to one skilled in the art.

In the making of containers of paper and similar material, either for the packaging of a frozen comestible or for containing a liquid, it is highly desirable to provide a container substantially self-sustaining in that it will substantially maintain its own container shape, and it is also extremely desirable to make the container as economically as possible and with as few operations as possible. Insofar as I am aware, all containers made heretofore having overlapped portions would not retain their shape unless the overlapped portions were secured together, such, for example, as by a suitable adhesive, and obviously more economical manufacture would result in the event the securing operation could be eliminated.

Other containers of which I am aware and which did not have overlapping portions secured together, were not capable of retaining their own shape prior to use or prior to disposition in some form of a holder, but up to the time of usage were merely in the form of a substantially flat blank shaped at the time of usage.

With the foregoing in mind, it is an important object of the present invention to provide a paper container which tends to substantially retain its general shape without support, and which also has unsecured overlapping portions.

Another object of the invention is the provision of a container of paper or similar material having overlapped unsecured portions but so formed that it will tend to substantially retain its container shape sufficiently to permit nesting of a plurality of the containers.

A further object of the invention is the provision of a container of conical shape, made from a single blank of paper or similar material, and so formed that it will tend to retain its conical shape alone and unaided at least to an extent sufficient to permit nesting of a plurality of the containers.

It is also a feature of the invention to provide a container made from paper or similar material, having overlapped unsecured portions, the container being so constructed as to maintain its container shape alone and unaided at least to such an extent as to render it suitable for handling and so constructed that when placed in a holder it will promptly assume its proper and complete resultant shape sufficiently to contain a liquid.

Also an object of this invention is the provision of a substantially self-sustaining container of paper or similar material, which may be made from a single blank of stock, merely by forming the sheet into container shape.

Another feature of the invention resides in the provision of a conical paper container which may be made by merely shaping a blank of stock into conical form with overlapped marginal portions, and nesting the container in a plurality of previously formed containers, leaving the container in nested position until the stock material has sufficient time to acquire a set, whereby at least the apexial region of the conical container will retain its formed shape, so that the entire container may be handled as though it were a true cone and will immediately adapt itself to substantially true conical shape upon being placed in a holder.

A further object of the invention is to provide a paper container which may be made by simply forming a blank of stock into container shape and contemporaneously giving the material a set sufficient to cause the formed blank to be substantially self-sustaining in container shape.

It is also an object of the invention to provide a new and novel method of making a container.

A still further object of the invention is the provision of a new and novel method of making and using a container.

While some of the more salient features, characteristics, and advantages of the present invention have been above pointed out, others will become apparent from the following disclosures taken in conjunction with the accompanying drawings, in which:

Figure 1 is a side elevational view of a container embodying principles of the present invention, with the opening between the overlapping marginal portions of the container somewhat exaggerated for the purpose of clarity;

Figure 2 is a plan view of the structure shown in Figure 1;

Figure 3 is a side elevational view, partly in section, showing the container of Figure 1 filled with a frozen comestible, such as ice cream;

Figure 4 is a side elevational view of the container of Figure 1, showing the same positioned in a holder illustrated in section, the container being ready for reception of a liquid substance;

Figure 5 is a fragmentary, part elevational and part sectional view, illustrating a step in the formation of the container;

Figure 6 is a fragmentary, part sectional and part elevational view, illustrating a step in the use of the container;

Figure 7 is a fragmentary plan view of the structure of Figure 6, with the container proper indicated by dotted lines.

As shown on the drawings:

As an illustrated embodiment of my invention, I have selected a container of substantially true conical shape, and of a character which may be used for the packaging of frozen comestibles, such as ice cream and sherbets, in which the frozen comestible is frozen in and to the container, and which container may also be used in a suitable holder to contain a liquid substance and function as a drinking cup. The container is preferably made from a suitable paper, such as the paper commonly used in the manufacture of paper drinking cups, the so-called "dry-wax" paper (in which the paper stock is impregnated with a thermoplastic substantially non-detectable from the surface of the paper stock) being a satisfactory and preferable material.

In the present instance, the illustrated container is made from a single blank of material, which blank is preferably somewhat sector-shaped including an initially arcuate edge **10** for defining the mouth of the container and a pair of converging side edges **11** and **12**, the margins adjacent which side edges are overlapped, as indicated at **13** in Figure 4. The blank also preferably includes a projecting tab-like portion **14** extending from one of the converging side edges, in this instance from the side edge **11**, the tab **14** being substantially coincidental with the side edge **12**, as seen best in Figure 5.

It is to be understood that the container is not limited to the use of a blank of the character just above described, any suitable form of blank being satisfactory, and by way of example and not by way of limitaton, I mention the forms of blanks illustrated in Cesare Barbieri Patent No. 1,610,192, issued December 7, 1926, entitled "Conical paper cup and process of making the same", and Andrew C. Wood Patent No. 1,964,238, issued June 26, 1934, entitled "Cups for confectioneries", as being satisfactory. However, it is to be definitely understood that while the blanks mentioned in the aforesaid patents are provided with a form of adhesive for securing the overlapped marginal portions together, the blank of the present invention as herein illustrated and described is not provided with any form of adhesive or other securing means on the overlapping margins, these margins remaining in overlapping position but being unsecured or unattached to each other by any outside medium.

When a single container is removed from a stack of nested containers prior to use, it will have an appearance approximating the showing in Figures 1 and 2, although in these figures the space **15** between the upper portions of the overlapped margins has been exaggerated somewhat for the purpose of clarity. However, the container will not have the exact shape of the showing in Figures 3 and 4 prior to use, because the container is formed from a blank of material which is merely shaped into container form and provided with a set so that it will have an inherent tendency to remain in conical shape thereafter, but this tendency will not be sufficient to maintain the upper portions of the overlapped margins in completely overlapped position without any support. However, the apexial region of the container will remain in overlapped position, as seen in Figure 1, so that the container will be substantially self-sustaining in substantially conical form, and upon placement of the container in a suitable holder, a slight force in the placing or a slight pressure after the placing is more than sufficient to cause the container to assume the shape of Figures 3 and 4.

One satisfactory way of forming the container is illustrated in Figure 5. In this instance, a conical mandrel **16**, mounted for rotation upon a suitable shaft **17**, is utilized, and the container blank is preferably gripped adjacent one of the side edges by the mandrel and then wound around the mandrel as the latter rotates. In Figure 5, I have illustrated a blank as partially wound around the mandrel, this figure plainly indicating the fact that the last portion or outer one of the overlapped margins is devoid of any adhesive or other securing means.

Preferably during the winding operation and thereafter for an interval of time, if desired, the blank is ironed by a suitable presser member comprising a backing **18**, a layer **19** of resilient substance, such as sponge rubber, for example, and a smooth-surfaced plate **20** which may be leather, copper or some other suitable material. The pressure of the ironing member tends to provide a stretching tension in the stock of the blank, thus giving the blank somewhat of a set so that thereafter the blank will tend to remain in its rolled form. Immediately after the winding of the blank against the ironing member, the blank is ejected from the mandrel into a plurality of completed containers **21** disposed in nested relationship in a receiving chute or magazine **22** of such size as to maintain the containers in their ultimate shape for use. The dotted lines in this figure indicate how the cup being formed upon the mandrel **16** will be ejected into the stack of nested containers **21**.

The forcible ejection may be done in any suitable manner, either by providing a blast of air through the mandrel to forcibly eject the container and lodge it firmly in the stack of nested containers, or the container may be dropped by gravity from the mandrel into the stack of nested containers and a suitable mechanical means, such as a reciprocating stacker utilized to press it firmly into positive nesting engagement. After removing the containers from the chute, they may be placed in a carton, and the formed blank is permitted to remain in nested engagement for a period of time, usually several days before it is desired or available for use, and this nested engagement tends to augment the set of the blank, so that when it is removed from the stack of nested cups, it will tend to be self-sustaining in substantially conical shape, as above explained.

If so desired, the mandrel may be heated by any suitable means, such as an electrical heating element contained within the mandrel, which may be energized by a pair of conductors **23** from any suitable source of power. When formed around a heated mandrel, the set in the blank will be more pronounced, and this is partially due to the thermoplastic with which the paper is impregnated. Due to the heat, the thermoplastic

will be somewhat melted and will then be permitted to reharden while the container is nested in a stack of containers, and thus the thermoplastic aids in rendering the container more self-sustaining. Of course, the same results would be obtained in the event the paper were wax-coated rather than impregnated.

Assuming that it is desired to use the container for the purpose of packaging frozen confectioneries, a container may be removed from the stack and dropped into a tray or rack **24**, shown in Figures 6 and 7. This tray or rack is preferably made of a plurality of wires welded together, the use of wires resulting in very little metallic contact with the container and leaving considerable space for the circulation of refrigerating air. The wires may be so arranged as to provide a pair of spaced sockets for each container, a small socket **25** for receiving the apexial region of the container and a larger socket **26** for engagement with the upper portion of the container. When the container is dropped into the socket, very little pressure is needed to cause it to assume the shape seen in Figures 3, 4, 6 and 7. The upper portions of the margins adjacent the edges **11** and **12** will promptly assume a proper overlapped relationship, and the container is immediately ready for the reception of the particular comestible. If the container is inserted in the rack with a slight initial propulsion, it will assume the proper shape without any further assistance. If it is merely dropped into the rack, and a slab filler utilized in the normal manner for filling a plurality of the containers while in the rack, the pressure from the slab filler will be sufficient to cause the containers to assume a proper shape for the reception of the confection. It is therefore apparent that the container may be handled with no more labor than if the overlapping marginal portions were secured together, and with considerably less labor than if the container were formed from an unformed blank at the time it is pressed into the tray or rack.

When positioned as seen in Figures 6 and 7, the container may be supplied with a partially frozen substance, such as ice cream, for example, which may then be frozen in and to the container, and thereafter the frozen substance will act to hold the container in proper shape, as indicated in Figure 3, wherein the container is shown as holding a frozen mixture **27**, such as ice cream. The margins will remain overlapped until the container is stripped from the confection, and it is a simple expedient to strip the container from the frozen confection by either separating the unsecured marginal portions by grasping the outer margin at any desirable location, or the protruding tab **14** and unwrapping the container from the confection, or by holding the entire packaged confection in the hand until the surface is slightly melted from the heat of the hand and then squeezing the apex of the container to discharge its contents.

When the container is to be used to contain a liquid, it is simply necessary to place it in a suitable holder of such character that the apexial region of the container will be relatively tightly held. For example, the tray shown in Figures 6 and 7 would be sufficient to hold the container and enable the container to contain a liquid without leakage. However, when the container is to contain a liquid, it is most frequently used as a drinking cup, and to this end a holder **28** of the character illustrated in section in Figure 4 may be more desirable, since the holder may readily be held by the user while drinking from the container. When the container is dropped into such a holder, a slight pressure, as before explained, is sufficient to form the container into substantially true conical shape with the marginal portions well overlapped, and when the container is supplied with liquid, the outward pressure of the liquid is quite sufficient to compress the overlapped marginal portions together so as to prevent leakage therebetween. The expediency with which the container may be handled for the serving of beverages is therefore apparent, it being simply necessary for the attendant or operator to take a container and toss it into the holder **28** with slight force, and the container will assume the position shown in Figure 4 and be ready for the reception of the liquid without further attention to the container.

In many cases, a mere dropping of the container into the rack **24** or the holder **28**, and then the subsequent pouring of the contents into the container will be all that will be necessary, since the dropping of the contents into the apexial region of the container will provide sufficient pressure to cause the container to assume its ultimate form with the marginal portions well overlapped.

From the foregoing, it is apparent that I have provided a novel form of container which may be handled very simply and very readily, and which is extremely economical to manufacture, the container consisting merely of a blank of material formed into container shape, with the elimination of any crimping or folding of the material to interlock the same, or the provision of any means for securing overlapped portions of the container to each other.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than is necessitated by the prior art.

I claim as my invention:

1. The method of making a container, including fashioning a single blank of paper stock into a container of conical shape with overlapping marginal portions, and working the blank to imbue the material with a tendency to retain said container shape without securement of marginal portions of the blank to each other.

2. The method of making a paper container which is substantially self-sustaining having unsecured overlapped portions, including fashioning a blank of paper stock into container shape with unsecured overlapping marginal portions, and contemporaneously giving the stock a set to cause the blank to thereafter tend to remain in container shape.

3. The method of making out of a single blank of stock a paper container which is substantially self-sustaining having unsecured overlapping portions, including fashioning the blank into container shape with unsecured overlapping marginal portions, providing a set in the blank causing it to tend to maintain such shape, and promptly and firmly nesting the formed blank in a stack of nested previously formed containers to augment the set.

4. The method of making out of a single blank of material a container having overlapping unsecured marginal portions and which container is substantially self-sustaining, including winding the blank into container shape, providing a set in

the stock of the blank by working the blank in a manner tending to impart a stretching tension to the stock contemporaneously with the forming of the blank, and promptly nesting the formed blank in a plurality of previously formed and nested containers to augment the set.

5. The method of making a substantially self-sustaining container having unsecured overlapping portions, including heating a blank of paper stock and at the same time fashioning the blank into container shape, and providing a set in the blank so that it will thereafter alone and unaided tend to retain its shape as a container.

6. The method of making a substantially self-sustaining container having unsecured overlapping portions from stock carrying a thermoplastic, including heating a blank of stock until the thermoplastic has softened, contemporaneously fashioning the blank into container shape, and holding the shaped blank under pressure until the thermoplastic has again hardened.

7. The method of making a substantially self-sustaining container having unsecured overlapping portions from stock carrying a thermoplastic, including heating a blank of stock until the thermoplastic has softened, contemporaneously fashioning the blank into container shape, and promptly nesting the formed container in a plurality of previously formed and nested containers until the thermoplastic has again hardened.

8. The method of making a substantially self-sustaining container having unsecured overlapping portions from stock carrying a thermoplastic, including heating a blank of stock until the thermoplastic has softened, contemporaneously fashioning the blank into container shape, working the blank contemporaneously with the forming thereof in a manner to impart a stretching tension to the stock, and promptly nesting the formed container in a plurality of previously formed and nested containers until the thermoplastic has again hardened.

9. The method of producing from a blank of paper stock a cup having unsecured overlapping marginal portions so that said marginal portions are adapted to remain in substantially overlapped although unsecured relation, said method comprising fashioning the blank to cup shape and working the stock to produce a set in the fashioned blank.

10. The method of producing from a blank of paper stock a container having unsecured overlapping marginal portions so that said marginal portions will remain in substantially overlapped although unsecured relation, said method comprising fashioning the blank to container shape, and rubbing the stock to provide tension in the stock and thereby produce a set in the fashioned blank.

11. The method of producing from a blank of paper or the like, a container having unsecured overlapping marginal portions so that said marginal portions are adapted to remain in substantially overlapped although unsecured relation, said method comprising fashioning the blank to container shape and deforming the stock by rubbing to produce a set in the fashioned blank.

12. The method of making and using a container formed for use with unsecured overlapping marginal portions and adapted to have its marginal portions moved to increased overlapping relation when the container is filled while in a holder, said method of making and using comprising fashioning a blank of paper stock, or the like, into the shape of a container having overlapping marginal portions, contemporaneously working the stock to give the blank a set so that the overlapping marginal portions will remain in overlapped although unsecured relation and the container be made available for handling as a completely formed container, placing the container in a holder, and filling the container to cause the holder to cooperate with the container to increase the overlap of the marginal portions.

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