

Aug. 7, 1951

M. W. MORSE

2,563,352

INSULATED CUP

Filed April 5, 1946

2 Sheets-Sheet 1

Fig. 1.

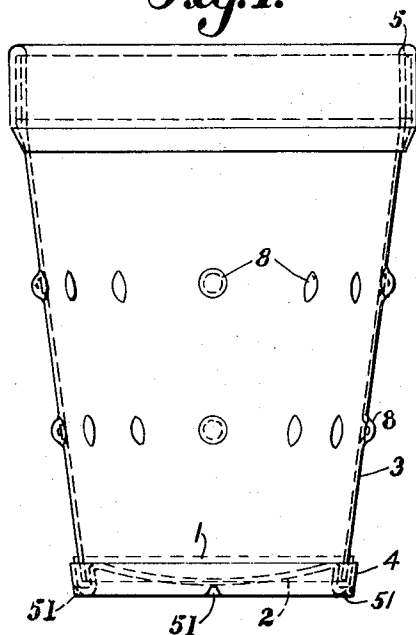


Fig. 2.

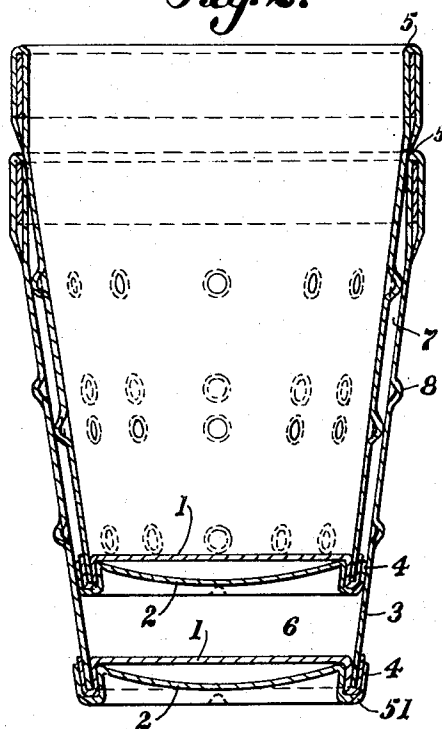


Fig. 3.

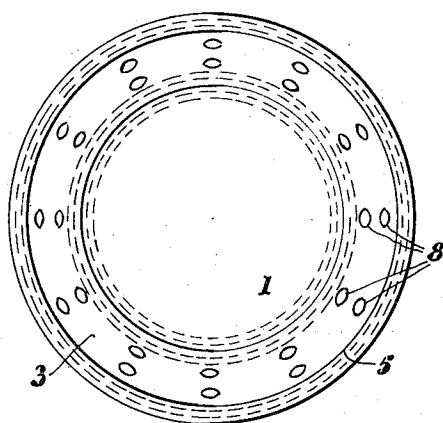
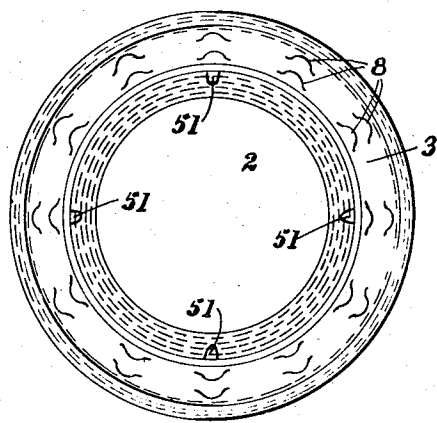


Fig. 4.



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Fig. 5.

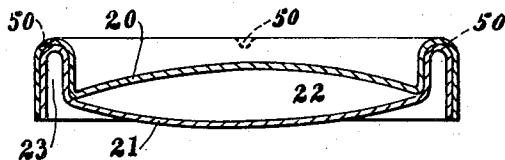


Fig. 6.

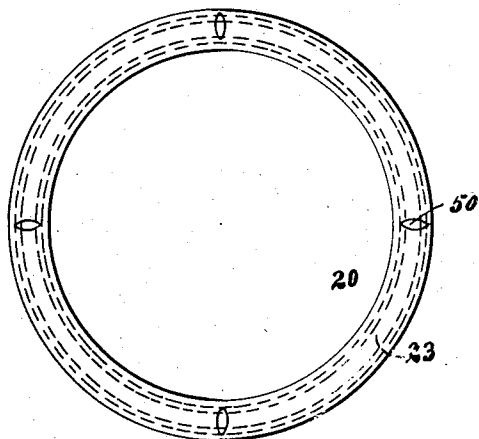
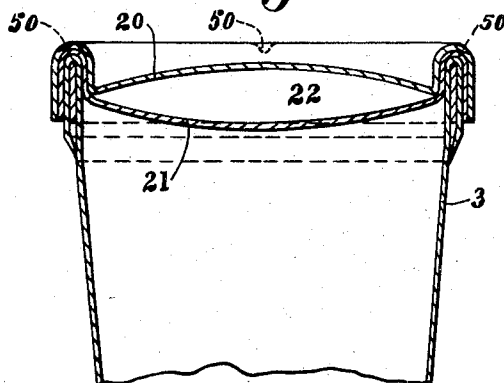


Fig. 7.



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UNITED STATES PATENT OFFICE

2,563,352

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Application April 5, 1946, Serial No. 659,848

3 Claims. (Cl. 229-14)

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This invention presents a novel construction of container and a novel construction of thermally insulated receptacle. In the broader aspects of this invention, the container is of conical shape and is provided at the upper and lower portions with circumferential ribs so that when two similar containers are nested, there is presented between the side walls of the two containers an insulating chamber. The insulating properties of this chamber may simply be due to air therein or may be or may result from insulating material located within the chamber.

If the container is of frusto-conical shape, then when the receptacle is formed by the nesting of the containers, an insulating chamber is formed between the bottoms of the two containers. The receptacle of this invention thus thermally insulated at the side walls, and of the frusto-conical shape also at the bottom is preferably closed by a cover containing an insulating chamber and thus the receptacle is well thermally insulated at the side walls, at the bottom, and at the top.

The terms bottom and top as herein used are to be understood as relative, although in the particular construction illustrated the smaller end of the container is referred to as the bottom while the larger end is referred to as the top.

The container of this invention may be made of any suitable material to comply with the requirements of the use to which it is to be put and the nature of the contents with which it is to be filled. While, therefore, in its broader aspects, the invention is not to be limited to the particular material of which the container is made, important advantages of the invention are secured when the container is made of some relatively thin, flexible, stiff or self-supporting material such as employed in the ordinary small single service containers used in the sale of milk, ice cream, oysters, salads, quick frozen foods and other food products, or employed in the better grades of single-service drinking cups. Of course, if the container is to hold liquid or moist contents; the material must be of a character, or treated, to be resistant to moisture and likewise the material must be suitable for whatever contents the container is designed to hold. By the nesting of the containers, a receptacle is provided well thermally insulated at the side walls, and when the containers are of frusto-conical shape and provided with the cover, well insulated at the bottom and at the top.

The receptacle of this invention is so inexpensive having regard to its use that it may be supplied usually as a "single service" receptacle.

A receptacle of this invention formed by the nesting of the containers with the thermal insu-

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lation provided by the invention enables the temperature of the contents to be maintained with a minimum amount of change over substantial periods of time at an exceedingly low cost.

5 The nature and objects of the invention will appear more fully from the accompanying description and drawings and will be particularly pointed out in the claims.

In the drawings:

10 Fig. 1 is a side elevation of one form of the container.

Fig. 2 is a view chiefly in vertical cross section and partially broken away of a receptacle formed of two nested containers having the construction 15 shown in Fig. 1.

Fig. 3 is a top view of the container shown in Fig. 1.

Fig. 4 is a bottom view of the container shown in Fig. 1.

20 Fig. 5 is a view in vertical cross section of one form of cover of the invention.

Fig. 6 is a top view of the construction shown in Fig. 5.

Fig. 7 is a view in vertical cross section partially broken away showing the cover in place on a container of the construction shown in Fig. 1.

The container illustrated in Figs. 1 to 4 is of frusto-conical shape closed at the bottom and has at the upper and lower portions circumferential ribs. In the construction shown in Figs. 1 to 4, the bottom is formed of two plies 1 and 2 of the material. These plies are spaced apart as by bulging downwardly the ply 2, and both plies at the rim are bent to form a grooved or U-shaped annular rim into which projects, and is secured in any suitable manner, the lower edge of the conical side wall 3. The plies at the bottom thus form at the bottom portion of the outer face of the side wall a thick annular rib 4. The upper portion of the side wall 3 is doubled back upon itself and bent slightly inward so as to form at the upper edge 5 an inwardly projecting annular rib. When, therefore, two similar containers are nested, as shown in Fig. 2, an insulating chamber 6 is formed between the bottoms of the two containers, and with this form of construction there is formed in addition, two auxiliary bottom insulating chambers by the spaces between the two plies of each container. The insulating chamber 6 is sealed at the top by the lower rib of one of the containers, such as the rib 4 of the inner container engaging the other or outer container.

There is also formed an insulating chamber 7 55 between the nested side walls of the two containers sealed at the top of the upper rib of one

of the containers, as the rib 5 of the outer container, engaging the other or inner container and this chamber is sealed at the bottom by the aforesaid lower rib 4.

Preferably also the container is provided with a plurality of bosses 8 formed in, and dispersed throughout, the side walls of the container between the ribs. It is unimportant whether these bosses project inward or outward, but preferably, as shown, they project outward from the side wall of the container. When two similar containers are nested, the bosses act to prevent contraction of the insulating chamber between the side walls of the containers. The bosses also strengthen the container (and a fortiori the receptacle formed by nested containers) and enable it to be grasped and handled when of normally light, flexible or yielding material.

It will be seen that there is presented when two similar frusto-conical containers are nested, a construction of receptacle thoroughly insulated at the bottom and throughout the side walls so that when the receptacle is caused to contain either a hot material, such, for example, as hot coffee, or a cold material, such, for example, as ice cream, any change in the temperature of the contents is greatly retarded and the receptacle may be readily and comfortably handled.

The insulating cover for the receptacle which may be employed is shown in Figs. 5 and 6 and is illustrated in Fig. 1 as positioned on a container. Such cover is a two-ply circular cover preferably of the same material as the container and has a circumferential grooved rim adapted to telescope snugly over the edge of and to close the container when in place. It also presents between the two plies within the rim an insulating chamber formed by spacing the plies apart. As shown in Fig. 5, the plies 20 and 21 at the center are spaced apart to form the insulating chamber 22. At the rim the two plies, here in contact, are bent up around and back to form the groove 23 shaped to fit snugly over the top edge of the side wall of a container as shown in Fig. 7.

Thus with the cover in place on the nested containers, the invention presents a receptacle efficiently thermally insulated by the insulating chamber extending between the side walls of the nested containers, by the insulating chamber between the bottoms of the nested containers, by the auxiliary bottom insulating chambers when employed, and by the insulating chamber at the top within the cover. The receptacle, when thus closed and insulated, efficiently retards the exchange of heat between the outside and inside of the containers thus enabling the temperature of the contents of the receptacle to be maintained with little change for long periods of time.

The invention also provides for holding the cover in place on the container or on the receptacle formed by nested containers so that the container or the receptacle may be handled, packaged or stored without any danger of the cover becoming separated. For this purpose, as illustrated, the cover has formed in its upper annular edge a plurality, preferably four, diametrically disposed depressions or grooves 50 and the container has similarly formed in its lower edge corresponding depressions 51. This enables string or wire to be tied or fastened about the covered container or receptacle and held in position in the depressions and thus firmly secure the cover to the container or receptacle.

Having thus described the invention, what is

claimed as new and desired to be secured by Letters Patent is:

1. An insulated receptacle formed of two nested similar conical containers, the inner container having at its bottom an exterior circumferential rib which has a tight sealing engagement with the interior face of the wall of the outer container, said outer container having at its top an inwardly projecting continuous unbroken annular rib which has a tight sealing engagement with the exterior surface of the inner container closely adjacent its top, the side walls of said nested containers being spaced from each other between the circumferential rib at the bottom of the inner container and the inwardly projecting rib of the outer container, and the bottoms of the containers also being spaced from each other, thereby to provide two separate insulating chambers, one of which extends from the lower end of the inner container to the inwardly projecting rib of the outer container and circumferentially encloses all of the side wall of the inner container between said ribs, and the other of which is constituted by the space between the bottoms of the containers, said insulating chambers being sealed from each other by the exterior circumferential rib at the bottom of the inner container.

2. An insulated receptacle formed of two nested similar conical containers each presenting a side wall and a bottom, the bottom of each container being made of two plies spaced from each other, the inner container having at its bottom an exterior circumferential rib which has a tight sealing engagement with the interior face of the wall of the outer container, said outer container having at its top an inwardly projecting continuous unbroken annular rib which has a tight sealing engagement with the exterior surface of the inner container closely adjacent its top, the side walls of said nested containers being spaced from each other for the full distance between the circumferential rib at the bottom of the inner container and the inwardly projecting rib of the outer container, thereby to provide an insulating chamber which extends from the exterior circumferential rib of the inner container to the inwardly directed rib of the outer container and circumferentially encloses the side wall of the inner container, the bottoms of the containers being spaced from each other thereby to provide a second insulating chamber between them which is sealed from the circumferential insulating chamber by the exterior bottom rib of the inner container, the two-ply bottom of each container providing between the plies thereof an auxiliary insulating chamber.

3. An insulated receptacle formed of two nested similar conical containers each presenting a side wall and a bottom, the bottom of each container being made of two plies spaced from each other, the inner container having at its bottom an exterior circumferential rib which has a tight sealing engagement with the interior face of the wall of the outer container, said outer container having at its top an inwardly projecting continuous unbroken annular rib which has a tight sealing engagement with the exterior surface of the inner container closely adjacent its top, the side walls of said nested containers being spaced from each other for the full distance between the circumferential rib at the bottom of the inner container and the inwardly projecting rib of the outer container, thereby to provide an insulating chamber which extends from the exterior circumferential rib of the inner container to the inwardly directed rib of the outer container and

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circumferentially encloses the side wall of the inner container, the bottoms of the containers being spaced from each other thereby to provide a second insulating chamber between them which is sealed from the circumferential insulating chamber by the exterior bottom rib of the inner container, the two-ply bottom of each container providing between the plies thereof an auxiliary insulating chamber, and a cover for closing the upper end of the inner container, said cover presenting a two-ply closure portion fitting within the upper end of the inner ply and the rim portion, the two plies of said closure portion being spaced to provide an insulating chamber and a rim portion upstanding from the periphery of the closure portion and presenting a downwardly directed annular groove to receive the top edge of the inner container.

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