

SPECIFICATION

HEAT INSULATING CONTAINER ✓

BACKGROUND OF THE INVENTION

1. Field of the Invention:

The invention relates to a cup-shaped container for containing instant foodstuffs such as instant noodles therein, and particularly to a container having excellent heat insulating property and containing the foodstuffs which can be eaten by pouring boiling water.

2. Related Art:

Containers made of plastics such as foaming polystyrene have been frequently used as cup-shaped heat insulating containers of this type, but these containers cause a pollution problem when they are wasted. There is proposed, instead of these containers, a heat insulating container made of paper as disclosed in Japanese Utility Model Laid-Open Publication No. 4-45212 wherein the container comprises a cup body made of paper and an outer cylinder forming a double structured barrel in which a heat insulating gap is defined.

The heat insulating container as disclosed in Japanese Utility Model Laid-Open Publication No. 4-45212 has an advantage to obtain a cup which exerts insulating effect by a simple construction of the combination of a normal paper cup and a bottomless outer cylinder formed of a tapered paper which different from that of the paper cup in a taper angle. The heat insulating gap becomes large as it is positioned in the lower portion of the container, and it exerts excellent heat insulating effect when it is normally held by a hand or hands. However, if this container is held by a hand or hands at the upper portion for a long time, there causes a problem that a

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hand or hands feel hot gradually because a gap for exerting a heat insulating effect is not present or narrow.

SUM MARY OF THE INVENTION

The invention has been made to solve the foregoing problem and it is an object of the invention to provide a container having excellent heat insulating property capable of hardly transmitting heat of foodstuffs contained therein even if any part of a barrel of the container is held by a hand or hands.

To achieve the above object, a heat insulating container according to a first aspect of the invention comprises a cup body made of paper and having an outwardly curled portion at an upper opening edge, and an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein the outer cylinder has a size that an upper opening inner surface of the outer cylinder contacts a sidewall outer periphery of the cup body at a portion immediately under the outwardly curled portion of the cup body, and the inwardly curled portion at the lower opening edge of the outer cylinder contacts a sidewall outer periphery of the cup body at the lower portion thereof, and wherein the cup body is covered with the outer cylinder, and the upper opening inner surface of the outer cylinder is bonded to the sidewall outer periphery of the cup body at the portion immediately under the outwardly curled portion of the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap defined between the cup body and outer cylinder becomes the largest in space at a portion close to the inwardly curled portion of the lower opening edge of the outer cylinder, and wherein the outer cylinder is formed of a paperboard which is subjected to a fine embossing process on substantially

an entire outer surface thereof.

To achieve the similar object, a heat insulating container according to a second aspect of the invention comprises a cup body made of paper and having an outwardly curled portion at an upper opening edge, and an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein the outer cylinder has a size that an upper opening inner surface of the outer cylinder contacts a sidewall outer periphery of the cup body at a portion immediately under the outwardly curled portion of the cup body, and the inwardly curled portion at the lower opening edge of the outer cylinder contacts a sidewall outer periphery of the cup body at the lower portion thereof, wherein the cup body is covered with the outer cylinder, and the upper opening inner surface of the outer cylinder being bonded to the sidewall outer periphery of the cup body at the portion immediately under the outwardly curled portion of the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and wherein the outer cylinder is formed of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form an outwardly embossed portion.

To achieve the similar object, a heat insulating container according to a third aspect of the invention comprises a cup body made of paper and having an outwardly curled portion at an upper opening edge, and an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein an inwardly recessed lateral rule mark is provided circumferentially at a portion close to an upper portion of a barrel of the outer cylinder, and wherein an inner surface of the lateral rule mark of the outer cylinder is bonded to a sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel of the cup body while the cup body is

covered with the outer cylinder so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and the outer cylinder.

To achieve the similar object, a heat insulating container according to a fourth aspect of the invention comprises a cup body made of paper and having an outwardly curled portion at an upper opening edge, and an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein the upper opening edge is folded inwardly at the upper portion of the outer cylinder to form a folding portion, and wherein the outer cylinder has a size that the folding portion at the upper portion contacts a sidewall outer peripheral surface immediately under the outwardly curled portion of the cup body and the inwardly curled portion of the lower opening edge thereof contacts the sidewall outer peripheral surface of the cup body, and wherein an inner surface of the outer cylinder at a portion close to the lower portion of the folding portion of the outer cylinder is bonded to the sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel of the cup body while the cup body is covered with the outer cylinder, so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and the outer cylinder.

To achieve the similar object, a heat insulating container according to a fifth aspect of the invention comprises a cup body expanding at an upper portion and made of paper and having an outwardly curled portion at an upper opening edge, and an outer cylinder expanding at an upper portion and made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein an upper portion of a barrel of the outer cylinder is bent in a direction to close it inwardly

along the entire periphery of the barrel, and a tip end of an upper end of the outer cylinder is brought into contact with or thrust into an inner side of the outwardly curled portion of the cup body while the cup body is covered with the outer cylinder, and at least either the upper end or the inwardly curled portion of the outer cylinder is bonded to the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and outer cylinder.

To achieve the similar object, a heat insulating container according to a sixth aspect of the invention comprises a cup body expanding at an upper portion and made of paper and having an outwardly curled portion at an upper opening edge, and an outer cylinder expanding at an upper portion and made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein an upper end adjacent to the outwardly curled portion of the cup body is bent to expand further outwardly at the entire periphery, and a tip end of an upper end of the outer cylinder is brought into contact with or thrust toward an inner side of the outwardly curled portion of the cup body while the cup body is covered with the outer cylinder, and at least either the upper end or the inwardly curled portion of the outer cylinder is bonded to the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and outer cylinder. Further, the outer cylinder may be structured that the upper end thereof is bent in a direction to close it inwardly along the entire periphery thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows an example of a heat insulating container according to a

first embodiment of the invention and a schematic view showing the construction thereof wherein the left part is a sectional view and the right part is a front view;

Fig. 2 is a schematic view of a heat insulating container according to a second embodiment of the invention and a schematic view showing the construction thereof wherein the left part is a sectional view and the right part is a front view;

Fig. 3 is a schematic view of a heat insulating container according to a third embodiment of the invention and a schematic view showing the construction thereof wherein the left part is a sectional view and the right part is a front view;

Fig. 4 shows another example of a heat insulating container according to the third embodiment of the invention and a schematic view showing the construction thereof wherein the left part is a sectional view and the right part is a front view;

Fig. 5 shows an example of a heat insulating container according to a fourth embodiment of the invention and a schematic view showing the construction thereof wherein the left part is a sectional view and the right part is a front view;

Fig. 6 is a partially enlarged view enlarging a left upper portion in Fig. 5;

Fig. 7 is a developing view showing a blank for forming an outer cylinder;

Fig. 8 shows a modification of the heat insulating container in Fig. 5 and a schematic view showing the construction thereof wherein the left part is a sectional view and the right part is a front view;

Fig. 9 shows another modification of the heat insulating container in Fig. 5 wherein the left part is a sectional view and the right part is a front

view;

Fig. 10 shows a still another modification of the heat insulating container in Fig. 5 and a schematic view showing the construction thereof wherein the left part is a sectional view and the right part is a front view;

Fig. 11 is a side view of a heat insulating container according to a fifth embodiment of the invention;

Fig. 12 is a side view of a paper cup body constituting the heat insulating container shown in Fig. 11;

Fig. 13 is a side view of an outer cylinder constituting the heat insulating container shown in Fig. 11;

Fig. 14 shows an example showing the construction of the heat insulating container shown in Fig. 11;

Fig. 15 is a partially enlarged view enlarging a right upper portion of the outer cylinder in Fig. 13;

Fig. 16 is a side view of a mandrel to be used in manufacturing the outer cylinder in Fig. 13;

Fig. 17 is an enlarged sectional view of the mandrel taken along the line A-A in Fig. 16;

Fig. 18 is a view for explaining providing a taper at the upper end of the outer cylinder by the mandrel in Fig. 16;

Fig. 19 shows another example of a heat insulating container according to another example of the fifth embodiment of the invention and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 20 is a partially enlarged view enlarging the right upper portion of the outer cylinder of the heat insulating container in Fig. 19;

Fig. 21 shows a modification of the heat insulating container in Fig.

14 and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 22 shows another modification of the heat insulating container in Fig. 14 and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 23 shows still another modification of the heat insulating container in Fig. 14 and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 24 shows an example of a heat insulating container according to a sixth embodiment of the invention and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 25 (a), (b) and (c) are views showing a process of bending the upper end of the cup body constituting the heat insulating container in Fig. 24;

Fig. 26 shows another example of the sixth embodiment of the invention and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 27 is an enlarged view for explaining the right upper portion of an outer cylinder constituting the heat insulating container in Fig. 26;

Fig. 28 is a partly enlarged view showing a modification of the outer cylinder in Fig. 27;

Fig. 29 is a side view of a mandrel to be used in manufacturing the outer cylinder of the heat insulating container in Fig. 26;

Fig. 30 is an enlarged sectional view of an encircled part A in Fig. 29;

Fig. 31 is a view for explaining providing a taper at the upper end of the outer cylinder by the mandrel in Fig. 29;

Fig. 32 shows still another example of the sixth embodiment of the invention and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 33 shows a modification of the heat insulating container in Fig. 26 and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view;

Fig. 34 shows another modification of the heat insulating container in Fig. 26 and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view; and

Fig. 35 shows a still another modification of the heat insulating container in Fig. 26 and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view.

PREFERRED EMBODIMENT OF THE INVENTION

First Embodiment (Fig. 1):

A heat insulating container according to a first embodiment of the invention is described with reference to Fig. 1.

Fig. 1 shows an example of the heat insulating container according to the invention illustrating a schematic construction thereof wherein the left portion is a sectional view and the right portion is a front view.

A heat insulating container 1 in Fig. 1 comprises a cup body 2 made of paper and a hollow cylindrical outer cylinder 3 which is open at the upper and lower portions.

The cup body 2 is made of paper which is coated with a synthetic resin such as polyethylene at either the inner surface or inner and outer surfaces and comprises a barrel 4 and a bottom plate 5 which is wrapped around the lower portion of the barrel 4 like an ordinary cup body, and it has an outwardly curled portion 6 at the upper opening edge thereof.

The outer cylinder 3 is made of single paper or paper coated with synthetic resin such as polyethylene at one surface or both surfaces thereof, and it has inwardly curled portion 8 at a lower opening portion edge of a barrel 7 thereof. The barrel 7 of the outer cylinder 3 is slightly greater than the barrel 4 of the cup body 2 at the skirt thereof, namely, the barrel 7 has a tapered portion. The outer cylinder 3 has a size that the upper opening inner surface of the outer cylinder 3 contacts the sidewall outer periphery of the cup body 2 immediately under the outwardly curled portion 6 and the inwardly curled portion 8 at the lower opening edge of the outer cylinder 3 contacts the sidewall outer periphery of the cup body 2 at the lower portion. As illustrated in Fig. 1, the outer cylinder 3 is made of a paperboard which is subjected to an embossing process on the entire outer surface thereof. As an embossed pattern, it may be a pear shape or appropriate concave/convex pattern. The concave/convex pattern may be formed deep on the back surface of the outer cylinder 3.

When the cup body 2 is covered with the outer cylinder 3, and the upper opening inner surface of the outer cylinder 3 is bonded to the sidewall outer peripheral surface of the cup body 2 immediately under the outwardly curled portion 6 by means of an emulsion adhesive so as to integrate the cup body 2 and outer cylinder 3, thereby forming the heat insulating container 1 shown in Fig. 1. Depending on the use of the heat insulating container, the inwardly curled portion 8 formed at the lower opening edge of the outer cylinder 3 may be bonded to the sidewall outer peripheral surface of the cup body 2 at the lower portion thereof to ensure the bonding between the outer cylinder 3 and cup body 2.

In the heat insulating container 1 having the foregoing construction, a gap 9 is defined between the barrel 4 of the cup body 2 and the barrel 7 and the outer cylinder 3 respectively having different tapers, and the gap 9 exerts

heat insulating effect. Accordingly, when boiling water is poured into the heat insulating container, heat in the inside barrel 4 is prevented from transmitting to the outside barrel 7. Although the content, e.g., noodles are kept contained in the lower portion of the cup body cup body 2 for a long time, the gap 9 between the cup body 2 and the outer cylinder 3 becomes the largest in space at the portion close to the inwardly curled portion 8 of the outer cylinder 3, namely, the gap 9 becomes larger in space as it is positioned toward the lower portion, so that excellent heat insulating effect can be exerted. Further, since the outer surface of the outer cylinder 3 is subjected to an embossing process on the entire surface and not flat, the outer cylinder 3 is easily held by a hand or hands, and heat is hardly transmitted to a hand or hands even if the outer cylinder 3 per se has heat. Since the concave/convex pattern is formed on the outer cylinder 3 by an embossing process, it is possible to give a design or aesthetic effect on the external appearance of the outer cylinder 3.

Although the convex/concave pattern is formed on substantially the entire surface of the barrel of the outer cylinder 3 by an embossing process in the first embodiment, a part which does not form a concave/convex pattern may be left on the surface of the outer cylinder 3. For example, non-embossed parts may be left in a belt shape on the upper and lower portions of the barrel considering an area which is held by a hand or hands, or a part indicating a product name may be left in the form of pattern considering design of the heat insulating container.

Further, a projection may be formed circumferentially on the barrel 4 of the cup body 2 so that it projects inwardly or outwardly so as to serve a pouring reference line as a standard when pouring boiling water.

Second Embodiment (Fig. 2):

A heat insulating container according to a second embodiment of the

invention is described with reference to Fig. 2.

Fig. 2 shows an example of the heat insulating container according to the invention and it is a schematic view showing the construction of the heat insulating container wherein the left portion is a sectional view and the right portion is a front view.

A heat insulating container 1 in Fig. 2 comprises a cup body 2 made of paper and a hollow cylindrical outer cylinder 3 which is open at the upper and lower portions.

The cup body 2 is made of paper which is coated with a synthetic resin such as polyethylene at either the inner surface or inner and outer surfaces and comprises a barrel 4 and a bottom plate 5 which is wrapped around the lower portion of the barrel 4 like an ordinary cup body, and it has an outwardly curled portion 6 at the an upper opening edge thereof.

The outer cylinder 3 is made of single paper or paper coated with synthetic resin such as polyethylene at one surface or both surfaces thereof, and it has inwardly curled portion 8 at a lower opening portion edge of a barrel 7 thereof. The barrel 7 of the outer cylinder 3 is slightly greater than the barrel 4 of the cup body 2 at the skirt thereof, namely, the barrel 7 has a tapered portion. The outer cylinder 3 has a size that the upper opening inner surface of the outer cylinder 3 contacts the sidewall outer periphery of the cup body 2 immediately under the outwardly curled portion 6 and the inwardly curled portion 8 at the lower opening edge of the outer cylinder 3 contacts the sidewall outer periphery of the cup body 2 at the lower portion. As illustrated in Fig. 2, the outer cylinder 3 is made of a paperboard which is subjected to an embossing process so that the characters and patterns to be printed form an outwardly embossed portion 9. The embossed portion projects toward the front surface and also form a recess at the back surface corresponding to the projection of the front surface so that printed characters

and patterns can be recognized to have the outwardly embossed portion 9 even by touching with a hand or hands or by seeing.

When the cup body 2 is covered with the outer cylinder 3, and the upper opening inner surface of the outer cylinder 3 is bonded to sidewall outer peripheral surface of the cup body 2 immediately under the outwardly curled portion 6 by means of an emulsion adhesive so as to integrate the cup body 2 and outer cylinder 3, thereby forming the heat insulating container 1 shown in Fig. 2. Depending on the use of the heat insulating container, the inwardly curled portion 8 formed at the lower opening edge of the outer cylinder 3 may be bonded to the sidewall outer peripheral surface of the cup body 2 at the lower portion thereof to ensure the bonding between the outer cylinder 3 and cup body 2.

In the heat insulating container 1 having the foregoing construction, a gap 10 is defined between the barrel 4 and the cup body 2 and the barrel 7 and the outer cylinder 3 respectively having different tapers, and the gap 10 exerts as a heat insulating effect, and hence when boiling water is poured into the heat insulating container, heat in the inside barrel 4 is prevented from transmitting to the outside barrel 7. Although the content, e.g., noodles are kept contained in the lower portion of the cup body 2, the gap 10 between the cup body 2 and the outer cylinder 3 becomes the largest in space at the portion close to the inwardly curled portion 8 of the outer cylinder 3, namely, the gap 10 becomes larger in space as it is positioned toward the lower portion, so that excellent heat insulating effect can be exerted. Further, since characters and patterns is in a projecting state as the outwardly embossed portion on the outer cylinder 3, heat insulating effect can be exerted excellently at the embossed portion 9 so that heat is hardly transmitted to a hand or hands.

It is not necessary to form the embossed portion 9 at the portion

where all the characters and patterns appear, and only the characters and patterns to be emphasized may be subjected to an embossing process. According to the invention, it is preferable to design the characters and patterns so that the outwardly embossed portion 9 is distributed on the entire outer periphery of the outer cylinder 3 considering the area to be held by a hand or hands.

Further, a projection may be formed circumferentially on the barrel 4 of the cup body 2 so that it projects inwardly or outwardly so as to serve a pouring reference line as a standard when pouring boiling water.

Third Embodiment (Figs. 3 and 4):

A heat insulating container according to a third embodiment of the invention is described with reference to Figs. 3 and 4.

Fig. 3 shows an example of the heat insulating container according to the invention and it is a schematic view showing the construction of the heat insulating container wherein the left portion is a sectional view and the right portion is a front view.

A heat insulating container 1 in Fig. 3 comprises a cup body 2 made of paper and a hollow cylindrical outer cylinder 3 which is open at the upper and lower portions.

The cup body 2 is made of paper which is coated with a synthetic resin such as polyethylene at either the inner surface or inner and outer surfaces and comprises a barrel 4 and a bottom plate 5 which is wrapped around the lower portion of the barrel 4 like an ordinary cup body, and it has an outwardly curled portion 6 at the an upper opening edge thereof.

The outer cylinder 3 is made of single paper or paper coated with synthetic resin such as polyethylene at one surface or both surfaces thereof, and it has inwardly curled portion 8 at a lower opening portion edge of a barrel 7 thereof. The barrel 7 of the outer cylinder 3 is slightly greater than

the barrel 4 of the cup body 2 at the skirt thereof, namely, the barrel 7 has a tapered portion. An inwardly recessed lateral rule mark 9 is provided circumferentially at a portion close to an upper portion of the barrel 7. The outer cylinder 3 has a size that an inner surface of the lateral rule mark 9 of the outer cylinder contacts a sidewall outer peripheral surface of the cup body 2 at a portion close to an upper portion of the barrel of the cup body and the inwardly curled portion 8 at the lower opening edge of the outer cylinder 3 contacts the sidewall outer periphery of the cup body 2 at the lower portion.

When the cup body 2 is covered with the outer cylinder 3, and the inner surface of the lateral rule mark 9 of the outer cylinder 3 is bonded to the sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel by means of an emulsion adhesive so as to integrate the cup body 2 and outer cylinder 3, thereby forming the heat insulating container 1 shown in Fig. 3. Depending on the use of the heat insulating container, the inwardly curled portion 8 formed at the lower opening edge of the outer cylinder 3 may be bonded to the sidewall outer peripheral surface of the cup body 2 at the lower portion thereof to ensure the bonding between the outer cylinder 3 and cup body 2.

In the heat insulating container 1 having the foregoing construction, a gap 10 is defined between the barrel 4 of the cup body 2 and the barrel 7 of the outer cylinder 3, and the gap 10 exerts heat insulating effect. Further, since the inwardly recessed lateral rule mark 9 is provided at a portion close to an upper portion of the barrel of the outer cylinder 3, the gap 10 is defined in a space extending from the lower portion to the lateral rule mark 9. Accordingly, when boiling water is poured into the heat insulating container, heat in the inside barrel 4 is prevented from transmitting to the outside barrel 7 in a large area, and hence a hand or hands do not feel hot even if the heat insulating container 1 is held at any part which is normally held by a

hand or hands.

Fig. 4 shows another example of the heat insulating container according to the third embodiment of the invention and it is a schematic view showing the construction of the heat insulating container wherein the left portion is a sectional view and the right portion is a front view.

Although the heat insulating container 1 in Fig. 4 has substantially the same construction as that shown in Fig. 3, the former is different from the latter in that in the former, the lateral rule mark 9 provided circumferentially at the portion close to the upper portion of the barrel of the outer cylinder 3 is discontinuous, while in the latter, the heat insulating container 1 shown in Fig. 4 has the lateral rule mark 9 which is divided into six.

The heat insulating container 1 shown in Fig. 4 is also assembled when the cup body 2 is covered with the outer cylinder 3, and the inner surface of the lateral rule mark 9 of the outer cylinder 3 is bonded to the sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel by means of an emulsion adhesive so as to integrate the cup body 2 and outer cylinder 3, and it exerts the similar heat insulating effect as the heat insulating container 1 shown in Fig. 3.

Further, a projection may be formed circumferentially on the barrel 4 of the cup body 2 so that it projects inwardly or outwardly so as to serve a pouring reference line as a standard when pouring boiling water. In the case where the pouring reference line is provided on the cup body 2, it is preferable that the lateral rule mark 9 is provided upper than the pouring reference line. With such a construction, the heat of the boiling water is prevented from transmitting to the barrel 7 of the outer cylinder 3 by way of the lateral rule mark 9.

Fourth Embodiment (Figs. 5 to 10):

A heat insulating container according to a fourth embodiment of the invention is described with reference to Figs. 5 to 10.

Fig. 5 shows an example of the heat insulating container according to the invention and it is a schematic view showing the construction of the heat insulating container wherein the left portion is a sectional view and the right portion is a front view.

A heat insulating container 1 in Fig. 5 comprises a cup body 2 made of paper and a hollow cylindrical outer cylinder 3 which is open at the upper and lower portions.

The cup body 2 is made of paper which is coated with a synthetic resin such as polyethylene at either the inner surface or inner and outer surfaces and comprises a barrel 4 and a bottom plate 5 which is wrapped around the lower portion of the barrel 4 like an ordinary cup body, and it has an outwardly curled portion 6 at the an upper opening edge thereof.

The outer cylinder 3 is made of single paper or paper coated with synthetic resin such as polyethylene at one surface or both surfaces thereof, and it has inwardly curled portion 8 at a lower opening portion edge of a barrel 7 thereof. The barrel 7 of the outer cylinder 3 is slightly greater than the barrel 4 of the cup body 2 at the skirt thereof, namely, the barrel 7 has a tapered portion. As shown in an enlarged view of Fig. 6, the upper opening edge is folded inwardly at the upper portion of the outer cylinder to form a folding portion 9. The outer cylinder 3 has a size that the folding portion 9 contacts a sidewall outer peripheral surface of the cup body at a portion close to the upper portion of the barrel of the cup body 2 and the inwardly curled portion 8 at the lower opening edge of the barrel 7 contacts the sidewall outer periphery of the cup body 2 at the lower portion.

When the cup body 2 is covered with the outer cylinder outer cylinder 3 from the lower side thereof, and the inner surface of the lower portion of the

folding portion 9 of the outer cylinder 3 is bonded to the sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel by means of an emulsion adhesive 10 so as to integrate the cup body 2 and outer cylinder 3, thereby forming the heat insulating container 1 shown in Fig. 5. Depending on the use of the heat insulating container, the inwardly curled portion 8 formed at the lower opening edge of the outer cylinder 3 may be bonded to the sidewall outer peripheral surface of the cup body 2 at the lower portion thereof to ensure the bonding between the outer cylinder 3 and cup body 2.

The outer cylinder 3 is formed in a hollow cylindrical shape by winding a fan-shaped blank and bonding both ends of the fan-shaped blank. The blank means blank paper which is prepared by punching a paperboard, and has the same thickness of the paperboard. The inwardly curled portion 8 at the lower opening edge is formed in the same manner as the outwardly curled portion 6 of the cup body 2. Meanwhile, although the folding portion 9 at the upper opening edge is formed by folding end edge of the blank inward, if a folding line a is formed of a perforation along the upper end edge of a blank B as shown in Fig. 7 (A), the folding can be easily and surely performed. Further, if notches b are provided on the upper end edge at given intervals as shown in Fig. 7 (B), the folding can be easily performed.

In the heat insulating container 1 having the foregoing construction, a gap 11 is defined between the barrel 4 of the cup body 2 and the barrel 7 of the outer cylinder 3, and it exerts heat insulating effect. Further, since the folding portion 9 is provided at the upper inner side of the outer cylinder 3, the gap 11 is formed also at the upper portion in a space extending to some extent as well as at the lower portion. Accordingly, if boiling water is poured into the heat insulating container, heat of the inside barrel 4 of the cup body 2 is prevented from transmitting to the outside barrel 7 in a wide

range, and hence, a hand or hands do not feel hot, even if the heat insulating container 1 is held at any part which is normally held by a hand or hands.

Fig. 8 shows a modification of the heat insulating container shown in Fig. 5 and it is a schematic view showing the construction of the heat insulating container in which the left half part is a sectional view and the right half part is a plan view.

A heat insulating container 1 shown in Fig. 8 has substantially the same construction as that shown in Fig. 5, but the former is different from the latter in that an outer cylinder 3 is formed of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form an embossed portion 12. The embossed portion is not always formed on all the characters and patterns, but it may be formed on those to be emphasized.

When the cup body 2 is covered with the outer cylinder outer cylinder 3 and the inner surface of the upper portion of the folding portion 9 of the outer cylinder 3 is bonded to the sidewall outer peripheral surface of the cup body 2 at a portion close to an upper portion of a barrel by means of an emulsion adhesive 10 so as to integrate the cup body 2 and outer cylinder 3, thereby assembling the heat insulating container 1. The heat insulating container 1 having such constructions exerts heat insulating effect in the same manner as the heat insulating container 1 in Fig. 5, and heat insulating effect becomes large particularly at the embossed portion 12 having a wide gap.

Fig. 9 shows another modification of the heat insulating container shown in Fig. 5, and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a sectional view and the right half part is a plan view. Although the heat insulating container 1 shown in Fig. 9 has substantially the same construction as that in Fig. 5, the

former is different from the latter in that an outer cylinder 3 is formed of a paperboard which is subjected to a fine embossing process along the entire outer surface thereof. When the cup body 2 is covered with the outer cylinder 3 and the inner surface of the upper portion of the folding portion 9 of the outer cylinder 3 is bonded to the sidewall outer peripheral surface of the cup body 2 at a portion close to an upper portion of a barrel by means of an emulsion adhesive 10 so as to integrate the cup body 2 and outer cylinder 3, thereby also assembling the heat insulating container 1. Although the heat insulating container 1 exerts the same heat insulating effect shown in Fig. 5, it can be easily carried by a hand or hands owing to the minute concaves and convexes provided on the surface of the outer cylinder 3 and heat is hardly transmitted to the hand or hands in addition to the exertion of heat insulating effect owing to the gap 11 defined between the cup body 2 and the outer cylinder 3, and hence heat insulating effect becomes more excellent as a whole. Although the concave/convex pattern is formed on the entire surface of the barrel of the outer cylinder 3 in the modification shown in Fig. 9, a portion where the concave/convex pattern is not formed may remain partly on the surface of the barrel. For example, such a portion may be left in a belt shape at the upper and lower portions of the barrel considering an area which is carried by a hand or hands, or a name of a content such as noodles may be left in a pattern shape considering designs thereof.

Fig. 10 shows another modification of the heat insulating container shown in Fig. 5 and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a sectional view and the right half part is a plan view.

A heat insulating container 1 shown in Fig. 10 has substantially the same construction as that shown in Fig. 5, but the former is different from

the latter in that an outer cylinder 3 is formed of a paperboard which is subjected to a fine embossing process along the entire outer surface thereof so that characters and patterns to be printed form an outwardly embossed portion 12. The outwardly embossed portion 12 is not always formed on all the characters and patterns, but it may be formed on those to be emphasized.

When the cup body 2 is covered with the outer cylinder 3 and the inner surface of the upper portion of the folding portion 9 of the outer cylinder 3 is bonded to the sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel by means of an emulsion adhesive 10 so as to integrate the cup body 2 and outer cylinder 3, thereby also assembling the heat insulating container 1. The heat insulating container 1 having such constructions exerts heat insulating effect in the same manner as the heat insulating container 1 in Fig. 5, and heat insulating effect becomes large, particularly at the embossed portion 12 having a wide gap 11 and it becomes more excellent in heat insulating effect as a whole in addition to the exertion of heat insulating effect owing to the minute concaves and convexes provided on the surface of the outer cylinder 3. Although the concave/convex pattern is formed on the entire surface of the barrel of the outer cylinder 3 in another modification shown in Fig. 10, a portion where the concave/convex pattern is not formed may remain partly on the surface of the barrel. For example, such a portion may be left in a belt shape at the upper and lower portions of the barrel considering an area which is carried by a hand or hands, or a portion forming the embossed portion 12 may be left in a pattern shape considering designs thereof.

Further, a projection may be formed circumferentially on the barrel 4 of the cup body 2 so that it projects inwardly or outwardly so as to serve a pouring reference line as a standard when pouring boiling water. In this

case, it is preferable that the adhesive gap 10 for bonding is provided upper than the pouring reference line. In the foregoing heat insulating containers shown in Fig. 5, Fig. 6, and Figs. 8 to 10, a projection 20 projecting inwardly is formed on the cup body 2.

Fifth Embodiment (Figs. 11 to 23):

A heat insulating container according to a fifth embodiment of the invention is described with reference to some examples.

Figs. 11 to 14 show an example of the heat insulating container according to the fifth embodiment of the invention wherein Fig. 11 is a side view showing an external appearance of the heat insulating container, Fig. 12 is a side view of a cup body, Fig. 13 is a side view of an outer cylinder, and Fig. 14 is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view.

A heat insulating container 10 shown in Fig. 11 comprises a combination of a cup body 20 made of paper shown in Fig. 12 and an outer cylinder 30 which is open at the upper and lower portions and has a hollow cylindrical shape.

The cup body 20 is made of paper coated with synthetic resin such as polyethylene at the inner or both the inner and outer surfaces, and it is formed by winding and fastening a circular bottom plate 22 around the lower portion of a barrel 21, which is formed by rounding a fan-shaped blank, and an outwardly curled portion 23 is formed at the upper opening edge thereof in the same manner as an ordinary paper cup. In the example shown in these figures, a projection 24, which projects inwardly and is narrow in width, is formed circumferentially on the barrel 21 of the cup body 20 at the portion close to the upper side, and it serves as a pouring reference line as a standard when pouring boiling water. A reinforcement rib comprising a

convex portion 25 projecting outwardly and extending circumferentially is provided on the middle of the barrel 21 of the cup body 20. The projection 24 and the convex portion 25 are formed on the cup body 20 using male and female molds before the cup body 20 and outer cylinder 30 are combined with each other.

Meanwhile, the hollow cylindrical outer cylinder 30 is made of single paper or fan-shaped paper coated with synthetic resin such as polyethylene at one surface or both surfaces thereof, and it has inwardly curled portion 32 at a lower opening portion edge of a barrel 31 thereof. Both the cup body 20 and the outer cylinder 30 expanded at the upper portion. The barrel 31 of the outer cylinder 30 is slightly greater than the barrel 21 of the cup body 20 at the skirt thereof, namely, the barrel 21 has a tapered portion.

In the outer cylinder 30, a concave projection 33 which is recessed inwardly is provided circumferentially at the portion close to the upper portion of the barrel thereof. The outer cylinder 30 has such a size that the inner surface of the concave projection 33 contacts or is slightly away from the sidewall outer peripheral surface of the cup body 20 at the portion close to the upper portion of the barrel of the cup body 20, and the inwardly curled portion 32 at the lower opening edge of the barrel 31 contacts the lower sidewall outer periphery of the cup body 20. Further, as shown by the enlarged view in Fig. 15, the upper end 34 of the outer cylinder 30 is bent in a tapered shape in a direction to close it inwardly along the entire periphery, and the tip end of the upper end 34 is brought into contact with the inner side of the outwardly curled portion 23 of the cup body 20. The bending of the upper end 34 is not limited to the tapered shape but it may be bent in a curved state.

In the outer cylinder 30 having the foregoing construction, although the concave projection 33 is formed simultaneously at the time when a

paperboard is punched by a punching machine to form the blank, the tapering or bending at the upper end 34 is performed using a mandrel 40 having the construction as shown in Fig. 16. Although the mandrel 40 is used to form an inwardly curled portion 32 by winding the fan-shaped blank around the periphery thereof, the upper end 34 may have a taper or may be curved at the same time for forming the inwardly curled portion 32. That is, the mandrel 40 has an aslant groove 41, as shown in Fig. 16 and Fig. 17 that is a partly enlarged view of Fig. 16, having a width of 1 mm in the maximum diameter side and a thickness of about 2 mm with an angle of 20 to 30°, is provided at the entire periphery, and also an escape portion 42 is provided so that the concave projection 33 is not crushed when the blank is wound. Utilizing a force pressing the curling mold against the lower portion of the outer cylinder 30 in a first curling step, the upper end 34 of the outer cylinder 30 is pushed into the groove 41 of the mandrel 40, as shown in Fig. 18, thereby forming the inwardly curled portion 32 in that state in a second curling step. When the outer cylinder 30 is removed from the mandrel 40 upon completion of the curling steps, the upper end 34 of the outer cylinder 30 is curved in an inwardly tapered state along the entire periphery thereof. Alternatively, if the shape of the groove 41 and a force to push against the groove 41 are appropriately set, the upper end 34 may be formed in a curved shape.

Further, when the cup body 20 is covered with and inserted into the outer cylinder 30, then the tip end of the outer cylinder 30 is brought into contact with or thrust into the inner side of the outwardly curled portion 23 of the cup body 20, thereafter the upper end 34 of the outer cylinder 30 is bonded to the inner side of the outwardly curled portion 23 of the cup body 20 by means of an emulsion adhesive coated in advance on the outer peripheral surface of the barrel at the portion close to the lower side of the outwardly

curled portion 23 of the cup body 20 to integrate the cup body 20 and the outer cylinder 30, thereby forming the heat insulating container 10 shown in Figs. 11 and 14. Alternatively, the inner side surface of the concave projection 33 of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the portion close to the upper portion of the barrel thereof by means of an emulsion adhesive to integrate the cup body 20 and the outer cylinder 30. Further, depending on the use of heat insulating container 10, the inwardly curled portion 32 formed on the lower opening edge of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion so as to even further ensure the connection between the cup body 20 and the outer cylinder 30. In the case that the tip end of the upper end 34 of the outer cylinder 30 is sufficiently thrust into the inner side of the outwardly curled portion 23 of the cup body 20, the inwardly curled portion 32 of the outer cylinder 30 may be bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion of the cup body 20, thereby fixing the upper end 34 and the outwardly curled portion 23.

As mentioned in the conventional heat insulating container, if the diameter of the upper end edge of the outer cylinder 30 and the diameter of the cup body 20 immediately under the outwardly curled portion are substantially made the same, when the concave projection 33 is provided on the outer cylinder 30, it projects inwardly, a complete insertion of the cup body 20 into the outer cylinder 30 is not performed when the cup body 20 is covered with the outer cylinder 30, so that the lower portion of the outer cylinder 30 is pushed out from the lower portion of the cup body 20. Accordingly, the inner diameter of the outer cylinder 30 is enlarged corresponding to the side of the concave projection 33 to ensure the insertion. If the outer cylinder 30 is tapered inwardly along the entire periphery of the

upper portion or curved to prevent the upper end 34 of the outer cylinder 30 from striking against the outwardly curled portion 23 of the cup body 20, thereby ensuring the insertion of the cup body 20 into the outer cylinder 30. Accordingly, there does not produce a slack at the upper end of the outer cylinder 30, so that an external appearance is not degraded.

In the heat insulating container 10 having the foregoing construction, a gap is defined between the barrel 21 of the cup body 20 and a barrel 31 of the outer cylinder 30, and it exerts heat insulating effect. Further, since the concave projection 33 which is recessed inwardly is provided at the portion close to the upper portion of the barrel of the outer cylinder 30, the gap is defined in a space to some extent extending from the lower portion of the outer cylinder 30 to the concave projection 33. Accordingly, when boiling water is poured into the heat insulating container 10, heat of the inside barrel 21 is prevented from transmitting to the outside barrel 31 in a wider range, and hence a hand or hands do not feel hot even if the heat insulating container 1 is held at any part which is normally held by a hand or hands. Further, since a reinforcement rib formed of a convex portion 25 projecting outwardly is formed on the barrel 21 of the cup body 20, the strength of the cup body 20 increases by the convex portion 25, and it serves to support the barrel 31 of the outer cylinder 30 not to bend the barrel 31 inwardly. As a result, it is possible to prevent a gap between the barrel 21 of the cup body 20 and the barrel 31 of the outer cylinder 30 from being narrowed if the heat insulating container 10 is held by a hand or hands.

Fig. 19 shows another example of the heat insulating container in the fifth embodiment and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view, and the heat insulating container 10 comprises a combination of a cup body 20 which is the same as that shown

in Fig. 12 and an outer cylinder 30 which has a different shape from that shown in Fig. 13.

The outer cylinder 30 shown in the fifth embodiment is not provided with the concave projection 33 provided circumferentially on the outer cylinder 30 as shown in Fig. 13. As shown by the enlarged view in Fig. 20, the outer cylinder 30 has a size that the upper end 34 of the outer cylinder 30 is bent in a curved state in a direction to close it inwardly along the entire periphery, and the tip end thereof is brought into contact with the inner side of the outwardly curled portion. The upper end 34 may be bent in a tapered shape as mentioned above instead of a curved shape. The bending of the upper end 34 is performed using a mandrel like the previous embodiment at the same time when forming the inwardly curled portion 32.

Further, when the cup body 20 is covered with and inserted into the outer cylinder 30, then the tip end 34 of the outer cylinder 30 is brought into contact with or thrust into the inner side of the outwardly curled portion 23 of the cup body 20, thereafter the upper end 34 of the outer cylinder 30 is bonded to the inner side of the outwardly curled portion 23 of the cup body 20 by means of an emulsion adhesive coated in advance on the outer peripheral surface of the barrel at the portion close to the lower side of the outwardly curled portion 23 of the cup body 20 to integrate the cup body 20 and the outer cylinder 30, thereby forming the heat insulating container 10 shown in Fig. 19. Further, depending on the use of heat insulating container 10, the inwardly curled portion 32 formed on the lower opening edge of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion so as to even further ensure the connection between the cup body 20 and the outer cylinder 30. Further, if the tip end of the upper end 34 of the outer cylinder 30 is sufficiently thrust into the inner side of the outwardly curled portion 23 of the cup body 20 in the same

manner as the foregoing examples, the inwardly curled portion 32 of the outer cylinder 30 may be bonded to the sidewall outer peripheral surface of the lower portion of the cup body 20, thereby fixing between the upper end 34 and the outwardly curled portion 23.

In the heat insulating container 10 having the foregoing construction, a gap is defined between the barrel 21 of the cup body 20 and the barrel 31 of the outer cylinder 30, and it exerts heat insulating effect. Accordingly, when boiling water is poured into the heat insulating container 10, heat of the inside barrel 21 is prevented from transmitting to the outside barrel 31 in a wider range, and hence a hand or hands do not feel hot even if the heat insulating container 1 is held at any part which is normally held by a hand or hands. Further, since a reinforcement rib formed of a convex portion 25 projecting outwardly is formed circumferentially on the barrel 21 of the cup body 20 also in the fifth embodiment, the strength of the cup body 20 increases by the convex portion 25, and it serves to support the barrel 31 of the outer cylinder 30 not to bend the barrel 31 inwardly. As a result, it is possible to prevent a gap between the barrel 21 of the cup body 20 and the barrel 31 of the outer cylinder 30 from being narrowed if the heat insulating container 10 is held by a hand or hands.

Fig. 21 shows a modification of the heat insulating container shown in Fig. 14 and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view.

A heat insulating container 10 shown in Fig. 21 has substantially the same construction as that shown in Fig. 14, but the former is different from the latter in that an outer cylinder 30 is formed of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form an outwardly embossed portion 35. The embossed portion 35

is not always formed on all the characters and patterns, but it may be formed on those to be emphasized. The heat insulating container 10 having such a construction exerts heat insulating effect in the same manner as the heat insulating container 10 in Fig. 14, and heat insulating effect becomes large particularly at the embossed portion 35 because a gap is wide at the outwardly embossed portion 35.

Fig. 22 shows another modification of the heat insulating container shown in Fig. 14, and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view. Although a heat insulating container 10 shown in Fig. 22 has substantially the same construction as that in Fig. 14, the former is different from the latter in that an outer cylinder 30 is formed of a paperboard which is subjected to a fine embossing process along the entire outer surface thereof. Although the heat insulating container 10 having such a construction exerts heat insulating effect in the same manner as the heat insulating container 10 in Fig. 14, it can be easily carried by a hand or hands owing to the minute concaves and convexes provided on the surface of the outer cylinder 30 and heat is hardly transmitted to the hand or hands in addition to the exertion of heat insulating effect owing to the gap defined between the cup body 20 and the outer cylinder outer cylinder 30, and hence it becomes more excellent in heat insulating effect as a whole. Although the concave/convex pattern is formed on the entire surface of the barrel of the outer cylinder in the modification shown in Fig. 22, a portion where the concave/convex pattern is not formed may remain partly on the surface of the barrel. For example, such a portion may be left in a belt shape at the upper and lower portions of the barrel considering an area which is carried by a hand or hands, or a name of a content such as noodles may be left in a pattern shape considering designs thereof.

Fig. 23 shows still another modification of the heat insulating container in Fig. 14 and a schematic view showing the construction thereof wherein the right part is a side view and the left part is a sectional view. Although a heat insulating container 10 shown in Fig. 23 has substantially the same construction as that in Fig. 14, the former is different from the latter in that an outer cylinder 30 is formed of a paperboard which is subjected to a fine embossing process along the entire outer surface thereof so that the characters and patterns to be printed form an outwardly embossed portion 35. The embossed portion 35 is not always formed on all the characters and patterns, but it may be formed on those to be emphasized. Although the heat insulating container 10 having such a construction exerts heat insulating effect in the same manner as the heat insulating container 10 in Fig. 14, heat insulating effect becomes large, particularly at the embossed portion 35 having a wide gap and it becomes more excellent in heat insulating effect as a whole in addition to the exertion of heat insulating effect owing to the minute concaves and convexes provided on the surface of the outer cylinder 30. Although the concave/convex pattern is formed on the entire surface of the barrel of the outer cylinder 30 in another modification shown in Fig. 23, a portion where the concave/convex pattern is not formed may remain partly on the surface of the barrel. For example, such a portion may be left in a belt shape at the upper and lower portions of the barrel considering an area which is carried by a hand or hands, or a portion forming the embossed portion 35 may be left considering designs thereof.

In the case of each heat insulating container as shown in Figs. 21 to 23 in the same manner as the heat insulating container 10 shown in Fig. 14, when the cup body 20 is covered with and inserted into the outer cylinder 30, then the tip end of the upper end 34 of the outer cylinder 30 is brought into

contact with or thrust into the inner side of the outwardly curled portion 23 of the cup body 20, thereafter the upper end 34 of the outer cylinder 30 is bonded to the inner side of the outwardly curled portion 23 of the cup body 20 by means of an emulsion adhesive coated in advance on the outer peripheral surface of the barrel at the portion close to the lower side of the outwardly curled portion 23 of the cup body 20 to integrate the cup body 20 and the outer cylinder 30, thereby assembling the heat insulating container 10. Alternatively, the inner side surface of the concave projection 33 of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the portion close to the upper portion of the barrel thereof by means of an emulsion adhesive to integrate the cup body 20 and the outer cylinder 30. Further, the inwardly curled portion 32 formed on the lower opening edge of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion. In the case that the tip end of the upper end 34 of the outer cylinder 30 is sufficiently thrust into the inner side of the outwardly curled portion 23 of the cup body 20, the inwardly curled portion 32 of the outer cylinder 30 may be bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion of the cup body 20, thereby fixing the upper end 34 and the outwardly curled portion 23.

Although in the foregoing each example, the projection 24 having a narrow width and projection inwardly is formed circumferentially at the position close to the upper portion of the barrel 21 of the cup body 20 serving as a pouring reference line as a standard, when pouring boiling water, the projection 24 may project outwardly, i.e., toward the outer surface. In either case, the position of an adhesive for bonding the cup body 20 and the outer cylinder 30 is preferable to be above the pouring reference line.

The concave projection 33 provided on the portion close to the upper portion of the outer cylinder 30 of the foregoing plural examples is

continuous in a belt shape to extend to the entire periphery except the joint of the barrel 31, but it may be discontinuous. The shape of the concave projection 33 may be a circular, an elliptical, or an arbitrary shape as well as a belt shape.

Sixth Embodiment (Figs. 24 to 35):

A heat insulating container according to a sixth embodiment of the invention is described with reference to some examples.

Fig. 24 show an example of the heat insulating container according to the sixth embodiment of the invention and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view. A heat insulating container 10 shown in Fig. 24 comprises a combination of a cup body 20 made of paper and an outer cylinder 30 which is open at the upper and lower portions and has a hollow cylindrical shape.

The cup body 20 is made of paper coated with synthetic resin such as polyethylene at the inner or both the inner and outer surfaces, and it is formed by winding and fastening a circular bottom plate 22 around the lower portion of a barrel 21, which is formed by rounding a fan-shaped blank, and an outwardly curled portion 23 is formed at the upper opening edge thereof in the same manner as an ordinary paper cup. In the example shown in these figures, a projection 24, which projects inwardly and is narrow in width, is formed circumferentially on the barrel 21 of the cup body 20 at the portion close to the upper side, and it serves as a pouring reference line as a standard when pouring boiling water. A reinforcement rib comprising a convex portion 25 projecting outwardly and extending circumferentially is provided on the middle of the barrel 21 of the cup body 20. The projection 24 and the convex portion 25 are formed on the cup body 20 using male and female molds before the cup body 20 and outer cylinder 30 are combined

with each other. The cup body 20 has an upper end 26 adjacent to the outwardly curled portion 23 which is bent to be further expanded outwardly along the entire periphery. The bending of the upper end 26 is performed at the same time when forming the outwardly curled portion 23.

In the cup body 20 shown in Fig. 24, the upper end 26 is subjected to a bending process with a shape using a straight line a which is different in taper from the barrel 21 as shown in Fig. 25(a), the shape may be replaced by a shape using one curve b (curvature R) having a curvature R as shown in Fig. 25(b) or a shape connecting two curves c, d having curvatures R1 and R2 as shown in Fig. 25(c). The dimensions of the expansion are varied according to a thickness of paper, grammage or basis weight, extension as well as circumferential length of the opening, but they are required to an extent not to produce a crack in the curled portion. Concretely, it is 0.1 to 2.0 mm, preferably 0.1 to 1.0 mm in a direction of diameter.

Meanwhile, the hollow cylindrical outer cylinder 30 is made of single paper or fan-shaped paper coated with synthetic resin such as polyethylene at one surface or both surfaces thereof, and it has inwardly curled portion 32 at a lower opening portion edge of a barrel 31 thereof. Both the cup body 20 and the outer cylinder 30 expanded at the upper portion. The barrel 31 of the outer cylinder 30 is slightly greater than the barrel 21 of the cup body 20 at the skirt thereof, namely, the barrel 21 has a tapered portion. Further, the outer cylinder has a size that the upper end of the barrel of the outer cylinder 30 is brought into contact with the inner side of the outwardly curled portion 23 of the cup body 20, while the inwardly curled portion 32 at the lower opening edge of the barrel 31 contacts the sidewall outer peripheral surface of the cup body 20 at the lower portion.

Further, when the cup body 20 is covered with and inserted into the outer cylinder 30, then the tip end of the upper end 34 of the outer cylinder

30 is brought into contact with or thrust into the inner side of the outwardly curled portion 23 of the cup body 20, thereafter the upper end 34 of the outer cylinder 30 is bonded to the inner side of the outwardly curled portion 23 of the cup body 20 by means of an emulsion adhesive coated in advance on the outer peripheral surface of the barrel at the portion close to the lower side of the outwardly curled portion 23 of the cup body 20 to integrate the cup body 20 and the outer cylinder 30, thereby forming the heat insulating container 10 shown in Fig. 24. Further, depending on the use of heat insulating container 10, the inwardly curled portion 32 formed on the lower opening edge of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion so as to even further ensure the connection between the cup body 20 and the outer cylinder 30. In the case that the tip end of the upper end 34 of the outer cylinder 30 is sufficiently thrust into the inner side of the outwardly curled portion 23 of the cup body 20, the inwardly curled portion 32 of the outer cylinder 30 may be bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion of the cup body 20, thereby fixing the upper end 34 and the outwardly curled portion 23.

In the heat insulating container 10 having the foregoing construction, a gap is defined between the barrel 21 of the cup body 20 and a barrel 31 of the outer cylinder 30, and it exerts heat insulating effect. Further, since the upper end 26 adjacent to the outwardly curled portion 23 of the cup body 20 is bent to expand outwardly along the entire periphery, the gap is defined in a space to some extent extending from the lower portion to the upper portion. Accordingly, when boiling water is poured into the heat insulating container 10, heat of the inside barrel 21 is prevented from transmitting to the outside barrel 31 in a wider range, and hence a hand or hands do not feel hot even if the heat insulating container 10 is held at any part which is normally held

by a hand or hands. Further, since a reinforcement rib formed of a convex portion 25 projecting outwardly is formed on the barrel 21 of the cup body 20, the strength of the cup body 20 increases by the convex portion 25, and it serves to support the barrel 31 of the outer cylinder 30 not to bend the barrel 31 inwardly. As a result, it is possible to prevent a gap between the barrel 21 of the cup body 20 and the barrel 31 of the outer cylinder 30 from being narrowed if the heat insulating container 10 is held by a hand or hands.

Fig. 26 shows another example of the heat insulating container in the sixth embodiment and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view, and the heat insulating container 10 comprises a combination of a cup body 20 which is the same as that shown in Fig. 23 and an outer cylinder 30 which has a different shape from that shown in Fig. 23.

The outer cylinder 30 used in this embodiment has a concave projection 33 which is recessed inwardly and provided circumferentially at the portion close to the upper portion of the barrel in addition to the outer cylinder 30 in Fig. 23. The outer cylinder 30 has such a size that the inner surface of the concave projection 33 contacts or is slightly away from the sidewall outer peripheral surface of the cup body 20 at the portion close to the upper portion of the barrel of the cup body 20, and the inwardly curled portion 32 at the lower opening edge of the barrel 31 contacts the lower sidewall outer periphery of the cup body 20. Further, as shown by the enlarged view in Fig. 27, the upper end 34 of the outer cylinder 30 is bent in a tapered shape in a direction to close it inwardly along the entire periphery, and the tip end of the upper end 34 is brought into contact with the inner side of the outwardly curled portion 23 of the cup body 20. The bending of the upper end 34 is not limited to the tapered shape but it may be bent in a

curved state as shown in Fig. 28.

In the outer cylinder 30 having the foregoing construction, although the concave projection 33 is formed simultaneously at the time when a paperboard is punched by a punching machine to form the blank, the tapering or bending at the upper end 34 is performed using a mandrel 40 having the construction as shown in Fig. 29. Although the mandrel 40 is used to form an inwardly curled portion 32 by winding the fan-shaped blank around the periphery thereof, the upper end 34 may be tapered or curved at the same time for forming the curled portion. That is, the mandrel 40 has an aslant groove 41, which is shown in Fig. 29 and Fig. 30 that is a partly enlarged view of Fig. 29, and has a width of 1 mm in the maximum diameter side and a thickness of about 2 mm with an angle of 20 to 30°, is provided at the entire periphery. An escape portion 42 is provided so that the concave projection 33 is not crushed when the blank is wound. Utilizing a force pressing the curling mold against the lower portion of the outer cylinder 30 in a first curling step, the upper end 34 of the outer cylinder 30 is pushed into the groove 41 of the mandrel 40, as shown in Fig. 31, thereby forming the inwardly curled portion 32 in that state in a second curling step. When the outer cylinder 30 is removed from the mandrel 40 upon completion of the curling steps, the upper end 34 of the outer cylinder 30 is curved in an inwardly tapered state along the entire periphery thereof. Alternatively, if the shape of the groove 41 and a force to push against the groove 41 are appropriately set, the upper end 34 may be formed in a curved shape.

Further, when the cup body 20 is covered with and inserted into the outer cylinder 30, then the tip end of the upper end 34 of the outer cylinder 30 is brought into contact with or thrust into the inner side of the outwardly curled portion 23 of the cup body 20, thereafter the upper end 34 of the outer cylinder 30 is bonded to the inner side of the outwardly curled

portion 23 of the cup body 20 by means of an emulsion adhesive coated in advance on the outer peripheral surface of the barrel at the portion close to the lower side of the outwardly curled portion 23 of the cup body 20 to integrate the cup body 20 and the outer cylinder 30, thereby forming the heat insulating container 10 shown in Fig. 26. Alternatively, the inner side surface of the concave projection 33 of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the portion close to the upper portion of the barrel thereof by means of an emulsion adhesive to integrate the cup body 20 and the outer cylinder 30. Further, depending on the use of heat insulating container 10, the inwardly curled portion 32 formed on the lower opening edge of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion so as to even further ensure the connection between the cup body 20 and the outer cylinder 30. Further, if the tip end of the upper end 34 of the outer cylinder 30 is sufficiently thrust into the inner side of the outwardly curled portion 23 of the cup body 20, the inwardly curled portion 32 of the outer cylinder 30 may be bonded to the sidewall outer peripheral surface of the lower portion of the cup body 20, thereby fixing between the upper end 34 and the outwardly curled portion 23.

In the heat insulating container 10 having the foregoing construction, a gap is defined between the barrel 21 of the cup body 20 and the barrel 31 of the outer cylinder 30, and it exerts heat insulating effect. Further, since the concave projection 33 which is recessed inwardly is provided at the portion close to the upper portion of the barrel of the outer cylinder 30, the gap 11 is defined in a space to some extent extending from the lower portion to the concave projection 33. Accordingly, if boiling water is poured into the heat insulating container 10, heat of the inside barrel 21 of the cup body 20 is prevented from transmitting to the outside barrel 31 in a wide range, and

hence a hand or hands do not feel hot, even if the heat insulating container 10 is held at any part which is normally held by a hand or hands. Further, since a reinforcement rib formed of a convex portion 25 projecting outwardly is formed circumferentially on the barrel 21 of the cup body 20, the strength of the cup body 20 increases by the convex portion 25, and it serves to support the barrel 31 of the outer cylinder 30 not to bend the barrel 31 inwardly. As a result, it is possible to prevent a gap between the barrel 21 of the cup body 20 and the barrel 31 of the outer cylinder 30 from being narrowed if the heat insulating container 10 is held by a hand or hands.

Fig. 32 shows another example of the heat insulating container in the sixth embodiment and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view, and the heat insulating container 10 comprises a combination of a cup body 20 which is the same as that shown in Fig. 26 and an outer cylinder 30 which has a different shape from that shown in Fig. 26.

Although the outer cylinder 30 of this example is the same as that shown in Fig. 26 in respect that the concave projection 33 which is recessed inwardly at the portion close to the upper portion of the barrel and is provided circumferentially, the upper end of the outer cylinder 30 of this example is not bent in a direction to close it inwardly but remains upright. When using the outer cylinder 30 having the concave projection 33 at the portion close to the upper portion of the barrel, the outer cylinder 30 projects inwardly, and hence it is considered that the upper end 34 does not contact the inner side of the outwardly curled portion 23 of the cup body 20. However, if the bending of the upper end 26 of the cup body 20 in an outward direction is large or the recess of the concave projection 33 of the outer cylinder 30 in an inward direction is small, the upper end 34 of the outer

cylinder 30 may remain upright like this example.

Fig. 33 shows a modification of the heat insulating container shown in Fig. 26 and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view.

The heat insulating container 10 shown in Fig. 33 has substantially the same construction as that shown in Fig. 26, but the former is different from the latter in that an outer cylinder 30 is formed of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form an outwardly embossed portion 35. The embossed portion 35 is not always formed on all the characters and patterns, but it may be formed on only those to be emphasized. The heat insulating container 10 having such a construction exerts heat insulating effect in the same manner as the heat insulating container 10 in Fig. 26, and heat insulating effect becomes large particularly at the embossed portion 35 because a gap is wide at the outwardly embossed portion 35.

Fig. 34 shows another modification of the heat insulating container shown in Fig. 26, and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view. Although a heat insulating container 10 shown in Fig. 34 has substantially the same construction as that in Fig. 26, the former is different from the latter in that an outer cylinder 30 is formed of a paperboard which is subjected to a fine embossing process along the entire outer surface thereof. Although the heat insulating container 10 having such a construction exerts heat insulating effect in the same manner as the heat insulating container 10 in Fig. 26, it becomes more excellent in heat insulating effect as a whole and it can be easily carried by a hand or hands owing to the minute concaves and convexes provided on the surface of

the outer cylinder 30 and heat is hardly transmitted to the hand or hands in addition to the exertion of heat insulating effect owing to the gap defined between the cup body 20 and the outer cylinder 30. Although the concave/convex pattern is formed on the entire surface of the barrel of the outer cylinder 30 in the modification shown in Fig. 34, a portion where the concave/convex pattern is not formed may remain partly on the surface of the barrel. For example, such a portion may be left in a belt shape at the upper and lower portions of the barrel considering an area which is carried by a hand or hands, or a name of a content such as noodles may be left in a pattern shape considering designs thereof.

Fig. 35 shows still another modification of the heat insulating container shown in Fig. 26 and it is a schematic view showing the construction of the heat insulating container wherein the left half part is a side view and the right half part is a sectional view.

A heat insulating container 10 shown in Fig. 35 has substantially the same construction as that shown in Fig. 26, but the former is different from the latter in that an outer cylinder 30 is formed of a paperboard which is subjected to a fine embossing process along the entire outer surface thereof and also subjected to an embossing process so that characters and patterns to be printed form an outwardly embossed portion 35. The embossed portion 35 is not always formed on all the characters and patterns, but it may be formed on only those to be emphasized. The heat insulating container 10 having such a construction exerts heat insulating effect in the same manner as the heat insulating container 10 in Fig. 26, and heat insulating effect becomes large particularly at the embossed portion 35 because a gap is wide at the outwardly embossed portion 35, and heat insulating effect becomes more excellent as a whole in addition to the exertion of heat insulating effect owing to the fine concaves and convexes on the

surface of the outer cylinder 30. Although the concave/convex pattern is formed on the entire surface of the barrel of the outer cylinder 30 in the modification shown in Fig. 35, a portion where the concave/convex pattern is not formed may remain partly on the surface of the barrel. For example, such a portion may be left in a belt shape at the upper and lower portions of the barrel considering an area which is carried by a hand or hands, or a portion forming the embossed portion 35 may be left considering designs thereof.

In the case of each heat insulating container as shown in Figs. 33 to 35, when the cup body 20 is covered with and inserted into the outer cylinder 30, then the tip end of the upper end 34 of the outer cylinder 30 is brought into contact with or thrust into the inner side of the outwardly curled portion 23 of the cup body 20, thereafter the upper end 34 of the outer cylinder 30 is bonded to the inner side of the outwardly curled portion 23 of the cup body 20 by means of an emulsion adhesive coated in advance on the outer peripheral surface of the barrel at the portion close to the lower side of the outwardly curled portion 23 of the cup body 20 to integrate the cup body 20 and the outer cylinder 30, thereby assembling the heat insulating container primary cooling portion 10 in the same manner as the heat insulating container 10 shown in Fig. 26. Alternatively, the inner side surface of the concave projection 33 of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the portion close to the upper portion of the barrel thereof by means of an emulsion adhesive to integrate the cup body 20 and the outer cylinder 30. Further, the inwardly curled portion 32 formed on the lower opening edge of the outer cylinder 30 is bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion. In the case that the tip end of the upper end 34 of the outer cylinder 30 is sufficiently thrust into the inner side of the outwardly curled portion 23 of the cup body 20, the inwardly curled portion 32 of the outer

cylinder 30 may be bonded to the sidewall outer peripheral surface of the cup body 20 at the lower portion of the cup body 20, thereby fixing the upper end 34 and the outwardly curled portion 23.

In each example of the foregoing modifications, a projection 24, which has a narrow width and projects inwardly at a position close to upper portion of the barrel 21 of the cup body 20 as a pouring reference line as a standard when pouring boiling water, is formed circumferentially, but it may project outwardly. In either case, it is preferable that an adhesive for bonding the barrel 21 of the cup body 20 and the barrel 31 of the outer cylinder 30 is positioned above the pouring reference line.

In the case of providing the concave projection 33 at the upper portion close to the barrel of the outer cylinder 30, the concave projection 33 may be formed continuously in a belt shape on the entire periphery or discontinuously while the joint of the barrel 31 of the concave projection 33 is left. If the concave projection 33 is formed discontinuously, the concave projection 33 may be a circular, an elliptical, or an arbitrary shape as well as a belt shape.

With the construction of the invention set forth above, there are the following effects.

Since the heat insulating container in Claim 1 has the outer cylinder made of a paperboard which is subjected to an embossing process along the entire outer surface thereof, heat insulating effect owing to concaves and convexes on the surface of the outer cylinder in addition to heat insulating effect owing to the gap between the cup body and the outer cylinder renders heat insulating effect more excellent. Further, since there are irregularities formed on the surface of the outer cylinder by an embossing process, the heat insulating container can be easily carried by a hand or hands and the heat insulating container is provided with an excellent design which has not been

made so far owing to the concave/convex pattern.

Since the heat insulating container in Claim 2 has the outer cylinder made of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form the outwardly embossed portion, heat insulating effect owing to the embossed portion on the surface of the outer cylinder in addition to heat insulating effect owing to the gap between the cup body and the outer cylinder renders heat insulating effect more excellent. Further, since the characters and patterns to be printed on the surface of the outer cylinder become in a projecting state, the characters and patterns are emphasized by the concaves and convexes thereof, so that the heat insulating container is provided with a design which is excellent from a design point of view or aesthetic point of view.

Since the heat insulating container in Claims 3 and 4 comprises the cup body made of paper and having outwardly curled portion at the upper opening edge and the outer cylinder made of paper and having inwardly curled portion at the lower opening edge and being open at both the upper and lower portions, wherein an inwardly recessed lateral ruler is provided circumferentially at the portion close to the upper portion of the barrel of the outer cylinder, and the inner side surface of the lateral ruler of the outer cylinder is bonded to the sidewall outer peripheral surface of the cup body at the portion close to the upper portion of the barrel of the cup body while the cup body is covered with the outer cylinder to integrate both, thereby forming the heat insulating container having the gap defined between the cup body and the outer cylinder, the gap for heat insulation is defined in a space to some extent extending from the lower portion to the lateral ruler of the outer cylinder, heat of the content in the heat insulating container is hardly transmitted to a hand or hands even if any part of the barrel of the heat insulating container is carried by a hand or hands.

Since the heat insulating container in Claim 5 comprises the cup body made of paper and having outwardly curled portion at the upper opening edge and the outer cylinder made of paper and having inwardly curled portion at the lower opening edge and being open at both the upper and lower portions, wherein the upper opening edge of the outer cylinder is folded inwardly to form the folding portion at the upper portion thereof, and the outer cylinder has a size that the folding portion at the upper portion of the outer cylinder contacts the sidewall outer peripheral surface of the cup body immediately under the outwardly curled portion of the cup body while the inwardly curled portion at the lower open edge of the outer cylinder contacts the sidewall outer peripheral surface of the lower portion of the cup body, and the inner side surface of the outer cylinder at the portion close to the lower portion of the folding portion of the outer cylinder is bonded to the sidewall surface of the barrel of the cup body at the portion close to the upper portion of the barrel while the cup body is covered with the outer cylinder to integrate both, thereby forming the heat insulating container having the gap defined between the cup body and the outer cylinder, the gap for heat insulation is defined in a space to some extent in a wide range extending from the lower portion of the barrel to the upper portion thereof, heat of the content in the heat insulating container is hardly transmitted to a hand or hands even if any part of the heat insulating container is carried by a hand or hands.

Since the heat insulating container in Claims 6 and 8 has the outer cylinder formed of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form an outwardly embossed portion, the characters and patterns to be printed on the surface of the outer cylinder becomes in a projecting state by the outwardly embossed portion, thereby rendering the heat insulating effect excellent, and emphasizing the

characters and patterns owing to the concaves and convexes so that the heat insulating container is provided with an excellent design.

Since the heat insulating container in Claims 7 and 8 has the outer cylinder formed of a paperboard which is subjected to a fine embossing process on substantially the entire outer surface thereof, the outer cylinder has concaves and convexes on the surface thereof owing to the embossing process, so that the heat insulating container is easily carried by a hand or hand, and heat is hardly transmitted to a hand or hand, and further the heat insulating container is provided with a design which has not been made so far owing to the concave/convex pattern.

Since the heat insulating container in Claim 9 comprises a cup body made of paper and expanded at an upper portion and having an outwardly curled portion at an upper opening edge, and an outer cylinder made of paper and expanded at an upper portion and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein an upper end of a barrel of the outer cylinder is bent in a direction to close it along the entire periphery of the barrel, and a tip end of an upper end of the outer cylinder is brought into contact with or thrust into an inner side of the outwardly curled portion of the cup body while the cup body is covered with the outer cylinder, and at least either the upper end or the inwardly curled portion of the outer cylinder is bonded to the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and outer cylinder, the gap for heat insulation is formed in a space to some extent in a wide range extending from the lower portion of the barrel to the upper portion thereof, so that heat of the content is hardly transmitted to a hand or hands even if the barrel of the heat insulating container is carried by a hand or hands, thereby rendering the heat insulating container excellent in heat

insulating property. Further when assembling the cup body with outer cylinder, the upper end of the outer cylinder is bent inwardly in a tapered shape or a curved shape, and it is brought into contact with or thrust into the inner side of the outwardly curled portion, so that it is prevented from striking against the lower side of the outwardly curved portion, and hence the outer cylinder can be smoothly inserted into the cup body, resulting in no degradation in the external appearance.

Since the heat insulating container in Claims 10 and 11 has the shape of the outer cylinder in the manner that an inwardly recessed concave projection is provided circumferentially at a portion close to an upper portion of the barrel thereof, the gap is defined in a space to some extent extending from the lower portion of the barrel to the concave projection, and hence the concave projection serves as a support when the heat insulating container is carried by hand or hands to prevent the gap from being narrowed, thereby rendering heat insulating effect more excellent.

Since the heat insulating container in Claim 14 has the outer cylinder formed of a paperboard that is subjected to an embossing process so that characters and patterns printed on the outer cylinder form an outwardly embossed portion, the characters and patterns to be printed on the surface of the outer cylinder becomes in a projecting state by the embossed portion, thereby rendering heat insulating effect excellent and emphasizing the characters and patterns owing to the concaves and convexes, so that the heat insulating container is provided with an excellent design.

Since the heat insulating container in Claim 15 has the outer cylinder formed of a paperboard which is subjected to a fine embossing process on substantially the entire outer surface thereof, the outer cylinder has concaves and convexes on the surface thereof owing to the embossing process, so that the heat insulating container is easily carried by a hand or

hand, and heat is hardly transmitted to a hand or hand, and further the heat insulating container is provided with a design which has not been made so far owing to the concave/convex pattern.

Since the heat insulating container in Claims 16 and 17 comprises a cup body made of paper and expanded at an upper portion and having an outwardly curled portion at an upper opening edge, and an outer cylinder made of paper and expanded at an upper portion and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, wherein an upper end adjacent to the outwardly curled portion of the cup body is bent to expand outwardly along the entire periphery, and the tip end of an upper end of the outer cylinder is brought into contact with or thrust into the inner side of the outwardly curled portion of the cup body while the cup body is covered with the outer cylinder, and at least either the upper end or the inwardly curled portion of the outer cylinder is bonded to the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and outer cylinder, the gap for heat insulation is defined in a space extending to some extent in a wide range extending from the lower portion of the barrel to the upper portion thereof, so that heat of the content in the heat insulating container is hardly transmitted to a hand or hands even if any part of the heat insulating container is carried by a hand or hands. Further, when assembling the cup body and the outer cylinder, since the upper end of the cup body is expanded outwardly and the upper end of the outer cylinder is brought into contact with or thrust into inner side of the outwardly curled portion, so that it is prevented from striking against the lower side of the outwardly curled portion, and hence the outer cylinder can be smoothly inserted into the cup body, resulting in no degradation in an external appearance.

Since the heat insulating container in Claims 18 and 19 has the shape of the outer cylinder in the manner that the concave projection which is provided at the portion close to the upper portion of the barrel and is recessed inwardly, is provided circumferentially so that the gap is defined in a space to some extent extending from the lower portion of the barrel to the concave projection, and hence the concave projection serves as a support when carried by hand or hands to prevent the gap from being narrowed, thereby rendering heat insulating effect more excellent.

Since the heat insulating container in Claim 22 has the outer cylinder formed of a paperboard which is subjected an embossing process so that characters and patterns printed on the outer cylinder form an outwardly embossed portion, the characters and patterns to be printed on the surface of the outer cylinder becomes in a projecting state by the embossed portion, thereby rendering heat insulating effect excellent and emphasizing the characters and patterns owing to the concaves and convexes so that the heat insulating container is provided with an excellent design.

Since the heat insulating container in Claim 23 has the outer cylinder formed of a paperboard which is subjected to a fine embossing process on substantially the entire outer surface thereof, the outer cylinder has concaves and convexes on the surface thereof owing to the embossing process, so that the heat insulating container is easily carried by a hand or hand, and heat is hardly transmitted to a hand or hand, and further the heat insulating container is provided with a design which has not been made so far owing to the concave/convex pattern.

What is claimed is:

1. A heat insulating container comprising:

a cup body made of paper and having an outwardly curled portion at an upper opening edge; and

an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge, said outer cylinder having a size that an upper opening inner surface of the outer cylinder contacts a sidewall outer periphery of the cup body at a portion immediately under the outwardly curled portion of the cup body, and the inwardly curled portion at the lower opening edge of the outer cylinder contacts a sidewall outer periphery of the cup body at the lower portion thereof;

wherein the cup body is covered with the outer cylinder, and the upper opening inner surface of the outer cylinder is bonded to the sidewall outer periphery of the cup body at the portion immediately under the outwardly curled portion of the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap defined between the cup body and outer cylinder becomes the largest in space at a portion close to the inwardly curled portion of the lower opening edge of the outer cylinder; and

wherein the outer cylinder is formed of a paperboard which is subjected to a fine embossing process on substantially an entire outer surface thereof.

2. A heat insulating container comprising:

a cup body made of paper and having an outwardly curled portion at an upper opening edge; and

an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge,



said outer cylinder having a size that an upper opening inner surface of the outer cylinder contacts a sidewall outer periphery of the cup body at a portion immediately under the outwardly curled portion of the cup body, and the inwardly curled portion at the lower opening edge of the outer cylinder contacts a sidewall outer periphery of the cup body at the lower portion thereof;

wherein the cup body is covered with the outer cylinder, and the upper opening inner surface of the outer cylinder is bonded to the sidewall outer periphery of the cup body at the portion immediately under the outwardly curled portion of the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap defined between the cup body and outer cylinder becomes the largest in space at a portion close to the inwardly curled portion of the lower opening edge of the outer cylinder; and

wherein the outer cylinder is formed of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form an outwardly embossed portion.

3. A heat insulating container comprising:

a cup body made of paper and having an outwardly curled portion at an upper opening edge; and

an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge;

wherein an inwardly recessed lateral rule mark is provided circumferentially at a portion close to an upper portion of a barrel of the outer cylinder, and wherein an inner surface of the lateral rule mark of the outer cylinder is bonded to a sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel of the cup body while



the cup body is covered with the outer cylinder so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and the outer cylinder.

4. A heat insulating container according to Claim 3, wherein the lateral rule mark provided circumferentially at the portion close to the upper portion of the barrel of the outer cylinder is discontinuous.

5. A heat insulating container comprising:

a cup body made of paper and having an outwardly curled portion at an upper opening edge; and

an outer cylinder made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge;

wherein the upper opening edge is folded inwardly at the upper portion of the outer cylinder to form a folding portion, the outer cylinder has a size that the folding portion at the upper portion contacts a sidewall outer peripheral surface immediately under the outwardly curled portion of the cup body, and the inwardly curled portion of the lower opening edge thereof contacts the sidewall outer peripheral surface of the cup body, and wherein the cup body is covered with the outer cylinder, and an inner surface of the outer cylinder at a portion close to the lower portion of the folding portion of the outer cylinder is bonded to the sidewall outer peripheral surface of the cup body at a portion close to an upper portion of a barrel of the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and the outer cylinder.

6. The heat insulating container according to Claim 5, wherein the outer cylinder is formed of a paperboard which is subjected to an embossing process so that characters and patterns to be printed form an outwardly



embossed portion.

7. The heat insulating container according to Claim 5, wherein the outer cylinder is formed of a paperboard which is subjected to a fine embossing process on substantially an entire outer surface thereof.

8. The heat insulating container according to Claim 5, wherein the outer cylinder is formed of a paperboard which is subjected to a fine embossing process on substantially the entire outer surface thereof and subjected to an embossing process so that characters and patterns to be printed form an outwardly embossed portion.

9. A heat insulating container comprising:

a cup body made of paper and expanded at an upper portion and having an outwardly curled portion at an upper opening edge; and

an outer cylinder made of paper and expanded at an upper portion and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge;

wherein an upper portion of a barrel of said outer cylinder is bent in a direction to close it along the entire periphery of the barrel, and a tip end of an upper end of the outer cylinder is brought into contact with or thrust into an inner side of the outwardly curled portion of the cup body while the cup body is covered with the outer cylinder, and at least either the upper end or the inwardly curled portion of the outer cylinder is bonded to the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and outer cylinder.

10. The heat insulating container according to Claim 9, further comprising an inwardly recessed concave projection is provided circumferentially at a portion close to an upper portion of the barrel of the outer cylinder.



11. The heat insulating container according to Claim 9, further comprising an inwardly recessed concave projection is provided circumferentially at a portion close to an upper portion of the barrel of the outer cylinder and is discontinuous.

12. The heat insulating container according to Claim 9, further comprising a pouring reference line formed of a projection which is circumferentially formed on the barrel of the cup body and projects toward an inner surface or outer surface of the barrel of the cup body.

13. The heat insulating container according to Claim 9, further comprising a reinforcement rib formed of a circumferential convex which is formed on the barrel of the cup body and projects toward an outer surface of the barrel of the cup body.

14. The heat insulating container according to Claim 9, wherein characters and patterns printed on the outer cylinder form an outwardly embossed portion.

15. The heat insulating container according to Claim 9, wherein the outer cylinder is formed of a paperboard which is subjected to a fine embossing process on substantially an entire outer surface thereof.

16. A heat insulating container comprising:

a cup body made of paper and expanded at an upper portion and made of paper having an outwardly curled portion at an upper opening edge; and

an outer cylinder made of paper and expanded at an upper portion and made of paper and being open both at upper and lower portions and having an inwardly curled portion at a lower opening edge;

wherein an upper end adjacent to the outwardly curled portion of the cup body is bent to expand outwardly at the entire periphery, and a tip end of an upper end of the outer cylinder is brought into contact with or thrust



into the inner side of the outwardly curled portion of the cup body while the cup body is covered with the outer cylinder, and at least either the upper end or the inwardly curled portion of the outer cylinder is bonded to the cup body so as to integrate the cup body with the outer cylinder, thereby forming the heat insulating container, and a gap is defined between the cup body and outer cylinder.

17. The heat insulating container according to Claim 16, wherein an upper end of said outer cylinder is bent in a direction to close it along the entire periphery thereof.

18. The heat insulating container according to Claim 16, further comprising an inwardly recessed concave projection which is provided circumferentially at a portion close to an upper portion of the barrel of the outer cylinder and is bent in a direction to close it inwardly.

19. The heat insulating container according to Claim 16, further comprising a concave projection which is provided circumferentially at a portion close to an upper portion of the barrel of the outer cylinder and is discontinuous.

20. The heat insulating container according to Claim 9, further comprising a pouring reference line formed of a projection which is circumferentially formed on the barrel of the cup body and projects toward an inner surface or outer surface of the barrel of the cup body.

21. The heat insulating container according to Claim 9, further comprising a reinforcement rib formed of a circumferential convex which is formed on the barrel of the cup body and projects toward an outer surface of the barrel of the cup body.

22. The heat insulating container according to Claim 9, wherein characters and patterns printed on the outer cylinder form an outwardly embossed portion.



23. The heat insulating container according to Claim 9, wherein the outer cylinder is formed of a paperboard which is subjected to a fine embossing process on substantially an entire outer surface thereof.

