HEAT-INSULATING PAPER CUP

A heat-insulating paper cup allows the glued external wall of the heat-insulating tube to be formed with a smooth surface, and the raised lines on the inner wall of the heat-insulating tube are mated closely with the conical cylindrical wall of the cup body. This can facilitate advertisement printing and fabrication on the surface of heat-insulating paper cup. Moreover, the raised lines on the inner wall of the heat-insulating tube can support the ribs, thus enhancing the structural strength and robustness of the heat-insulating tube and avoiding squashing during manual holding.
HEAT-INSULATING PAPER CUP
CROSS-REFERENCE TO RELATED U.S. APPLICATIONS


STATEMENT REGARDING FEDERALLY SPONSOURED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

NAMES OF PARTIES TO A JOINT RESEARCH AGREEMENT

[0003] Not applicable.

REFERENCE TO AN APPENDIX SUBMITTED ON COMPACT DISC

[0004] Not applicable.

BACKGROUND OF THE INVENTION

[0005] 1. Field of the Invention

[0006] The present invention relates generally to a heat-insulating paper cup, and more particularly to an innovative one which allows raised lines to be set on the inner wall of the heat-insulating tube and mated closely with the cup body.


[0008] Since conventional a-single-layer paper cup filled with hot drink or water makes it difficult to hold manually, a heat-insulating paper cup has been developed in the industry. Said heat-insulating paper cup is structurally designed in such a manner that an external paper tube is generally sleeved onto exterior of original cup body, so a two-layer wall is employed for heat insulation. Yet, there still exist the following shortcomings against conventional heat-insulating paper cup.

[0009] As for the typical structure wherein the external paper tube is made of corrugated paper and spaced ribs are set on the external wall, the heat-insulating effect can be enhanced by the bigger thickness of the external paper tube with spaced ribs, but the irregular surface formed by the spaced ribs leads to difficult advertisement printing and fabrication on the surface of the heat-insulating paper cup.

[0010] Moreover, upper and lower flanges of the external paper tube are designed into an incurved shape to form an annular space of better insulation effect between the external paper tube and cup body of conventional heat-insulating paper cup. Yet, it is observed during actual application that, only incurved portions of the upper and lower flanges of external paper tube are used as a support, a vacant shell is formed between the intermediate region of the external paper tube and the cup body, so the external paper tube is easily squashed when it is held manually.

[0011] There still exists another shortcoming against conventional heat-insulating paper cup: when these paper cups are overlapped, the conical cylindrical wall of two heat-insulating paper cups usually enters into a pressing state, abutting cannot be realized due to spacing between the bottoms of the cups, so the overlapped paper cups will enter into a tighter pressing state with the overlapping time, leading to inconvenient use by the users. As for heat-insulating paper cups with spaced ribs made of corrugated paper, the spaced ribs on the external paper tube will be squashed and deformed by excessive pressing, and the heat-insulating space will be reduced, affecting the heat-insulating effect directly.

[0012] Moreover, notwithstanding the insulation effect of conventional heat-insulating paper cup is achieved by said external paper tube, the original single-layer paper wall for the bottom structure is still maintained without any change of the design. So, when a hot or warm drink is filled, the cup bottom is a relatively weak part of the overall cup structure for heat insulation and preservation, requiring for breakthrough improvement.

[0013] Thus, to overcome the aforementioned problems of the prior art, it would be an advancement if the art to provide an improved structure that can significantly improve the efficacy.

[0014] Therefore, the inventor has provided the present invention of practicability after deliberate design and evaluation based on years of experience in the production, development and design of related products.

BRIEF SUMMARY OF THE INVENTION

[0015] The enhanced efficacy of the present invention is as follows:

[0016] Based on the unique design of the present invention wherein the "heat-insulating paper cup" allows the glued external wall of heat-insulating tube to be designed with a smooth surface, and the raised lines on the inner wall of the heat-insulating tube are mated closely with the conical cylindrical wall of the cup body, this can facilitate advertisement printing and fabrication on the surface of heat-insulating paper cup. Moreover, the raised lines on the inner wall of the heat-insulating tube can support the ribs, thus enhancing the structural strength and robustness of the heat-insulating tube and avoiding squashing during manual holding.

[0017] The improvements brought about by this invention are as follows:

[0018] Based on the structural design wherein the raised line is designed into an oblique angle, the flow speed of glue can be delayed to prevent dripping of the glue.

[0019] Based on the structural characteristics of the second cup bottom and bottom extension folded edge, an extended strengthening structure is formed at the bottom of the annular underframe of the cup bottom. When cup bodies are overlapped, the bottom extension folded edge on the cup body is abuttled onto the cup bottom of the cup body before the conical cylindrical walls of two cup bodies are abuttled to each other. In this case, the cup body will not continue to fall, thus preventing excessive pressing of the conical cylindrical walls of the cup bodies and facilitating the use of the paper cups. Besides, raised lines on the inner wall of the heat-insulating sleeve can also be prevented from deformation by extruding to ensure the expected and best heat-insulating effect.

[0020] With the setting of the second cup bottom, another bottom structure could be formed at interval at the cup bottom of the cup body, helping to make up the shortcomings of the original cup bottom such as: single-layer structure and week heat preservation effect, and significantly improve the bottom's structural strength and heat-insulating effect of the heat-insulating paper cups.

[0021] Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be
made without departing from the spirit and scope of the invention as hereinafter claimed.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0022] FIG. 1 shows an assembled perspective view of a preferred embodiment of the present invention.
[0023] FIG. 2 shows an exploded perspective view of a preferred embodiment of the present invention.
[0024] FIG. 3 shows an unfolded view of the heat-insulating tube of the present invention.
[0025] FIG. 4 shows a plane top view of a preferred embodiment of the present invention.
[0026] FIG. 5 shows a flow process diagram of the present invention.
[0027] FIG. 6 shows a schematic view of the present invention that the raised line is of a wavy pattern.
[0028] FIG. 7 shows an assembled sectional view of the preferred embodiment of the present invention.
[0029] FIG. 8 shows an enlarged view of part B shown in FIG. 7.
[0030] FIG. 9 shows a plan view of two overlapped paper cup bodies of the present invention.
[0031] FIG. 10 shows an application view of the present invention wherein a curved retracted section is formed on the upper part of the second cup bottom’s annular side frame.

DETAILED DESCRIPTION OF THE INVENTION

[0032] FIGS. 1-4 and 7-8 depict preferred embodiments of a heat-insulating paper cup of the present invention, which, however, are provided for only explanatory objective for patent claims.

[0033] Said heat-insulating paper cup comprises a cup body 10, which comprises a conical cylindrical wall 11, a cup bottom 12 and a cup rim 13. Of which a downward protruding annular underframe 121 is formed at the joint of the cup bottom 12 and the bottom of the conical cylindrical wall 11.

[0034] A glued heat-insulating tube 20 is made of paper material. The inner wall 21 of the heat-insulating tube 20 is sleeved onto the exterior of the conical cylindrical wall 11 of the cup body 10, and the heat-insulating tube 20 and the conical cylindrical wall 11 of the cup body 10 are adhered securely by glue W (shown in FIG. 4). The heat-insulating tube 20 is of conical cylindrical shape and mated with the conical cylindrical wall 11. Moreover, the external wall 22 of the heat-insulating tube 20 is designed with a smooth surface, so as to facilitate advertisement printing and fabrication on the surface of heat-insulating paper cup, thus increasing the visibility of the business performance and improving the value of the products. Meanwhile, the users are allowed to hold stably the heat-insulating tube 20 which can prevent efficiently heat transfer and avoid the scalding of hot liquid stored in the cup body 10 to ensure the safety of utilization.

[0035] Multiple raised lines 23 are protruded at interval onto the inner wall 21 of the heat-insulating tube 20 at an oblique angle, and mated with the conical cylindrical wall 11 of the cup body 10. Said raised line 23 permits to reduce the contact area with the cup body 10, helping to cut down efficiently the heat transfer.

[0036] Multiple hollow ducts 24, set into the heat-insulating tube 20 at interval and at an oblique angle in tune with the raised lines 23.

[0037] Referring to FIGS. 2, 7 and 8, a second cup bottom 30 is located at the bottom of annular underframe 121 of the cup bottom 12, so that an interval space 40 is formed between second cup bottom 30 and cup bottom 12, and an annular side frame 31 folded downwards is set on the periphery of the second cup bottom 30, and also located below the annular underframe 121 of the cup bottom 12.

[0038] Referring to FIGS. 2, 7 and 8, a bottom extension folded edge 50 is extended downwards from the bottom of the heat-insulating sleeve 20; said bottom extension folded edge 50 is also located beyond the annular underframe 121 of the cup body 10 and the annular side frame 31 of the second cup bottom 30. The lower end of bottom extension folded edge 50 is folded inwards and upwards to form a folded flange 51, which is abutted to the inner side of annular side frame 31 of the second cup bottom 30.

[0039] Of which, the heat-insulating tube 20 is made of corrugated paper, so the corrugated inner layer of the corrugated paper is defined to form said raised line 23 and hollow duct 24. Said hollow duct 24 will then be ventilated to avoid vacuum suction due to tight sleeving between annular space of heat-insulating paper cup, and enable easier removal of the closely overlapped heat-insulating paper cups.

[0040] Of which, said raised line 23 is available with multiple patterns. Referring to FIGS. 2 and 3, said raised line 23 is extended obliquely from the top to the bottom of the heat-insulating tube 20. Or, referring to FIG. 6, said raised line 23 is extended transversely into a wavy pattern between the top and bottom of the heat-insulating tube 20.

[0041] Based on above-specified structural design, said heat-insulating paper cup is formed by the steps in FIG. 5, wherein the unfolded heat-insulating tube 20 is folded into a conical cylindrical pattern in tune with the cup body 10, and the inner wall 21 of the conical cylindrical heat-insulating tube 20 is coated with glue W. Next, the cup body 10 is sleeved onto it such that the heat-insulating tube 20 and the conical cylindrical wall 11 of the cup body 10 are adhered by glue W (in conjunction with FIG. 4).

[0042] Referring also to FIG. 8, the second cup bottom 30 is abutted to the bottom of the annular underframe 121 of cup bottom 12, and then the bottom extension folded edge 50 is folded. Based on the structural characteristics of said second cup bottom 30 and the bottom extension folded edge 50, an extended strengthening structure is formed at the bottom of the annular underframe 121 of the cup bottom 12. Therefore, referring to FIG. 9, when another cup body 103 is overlapped onto the cup body 10, since the bottom of the cup body 103 is higher than the conventional paper cup (marked by W), the bottom extension folded edge 50 on the cup body 103 is abutted on the cup bottom 12 of the cup body 10 before the conical cylindrical walls 11 of two cup bodies 10, 103 are abutted to each other. In this case, the cup body 103 will not continue to fall, thus preventing excessive pressing of the conical cylindrical walls 11 of the cup bodies 10 and 103. And multiple raised lines 23 set on the inner wall 21 of the heat-insulating sleeve 20 can also be prevented from deformation by extruding to ensure the expected and best heat-insulating effect. With the setting of the second cup bottom 30, another bottom structure could be formed at interval at the cup bottom 12 of the cup body 10, helping to make up the shortcomings of the original cup bottom 12 such as: single-layer structure and weak heat preservation effect, and significantly improve the bottom’s structural strength and heat preservation effect of the heat-insulating paper cups.
Referring also to FIG. 10, a curved retracted segment 315 of the second cup bottom 30, and also abutted to the inner side of annular underframe 121 at the cup bottom 12 of the cup body 10. In the preferred embodiment, outer diameter difference exists at the upper and lower parts of the annular side frame 31 of the second cup bottom 30 with the setting of the curved retracted segment 315, so that the mating of the second cup bottom 30 and the annular underframe 121 has embedded positioning effect, which is more conducive to stability and smoothness in the mating process.

1 claim:

1. A heat-insulating paper cup, which comprising:
   a cup body, which consists of a conical cylindrical wall, a cup bottom and a cup rim; of which a downward protruding annular underframe is formed at the joint of the cup bottom and the bottom of the conical cylindrical wall;
   a glued heat-insulating tube made of paper material; the inner wall of the heat-insulating tube is sleeved onto the exterior of the conical cylindrical wall of the cup body, and the heat-insulating tube and the conical cylindrical wall of the cup body are adhered securely by glue W; the heat-insulating tube is of conical cylindrical shape and mated with the conical cylindrical wall; moreover, the external wall of the heat-insulating tube is designed with a smooth surface;
   multiple raised lines, protruded at interval onto the inner wall of the heat-insulating tube at an oblique angle, and mated with the conical cylindrical wall of the cup body; multiple hollow ducts, set into the heat-insulating tube at interval and at an oblique angle in tune with the raised lines;
   a second cup bottom, located at the bottom of annular underframe of the cup bottom, so that an interval space is formed between second cup bottom and cup bottom; and an annular side frame folded downwards is set on the periphery of the second cup bottom, and also located below the annular underframe of the cup bottom;
   a bottom extension folded edge, extended downwards from the bottom of the heat-insulating sleeve; said bottom extension folded edge is also located beyond the annular underframe of the cup body and the annular side frame of the second cup bottom; and the lower end of bottom extension folded edge is folded inwards and upwards to form a folded flange, which is abutted to the inner side of annular side frame of the second cup bottom.

2. The device defined in claim 1, wherein the heat-insulating tube is made of corrugated paper, so the corrugated inner layer of the corrugated paper is defined to form said raised line and hollow duct.

3. The device defined in claim 1, wherein the raised lines are protruded at interval onto the inner wall of the heat-insulating tube at an oblique angle, and said hollow ducts are also designed with an oblique angle in tune with the raised lines.

4. The device defined in claim 3, wherein said raised line is extended obliquely from the top to the bottom of the heat-insulating tube.

5. The device defined in claim 3, wherein said raised line is extended transversely into a wavy pattern between the top and bottom of the heat-insulating tube.

6. The device defined in claim 1, wherein a curved retracted segment is formed on the upper part of the annular side frame of the second cup bottom, and also abutted to the inner side of annular underframe of the cup body.

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