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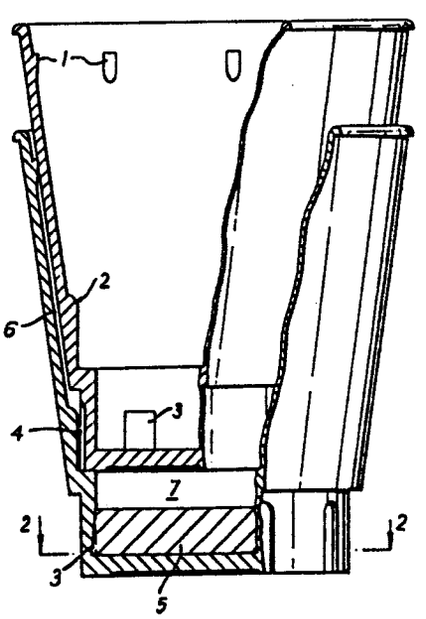
(54) Drinking cup.

(57) A drinking cup of the kind adapted to be nested in a stack of identical cups contains a measured dose of beverage concentrate (5), which is retained within the cup as a coherent mass by being compressed within the cup in such a manner that the coherent mass interlocks with recesses (3) within the cup. The cup incorporates a stacking ledge to support an upper cup nested therein out of contact with said mass of concentrate.

FIG. 1



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"DRINKING CUP"

This invention concerns improvements in drinking cups containing beverage concentrate, and more especially to drinking cups of the disposable kind which are intended to be stacked one within another, each containing its own measured dose of soluble or infusible beverage concentrate.

In order to enable the convenient dispensing of instant beverages, and also to reduce pilferage of beverage concentrate when stored in bulk, it has previously been proposed to provide a separate dose of beverage concentrate in each of a plurality of stacked disposable vending cups. The concentrate is stored in powdered or granular form in each cup, and although this reduces the labour involved in dispensing instant beverages and provides portion control, it has the disadvantage that the stacks of cups can become soiled during storage and service, by leakage of the powdered concentrate. Also, since the concentrate is stored loosely within each cup, it is still possible for the concentrate to be pilfered by systematic reduction of the individual doses provided within each cup, before dispensing of the beverage.

In order to avoid the above disadvantages it has further been proposed to seal the beverage concentrate within each cup by means of a partition of filter paper

or the like, which retains the concentrate within the base of the cup but permits water when added to the cup, to dissolve or infuse the beverage concentrate. Such an arrangement has the disadvantage, however, that vending cups provided with the required filter partition are expensive to manufacture and also the membrane is not strong enough to support a nest of cups without breakage or damage when packed and stored and during transit, and also that since the partition reduces the circulation of water relatively to the beverage concentrate, the solubility, or infusibility, of the concentrate is obstructed.

It is accordingly an object of the present invention to provide an improved vending cup/beverage concentrate combination, which avoids or at least reduces the above disadvantages.

In accordance with the present invention there is provided a drinking cup of the type adapted to be nested in a stack of identical cups, said cup including a measured dose of soluble or infusible beverage concentrate provided as a coherent mass within the base of the cup, said mass being retained within said cup by interlocking with the cup and the said cup being so shaped that when identical cups are stacked one within another the base of each stacked cup is supported out of contact with the mass of beverage concentrate contained in the cup below.

Preferably, the mass of beverage concentrate contained in the cup is formed from a particulate concentrate in the form of a powder or granules, which is compressed into a semi-porous coherent mass whilst present within the cup, the cup being so shaped that as a result of compression of the concentrate into a coherent mass, the

mass becomes interlocked with recesses within the cup.

In a cup in accordance with the invention, the fact that the beverage concentrate is in the form of a coherent mass and is out of contact with the base of a cup stacked above it provides for secure retention of the concentrate within the cup, without the disadvantage of soiling of the underside of the base of the upper cup, which is a considerable problem, especially in the case of cups moulded from expanded polystyrene which tend to accumulate electrostatic charges causing the attraction thereto of any loose particulate material.

A cup in accordance with the invention may incorporate a stacking ledge adjacent the base wall and above the level of said mass of concentrate, the arrangement being such that the base of an identical upper cup when resting upon said stacking ledge encloses a space within which the said mass of concentrate is retained.

Preferably the cup wall is so shaped that an air space is defined between the walls of identical nested cups, said space extending from the upper rim of each cup to a region adjacent the upper edge of the stacking ledge and being bridged by abutment means preventing relative lateral movement of the nested cups. This arrangement promotes an air flow into the space between the bases of stacked cups, when the cups are separated from one another, thus preventing suction and air turbulence that might otherwise occur within this region, causing undesired displacement of the beverage concentrate.

The invention is illustrated by way of example in the accompanying drawing, in which:

Figure 1 is an elevation partly in section of a cup in accordance with the invention shown in stacked relationship with another similar cup,

Figure 2 is a section on the line 2 - 2 of Figure 1, and

Figure 3 is a side elevation of the base of a cup as shown in Figure 1.

Referring to the drawing, a cup in accordance with one embodiment of the invention is formed from moulded expanded polystyrene, and is constructed so that identical cups can be stacked one within another, the base of one cup resting upon a stacking ledge within, and adjacent the base of the cup below, in known manner. Within the base of the cup is provided a mass 5 of semi-porous beverage concentrate, which is of soluble or infusible material, the mass 5 being arranged to interlock with undercut recesses 3 arranged around the inner wall of the cup at the base, below the stacking ledge. The formation of the mass 5 in such a manner that it interlocks with the recesses 3 is achieved by placing the beverage concentrate within the cup in the form of a particulate, powdered or granular product, and then compressing the product into a coherent mass which extends into the recesses 3.

The mass 5 is maintained out of contact with the base of the cup above it, as illustrated in the drawing, to avoid soiling of the base of the upper cup. Moreover, as shown more especially in Figure 1, an air space is arranged to extend between the walls of the nested cups from the region of the stacking ledge to the upper rim of the cup, said air space being formed by grooves 4

around the periphery of the base of the cup, and a space 6 between the walls of the cups. The cups are held in spaced relationship to define the space 6 by means of pips 1 which project from within the upper margin of the inner wall of the cup and serve as abutments to hold the cups against relative lateral movement. Likewise, a shoulder 2 within the cup just above the stacking ledge serves to form an abutment for engaging the base of a cup nested therein, and likewise to prevent lateral movement. The air space formed by the groove 4 and the space 6 serves to enable a flow of air into the free space 7 between the bases of the nested cups, upon separation of the cups, and therefore prevents the displacement of the beverage concentrate 5 due to the effects of suction or air turbulence induced by relative movement of the cups.

As will be seen from Figure 2, the recesses 3 and the grooves 4 in the lower side wall of the cup are staggered relatively to one another in order to maintain the thickness of the cup wall and avoid weakening of the cup.

CLAIMS

1. A drinking cup of the type adapted to be nested in a stack of identical cups, said cup including a measured dose of soluble or infusible beverage concentrate, characterised in that said concentrate is provided as a coherent mass within the base of the cup, said mass being retained within said cup by interlocking with the cup and the said cup being so shaped that when identical cups are stacked one within another the base of each stacked cup is supported out of contact with the mass of beverage concentrate contained in the cup below.

2. A cup as claimed in Claim 1, characterised in that said cup incorporates a stacking ledge adjacent the base wall and above the level of said mass of concentrate, the arrangement being such that the base of an identical upper cup when resting upon said stacking ledge encloses a space within which the said mass of concentrate is retained.

3. A cup as claimed in Claim 2, characterised in that the cup wall is so shaped that an air space is defined between the walls of identical nested cups said space extending from the upper rim of each cup to a region adjacent the upper edge of the stacking ledge and being bridged by abutment means preventing relative lateral movement of the nested cups.

FIG. 1

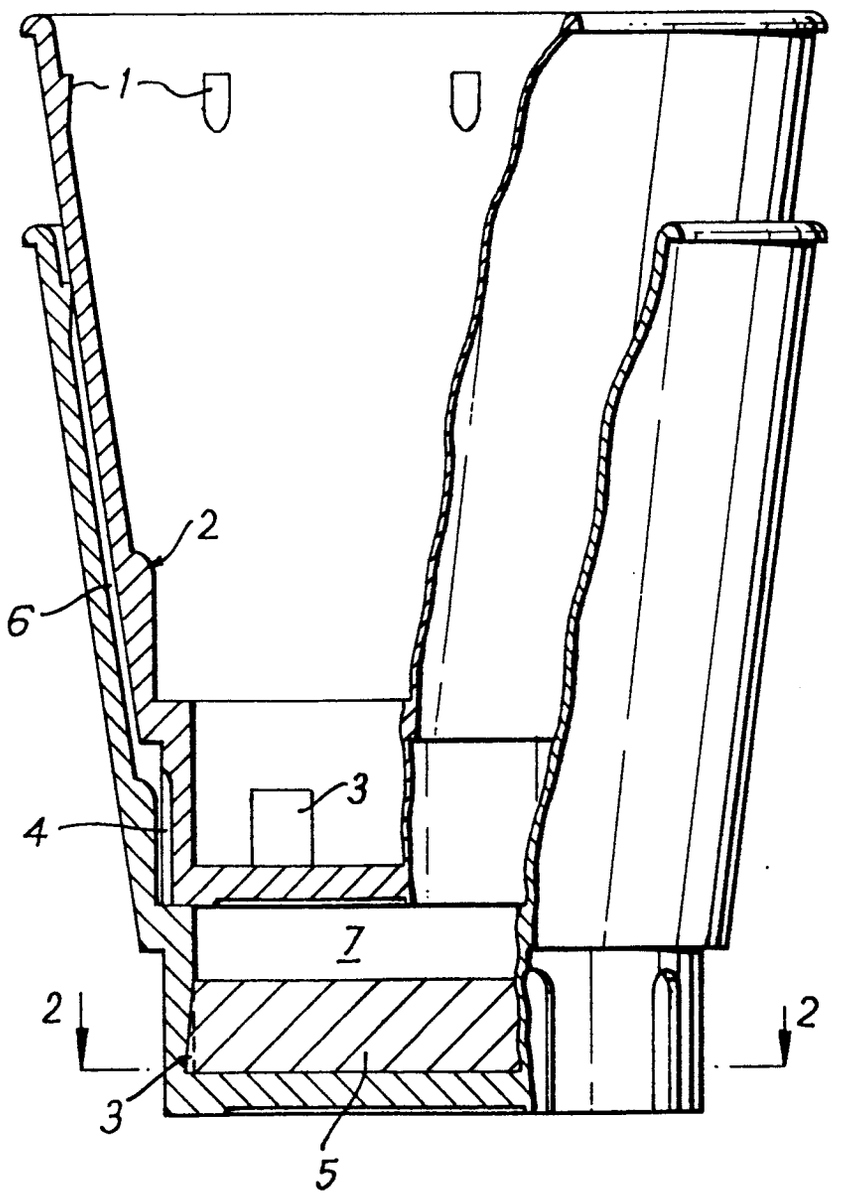


FIG. 2

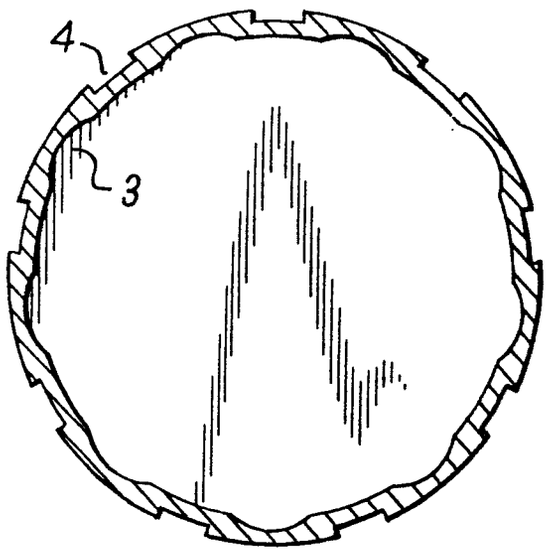
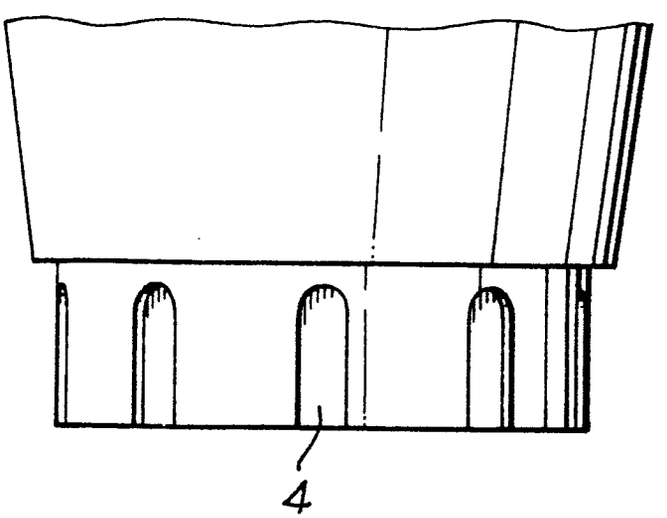


FIG. 3



European Patent Office

0006014

Application number

EP 79 30 1018

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	US - A - 2 062 897 (MICHEL et al.) * in its entirety *	1
	US - A - 3 526 316 (KALOGRIS) * in its entirety *	1,2
	FR - A - 2 171 306 (S.I.C.) * page 2, line 9 to page 3, line 9; figures 1,2 *	1,2
	FR - A - 1 215 401 (ILLINOIS TOOL WORKS) * page 2, right-hand column, paragraph 2 to page 3, left-hand column, paragraph 2; page 3, left-hand column, paragraph 4; page 3, left-hand column, paragraph 6 to page 3, right-hand column, paragraph 2; page 5, right-hand column, paragraph 2; figures 1 to 10, 21 *	1,2,3
	FR - A - 2 310 733 (COMPACT INDUSTRIES) * page 4, line 14 to page 5, line 16; figures 1-3 *	1,2
	GB - A - 1 220 343 (V.C. WEBB) * page 2, lines 66-85; page 4, lines 48-63; figures 1,3,11,12 *	1,2
A	DE - A - 2 001 984 (BIERMANN) * page 5, lines 5 to 25; page 6, lines 4 to 31; figure 5 *	1

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

B 65 D 1/26
B 65 D 81/34

TECHNICAL FIELDS SEARCHED (Int.Cl.³)

B 65 D
A 47 G

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10-08-1979	MARTENS