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(54) **CAPSULE WITH MESSAGING SYSTEM**

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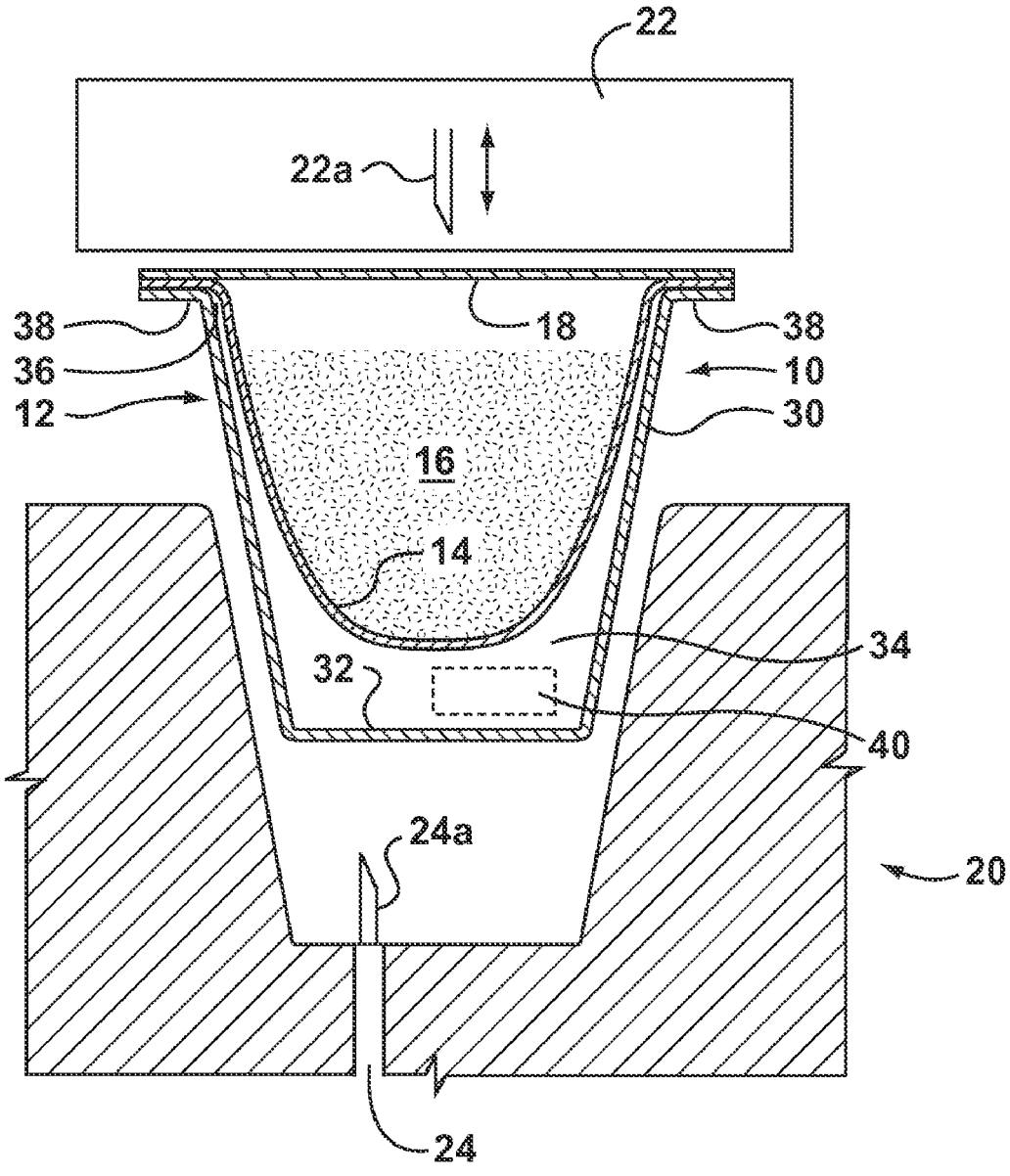
(57) **ABSTRACT**

A capsule is provided with a body defining an interior space having an opening. A filter is disposed in the interior space to define an ingredients chamber. Ingredients are disposed in the ingredients chamber and a cover is disposed over the opening to seal the interior space. A messaging system is provided with the capsule to provide a desired message.



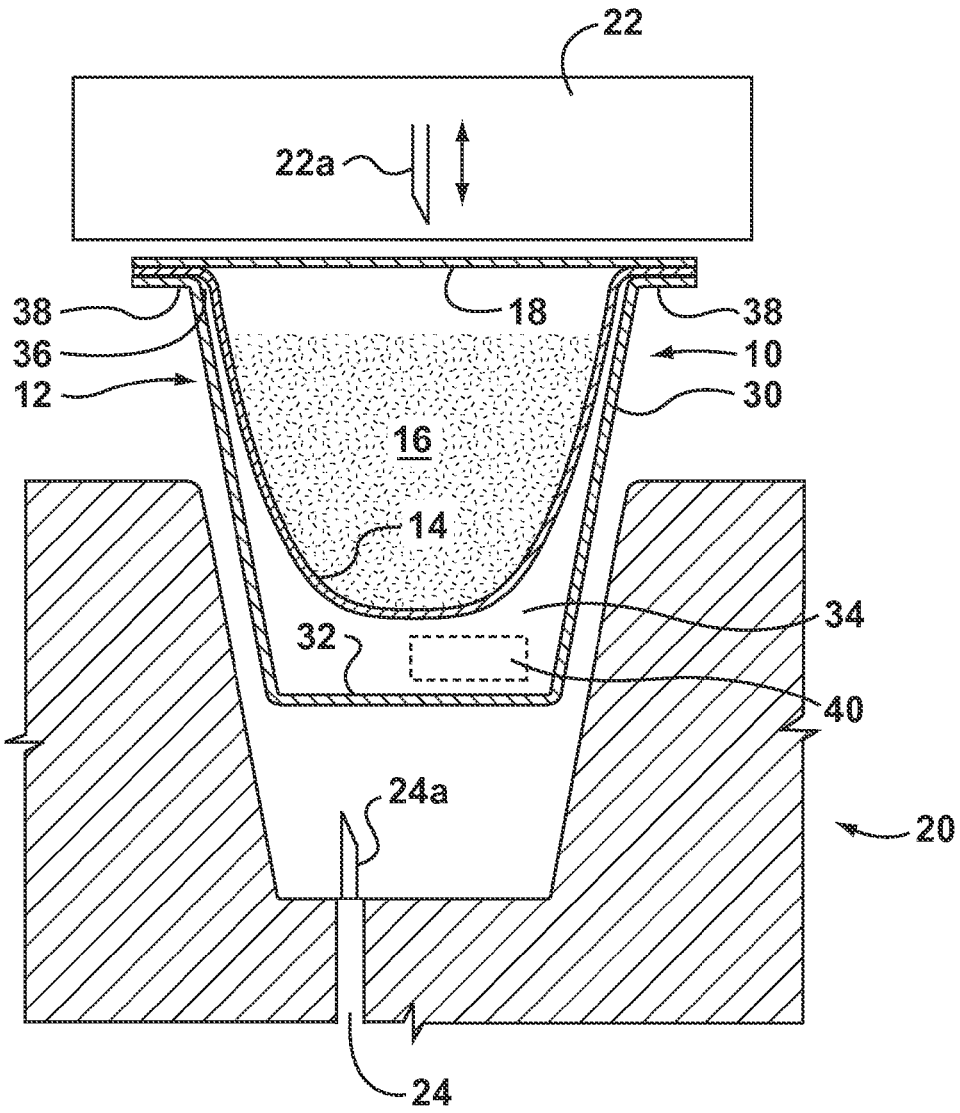


FIG. 1

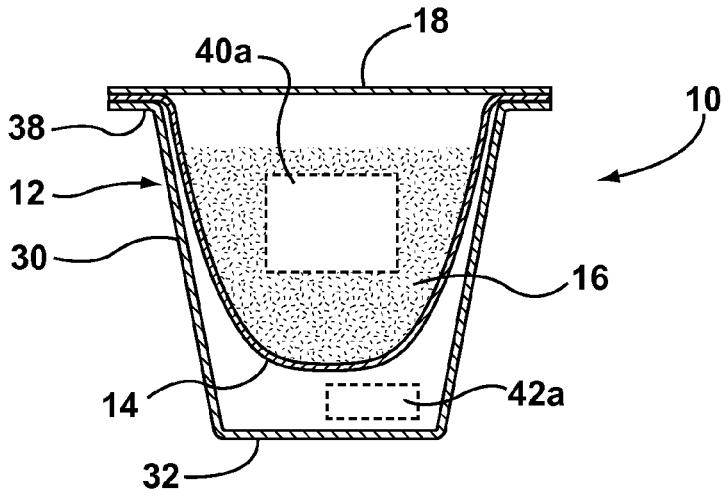


FIG. 2(a)

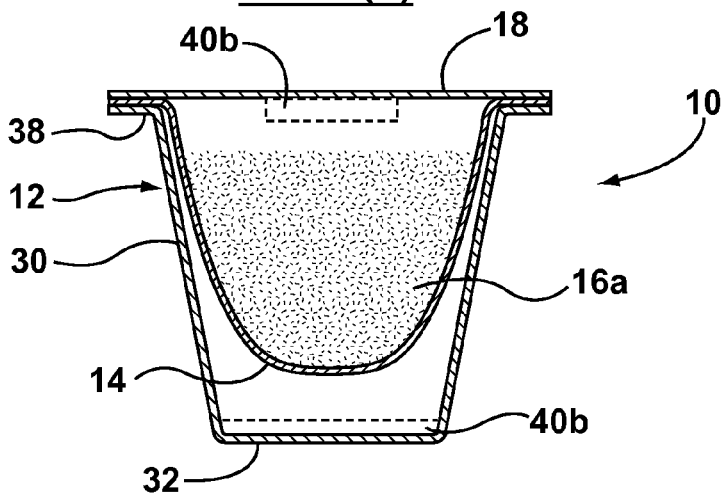


FIG. 2(b)

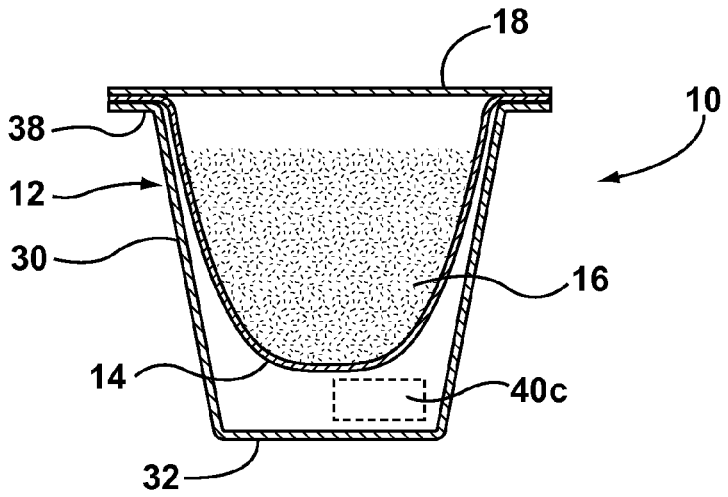


FIG. 2(c)

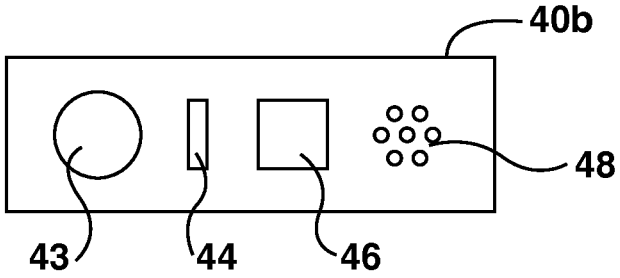


FIG. 3(a)

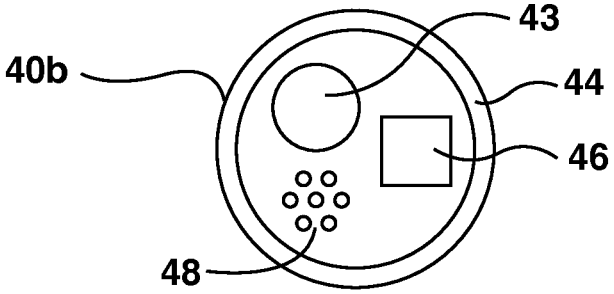


FIG. 3(b)

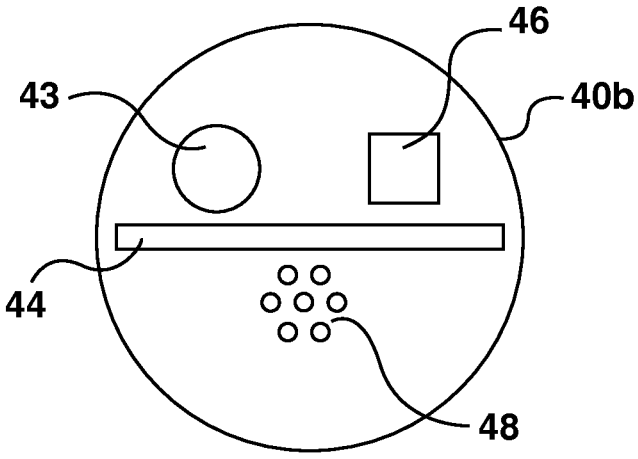


FIG. 3(c)

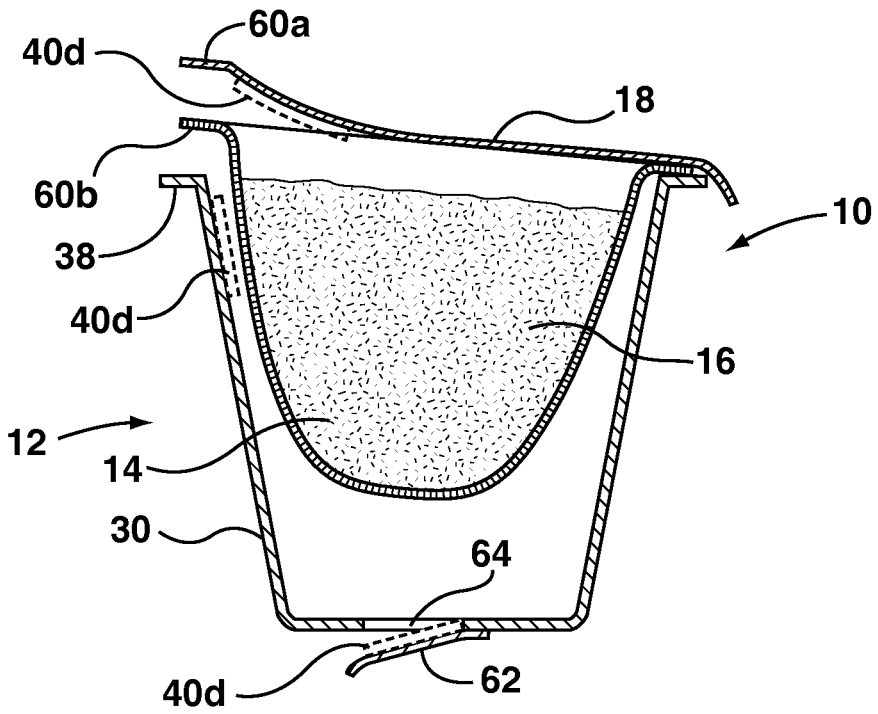


FIG. 4

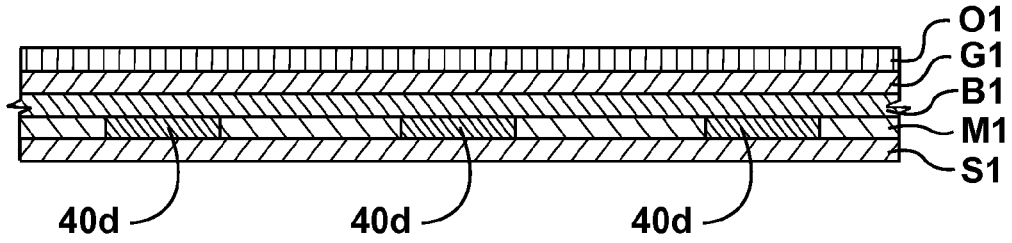


FIG. 5

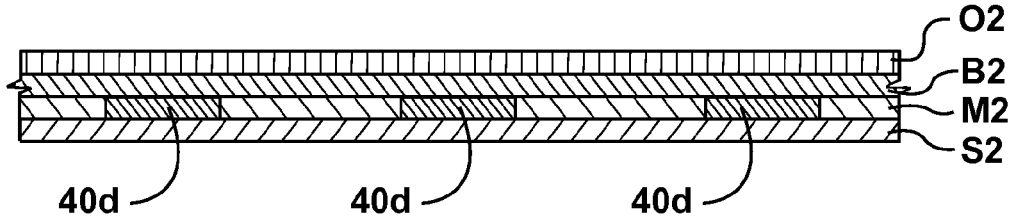


FIG. 6

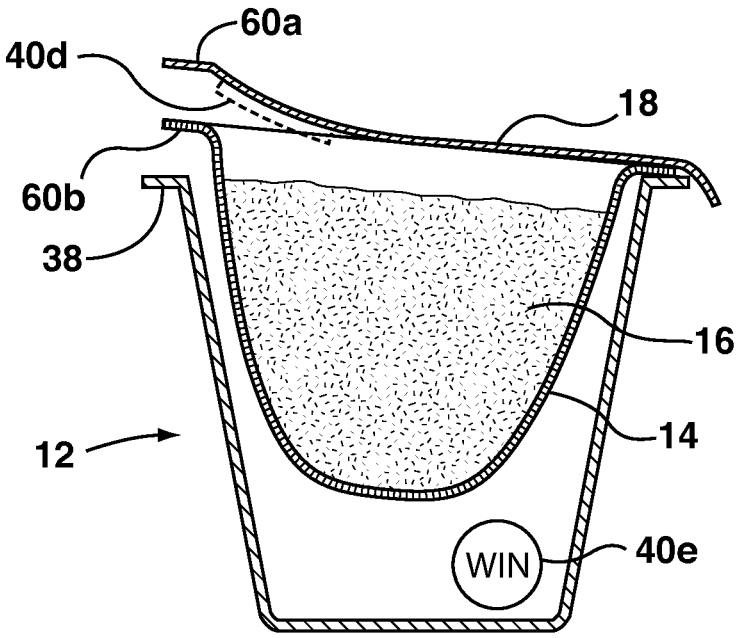


FIG. 7

CAPSULE WITH MESSAGING SYSTEM

FIELD

[0001] This specification relates to capsules adapted for use in machines for preparing products from capsules, and in particular to capsules having a system for delivering a message such as a promotional message.

BACKGROUND

[0002] The following background discussion is not an admission that anything discussed below is citable as prior art or common general knowledge. The documents listed below are incorporated herein in their entirety by this reference to them.

[0003] Single serve capsules for use in machines to prepare a desired consumable product are becoming increasingly popular. Such capsules come in a variety of formats most typically for producing beverages such as espresso coffee, drip coffee, tea, hot chocolate or soup broth.

[0004] With the increasing popularity of single serve capsules, and increased competition among capsule producers, it is desirable to find ways to encourage consumers to purchase one brand of consumable capsule over another. One way to encourage consumers to purchase capsules is to provide promotional information within the capsules, such as information concerning a prize that a consumer has won by purchasing the capsule.

[0005] It is also desirable to encourage consumers to separate or disassemble components of capsules following use, where capsules are adapted for this purpose, for disposal in an environmentally responsible manner. One way to encourage consumers to disassemble components of the capsule is to provide promotional information, such as noted above, within the interior space of the capsule where such information requires the capsule to be at least partially disassembled to access the information.

[0006] There is a need for a capsule that is adapted for providing messages to consumers to encourage a desired behavior such as one or more of the behaviors described above.

SUMMARY

[0007] In one aspect the invention provides a capsule for use in a machine to prepare a desired product, the machine having an injection system for injecting a fluid into the capsule and a dispensing system for dispensing the product from the capsule to a desired receptacle, the capsule comprising:

[0008] a body defining an interior space having an opening;

[0009] ingredients disposed in said interior space for mixing with a fluid to prepare a desired product;

[0010] a messaging system disposed in said interior space, said messaging system being adapted to provide promotional information;

[0011] a cover disposed over said opening for sealing said interior space.

[0012] In another aspect the invention provides capsule for use in a machine to prepare a desired product, the machine having an injection system for injecting a fluid into the capsule and a dispensing system for dispensing the product from the capsule to a desired receptacle, the capsule comprising:

[0013] a body defining an interior space having an opening;

[0014] ingredients disposed in said interior space for mixing with a fluid to prepare a desired product;

[0015] a cover disposed over said opening for sealing said interior space, said cover being adapted to be removed at least partially from said opening following use of said capsule in the machine;

[0016] indicia displayed on an interior surface of said capsule, said indicia being adapted to deliver a desired message only when said cover has been at least partially removed from said capsule.

[0017] In another aspect the invention provides capsule for use in a machine to prepare a desired product, the machine having an injection system for injecting a fluid into the capsule and a dispensing system for dispensing the product from the capsule to a desired receptacle, the capsule comprising:

[0018] a body defining an interior space having an opening;

[0019] ingredients disposed in said interior space for mixing with a fluid to prepare a desired product;

[0020] a cover disposed over said opening for sealing said interior space;

[0021] indicia displayed on an interior surface of said capsule, said indicia being adapted to deliver a desired message only when said capsule has been used in machine.

[0022] Other aspects and features of the teachings disclosed herein will become apparent, to those ordinarily skilled in the art, upon review of the following description of the specific examples of the specification.

DRAWINGS

[0023] The drawings included herewith are for illustrating various examples of articles, methods, and apparatuses of the present specification and are not intended to limit the scope of what is taught in any way. For simplicity and clarity of illustration, where considered appropriate, reference numerals may be repeated among the drawings to indicate corresponding or analogous elements.

[0024] FIG. **1** is a sectional view of a capsule in accordance with the present invention, the capsule being disposed in a schematic representation of a machine for preparing product from capsules;

[0025] FIGS. **2**(*a*) to **2**(*c*), are sectional views of a closed system of capsule with different embodiments of messaging system in accordance with the present invention;

[0026] FIGS. **3**(*a*) to **3**(*c*) are schematic views of different embodiments of signaling system for use with the messaging system shown in FIG. **2**(*b*);

[0027] FIG. **4** is a sectional view of an open system of capsule with a messaging system in accordance with an embodiment the present invention;

[0028] FIG. **5** is a sectional view of a cover for a capsule in accordance with an embodiment of the invention;

[0029] FIG. **6** is a sectional view of a body for a capsule in accordance with an embodiment of the invention; and

[0030] FIG. **7** is a sectional view of an open system of capsule with a messaging system in accordance with another embodiment of the present invention.

DESCRIPTION OF VARIOUS EMBODIMENTS

[0031] Various apparatuses or methods will be described below to provide examples of the claimed invention. The claimed invention is not limited to apparatuses or methods having all of the features of any one apparatus or method described below or to features common to multiple or all of the apparatuses described below. The claimed invention may reside in a combination or sub-combination of the apparatus

elements or method steps described below. It is possible that an apparatus or method described below is not an example of the claimed invention. The applicant(s), inventor(s) and/or owner(s) reserve all rights in any invention disclosed in an apparatus or method described below that is not claimed in this document and do not abandon, disclaim or dedicate to the public any such invention by its disclosure in this document.

[0032] A capsule in accordance with the present invention is shown generally at **10** in the figures. Capsule **10** includes a body **12**, filter **14**, ingredients **16** and cover **18**. Body **12** and cover **18** may each be formed of multilayered materials that include one or more barrier layers providing barriers against one or more environmental factors such as light, oxygen, and moisture.

[0033] Capsule **10** is sized and configured for use in a machine **20** that is adapted for preparing a product from capsule **10**. An injection system **22** may be provided for injecting a fluid, typically water, into the capsule for mixing with ingredients **16**. A dispensing system **24** may also be provided for dispensing product (that is formed by mixing ingredients **16** with fluid) from capsule **10** into a desired receptacle such as a bowl or cup (not shown).

[0034] Injection system **22** may include a nozzle **22***a* disposed on machine **20** that is adapted to pierce cover **18** to inject fluid into capsule **10**. Injection system **20** may alternatively have at least one component disposed on capsule **10**, such as on cover **18**, and adapted to pierce body **12** and interact with machine **20** to inject fluid into capsule **10**.

[0035] Dispensing system **24** may include a probe **24***a* disposed on machine **20** that is adapted to pierce capsule **10** to dispense a prepared product from capsule **10** into a desired receptacle. Dispensing system **24** may alternatively have at least one component disposed on capsule **10**, such as on body **12**, and adapted to interact with machine to pierce capsule **10** and dispense product into a receptacle.

[0036] The present invention is intended for use with all forms of capsule **10** and is not intended to be limited to a particular form of injection system **22** or dispensing system **24** associated with machine **20** or capsule **10**.

[0037] Body **12** of capsule **10** includes a sidewall **30** and an end wall **32** together defining an interior space **34**. An opening **36** is defined at one end of body **12** and a flange **38** extends around the perimeter of opening **36**.

[0038] In another embodiment (not shown), body **12** may be formed with no end wall **32** and no sidewall **30** or a partial sidewall **30**. Flange **38** may still extend around the perimeter of opening **36** to receive cover **18** and to support capsule **10** within machine **20**. Filter **14** may be secured to flange **38** or to partial sidewall **30** or underside of cover **18**.

[0039] Filter **14** is adapted to be disposed within body **12** to define at least one ingredients chamber **40** within interior space **24** for receiving one or more ingredients **16**. Filter **14** may be secured to flange **38** or to an interior surface of capsule **10** (such as to sidewall **30** proximate to opening **36** or proximate to end wall **32** or the underside of cover **18**). Capsule **10** may be provided without filter **14** in instances where ingredients are soluble or where it is desired that ingredients **16** are dispensed together with fluid into a desired receptacle.

[0040] Cover **18** is disposed over opening **36** and secured to body **12** such as by sealing cover **18** to flange **38**.

[0041] Messaging system **40** is provided with capsule **10** to deliver desired information, such as promotional information, to a consumer. Messaging system **40** is adapted to be hidden from consumer until a desired occurrence such as the use of capsule **10** in machine **20**.

[0042] Capsule **10** may be a closed system of capsule where the components of capsule are not intended to be opened or disassembled during or following normal use of capsule **10**. The use of a knife or scissors to disassemble capsule **10** is not considered to be a normal use. Capsule **10** may alternatively be an open system of capsule where one or more components are adapted to be opened or disassembled during or following normal use of capsule. The nature and location of messaging system **40** may vary according to the system of capsule **10**.

[0043] Referring to FIGS. **2**(*a*) to **2** (*c*), different embodiments of a messaging system **40** adapted for a closed system of capsule **10** are shown. It will be understood that such embodiments may be incorporated into an open system of capsule **10** as well.

[0044] Messaging system **40** is provided with capsule **10** and adapted to deliver desired information such as promotional information without requiring capsule **10** to be opened or disassembled. Desired information is delivered typically following purchase of capsule **10** by a consumer such as during use of capsule **10** in machine **20**.

[0045] One example of messaging system **40** is a substance **40***a* disposed in capsule **10** that is adapted to interact with fluid injected into capsule **10** in order that product dispensed from capsule **10** has one or more distinctive attributes not normally associated with the product that is intended to be prepared by capsule **10**. Distinctive attributes may include distinctive colour, smell, sound, texture or taste attributes. For example, substance **40***a* may be a colored dye, a flavor or aroma additive, or a fizzing or foaming agent. Substance **40***a* may alternatively comprise a temperature sensitive ink or a dissolvable dye that is applied to an interior facing surface of body **12** or cover **18** that changes color or dissolves during use of capsule **10** in order to reveal promotional information through body **12** or cover **18**.

[0046] Special ingredients **16***a* may be disposed in capsule **10** in place of ingredients **16** normally used to prepare product. Special ingredients **16** may for example be ingredients that enhance the distinctive attributes produced by substance **40***a*. Special ingredients **16** preferably have a similar weight and consistency to ingredients **16** that are normally used with capsule **10** in order that a consumer cannot identify the contents of capsule **10** by weight or by feel prior to use in machine **20**.

[0047] Capsule **10** may further include a verification system **42** adapted for verifying promotional information delivered by capsule **10**. Verification system **42** may comprise indicia **42***a* disposed on the interior or exterior of capsule. Indicia **42***a* may comprise words (e.g., "winner"), a serial number, an image or other indicia adapted for verifying the authenticity of the information delivered by capsule **10**. Verification system **42** may also be incorporated within the material for body **12** or filter **14** (such as source indicia disposed directly onto fibres used for filter **14**).

[0048] Another example of messaging system **40** is a visual or audible signaling system **40***b* disposed in capsule **10** and adapted to emit a signal following a triggering event. Signaling system **40***b* may for example produce a flashing light, a visual image, an alarm sound, a musical passage, an audio message or any other appropriate visible or audible signal. Signaling system **40***b* may be activated upon exposure to moisture, such as during injection of fluid into capsule **10** by machine **20**. Signaling system **40***b* may alternatively be acti-

vated by interaction with injection system **22** or dispensing system **24** of machine **20** such as by completing or disrupting an electrical circuit associated with signaling system **40***b*.

[0049] Referring to FIGS. **3**(*a*) to **3**(*c*), different embodiments of signaling system **40***b* are shown. Signaling system **40***b* includes a power supply **43**, a sensor **44** (such as a moisture sensor), a processor **46** and a signaling device **48** such as an LED or speaker. Processor **46** may include a storage device **48***a* for storing one or more signals to be emitted from signaling device **48**. The signaling system **40***b* shown in FIG. **3**(*a*) includes a moisture sensor **44** and may be secured to a surface of capsule **10** that is exposed to moisture such as end wall **32**. The signaling system **40***b* shown in FIGS. **3**(*b*) and **3**(*c*) includes a sensor **44** that is adapted to be pierced by probe **24***a* (as shown in FIG. **3**(*b*)) or nozzle **22***a* (as shown in FIG. **3**(*c*)). Sensor **44** may comprise an electrical circuit that is completed or disrupted by piercing of probe **24***a* or nozzle **22***a*.

[0050] Another example of messaging system **40** is an identification system **40***c* having a transmitter or receiver that is adapted to interact with a corresponding transmitter or receiver that is external to capsule **10**. Identification system **40***c* may for example include a tag, such as an RFID tag, that is disposed in capsule **10** and adapted to interact with a reader, such as an RFID reader, disposed on machine **20**. Reader may alternatively be associated with an inventory control system at a retail outlet where capsule **10** is purchased. Identification system **40***c* may alternatively be a barcode system disposed on an exterior surface of capsule **10** and adapted to interact with a barcode reader disposed on machine **20**. Barcode reader may alternatively be disposed at a retail outlet where capsule **10** is purchased.

[0051] In another embodiment as shown in FIGS. **4** to **7**, capsule **10** is an open system where one or more components of capsule **10** are adapted to be opened or disassembled during normal use. Similar reference numerals are used to refer to similar elements as the embodiment discussed above.

[0052] Capsule **10** includes cover **18** disposed over opening **36** and secured to body **12**. Cover **18** is adapted to be separated from body **12** following use of capsule **10** such as by pulling a tab **60***a* disposed on cover **18** and peeling cover away from body **12**. Filter **14** may be secured to cover **18** and thus separated from body **12** together with cover **18**. Alternatively, filter **14** may be secured to body **12** in a manner that is adapted to be separated for instance by pulling a tab **60***b* disposed on filter **14** and peeling filter **14** from body **12**. Alternatively, filter **14** and cover **18** may be peeled in unison from body **12** by gripping tabs **60***a* and **60***b* and then filter **14** may subsequently be peeled from cover **18** by pulling apart using tabs **60***a* and **60***b*.

[0053] Capsule **10** may include a removable closure **62** disposed over a portion of capsule **10** that is intended for removal prior to use of capsule **10** in machine **40**. Removable closure **62** may be provided for example to cover an opening **64** defined in end wall **32** of capsule **10**. Removable closure **62** may provide a barrier seal to preserve the freshness of ingredients **16** prior to use. The removable closure **62** is removed prior to placement of capsule **10** into machine **20** in order to expose opening **64** to allow product to be dispensed from capsule **10**.

[0054] Examples of capsules **10** having one or more removable components are provided in co-pending U.S. patent applications No. 61/760,880, Ser. No. 14/098,915 and 2012/0058226 each of which are incorporated in their entirety herein by reference.

[0055] Referring to FIG. **4**, messaging system **40** comprises indicia **40***d* that is exposed during or following normal use of capsule **10**. Indicia **40***d* may include words (e.g. "winner"), a serial number, an image or other indicia adapted for conveying promotional information. Indicia **40***d* may be embossed, stamped, printed, adhered or otherwise applied to an interior surface of body **12**, such as side wall **30** or end wall **32**, or to a surface of filter **14**, cover **18** or removable closure **62** that is hidden until filter **14**, cover **18** or removable closure **62** is removed from body **12**. Indicia **40***d* may alternatively be a distinctive color of filter **14** (e.g. gold filter) or interior facing surface of body **12**, cover **18** or removable closure **62**.

[0056] Preferably, indicia **40***d* is applied to capsule **10** in a manner that is not effected by exposure to extreme temperatures associated with the use of capsule **10** in machine **20**. Preferably indicia **40***d* is etched, scribed or embossed to a surface of capsule **10** such as by laser. Indicia **40***d* preferably includes a unique code that includes particulars regarding production of capsule **10** (such as date, time, location, batch number etc) to reduce tampering and fraud.

[0057] In one embodiment, capsule **10** may be formed with a cover **18**, removable closure **62** and/or body **12** comprising a multilayered material that includes messaging system **40** as described and shown below.

[0058] Referring to FIG. **5**, a sectional view of cover **18** is shown. Cover **18** is formed of a multilayered material that includes an outer layer O**1**, a graphics layer O**1**, a barrier layer B**1** and a sealing layer S**1** as known in the art. Cover **18** further includes a messaging layer M**1** with indicia **40***d* disposed between barrier layer B**1** and sealing layer S**1**. Indicia **40***d* may be disposed on messaging layer M**1** in known manner for applying graphics such as by printing. Sealing layer S**1** is provided to seal ink or other materials used to form indicia **40***d* from contact with the contents of capsule **10** prior to or during formation of the desired product. Sealing layer S**1** is preferably formed of a transparent material such as polyethylene (PE) that permits indicia **40***d* from messaging system **40** to be viewed through sealing layer S**1**. Removable closure **62** may be formed in a similar manner as cover **18** with indicia **40***d*.

[0059] Referring to FIG. **6**, a sectional view of body **12** is shown. Body **12** is formed of a multilayered material that includes an outer layer O**2**, a barrier layer B**2** and a sealing layer S**2** as known in the art. A graphics layer (not shown) may optionally be disposed between outer layer O**2** and barrier layer B**2**. Body **12** further includes a messaging layer M**2** with indicia **40***d* disposed between barrier layer B**2** and sealing layer S**2**. Indicia **40***d* may be disposed on messaging layer M**2** in known manner for applying graphics such as by printing. Sealing layer S**2** is provided to seal ink or other materials used to form indicia **40***d* from contact with the contents of capsule **10** prior to or during formation of the desired product. Sealing layer S**2** is preferably formed of a transparent material such as polyethylene (PE) that permits indicia **40***d* from messaging system **40** to be viewed through sealing layer S**2**.

[0060] In one embodiment, cover **19** or body **12** may be formed from a transparent multilayered material. Graphics may be applied in known manner to graphics layer to cover a portion of the transparent material and corresponding indicia **40***d* may be applied to messaging layer M at a location where indicia **40***d* is disposed beneath graphics such that indicia **40***d*

is not visible from the outside of capsule **10**. Alternatively, a transparent masking agent, such as a first UV (ultraviolet) ink **70**, may be applied to graphics layer and transparent indicia **40***d*, such as may be formed with a second UV ink **72**, with may be applied to messaging layer M. Transparent masking agent acts to screen transparent indicia from being detected from the outside of capsule **10**. Transparent indicia **40***d* is adapted to be identified when subjected to specific conditions such as when illuminated with UV light.

[0061] Referring to FIG. **7**, messaging system **40** may alternatively comprise a promotional object **40***e* disposed within capsule **10**. Promotional object **40***e* may include a ball, disc, game piece or other physical object. Promotional object **40***e* may be exposed when filter, cover or removable closure is removed from body **12**. Promotional object **40***e* may have words (e.g. "winner"), a serial number, an image or other indicia adapted for conveying promotional information.

[0062] While the above description provides examples of one or more processes or apparatuses, it will be appreciated that other processes or apparatuses may be within the scope of the accompanying claims.

I/we claim:

1. A capsule for use in a machine to prepare a desired product, the machine having an injection system for injecting a fluid into the capsule and a dispensing system for dispensing the product from the capsule to a desired receptacle, the capsule comprising:

a body defining an interior space having an opening;

ingredients disposed in said interior space for mixing with a fluid to prepare a desired product;

a messaging system disposed in said interior space, said messaging system being adapted to deliver a desired message upon the occurrence of a triggering event;

a cover disposed over said opening for sealing said interior space.

2. The capsule of claim **1**, wherein said triggering event comprises the injection of fluid into said capsule.

3. The capsule of claim **2**, wherein said messaging system comprises a moisture sensor for sensing when fluid has been injected into said capsule.

4. The capsule of claim **2**, wherein said messaging system comprises a sensor for sensing when said capsule has been pierced by at least one of the injection system and dispensing system of the machine.

5. The capsule of claim **3** wherein said messaging system further comprises a signaling system, said signaling system emitting a desired signal upon said moisture sensor sensing when fluid has been injected into said capsule.

6. The capsule of claim **3** wherein said messaging system further comprises a signaling system, said signaling system emitting a desired signal upon said sensor sensing when said capsule has been pierced by at least one of the injection system and dispensing system of the machine.

7. The capsule of claim **1**, wherein said messaging system comprises a substance that is adapted to interact with fluid injected into said capsule in order that product dispensed from said capsule has one or more distinctive attributes not normally associated with the product that is intended to be prepared by said capsule.

8. The capsule of claim **1**, wherein said messaging system comprises a sound emitter.

9. The capsule of claim **1** wherein said messaging system comprises a tag.

10. The capsule of claim **1**, further comprising a filter disposed in said interior space for filtering at least some of said ingredients.

11. A capsule for use in a machine to prepare a desired product, the machine having an injection system for injecting a fluid into the capsule and a dispensing system for dispensing the product from the capsule to a desired receptacle, the capsule comprising:

a body defining an interior space having an opening;

ingredients disposed in said interior space for mixing with a fluid to prepare a desired product;

a cover disposed over said opening for sealing said interior space, said cover being adapted to be removed at least partially from said opening following use of said capsule in the machine;

indicia displayed on an interior surface of said capsule, said indicia being adapted to deliver a desired message only when said cover has been at least partially removed from said capsule.

12. The capsule of claim **11**, further comprising a filter disposed in said interior space for filtering at least some of said ingredients.

13. The capsule of claim **11**, wherein said indicia is displayed on an interior surface of said body.

14. The capsule of claim **11**, wherein said indicia is displayed on a surface of said cover that faces said interior space.

15. The capsule of claim **12** wherein said body comprises a multilayered material that includes a messaging layer displaying said indicia and a sealing layer that covers said messaging layer and faces said interior space.

16. The capsule of claim **12** wherein said cover comprises a multilayered material that includes a messaging layer displaying said indicia and a sealing layer that covers said messaging layer and faces said interior space.

17. A capsule for use in a machine to prepare a desired product, the machine having an injection system for injecting a fluid into the capsule and a dispensing system for dispensing the product from the capsule to a desired receptacle, the capsule comprising:

a body defining an interior space having an opening;

ingredients disposed in said interior space for mixing with a fluid to prepare a desired product;

a cover disposed over said opening for sealing said interior space;

indicia displayed on an interior surface of said capsule, said indicia being adapted to deliver a desired message only when said capsule has been used in machine.

18. A capsule as claimed in claim **17** wherein a portion of said capsule is adapted to be removed following use in the machine to reveal said indicia.

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