

Jan. 22, 1957

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2,778,739

PACKAGE FOR BEVERAGE INFUSION MATERIAL

Filed July 16, 1954

2 Sheets-Sheet 1

Fig. 1.

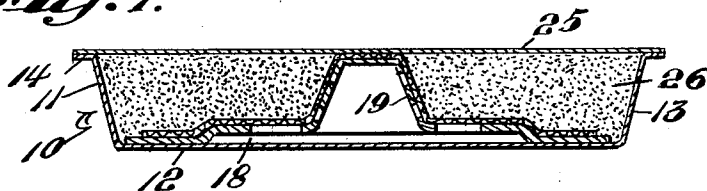


Fig. 2.

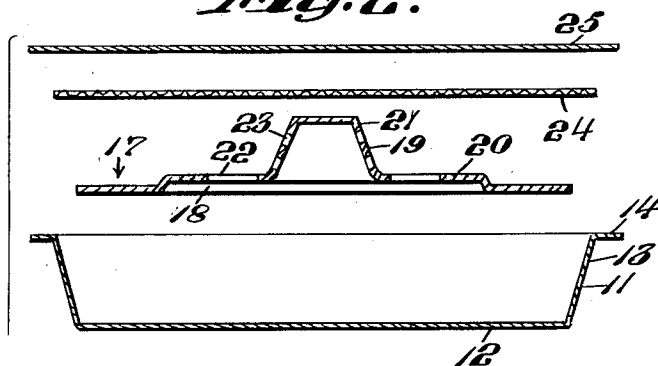


Fig. 3.

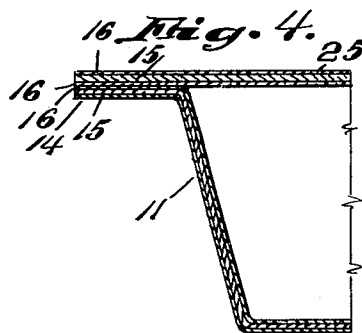
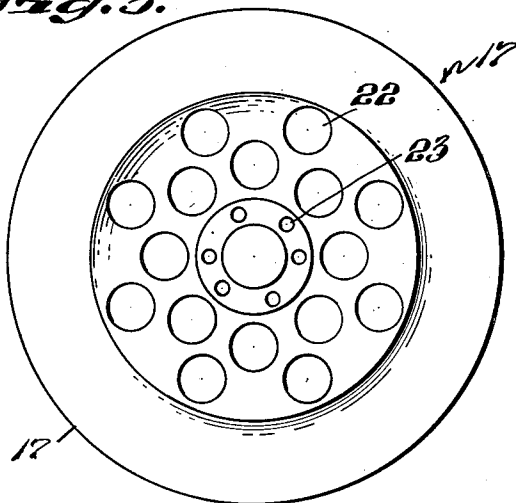
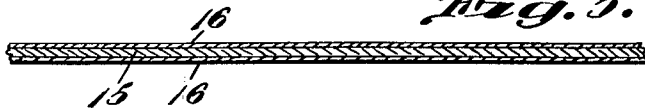


Fig. 5.



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Fig. 6.

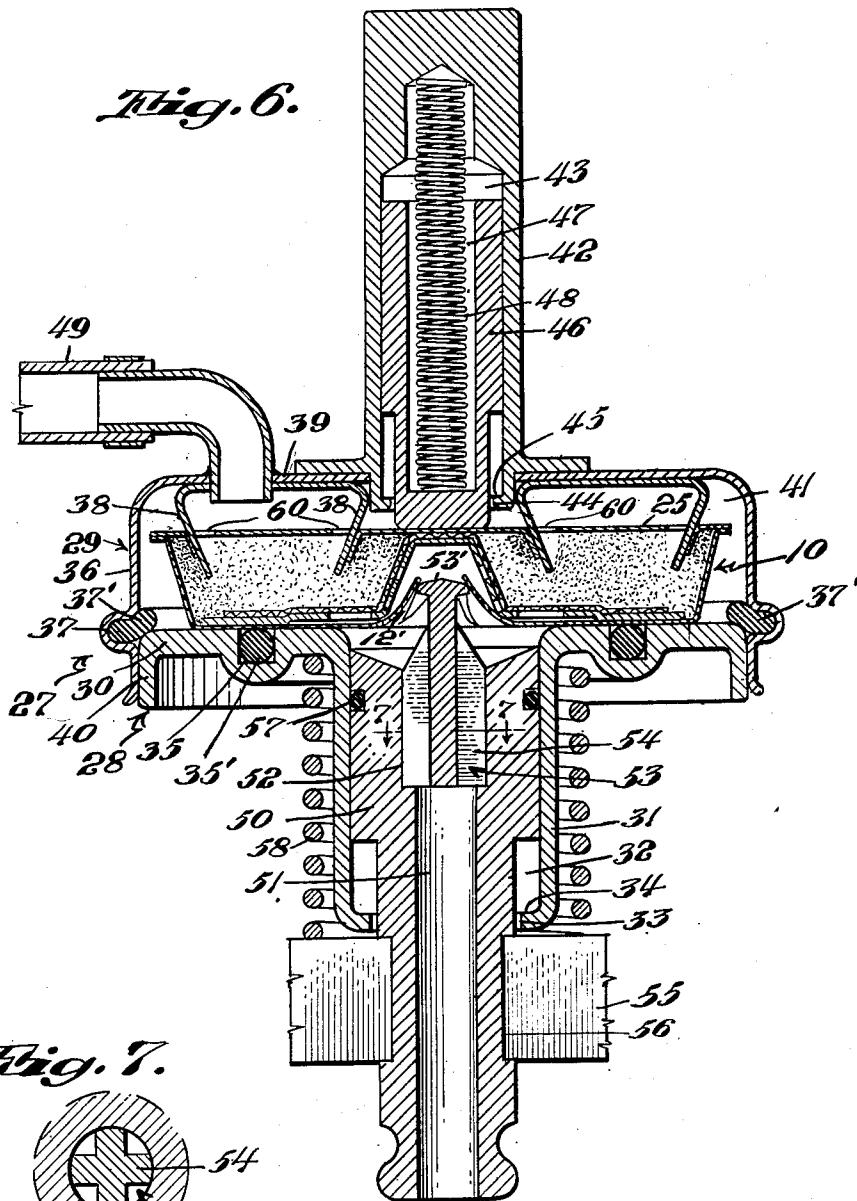
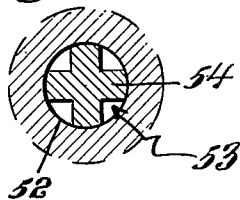


Fig. 7.



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PACKAGE FOR BEVERAGE INFUSION MATERIAL

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Application July 16, 1954, Serial No. 443,789

5 Claims. (Cl. 99—171)

This invention relates to improvements in an infuser or food pellet and an apparatus for use to extract useful qualities therefrom by infusion.

Infusers for individual portions of food material such as tea or coffee are well known in the art. Frequently such food materials are put up in bags and like packages and commonly referred to as tea bags, coffee bags or cartridges. When it is required that such packages be sealed in order to prevent the escape of volatile material and preserve the aroma and flavor of the contents (such as ground coffee), the sealing medium may take the form of a separate closure which is removed prior to using the package or such sealing medium may be a gelatinous material which dissolves in the extracting liquid.

An object of the invention is to improve upon the usual sealing medium of the prior art.

Another object of the invention is to provide a package that may be stored indefinitely.

Another object is to provide a package of the above character so constructed as to provide for the use of a fragile material for the body thereof and to support at least one of the walls thereof in a manner to permit the piercing thereof without collapsing of the package.

Another object of the invention is to provide a unit which may be used for machine handling.

Another object is to provide a package of the above character so constructed as to provide for rigidity at the location of sealing between the package and the apparatus employed for extracting a solution from the contents of the package.

Another object is to provide a package of the above character which will enable a quicker extraction of a solution from the package.

Another object is to provide a package of the above character so constructed as to be particularly adapted to be formed in an automatic manner.

Another object is to provide a package of the above character which may be manufactured at a competitive cost.

A more specific object is to provide a package of the above character so constructed as to permit the use of a metallic foil for the walls of the body of the package.

Another object is to provide an apparatus for extracting a solution from the above package.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a central sectional view of an infuser or foodstuff pellet embodying one form of the invention;

Figure 2 is an exploded view of the elements of the pellets shown in Figure 1;

Figure 3 is a top plan view of one of the elements shown in Figure 2;

Figure 4 is a sectional view of a fragmental portion of the pellet shown in Figure 1 on a much enlarged scale;

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Figure 5 is a sectional view on an enlarged scale through a piece of laminated foil material employed in forming certain elements of the pellet;

Figure 6 is a central sectional view through an apparatus for extracting by infusion the foodstuff contained in the pellet shown in Figure 1; and

Figure 7 is a sectional view taken substantially on line 7—7 of Figure 6.

Referring to Figures 1—5, 10 designates generally an infuser or pellet of a food material which will be soluble in some liquid as for example ground coffee in a state suitable for extraction by hot water infusion. The infuser or pellet 10 comprises a cup-like body 11 which is shown as being circular but may be made in various appropriate shapes as desired. The body 11 has a bottom wall 12 which extends in a flat plane and an annular side wall 13 united to the bottom wall 12 extends therefrom on an outward taper and has an annular flange 14 which projects outwardly at the upper edge thereof substantially parallel to the bottom wall 12. The body 11 may be made by a usual drawing operation from suitable sheet stock of any suitable material compatible with the particular nature of the food material to be contained therein and to be able to withstand without collapsing or deterioration the temperature of the extracting liquid such as hot or boiling water and the pressure at which it may be required to pass said water through the pellet. Such material must also be of a nature to be readily formed in a practical manner in the desired shapes required.

I have discovered that a metallic foil as for example aluminium foil which is known in the art as laminated foil (see Figure 5) is suitable for making the above described body 11. The core of the material is a metallic foil 15 both side surfaces of which have been coated with a thermoplastic material 16 as for example polyethylene. The thermoplastic coating 16 adds rigidity to the foil and is such as to withstand the temperature of boiling water without unduly softening thereof or imparting a foreign taste to the food contents of the pellet. This coating also provides for sealing the package.

A metal disk or rigid member 17 (see Figures 2 and 3) has a shallow annular recess 18 in a base portion thereof which extends inwardly from the lower side thereof and a portion shaped as a hollow frusto-conical hub-like projection 19 which rises centrally from the wall 20 of the recess. The wall 20 of the recess 18 and side wall 21 of the projection 19 are perforated with openings 22, 23, respectively. The member 17 is received within the cup body 11 and its outer margin rests flat against the bottom thereof. A sheet 24 of a filter material as for example muslin, although various filters may be used, may be positioned over the member 17 to an extent to cover said openings 22 and 23. A filter, however, is not necessary in many instances. A closure 25 which is made of the same material as that of the body 11 is placed or stretched across the body 11 and engages the flange 14 and the hub 19 thereof. The thermoplastic material 16 of the flange 14 and of the closure 25 are welded to each other under heat and pressure to hermetically seal the ground food material contents 26, such as for example coffee, of the pellet. Thus, a pellet 10 is provided wherein the ground coffee is maintained fresh until used. The pellet or infuser 10 hereinabove described is particularly adapted for use in combination with the apparatus shown in Figure 6.

The apparatus comprises a housing designated generally 27 which is composed of lower and upper telescopically related sections 28 and 29. The section 28 has a circular base 30 from which there depends a centrally disposed boss-like projection 31 having a recess 32 therein, which boss is turned inwardly at the lower end as at 33 and

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forms an annular shoulder 34. An annular groove 35 extends inwardly from the upper side of base 30 and receives an O-ring seal 35' therein. The upper section 29 is of an inverted cup-like formation having a depending annular wall 36 in which there is formed an inner annular groove 37 to receive a packing ring or seal 37'. A plurality of piercing fingers 38 project downwardly from the upper wall 39 of section 29 for a purpose to hereinafter appear. The lower marginal edge of the wall 36 telescopes over the peripheral flange or wall 40 of the base 30 with the seal ring 37' sealingly engaging the said base 30 at the peripheral edge portion thereof. The sections 28 and 29 are detachably held in assembled relation by frictional engagement of the walls 36 and 40 and form therebetween an infusion chamber 41.

The upper section 29 has a vertically extending central boss 42 which has a bore 43 opening into chamber 41. The inner end portion of the bore 43 is reduced as at 44 and forms a stop shoulder 45. A plunger 46 is slidably received in the bore 43 and is reduced at the inner end portion thereof to project through the reduced bore portion 44. The plunger 46 has a guide bore 47 extending inwardly from the upper end thereof in which is received a compression spring 48, one end of which abuts against the bottom wall of bore 47 and the other end of which abuts against the bottom wall of bore 43 and applies a resilient bias on the plunger 46 in a direction tending to move the same into said chamber 41. A flexible conduit 49 leads from a suitable supply source (not shown) of water at boiling temperature under pressure above atmosphere to chamber 41.

The housing 27 is slidably mounted on a vertical post 50 which has a central bore 51 therethrough which is enlarged at the upper end portion as at 52 to frictionally receive and hold a piercing member 53 which has a body 54 of a cross formation as seen in Figure 7. The post is mounted on a horizontally extending support 55 which engages a neck portion 56 on the post. The boss 31 of section 28 slidably engages the post 50, and an O-ring 57 is positioned between adjacent wall portions of the post and boss to block leakage therebetween. A compression spring 58 encircles the boss 31, one end of which abuts against the support 55 and the other end of which abuts against the base 30 to apply a bias on said housing in a direction tending to move the same upwardly on the said post 50.

In the operation of the apparatus hereinabove described, the upper section 29 is removed from lower section 28 by lifting the same therefrom, and an infuser or pellet 10 is inserted and centered on the base 30. This will position the openings 22 of the pellet inwardly of the seal 35' and the marginal edge of the rigid member 17 opposite the seal 35'. The plunger 46 under bias of spring 48 will have been moved outwardly of bore 47 to the extent of shoulder 45. With the pellet 10 in proper position the section 29 is inserted on the lower section. The plunger 46 will engage the central portion of rigid member 17 and apply a pressure thereon to engage the pellet against the seal 35'. Further movement of section 29 in the same direction will carry fingers 38 through wall 25 of the pellet or infuser and engage seal 37' with the edge of the base 30, thus sealing chamber 41 at seal 37' and sealing the pellet at seal 35' whereby fluid introduced into chamber 41 will be blocked from passing out of chamber 41 other than will pass through the pellet. The piercing member 53 is normally at a position for the head 53' thereof to be beneath the upper edge of base 30. Upon a downward pressure applied on the housing to move the same on the post 50

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against bias of spring 58, the wall 12 of the pellet 10 will be moved against the piercing head 53' and be ruptured thereby as seen at 12' in Figure 6 to provide an outlet opening from the pellet. Upon the release of the downward force applied on the housing, the bias of spring 58 will move the housing upwardly to free the pellet of the piercing member 53.

The supply of liquid such as boiling water under pressure above atmosphere may now be turned on through a suitable control (not shown). The water will flow into chamber 41 and pass through openings 60 made in the wall 25 by fingers 38 and pass out of pellet through opening 22, 23 in the rigid member 17 and thence into recess 18 and out through opening 12' past piercing member 53 to bore 51 which forms a passageway for the effusion liquid and beneath which a receptacle such as a cup may be positioned to receive the solution extracted from the pellet 10.

I claim:

1. A hermetically sealed package comprising a container having spaced walls made of relatively thin frangible material, a perforated relatively rigid member between said walls having a base portion engaging one wall and a central projection extending therefrom into engagement with the other wall to hold the walls in spaced relation and beverage infusion material between said walls about said central projection.

2. A hermetically sealed package as set forth in claim 1 wherein the said walls are made of a metallic foil.

3. A package as in claim 1 wherein the base of said rigid member is a disk with openings therethrough.

4. A hermetically sealed package of liquid soluble food material to be extracted by infusion comprising a generally cup-shaped body having an annular flange at the upper edge of the side wall thereof, a closure for said body extending across the opening of said cup and engaging the said flange and welded thereto, a metal disk within said cup engaging the bottom wall of said cup and having an apertured central raised portion extending into engagement with said closure, said disk being apertured adjacent said central portion for the passage of the effusion solution from said package, beverage infusion material in said cup and about said central raised portion.

5. A hermetically sealed package of liquid soluble food material to be extracted by infusion comprising a generally cup-shaped body having an annular flange at the upper edge of the side wall thereof, a closure for said body extending across the opening of said cup and engaging the said flange and welded thereto, a metal disk within said cup engaging the bottom wall of said cup and having an apertured central raised portion extending into engagement with said closure, said disk being apertured adjacent said central portion for the passage of the effusion solution from said package, and a sheet of filter material covering the openings in said disk, beverage infusion material in said cup and about said central raised portion.

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