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2,899,886

BEVERAGE APPARATUS

Filed April 26, 1955

2 Sheets-Sheet 1

Fig. 1.

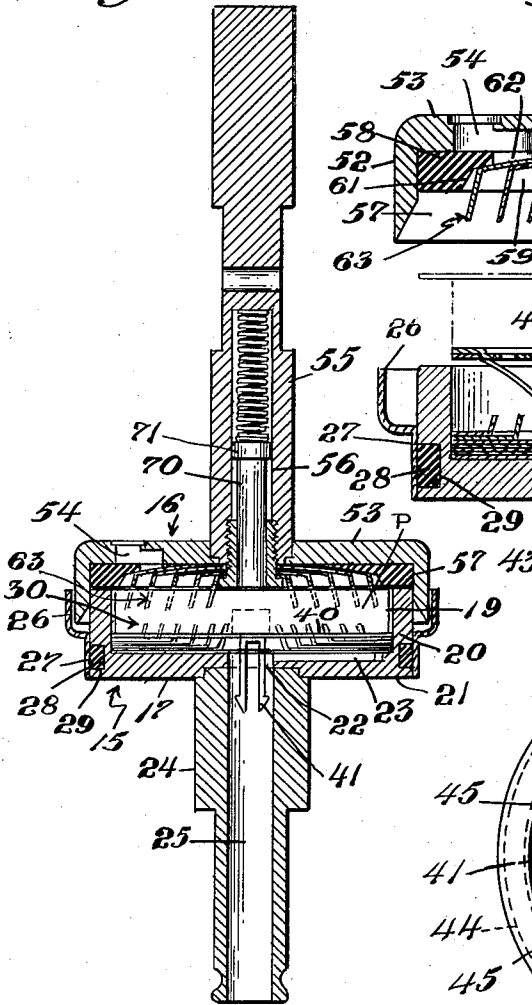


Fig. 2.

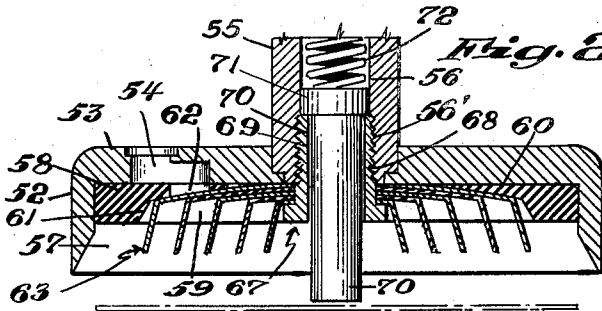


Fig. 3.

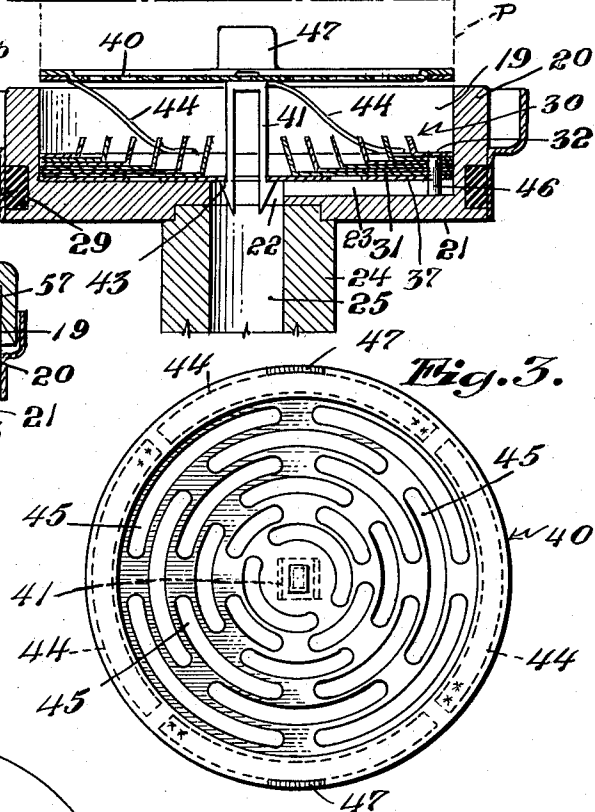
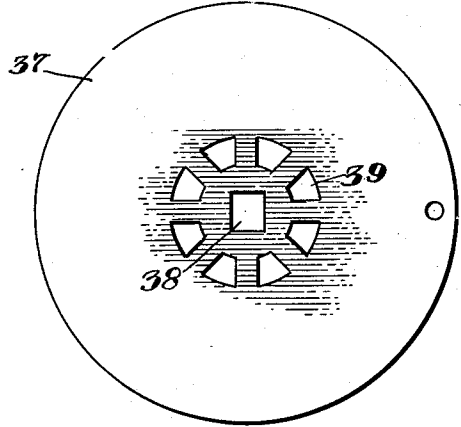


Fig. 4.



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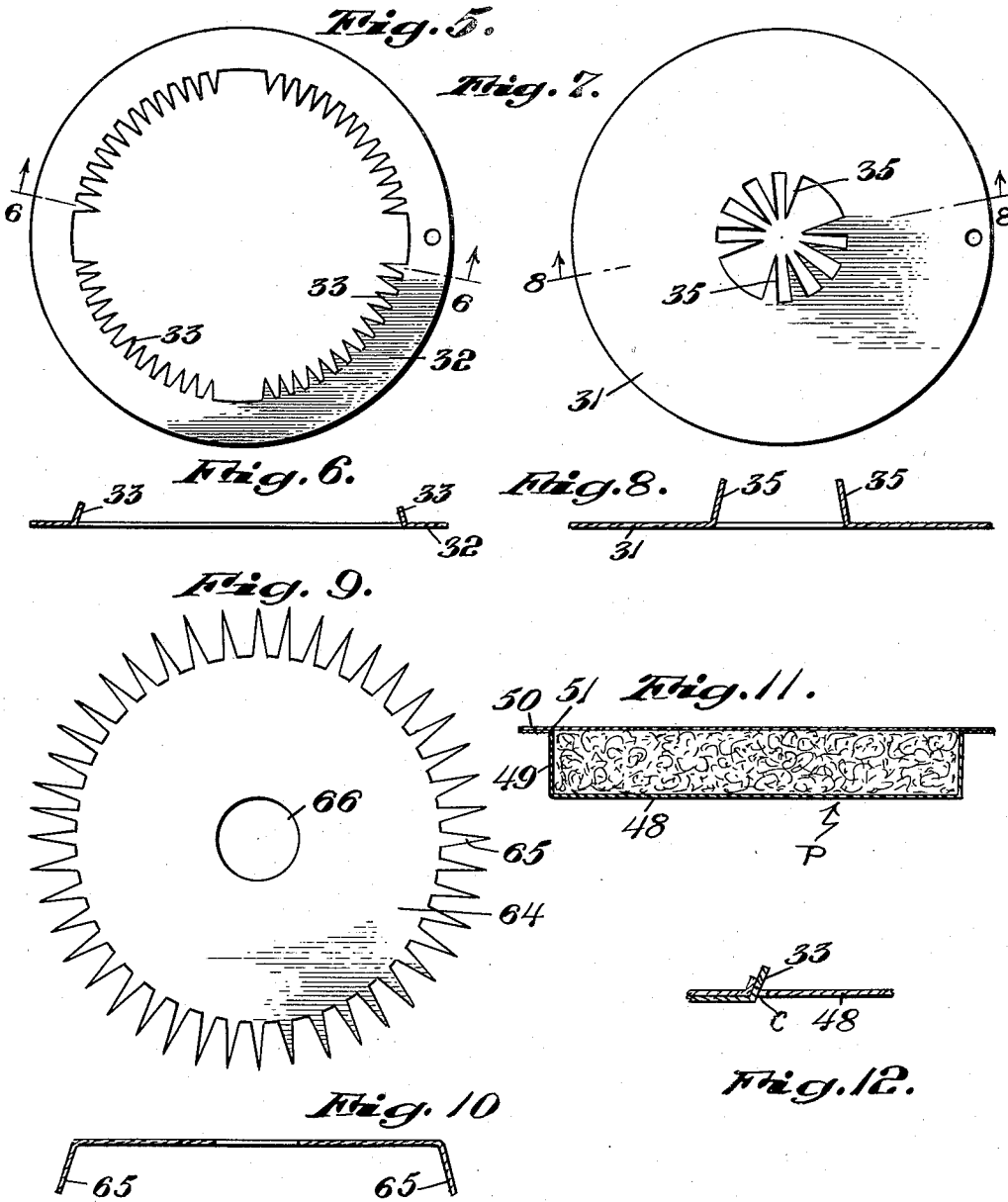
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BEVERAGE APPARATUS

Joseph J. Rodth, Swansea, Mass., assignor, by mesne assignments, to Scalpak Corporation, a corporation of New York

Application April 26, 1955, Serial No. 504,042

5 Claims. (Cl. 99—295)

This invention relates to improvements in an apparatus for making a beverage and/or the like from an infuser or pellet containing the ingredients for making such beverage and is a continuation in part of my copending application Serial No. 443,789, filed July 16, 1954, for which Patent No. 2,778,739 was granted January 22, 1957.

It is desirable in apparatus of the above character that the extracting liquid be evenly dispersed and at the same time passed quickly through the pellet. This is particularly desirable in automatic beverage dispensing machines. It is also desirable that such a beverage be clear and free of any residue of the said ingredient, and to this end it has been proposed to position a filter ahead of the outlet. This has proven satisfactory in maintaining the beverage clear, but such filter tends to retard the flow of solution extracted from the pellet as well as to increase the cost of the pellet.

An object of the invention is to provide an apparatus of the above character so constructed as to provide for piercing the walls of the pellet with a multiplicity of openings in such a manner as to provide for an even dispersion of the liquid about the ingredient of the pellet and of such minute size as to produce a filter effect on the outlet side of the pellet and yet obtain the desired flow of liquid through the pellet.

Another object is to provide in an apparatus of the above character a multiplicity of pellet wall piercing lances arranged in a manner to permit easy dismantling thereof and removal from the body of the apparatus.

Another object is to provide an apparatus so constructed as to provide a pellet seat or support which may be automatically moved to a pellet loading position.

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 longitudinal sectional view through a beverage making apparatus embodying my invention;

Figure 2 is a similar sectional view on a large scale of a fragmentary portion of the apparatus shown in Figure 1 but with the said portions in the open relation;

Figure 3 is a plan view of an element forming a pellet receiving seat;

Figure 4 is a plan view of a plate element of the apparatus;

Figure 5 is a plan view of a blank showing an intermediate stage of construction of a pellet wall piercing lance carrier;

Figure 6 is a sectional view on line 6—6 of Figure 5 but showing opposite lances as bent in the finished stage thereof;

Figures 7 and 8 are views similar to Figures 5 and 6, respectively, of a different size lance carrier;

Figure 9 is a plan view of a blank showing an intermediate stage in the construction of the upper lances of the apparatus;

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Figure 10 is a sectional view taken along line 10—10 of Figure 9;

Figure 11 is a central sectional view of an infuser or pellet with the ingredients contained therein for making a beverage in the apparatus of Figure 1; and

Figure 12 is a sectional view illustrating a fragmentary portion of a wall of the pellet of Figure 11 pierced with the piercing lance in position, showing the passageway formed by the clearance between the opening made and the lance.

The apparatus of the present invention comprises a pair of telescopically related hollow members which when in closed position form an infusing chamber in which the infuser in pellet form is positioned containing the ingredients for making a beverage. An inlet is provided for supplying the infusing liquid to the chamber and an outlet is provided for the passage out of the chamber of the solution extracted from the pellet. A multiplicity of lances or piercing prongs are carried by the walls of the chamber, and these are adapted to penetrate the walls of the pellet to make a multiplicity of tiny openings through which the said liquid passes to the said ingredients and out in solution extracted. Upon moving of said members apart to open position, the spent pellet is resiliently moved outwardly to a position to be replaced with a new pellet whereby another cycle of operation of the apparatus may be repeated.

Referring to the drawings for a detailed description of the invention, 15 designates an apparatus which is particularly adapted for making a beverage by infusion and comprises upper and lower hollow members or sections 16 and 17, the cavities of which when the sections are in closed relation form a chamber 19. The cavity in lower member 17 forms the lower portion of chamber 19 and has a cylindrical wall 20 and a bottom wall 21 having a central opening 22 therethrough and radial grooves 23 extending inwardly from the inner side thereof which intersect the opening 22. A hollow stem 24 depends centrally from the wall 21 and the bore 25 thereof extends in continuation of the opening 22 to form a passageway or outlet from the said chamber 19. An annular flange 26 extends about the wall 20 in spaced relation therewith and is reduced as at 27 at the lower edge portion to snugly engage the wall 20 and form an annular trough about the wall 20. A seal 28 positioned in an annular groove 29 extends to engage and form a seal between the flange portion 27 and wall 20.

A multiplicity of lances or piercing prongs designated generally 30 project upwardly at the bottom portion of chamber 19 in substantially equal spaced circular rows. In the present instance the prongs are formed at the inner edge of a plurality of annuluses which are positioned one upon the other and which have the same outside diameter but whose inside diameters progressively increase in an outward direction from the lowermost annulus 31 which has the smaller inside diameter to the uppermost annulus 32 which has the larger inside diameter. The annulus 32 (see Figures 5 and 6) is made of very thin stainless steel sheet material and the prongs 33 thereof are cut in V shape and equally spaced at each quarter section of the annulus at the inner side thereof. The prongs 33 are bent at an obtuse angle (see Figure 6). The annulus 31 (see Figures 7 and 8) has similar prongs 35 cut at the inner side edge thereof and these are likewise bent at an obtuse angle (see Figure 8). The annulus 31 has the smaller inside diameter and consequently has the lesser number of prongs, but these are made longer than the prongs 33 so that the points thereof extend in the assembled relation of the annuluses in the same plane as the points of prongs 33. The intermediate rows of prongs 30 are likewise formed by similar annuluses but whose inside diameters as before

mentioned increase progressively outwardly and the prongs of which are progressively made shorter so as to all extend to said plane.

The lowermost annulus 31 rests on a plate 37 (see Figures 2 and 4) which is provided with a central rectangular opening 38 therethrough and a plurality of equally spaced radial openings 39 at the central portion thereof. A pellet seat disk 40 is positioned above the prongs 30 and has a bifurcated stem depending centrally thereof. The arms 41 of the stem are resilient and a shoulder 43 is formed at the free end portion of each of said arms. The arms 41 may be squeezed to be passed through the opening 38 and after released, the shoulders 43 are adapted to engage the edges of opening 38 and thus attach the seat 40 to the plate 37 in a manner to permit limited relative movement therebetween. There is secured to the under side of the seat 40 at the peripheral edge portion thereof a plurality of flat springs 44 which extend along the curvature of said edge portion and are adapted to bear against the outer peripheral marginal edge of the annulus 32 so as to yieldably bias the seat 40 to move to the raised position thereof as seen in Figure 2 and to maintain the prong-carrying annuluses in nested relation against plate 37.

The seat 40 has a plurality of circular rows of elongated openings 45, there being a row of such openings for each row of prongs 30 and spaced so as to be in register with the section of prongs in each row. The register of said prongs with said openings 45 is maintained by means of a locating dowel 46 which extends through all the said prong-carrying annuluses and the engagement of stem arms 41 in the rectangular opening 38.

In Figure 2 the apparatus is shown in open position with the seat 40 raised in loading position to receive between the guide upright tabs 47 thereof an infuser or pellet P (see Figure 11) which comprises a cup-like body having a bottom wall 48 and side wall 49 provided with an annular flange 50. The contents of the pellet, which may be ground coffee in a state suitable for extraction by hot water infusion, is hermetically sealed by means of a closure 51 which extends to engage and be secured to the flange 50. The body and closure of the pellet is made 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 as by way of example may be aluminum foil, which is known in the art as laminated foil.

The upper section 16 has a depending circular side wall 52 and an upper wall 53 having an opening 54 therethrough and a centrally disposed stem 55 having a blind bore 56 which opens into the cavity 57 of section 16 which forms the upper portion of chamber 19. The bore 56 is threaded at the lower edge portion thereof as at 56' for a purpose which will hereinafter appear. An annular seal member 58 made of a suitable material, as by way of example rubber, is snugly received in the cavity 57 and bottoms against the wall 53. The member 58 has an annular recess 59 provided with a concave bottom wall 60 and outwardly tapered side wall 61. An opening 62 through the wall 60 aligns with opening 54 and forms a passageway or inlet to the cavity 57 and thus chamber 19.

A multiplicity of lances or piercing prongs designated generally 63 depend from wall 53 in equally spaced circular rows. These prongs 63 in the present instance are formed at the peripheral edge portion of separate disk-like elements, one of which is shown at Figure 9. The disk 64, which is the largest of the group, is made of very thin stainless sheet material and has a plurality of equally spaced V-shaped prongs 65 cut in the peripheral edge portion of the disk which are thereafter bent at an obtuse

angle as shown in Figure 10. There is a plurality of like disks and these are progressively smaller in diameter and each has a centrally disposed opening 66 therethrough. These are assembled in nested relation, one within the other, in recess 59 and held in arched relation against the wall 60 and secured to wall 53 by means of a clamp fastening 67 having a head engaging the outermost disk and a threaded shank 68 extending through openings 66 into screw threaded engagement with the bore portion 57. The fastening 67 has an axial bore 69 therethrough. A plunger 70 having an enlarged head 71 is slidably received in bores 56, 69 and a compression spring 72 is arranged in bore 56 with one end thereof abutting against the head 71 and the other end thereof engaging against the bottom of bore 56 so as to apply a resilient pressure on the plunger tending to move the same into the chamber 19, the head 71 abutting against the shank 68 limiting the inward movement of the plunger.

The apparatus thus far described is part of an automatic beverage dispensing device having the necessary supporting structure for the proper mounting of the apparatus 15 and means for moving the section or closure 16 towards and from the section 17. With the pellet P in the position shown in Figure 2, the flange thereof will overlie the upper edge of wall 20. The closure 16 is lowered and the walls 52 telescope over wall 20 in fairly snug relation therewith. During the lowering of closure 16, the plunger 70 under pressure of spring 72 will engage and move the pellet and seat 40 against the resistance of springs 44 into chamber 19. At the fully closed position of closure 16 the seat 40 and springs 44 now in retracted position will seat against the outer edge of the annulus 32. The flange portion of the pellet will extend in sealed relation between the upper edge of wall 20 and the sealing member 58. During the lowering of closure 16 the prongs 30 will pass through openings 45 in the seat 40 and pierce the bottom wall 48 of the pellet. Likewise the upper prongs 63 will pierce the closure 51 of the pellet. This will provide a multiplicity of tiny openings in top and bottom walls of the pellet so as to provide for the passage of the infusion liquid through the pellet.

The inlet 54 may be connected to a suitable liquid supply source (not shown), in the present instance, boiling water under pressure controlled by suitable valve mechanism (not shown). The boiling water passing through opening 62 will disperse over the top of the pellet and pass through the multiplicity of openings in the closure 51 and out through the openings in the bottom wall 48 as a solution extracted from the contents of the pellet. The solution in passing out of the pellet will be dispersed through openings 39 in plate 37 and into grooves 23, thence to the bore 25, and out into some receptacle (not shown).

The closure 16 may not be raised to free the pellet P of the plunger 70 whereupon the seat 40 under pressure of springs 40 will rise to the initial unloading and loading position previously mentioned. A certain amount of water may remain in the walls of the cavity of the closure, and this will drip to be caught in trough formed by the flange 26 which may be drained to waste by proper connections (not shown). A new pellet which may be automatically fed pushes the spent pellet off the seat 40 to replace the same for another cycle of operation, as above described.

From the foregoing description it will be apparent that each prong because of being set at an obtuse angle and moving parallel to the axis of the apparatus will puncture a larger opening into the wall of the pellet than the size of the prongs (see Figure 12). Thus, there will be provided a clearance C between the edges of the openings made and the said prongs for the passage of the liquid. The amount of clearance may be predetermined by the angular setting of the prongs. There will be a large multiplicity of these tiny clearance passageways

much too small for the escape of the ingredients contained within the pellet but which aggregation of passageways will provide for fast passage of the liquid in and out of the pellet as well as a more uniform dispersement of the liquid about the ingredients contained in the pellet. Thus, the multiplicity of clearances C in effect forms a filter for the liquid solution passing therethrough. It will also be apparent that the pellet seat, prong-carrying annulus, and plate 37 may be easily removed as a unit from the chamber by merely lifting the same out and thereafter separated by merely squeezing the arms 41 to pass the shoulders 43 out of opening 33 whereupon each element may be individually cleansed. It will be further apparent that the elements carried by closure 16 may be also easily dismantled for cleansing by merely unscrewing the fastening 67 to free the prong-carrying disk and sealing member 56.

I claim:

1. In an apparatus for making a beverage, said apparatus having an infusion chamber provided with an inlet thereto and an outlet therefrom, a seat within said chamber adapted to receive thereon a pellet of infusion material, means including said pellet for sealing the upper part of said chamber from the lower part thereof, a plurality of nested disks in the upper part of said chamber, each of said disks having a diameter larger than the adjacent inner disk, each of said disks having a plurality of piercing prongs at the peripheral edge thereof for piercing the top wall of said pellet, a plurality of nested annuluses in the lower part of said chamber, each of said annuluses having an inner diameter larger than the next adjacent inner annulus, and each of said annuluses having a plurality of piercing prongs about the inner edge thereof for piercing the bottom wall of said pellet.

2. In an apparatus for making a beverage, said apparatus having an infusion chamber, a seat in said chamber adapted to receive a pellet of infusion material, an inlet to said chamber, an outlet from said chamber, means including said pellet for sealing the upper part of said chamber from the lower part thereof, a plurality of nested disks in the upper part of said chamber, each of said disks having a diameter larger than the adjacent inner disk, the diameter of said disks decreasing in progressive order in like amounts, a multiplicity of piercing prongs in the upper and lower parts of said chamber for piercing the top and bottom walls of said pellet for providing for the passage of an infusion liquid through said pellet from said inlet to said outlet, the prongs in the upper part of said chamber being carried at the peripheral edges of said disks.

3. In an apparatus for making a beverage, said apparatus having an infusion chamber, a seat in said chamber adapted to receive a pellet of infusion material, an inlet to said chamber, an outlet from said chamber, means including said pellet for sealing the upper part of said chamber from the lower part thereof, a plurality of nested annuluses in the lower part of said chamber, each of said annuluses having an inner diameter larger than the next adjacent inner annulus, said inner diameters increasing in a progressive order in like amounts, a multiplicity of

piercing prongs in said upper and lower parts of said chamber for piercing the top and bottom walls of said pellet for providing for the passage of an infusion liquid through said pellet from said inlet to said outlet, the prongs in the lower part of said chamber being carried at the inner edges of said annulus.

4. In an apparatus for making a beverage, said apparatus having an infusion chamber provided with an upper part and a lower part, said parts being relatively movable one from the other, a seat in said chamber adapted to receive a pellet of infusion material, an inlet to said chamber, an outlet from said chamber, means including said pellet for sealing the upper part of said chamber from the lower part thereof, and a multiplicity of piercing prongs in the upper and lower part of said chamber for piercing the bottom and top walls of said pellet for providing for the passage of an infusion liquid through said pellet from said inlet to said outlet, said seat being resiliently mounted for movement outwardly beyond the lower of said parts at a position to receive said pellet thereon and provided with openings for the passage of said piercing prongs through said seat.

5. In an apparatus for making a beverage, said apparatus having an infusion chamber provided with an upper part and a lower part, said parts being relatively movable one from the other, a seat in said chamber adapted to receive a pellet of infusion material, an inlet to said chamber, an outlet from said chamber, means including said pellet for sealing the upper part of said chamber from the lower part thereof, and a multiplicity of piercing prongs in the upper and lower part of said chamber for piercing the bottom and top walls of said pellet for providing for the passage of an infusion liquid through said pellet from said inlet to said outlet, said seat being resiliently mounted for movement outwardly beyond the lower of said parts at a position to receive said pellet thereon, and a plunger resiliently mounted on said upper part and adapted to be moved into engagement with said pellet to move the same and said seat into the lower part of the chamber for said pellet to be engaged by said prongs in the lower part of said chamber upon moving said parts toward each other, said seat being provided with openings therethrough for the passage of said prongs through said seat.

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