

Jan. 11, 1944.

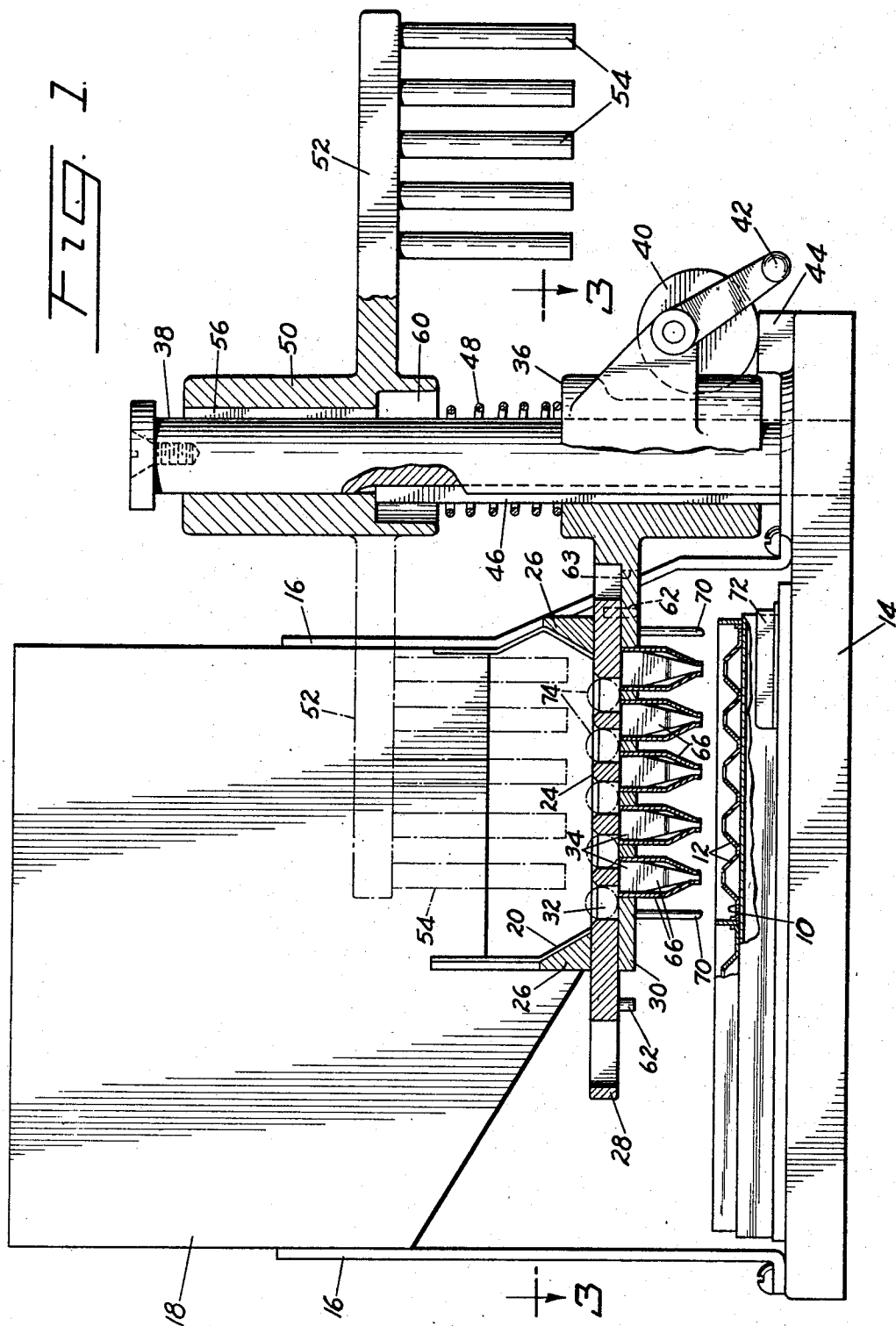
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2,339,115

MACHINE FOR AND METHOD OF PACKAGING CAPSULES

Filed July 5, 1940

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

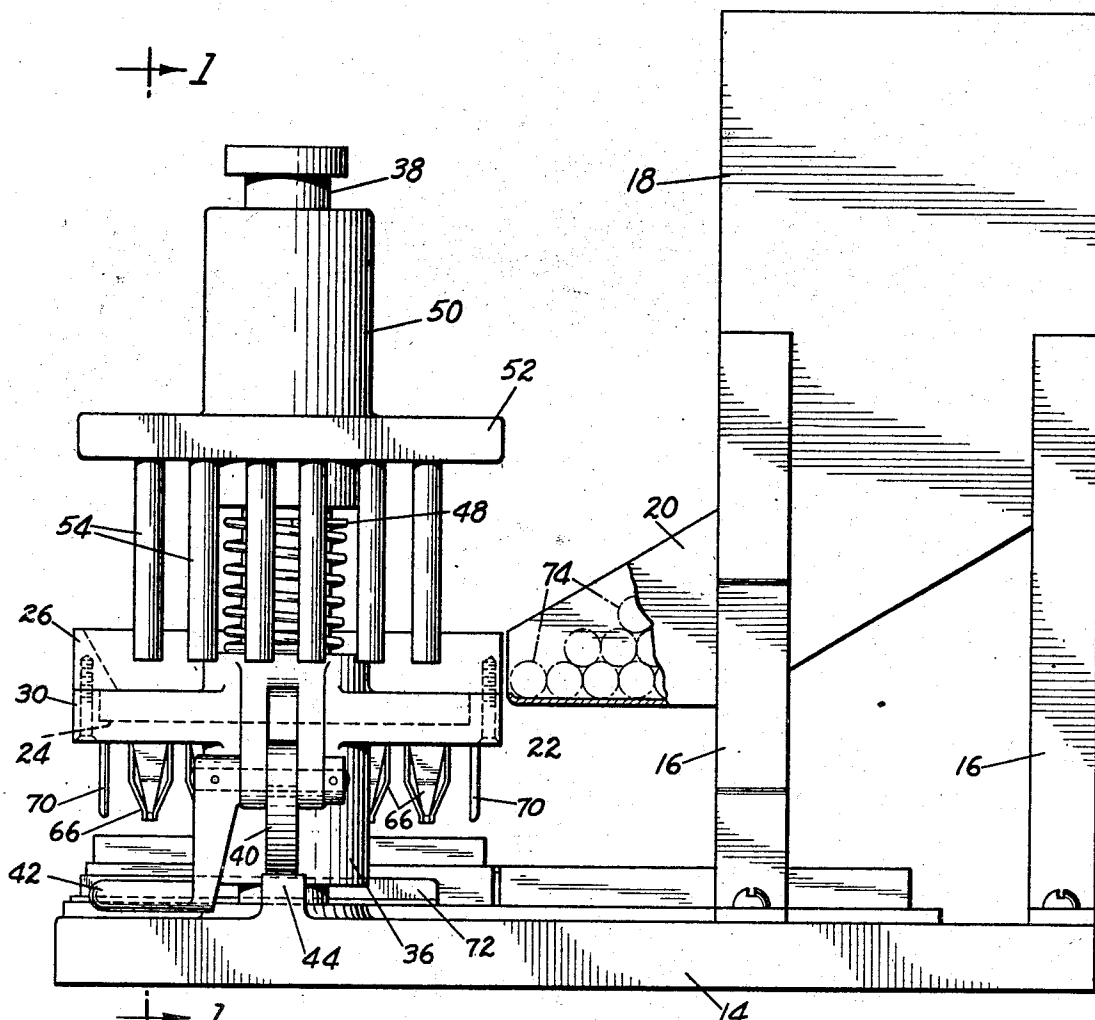


FIG. 2.

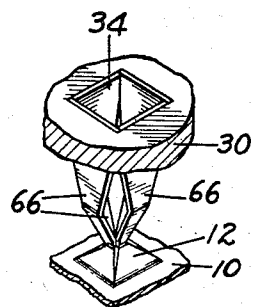


FIG. 5.

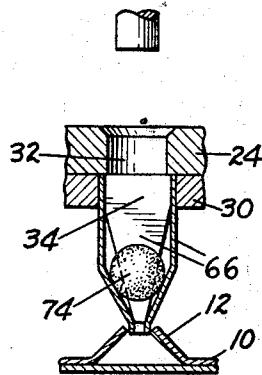


FIG. 6.

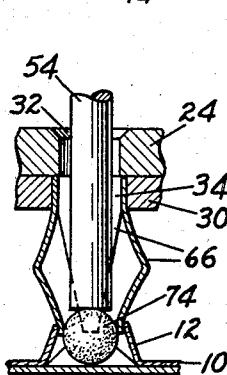


FIG. 7.

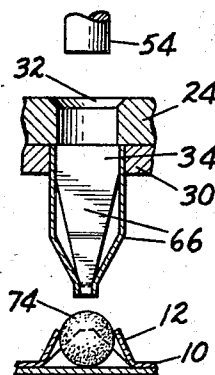


FIG. 8.

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3 Sheets-Sheet 3

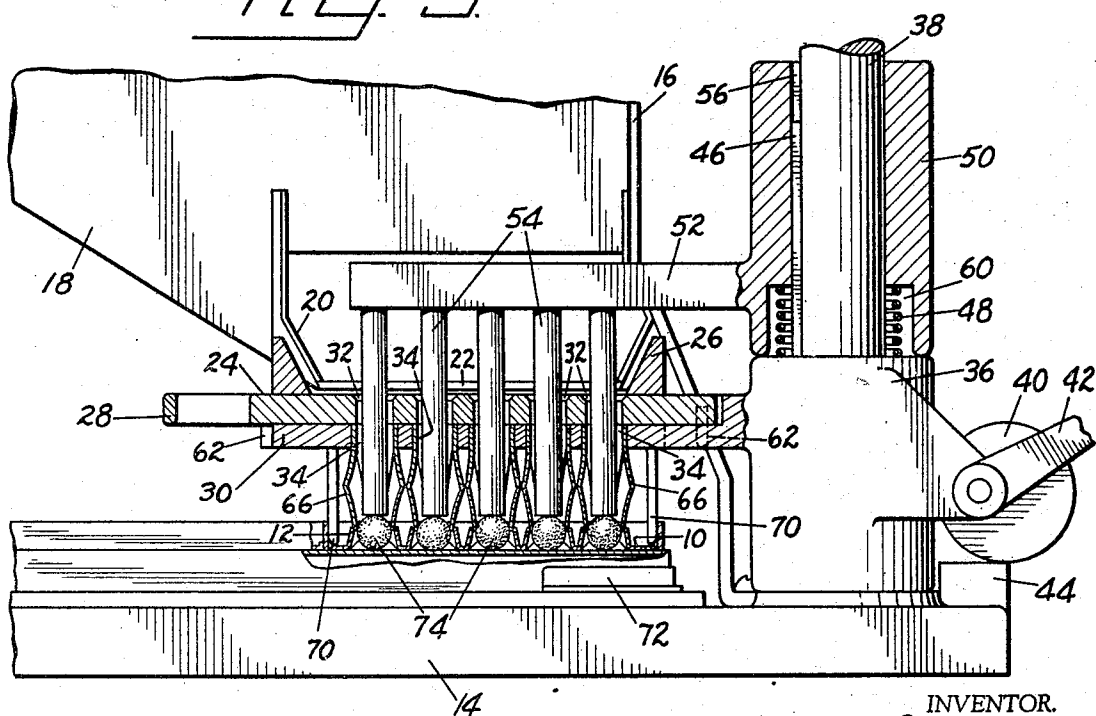
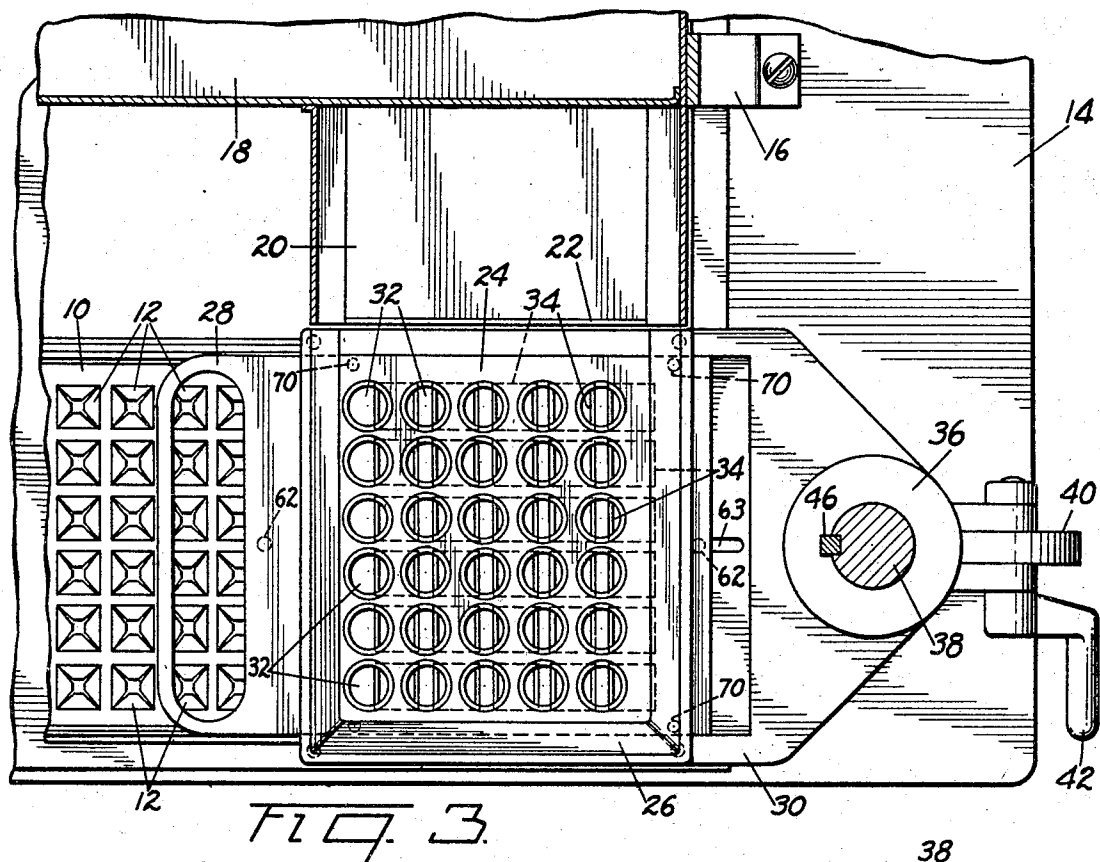


FIG. 4.

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2,339,115

MACHINE FOR AND METHOD OF PACKAGING CAPSULES

Robert P. Scherer, Detroit, Mich.

Application July 5, 1940, Serial No. 343,947

4 Claims. (Cl. 226-2)

The object of this invention is to provide a machine for packaging capsules or other small pellet like objects so that they will be individually supported and attractively displayed. This invention is designed to accomplish this object rapidly and economically.

A further object is to provide a machine whereby a plurality of capsules may be discharged or ejected into a receiving container, which container is adapted to individually grip and support the capsules. The machine is so constructed that the capsule gripping portions of the container are actuated by parts of the machine to permit the capsules being placed upon their seats to be there held by the capsule gripping portions of the container upon withdrawal of the machine therefrom.

The capsule container which the improved machine is adapted to fill is provided with a plurality of capsule seats. Each seat is adapted to receive and support an individual capsule. Each capsule seat is provided with a hinged or flexible wall portion that partially overhangs the seat and engages the capsule at a point above its horizontal median line to hold it securely in place.

The machine is provided with capsule discharging mechanism which includes spreading means adapted to engage the flexible wall portions of the capsule retainer that overhang the capsule seats to actuate them to uncover the seats to receive the capsules. This is accomplished during the ejection of the capsules and in the form here shown simultaneously therewith.

In considering the process aspect of the invention, a capsule carried by capsule discharging means is moved toward the capsule seat of the retainer to bring a portion of the discharging mechanism into engagement with a portion of the retainer and during the ejection of the capsule the capsule seat is uncovered and the capsule is deposited thereon. The mechanism is then withdrawn leaving the capsule seated within the retainer.

Various other objects, advantages, and meritorious features of the invention will more fully appear from the following description, appended claims, and accompanying drawings, wherein:

Figure 1 is an elevation partly in section taken on line 1-1 of Fig. 2, and at right angles to the elevation of Fig. 2,

Fig. 2 is an elevation taken at right angles to the view in Fig. 1 but showing a part of the capsule feed hopper in section,

Fig. 3 is a sectional view taken on line 3-3 of Fig. 1,

Fig. 4 is a sectional fragment of the structure taken on the same line as Fig. 1 but showing the capsules at the moment of their complete ejection from the discharge mechanism into the retainer, and

Fig. 5 is an enlarged perspective, and

Figs. 6, 7 and 8 are enlarged sectional views through a fragment of the carrier and discharge mechanism of the machine showing successive steps in depositing a capsule upon the retainer seat to be held thereon.

A container of the character here shown as being filled is disclosed in application of Robert P. Scherer, Serial No. 339,107, filed June 6, 1940. The machine here illustrated is adapted to fill such container with capsules. It is obvious that small objects, such as tablets, pellets, or the like might be used instead of capsules and wherever the term "capsules" is employed herein it is intended to cover such an object which is usable in the mechanism here shown. In the drawings the container or capsule retainer sheet itself is indicated as 10 and this is shown as a sheet like member which is provided with a series of flaps or prongs 12 that overhang floor portions serving as capsule seats. These prongs are adapted to be spread apart to receive the capsule therebetween upon the seat.

A plurality of prongs is shown as associated with each capsule seat. In the particular construction here shown four such prongs are so illustrated. Upon the spreading apart of these prongs the capsule is discharged onto the seat. Upon withdrawal of the capsule discharging mechanism the prongs spring back to a position to engage the capsule at a point slightly above the horizontal median line so as to retain the capsule in place. Sufficient of the capsule is exposed to be grasped by the fingers for removal.

The machine base is indicated as 14. Supported upon brackets 16 from the base is a hopper like container 18 which has a discharge spout 20 through which capsules are adapted to feed. The capsules will not ordinarily run out from the discharge spout. It has slightly upturned lip 41. The top of this spout is open so that capsules may be brushed therefrom onto a capsule guide plate 24. This guide plate is surmounted by a hopper ring 26 which is three sided as shown in Fig. 2 and open on the side adjacent to the hopper so that capsules may be brushed into the enclosure of the ring onto the guide plate 24. The guide plate has a handle 28. The guide plate is slidably supported upon a guide way formed in a capsule discharge plate 30.

The guide plate is provided with a plurality of capsule receiving orifices 32. Each orifice is adapted to receive a single capsule. Normally the guide plate is positioned with respect to the capsule discharge plate as shown in Fig. 1. In this position the orifices 32 through the guide plate do not register with the orifices 34 through the discharge plate so that as capsules are brushed over the guide plate to fill each of the orifices therein such capsules will not pass through the orifices but will remain therein as shown in Fig. 1.

In Fig. 1 the discharge plate and guide plate are elevated. The discharge plate is formed with a tubular bearing 36 which is slidably mounted upon a standard 38 and a cam 40 is carried by said tubular bearing portion and adapted for actuation by handle 42. This cam rests upon a bearing block 44 and is adapted to be swung to raise and lower the discharge plate. The guide plate and the hopper ring 26 move with the discharge plate in raising and lowering. The structure is shown in the elevated position in Fig. 1. It is shown in the lowered position in Fig. 4. The standard 38 is provided with a key way in which is mounted a key 46, which key also fits within a key-way in the tubular element 36 so as to guide the raising and lowering of the discharge plate 30.

Superposing the tubular portion 36 of the discharge plate is a spring 48 which encircles the standard and superposing this spring is ram mechanism 50 which is slidably supported upon the standard and includes a ram plate 52 which carries a plurality of ram elements 54. These ram elements correspond in size and location to the capsule discharge orifices through the discharge plate 30 and the ram mechanism is provided with a key way 56 adapted to register with the key 46 of the standard when the ram mechanism is swung to the position shown in Fig. 4.

This ram mechanism may be elevated as shown in Fig. 1 and swung around so that the shoulder formed by the counterbore 60 rests upon the key 46 and supports the ram mechanism in the elevated position. When it is swung to the position shown in Fig. 4 bringing its key way 56 in registry with key 46 it may be lowered against the tension of the spring 48 and urged downwardly to cause the individual ram elements 54 to pass through the capsule orifices in the guide plate and into the capsule orifices of the discharge plate which ejects the capsules therefrom as shown in Fig. 4. For this operation to be carried out the orifices of the guide plate and discharge plate must register.

When the guide plate is in the position shown in Fig. 1 the lands between the discharge orifices superpose the discharge orifices 34 of the discharge plate as shown in Figs. 1 and 3 and the capsules are received merely within the discharge orifices of the guide plate. The guide plate is then moved toward the standard to the position shown in Fig. 4 to bring its orifices 32 into registration with orifices 34 of the discharge plate. The capsules then fall downwardly through the orifices in the guide plate and discharge plate to be held by the capsule directing fingers of each orifice of the discharge plate. The guide plate has pins 62 which serve as stops to limit its movement. The pin adjacent the standard is receivable within a slot 63 shown in Fig. 3 in the discharge plate.

Each discharge orifice of the discharge plate has formed as part thereof or as a continuation

thereof capsule directing fingers 66. Four are shown in the form illustrated. Each of these four fingers is formed of very thin flexible sheet metal and shaped as shown so that they converge at their outer ends so as to receive between the four fingers a capsule as illustrated in Fig. 6. These fingers are very flexible. At their extreme outer ends they are shaped to form a portion adapted to enter the space between the flaps 12 of the retainer 10. In Figs. 5 and 6 they are shown as so entering this space.

To accomplish this entrance the container or retainer shell is positioned on the base. The discharge plate is then lowered. The discharge plate may be provided with guide pins 70 adapted to engage corners or portions of the retainer 10 to support it or the retainer 10 may be supported by a portion 72 formed as part of the base as shown in Fig. 1. When the fingers enter the space between the flexible flaps 12 shown in Fig. 6 and the discharge plate continues to move downwardly these flaps tend to ride upwardly on the fingers 66 as shown in Fig. 7. The ram mechanism is then swung about to a position for lowering and as it is lowered to the points shown in Figs. 4 and 7, the capsules 74 are ejected as shown in these figures. Upon raising the ram and discharge mechanism the capsule is grasped by the flaps 12 of the retainer and held securely in position as shown in Fig. 8.

What I claim:

1. A machine of the character described comprising means for supporting a capsule retainer, a capsule discharge plate supported above said retainer and operable to be raised or lowered with respect thereto, said discharge plate provided with a plurality of capsule orifices, each orifice provided with depending capsule directing flexible fingers approaching each other spaced above their outer ends to retain a capsule therebetween and having outer end portions projecting substantially beyond the capsule supporting portions, a capsule guide plate provided with a corresponding plurality of capsule receiving orifices and slidably supported upon the discharge plate for movement to bring its orifices into registration with or out of registration with the orifices of the discharge plate, a hopper ring surmounting the capsule guide plate, ram mechanism swingably supported to be moved to superimpose said guide plate, said ram mechanism provided with individual ram elements corresponding with the discharge orifices of the discharge plate, said ram mechanism supported to be moved to cause the ram elements to enter the discharge orifices.

2. That process of packaging capsules comprising providing a capsule retainer sheet having a capsule seat provided with a swingable flap overhanging the seat, advancing a capsule discharging device carrying a capsule toward said seat and into engagement with said flap, ejecting said capsule from the discharging device and simultaneously urging a portion of the discharging device to swing the flap to uncover the seat to receive the capsule.

3. A machine of the character described comprising a capsule discharge plate provided with a plurality of orifices, each orifice terminating in a plurality of outwardly projecting flexible fingers shaped to approach each other spaced above their outer ends and adapted to support a capsule therebetween, a capsule guide plate provided with a plurality of capsule receiving and discharging orifices, said guide plate supported to be moved into position with its orifices registering with the

orifices of the discharge plate, ram mechanism provided with a plurality of ram elements receivable through the orifices in the guide plate and within the orifices of the discharge plate and supported to be moved into position with the ram elements entering said orifices to exert a pressure on the capsule supported by said fingers to eject said capsules, a hopper ring surmounting the guide plate, and a hopper disposed to discharge into said ring, and means for moving said fingers in an axial direction.

4. That process of depositing a capsule from within a resiliently fingered capsule retaining and depositing device within a retainer having a

resilient capsule retaining wall defining a capsule entrance of less extent than the diameter of the capsule comprising advancing the fingers of said means into the entrance defined by the resilient wall of the retainer and ahead of the capsule, extruding the capsule from between said fingers and simultaneously moving the fingers outwardly against the resilient wall of the retainer spreading said wall sufficiently to permit entrance of the capsule into the retainer, and depositing the capsule thereinto and withdrawing the fingers therefrom.

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