The present invention relates to a capsule or article inserting machine and particularly, although not exclusively, to a machine for inserting capsules or articles containing coloring matter in cartons or packages of oleomargarine.

At the present time, packages of oleomargarine are packed with, say, from 12 to 48 packages to a case and a quantity of capsules of coloring matter are packed in the case to be supplied to the retailer as desired. This has proved unsatisfactory in that oftentimes the purchaser loses the capsules, thus necessitating purchase of others.

The present invention has for an object the provision of means applicable to an oleomargarine packaging machine for inserting a capsule or article of coloring matter in every package or carton of oleomargarine, so that the capsule or article is enclosed with the carton and thus not easily lost and furthermore the capsule or article is made available for use whenever the housewife desires to color the oleomargarine which must be done in the home or other place of use.

Another object of the present invention contemplates the provision of means whereby a supply of capsules or articles may be conveniently maintained adjacent a packaging machine and delivered one by one to the packages as completed in the packaging machine whereby every package may be supplied with at least one capsule or article containing coloring matter.

A further object of the invention is to provide means whereby capsules or articles may be presented in proper position for delivery to cartons or packages.

The above, other, and further objects of the invention will be apparent from the following description, accompanying drawings, and appended claims.

Generally speaking, the invention contemplates mechanism which may be applied to a packaging machine of such character as to carry a plurality of capsules or articles containing coloring matter which may be delivered one by one to the packages as completed in the packaging machine so that every completed package is provided with a capsule or article containing coloring matter.

An exemplification of the apparatus embodying principles of the present invention is illustrated in the accompanying drawings and the views thereof are as follows:

Figure 1 is a fragmental top plan view of an oleomargarine packaging machine showing applied thereto the capsule or article inserting apparatus embodying principles of the present invention.

Figure 2 is a vertical view partially in section of a fragmental portion of a packaging machine and showing certain details of construction of the capsule or article inserting apparatus.

Figure 3 is an enlarged fragmental sectional view of the end of the duct from the supply hopper showing the curved horn for delivering a capsule or article to a package as the same is about to be closed by the packaging machine and showing the manner of advancing a capsule or article from the duct and also a plunger for moving a capsule or article downwardly into a package should perchance the same stop for any reason in the horn.

Figure 4 is an enlarged horizontal sectional view taken substantially in the plane of line IV—IV of Figure 2 and showing certain details of construction of a part of the inserting apparatus.

Figure 5 is a fragmental sectional view of a portion of a filled package or carton showing a capsule or article inserted between two of the end flaps thereof immediately prior to the time that the end flaps are closed by suitable mechanism of the packaging machine.

Figure 6 is a fragmental sectional view through a completed package of oleomargarine showing the coloring capsule or article inserted therein between certain of the end flaps of the package or carton.

The drawings will now be explained.

Figure 1 illustrates a fragmental portion of a packaging machine wherein blocks of oleomargarine or other packagable substance are advanced along a track by any suitable means. A pile of wrappers is sup-
ported on a table 4 for feeding one by one under the individual blocks 1 of the oleomargarine. The operator places a wrapper on the table 4 underneath the block 1 at the end of the track 2 over an opening in the table. A plunger 5 then moves downwardly to fold a portion of the wrapper about the oleomargarine. By suitable mechanism such as the pusher 13 the block or brick is then advanced endwise along a track 6 for enclosure in a carton.

The carton blanks represented generally at A are suitably fed onto a shelf 7 in open or flat position. A hook consisting of a substantially circular member 8 is carried on a reciprocating rod 9, which is reciprocated by any suitable mechanism as a part of the packaging machine. Figure 2 illustrates in dotted lines the outermost position of the hook 8 and in full lines the innermost position of the same. The hook 8 when moved to its outermost or dotted line position of Figure 2 engages the margin of the outermost panel of the carton blank and as the hook is moved to the left as viewed in Figure 2 rolls the blanks into substantially rectangular or box-like form as illustrated in dotted lines in the full line position of the hook 8. There are provided however five panels in the box or carton blank so that when the carton has been rolled into substantially rectangular or box-like form by the hook 8, one panel 10 remains in substantially flat position. By suitable means, not illustrated, the carton folded as illustrated in dotted lines is then lowered to register with the wrapped block of oleomargarine 1 on the track 6, the lowering of the carton bending the panel 10 against the head 11 of another plunger 12 forming a part of the packaging machine into the position as shown in Figure 2. By suitable means, such for instance as by a swinging arm 13, the wrapped block of oleomargarine is pushed endwise into the carton, as so far in the packaging operation the ends have not been closed but remain open. As soon as the wrapped block of oleomargarine is pushed into the carton, means not shown close certain of the end flaps to complete the package. The rod 12 is actuated to move the head 11 thereof to move the panel 10 flatwise against the package.

The capsule or article inserting mechanism embodying principles of the present invention contemplates a hopper 14 which is supported on a duct 15 suitably mounted on the packaging machine. Figure 2 is an opening in the hopper 14. The hopper 14 is substantially conical shape and inverted as to position so that the capsules or articles therein will tend to fall downwardly by gravity.

A bar having concave convex faces and designated at 16 is disposed within the duct 15 with its upper end extending upwardly into the interior of the hopper 14.

Capsules of coloring matter for use with oleomargarine are made generally of elliptical form and it is therefore essential that these be delivered through the duct 15 in a manner to prevent clogging and also in a manner to be readily discharged into a package.

The concave face of the bar 16 cooperating with the duct 15 serves to maintain the capsules in position with the longer axis thereof crosswise of the duct.

A slide 17 surrounds the duct 15 and is provided with upstanding fingers 18 which enter the interior of the hopper 14 and which are maintained in the slide 17 by means of set screws 19 or equivalent fastening means. As the slide 17 is reciprocated, as will be later explained, the fingers 18 tend to agitate the capsules within the hopper 14 and thus mill them so that sooner or later these are delivered to the duct 15 in proper position for discharge through the duct and for removal therefrom to the package. The bar 16 is fastened to the slide 17 and moves with it.

A shelf 20 is disposed below the lower open end of the duct 15 in spaced relation thereto, the space being slightly greater than the minor axis or diameter of the elliptical capsule. The shelf has an opening 20 therein into which the bar 16 enters as the slide is lowered, thus preventing a capsule from clogging the space at the lower end of the duct.

A plunger rod 21 suitably supported in brackets 22 is reciprocable by means of lever mechanism designated generally at 23 from the packaging machine. The plunger 21 carries a head 24 which moves underneath the end of the duct 15 and serves as a pusher for pushing a capsule B from underneath the duct 15 into the horn 25.

In order to prevent discharge of more than one capsule at a time from the duct 15, a leaf spring 26 may be provided which is moved upwardly against the bottommost capsule in the duct 15 by movement of the head 24 in discharge direction, that is in a direction to the right, as viewed in Figure 3, which spring thereupon serves to prevent removal of the lowermost capsule in the duct. The capsule B which has been discharged from the duct 15 is then pushed by the head 24 into the horn 25, whence it drops into the space between an inner end flap designated 27 in Figure 5 and the end flap 28 of the panel to form a part of the carton package. When the head 24 is moved to the left the spring 26 then is freed from underneath the column of capsules in the duct 15, and the bottommost one thereupon drops onto the shelf 20 in position to be pushed by the head 24 on the next reciprocation of the same.
The slide 17 carries a vertically disposed plunger 29, the lower end of which is operable within the horn 25 and the purpose of which is to push a capsule from the horn into the package in the event the capsule is stuck in the horn.

The slide 17 is reciprocated by a link 30 which is pivoted at 31 to the slide and at its other end at 32 to the rod 21. It will thus be seen that when the head 24 is moved to the left, as viewed in Figures 2 and 3, the slide 17 will be lowered and the plunger 29 moved to dotted line position of Figure 3 and when the rod 21 is moved to the right with the head 24 in the full line position of Figure 3 the plunger 29 will be raised to full line position of Figure 3.

The capsule B is dislodged from below the lower end of the duct 15 by the head 24 as the same is moved to the right whereupon it drops into the position C of Figure 5 where it rests on an end flap 33 of what in the drawings appears to be the bottom of the package or carton.

The packaging machine mechanism then becomes effective to move the flaps 28 and 27 of Figure 5 into closed position as illustrated in Figure 6 while the plunger 12 moves the wall 10 flatwise against the package. In this manner the capsule is packed within the package or carton as illustrated in Figure 6 available for use when the package is opened.

Bar 16 is supported in the slide 17 by screws 34 having threaded ends 35 engaging the bar 16 and enlarged heads in suitably disposed apertures in the slide.

The duct 15 is supported in a collar 36 forming a part of the shelf 30 of the inserting mechanism.

The details of the packaging machine per se form no part of the present invention. This invention is directed to the capsule inserting mechanism which has been described and illustrated in connection with a packaging machine.

The slide 17 is aided in its reciprocating movement by a spring 37 which surrounds the duct 15 between the collar 36 and the slide 17 and its tendency is to urge the slide 17 upwardly.

The provision of the fingers 18 serve as agitators to stir the contents of the hopper 14 so that the same will not become massed to prevent individual discharge into the duct 15. Furthermore the provision of the conca-convex bar 16 in cooperation with these fingers serves to position the elliptical capsules crosswise of the duct in proper form for easy passage therethrough and in position to be readily engaged by the head 24 of the pusher mechanism.

The hopper 14 is provided with an inwardly inclined wall 38 thus forming a depression 39 in the rear side of the hopper for connection of the duct to the same.

The capsules have been referred to herein as being elliptical in form with the duct 15 and the bar 16 provided to receive capsules of this shape. There is of course no limitation as to the contour of the capsules but these have been described as elliptical inasmuch as such is the shape which is commercially supplied and which shape has been found practical for use. In the event capsules of other shapes were utilized then of course the bar 16 would be modified accordingly or else eliminated. The duct 15 and the bar 16 do not tightly engage these capsules as of course the capsules vary slightly in size and were there tight engagement then the capsules would not drop downwardly in the duct. However the duct and bar have been shaped so as to maintain the elliptical capsules in position so that the longer axis will be transversely of the direction of movement of the pusher head 24.

The actuation of the pusher head 24 by the pusher rod 21 and the means for closing the side wall 10 and the end flaps of the carton operate in timed relation so that the discharge of a capsule through the horn 25 to the carton will be such that it is immediately prior to the time the end flaps are moved to closed position by the flap closing mechanism of the packaging machine.

The word "capsule" is herein used generically and not by way of limitation and is meant to include any form of container for coloring or other matter desirable for use with the contents of a completed and filled package, carton or the like.

The method of the present invention contemplates the insertion of a capsule in the carton or package just prior to the closing of the end which has been left open for filling the carton or package.

The invention is claimed as follows:
1. In a packaging machine of the type wherein a carton is folded about its contents and wherein an end flap is tucked in position to complete the package, of means for delivering an article interiorly of said package, said means including a hopper, a duct leading therefrom, and means at the delivery end of said duct for receiving an article therefrom and discharging it into a package, and agitating means in said hopper for agitating the articles therein whereby the same may enter said duct properly positioned.
2. In a packaging machine of the type wherein a carton is folded about its contents and wherein an end flap is tucked in position to complete the package, of means for delivering an article interiorly of said package, said means including a hopper, a duct leading therefrom, a shelf underlying the end of the duct, a downturned horn at one end of said shelf, a slide reciprocable on said shelf for...
pushing an article received from said duct into said horn, and a plunger vertically movable within said horn to dislodge an article therefrom and direct the same into a package, said plunger being operatively connected to said slide.

3. In a package machine of the type wherein a carton is rolled from open flat position to a position about its contents and wherein means are included for closing the end flaps to complete the package, of means for delivering an article in front of an end flap as it is being moved to closed position, and means for actuating said delivery means in timed relation with the flap closing means.

4. In a package machine of the type wherein a package is formed from flat open position to a closed position about its contents and wherein means are provided for closing the package, of means for delivering a filled envelope or capsule of edible matter in front of a part of said package as it is being closed, and means for actuating the delivery means in timed relation with the package closing means.

In testimony whereof, we have hereunto subscribed our names at Chicago, Cook County, Illinois.

DANIEL A. FARRELL.
JOHN E. JOHNSON.