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MACHINE FOR INSERTING BOTTLES, ETC., INTO TIGHT FITTING BAGS

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2 Sheets-Sheet 1

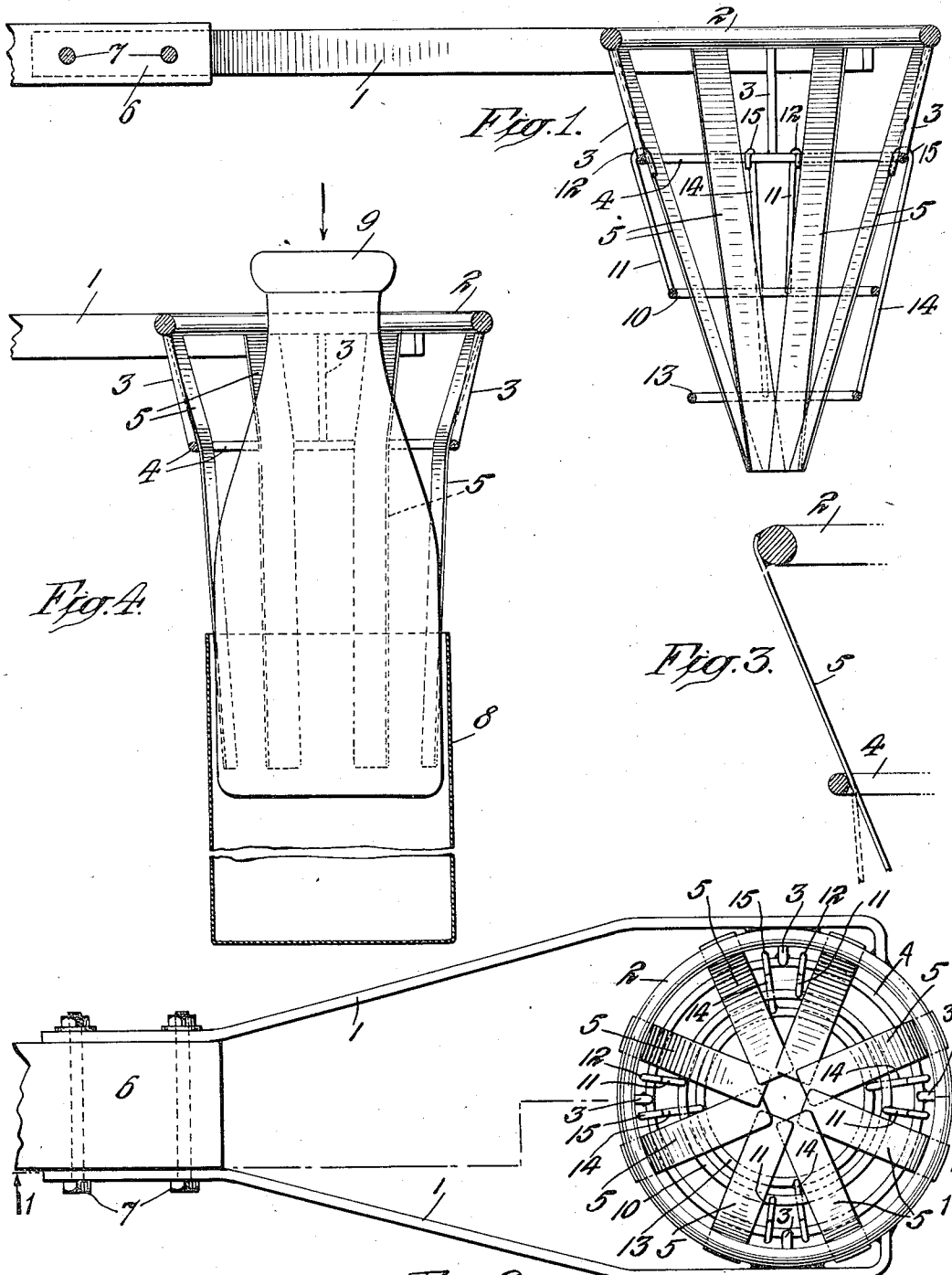


Fig. 2.

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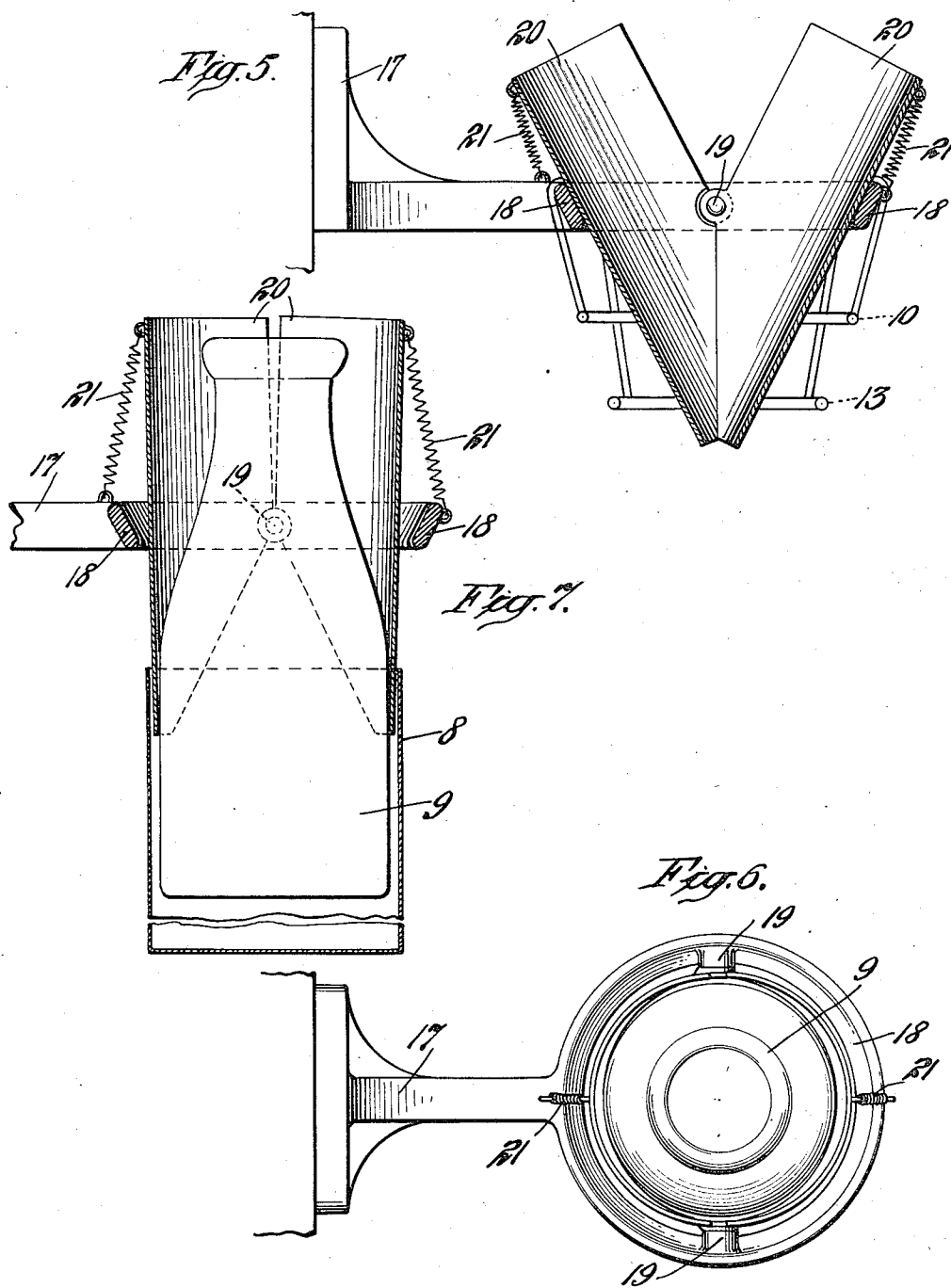
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MACHINE FOR INSERTING BOTTLES, ETC., INTO TIGHT FITTING BAGS

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2 Sheets-Sheet 2



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MACHINE FOR INSERTING BOTTLES, ETC.,
INTO TIGHT FITTING BAGS

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11 Claims. (Cl. 226—18)

This invention relates to bagging machines and has for its object to provide a simple and efficient device for inserting bottles, containers and other articles into tight-fitting bags.

Another object of the invention is to provide a device of this type which may readily be adjusted to handle bottles and other articles of various sizes.

There are numerous situations in which it is desirable to encase bottles and other articles in "skin-tight" covers for the purpose of protecting the contents from contamination as well as enhancing the appearance and saleability of the product. One example of such use is in marketing bottled milk, a sanitary cover of the type referred to enabling dairymen to eliminate the so-called "floor ring" and other streaks of dirt which always collect on milk bottles standing around a dairy or grocery store or in milk wagons before delivery to the consumer.

My invention provides a simple, inexpensive device for inserting bottles and other articles into tight-fitting sanitary bags which enhance the appearance of the product and insure its delivery to the consumer in desired immaculate condition. For purposes of illustration I shall describe the invention as applied to a device for inserting milk bottles into form-fitting paper bags but it will be evident that it is equally well suited for bagging other containers and articles of every description.

In its preferred form my device comprises a funnel-like spreading receptacle which may be mounted on a suitable support with the small end of the funnel toward the floor. A paper bag is placed over the lower end of the funnel and the bottle or other article to be bagged is inserted into the top of the device and dropped or forced down through it so that said article emerges through the bottom of the device encased in the bag.

For adapting the device to bottles, etc. of various sizes I provide a plurality of interchangeable guards the principal function of which is to limit the spread of the funnel in accordance with the size of the article to be bagged. In the case of milk bottles, for example, I may employ three frame members or rings corresponding respectively with the conventional quart, pint and half-pint bottles used by dairies. When bagging half-pint bottles all three rings may be arranged around the funnel, one beneath the other, in the order of descending size. The lowermost ring in such case acts as a stop to the bag and also hugs the half-pint bottle on its way into the bag. When bagging pint bottles the lowermost ring is removed, and in the case of quart bottles only the

uppermost or largest ring is employed, all three rings performing the same function with different sized bottles.

These and other features and advantages of the invention will be described in connection with the accompanying drawings, in which:

Fig. 1 is a vertical sectional view of a machine adapted for bagging bottles of various sizes;

Fig. 2 is a plan view thereof;

Fig. 3 is a fragmentary sectional view illustrating a detail of construction;

Fig. 4 is a vertical sectional view illustrating the use of the machine in bagging quart size bottles;

Fig. 5 is a vertical sectional view illustrating a modification of the invention;

Fig. 6 is a plan view thereof; and

Fig. 7 is a vertical sectional view illustrating the use of this machine.

The device shown in Figs. 1 to 4 comprises a bifurcated support 1 carrying a circular end frame or ring 2. Secured to said frame 2, as by means of spaced depending rods 3, is a smaller limiting and guiding ring 4 which in this particular case has an internal diameter slightly greater than the diameter of a quart size milk bottle and somewhat less than the diameter of the frame or support 2. The frame 2 also carries a plurality of depending flexible fingers 5 which abut against the inner periphery of the ring 4 and are flexed to come together at their lower ends so as to form a cone-shaped basket or funnel as shown in Fig. 1. In the form illustrated the parts are made of metal and all joints are made by welding as illustrated in Figs. 1 to 3, although any other suitable construction may be employed.

The device constructed as described above is secured to a support 6, as by means of bolts 7, with the apex of the spring-fingered funnel toward the floor, and is then ready for bagging quart milk bottles. A paper bag 8 of suitable size is placed over the apex of the flexible fingers 5 and the bottle 9 is inserted into the top of the funnel and slid down through it as illustrated in Fig. 4 until the bottle emerges through the bottom of the device encased in the bag. In operation, the pressure of the bottle on the flexible fingers 5 automatically holds the bag open to receive the bottle which thus descends by gravity and is instantly conveyed into the bag.

For bagging pint bottles I provide a smaller ring 10 carrying spaced rods 11 having their free ends bent over to form hooks 12 for suspending same from the upper ring 4 as shown in Fig. 1; while for half-pint bottles I provide a still smaller

bottom ring 13 carrying elongated rods 14 and hooks 15 for suspending same from ring 4 as shown in Fig. 1. In bagging half-pint bottles all the rings are employed, one beneath the other in the order of descending size, the bottom ring 13 in such case acting as a stop to the bag and also serving to hug the bottle on its way into the bag. It will be noted that the rings 4, 10 and 13 are all disposed coaxially below the frame or support 2.

In bagging pint bottles the bottom ring 13 is removed and the intermediate ring 10 serves as a stop for the bag and guide for the bottle. For dairy purposes I have found it convenient to make the top frame 2 five inches in diameter while the respective diameters of the other rings may be: ring 4 (quart size), 4 $\frac{3}{8}$ inches; ring 10 (pint size), 3 $\frac{1}{4}$ inches; and ring 13 (half-pint size) 2 $\frac{5}{8}$ inches.

The modified bagging machine of Figs. 5 to 7 comprises a support or bracket 17 having an annular frame 18 in which are pivoted, as by means of pivots 19, a pair of cooperating semi-cylindrical sections 20 the adjacent edges of which are shaped at the bottom to form a cone or funnel when the parts are canted to the open position shown in Fig. 5. The parts are normally held in this open position by coil springs 21 which are secured at one end to the frame 18 and at the other end to the upper edges of the respective sections 20. The bag 8 is placed over the apex of the funnel and the bottle 9 is inserted through the top as in the device previously described. When the descending bottle passes the center of the funnel the sections open until they assume the cylindrical form shown in Fig. 7, allowing the bottle to pass into the bag. This device is particularly well suited for handling bottles of one size, the device preferably being made in different sizes to accommodate any number of different bottles. However, it may be adjusted to different sizes if desired by employing detachable rings such as 10 and 13 as shown in dotted lines in Fig. 5, the respective rings serving to limit the opening movement of sections 20 in accordance with the size of the bottle or other article to be bagged.

Among other advantages of my bagging machine may be mentioned its simplicity of construction and operation and the ease with which it may be adapted to handle articles of different sizes. In the dairy business the nearest approach to my method of protection are the conventional paper and metal caps and seals which are expensive to manufacture and attach and at best only protect the mouth of the bottle from contamination. My device, on the other hand, makes it easy to provide all bottles with a tight-fitting, all-over hood which affords complete protection against light, animals, floor rings, etc., and also reduces the danger of breakage. Although I have illustrated my invention in its application to a machine for bagging bottles of circular cross-section it will be evident that by changing the contour of the funnel it may be made to handle articles of rectangular or irregular shape in any situation where a tight-fitting bag is preferable to an open wrap. Machines of this type may also be constructed in various combinations or gangs for quantity production. These and various other changes in construction and methods of operation may be made without departing from the scope and spirit of the invention as defined by the appended claims.

The invention claimed is:

1. A bagging machine comprising a funnel-

like receptacle adapted to receive the article to be bagged and having spring tensioned side portions adapted to spread apart under the pressure of said article to discharge same into a bag at the small end of the funnel, and a plurality of detachable frame members of different widths mounted about the periphery of said receptacle to limit the spread of said side portions.

2. A bagging machine comprising a plurality of flexible fingers arranged in the form of a funnel, said fingers being fixed at the wide part of the funnel for the reception of the article to be bagged and being otherwise free to spread apart under the pressure of said article to discharge same into a bag at the small end of the funnel, a frame disposed about the periphery of said funnel between the ends thereof to limit the spread of said fingers, and a second smaller frame detachably mounted about the periphery of said funnel adjacent the small end thereof to further limit the spread of said fingers.

3. In a machine for inserting bottles into tight-fitting bags, an annular frame wide enough to admit the bottle to be bagged, a plurality of flexible fingers carried by said frame and flexed to come together at their outer ends in the form of a funnel, said fingers being free to spread apart under the pressure of said bottle to discharge same into a bag at the small end of the funnel, and plural means for limiting the spread of said fingers to different amounts to accommodate different sized bottles.

4. In a machine for inserting bottles into tight-fitting bags, an annular frame wide enough to admit the bottle to be bagged, a plurality of flexible fingers carried by said frame and flexed to come together at their outer ends in the form of a funnel, said fingers being free to spread apart under the pressure of said bottle to discharge same into a bag at the small end of the funnel, a ring carried by said frame and encircling said funnel to limit the spread of said fingers, and a plurality of additional rings of different diameters detachably connected to said first mentioned ring in the order of descending size to further limit the spread of said fingers.

5. In a machine for inserting bottles into tight-fitting bags, a support, a pair of cooperating semi-cylindrical sections pivoted on said support and having a common pivotal axis, said sections being shaped to form a funnel when canted to open position on one side of said pivot, and means for yieldingly holding said sections in open position to receive a bottle for insertion into a bag at the small end of the funnel.

6. In a machine for inserting bottles into tight-fitting bags, a support, a pair of cooperating semi-cylindrical sections pivoted on said support, said sections being shaped to form a funnel when canted to open position on one side of said pivot, means for yieldingly biasing the lower ends of said members into position for insertion into a bag and to receive a bottle for insertion into said bag, and a rigid frame depending from said support and encircling said lower ends to limit the spread of said members.

7. In a machine for inserting bottles into tight-fitting bags, an annular frame wide enough to admit the bottle to be bagged, a plurality of members carried by said frame and having their lower ends biased to come together yieldingly in the form of a funnel, said members being free to spread apart under the pressure of said bottle to discharge the same into a bag at the small end of the funnel, and rigid means encircling the

lower part of said members for limiting the outward spread of said members.

5 8. In a machine for inserting bottles into tight-fitting bags, a support, a plurality of members mounted upon said support in funnel shaped relation, having their ends adjacent to the small end of the funnel biased toward the axis thereof, and limiting and guiding rings disposed coaxially below said support and serving to limit definitely
10 the outward movement of said members and thereby to guide said bottle definitely through said members into position to enter said bag; also serving as a stop to said bag and to insure a definitely formed outline for the guidance of said
15 bottle into said bag, the latter being held definitely by said members in axial arrangement therewith.

9. In a machine for inserting bottles into tight-fitting bags, an annular support, a plurality of
20 members mounted upon said support in funnel shaped relation, having their ends adjacent the small end of the funnel biased toward the axis thereof, and a limiting and guiding ring having a diameter less than that of said support dis-
25 posed coaxially below said support and serving to limit definitely the outward movement of said member and thereby to guide said bottle definitely

through said members into position to enter said bag.

10. In a machine for inserting bottles into tight-fitting bags, an annular support, a plurality of members mounted upon said support in funnel
5 shaped relation, having their ends adjacent the small end of the funnel biased toward the axis thereof, and limiting and guiding rings disposed coaxially below said support and serving to limit definitely the outward movement of said mem-
10 bers so as to prevent tearing of the bag and to guide said bottle definitely through said members into position to enter said bag.

11. In a machine for inserting bottles into tight-fitting bags, an annular support, a plu-
15 rality of flexible fingers mounted upon said support in funnel shaped relation having their ends adjacent the small end of the funnel biased toward the axis thereof, and a limiting and guid-
20 ing ring having a diameter less than that of said support disposed coaxially below said support and serving to limit definitely the outward movement of said fingers so as to prevent tearing of the
25 bag and to guide said bottle definitely through said fingers into position to enter said bag.

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