

[54] APPARATUS FOR PRODUCING A
PACKAGED ASSORTMENT OF DIFFERENT
SWEETS

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221/92-95, 112, 119, 175

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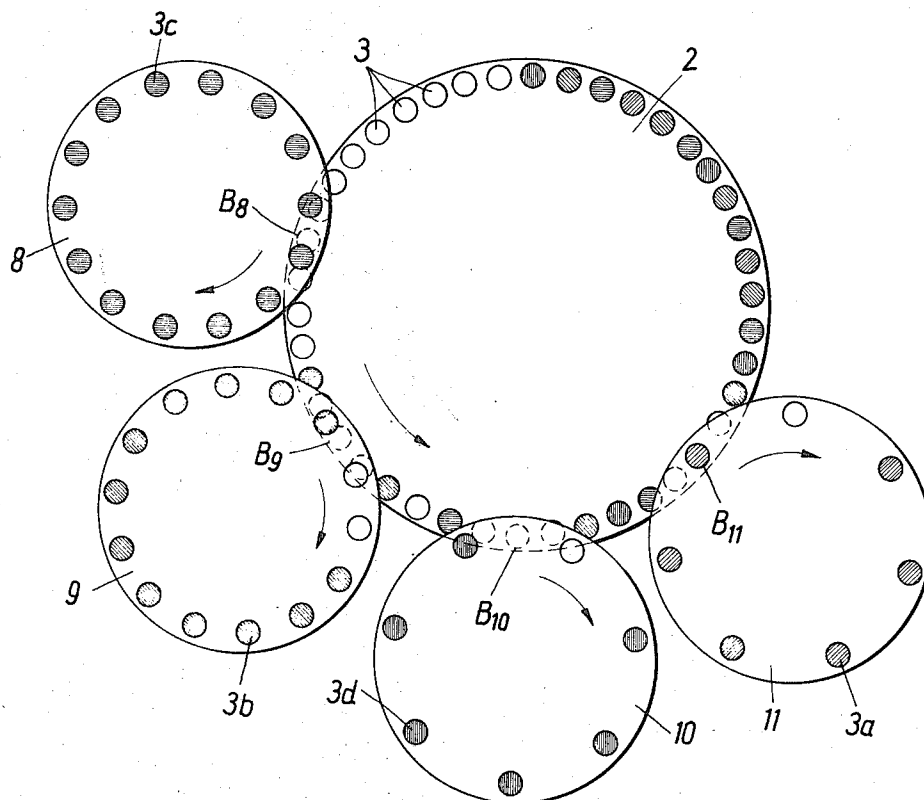
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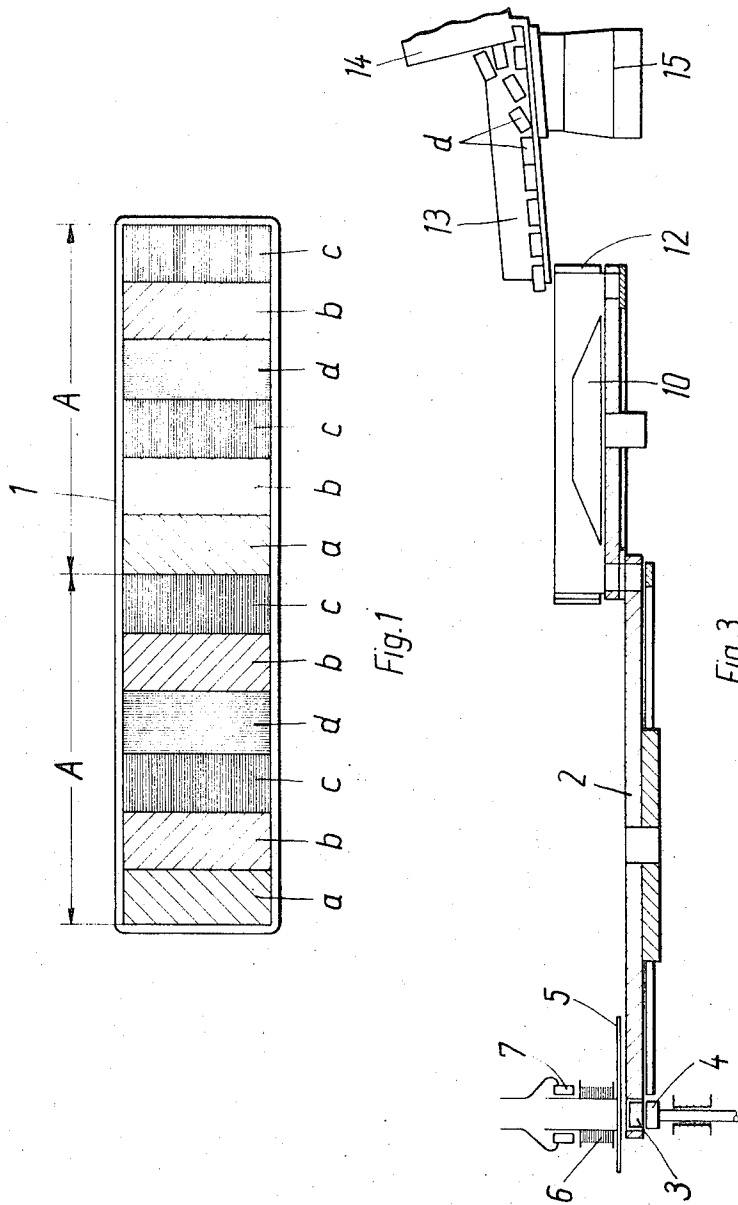
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[57] ABSTRACT

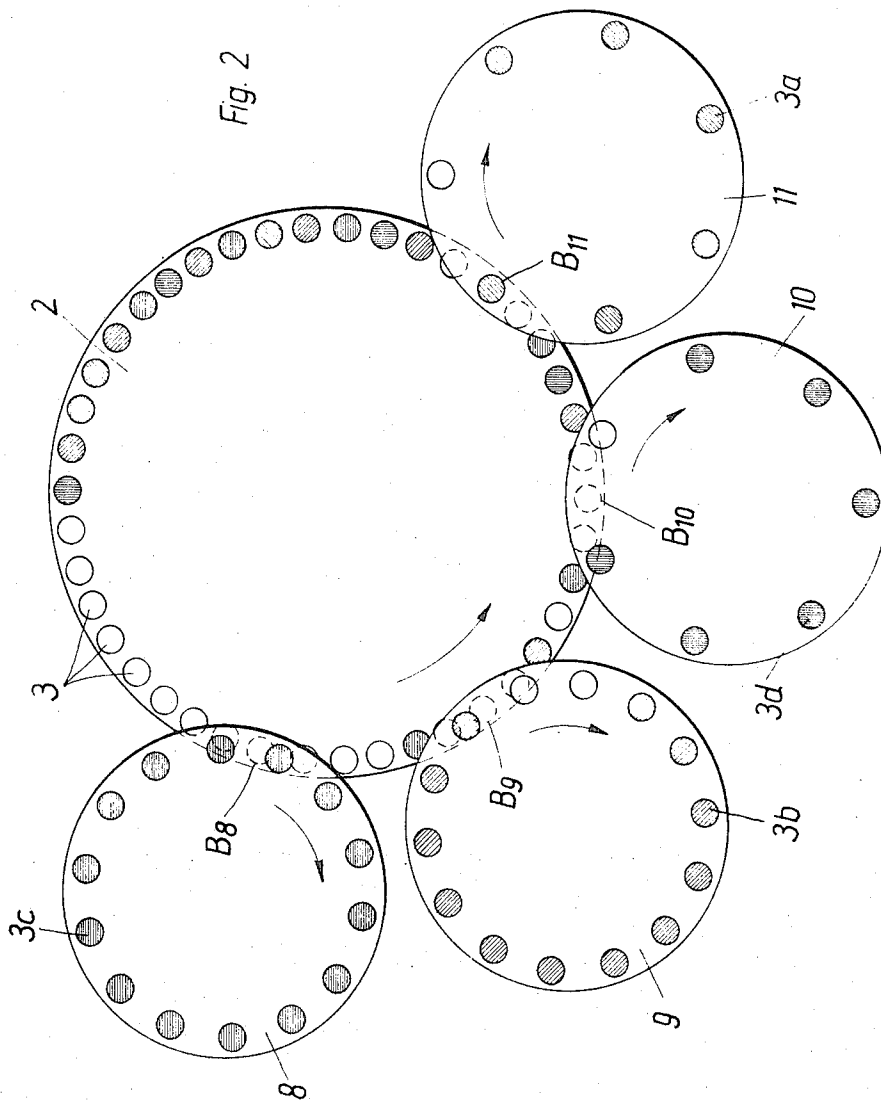
An apparatus for the production of a packaged assortment of sweets, in particular of different sweets, which comprises a feeding ram, and a wrapping mechanism including the feeding ram. An intermittently movable main feeder is provided which contains consecutively disposed pockets for the reception of the sweets and for delivering the same to the feeding ram of the wrapping mechanism. A plurality of supplementary, intermittently movable feeders are arranged which have pockets adapted to be fed from storage means, in which for achieving a predetermined sequence of the different kinds of sweet in the packaged assortment the main feeder is positioned adjacent to the supplementary feeders. The number and relative spacing of the pockets of both the main and supplementary feeders and their frequency of intermittent movement are so synchronized, that each supplementary feeder fills only a predetermined associated pocket or pockets in the main feeder.

6 Claims, 3 Drawing Figures





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APPARATUS FOR PRODUCING A PACKAGED ASSORTMENT OF DIFFERENT SWEETS

The present invention relates to an apparatus for producing a packaged assortment, of the type known as a rod package, which contains a predetermined number of different kinds of sweets packed in the same package in the form of a rod.

Wrapping machines for sweets use in known manner a feeding ram, which transmits the sweets to be wrapped jointly with the surrounding wrapping material through a brush shaft into a gripper, which passes the already partly wrapped sweet along folding members, which complete the wrapping. In order to feed the sweets to the feeding ram feeders, by example, in form of an intermittently rotating plate are known, which are equipped at their periphery with receiving pockets, which are adjusted as to their configuration to the particular sweet shape. From a storage container the plate is fed by means of a vibrating channel or the like with sweets such, that the latter fill up the still empty receiving pockets in the plate and are brought individually to the feeding ram of the packing device.

Such packing devices are not suitable for obtaining a predetermined mixing ratio in the total packing, if a variety of types of sweets are applied. Often a demixture occurs on the feeding plate of the packing machine upon feeding of a plurality of types of sweets, so that in the total packing once small or less sweets of a particular type are contained and it could even occur, respectively, that one type is not present at all in some packings. The aim, to produce a collective packing, in which the individual types of sweets are contained in a predetermined mixture ratio and a predetermined succession, respectively, could not be obtained with the known machines or apparatus.

It is one object of the present invention to provide an apparatus for producing a package assortment of sweets in which the drawbacks of the known machines are avoided.

It is another object of the present invention to provide an apparatus for producing a package assortment of different sweets, wherein the formation of a total packing of individual sweets to be wrapped is made possible, whereby the sweets are contained in the collecting package in a previously set mixing ratio and predetermined succession in the package.

It is still another object of the present invention to provide an apparatus for producing a package assortment of sweets wherein additional feeders fed from a particular sweets storage supply a sweet feeder feeding the ram of the packing device, which additional feeders are likewise equipped with receiving pockets and are intermittently moved, whereby the number and division of the receiving pockets in all feeders as well as their feeding speeds are adjusted to each other in such manner, that each preset feeder feeds only the receiving pocket or pockets of the feeder coordinated thereto, which supplies to their feeding ram of the pocket device with sweets.

Preferably the main feeder which supplies the feeding ram of the wrapping mechanism may be a pan feeder formed around its periphery with a plurality of consecutive pockets, and the supplementary feeders formed by similar pan feeders disposed about the circumference of the main feeder pan in such a way that the path of their pockets overlaps the path of the pocket

ets of the main feeder pan and a sweet transfer point is formed between the main feeder pan and each supplementary feeder pan where for the purpose of transfer the respective pockets move into exact register.

The main feeder and the associated supplementary feeders may rotate intermittently at the same angular speed and the angular pitch of the pockets around the peripheries of the feeder be a multiple of the angular pitch of the pockets in the main feeder. The actual pitch of the pockets of the feeder depends upon the sequence of the sweets in the packaged assortment that is to be produced. For example, if the sweet from a particular supplementary feeder is to occupy each third or sixth position in the completed package, then the pitch of the pockets in that feeder must be three times or six times of the pockets in the main feeder.

The size of the completed packaged assortment depends upon the number of sets of different kinds of sweets it contains, the number of pockets in the main feeder being a multiple of the number in one set of sweets. The spacing of the sweet transfer points of the supplementary feeder is equal to the number of sweets contained in a set of sweets multiplied by the spacing of the pockets in the main feeder.

The number of supplementary feeders is determined by the composition of a set of sweets. The several supplementary feeders may, for the purpose of varying the composition of the sets of sweets be exchangeable for other feeder pans having differently pitched pockets. On the other hand, the same feeder pans may be retained and some of their pockets not intended to participate in the feeding of sweets, either masked or filled. Each of the feeder pans may be provided with its own supply conveyor for sweets from an appropriate storage bin.

With these and other objects in view, which will become apparent in the following detailed description, the present invention which is shown by example only, will be clearly understood in connection with the accompanying drawings, in which

FIG. 1 is a schematic representation of a packaged assortment of different kinds of sweets produced by an apparatus according to the present invention;

FIG. 2 is a schematic plan view of a main feeder and four associated supplementary feeders of an apparatus according to the present invention; and

FIG. 3 is a vertical section through the main feeder and one of the supplementary feeders of the apparatus shown in FIG. 1.

Referring now to the drawings, FIG. 1 is an example of a package containing an assortment of sweets. This type of package is sometimes referred to as a rod package and contains in a common enveloping wrapper 1 an assortment of individually wrapped sweets of kinds *a*, *b*, *c*, *d*. Different numbers of confections *a* to *d* are present but they are arranged in recurring sets. Sweet *a* is followed by a sweet *b*, which is followed by a sweet *c*, which is followed by a sweet *d*. The next sweet *b* which is followed by another sweet *c*. The six sweets make up a complete set A. The single rod package shown contains two such sets A, each comprising the six sweets *a*, *b*, *c*, *d*, *b*, *c*, in that order, so that there are two sweets of type *b* and two sweets of kind *c*, but only one sweet of kinds *a* and *d* in each set.

The number of sets A contained in a single rod may be varied and the order of the individual sweets as well as the numbers of a particular kind of sweets in each set

can also be changed by effecting appropriate changes in the apparatus that will be hereinafter described.

With reference to FIGS. 2 and 3, the apparatus comprises a main feeder pan 2, which is formed around its periphery with a plurality of pockets 3, each for the reception of a sweet that is to be wrapped. According to the shape of the sweet, these pockets may be round, polygonal or oval. In the illustrated example, the main feeder pan contains 42 such pockets around its periphery and can therefore accommodate seven sets A of sweets. The pitch of the pockets expressed in angular degrees is therefore three hundred and sixty divided by fortytwo. The pan 2 is rotatable intermittently anticlockwise in the arrowed direction in consecutive steps, the sweets which are received in the bare unwrapped state being conveyed in the pockets 3 over a lifting ram 4 which rises when the pan is stationary and from below lifts the sweet from the pocket 3, together with a wrapper 5 placed over the sweet, through a folding shaft or forming brush 6 to grippers 7 which accept the sweet and convey it past folding elements which complete the wrapping of the sweet. The sweets in predetermined numbers are then transferred to another part of the apparatus at which they are stacked in the form of a rod and together packed in a common wrapping envelope 1.

Supplementary feeders pans, 8, 9, 10 and 11 which are likewise formed with pockets 3c, 3b, 3d, and 3a, respectively, are positioned around the periphery of the main feeder pan 2 as shown. Each of the supplementary feeder pans 8 to 11 is provided with an upright rim 12. The sweets *a*, *b*, or *d* are supplied from a storage bin 14 down a vibratory chute 13 is shaken by a vibrator 15.

The main feeder pan 2 is driven by an intermittent drive (not shown), preferably a Geneva stop. This rotates the pan 2 through an angle equal to 1/42 of its full circumference driving each intermittent movement. Chains and spur wheels, (not shown) transmit the drive to the supplementary feeder pans 8 to 11, which rotate in intermittent steps at the same angular speed. The supplementary feeder pans pockets are so placed about the peripheries of the pans that their paths overlap the path of the pockets of the main feeder pan and that at a point of transfer B_8 of a sweet a pocket 3c will be in exact register with a pocket 3 in the main feeder pan 2. The same applies to the other sweet transfer points B_9 , B_{10} and B_{11} . The transfer points B_8 to B_{11} , in accordance with the number of sweets in a set A are spaced apart a distance equal to six times the pitch of the pockets in the main feeder pan 2. Consequently the angular pitch of the pockets 3c and 3b in the two feeder pans 8 and 9 is three times the pitch of the pockets in the main feeder pan 2, because two sweets of each of the kinds *b* and *c* are contained in a set. On the other hand, in the case of the feeder pans 10 and 11, the angular pitch of the pockets is six times the angular pitch of the pockets in the main feeder pan 2, because each of the kinds *a* and *d* is needed only once in each set of six.

All the pans 2 and 8 to 11 are exchangeable for other containing pockets of other shapes differently pitched. Supplementary feeder pans for other types of sweet may be associated with the main pan and, by suitably choosing the pan disposition, the angular pitch of the pockets and the number of pans, a considerable variety of assortments can be assembled for packaging. Particular pockets in the feeder pans may be masked or filled in order to accommodate different variations in the

arrangement of kinds of sweet in the completed package without exchanging the pan. Preferably all the pans are arranged to rotate synchronously at the same frequency of intermittent movement. At the sweet transfer points B the sweets fall from the supplementary feeder pan into a pocket of the main feeder pan underneath. This ensures that the sequence of the different sweets *a* to *d* will be exactly maintained as prescribed by the sequence in a set in the packaged assortment. The transfer of sweets takes place only when the pans are stationary. If necessary plungers or suckers could be provided at the transfer points B, in such manner that a positive transfer takes place. Moreover, instead of making use of supplementary and main feeder pans, chains fitted with pocket receptacles could also be used. The sweets can be sorted in any sequence irrespectively of the number of varieties present and the percentage of each variety in the package assortment can be repeated any number of times.

Although the illustrated example uses main and supplementary pans, the possibility of using chains or other conveyors should be specially noted. Furthermore, it is possible to dispose the supplementary feeder pans below the edge of the main pan and to convey the sweets from the pockets in the supplementary feeder pans from below by a lifting ram to the main feeder pan. It is also unnecessary to provide the main pan with fortytwo pockets. Other numbers of pockets variously pitched may be used for preparing packaged assortments, in which the sweets are combined in different ways.

While we have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only and not in a limiting sense.

We claim:

1. An apparatus for the production of a rod packing containing a predetermined order of succession and mixture ratio of sweets of different types, by a wrapping device individually wrapping the sweets and thereafter stacking up the sweets into a rod package comprising
 - a intermittent switching main feeder,
 - a feeding ram means for wrapping sweets in sequence and conveying same to a stacking device and being fed by said intermittent switching main feeder,
 - said main feeder having on its periphery receiving pockets disposed in a uniform spacing, said pockets for receiving sweets therein,
 - a plurality of supplementary feeders, one for each type of sweet, and having receiving pockets on its peripheries, disposed in uniform spacings for receiving said sweets, at least one of said supplementary feeders having a different number of receiving pockets than any of the other supplementary feeders
 - said supplementary feeders and said main feeder rotatably disposed such that the path of movement of said pockets of said main feeder overlapping the path of movement of said pockets of said supplementary feeders,
 - a common intermittent switching means for driving said main feeder and said supplementary feeders, the number of said receiving pockets of said main feeder being an integral multiple of the number of said receiving pockets of each of said supplementary feeders,

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said common intermittent switching means for driving said main feeder and said supplementary feeders such that the number of revolutions of each of said supplementary feeders corresponds to an integral multiple, including one, of the number of revolutions of said main feeder,

all of said receiving pockets of said main feeder and of said supplementary feeders being divided in such manner relative to one another such that after each intermittent switching step only each one receiving pocket of one of said supplementary feeders comes in alignment with one of said receiving pockets of said main feeder corresponding to the predetermined order of succession of the different types of sweets, for the transfer of a sweet from said one receiving pocket of said one of said supplementary feeders to said one of said receiving pockets of said main feeder, and

said supplementary feeders are exchangeably mounted to be exchanged for other supplementary feeders having a different uniform spacing of receiving pockets.

2. The apparatus, as set forth in claim 1, wherein said main feeder and said supplementary feeders comprise feeder pans, said supplementary feeder pans are disposed about the circumference of said main feeder pan, and said pockets of each feeder pan are disposed around the periphery of each of said feeder pans.

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3. The apparatus as set forth in claim 1, wherein a preset number of sweets constitutes a sweets succession, and

the number of said pockets in said main feeder is an integral multiple of the number of sweets of said sweets succession.

4. The apparatus as set forth in claim 2, wherein said common intermittent switching means for driving with an equal number of revolutions said main feeder pan and said supplementary feeder pans, the number of said pockets provided on each of said supplementary feeder pans is equal with the number of said pockets of said main feeder pan multiplied with the number of sweets contained in sweets succession of a predetermined type and divided by the total number of sweets contained in said sweets succession.

5. The apparatus, as set forth in claim 2, wherein the multiplication product of the number of revolutions of each of said supplementary feeder pans with the number of pockets of said supplementary feeder pan, divided by the number of said sweets contained in a sweet succession of the type coordinated to said supplementary feeder pan is constant.

6. The apparatus, as set forth in claim 2, which includes means for covering predetermined pockets of said supplementary feeder pans.

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