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CHEESE DIE TRANSFER CHAIN FOR MACHINES FOR PACKAGING
MELTED CHEESE INTO DIFFERENT PRESENTATION PACKAGES
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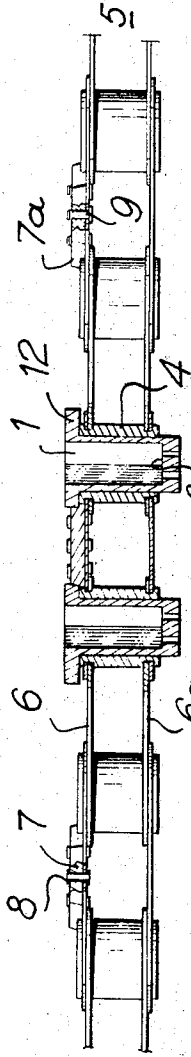


Fig. 1

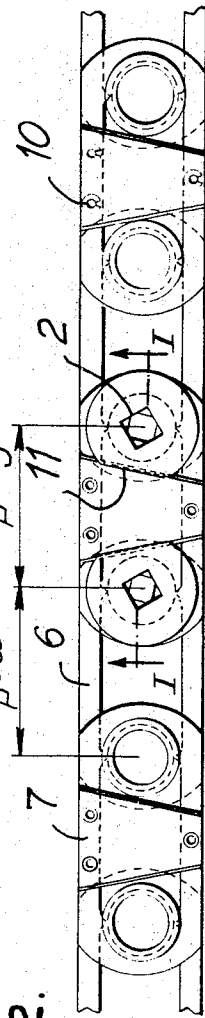


Fig. 2

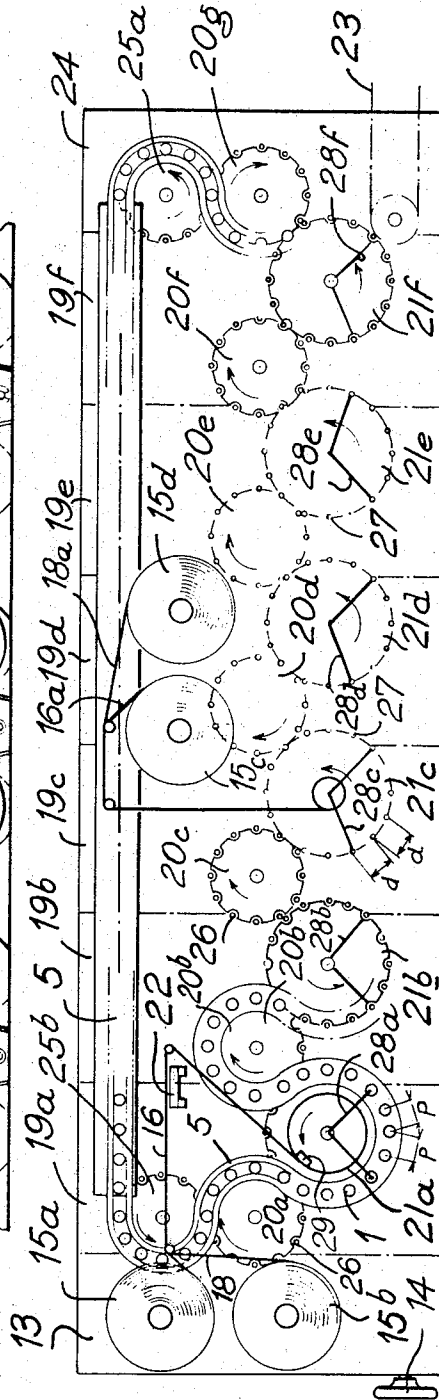


Fig. 3

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CHEESE DIE TRANSFER CHAIN FOR MACHINES FOR PACKAGING MELTED CHEESE INTO DIFFERENT PRESENTATION PACKAGES**Robert Henri Jules Fievet, Paris, France, assignor to Fromageries Bel-La Vache Qui Rit, Paris, France**

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4 Claims. (Cl. 31—46)

Known machines for packaging melted cheese into different package shapes such as slices, triangular portions and cocktail cubes are equipped with rotary transfer and working barrels provided on their perimeter with semi-circular indents corresponding to equi-distant transfer and working stations and into which penetrate the stems of dies on which the packaging operations are performed.

This form of embodiment does not ensure that the dies are invariably presented in the desired position beneath the operative means associated with the working stations of each work barrel.

In order to overcome this drawback, the present invention has for its object to provide in a machine of the type hereinbefore specified a die transfer endless chain characterized in that the dies are mounted in a determinate position at the hinge points of the links of said endless chain, the pitch of which is equal to the peripheral distance between the work barrel and transfer barrel stations, said chain wrapping itself successively around the various barrels and alone ensuring conveyance of the dies from the station for discharging the end product to the station for beginning the packaging. This in turn ensures that the dies occupy a precise position at each work barrel station.

The description which follows with reference to the accompanying non-limitative exemplary drawings will give a clear understanding of how the invention can be carried into practice.

In the drawings:

FIG. 1 shows in side elevation with partial cutaway and in partial section through the line I—I of FIG. 2, a die transfer chain according to the invention;

FIG. 2 is a plan view of the chain section shown in FIG. 1; and

FIG. 3 is a diagrammatic plan view of a machine according to the invention for packaging melted cheese into cocktail cubes.

Referring first to FIGS. 1 and 2 for a non-limitative exemplary embodiment of a transfer chain for packaging into cocktail cubes, the dies 1 shown thereon are hollow elements embodying internal recesses 2 of square section the sides of which are identical to those of the cocktail cubes to be formed. These square-section recesses open at the base of the dies into openings of octagonal section that provide internal bearing faces 3 for the blank which is to form the base of the cube. The dies are mounted inside removable bushings 4 which form pivots for an endless chain 5 having hollow upper and lower links 6 and 6a respectively, and whose pitch p is equal to the peripheral distance d between the work and transfer barrel stations 27 of the machine it is to equip. On both upper hollow links 6 are mounted indexing devices 7 secured thereto by means of hollow rivets 8, a number thereof, designated 7a in FIG. 1, being removable and fixed in position by means of pins 9 with removable circlips 10.

The indexing devices 7 and 7a are trapezium-shaped in plan view, and each one is fixed between two consecutive dies 1. Each die has a supporting flange 12 of circular form with a truncation 11 facing the adjacent indexing device. The truncation is formed as a chord of the flange so that the two truncations of the dies bear against the

non-parallel faces of the trapezium-shaped indexing devices, the obliquity of said trapeziums being so determined that, at each work station of one of the work barrels of the machine, each die 1 is presented in the same position with respect to the operative means 28a, 28b, 28c, 28d, 28e or 28f with which that work station is equipped.

A constructional form as hereinbefore disclosed permits a transition from one form of packaging to another requiring a different number of work and transfer barrels, either by increasing or reducing the number of links in the die transfer chain, or by eliminating one out of every two dies, the dies then no longer having the shape of those of FIGS. 1 and 2 but a shape suited to the new form of packaging, yet continuing to be correctly centered in the removable bushings 4 by any convenient means.

Reference to FIG. 3 shows a machine for packaging melted cheese into cocktail cubes, utilizing a die transfer chain of the type shown in FIGS. 1 and 2. This machine comprises an initial unit 13 which supports the main driving motor and the manual control 14. This unit 13 is equipped with a spool 15a of aluminum strip 16 which has been previously punched to match the pitch of the blanks to be cut out and which is equipped with a narrow tear-away strip along its middle, said aluminum strip bearing a series of imprints on its inner surface and being covered on its outer surface with a thermowelding lacquer. A second spool 15b supported by the unit 13 carries aluminum strip 18 which has been previously punched to match the pitch of the blanks to be cut out and which has its inner surface covered with a lacquered coating of the type used in cheese-making.

Subsequent to the initial unit 13, the machine comprises a series of similar basic units 19a through 19f, each being a transfer and working station and equipped with a transfer barrel 20a through 20f and a work barrel 21a through 21f. These work and transfer barrels are provided on their periphery and at each of their stations with a semi-circular indent 26. The chain 5 runs successively around the barrels 20a, 21a, 20b, 21b, 20c, 21c, 20d, 21d, 20e, 21e, 20f and 21f, the successive bushings 4 of the chain being received in the successive indents of the barrels. The various barrels are driven at the same peripheral speed, the chain can run uniformly and the dies 1 are carried at uniform speed with the barrels and their operative means, thereby permitting the exact performing of the operations of each work barrel. At basic unit 19a are performed the operations of welding the strips 16 and 18 together by means of a device 22, cutting the blanks out of the single duplex strip obtained thereby by means of a device 29, and performing these blanks in the dies by means of a cam-controlled plunger system 28a. For greater simplicity, these various devices, which are well known, as for example, shown in British Pat. 1,011,361, fall outside the scope of the invention, and will not be described herein. The basic unit 19b is used to proportion and pour the melted cheese into the preformed mould. At basic unit 19c the heat of the melted cheese is used to weld together two strips 16a and 18a, similar to the strips 16 and 18 referred to precedingly and supplied from two spools 15c and 15d supported on the basic unit 19d. These strips are also cut up on the work barrel 21c, and the blanks thus obtained, which will form the package cover, are positioned by any convenient means on the melted cheese poured into the blank moulded on basic unit 19b.

At the basic units 19d and 19e respectively are performed the operations of folding the moulded blank down onto the cover. At basic unit 19f the finished cocktail cubes are extracted from the dies and deposited on a conveyor belt 23 which takes them to the concentration point, for visual checking, weighing, and packaging in boxes. Freed of its cocktail cubes, the die transfer chain runs over a transfer barrel 20g carried by the last machine ele-

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ment 24 which transfers it to a chain barrel 25a carried by said element 24, whence the chain returns to a further chain barrel 25b carried by basic unit 19a, from which the chain is then taken up by the entry transfer barrel 20a of the machine.

In this specific embodiment the transfer chain carries the dies from the station for discharging the end product to the entry station of the machine, without the need to resort to an endless chain as utilized for known machines.

What I claim is:

1. A cheese die transfer endless chain for machines for packaging melted cheese into various shapes, said machine having a plurality of rotatable barrels each with equally spaced indents in the periphery thereof, the chain passing at the periphery of the barrels to position dies thereof in the indents, said chain comprising a plurality of links, a plurality of pivot means connecting the links together, said pivot means being equally spaced along the chain at distances equal to the spacing between the indents of the barrels, means mounted at said pivot means for supporting dies thereat adapted to cooperate with working means disposed at least at some of the indents of the rotatable barrels, and indexing means for positioning the dies on said pivot means such that the chain passes itself successively around the various barrels and independently insures conveyance of said dies from a station for discharging the end product to a station for the beginning of the packaging.

2. A die transfer chain according to claim 1, wherein the dies have supporting flanges provided with truncations, said pivot means including bushings in which the dies are removably received such that their flanges project beyond the bushings, said indexing means comprising trapezium-shaped devices fixed to every second link in the chain and

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having non-parallel sides which engage the truncations of two successive dies.

3. A die transfer chain according to claim 2, usable for packaging melted cheese into cocktail cubes, wherein each die consists of a hollow portion having an internal recess of square cross-section the sides of which are equal to one of the sides of the cocktail cubes, said recess opening at the base of the die into an aperture thereof of octagonal cross-section which provides internal supporting faces for the blank which is to form the bottom of the cocktail cube.

4. A die transfer chain according to claim 1 wherein the indents in the barrels are semi-circular, said supporting flanges of the dies being of circular form with said truncations thereof extending along a chord.

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