METHOD AND APPARATUS FOR APPLYING FOIL
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This invention relates to a process and mechanism for applying foil to chocolates or the like.

The invention is described, by way of example, with reference to preferred methods of applying foil to chocolate coins, having reference to the accompanying drawings, in which:

Figs. 1, 2, 3, 4 show the coin in the four principal phases of the application of the foil;

Fig. 5 shows a schematic vertical section of the mechanism at the beginning of the first phase of the application of the foil;

Fig. 6 is a plan view of Fig. 5, in which all parts which were above the upper face of the article 1 have been taken off;

Fig. 7 is a plan view similar to Fig. 6 corresponding to a successive phase of the application of the foil;

Figs. 8 is a schematic vertical section of the mechanism similar to Fig. 5, in a successive phase of the application of the foil;

Fig. 9 is a schematic vertical section in a successive phase of the application of the foil;

Fig. 10 is a plan view of Fig. 9; and

Figs. 11, 12, 13, 14 are schematic vertical sections in successive phases of the application of the foil.

The method of the invention consists in folding to U-shape the sheet of wrapping material 2 (Fig. 1) which may be, for example, a tin or silver foil, over and under the article 1 which may be, for example, in the form of a disc or coin.

The part 30, which forms the back of the U is kept distant from the corresponding border of the article 1 and the upper strip 31 and lower strip 32 are left for a sufficient length to effect the trimming around the edges. Successively the upper foil is bent to a cone-shape down to the base-plane of article 1, see Fig. 2, and all part 33 of the upper and lower foil projecting beyond the borders 34, which are required for refolding against the edge of the coin, is cut away. Successively, Fig. 3, the edges of the upper foil are pressed down on the base plane, giving the upper part of the foil the form of a hat. By this pressing the edges shrink inwards to a certain extent in respect of the lower foil, see Fig. 3, and lastly, Fig. 4, the edges 34 are folded upwards against the lateral faces and the article covered with foil is compressed, smoothed and embossed in the usual manner required for chocolate coins; on the edge of the coin the foil is folded over in layers partly double and partly triple, Fig. 4. In the above mentioned figures, as in all the following ones, the thickness of the foil has been greatly exaggerated, for the sake of clarity. In reality the overlaps are almost invisible and the coin acquires an elegant and pleasing appearance.

In Fig. 4 one sees that the external facing 51 of the coin's border is formed by the external facing of the lower foil and that part 52 of the upper foil which is folded over with the internal facing outwards is completely covered, as is required so as to prevent its being visible.

It is obvious and expressly understood that, to economize foil, the upper flap can be kept shorter and narrower than above said, so that it will be cut only on part of the contour; all combinations are naturally possible within the scope of the invention.

The mechanism is described with reference to Figures from 5 to 14 through the various phases of the application of the foil, always with reference to a particular way of embodiment, by way of example only. Figures 5 and 6 show the first phase. The chocolate disc 1 is stacked in the stacker 4 and rests on the surface 5 while upon it are resting the other discs which will have to be covered with foil successively. Behind the disc, but not in contact with it, is provided a transporter 3. In front of the disc is the lower portion 2 of the ribbon of foil, unwound by the rollers 10 from the spool 9 and kept in position by the guide-plate 12. Behind the foil is the counter-transporter 6, between the lower and upper stationary guides 7 and 8, which act as a stationary folder.

The transporter 3 has in its forward part a cavity formed by a stationary side 35 and a mobile side 36. The bottom of the cavity is formed by an inclined side 37.

In this phase the transporter is fully back and the disc 1 is in the cavity without being in contact with its sides, so that it can fall into it freely, because the mobile side 36, fulcrumed at the position 38 on an appendix of the transporter 3, in this position is kept open owing to the action of cam 39 on the appendix 40 of the mobile side.

The application of the foil to the disc is started by advancing the transporter 3 to contact disc 1 with its stationary side 35 and the oblique end 37, centering it in the V which is formed by these parts. Then appendix 40, coming forward, frees itself from cam 39 and liberates the flank 26 which, by the action of the spring 41, comes in on the disc holding it tight in the cavity of the transporter. Subsequently disc 1 advances, held by the transporter, while the other stacked discs held in the stacker rest on the upper face of the transporter itself. The frontal elements 42 and 43 of the stationary and mobile sides 35 and 36 which protrude forward from the chocolate disc come into contact with the foil and press it against the counter-transporter 6, Fig. 7. At this position the strip of foil 2 is cut off by the scissors 11 and is kept tight between the transporter and the counter-transporter, which thence advance jointly between the sides 7 and 8 of the stationary folder, right past the folder itself, carrying the disc 1 onto the anvil 15, under the die 13. The end of this phase is shown in Fig. 8 in which disc 1 is visible between the anvil 15 and the die 13, while part 30 of the foil bent to U shape overlaps it sufficiently to allow for the trimming of the edges 34, and at the same time the upper and lower strips 31 and 32 protrude backwards sufficiently, as already shown in the description of the process. The phase of the process shown in Fig. 1 has thus been obtained.

At this point, Fig. 9, die 13 descends and presses elastically, loaded by the light spring 47, on the disc 1, holding it steady on the anvil 15, which does not move because it is counterbalanced by spring 22, which opposes a greater load than that of spring 47, and with this holds the foil. The transporter 3 then recedes in the direction of the arrow 48 and the counter-transporter 6 first moves in the direction of the arrow 44, then in the direction of arrow 45 so as to avoid the obstacle to its return caused by the sheet of foil and the article held between the anvil and the die, then it also recedes in the direction of arrow 46, see Fig. 10. Lastly, Fig. 11, having passed by the obstacle, comes forward again on the operating level to gain the initial position shown in Figs. 5 and 6.
The phases of centering, trimming and embossing of the coin now take place as follows: Firstly, Fig. 11, the cutting die 14 descends and with its cutting edge 16, operating against the cutting edge 18 of the counter-die 19, cut the remnant of the foil 33 which falls down; at this point the die 13 lifts up, see Fig. 12, leaving the die 1 free, and the die 14 continues to descend until the centering die 49 comes to surround the disc, firstly centering it with its lower slightly chamfered cone-shaped edge and then pressing down the folds 34 onto the upper facing of the counter-die 19, so that at the end of this phase the coin has taken on the appearance shown in Fig. 3.

Thence, see Fig. 13, the body 50 of the die comes down and after having compressed the spring 47 presses directly on the die 13 which in turn presses on the disc 1, and overcoming the resistance of spring 22 causes the anvil to descend within the counter-die 19 until it comes to rest with its appendix 23 on the off-set 24 of the pressure limiter 25, the reaction of which is limited by the power of the spring 26. In the further slight descent of the die the chocolate disc becomes subjected to compression with all the power of the heavy spring 26, and the phases of embossing and compression are thus accomplished. The foiling of the coin, which has acquired the appearance shown in Fig. 4, is thus completed. The die 13 and the matrix 14 ascend to the highest position and the anvil 15 also comes up, pushed by the spring 22, until it comes to a level with the counter-matrix 19, see Fig. 14, and is then made to fall by the rear edge 29 of the counter-transporter 6 when this comes forward with another die to be foiled. In its upward travel the anvil 15 is accompanied by the expeller 28, which up till now had remained down and detached, and which ensures that the anvil does go up and that the coin be extracted.

In the various figures the reference numeral 27 represents the base of the machine, to which are attached either rigidly or through suitable guides, the stationary or the mobile parts.

Having thus described the invention in detail, it will be obvious to those skilled in the art, after having read this specification, that changes and modifications can be made without departing from the scope of the invention, and it is my intention in the following claims to cover such changes and modifications. What I feel to be important herein is:

That the article to be foiled be chocolate coins or other similar objects;

That the wrapping material be of any suitable kind;

That the arrangements for feeding-in the articles or the strips of foil be of any known type;

That the cutters, dies, embossers, guides etc. described, be made of a greater or lesser number of parts connected with one-another and arranged so as to obtain the same operations and shapes of the active parts;

That the systems of springs and connection with the base be substituted by other systems which obtain similar functional conditions;

That the phases which for clarity of description have been described as being successive, be in reality partially contemporaneous and overlapped:

That the strip of foil be smaller than that corresponding to Figs. 1, 2, 3, 4, for economy of foil, and that consequently the overappings in the frontal, rear and lateral areas of the folded edges be less than those shown in the drawings.

What I claim is:

1. Process for applying foil to chocolate coins and other similar articles, in which a foil of enveloping material is folded to U-shape around the article to be wrapped up, characterized in that the arms of the U are trimmed at a certain distance around the article, that portion of one of the arms of the U which is projecting beyond the article being pushed against the other portion having the shape of a conical envelope and subsequently compressed to hat-shape, whereupon those parts of the wrapping material which project from the periphery of the article are folded against the peripheral contour of the article, the article being then, if necessary, embossed to form reliefs.

2. Mechanism for applying foil to chocolate coins and other similar articles characterized in that it comprises a folding channel in which a sheet of wrapping material is folded to U shape around an article, shearing, folding and compressing devices located beyond said folding channel and forming an operative unity, and a reciprocating conveyor, cooperating with feeding devices for the articles and the sheet of enveloping material to push the article, together with the sheet delivered in front of the folding channel, through said channel and then move them into the operating area of the devices.

3. Process according to claim 1, characterized in that the back side of the U is kept at a predetermined distance from the lateral contour of the article.

4. Mechanism according to claim 2, characterized by a shearing device for the arms of the U around the article, comprising a shearing die cooperating with cutting edges and with supports for the article, to cone-like bend the upper arm of the U against the lower arm and to cut off the material of the arms at a certain distance from the article.

5. Mechanism according to claim 2, characterized by a centering pressing element which centers the article upon an anvil and compresses the upper part of the sheet to hat-shape against the lower part.

6. Mechanism according to claim 5, characterized by a punch cooperating with a counter-die, an anvil and compression limiting elements and which refolds the hat brims against the lateral contour of the article and presses the whole within the die.

7. Mechanism according to claim 2, characterized in that said conveyor comprises a pushing element cooperating with an accompanying element to push the article and the sheet of enveloping material through said folding channel and to move them into the operating area of the shearing, folding and compressing devices.

8. Mechanism according to claim 7, characterized in that the pushing element is provided with a notch intended to receive the article to be conveyed.

9. Mechanism according to claim 8, characterized in that the notch of the pushing element is formed by the arms of pincers, which keep back the sheet, during the folding operation of the U-shaped sheet around the article, at a predetermined distance from said article.

10. Mechanism according to claim 8, characterized in that an arm of the pincers is capable of being closed by an elastic element and the opening operation is performed by a stationary cam against which moves an extension of the arm capable of being opened.

References Cited in the file of this patent

UNITED STATES PATENTS

545,397 Ward ------------------ Aug. 27, 1895
1,650,223 Martinez --------------- Nov. 22, 1927
1,689,018 Froidevaux ................ Oct. 23, 1928
2,297,432 Kaseh et al. ................. Sept. 29, 1942
2,302,846 Farmer ----------------- Nov. 24, 1942
2,341,492 Tushill .................... Feb. 8, 1944