

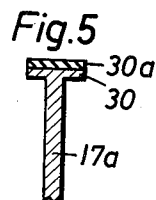
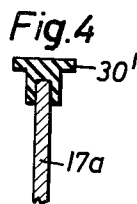
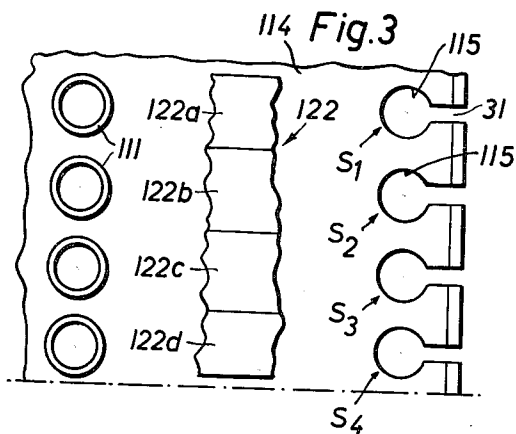
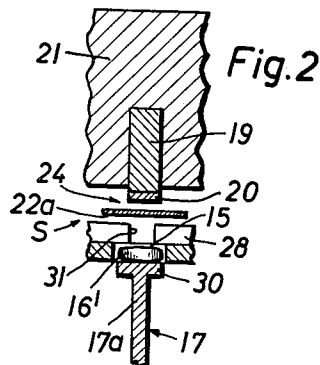
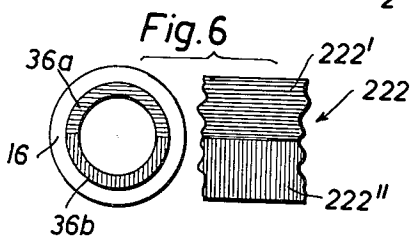
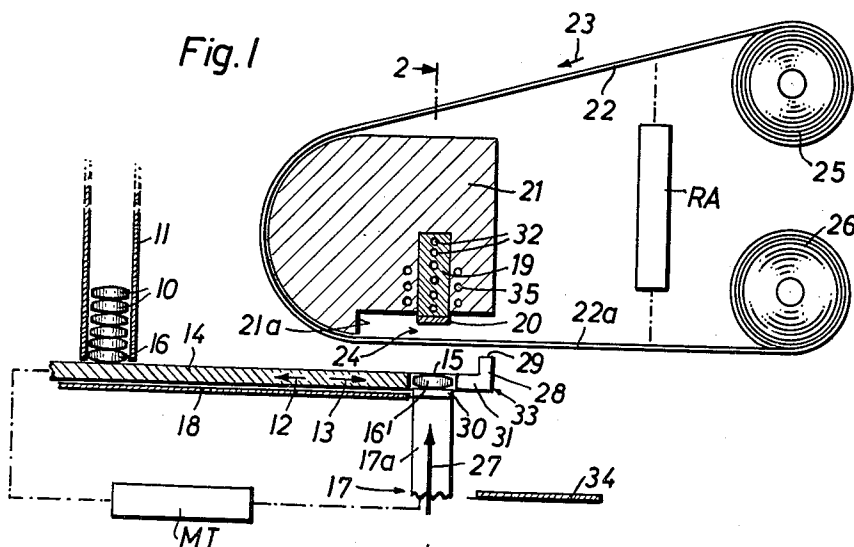
May 21, 1963

W. PECHMANN
METHOD AND APPARATUS FOR THE APPLICATION OF COLORING
MATTER TO TABLETS, SUCH AS DRAGEES

3,090,296

Filed Dec. 19, 1960

3 Sheets-Sheet 1

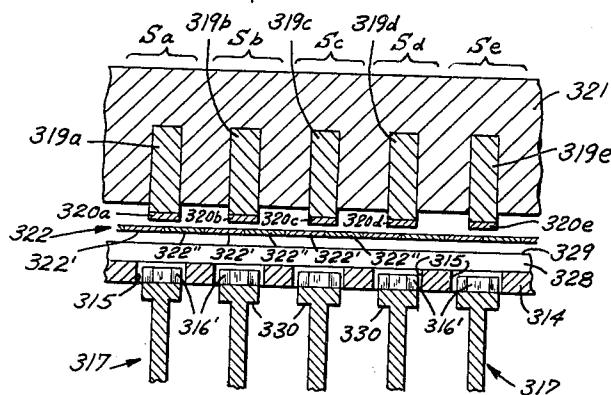


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METHOD
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963 W. PECHMANN 3,09
METHOD AND APPARATUS FOR THE APPLICATION OF COLORING
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9, 1960

3,090,296

3 Sheets-Sheet 2



A diagram of a circular structure, possibly a cross-section of a lens or a similar optical component. The circle contains several horizontal lines on the left and right sides, and a vertical column of small circles in the center. Labels with leader lines point to specific features: '435' points to the top right horizontal line, '435'' points to the top right small circle, '435' points to the bottom left small circle, and '416' points to the right side of the central vertical column.

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3 Sheets-Sheet 3

FIG. 12

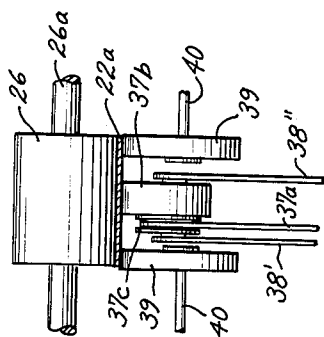
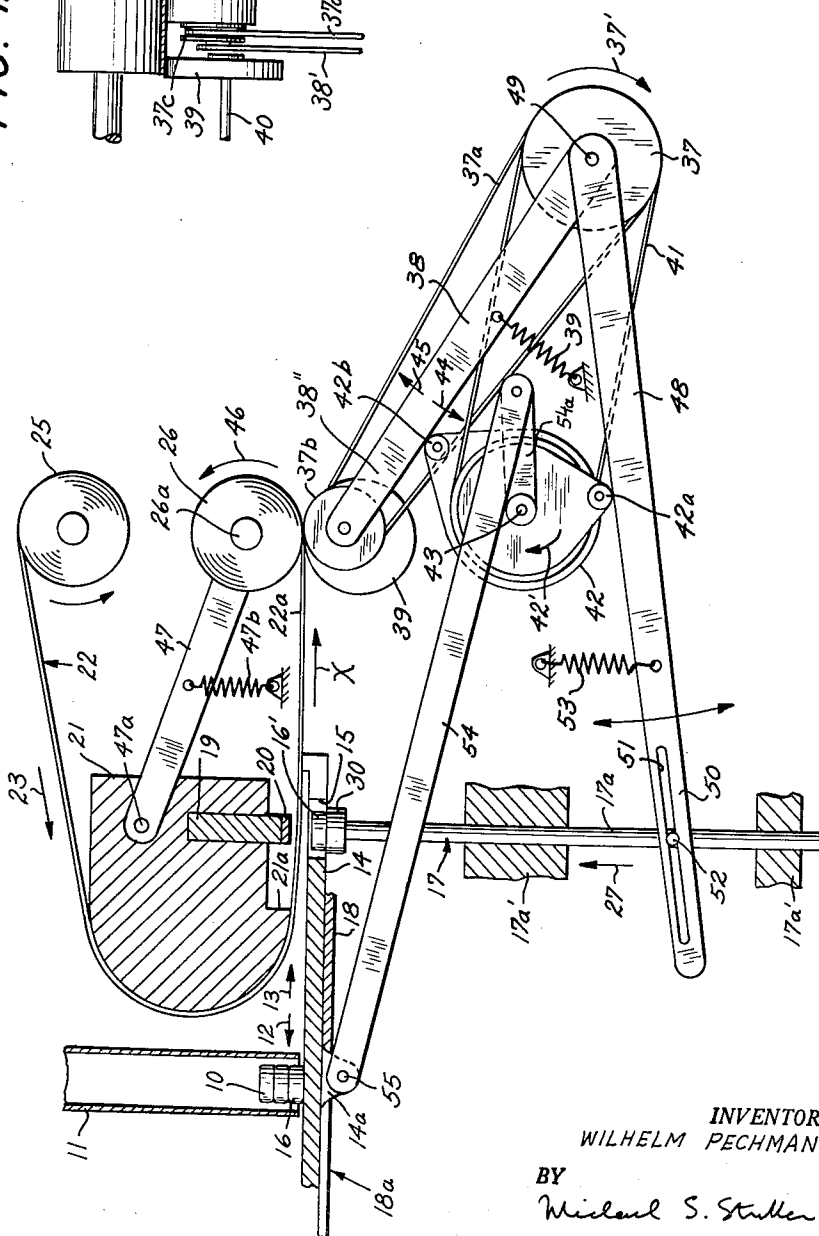


FIG. 11



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3,090,296

METHOD AND APPARATUS FOR THE APPLICATION OF COLORING MATTER TO TABLETS, SUCH AS DRAGEES

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3 Claims. (Cl. 101—44)

The present invention relates to a method and to an apparatus for the application of coloring matter to tablets, particularly to dragees and the like.

It is already known to coat selected portions of dragees and like tablets with coloring matter. However, the apparatus presently utilized for such purposes are too costly, too complicated, and cannot insure satisfactory application of coloring matter in rapid sequence without impairing the clarity of impressions and without damaging the dragees. As a rule, the dragees are coated with liquid coloring matter which is contained in a central receptacle.

An important object of the present invention is to provide a method for the application of coloring matter to dragees and like tablets according to which very clear impressions may be produced in quick succession and according to which the tablets may be simultaneously or sequentially coated with differently colored matter.

Another object of the invention is to provide a method of the just outlined characteristics according to which the tablets may be provided with coloring matter in very quick succession without being subjected to lasting deformation during the coating step.

A further object of the invention is to provide a method of simultaneously coating two or more tablets with single- or multi-colored matter.

A concomitant object of the invention is to provide a method of the above outlined characteristics according to which the coats of coloring matter applied to successive tablets are of the same clarity and according to which very satisfactory impressions can be obtained even if the nature of coloring matter is such that it is properly transferrable only under the combined action of heat and pressure.

A concomitant object of the invention is to provide a very simple and reliable apparatus for the practice of my method which is constructed and assembled in such a way that the tablets are automatically advanced and retained during the entire coating operation and which may be readily adapted for the application of differently colored matter and/or for the application of differently configured impressions.

Still another object of my invention is to provide an apparatus of the above outlined characteristics which requires little or no attention when in actual use, wherein all component parts are readily accessible for inspection, replacement or repair, and which may be rapidly adapted for application of coloring matter to differently configured and/or dimensioned tablets.

An additional object of the invention is to provide an apparatus of the above described type which is of very compact design because the coloring matter is not in liquid state.

With the above objects in view, the invention resides in the provision of a method of coloring tablets, such as dragees and the like, which comprises the steps of placing a tablet in juxtaposition with a deformable carrier of transferrable coloring matter, and pressing a selected portion of the carrier against the tablet so that this selected portion transmits coloring matter to the tablet. If the coloring matter is transferrable onto the tablet solely

2

under the action of pressure, the method may be carried out at room temperatures. However, if the nature of the coloring matter is such that it is more readily transferrable by application of heat and pressure, the selected portion or portions of the carrier are heated at the point or points of contact with the successive tablets to such an extent as to insure accurate reproduction of the desired impression.

For carrying out the method on a commercial scale, the tablets are successively moved to a color transfer station, and the carrier of coloring matter is intermittently advanced in such a way that it moves into compressive contact with successive tablets during the intervals between its intermittent advances which insures that the tablets come into contact with such portions of the carrier whereon the layer of coloring matter is still intact and which also insures that the impressions applied to the tablets remain sharp because there is no relative movement between the tablets and the carrier when the latter is in contact with the tablets.

The improved apparatus for the practice of my method comprises a ribbon-like carrier of coloring matter, impression producing means located at one side of the carrier, and means for successively moving tablets into contact with the carrier so that the carrier is pressed against the impression producing means and that the latter causes the transfer of coloring matter from selected portion or portions of the carrier to the successive tablets. It is preferred to arrange the carrier in a horizontal plane and to intermittently advance the carrier by a suitable mechanism, e.g. such as the mechanism which advances the ribbon in a typewriter. The impression producing means assumes the shape of a type whose raised portion or portions come into contact with the upper side of the carrier, and the tablet moving means assumes the shape of a ram whose head is vertically aligned with the type to move the tablets into compressive contact with the carrier by simultaneously pressing the carrier against the raised portion or portions of the type.

The improved apparatus further comprises means for feeding tablets to the head of the vertically reciprocable ram, preferably in such a way that the feeding of tablets and the strokes of the ram are brought about in a predetermined rhythm. The feeding means comprises one or more sources in the form of magazines, and a reciprocable transporting or conveying plate which is formed with aperture means and which is movable between a first position in which the aperture means is located below the magazine to receive a tablet and a second position in which the aperture means is located above the ram so that the latter may perform an upward stroke to move the tablet into contact with the carrier.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following detailed description of certain specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a schematic partly elevational and partly sectional view of an apparatus embodying one form of the invention;

FIG. 2 is a fragmentary transverse vertical section taken along the line 2—2 of FIG. 1, as seen in the direction of arrows;

FIG. 3 is a fragmentary top plan view of a modified conveying plate;

FIG. 4 is a vertical section through a modified ram;

FIG. 5 is a vertical section through a different ram;

FIG. 6 illustrates a tablet which is provided with a

multi-colored impression and a ribbon for the production of such impressions;

FIG. 7 is a partly elevational and partly sectional view of a slightly modified apparatus;

FIG. 8 is a fragmentary section through an apparatus which comprises five transversely aligned color transfer stations;

FIG. 9 is a greatly enlarged vertical section through a composite support for a series of impression producing elements;

FIG. 10 is a top plan view of a tablet-like dragee which has been provided with coloring matter by the impression producing elements of FIG. 9;

FIG. 11 is a partly elevational and partly sectional view of a different apparatus wherein the ram, the conveying plate and the ribbon are moved by a single mechanism; and

FIG. 12 is a fragmentary detail view of the mechanism as seen in the direction of the arrow X in FIG. 11.

Referring now in greater detail to the drawings, and first to FIG. 1, there is shown an apparatus for consecutively applying coloring matter to tablets, such as the dragees 10 which are stacked in a suitable source herein shown as a vertical magazine 11. The magazine has an open lower end so that the lowermost tablet 16 rests on the upper side of a horizontal transporting means in the form of a conveying plate 14 which is alternately reciprocable to the left (arrow 12) and to the right (arrow 13) by a motion transmitting mechanism MT of any known design. The plate 14 is formed with aperture means in the form of a preferably circular cutout 15 which is shiftable in a horizontal plane between a color transfer station S (see FIG. 2) and the lower end of the magazine 11 so that the lowermost tablet 16 may descend into the cutout 15 and is transferred to the station S to assume the position 16' in which it is in juxtaposition with the horizontally extending lower portion or run 22a of a deformable ribbon-like color carrier 22. When the plate 14 assumes its right-hand end position of FIG. 1, the cutout 15 is located above the upper end or head 30 of a vertically reciprocable tablet moving means or ram 17 which is adapted to be moved by the mechanism MT in and counter to the direction indicated by the arrow 27. The stem 17a of the ram 17 is of rectangular cross-sectional contour and is connected with the motion transmitting mechanism MT which reciprocates the ram in predetermined rhythm with the horizontal movements of the plate 14.

The plate 14 is slidable along the upper side of a horizontal guide panel 18 which extends all the way to the ram 17 and whose function is to prevent the tablets received in the cutout 15 from dropping through this cutout before they reach the ram 17.

Adjacent to the upper side of the lower run 22a of the ribbon 22, there is provided an impression producing type 20 which is carried by a supporting means 19. In accordance with one embodiment of my invention, the type 20 consists of an at least slightly elastic material. The supporting means 19 is embedded in a deflecting block 21 which serves as a means for reversing the ribbon 22, the latter moving in the direction of the arrow 23 from a payout reel 25 to a takeup reel 26. As shown in FIG. 1, the underside of the deflecting block 21 is provided with a flat recess 21a so that the type 20 is slightly spaced from and defines a gap 24 with the lower run 22a. In other words, when the horizontal portion or run 22a of the ribbon 22 is not deflected by the tablet 16' under the action of the ram 17, the ribbon is out of contact with the type 20. It will be readily understood that the deflecting block 21 may be replaced by a suitable roller which is shown in FIG. 7.

The improved apparatus is operated as follows:

It is assumed that the tablet 16' is already located above and is supported on the head 30 of the ram 17 when the latter is still in the position of FIGS. 1 and 2. In the

next step, the ram 17 is moved in the direction of the arrow 27 and presses the upper face of the tablet 16' against the underside of the ribbon portion 22a by simultaneously deflecting this ribbon portion into compressive contact with the fixed type 20. The height of the gap 24 is then reduced to zero, and the compressive force of the ram 17 is sufficient to cause a transfer of coloring matter from that portion of the ribbon 22 which is in contact with the raised design on the underside of the type 20. While moving in the direction of the arrow 27, the head 30 of the ram 17 passes through the cutout 15 without in any way interfering with horizontal movements of the plate 14 in the direction of the arrow 12 because the plate is provided with an open connecting slot 31 (see also FIG. 3) which is aligned with the direction (arrows 12, 13) in which the plate is reciprocated and whose width is sufficient to permit the passage of the stem 17a. The provision of the slot 31 renders it possible to increase the output of the apparatus because the plate 14 is free to move to the left, as viewed in FIG. 1, and to receive in its cutout 15 the next tablet 16 while the head 30 of the ram 17 is still in its uppermost position in which it presses the tablet 16' against the underside of the ribbon portion 22a. The ram then descends before the plate 14 returns to the position of FIG. 1 so that its head 30 is ready to support the next tablet 16 and to lift this tablet toward the ribbon portion 22a.

The improved apparatus also comprises a suitable ribbon advancing mechanism RA which may be of any known design. For example, the mechanism RA may be similar to that utilized in typewriters so as to intermittently advance the ribbon 22 in the direction of the arrow 23 through distances which equal or approach the width of the raised portion on the type 20 so that the type comes into contact with new portions of the ribbon during each upward stroke of the ram 17. This insures that the type 20 forms a clearcut colored design on the tablets because it comes into contact with such portions of the ribbon whereon the layer of coloring matter is still intact.

The right-hand end portion 28 of the plate 14 assumes the shape of an upturned projection or lug and serves as a means for separating the tablets from the underside of the ribbon portion 22a in the event that the tablets adhere to the ribbon after the ram 17 is already caused to descend to its position of FIG. 1. The horizontal upper face 29 of the projection 28 is located at such a distance from the type 20 that the plate 14 can move in the direction of the arrow 12 even if the head 30 still presses a tablet against the underside of the ribbon portion 22a. In other words, the distance between the raised portion or portions at the underside of the type 20 and the face 29 is greater than the combined thickness of a tablet, of the ribbon 22 and of the head 30, it being assumed that the type is non-elastic. Of course, if the type is elastic, the distance between the face 29 and the raised portion of the type in the latter's non-compressed condition may be reduced to an extent corresponding to the difference between the height of the type in unstressed and compressed condition. By placing the face 29 at such a distance from the type 20, the plate 14 is free to move to the left (arrow 12) even when the tablet 16' is still in contact with the ribbon portion 22a because the face 29 will pass beneath the head 30 and because the slot 31 will receive the stem 17a during the initial stage of the leftward movement of the plate 14.

In the event that the tablet 16' adheres to the underside of the ribbon portion 22a after the head 30 returns to its lower end position, the right-hand end face 33 of the projection 28 will act as a separator or stripper because the height of the gap between the face 29 and the ribbon portion 22a in the latter's non-deflected position is less than the height of a tablet. It will be readily understood that there may even develop a slight downward deflection of the ribbon portion 22a under the weight of the adhering tablet 16', particularly if the ribbon is not subjected to

5

a substantial tensioning force. Therefore, the gap between the ribbon portion 22a and the face 29 will be even less than shown in FIGS. 1 and 2.

The end face 33 may also act as a stripper if the tablet 16' adheres to the head 30 of the ram 17 after the latter returns to its lower end position. As the plate 14 returns in a direction to the right (arrow 13), the end face 33 pushes the tablet 16' off the head 30 while a new tablet 16 is moved to the transfer station S. The tablets which are already provided with colored matter are thereupon collected on a conveyor 34, and it is often preferred to provide suitable chutes, not shown, which guide the tablets during their descent toward the conveyor 34.

As is shown in FIG. 3, the plate 14 of FIGS. 1 and 2 which is assumed to have a single aperture means 15 may be replaced by a much wider plate 114 which is formed with a series of aperture means 115 and which cooperates with a plurality of magazines 111 so that it may simultaneously transport tablets to a battery of rams 17 shown in FIG. 8. In such instances, the apparatus comprises a series of ribbons 22 which are disposed in parallel vertical planes and whose spacing equals the spacing between the adjacent aperture means 115. Alternately, the series of ribbons 22 may be replaced by a much wider ribbon 122 which is of considerable advantage because a single ribbon advancing mechanism RA may be utilized in connection with a large number of rams. As shown, the ribbon 122 may be provided with a series of differently colored zones 122a-122d if it is desired that the tablets at the individual color transfer stations S₁-S₄ be provided with differently colored printed matter. The rams at the stations S₁-S₄ and the conveying plate 114 may be moved in a predetermined rhythm by a single motion transmitting means MT. It will be readily understood that the type 20 may be replaced by a series of individual types, one for each of the stations S₁-S₄ (see FIG. 8), or that a single type with spaced raised portions may be used to transfer coloring matter to several tablets at the adjacent transfer stations.

Referring back to FIG. 1, it will be noted that the supporting means 19 for the type 20 accommodates a series of heating coils 32 whose purpose is to heat the type in the event that the transfer of coloring matter to the tablets is improved if it takes place under the action of heat and pressure. Alternately, the deflecting block 21 may also comprise a heating means (indicated at 35), particularly if the supporting means 19 consists of an elastically deformable material.

The deflecting block 21 insures that the type is not smudged by the ribbon 22 because the latter cannot slide along the underside of the type 20 but comes into contact with the type only during the intervals between its intermittent advances in the direction of the arrow 23. At the same time, the ribbon 22 cannot smudge or blur the colored impressions on the successive tablets because it comes into contact with the tablets only when it is brought to a halt so that the impressions produced by the raised portion or portions of the type 20 are extremely clear.

As stated above, the type 20 may consist of a material which is at least slightly elastic, but it is equally possible to form the supporting means 19 of an at least slightly elastic material. If the transfer of coloring matter takes place under the action of heat and pressure, the type 20 preferably consists of a heat-resistant material which is a good conductor of heat. A number of well-known synthetic plastic substances meets this requirement. For example, the elasticity of the type 20 may be somewhere between the elasticity of rubber and hard rubber, which insures that the type will yield sufficiently to prevent any damage to tablets during actual transfer of coloring matter at the station S.

Of course, it is equally possible to utilize a hard type 20 which consists of a metallic substance, and to provide the ram 17a with an elastically yieldable cushion 30' for the head 30 as is shown in FIG. 4.

6

The improved apparatus may be modified for the production of multi-colored impressions. Referring to FIG. 6, there is shown a table 16 which is provided with an annular impression consisting of a semicircular portion 36a in blue color and of a semicircular portion 36b in red or pink color. The ribbon 222 which is utilized for the production of such annular impressions comprises a zone 222' which carries a blue coloring matter and a zone 222'' which carries a red or pink coloring matter. Of course, it is also possible to produce multi-colored impressions by moving each tablet through two or more aligned color transfer stations at each of which the tablets come into contact with differently colored ribbons. For example, at the first station, the tablets may receive colored matter in the form of a ring, and the second station is provided with a differently colored ribbon and with a differently configured type so as to impress in the ring a suitable configuration representing the trademark of the manufacturer, an ornamental design or any other printed matter.

FIG. 7 illustrates an apparatus which is similar to the apparatus of FIG. 1 with the exception that the deflecting block 21 is replaced by an assembly including a deflecting roller 121, a shaft 121b for the roller 121, and an arm 121c for the shaft 121b. The arm 121c also carries a modified elastic support 119 for the type 120, the latter consisting of a synthetic plastic material which may, but need not, be at least slightly elastic. The support 119 is formed with a vertical bore which accommodates an elongated heating element, e.g. an electrode 132, which is connected to a current source, not shown, by means of conductors 132a, 132b. A dragee 16' which is already provided with coloring matter is shown on the upper run of an endless band conveyor 134 which moves in the direction of the arrow 134a.

Referring to FIG. 8, there is shown a portion of an apparatus which comprises five transversely aligned color transfer stations Sa-Se. A deflecting block 321 carries five downwardly extending supports 319a-319e for the types 320a-320e, respectively. The conveying plate 314 is formed with five apertures 315 and is provided with a single transversely extending projection or stripping member 328 whose upper face 329 is spaced from the underside of a ribbon 322 by a distance less than the height of a dragee. In the position of FIG. 8, each aperture 315 receives a dragee 316', and the dragees are assumed to be of hexagonal cross-sectional contour. The ribbon 322 comprises alternating zones 322', 322'' which are assumed to be impregnated with black and red coloring matter, respectively. Thus, when the heads 330 of the rams 317 are moved in upward direction, the left-hand portion at the upper side of each dragee 316' receives a coat of black coloring matter while the right-hand portions are colored in red. Of course, and as stated hereinbefore, the ribbon 322 need not be a unitary structure but may assume the form of a number of parallel bands each of a width approximating the width of a zone 322' or 322''. Furthermore, the ribbon may be provided with groups of three or more differently colored zones for each of the stations Sa-Se so that each dragee is provided with an impression consisting of three or more colors.

FIG. 9 shows a support 419 which carries a composite type consisting of a plurality of pin-shaped vertically reciprocable impression-producing elements. The support 419 comprises a main body portion 419a and a removable cup-shaped lower end portion 419b whose upper end is internally threaded to mesh with a downwardly extending externally threaded sleeve of the main body portion 419a. The interior of the cup 419b is formed with vertically arranged bores 419c which are open at their upper ends and which communicate with smaller-diameter bores 419d, the latter extending all the way to the lower end face 419e of the cup 419b. Each bore 419c receives the cylindrical upper component 420a of the respective impression producing element while the

smaller-diameter lower components 420b of these elements extend through and normally project downwardly beyond the bores 419d. The impression producing elements are permanently biased in downward direction by resilient elements in the form of helical springs 420c which operate between the upper end faces of the larger-diameter components 420a and the lower end face of the main body portion 419a. In this embodiment, the impression producing elements and the support 419 may consist of a rigid material.

FIG. 10 shows that the composite impression producing elements 420a, 420b, may be arranged in such a way as to produce on a dragee 416' a series of dot-like colored impressions 435 which in their entirety form a numeral 4. Of course, by removing certain impression producing elements from the cup 419b, one can readily change the impressed design to form a numeral 1 or any other representation, particularly if the cup is formed with a large number of suitably arranged bores 419c, 419d. The lower components 420b need not be of identical dimensions, i.e. their ends may be of different diameters so as to obtain a more complicated or more attractive impression consisting of larger impressions 435 and of smaller impressions 435'. Of course, the lower components 420b of the impression producing elements shown in FIG. 9 need not be of circular cross-section but may assume the form of polygons, stars, ellipses or any other suitable shape.

Referring finally to FIGS. 11 and 12, there is shown an apparatus wherein the motion transmitting mechanism MT and the ribbon advancing mechanism RA are replaced by a different mechanism which performs three functions, namely, it reciprocates the conveying plate 14, it reciprocates the ram 17, and it advances the takeup roller 26.

The modified mechanism comprises a driving roller 37 which is rotatable about a horizontal shaft 39 and which is driven in the direction of the arrow 37' by an electric motor or the like, not shown. The shaft 49 pivotally supports one end of an elongated arm 38 whose other end is bifurcated to form two prongs 38', 38'' (see FIG. 12) which rotatably support a roller 37b, the latter being coaxially connected with a sheave 37c which is rotated at a constant speed by an endless flexible element in the form of a cable 37a, the latter passing about the driving roller 37 so that the roller 37b is rotated in clockwise direction, as viewed in FIG. 11. The arm 38 is permanently biased in anticlockwise direction (see the arrow 44) by a resilient element in the form of a helical spring 39 one end of which is anchored in the apparatus frame. The roller 37b is movable in a vertical plane and, when pivoted in the direction of the arrow 45, enters the space between a pair of stationary idler rollers 39 which are rotatable about separate shafts 40 and which are in permanent rolling contact with the takeup reel 26, i.e. with the ribbon portion 22a which is being convoluted onto the reel 26 in the direction indicated by the arrow 46. The shaft 26a of the takeup reel 26 is rotatably mounted in the right-hand end of a lever 47 whose left-hand end is pivotable about a pin 47a mounted on the deflecting block 21. The lever 47 is permanently biased in clockwise direction by a resilient element 47b which is anchored in the apparatus frame. The resilient element 47b ensures that the takeup reel 26 remains in permanent contact with the peripheries of the rollers 39 whereby these rollers insure that the ribbon portion 22a remains tightly wound on the reel 26.

The roller 37 also drives a cam disk 42 which is rotatable about a fixed horizontal shaft 43 and which is provided with two spaced lobes each carrying a roller 42a, 42b, respectively. The roller 42b is located in the plane of the arm 38 and rocks the latter against the bias of the spring 39 during each revolution of the cam disk 42. The driving connection between the roller 37 and the cam disk 42 consists of an endless flexible element in the form

of a belt 41. FIG. 12 shows that the motion transmitting member 42b is adapted to rock the roller 37b into contact with the outermost convolution of the ribbon portion 22a on the takeup reel 26 so that the takeup reel is intermittently turned in the direction of the arrow 46 through distances corresponding to the width of the raised portion or portions on the impression producing type 20. The provision of the pivotable lever 47 and of the resilient element 47b insures that the takeup reel 26 can be lifted proportionally with an increase of the diameter of the convoluted ribbon portion 22a thereon. The above described mounting of the arm 38 and the provision of idler rollers 39 further insures that the pressure between the outermost convolution on the takeup reel 26 and the roller 37b remains unchanged regardless of the number of convolutions on the takeup reel. One of the rollers 39 has been omitted in FIG. 11 for the sake of clarity.

The other motion transmitting roller 42a of the cam disk 42 cooperates with a second arm 48 whose right-hand end is pivotable about the shaft 49 and whose left-hand end portion 50 is formed with an elongated closed cam slot 51 for a follower pin 52 which is secured to the stem 17a of the ram 17. The arm 48 is permanently biased in clockwise direction by a resilient element in the form of a helical coil spring 53, the latter having one of its ends anchored in the apparatus frame. This insures that the arm 48 follows the movements of the roller 42a. When the cam disk 42 turns in the direction of the arrow 42', the arm 48 pivots in clockwise direction and moves the ram 17 in the direction of the arrow 27 to thereby advance the dragee 16' into contact with the ribbon portion 22a in a manner as described in connection with FIG. 1. After a predetermined interval, the arm 48 is caused to pivot in anticlockwise direction and moves the ram 17 downwardly counter to the direction of the arrow 27 so as to enable the plate 14 to move the next dragee 16 into proper position above the head 30.

The shaft 43 of the cam disk 42 is rigidly connected with a link 54a which, in turn, is pivotally connected with a third arm 54, the latter having its left-hand end articulately secured to a downwardly extending bracket 14a of the conveying plate 14 by means of a pivot axle 55. The bracket 14a projects through a slot 18a in the guide panel 18. As the cam disk 42 is rotated by the belt 41, the arm 54 causes the plate 14 to reciprocate in a horizontal plane, as is indicated by the arrows 12 and 13. It will be seen that a single driving means 37 is capable of operating in a predetermined rhythm all movable component parts of the apparatus and also that the mechanism of FIGS. 11 and 12 is of extremely simple design.

The stem 17a of the ram 17 is guided in suitable bearings 17a' of any known design.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic and specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. An apparatus for consecutively applying coloring matter to tablets, such as dragees and the like, said apparatus comprising, in combination, a ribbon-like carrier of coloring matter which is more readily transferrable at elevated than at lower temperatures, said carrier having a portion located in a substantially horizontal plane and said carrier portion having an upper side and an underside; stationary impression producing means of at least slightly elastic heat-resistant material, said impression producing means located at the upper side of and adjacent to said carrier portion; means for heating said impression producing means; a ram having an upper end vertically aligned

9

with said impression producing means and reciprocable toward the underside of said carrier portion for deflecting said carrier portion into contact with said impression producing means; and means for consecutively feeding tablets onto the upper end of said ram, said feeding means comprising a magazine having an open lower end and adapted to receive a supply of tablets, and a conveying plate located beneath said magazine and formed with aperture means adapted to receive a tablet through the lower end of said magazine, said plate reciprocable between a first position in which said aperture means is located beneath said magazine to receive a tablet and a second position in which said aperture is located above the upper end of said ram so that a tablet contained in said aperture means may be engaged by said upper end and lifted into contact with the underside of said carrier portion whereby said impression producing means deforms a selected part of said carrier portion into color-transmitting compressive contact with the tablet.

2. An apparatus for consecutively applying coloring matter to tablets, such as dragees and the like, said apparatus comprising, in combination, a ribbon-like carrier of coloring matter which is more readily transferrable at elevated than at lower temperatures, said carrier having a portion located in a substantially horizontal plane and said carrier portion having an upper side and an underside; stationary impression producing means of at least slightly elastic heat-resistant material, said impression producing means located at the upper side of and adjacent to said carrier portion; means for heating said impression producing means; a ram having a stem and a head carried by said stem, said ram vertically aligned with said impression producing means and reciprocable toward the underside of said carrier portion for deflecting said carrier portion

10

into contact with said impression producing means; and means for consecutively feeding tablets onto the head of said ram, said feeding means comprising a magazine having an open lower end and adapted to receive a supply of tablets, and a conveying plate located beneath said magazine and formed with aperture means adapted to receive a tablet through the lower end of said magazine and with open slot means communicating with said aperture means, said plate reciprocable between a first position in which said aperture means is located beneath said magazine to receive a tablet and a second position in which said aperture means is located above the head of said ram so that a tablet contained in said aperture means may be engaged by said head and lifted into contact with the underside of said carrier portion whereby said impression producing means deforms a selected part of said carrier portion into color-transmitting compressive contact with the tablet, said stem passing through said slot means when said plate is moved from said second to said first position.

3. An apparatus as set forth in claim 2, wherein the width of said slot means approximates the thickness of said stem and said slot means is parallel with the direction of movements of said plate.

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