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(54) **Arrangement for making textured multi film solid cleanser holders**

Vorrichtung zur Herstellung von Behältern aus mehrschichtiger Folie mit texturierter Oberfläche für das Aufbewahren von soliden Reinigungsmitteln

Dispositif de production de recipients avec plusieurs feuilles texturees pour savon solid

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Description**FIELD OF INVENTION**

[0001] This invention relates to an arrangement for making textured multi film solid cleanser holders.

PRIOR ART

[0002] US Patent application No 09/503262 filed on 13th June 2001 relates to textured film solid cleanser holders and methods for the manufacture and use thereof. A textured film solid cleanser holder comprises a solid cleanser surrounded by at least one textured film having texture variations including at least one aperture.

[0003] US 2002/0025215 discloses a solid cleanser holder comprising a textured film. US 3,527,633 describes a machine for producing bags from a continuous tube of heat sealable material. GB 870,692 relates to a mechanism for producing strip package sample booklets. US 5,524,419 describes an automated apparatus for forming contact lenses using mould cavities.

OBJECTS OF THE INVENTION

[0004] An object of the invention is to provide an arrangement for making textured multi film solid cleanser holders.

[0005] Another object of the invention is to provide an arrangement for making frilled textured multi film solid cleanser holders.

[0006] According to the invention there is provided an arrangement for making textured multi film solid cleanser holders comprising a solid cleanser feed conveyor horizontally rotatably mounted on a first frame work and provided with a plurality of spaced solid cleanser holding pockets along the length thereof, a film feeding unit comprising at least one pair of film unwind top rolls and at least one pair of film unwind bottom rolls rotatably mounted on a stand at the feed end of the feed conveyor, a pair of film lamination units each mounted at the top and bottom of the first framework, a solid cleanser holder forming unit comprising a pair of horizontally contrarotatable conveyors disposed spaced one below the other and mounted on a second framework which is located close to the discharge end of the feed conveyor, a solid cleanser holder sealing unit, a solid cleanser holder cutting unit, a film scoring unit and a horizontally rotatable waste film carrying conveyor mounted on the second frame work in tandem with the solid cleanser holder forming unit and a plurality of film tensioning rollers and a plurality of film pulling units provided in the path of the textured film and an intermittent differential drive unit connected to the feed conveyor, contra-rotatable conveyors, film scoring unit, waste film carrying conveyor and film pulling units.

[0007] The term textured film and texture variations as used in the specification have the same meanings as given in the US Patent Application No 09/503262.

[0008] The solid cleanser referred to in the specification may be a soap or detergent cake or bar.

[0009] The following is a detailed description of the invention with reference to the accompanying drawings, in which :

Fig 1 is elevation of an arrangement for making textured multi film solid cleanser holders according to an embodiment of the invention ;

Fig 2 is enlarged elevation of a film lamination unit of the arrangement of Fig 1;

Fig 3 is isometric view of a movable laminator plate or stationary laminator plate of the film lamination unit of Fig 2;

Fig 4 is enlarged elevation of the solid cleanser holder sealing unit of the arrangement of Fig 1;

Fig 5 is front view of the movable die plate or stationary die plate of the solid cleanser holder sealing unit of Fig 4;

Fig 6 is enlarged elevation of the solid cleanser holder cutting unit of the arrangement of Fig 1;

Fig 7 is front view of the movable punch plate of the solid cleanser holder cutting unit of Fig 6;

Fig 8 is an enlarged view at X in Fig 6;

Figs 9 and 10 are elevation and side view of the film scoring unit of the arrangement of Fig 1;

Figs 11 and 12 are elevation and side view of a film pulling unit of the arrangement of Fig 1,

Fig 13 is schematic view of the intermittent differential drive unit of the arrangement of Fig 1;

Fig 14 is schematic view of the pneumatic cylinders of the film lamination units, solid cleanser holder sealing unit and solid cleanser holder cutting unit of the arrangement of Fig 1 connected to a pneumatic supply through 5-port 2-position solenoid operated direction control valves; and

Figs 15, 16, 17, 18 and 19 show the various positions of the Geneva drive in a cycle of operation of the arrangement of Fig 1; and

Fig 20 is crosssection of a multifilm solid cleanser holder made by the arrangement of Fig 1.

[0010] As illustrated in Figs 1 to 20 of the accompanying drawings, the arrangement 1 comprises a solid cleanser feed conveyor 2 horizontally rotatably mounted on a first

frame work 3 and provided with a plurality of spaced solid cleanser holding pockets along the length thereof (Fig 1). Each of the solid cleanser holding pockets comprises a pair of spaced upright members 4 fitted across the length of the feed conveyor. A pair of film unwind top rolls 5,5 and a pair of film unwind bottom rolls 6,6 are rotatably mounted on a stand 7 at the feed end 8 of the feed conveyor. 9,9 represent the shafts of the film unwind top rolls. 10, 10 represent the shafts of the film unwind bottom rolls. 11a and 11b are a pair of film lamination units, each mounted at the top and bottom of the first framework 3. Each of the film lamination units comprises a first pneumatic cylinder 12 mounted on the top horizontal member 13 of a first supporting structure 14 and having a first piston 15 reciprocating therein (Figs 2 and 3). The first piston rod 16 protrudes down from the first cylinder through the top horizontal member of the first supporting structure. Air inlets cum outlets at the cylinder side and piston side of the first cylinder are marked 17 and 18 respectively. The cylinder side and piston side of the first pneumatic cylinder are connected to a pneumatic supply 19 through a 5 port 2-position solenoid operated direction control valve 20 and a control valve 21 (Fig 14). The 5 ports of the valve 20 are marked a, b, c, d, and e. The solenoid of the valve 20 is marked 22. 23 is a movable laminator plate fitted to a first guide plate 24 which in turn is fitted to the protruding end of the first piston rod (Figs 1 and 2). The first guide plate is up and down slidably engaged over guide rods 25 of the first supporting structure through bushes 26 fitted to the guide plate. 27 is a stationary laminator plate fitted at the base 28 of the first supporting structure aligned with the movable laminator plate. Both the movable laminator plate and stationary laminator plate are provided with a pair of spaced laminating ridges 29 across the length thereof (Fig 3). Both the movable laminator plate and stationary laminator plate are also provided with electric heating elements comprising conductors 30 running therethrough and connected to an AC supply (not shown) through thermostat (not shown) and temperature controller (not shown). 31 is a solid cleanser holder forming unit comprising a pair of horizontally contrarotatable conveyors 32 and 33 disposed spaced one below the other and mounted on an upright structure 34 of a second framework 35 which is located close to the discharge end 36 of the feed conveyor (Fig 1). The bottom and top rollers at the feed end 37a and discharge end 37b of the contrarotatable conveyors are marked 38a and 38b and 38c and 38d respectively. The shafts of the rollers 38a, 38b, 38c and 38d are marked 39a, 39b, 39c and 39d respectively. The first framework 3 is provided with a flat protrusion 40 at the discharge end 36 of the feed conveyor extending to the feed end 37a of the contrarotatable conveyors. 41 is a solid cleanser holder sealing unit mounted on the second framework 35 and comprising a second pneumatic cylinder 42 mounted on the top horizontal member 43 of a second supporting structure 44 and having a second piston 45 reciprocating therein (Figs 1 and 4). The second

piston rod 46 protrudes down from the second cylinder through the top horizontal member of the second supporting structure. Air inlets cum outlets at the cylinder side and piston side of the second cylinder are marked 47 and 48 respectively. The cylinder side and piston side of the second cylinder are connected to the pneumatic supply through a 5 port 2-position solenoid operated direction control 49 and control valve 21 (Fig 14). The 5 ports of the valve 49 are marked a, b, c, d, and e. The solenoid of the valve 49 is marked 50. 51 is a movable die plate fitted to a second guide plate 52 which in turn is fitted to the protruding end of the second piston rod and up and down movably engaged over guide rods 53 of the second supporting structure through bushes 54 fitted to the guide plate 52. 55 is a stationary die plate fitted at the base 56 of the second supporting structure aligned with the movable die plate. The movable die plate 51 and stationary die plate 55 are formed with die sockets 57 corresponding to the size of the solid cleanser holders and provided with electric heating elements comprising conductors 58 around the sockets and connected to the AC supply through thermostat (not shown) and temperature controller (not shown). 59 is a solid cleanser holder cutting unit mounted on the second framework 35 and comprising a third pneumatic cylinder 60 mounted on the top horizontal member 61 of a third supporting structure 62 and having a third piston 63 reciprocating therein (Figs 1 and 6). The third piston rod 64 protrudes down from the third cylinder through the top horizontal member of the third supporting structure. Air inlets cum outlets at the cylinder side and piston side are marked 65 and 66 respectively. The cylinder side and piston side of the third cylinder are connected to the pneumatic supply through 5 port 2-position solenoid operated direction control valve 67 and control valve 21 (Fig 14). The five ports of the valve 67 are numbered a, b, c, d and e. Solenoid of the valve 67 is marked 68. 69 is a movable punch plate fitted to a third guide plate 70 which in turn is fitted to the protruding end of the third piston rod and up and down slidably engaged over guide rods 71 of the third supporting structure through bushes 72 fitted thereto. The movable punch plate is provided with a pair of holes 73 defining neck portions 74 (Fig 6). 75, 75 are a pair of screw members each being movably disposed in each of the holes with the heads of the screw members adapted to abut against the shoulders 77 of the neck portions (Fig 8). 78 is a retainer flange provided at the front side of the punch plate in thread engagement with the edges of the screw members. The film retainer flange is held stressed by tension springs 79 disposed over the screw members and located between the punch plate and the film retainer flange. 80 is a stationary die plate fitted at the base 81 of the third supporting structure aligned with the movable punch plate. The movable punch plate and stationary die plate are formed with die cavities 82 which are larger than the die sockets in the movable die plate and stationary die plate of the solid cleanser holder sealing unit and are corresponding to the

profiles of the edges or frills of the solid cleanser holders. The bottom of the die cavity 82 in the stationary die plate 80 is open. 83 is an opening in the base of the third supporting structure corresponding to the open bottom die cavity in the stationary die plate 80. 84 is a film scoring unit mounted on the second framework 35 and comprising an anvil roller 85 whose shaft 86 is rotatably supported in a pair of first vertical oblong slots 87 provided in a pair of spaced first vertical side plates 88 of a fourth supporting structure 89 (Figs 1, 9 and 10). The bearings 90 of the anvil roller shaft are located at the bottom of the first vertical oblong slots. Therefore, the anvil roller remains in position. 90a is a driver gear fitted on the shaft 86 at its one end. 91 is a rotary disc cutter disposed across and close to the anvil roller and having its shaft 92 fitted with bearings 93 mounted in the first vertical oblong slots in the first vertical plates. 93a is a driven gear fitted on shaft 92 at its one end. Gears 90a and 93a are in mesh with each other (Fig 9). The bearings 93 are stressed by tension springs 94 in abutment with first setting screws 95 secured through the top horizontal member 96 of the fourth supporting structure in thread engagement therewith. The first setting screws are provided with first lock nuts 97. The clearance between the rotary disc cutter and the anvil roller is adjusted by moving the rotary cutter down by turning and moving down the setting screws against the tension springs and stressing or compressing the tension springs. The setting screws are locked in position with the lock nuts against the horizontal member of the fourth supporting structure. 98 is a horizontally rotatable waste film carrying conveyor mounted between a pair of upright members 99 of the second framework 35. Only one of the upright members is seen in Fig 1 as the other is behind the one shown in Fig 1. The solid cleanser holder sealing unit, solid cleanser holder cutting unit, film scoring unit and film carrying conveyor are in tandem with the solid cleanser holder forming unit. 100 represents a plurality of film tensioning rollers. 100a, 100b, 100c and 100d represent a plurality of film pulling units (Fig 1). Film pulling unit 100a is mounted on the upright structure 34. Film pulling units 100b and 100c and 100d are mounted directly on the second framework 35. Each of the film pulling units 100a, 100b, 100c and 100d comprises a pair of horizontally contrarotatable rollers 101 and 102 disposed one below the other in contact (Figs 11 and 12). The shaft 103 of the bottom roller 101 is fitted with bearings 104 at the ends thereof which are located in a pair of second vertical oblong slots 105 provided in a pair of spaced second vertical side plates 106 of a fifth supporting structure 107. The bearings 104 of the shaft 103 are located at the bottom of the oblong slots 105. Therefore, the bottom roller 101 remains in position. 104a is a driver gear fitted at one end of the shaft 103. The shaft 108 of the top roller 102 is fitted with bearings 109 at the ends thereof which are located in the second vertical oblong slots 105. 109a is a driven gear fitted at one end of the shaft 108. Gears 104a and 109a are in mesh with each other (Figs 11 and 12). 110, 110 are pair

of second setting screws whose edges are in contact with the bearings 109. The second setting screws 110 are secured through the top horizontal member 111 of the fifth supporting structure in thread engagement therewith. The second setting screws are provided with second lock nuts 112. The clearance between the top roller and bottom roller is adjustable by turning and moving down the second setting screws against the tension springs and stressing or compressing the tension springs. The second setting screws are locked in position with the locknuts against the horizontal member of the fifth supporting structure. 113 is a geared motor whose shaft is marked 114. 115 is a six station Geneva drive compressing a Geneva wheel 116 and a Geneva driver 117. Geneva wheel shaft is marked 118. Six slots of the Geneva wheel are marked 119a, 119b, 119c, 119d, 119e and 119f. Geneva driver shaft is marked 120. 121 is pinion of the Geneva driver. 122 and 123 are sprockets mounted on the motor shaft and Geneva driver shaft, respectively and interconnected by chain 124. The teeth ratio of sprockets 122 and 123 is 2:3. 125 is a sprocket mounted on the Geneva wheel shaft. 126, 127, 128, 129 and 130 are sprockets mounted on the shea 39c of roller 38c of conveyor 33. Sprockets 125 and 128 are interconnected by chain 132, 133 is a driver roller shaft of the feed conveyor 2. 134 is a sprocket mounted on the drive roller shaft 133. Sprockets 126 and 134 are interconnected by chain 135. 136 is a sprocket mounted on the driver shaft 137 of the film pulling unit 100a. Sprockets 129 and 136 are interconnected by chain 138. 139 is a sprocket mounted on the driver shaft 140 of the film pulling unit 100b. Sprockets 130 and 139 are interconnected by chain 141, 142 and 143 are sprockets mounted on the driver shaft 144 of the film pulling unit 100c. Sprockets 127 and 143 are interconnected by chain 145, 146, 147 and 148 are sprockets mounted on the driver shaft 149 of the film pulling unit 100d. Sprockets 142 and 146 are interconnected by chain 149. 150 is a sprocket mounted on the driver shaft 151 of the waste film carrying conveyor 94. Sprockets 147 and 150 are interconnected by chain 152. 153 is a sprocket mounted on the driver shaft 154 of the film scoring unit 84. Sprockets 148 and 153 are interconnected by chain 155. The teeth ratio of sprocket 125 to each of sprockets 126 to 130, 134, and to each of sprockets 136, 139, 142, 143, 146, 147, 148, 150 and 153 is 1:1. Teeth ratio of gears 90a and 104a is also 1:1. The operation of the arrangement of the invention is in a cyclic manner as described below during which valve 21 remains open.

[0011] At the beginning of a half cycle of operation of the arrangement, pinion 121 of the Geneva driver 117 is positioned at the mouth of slot 119a of the Geneva wheel 116 (Fig 15). During rotation of the Geneva driver in the anticlockwise direction pinion 121 travels away from slot 119a as shown in Figs 16 and 17 and no drive is transmitted to the Geneva wheel 116 and the solid cleanser feed conveyor 2, solid cleaner holder forming unit 31 comprising contrarotatable conveyors 32 and 33, film

pulling units 100a, 100b, 100c and 100d, film scoring unit 84 and waste film carrying conveyor 98 remain stationary. Ports a and e and ports b and d of valves 20 of the film lamination units 11a and 11b are connected. Air flows into the piston side and air flows out into the atmosphere from the cylinder side of the cylinders 12. Pistons 15 of the cylinders 12 along with the movable laminator plates 23 move down towards the stationary laminator plates 27 of the film lamination units. Both the movable laminator plates 23 and stationary laminator plates 27 are being heated by the electric conductors 30 running there-through. Both the films 156, 156 from top unwind rolls 5 positioned in the top lamination unit 11a are hot pressed together and laminated into a single top film along the lamination ridges 29 of the movable laminator plate 23 and stationary laminator plate 27 of the top lamination unit 11a. Similarly both the films 156, 156 from the bottom unwind rolls 6 positioned in the bottom lamination unit 11b are hot pressed together and laminated into single bottom film along the lamination ridges 29 of the movable laminator plate 23 and stationary laminator plate 27 of the bottom lamination unit 11b. The laminated top and bottom films emerging from the lamination units are marked 157. The films on the unwind rolls may be of the same or different materials, textures or colours as required. Ports b and d and ports a and e of valve 49 of the solid cleanser sealing unit 41 are connected. Air flows into the piston side and air flows out into the atmosphere from the cylinder side of the cylinder 42 of the solid cleanser sealing unit 41. The piston 45 of cylinder 42 along with the movable die plate 51 moves down towards the stationary die plate 55. Both the die sockets 57 in the movable die plate 51 and stationary die plate 55 are being heated by the electric conductors 58 running around them. The movable die plate 51 closes on the stationary die plate 55 and holds the solid cleanser holder positioned therebetween within the die sockets 57 and heat seals together the bottom and top films around the solid cleanser at the peripheries of the die sockets. Ports b and d and ports a and e of valve 67 of solid cleanser holder cutting unit are connected. Air flows into the piston side and air flows out into the atmosphere from the cylinder side of cylinder 60 of the solid cleanser holder cutting unit. The piston 63 of cylinder 60 along with the punch plate 69 moves down towards the stationary die plate 80. The punch plate 69 closes on the die plate 80 and holds the solid cleanser holder positioned therebetween within the die cavities and cuts the solid cleanser holder at the peripheries of the die cavities. On being cut and separated from the bottom and top films, the solid cleanser holder 160 falls down through the open bottom of the die cavity 82 in the die plate 80 and corresponding opening 83 in the base 81 of the supporting structure 62. While the punch plate 69 closes on the die plate 80 and cuts and separates the solid cleanser holder from the films, the retainer flange 78 presses against the films under spring tension and holds the films in position to facilitate cutting of the solid cleanser holders. The retainer flange

slides in and out on the punch plate due to its being tensioned by springs 79 and fixed to the screw members 75 which are movably disposed in the holes 73. The outward movement of the screw members in holes 73 and hence that of the retainer flange is restricted by shoulders 77 as the heads of the screw members abuts the shoulders at the extreme outward position of the screw members. The size of the edges or frills of the solid cleanser holder from the sealing point thereof depends on the larger peripheries of the die cavities as compared to the die sockets. At the end of the half cycle of operation of the arrangement, the position of the pinion 121 of the Geneva driver 117 is as shown in Fig 17. The pinion 121 is about to enter slot 119f of the Geneva wheel 116. During further rotation of the Geneva driver in the anticlockwise direction the pinion 121 travels into the slot 119f of the Geneva wheel (Fig 18) and travels back from the slot 119f of the Geneva wheel and positions itself at the mouth of slot 119f of the Geneva wheel as shown in Fig 19. During this half cycle drive is transmitted to the Geneva wheel and it rotates in the clockwise direction. Consequently drive is transmitted to the solid cleanser feed conveyor 2, solid cleanser holder forming unit 31 comprising contrarotatable conveyors 32 and 33, film pulling units 100a, 100b, 100c and 100d and film scoring unit 84 and waste film carrying unit 98. Solid cleansers 158 being fed from the feed end of the conveyor 2 in the pockets formed by pairs of spaced upright members 4, are moved forward by the feed conveyor. Due to momentum of movement of the feed conveyor, the solid cleanser at the discharge end of the infeed conveyor is pushed by the advancing upright member 4 at the rear side of the solid cleanser 158 into the laminated bottom film 157 at the feed end 37a between the contrarotatable conveyors 32 and 33 over the flat protrusion 40. The contrarotating rollers of the film pulling units 100a and 100b pull the laminated bottom and top films from the lamination units 11a and 11b and keep them taut. In the solid cleanser holder forming unit 31, the bottom film 157 carrying the solid cleansers and the top film 157 overlying the solid cleansers form holders for the solid cleansers and are moved forward by and between the contrarotating conveyors 32 and 33. The bottom and top films having the solid cleansers interposed therebetween enter the solid cleanser holder stalling unit 41. The contrarotating rollers of the film pulling unit 100c pull the bottom and top films with the sealed solid cleansers holders emerging from the solid cleanser holder sealing unit and feed them to the solid cleanser cutting unit 59 one at a time. The contrarotating rollers of the film pulling unit 100d pull the bottom and top films from the solid cleanser cutting unit 59 through the film scoring unit 84 in which the rotary disc cutter 91 cuts or scores the waste films into two lengthwise, which remain as webs between adjacent cutouts of solid cleanser holders after they are cut and separated. The waste films emerging from the pulling unit 100d are carried onto the waste film carrying conveyor 98. The waste films are cut and removed from the waste film carrying conveyor as

and when required.

Simultaneously ports b and c and ports a and d of valves 20 are connected. Air flows into the cylinder side and air flows out into the atmosphere from the piston side of the cylinders 12 of the film lamination units 11a and 11b. The piston 15 of the cylinders 12 move up into their original position. Ports b and c and ports a and d of valve 49 are connected. Air flows into the cylinder side and air flows out into the atmosphere from the piston side of cylinder 42 of the solid cleanser holder sealing unit 41. The piston 45 of cylinder 42 moves up to its original position. Ports b and c and ports a and d of valve 67 are connected. Air flows into the cylinder side and air flows out into the atmosphere from the piston side of cylinder 60 of the solid cleanser holder cutting unit 59. The piston 63 of the cylinder 60 moves up to its original position. The arrangement is now ready for the next cycle of operation.

[0012] Due to the intermittent drive and feeding of solid cleansers into the solid cleaner holder forming unit in a cycle of operation of the arrangement a gap is maintained between two solid cleansers in the solid cleanser holder forming unit. The temperature controllers sense the temperatures of the laminator plates and movable die plate and corresponding stationary die plate through the thermostats and cut of the power supply when the temperatures exceed the set limits. The film tensioning rollers keep the films under tension. The bushes are to minimise friction between the guide plates and respective guide rods and render the up and down movement of the guide plates smooth.

[0013] The film lamination units, solid cleanser holder forming unit, solid cleanser holder sealing unit, solid cleanser holder cutting unit, film pulling units, film scoring unit and solid cleanser pockets may be of different constructions. There may be more than four film pulling units. Instead of pneumatic cylinders, hydraulic cylinders may be used. There may be more than two film unwind top rolls and more than two film unwind bottom rolls and corresponding number of films to be laminated. The waste film carrying conveyor and film scoring unit are optional. Instead of waste film carrying conveyor some other arrangement may be used to carry the used films. The sizes and profiles of the die sockets and die cavities will change depending upon the sizes and profiles of the solid cleansers and solid cleanser holders. The arrangement may include a solid cleanser feeding unit. Instead of film unwind rolls, the film feeding arrangement may be different. Such variations of the invention are to be construed and understood to be within the scope of the invention.

Claims

1. Arrangement(1) for making textured multi film solid cleanser holders (160) comprising a solid cleanser feed conveyor (2) horizontally rotatably mounted on a first frame work (3) and provided with a plurality of spaced solid cleanser holding pockets along the

length thereof, a film feeding unit comprising at least one pair of film unwind top rolls (5,5) and at least one pair of film unwind bottom rolls (6,6) rotatably mounted on a stand (7) at the feed end (8) of the feed conveyor, a pair of film lamination units (11a,11b) each mounted at the top and bottom of the first framework, a solid cleanser holder forming unit (31) comprising a pair of horizontally contrarotatable conveyors disposed spaced one below the other and mounted on a second framework (35) which is located close to the discharge end of the feed conveyor (36) a solid cleanser holder sealing unit (41) a solid cleanser holder cutting unit, a film scoring unit (84), which scores the waste film into two lengthways, and a horizontally rotatable waste film carrying conveyor (98) mounted on the second frame work(35) in tandem with the solid cleanser holder forming unit and a plurality of film tensioning rollers (100) and a plurality of film pulling units (100a, b, c, d) provided in the path of the textured film and an intermittent differential drive unit connected to the feed conveyor, contrarotatable conveyors, film scoring unit, waste film carrying conveyor and film pulling units.

2. Arrangement as claimed in claim 1, wherein each of the solid cleanser holding pockets comprises a pair of spaced upright members (4) fitted across the length of the feed conveyor and the first framework is provided with a flat protrusion (40) at the discharge end of the feed conveyor extending to the feed end of the contrarotatable conveyors.

3. Arrangement as claimed in claim 1 or 2, wherein each of the film lamination units comprises a first pneumatic cylinder (12) mounted on the top horizontal member (13) of a first supporting structure (14) and having a first piston (15) reciprocating therein, the first piston rod (16) protruding down from the first cylinder through the top horizontal member of the first supporting frame, the cylinder side and piston side of the first cylinder being connected to a pneumatic supply (19) through a 5-port 2-position solenoid operated direction control valve (20), a movable laminator plate (23) fitted to a first guide plate (24) which in turn is fitted to the protruding end of the first piston rod and up and down slidably engaged over guide rods (25) of the first supporting structure, a stationary laminator plate (27) fitted at the base of the first supporting structure aligned with the movable laminator plate, the movable laminator plate and stationary laminator plate being provided with a pair of spaced laminating ridges (29) across the length thereof and electric heating elements connected to an AC supply through thermostat and temperature controller.

4. Arrangement as claimed in any one of claims 1 to 3, wherein the solid cleanser holder sealing unit com-

prises a second pneumatic cylinder (42) mounted on the top horizontal member (43) of a second supporting structure (44) and having a second piston (45) reciprocating therein, the second piston rod (46) protruding down from the second cylinder through the top horizontal member of the second supporting structure, the cylinder side and piston side of the second cylinder being connected to the pneumatic supply through a 5-port 2-position solenoid operated direction control valve (49), a movable die plate (51) fitted to a second guide plate (52) which in turn is fitted to the protruding end of the second piston rod and up and down slidably engaged over guide rods (53) of the second supporting structure, a stationary die plate (55) fitted at the base (56) of the second supporting structure aligned with the movable die plate (51), the movable die plate and stationary die plate having formed with the sockets (57) corresponding to the size of the solid cleanser holders and provided with electric heating elements connected to the AC supply through thermostat and temperature.

5. Arrangement as claimed in claim 4 or 5, wherein the electric heating elements comprise electric conductors (58).

6. Arrangement as claimed in any one of claims 1 to 5, wherein the solid cleanser holder cutting unit comprises a third pneumatic cylinder (60) mounted on the top horizontal member (61) of a third supporting structure (62) and having a third piston (63) reciprocating therein, the third piston rod (64) protruding down from the third cylinder through the top horizontal member of the third supporting structure, the cylinder side and piston side of the third cylinder being connected to the pneumatic supply through a 5-port 2-position solenoid operated direction control valve (67), a movable punch plate (69) fitted to a third guide plate (70) which in turn is fitted to the protruding end of the third piston rod and up and down slidably engaged over guide rods (71) of the third supporting structure, the movable punch plate being provided with a film retainer flange (78) at the front side, the film retainer flange being movably held tension spring stressed (79), a stationary die plate (80) fitted at the base (81) of the third supporting structure aligned with the movable punch plate, the movable punch plate and corresponding stationary die plate having formed with die cavities (82) larger the die sockets in the movable die plate and corresponding stationary die plate registering with the profiles of the edges or frills of the solid cleanser, the bottom of the die cavity in the stationary die plate being open and the base of the third supporting structure being provided with a corresponding opening (83) there-through.

7. Arrangement as claimed in claim 6, wherein the punch plate is provided with a pair of holes (73) defining neck portions (74) a pair of screw members (75,75) each being movably disposed in each of the holes with the heads of the screw members adapted to abut against the shoulders (77) of the neck portions, the film retainer flange being in thread engagement with the edges of the screw members and tension spring stressed against the movable punch plate.

8. Arrangement as claimed in any one of claims 1 to 7, wherein the film scoring unit (84) comprises an anvil roller (85) whose shaft (86) is rotatably supported in a pair of first vertical oblong slots (87) provided in a pair of spaced first vertical side plates (88) of a fourth supporting structure (89), a rotary disc cutter (91) disposed across and close to the anvil roller and fitted on a shaft (92) rotatably height adjustably mounted in the first vertical oblong slots in the first vertical side plates and stressed by tension springs (94) in abutment with the edges of first setting screws (95) secured through the top horizontal member (96) of the fourth supporting structure in thread engagement therewith and provided with first lock nuts (97).

9. Arrangement as claimed in any one of claims 1 to 8, wherein each of the film pulling units (100a, b, c, d) comprises a pair of horizontally contrarotatable rollers (101,102) disposed one below the other in contact and having their shafts (103, 108) rotatably mounted in a second pair of second vertical oblong slots (105) provided in a pair of spaced second vertical side plates (106) of a fifth supporting structure (107), the top roller (102) being height adjustable with second setting screws (110) secured through the top horizontal member (111) of the fifth supporting structure in thread engagement therewith, the edges of the second setting screws being in contact with the top roller shaft (108) and the second setting screws being provided with second lock nuts (112).

10. Arrangement as claimed in any one of claims 1 to 8, wherein the intermittent differential drive unit comprises a geared motor connected to the feed conveyor, contrarotatable conveyors, film scoring unit, waste film carrying conveyor (94) and film pulling units through sprockets and chains, and gears and a 6-station Geneva drive (115) in which the teeth ratio of the sprocket (122,123) on the geared motor shaft to the sprocket on the Geneva driver shaft is 2:3 and the teeth ratio of the sprocket on the geared motor shaft to each of the sprockets of the feed conveyor, contrarotatable conveyors, film scoring unit, waste film carrying conveyor and each of the film pulling units is 1:1 and the teeth ratio of the gears of the shafts of the film scoring unit and each pulling unit is 1:1.

Patentansprüche

1. Anordnung (1) zum Herstellen von Behältern (160) aus mehreren texturierten Folien für das Aufbewahren eines soliden Reinigungsmittels, umfassend einen Zuführförderer (2) für das solide Reinigungsmittel, der horizontal drehbar an einem ersten Gestellrahmen (3) montiert ist und mehrere beabstandete Haltefächer für das solide Reinigungsmittel in dessen Längsrichtung umfaßt, wobei eine Folienzuführeinrichtung umfaßt mindestens ein Paar obere Folienabwickelrollen (5, 5) und mindestens ein Paar untere Folienabwickelrollen (6, 6), die drehbar an einem Gestell (7) an dem Zuführende (8) des Zuführförderers montiert sind, ein Paar Folienlaminierungseinrichtungen (11a, 11b), die jeweils oben und unten am ersten Gestellrahmen montiert sind, eine Einrichtung (31) zum Formen des Behälters für das solide Reinigungsmittel mit einem Paar horizontal gegenläufige, in einem Abstand untereinander angeordnete Fördereinrichtungen, die auf einem zweiten Gestellrahmen (35) montiert sind, der nahe dem Ausgabeende des Zuführförderers (36) angeordnet ist, eine Einrichtung (41) zum Dichten des Behälters für das solide Reinigungsmittel, eine Schneideeinrichtung für Behälter von solidem Reinigungsmittel, eine Folienanritzeinrichtung (84), die die Abfallfolie in zwei Längsstreifen abtrennt, und eine horizontal drehbare Abfallfolienfördereinrichtung (98), die an dem zweiten Gestellrahmen (35) in einer Reihe mit der Einrichtung zum Formen des Behälters für das solide Reinigungsmittel und mit mehreren Folienspannrollen (100) und mehrere Folienzugeinrichtungen (100a, b, c, d) montiert ist, die in dem Pfad der texturierten Folie angeordnet sind, und eine Taktdifferenzialantriebseinrichtung, die mit dem Zuführförderer, gegenläufigen Fördereinrichtungen, der Folienanritzeinrichtung, der Abfallfolienfördereinrichtung und den Folienzugeinrichtungen verbunden ist.

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2. Anordnung nach Anspruch 1, wobei jedes Haltefach für das solide Reinigungsmittel ein Paar beabstandete, aufrechte Glieder (4) umfaßt, die quer zur Längsrichtung des Zuführförderers angebracht sind, und der erste Gestellrahmen einen flachen Vorsprung (40) am Auswurfende des Zuführförderers umfaßt, der sich zu dem Zuführende der gegenläufigen Fördereinrichtungen hinerstreckt.

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3. Anordnung nach Anspruch 1 oder 2, wobei jede der Folienlaminierungseinrichtungen umfaßt einen ersten pneumatischen Zylinder (12), der an dem oberen horizontalen Glied (13) einer ersten Trägerstruktur (14) montiert ist und einen ersten, darin hin- und herbewegenden Kolben (15) aufweist, der von dem ersten Zylinder durch das obere horizontale Glied des ersten Trägerrahmens nach unten vorsteht, wobei die Zylinderseite und die Kolbenseite des ersten

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- Zylinders mit einer pneumatischen Quelle (19) über ein magnetisch betriebenes Wegeventil (20) mit fünf Anschlüssen und zwei Stellungen verbunden sind, eine bewegliche Laminierungsplatte (13), die an einer ersten Führungsplatte (24) angebracht ist, die wiederum an das vorstehende Ende der ersten Kolbenstange angebracht ist und mit Führungsstangen (25) der ersten Trägerstruktur auf und ab gleitend in Eingriff steht, eine stationäre Laminierungsplatte (27), die an der Basis der ersten Trägerstruktur mit der beweglichen Laminierungsplatte ausgerichtet angebracht ist, wobei die bewegliche Laminierungsplatte und die stationäre Laminierungsplatte ein Paar beabstandete, quer zu ihrer Längsrichtung angeordnete Laminierungsleisten (29) und über ein Thermostat und ein Temperaturregler mit einer Wechselstromzufuhr verbundene elektrische Heizelemente umfassen.

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4. Anordnung nach einem der Ansprüche 1 bis 3, wobei die Einrichtung zum Dichten des Behälters für das solide Reinigungsmittel umfaßt einen zweiten pneumatischen Zylinder (42), der auf dem oberen horizontalen Glied (43) einer zweiten Trägerstruktur (44) montiert ist und einen zweiten, sich darin hin- und her bewegenden Kolben (45) aufweist, der von dem zweiten Zylinder durch das obere horizontale Glied einer zweiten Trägerstruktur hindurch nach unten vorsteht, wobei die Zylinderseite und die Kolbenseite des zweiten Zylinders mit einer pneumatischen Quelle durch ein magnetisch betriebenes Wegeventil (49) mit fünf Anschlüssen und zwei Stellungen verbunden sind, eine bewegbare Matrize (51), die an einer zweiten Führungsplatte (52) angebracht ist, die wiederum an das vorstehende Ende der zweiten Kolbenstange angebracht ist sowie mit Führungsstangen (53) der zweiten Trägerstruktur auf und ab gleitend in Eingriff steht, eine stationäre Matrize (55), die an die Basis (56) der zweiten Trägerstruktur mit der beweglichen Matrize (51) ausgerichtet angebracht ist, wobei die bewegliche Matrize und die stationäre Matrize mit zu der Größe der Behälter für das solide Reinigungsmittel entsprechenden Aufnahmen gebildet sind und mit elektrischen Heizelementen versehen sind, die über ein Thermostat und einen Temperaturregler mit einer Wechselstromversorgung verbunden sind.

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5. Anordnung nach Anspruch 4 oder 5, wobei die elektrischen Heizelemente elektrische Leiter (58) umfassen.

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6. Anordnung nach einem der Ansprüche 1 bis 5, wobei die Einrichtung zum Schneiden des Behälters für das solide Reinigungsmittel umfaßt einen dritten pneumatischen Zylinder (60), der auf dem oberen, horizontalen Glied (61) einer dritten Trägerstruktur (62) montiert ist und einen dritten, sich darin hin und her

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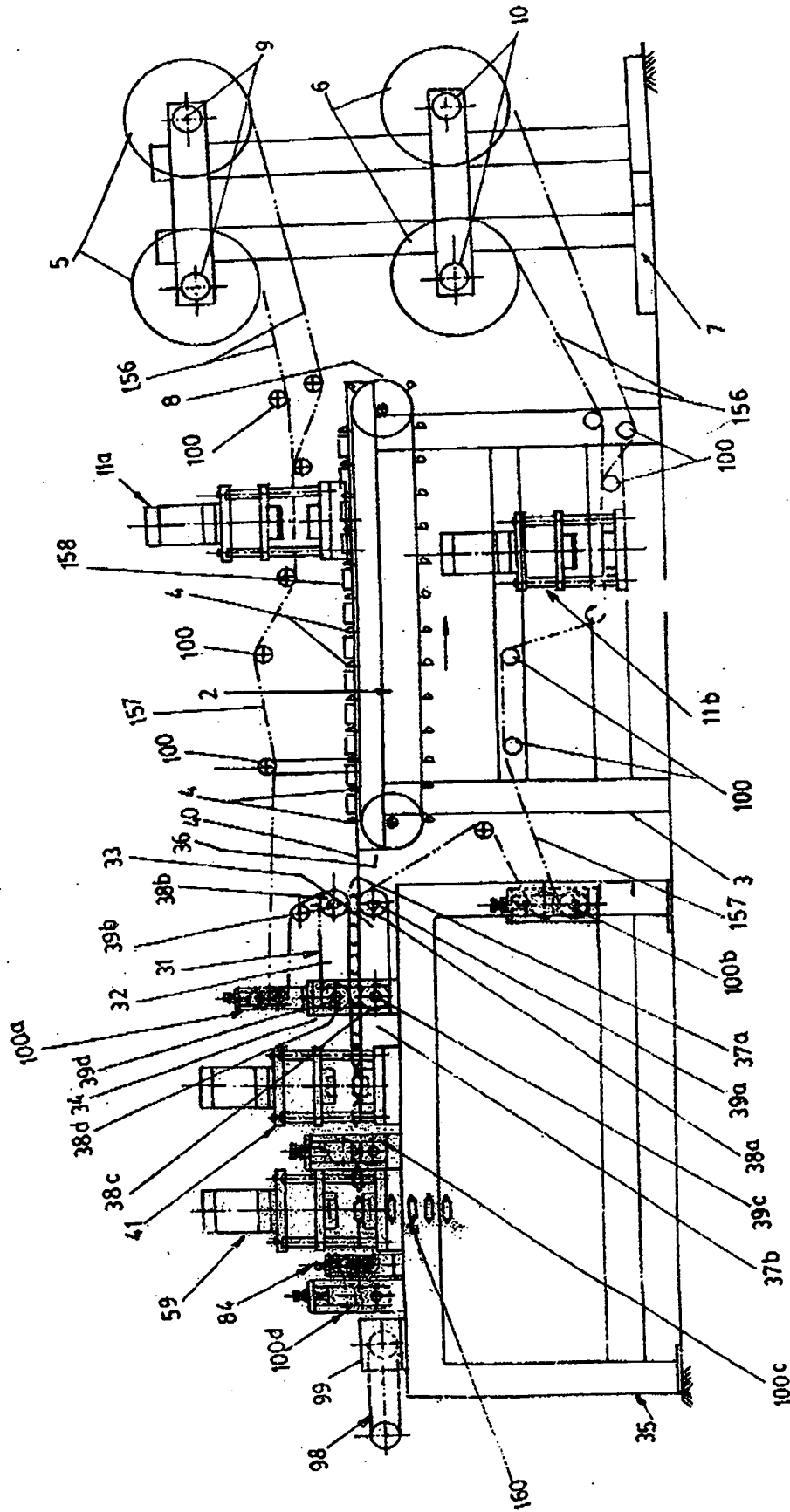
- bewegenden Kolben (63) aufweist, der von dem dritten Zylinder durch das obere horizontale Glied der dritten Trägerstruktur hindurch nach unten vorsteht, wobei die Zylinderseite und die Kolbenseite des dritten Zylinders über ein magnetisch betriebenes We-
geventil (67) mit fünf Anschlüssen und zwei Stellun-
gen mit der pneumatischen Zufuhr verbunden sind, eine bewegliche Stanzplatte (69), die an einer dritten Führungsplatte (70) angebracht ist, die wiederum an das vorstehende Ende der dritten Kolbenstange an-
gebracht ist und auf und ab beweglich mit Führungs-
stangen (71) der dritten Trägerstruktur in Eingriff
steht, wobei die bewegbare Stanzplatte einen Foli-
enthalteflansch (78) an der Vorderseite umfaßt, der
bewegbar von einer gespannten Feder (79) beweg-
lich gehalten wird, eine stationäre Matrizenplatte
(80), die an der Basis (81) der dritten Trägerstruktur
mit der beweglichen Stanzplatte ausgerichtet ange-
bracht ist, wobei die bewegliche Stanzplatte und die
entsprechende stationäre Matrizenplatte mit Matri-
zenhohlräumen (82) gebildet sind, die größer als die
Matrizenaufnahmen der beweglichen Matrize und
der entsprechenden stationären Matrize sind, die an
die Profile der Ränder oder Ornamentränder des so-
liden Reinigungsmittels angepaßt sind, wobei der
Boden des Matrizenhohlraums in der stationären
Matrizenplatte offen ist und die Basis der dritten Trä-
gerstruktur eine entsprechende **dadurch** gehende
Öffnung (83) umfaßt.
7. Anordnung nach Anspruch 6, wobei die Stanzplatte
umfaßt ein Paar Löcher (73), die Halsabschnitte (74)
definieren, ein Paar Schrauben (75, 75), die jeweils
mit den Schraubenköpfen beweglich in jedem der
Löcher angeordnet sind, wobei die Köpfe der
Schrauben gegen die Schultern (77) der Halsab-
schnitte in Anlage kommen können, wobei der Foli-
enthalteflansch mit den Kanten der Schrauben ver-
schraubt und mit der Spannungsfeder gegen die be-
wegliche Stanzplatte gedrückt ist.
8. Anordnung nach einem der Ansprüche 1 bis 7, wobei
die Foliehanritzeinrichtung (84) umfaßt eine Riffel-
walze (85), dessen Schaft (86) in einem Paar erste,
senkrechte Langlöcher (87) drehbar gelagert ist, die
in einem Paar von beabstandeten ersten vertikalen
Seitenplatten (88) einer vierten Trägerstruktur (89)
angeordnet sind, eine Drehscheibenschneideinrich-
tung (91), die über und nahe der Riffelwalze ange-
ordnet und auf einem Schaft (92) angebracht ist, der
drehbar höhen-einstellbar in den ersten senkrechten
Langlöchern der ersten senkrechten Seitenplatten
montiert und durch Spannfedern (94) in Anlage mit
den Rändern der ersten Einstellschrauben (95) ge-
spannt ist, die durch das obere horizontale Glied (96)
der vierten Trägerstruktur damit verschraubt und mit
ersten Sperrmuttern (97) ausgestattet sind.
9. Anordnung nach einem der Ansprüche 1 bis 8, wobei
jede der Folienzugeinrichtungen (100a, b, c, d) um-
faßt ein Paar horizontal gegenläufige Walzen (101,
102), die untereinander in Kontakt angeordnet sind
und ihre Schäfte (103, 108) drehbar in einem zweiten
Paar vertikale Langlöcher (105) montiert sind, die in
einem Paar beabstandete zweite vertikale Seiten-
platten (106) einer fünften Trägerstruktur (107) an-
geordnet sind, wobei die obere Walze (102) mit zwei-
ten Einstellschrauben (110) höhen-einstellbar ist, die
durch das obere horizontale Glied (111) der fünften
Trägerstruktur damit verschraubt sind, wobei die
Ränder der zweiten Einstellschrauben in Kontakt mit
dem oberen Rollenschaft (108) stehen und die zwei-
ten Einstellschrauben mit zweiten Sperrmuttern
(112) ausgestattet sind.
10. Anordnung nach einem der Ansprüche 1 bis 8, wobei
die Takt-differentialeinrichtung umfaßt einen Motor
mit Zahnrädern, der mit dem Zuführförderer, den ge-
genläufigen Fördereinrichtungen, der Folienanritz-
einrichtung, der Abfallfolienfördereinrichtung (94)
und den Folienzugeinrichtungen durch Kettenzahn-
räder und Ketten und Zahnräder und einem 6-Posi-
tions-Malteserkreuzantrieb (15) verbunden ist, wo-
bei das Zahnverhältnis des Kettenzahnrad (122,
123) auf dem verzahnten Motorschaft zu dem Ket-
tenzahnrad auf dem Malteserkreuzantriebsschaft 2:
3 ist und das Zahnverhältnis von dem Kettenzahnrad
auf dem verzahnten Motorschaft zu jedem der Ket-
tenzahnrad auf dem Zuführförderer, den gegen-
läufigen Fördereinrichtungen, der Folienanritz-
einrichtung, der Abfallfolienfördereinrichtung und je-
dem der Folienzugeinrichtungen 1:1 ist und das
Zahnverhältnis der Zahnräder der Schäfte von dem
Folienritzeinrichtungen und jeder Folienzugeinrich-
tung 1:1 ist.

40 Revendications

1. Dispositif (1) pour la production de supports de sa-
von solide avec plusieurs films texturés (160), com-
prenant un convoyeur d'alimentation (2) de savon
solide monté de manière horizontalement rotative
sur un premier châssis (3) et prévu avec une pluralité
de poches de support espacées de savons solides
le long de sa longueur, une unité d'alimentation de
film comprenant au moins une paire de rouleaux su-
périeurs déroulés de film (5, 5) au moins une paire
de rouleaux inférieurs déroulés de film (6, 6) montés
de manière rotative sur un support (7) au niveau de
l'extrémité d'alimentation (8) du convoyeur d'alimen-
tation, une paire d'unités de stratification de film
(11a, 11b) chacune montée au niveau de la partie
supérieure et de la partie inférieure du premier châs-
sis, une unité de formation de support de savon so-
lide (31) comprenant une paire de convoyeurs à ro-

- tation inverse horizontale disposés de manière espacée l'un au-dessus de l'autre et montée sur un second châssis (35) qui est situé à proximité de l'extrémité de décharge du convoyeur d'alimentation (36), une unité de fermeture hermétique du support de savon solide (41), une unité de coupe de support de savon solide, une unité d'entaille de film (84), qui entaille la chute de film dans les deux sens de la longueur, et un convoyeur supportant les chutes de film (98) pouvant tourner de manière horizontale, monté sur le second châssis (35) en tandem avec l'unité de formation de support de savon solide et une pluralité de rouleaux tendeurs de film (100) et une pluralité d'unités de traction de film (100a, b, c, d) prévues dans la trajectoire du film texturé et une unité d'entraînement différentiel intermittent raccordée au convoyeur d'alimentation, aux convoyeurs tournant en sens inverse, à l'unité d'entaille de film, au convoyeur de support de chute de film et aux unités de traction de film.
2. Dispositif selon la revendication 1, dans lequel chacune des poches de support de savon solide comprend une paire d'éléments verticaux espacés (4) montés sur la longueur du convoyeur d'alimentation et le premier châssis est prévu avec une saillie plate (40) au niveau de l'extrémité de décharge du convoyeur d'alimentation s'étendant vers l'extrémité d'alimentation des convoyeurs tournant en sens inverse.
3. Dispositif selon la revendication 1 ou 2, dans lequel chacune des unités de stratification de film comprend un premier cylindre pneumatique (12) monté sur l'élément horizontal supérieur (13) d'une première structure de support (14) et ayant un premier piston (15) effectuant un mouvement de va-et-vient à l'intérieur de celui-ci, la première tige de piston (16) faisant saillie vers le bas à partir du premier cylindre à travers l'élément horizontal supérieur du premier châssis de support, le côté de cylindre et le côté de piston du premier cylindre étant raccordés à une alimentation pneumatique (19) par le biais d'une soupape de contrôle de direction (20) actionnée par une électrovanne à 2 positions et à 5 orifices, une plaque de contrecolleuse mobile (23) montée sur une première plaque de guidage (24) qui est à son tour montée sur l'extrémité en saillie de la première tige de piston et mise en prise de manière coulissante de haut en bas sur les tiges de guidage (25) de la première structure de support, une plaque de contrecolleuse fixe (27) montée au niveau de la base de la première structure de support alignée avec la plaque de contrecolleuse mobile, la plaque de contrecolleuse mobile et la plaque de contrecolleuse fixe étant prévues avec une paire de saillies de stratification espacées (29) sur sa longueur et des éléments de chauffage électrique raccordés à une alimentation de courant continu par le biais d'un thermostat et d'un dispositif de contrôle de température.
4. Dispositif selon l'une quelconque des revendications 1 à 3, dans lequel l'unité de fermeture hermétique de support de savon solide comprend un second cylindre pneumatique (42) monté sur l'élément horizontal supérieur (43) d'une seconde structure de support (44) et ayant un second piston (45) effectuant un mouvement de va-et-vient à l'intérieur de celui-ci, la seconde tige de piston (46) faisant saillie vers le bas à partir du second cylindre à travers l'élément horizontal supérieur de la seconde structure de support, le côté de cylindre et le côté de piston du second cylindre étant raccordés à l'alimentation pneumatique par le biais d'une soupape de contrôle de direction (49) actionnée par une électrovanne à 2 positions et à 5 orifices, une plaque de moule mobile (51) montée sur une seconde plaque de guidage (52) qui est à son tour montée sur l'extrémité en saillie de la seconde tige de piston et mise en prise de manière coulissante de haut en bas sur les tiges de guidage (53) de la seconde structure de support, une plaque de moule fixe (55) montée au niveau de la base (56) de la seconde structure de support alignée avec la plaque de moule mobile (51), la plaque de moule mobile et la plaque de moule fixe étant formées avec des douilles (57) correspondant à la taille desdits supports de savon solide et prévues avec des éléments de chauffage électrique raccordés à l'alimentation de courant continu par le biais d'un thermostat et de la température.
5. Dispositif selon la revendication 4 ou 5, dans lequel les éléments de chauffage électrique comprennent des conducteurs électriques (58).
6. Dispositif selon l'une quelconque des revendications 1 à 5, dans lequel l'unité de coupe de support de savon solide comprend un troisième cylindre pneumatique (60) monté sur l'élément horizontal supérieur (61) d'une troisième structure de support (62) et ayant un troisième piston (63) effectuant un mouvement de va-et-vient à l'intérieur de celui-ci, la troisième tige de piston (64) faisant saillie vers le bas à partir du troisième cylindre en passant par l'élément horizontal supérieur de la troisième structure de support, le côté de cylindre et le côté de piston du troisième cylindre étant raccordés à l'alimentation pneumatique par le biais d'une soupape de contrôle de direction (67) actionnée par une électrovanne à 2 positions et à 5 orifices, une plaque de poinçon mobile (69) montée sur une troisième plaque de guidage (70) qui est à son tour montée sur l'extrémité en saillie de la troisième tige de piston et mise en prise de manière coulissante de haut en bas sur des tiges de guidage (71) de la troisième structure de support, la plaque de poinçon mobile étant prévue avec un

- rebord de retenue de film (78) au niveau de côté avant, le rebord de retenue de film étant maintenu sous tension de manière mobile par un ressort sollicite (79), une plaque de moule fixe (80) montée au niveau de la base (81) de la troisième structure de support alignée avec la plaque de poinçon mobile, la plaque de poinçon mobile et la plaque de moule fixe correspondante étant formées avec des cavités de moule (82) plus grandes que les douilles de moule dans la plaque de moule mobile et la plaque de moule fixe correspondante alignée avec les profils des bords ou volants du savon solide, le fond de la cavité de moule dans la plaque de moule fixe étant ouvert et la base de la troisième structure de support étant prévue avec une ouverture (83) correspondante à travers celle-ci.
7. Dispositif selon la revendication 6, dans lequel la plaque de poinçon est prévue avec une paire de trous (73) définissant des parties de cols (74), une paire d'éléments de vis (75, 75) étant chacun disposé de manière mobile dans chacun des trous avec les têtes des éléments de vis adaptés pour venir en butée contre les épaulements (77) des parties de col, le rebord de retenue de film étant mise en prise par filetage avec les bords des éléments de vis et le ressort de tension sollicite contre la plaque de poinçon mobile.
8. Dispositif selon l'une quelconque des revendications 1 à 7, dans lequel l'unité d'entaille de film (84) comprend un rouleau d'enclume (85) dont l'arbre (86) est supporté de manière rotative dans une paire de premières fentes verticales oblongues (87) prévue dans une paire de premières plaques latérales verticales (88) espacée d'une quatrième structure de support (89), un dispositif de coupe à disque rotatif (91) disposé sur et à proximité du rouleau d'enclume et monté sur un arbre (92) monté de manière rotative et réglable en hauteur dans les premières fentes verticales oblongues dans les premières plaques latérales verticales et sollicité par les ressorts de tension (94) en butée contre les bords des premières vis de réglage (95) fixées par le biais de l'élément horizontal supérieur (96) de la quatrième structure de support mise en prise par filetage avec celles-ci et prévues avec des premiers écrous de blocage (97).
9. Dispositif selon l'une quelconque des revendications 1 à 8, dans lequel chacune des unités de traction de film (100a, b, c, d) comprend une paire de rouleaux à rotation inverse horizontale (101, 102) disposés l'un au-dessus de l'autre en contact et ayant leurs arbres (103, 108) montés de manière rotative dans une seconde paire de secondes fentes oblongues verticales (105) prévue dans une paire de secondes plaques latérales verticales (106) espacée d'une cinquième structure de support (107), le rouleau supérieur (102) étant réglable en hauteur avec les secondes vis de réglage (110) fixées par le biais de l'élément horizontal supérieur (111) de la cinquième structure de support mise en prise par filetage avec celles-ci, les bords des secondes vis de réglage étant en contact avec l'arbre (108) du rouleau supérieur et les secondes vis de réglage étant prévues avec des seconds écrous de blocage (112).
10. Dispositif selon l'une quelconque des revendications 1 à 8, dans lequel l'unité d'entraînement différentiel intermittent comprend un moteur à engrenage raccordé au convoyeur d'alimentation, des convoyeurs tournant en sens inverse, l'unité d'entaille de film, le convoyeur de support de chute de film (94) et des unités de traction de film par le biais de pignons et de chaîne, et d'engrenage et un entraînement Geneva à 6 postes (115) dans lequel le rapport de dents du pignon (122, 123) de l'arbre du moteur à engrenages sur le pignon de l'arbre du dispositif d'entraînement Geneva est 2:3 et le rapport de dents du pignon de l'arbre de moteur à engrenages sur chacun des pignons du convoyeur d'alimentation, des convoyeurs à rotation inverse, de l'unité d'entaille de film, du convoyeur de support de chute de film et de chacune des unités de traction de film est de 1:1 et le rapport de dents des engrenages des arbres de l'unité d'entaille de film et de chaque unité de traction est de 1:1.



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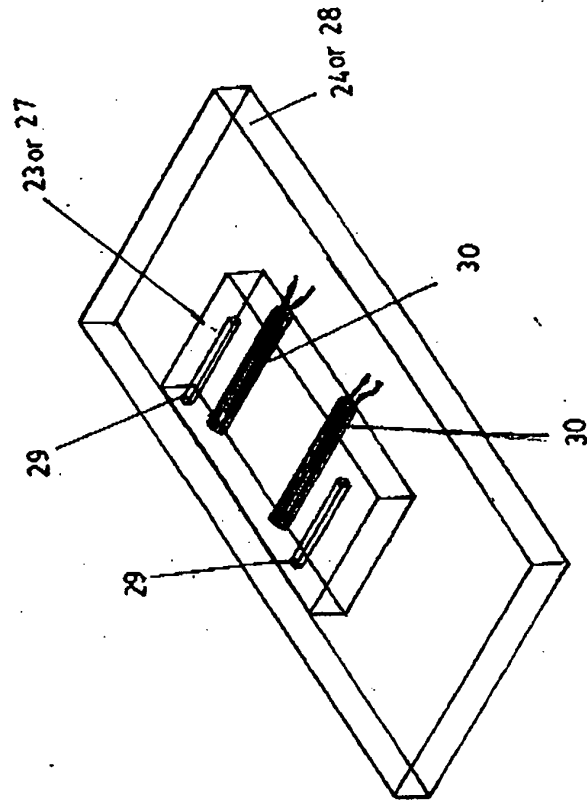


FIG 3

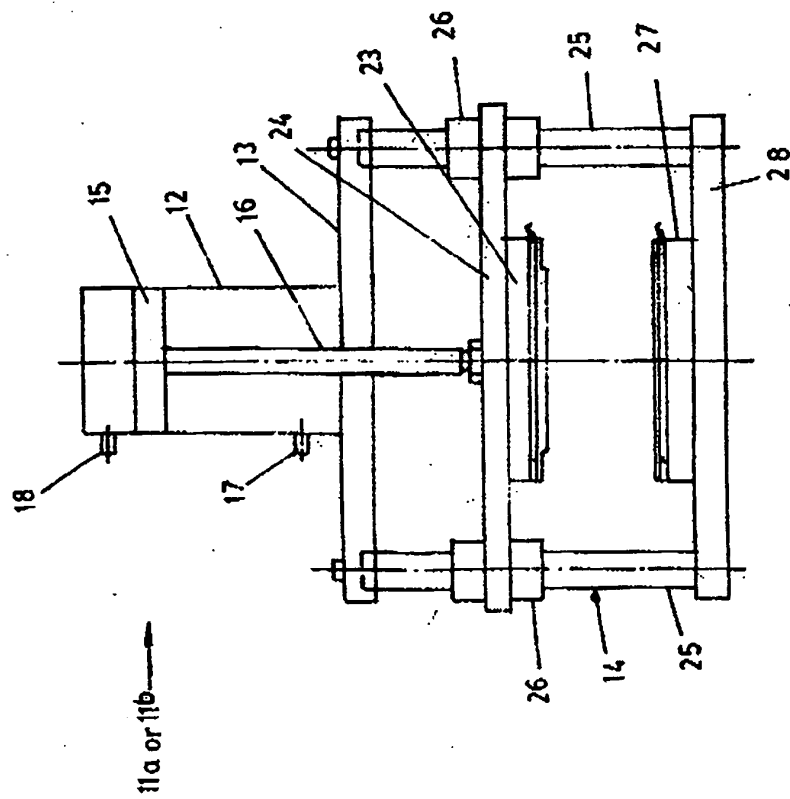
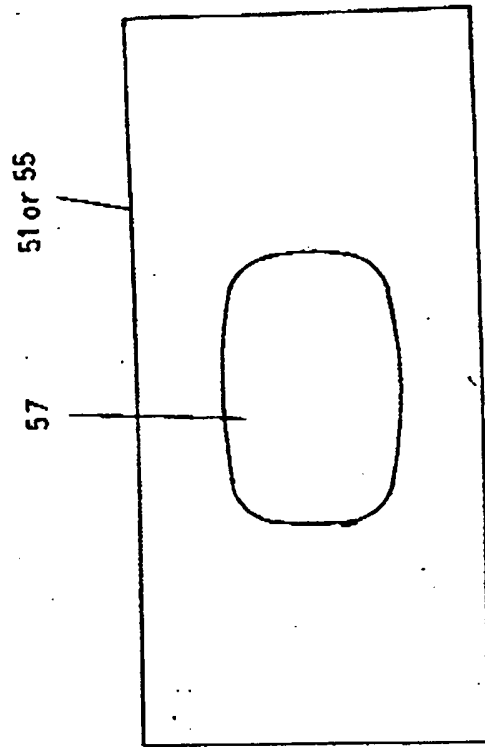
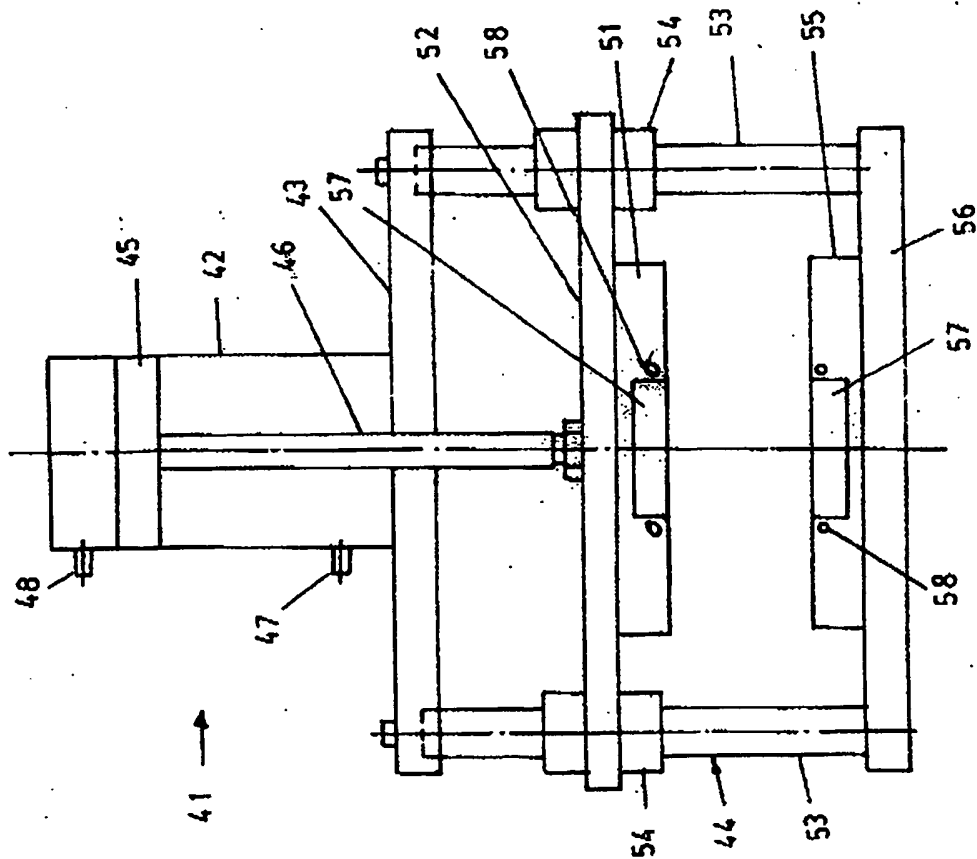


FIG 2



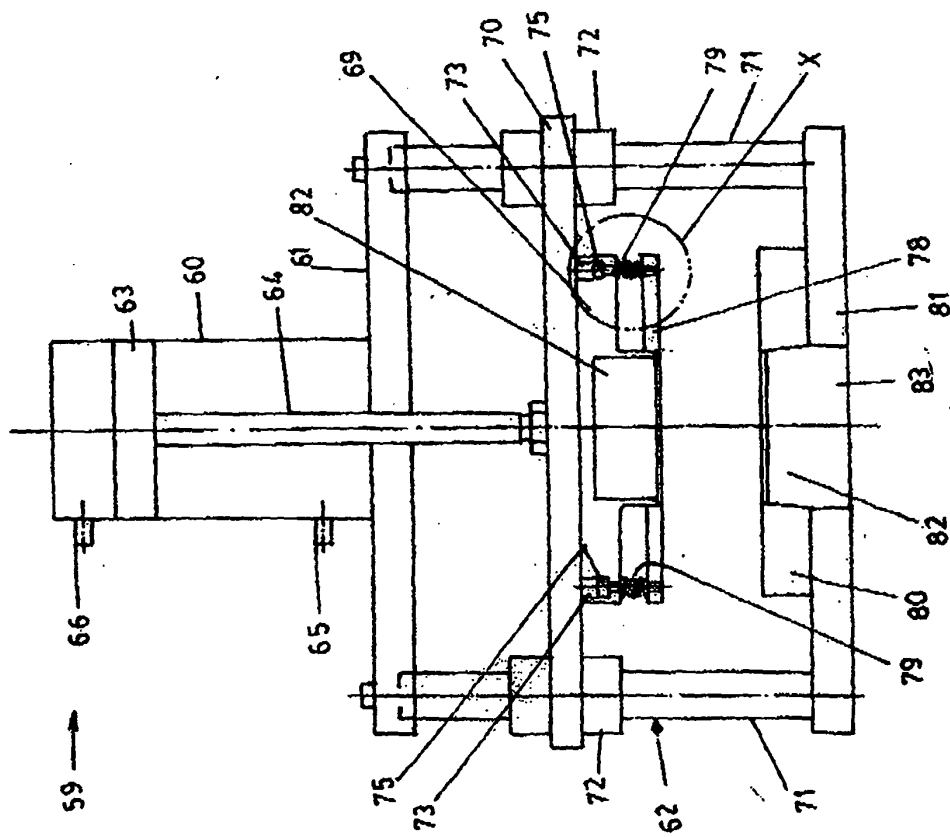


FIG 6

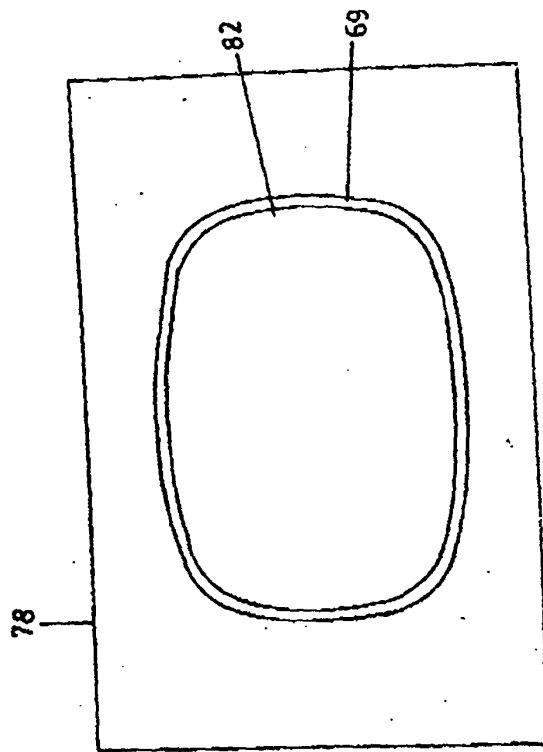


FIG 7

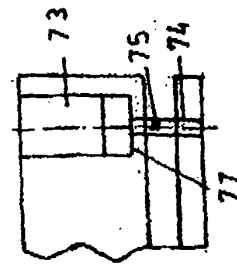


FIG 8

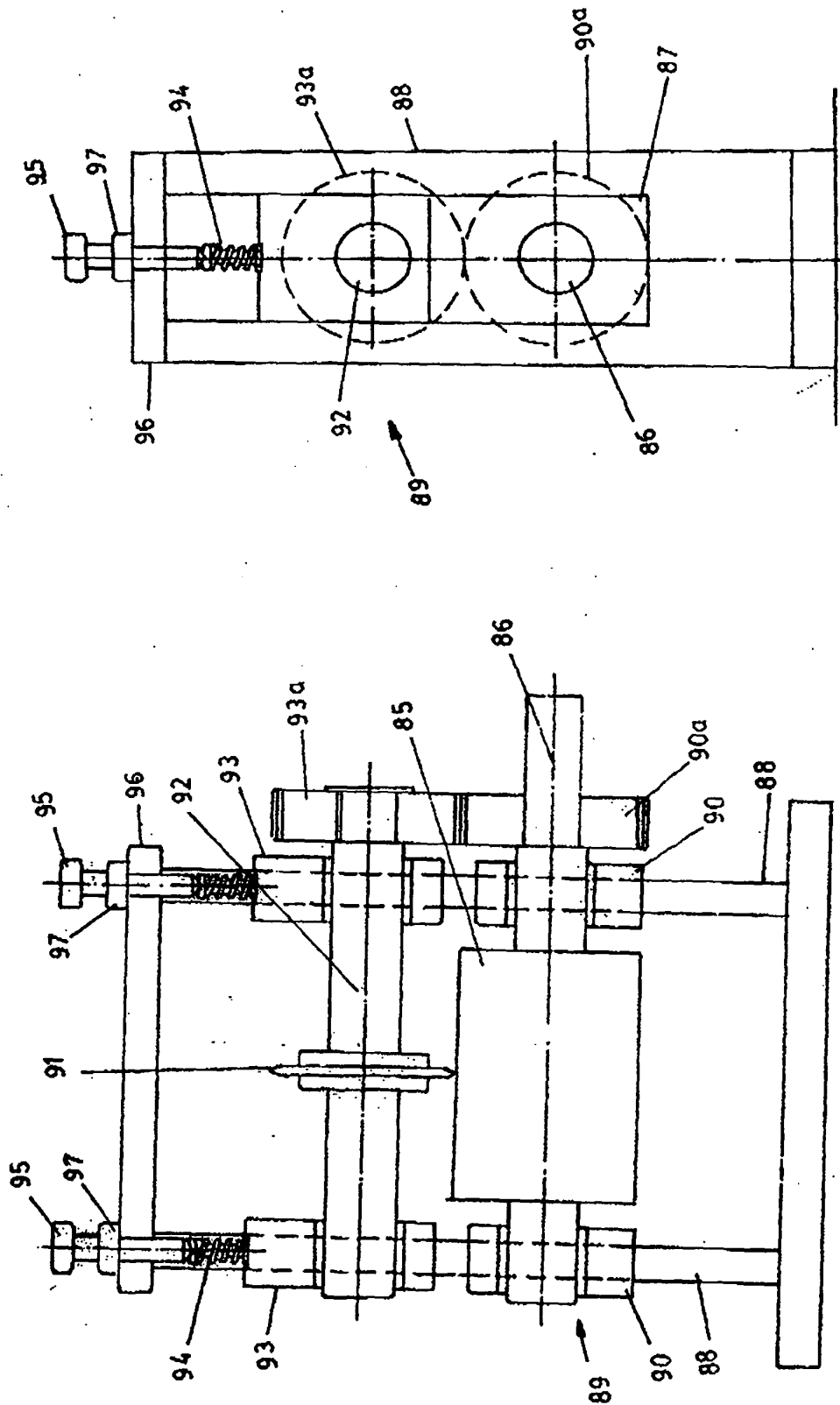


FIG 10

FIG 9

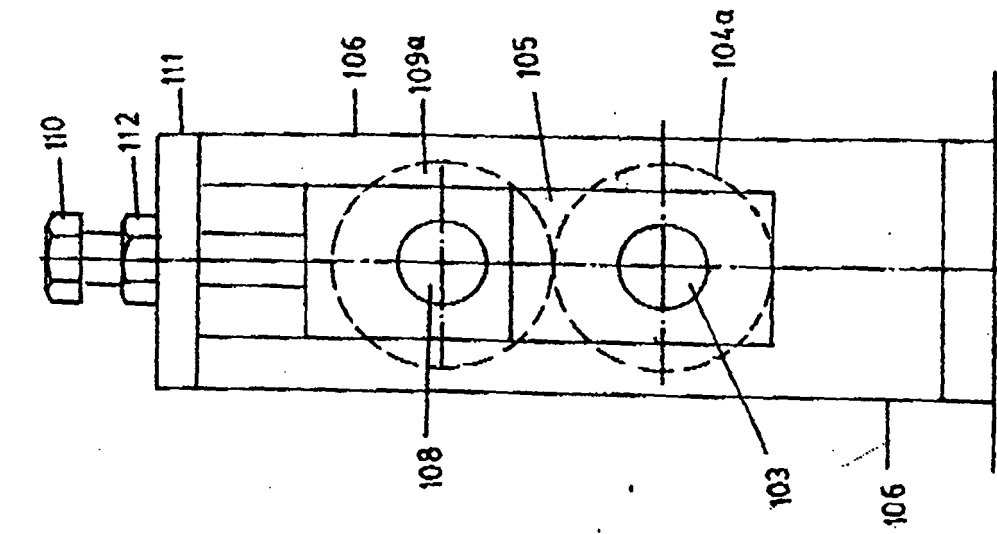


FIG 12

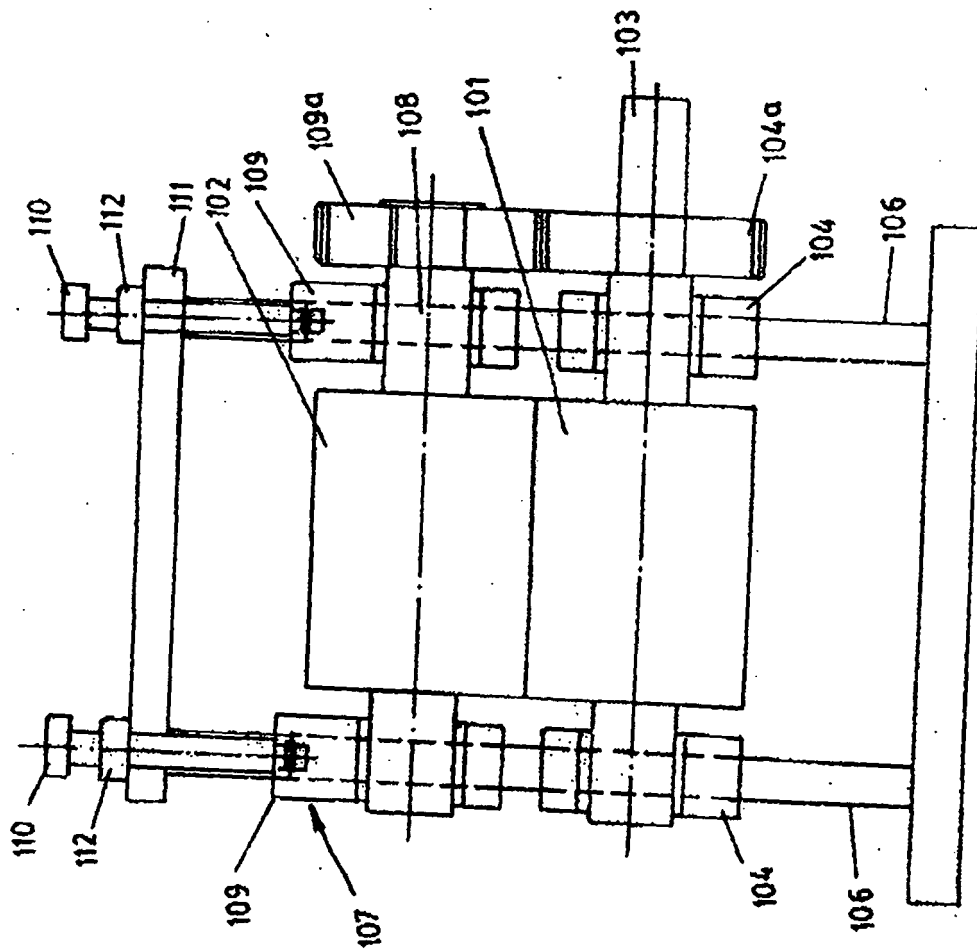


FIG 11

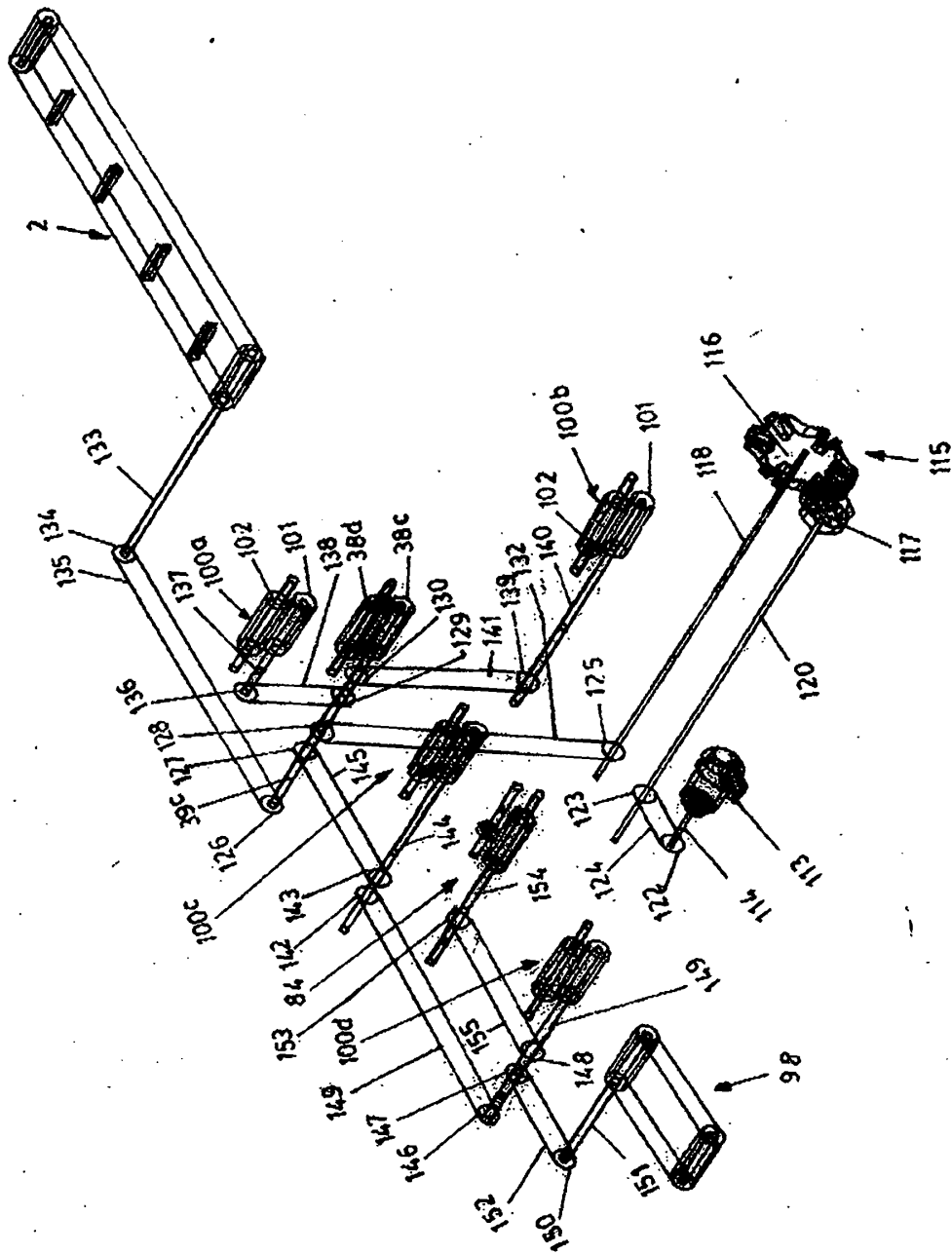


FIG 13

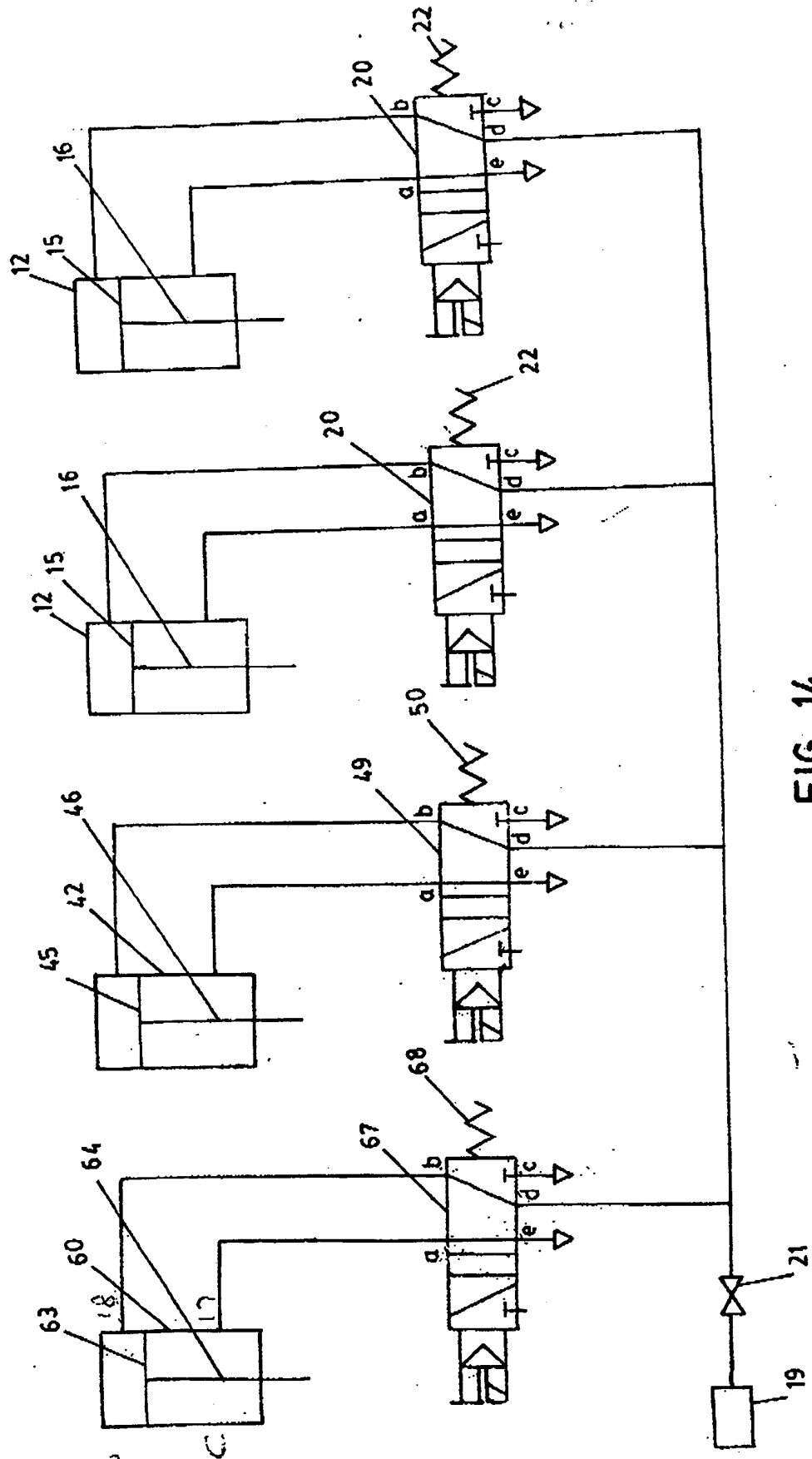
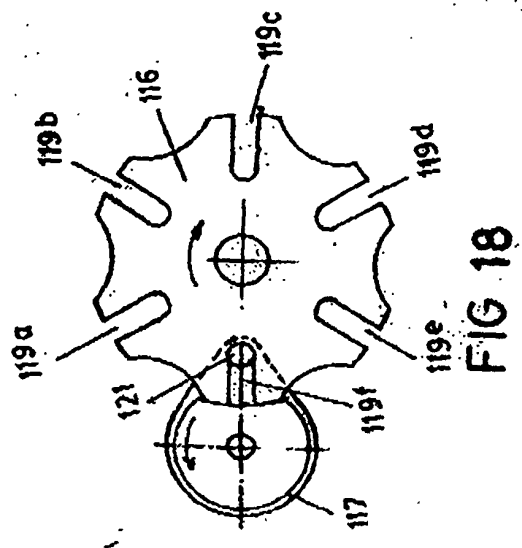
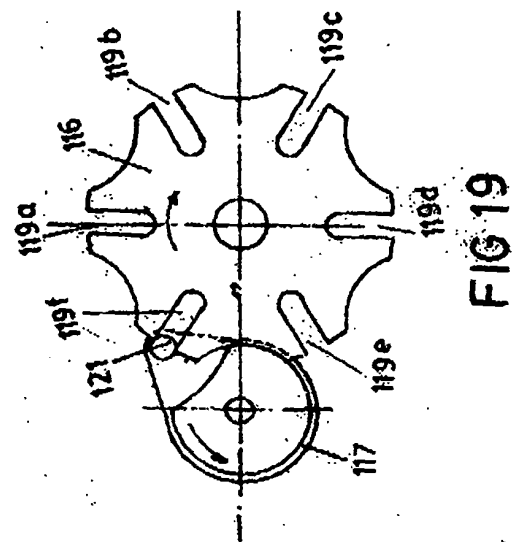
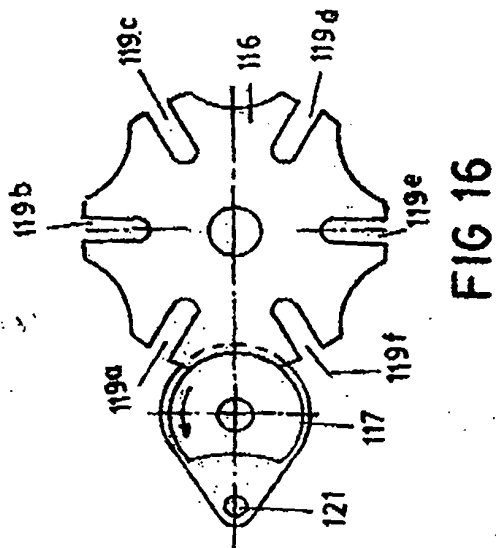
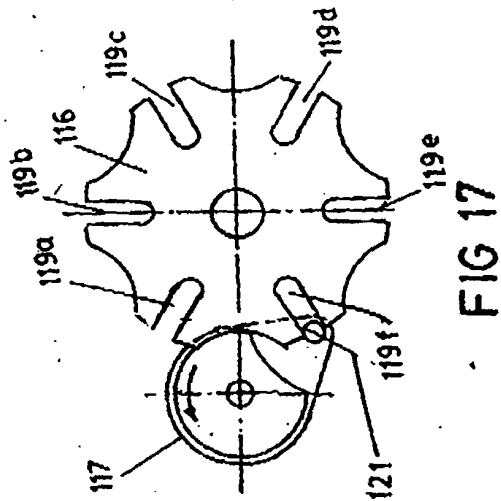


FIG 14



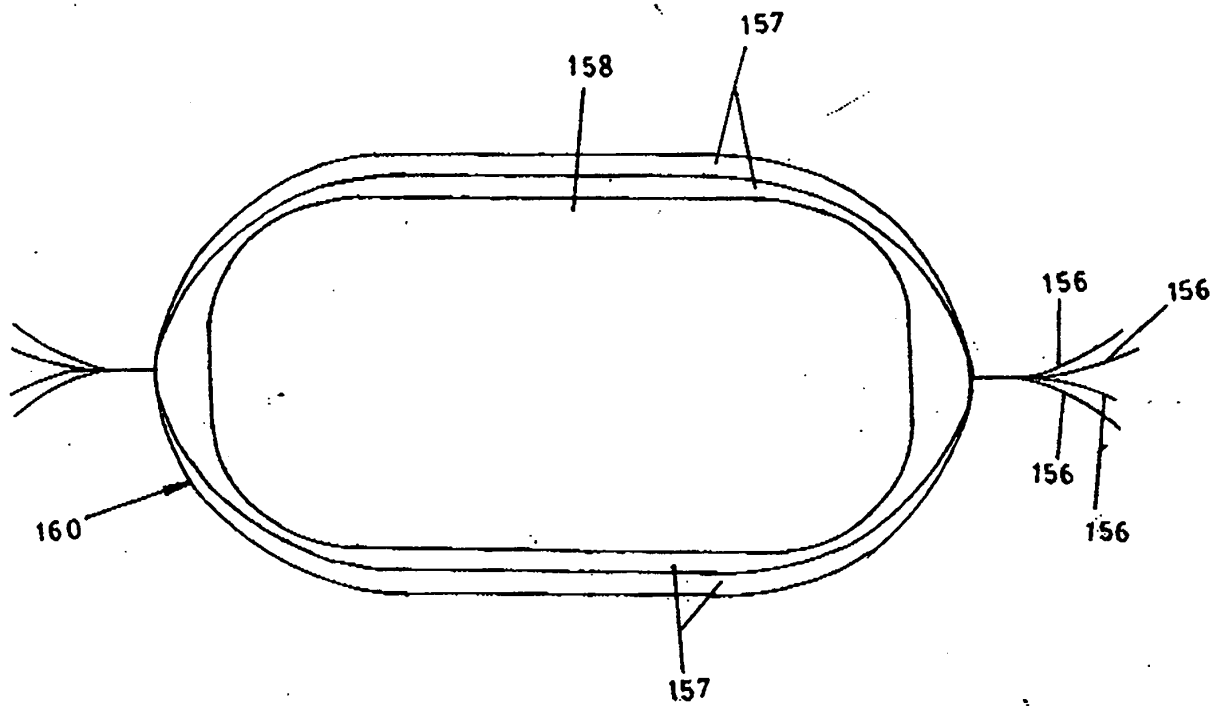


FIG 20