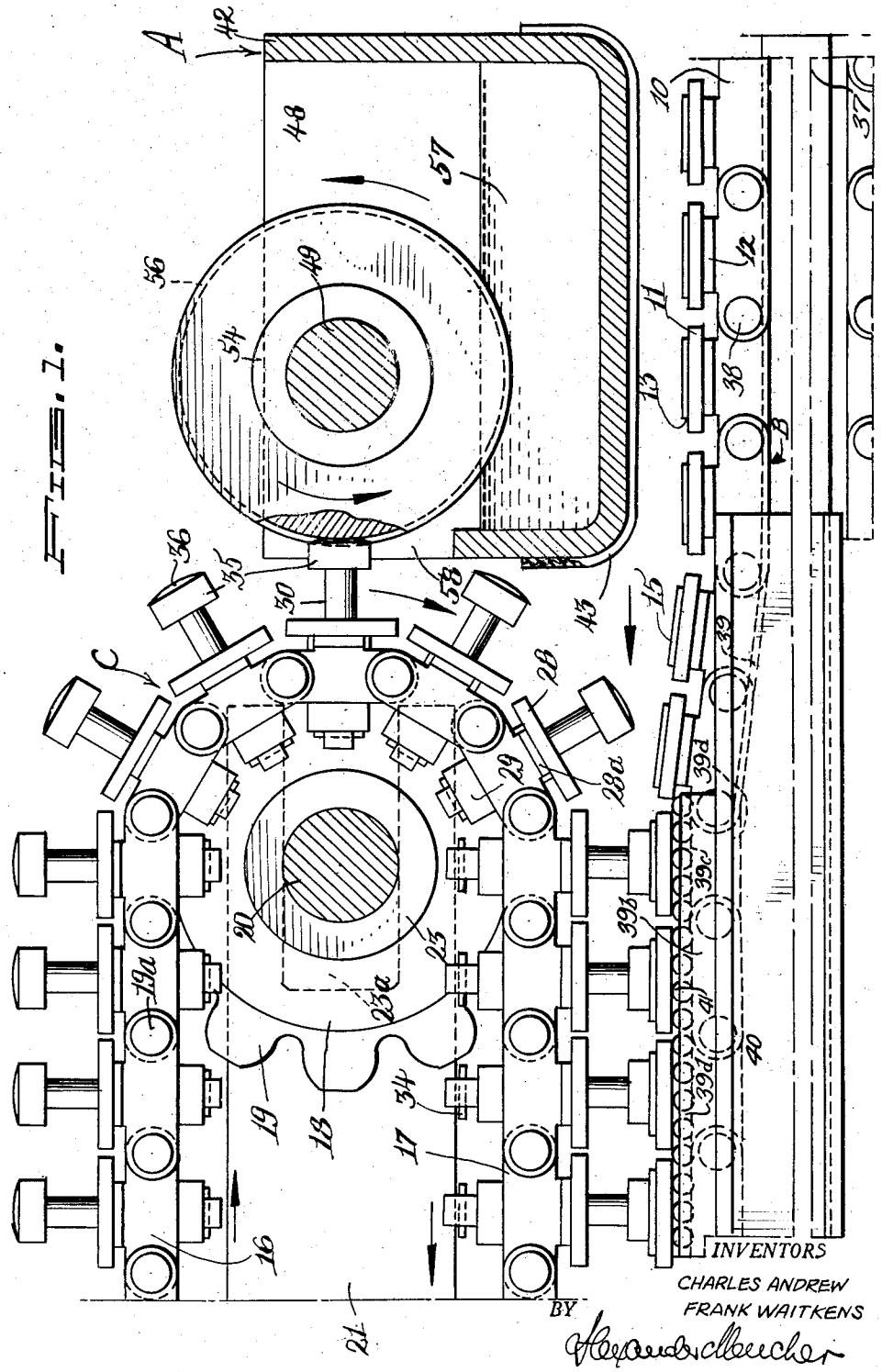
Aug. 23, 1949. C. ANDREW ET AL 2,479,663

PARAFFIN APPLICATOR FOR CAP LINING MACHINES

Filed May 29, 1945 3 Sheets-Sheet 1

FIG. 1.



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Filed May 29, 1945 3 Sheets-Sheet 2

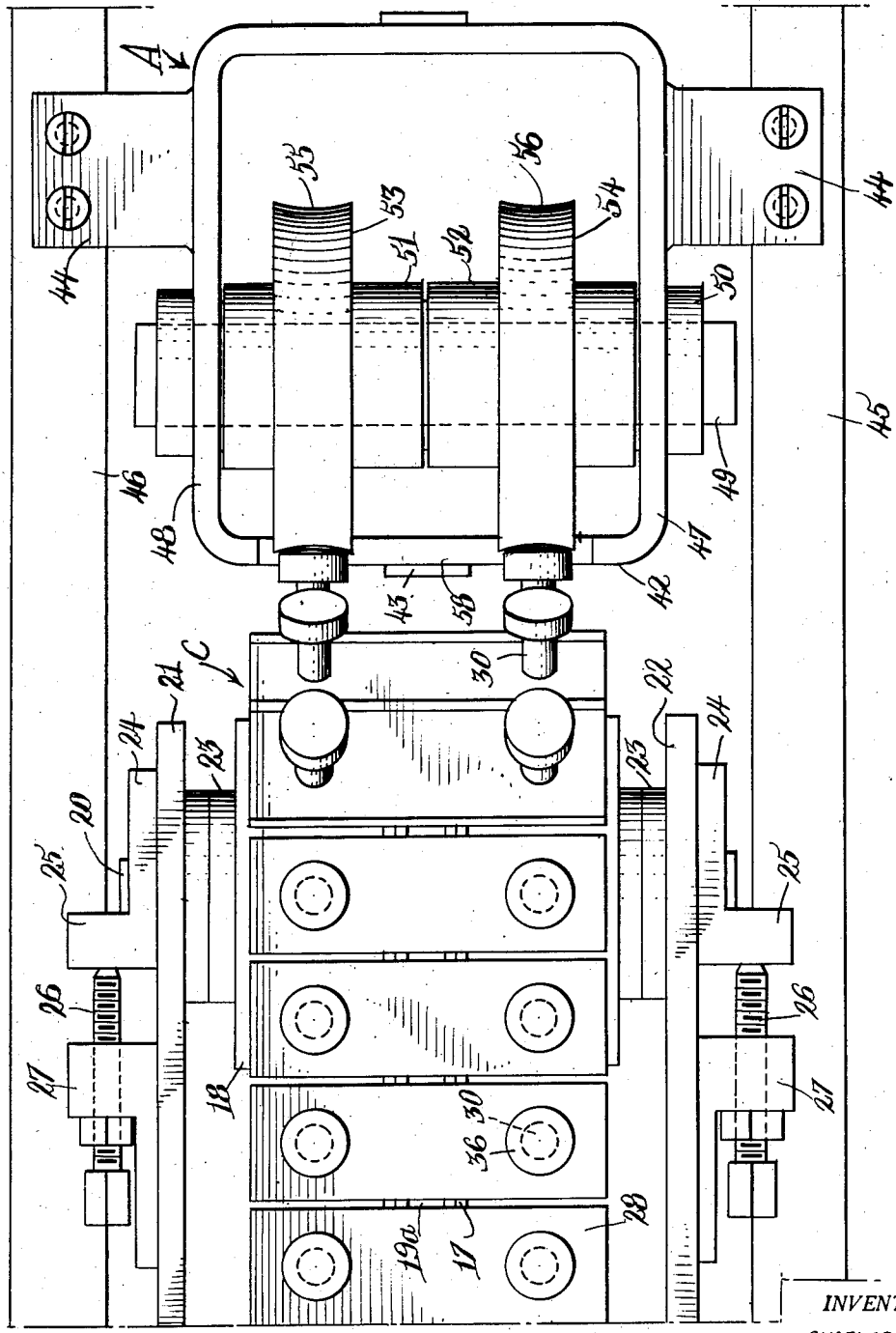


FIG. 2.

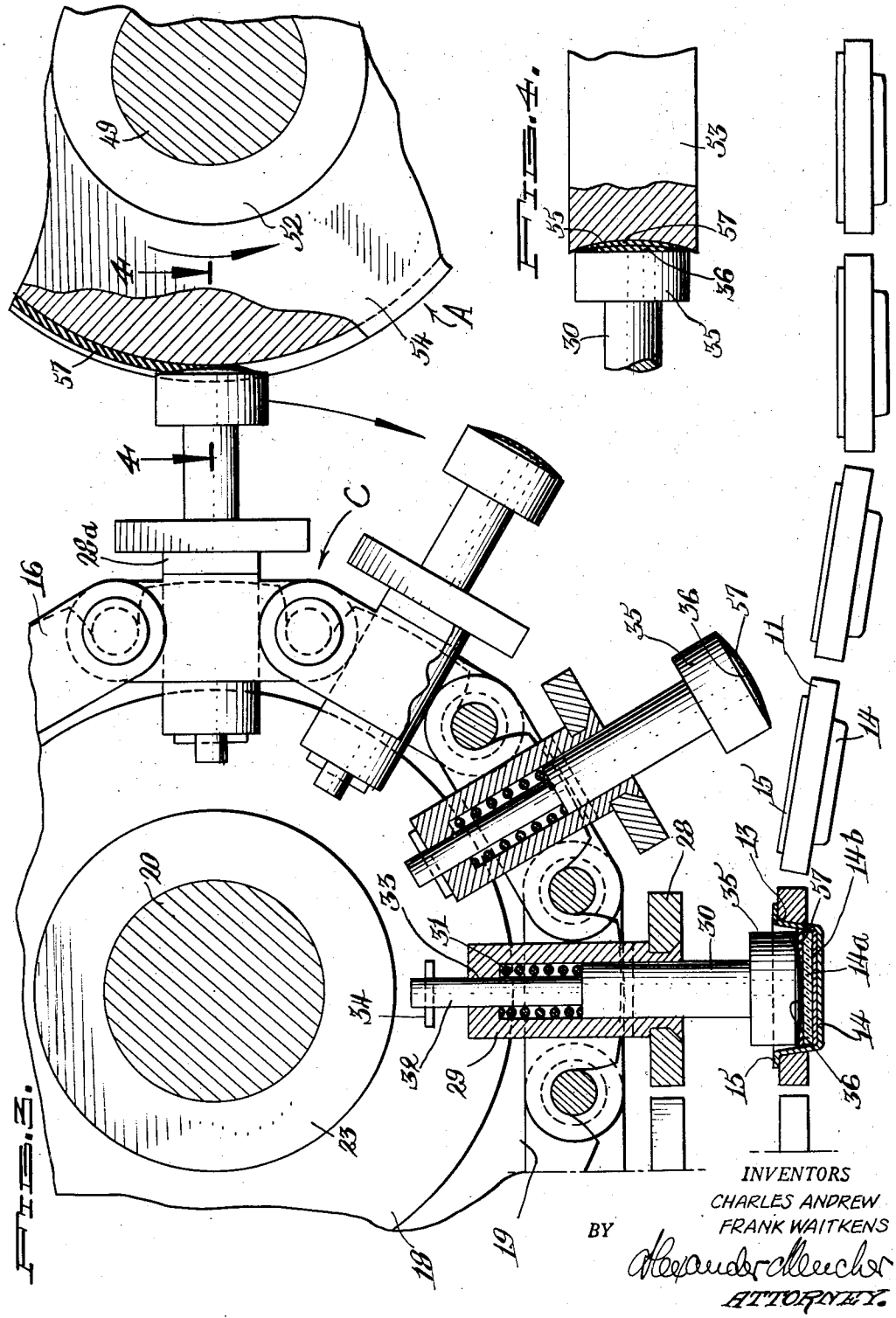
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PARAFFIN APPLICATOR FOR CAP LINING MACHINES

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Application May 29, 1945, Serial No. 596,502

5 Claims. (Cl. 91—47)

1

This invention relates generally to means for applying wax or other composition to the faces of disks in a bottle cap assembling machine designed to assemble cork or composition cork disks within shells and to bond such disks within the shells.

The main object of the invention resides in the provision of means cooperating with a sequence of pressure plungers carried on an endless sprocket chain in association with a sequence of cap-carrying plates on another endless sprocket chain whereby said plungers serve the additional function of daubers for the application and spreading of a small quantity of wax or other finishing composition to the exposed surface of the disks within the shells or caps. The invention herein may be adapted to and incorporated in an assembling machine of the type described in our copending application for patent filed in the United States Patent Office on September 27, 1944, under Serial Number 556,066 (now abandoned).

A further object of the invention resides in the provision of a wax or other like composition applicator which is simple and economical to install in any cap assembling machine utilizing pressure plungers carried on an endless sprocket chain above a sequence of cap carrying plates carried on a lower endless sprocket chain, the said applicator also being efficient in operation and simple in structure.

These objects and other ends and advantages of the invention will hereinafter appear in the progress of the disclosure and as pointed out in the appended claims.

Accompanying this specification are drawings showing a preferred form of the invention wherein:

Figure 1 is a fragmentary front view in elevation partly in section showing the wax applicator in operable relationship with a sequence of pressure plungers on an endless sprocket chain, the plungers being shown also in engageable relationship with a sequence of cap-carrying plates on another endless sprocket chain, said plates being exposed to heat along a portion of the upper stretch of said chain.

Figure 2 is a plan view of the assembly shown in Figure 1.

Figure 3 is an enlarged fragmentary front view in elevation and partly in section of Figure 1 showing the operable relationship between the wax applicator and the pressure plungers, and between the pressure plungers and the cap disks on the carrying plates.

2

Figure 4 is a fragmentary sectional view partly in elevation along plane 4—4 of Figure 3 showing the engagement of a plunger head with the applicator roller for transfer of wax or composition thereto.

In accordance with the invention and the preferred form thereof shown in the drawings, the applicator for the spreading of a quantity of wax or other finishing composition is generally indicated by letter A. It is associated with a bottle cap assembling machine which includes a sequence of plates which carry caps, the plates being mounted on the upper stretch of an endless sprocket chain, and a pressure mechanism comprised of a sequence of pressure plungers carried on an endless sprocket chain disposed above the first mentioned chain. The sprocket chain and the sequence of plates thereon carrying the caps is indicated generally by letter B and the sprocket chain carrying the sequence of pressure plungers thereon is indicated generally by letter C.

As described in our co-pending application for patent filed September 27, 1944, under Serial Number 556,066, a conventional cap assembling machine to which the invention herein may be applicable possesses mechanisms and operations not all shown herein. Thus, the type of cap assembling machine to which the invention is applicable has at one end a shell or cap feeding mechanism adapted to simultaneously deliver a pair or more shells to each of said carrier plates; a mechanism is adapted thereafter to deposit a disk upon the adhesive within each shell; means are adapted to subject the shells and the adhesive therein to an elevated temperature; a pressure mechanism comprised of a sequence of pressure plungers carried on an endless sprocket chain is operative upon the disks and the shells upon the several carrier members while the adhesive therein is heated; an ejecting mechanism is provided for the completed caps; and an actuating mechanism is provided whereby said carrier plates are successively and progressively brought into the operative relation to said other mechanisms, and said mechanisms are actuated in synchronism with the movement of said members.

Thus, an endless sprocket chain 10 as shown in Figure 1 actuated in the conventional manner as by a pair of sprockets (not shown) is adapted to carry a sequence of spaced plates 11 secured to the sprocket chain 10 in any conventional manner as by brackets 12. Each of the plates 11 is provided with a plurality of openings 13 but as

shown the openings are limited to two in number. Each of openings 13 carries a shell 14 provided with a skirt 15 by which each disk is suspended from each of the openings 13. Shells 14 travel along the upper stretch of sprocket chain 10.

The pressure plunger mechanism is comprised of an endless sprocket chain 16 mounted above the upper stretch of sprocket chain 10, the lower stretch 17 of this sprocket chain being adapted through the plungers secured thereto as hereinafter described to engage the interior of each of the shells 14 at cushion disks 14*a* lying on adhesive 14*b*, while the curved stretch of the sprocket chain 16 carrying the pressure plungers cooperates with the wax applicator hereinafter to be described and all as shown best in Figures 1 and 3.

Sprocket chain 16 is actuated by at least one sprocket wheel 18 carrying sprockets 19 to engage the sprocket chain 16 between successive chain cross bars 19*a*. Sprocket wheel 18 is suitably mounted on an axis 20 between end plates 21 and 22, there being provided bearing hubs or driving pulleys 23 on the ends of wheel 18 inside of plates 21 and 22. Each of the end plates 21 and 22 is provided with an elongated cut out 23*a* over which is fitted on the outer side of said plates a slidable plate 24 having registering openings with 23*a*, said slidable plates 24 each having projections 25 adapted to engage an adjusting screw 26 mounted in a bracket 27 on each of the plates 21 and 22 whereby sprocket chain 16 may be made adjustable for tightening and loosening purposes.

The sprocket chain 16—17 is provided with a sequence of cross plates or bars 28 of substantially the same length as plates 11 and being spaced apart substantially the same distance as plates 11. Each of plates 28 is suitably secured to chain 16—17 by brackets 28*a* and carries a pair of spring housings 29 (Figure 3) each having mounted therein a plunger 30 acted on by a spring 31 between the shoulder of the upper end of the plunger 30 and a reduced stem portion 32. The spring 31 has a normal tendency to force the plunger outwardly of the bar or plate 28. Spring 31 encircles stem 32, the latter having a bearing in the form of an opening 33 in the top of housing 29, the stem 32 at the upper end having a stop pin 34 to limit the outward movement of the plunger 30. A head 35 of the plunger is enlarged and has a convex outer end 36, the head of the plunger having substantially the same diameter as the cushion cork or composition disk 14*a* within shell 14.

It is to be observed that the number of plungers 30 carried by each plate 28 corresponds with the number of openings 13 in each plate 11, and the arrangement of the sprocket chains is such that as the lower stretch 17 of sprocket chain 16 approaches the upper stretch of sprocket chain 10, the various plungers 30 of each plate 28 will be so positioned as to enter the shells 14 upon the plates 11, the springs 31 being tensioned as a result of the engagement of the plunger faces 36 with the cork cushions 14*a*, the latter being compressed against adhesive 14*b* to an extent to develop the desired pressure for baking the adhesive between cork cushion 14*a* and the bottom of shell or cap 14. Engagement of plungers 30 and caps 14 takes place along the lower stretch 17 of chain 16, and in this interval heating means are provided as will hereinafter appear.

With the upper stretch of sprocket chain 10 and the lower stretch 17 of sprocket chain 16 lying parallel, the plungers 30 passing around the sprocket wheel 18 will impart a swiping action to the caps or shells 14 in plates 11 lying along the upper stretch of the chain 10 due to plunger travel along a radical orbit, the movement of the plungers 30 being greater than the linear movement of the caps 14 on plates 11. Such a situation would cause a crushing of the shells 14. To eliminate this possibility, a plate 37 is provided which engages the cross pins 38 of chain 10 along the upper run, plate 37 having an upper inclined runway 39 along a portion of its length opposite the curved stretch of sprocket chain 16 as shown in Figure 1 whereby each plunger 30 is free from engagement with each of the caps 14 as they ascend the inclined portion 39. Engagement between each plunger 30 and cap 14 takes place along the vertically disposed axis of each of the plungers and while the caps 14 are on the upper straight portion 39*a* of bar 37.

Along the upper stretch of chain 10 and adjacent the lower horizontal sprocket chain stretch 17 is provided heating means for the caps 14 containing adhesive 14*b* on which disks 14*a* lie so that while uniform pressure is applied by plungers 30 to caps 14 along stretch 17, the adhesive is baked for affixation of disks 14*a* to caps 14. For this purpose a heating element 39*b* is provided and is secured to a pair of lateral and spaced plates 40, the said plates 40 also being used to mount bar 37. The heating element 39 may be in the form of a flat plate mounted between the plates 40 and may contain a groove 39*c* on the upper face against the sides 39*d* of which are mounted a plurality of rollers 41. Rollers 41 also serve to support the opposite ends of each of the plates 11 of sprocket chain 10 so that this portion of the upper stretch of chain 10 may have a support during application of pressure by plungers 30 on the caps 14 mounted within the plates 11.

The applicator designated generally by letter A is comprised of a receptacle 42 having suitable heating means such as an electric heating unit 43 secured to the bottom and front and rear walls. Receptacle 42 is preferably mounted by a pair of brackets 44 on lateral plates 45 and 46 of the cap assembling machine and is disposed above plates 11 of the upper stretch of sprocket chain 10 and adjacent the radial orbit of plungers 30 on sprocket chain 16 as best shown in Figure 1.

Between the end walls 47 and 48 of receptacle 42 is mounted a double feed roller to transfer molten wax or composition to the plunger heads 35, the said roller having an axis 49 rotatably mounted between walls 48 and 49 as by the use of a pair of bearing members 50 contacting the outer faces of receptacle walls 47 and 48. A pair of hubs 51 and 52 secured to axis 49 carry rollers 53 and 54 each having a concave grooved outer circumferential wall 55 and 56 respectively. The roller grooves 55 and 56 are spaced apart to register with each pair of convex faces 36 of plunger heads 35 on the plates 28 during movement of plungers 30 through the radial orbit as shown in Figure 1. Grooves 55 and 56 are submerged along the lower end in the molten paraffin or other like composition 57 in receptacle 48 and as plunger faces 36 contact 55 and 56 through an opening 58 in the front wall of receptacle 48, rollers 53 and 54 are caused to rotate thereby feeding grooves 55 and 56 with molten wax or composition 57 for transfer at openings 58 to the plunger faces 36.

Since the plunger faces 36 are still warm from passage through the heating means 39*b* before

contacting the roller grooves **55** and **56**, they carry an even distribution of molten wax material from the rollers to the upper surface of cushion disks **14***a*. At the end of the heating operation and at which time plungers **30** are disengaged from cushion disks **14***a*, the film of molten wax is evenly distributed on the disks, and the further travel of sprocket chain **10** along the upper stretch and beyond the heating means permits the wax to harden evenly on the upper face of the disks before the assembled and paraffined caps are ejected.

Thus, the invention herein makes it possible for pressure plungers **30** of a cap assembling machine to serve as radially arranged daubers for the application of wax or similar composition to cushion disks without resorting to additional drives and additional equipment outside of a feed roller and a wax or composition reservoir.

It is understood that minor changes and variations in the integration, location, material and subcombination of parts may all be resorted to without departing from the spirit of the invention and the scope of the appended claims.

We claim:

1. In assembling apparatus for closure caps adapted to introduce adhesive and sealing disks therein, a distributing mechanism carrying a fluid to form a film for the faces of said disks, an endless movable conveyor with horizontally disposed upper and lower stretches and arranged with successive cap-supporting seats, an endless plunger-carrying movable conveyor with the lower stretch thereof juxtaposed to the upper stretch of the other conveyor and the plungers carried thereby being adapted to actuate and receive fluid material from said distributing mechanism and thereafter to simultaneously transfer said material to the sealing disks in the caps and to engage said disks in the caps under pressure, and heating means associated with the endless movable conveyor opposite the lower stretch of the plunger-carrying conveyor to cure the adhesive between the disks and the caps and to evenly distribute the transferred film material on the sealing disks.

2. In assembling apparatus for closure caps adapted to introduce adhesive and sealing disks therein, a film distributing mechanism for the outer faces of said disks, a movable conveyor having an upper stretch of at least a portion of its length horizontally disposed and arranged with successive cap-supporting seats, a plunger-carrying movable conveyor with the lower stretch juxtaposed to said upper stretch at the horizontal portion and the plungers carried thereby being adapted to actuate and receive film material from said film distributing mechanism and thereafter to simultaneously transfer said film material to the sealing disks in the caps and to engage said disks in the caps under pressure.

3. In assembling apparatus for closure caps adapted to introduce adhesive and sealing disks therein, a movable conveyor having an upper stretch with at least a portion of its length horizontally disposed and arranged with successive cap-supporting seats, a plunger-carrying movable conveyor, at least one sprocket wheel engaging said plunger-carrying conveyor to form an upper and lower stretch, the said lower stretch being juxtaposed to the horizontal portion of the upper stretch of the first mentioned movable conveyor, a film distributing mechanism between the said conveyors, the plungers carried by one of the conveyors during movement along the radial orbit thereof being adapted to actuate and receive film material from said film distributing mechanism and thereafter to simultaneously transfer said film material to the sealing disks in the caps and to engage said disks in the caps under pressure along the horizontal portion of the upper stretch of the first mentioned movable conveyor.

4. In an assembling apparatus for closure caps as set forth in claim 3 wherein heating means are provided for the horizontal portion of the upper stretch of the first mentioned movable conveyor for even distribution of film material on the faces of the disks and for curing the adhesive between the disks and the caps.

5. In assembling apparatus for closure caps adapted to introduce adhesive and sealing discs therein, a movable conveyor arranged with successive cap-supporting seats, a plunger-carrying movable conveyor, a distributing mechanism of material for forming a protective film on the discs mounted between predetermined portions of said conveyors, the plungers carried by one of the conveyors being adapted to actuate and receive said material from said distributing mechanism and thereafter to simultaneously transfer said material to the sealing discs in the caps and to engage said discs in the caps under pressure during synchronous movement of the conveyors, and heating means along a predetermined length of the conveyor carrying the cap-supporting seats to simultaneously cure the adhesive between the sealing discs and the caps and heat the plungers during plunger engagement therewith.

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