

May 9, 1939.

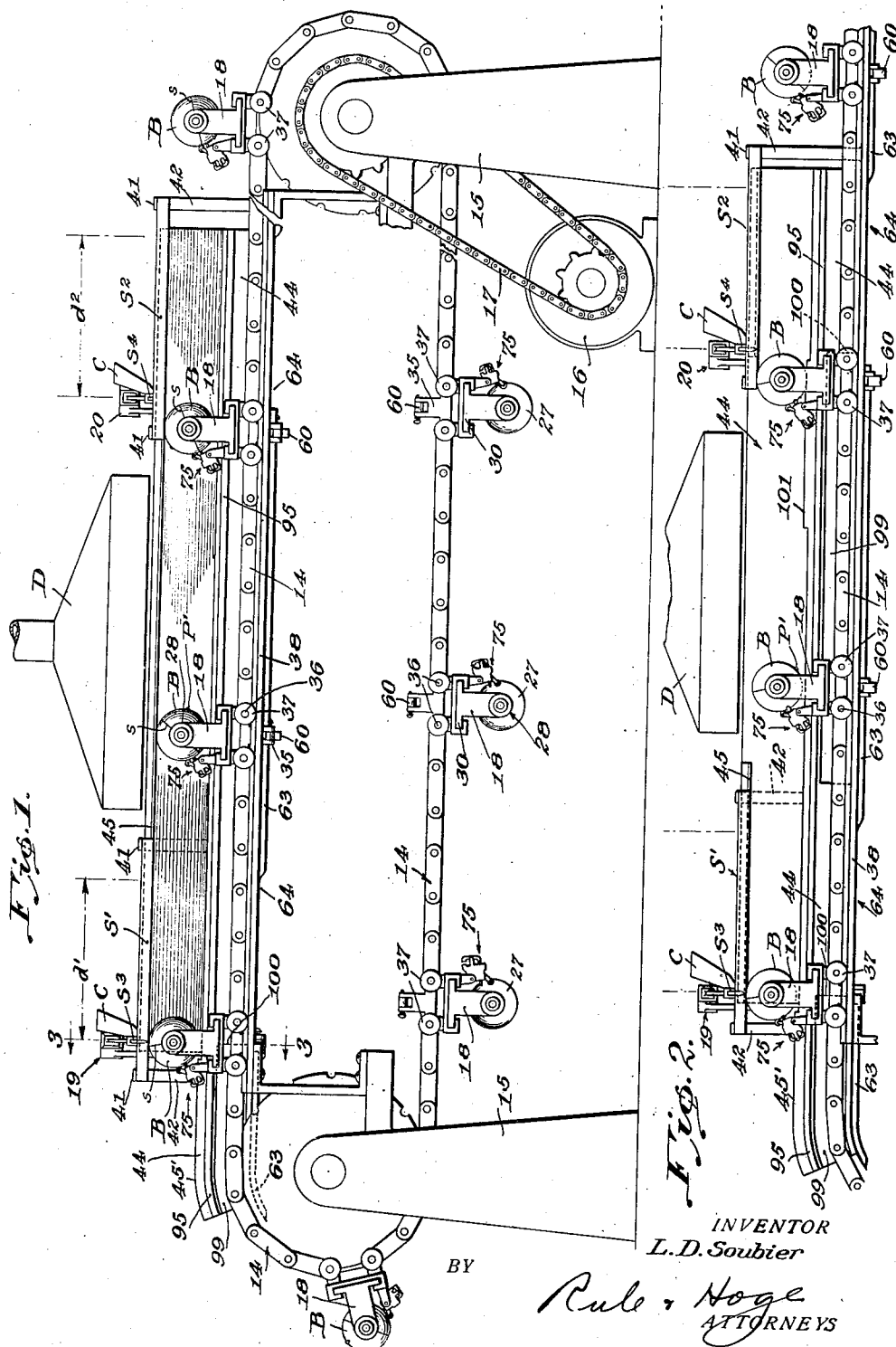
L. D. SOUBIER

2,157,638

STENCILING APPARATUS

Filed Sept. 30, 1937

5 Sheets-Sheet 1



May 9, 1939.

L. D. SOUBIER

2,157,638

STENCILING APPARATUS

Filed Sept. 30, 1937

5 Sheets-Sheet 2

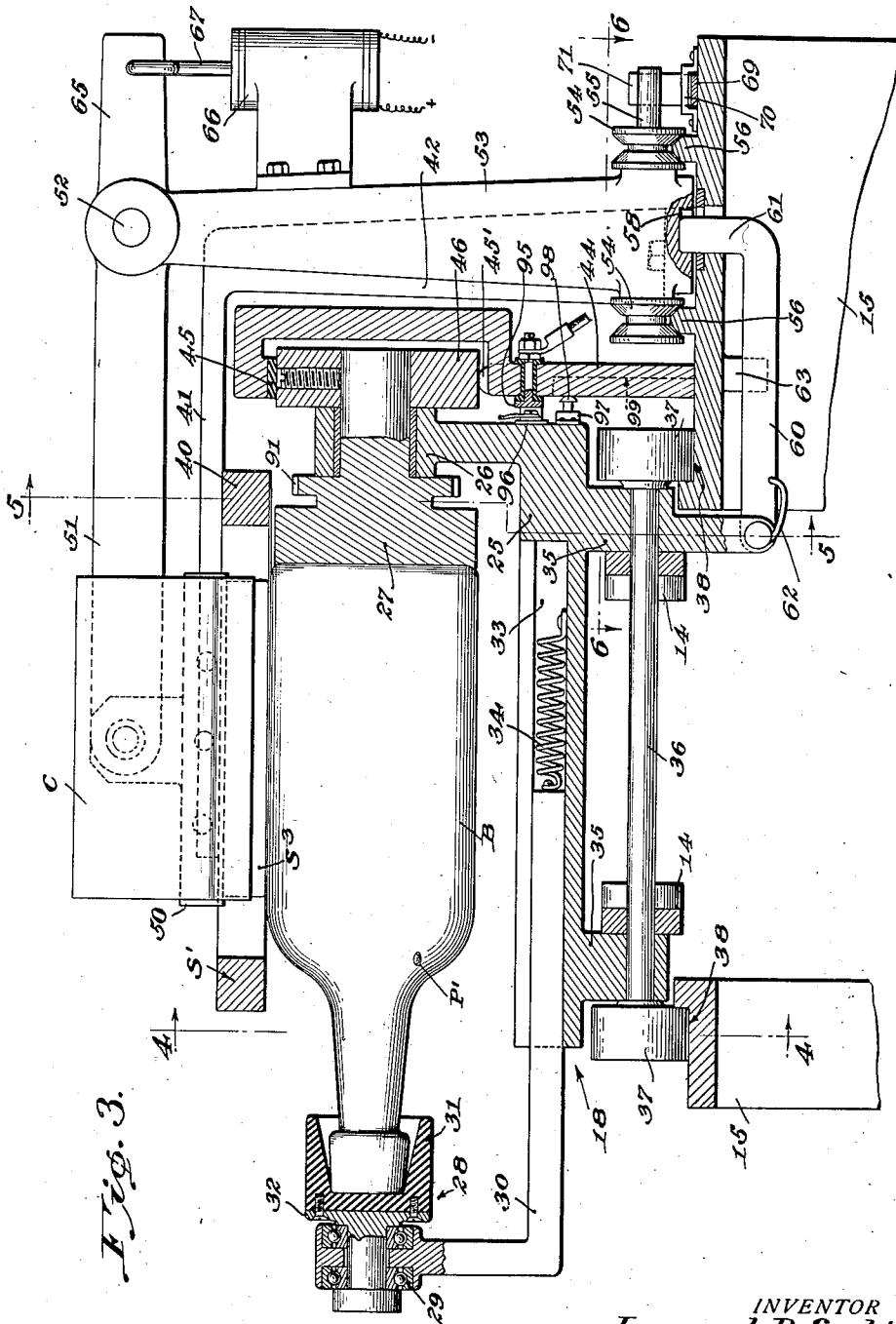


Fig. 3.

BY

INVENTOR
Leonard D. Soubier,
Rue & Hoge
ATTORNEYS

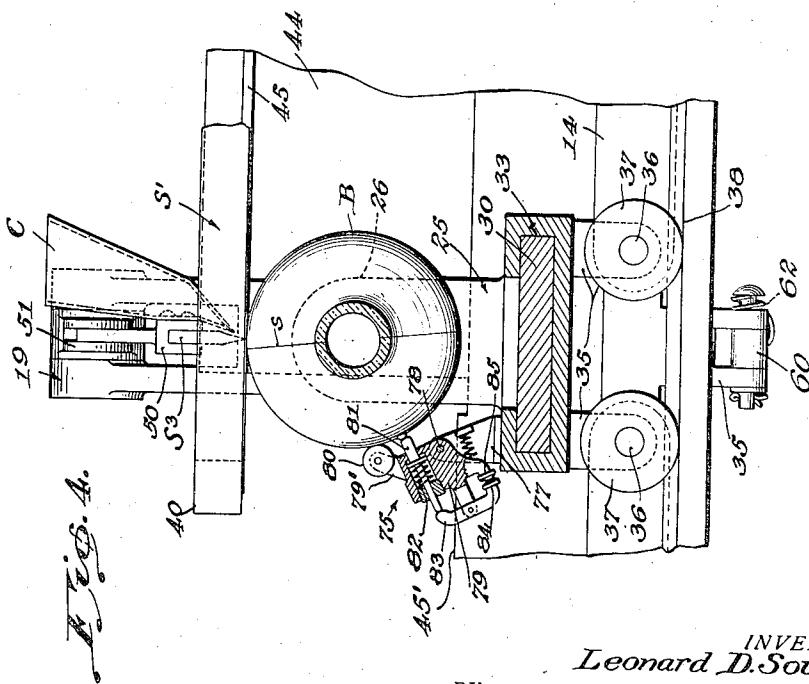
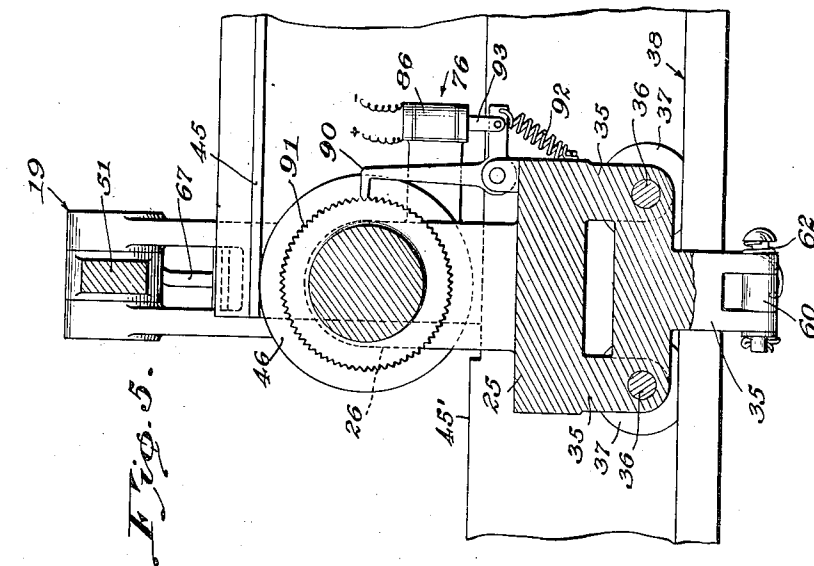
May 9, 1939.

L. D. SOUBIER
STENCILING APPARATUS

2,157,638

Filed Sept. 30, 1937

5 Sheets-Sheet 3



BY

INVENTOR
Leonard D. Soubier,
Rule & Hoge
ATTORNEYS

May 9, 1939.

L. D. SOUBIER

2,157,638

STENCILING APPARATUS

Filed Sept. 30, 1937

5 Sheets-Sheet 4

Fig. 6.

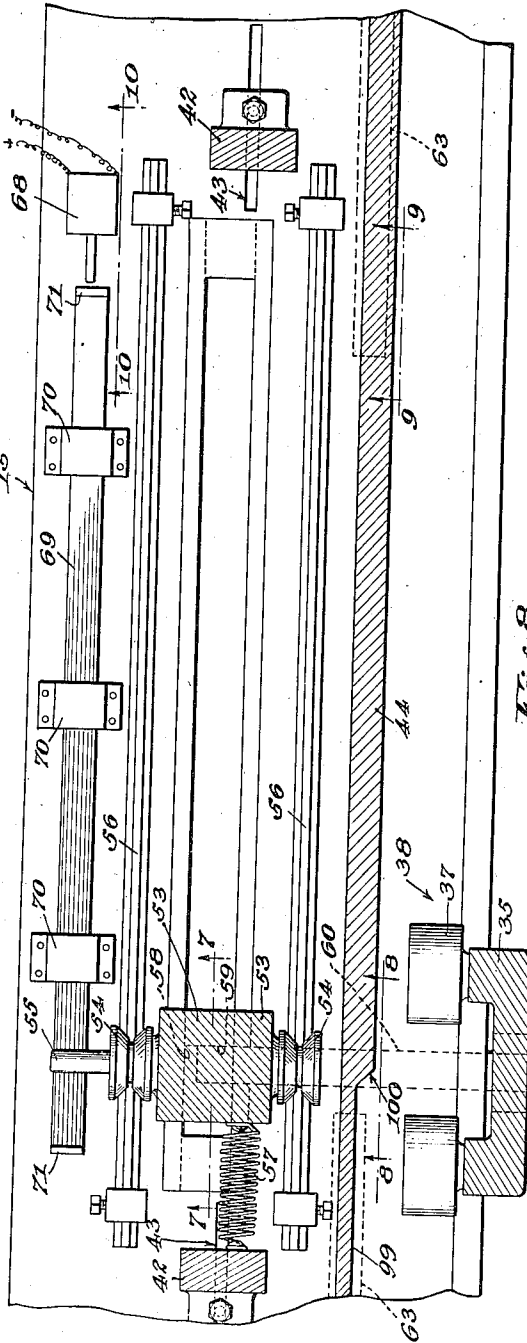


Fig. 8.

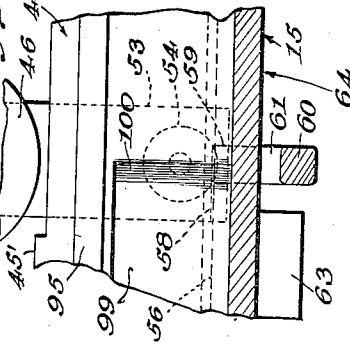


Fig. 9.

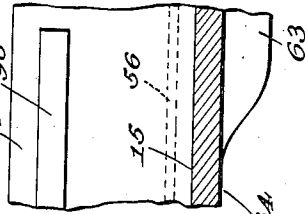


Fig. 7.

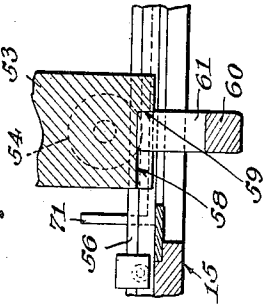
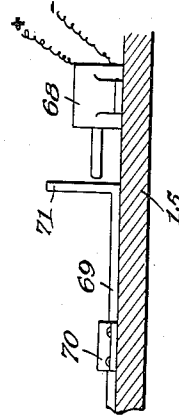


Fig. 10.



BY

INVENTOR
Leonard D. Soubier

Rule & Hoge
ATTORNEYS

May 9, 1939.

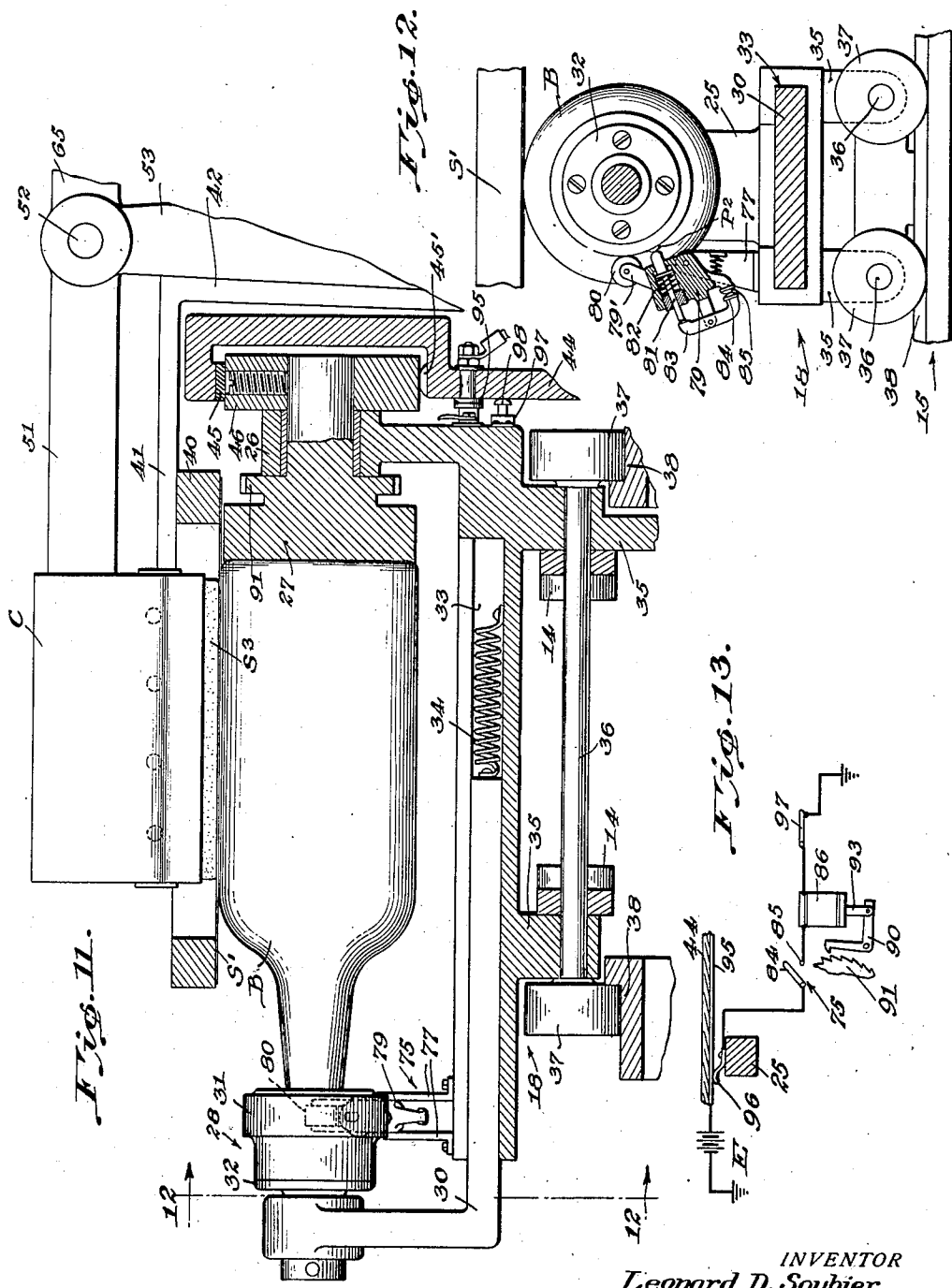
L. D. SOUBIER

2,157,638

STENCILING APPARATUS

Filed Sept. 30, 1937

5 Sheets-Sheet 5



INVENTOR
Leonard D. Soubier,
BY
Rule & Hoge
ATTORNEYS

UNITED STATES PATENT OFFICE

2,157,638

STENCILING APPARATUS

Leonard D. Soubier, Toledo, Ohio, assignor to
Owens-Illinois Glass Company, a corporation
of Ohio

Application September 30, 1937, Serial No. 166,619

21 Claims. (Cl. 101—115)

The present invention relates to improvements in apparatus for marking or decorating the cylindrical surfaces of bottles and like articles with lettering or other desired designs by a stenciling, printing, or other process wherein the ink, enamel composition or other coloring material is forced through a stencil screen by means of a squeegee.

The principal object of the invention is to provide a stenciling or other decorating apparatus which operates automatically to decorate the cylindrical surfaces of bottles or like articles fed in succession thereto and which will orient the bottles angularly prior to each application of color to the surface thereof in such a manner that proper circumferential positioning of the variously independently applied colors or component parts of the designs will be attained, while at the same time the completed designs will not overlaid the usual mold seams occurring on the bottles.

In carrying out the above mentioned object, the invention, in one form thereof, contemplates the provision of a decorating apparatus having associated therewith a plurality of bottle conveying units, each of which is adapted to receive and rotatably support a bottle to be decorated, each unit having associated therewith a means designed for cooperation with a projection formed on a bottle for insuring proper orientation of the bottle as the same is brought by the unit into decorating position.

In another form of the invention, designed for the application of multi-color designs to seamless articles, a projection formed on one of the article supporting chucks of each article conveying unit cooperates with a similar means for insuring proper superimposition of the component colors of the design upon the surface of the articles.

Other objects of the invention will become apparent as the description of the invention ensues.

In the accompanying drawings:

Fig. 1 is a side elevational view of one form of decorating apparatus embodying the principles of the invention;

Fig. 2 is a fragmentary side elevational view of another form of decorating apparatus;

Fig. 3 is an enlarged sectional view taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken substantially along the line 4—4 of Fig. 3;

Fig. 5 is a sectional view taken substantially along the line 5—5 of Fig. 3;

Fig. 6 is a sectional view taken substantially along the line 6—6 of Fig. 3;

Fig. 7 is a sectional view taken substantially along the line 7—7 of Fig. 6;

Fig. 8 is a sectional view taken substantially along the line 8—8 of Fig. 6;

Fig. 9 is a sectional view taken substantially along the line 9—9 of Fig. 6;

Fig. 10 is a sectional view taken substantially along the line 10—10 of Fig. 6;

Fig. 11 is a fragmentary sectional view similar to Fig. 3 showing a modified form of the invention;

Fig. 12 is a sectional view taken substantially along the line 12—12 of Fig. 11; and

Fig. 13 is a diagrammatic view illustrating an electrical circuit employed in connection with the present invention.

Briefly, the invention is embodied in a decorating apparatus involving in its general organization an endless horizontal conveyor 14 (Fig. 1) supported in the framework 15 of the apparatus and driven by a motor 16 to which driving connection is effected by a chain 17 or like element. The conveyor 14 carries a series of article holding units 18 which are adapted to rotatably support and convey bottles B or other articles having cylindrical surfaces in succession beneath a plurality of stencil screens in tangential rolling line contact therewith. While any number of stencil screens may be provided, depending upon the number of color applications to be made to each bottle, in the present instance two screens S^1 and S^2 have been illustrated, each screen being adapted to apply a component color or part of the design to the bottles. A drying device D is disposed between the screens S^1 and S^2 above the path of movement of the bottles B and is adapted to apply sufficient heat to the bottles issuing from the first screen S^1 and passing to the second screen S^2 that the component part of the decoration applied to the bottles by the former screen will have become set or hardened before the bottles are treated by the second screen S^2 .

The screens S^1 and S^2 have associated therewith squeegee carrying units 19 and 20 respectively, including squeegees S^3 and S^4 . The units 19 and 20 are adapted to travel horizontally in the apparatus to move the squeegees S^3 and S^4 across the surface of the respective screens S^1 and S^2 and force coloring material applied to the screens through the same and onto the bottles B passing therebeneath. Means is provided for periodically returning the units 19 and 20

to their initial or starting positions in order that the squeegees S^3 and S^4 may cooperate with each successive bottle B passing beneath the screens S^1 and S^2 .

Each of the article holding units 18 consists of a body portion 25 or casting (Figs. 3 and 4) which has formed on one side thereof an elevated bearing 26 in which is rotatably mounted a base chuck 27 designed to support the base of a bottle B undergoing decoration. The head chuck 28 is rotatably mounted in bearings 29 carried by a slide 30 and includes an elastic cup 31 mounted upon a holder 32. The slide 30 is mounted in a slideway 33 and a coil spring 34 normally urges the slide 30 inwardly of the casting 25 to move the cup 31 to its innermost article engaging position. The bottles are manually placed in the units 18 at the forward end of the conveyor 14, it being necessary for the operator merely to insert the neck portion of each bottle in the elastic cup 31 and force the slide outwardly until the base portion of the bottle clears the base chuck 27.

The casting 25 is provided with a plurality of pairs of depending ears 35 or legs which rotatably support therebetween respective transverse shafts 36 carrying supporting wheels 37 at their outer ends. As shown in Fig. 1, the shafts 36 form the pivotal connection by means of which the units 18 are supported in the conveyor 14. Horizontal runways 38 provided on the framework 15 (Figs. 1 and 4) extend longitudinally of the conveyor 14 in the upper regions thereof, and provide a rolling support for the units 18 on the supporting wheels 37.

Referring now to Figs. 3 and 6, the stencil screens S^1 and S^2 are each carried by a rectangular screen frame 40 which is mounted upon a horizontal supporting arm 41 formed on the upper end of a standard 42. The standards 42 are adjustable toward and away from each other in slots 43 provided in the framework 15 of the apparatus.

In order to effect positive tangential rolling line contact between the cylindrical surfaces of the bottles B carried in the units 18 and the stencil screens S^1 and S^2 , an upstanding wall 44 (Figs. 1 and 3), forming a part of the stationary framework 15, carries upper and lower friction strips 45 and 45' which are designed for engagement with a friction wheel 46 mounted on the outer end of each base chuck 27. The friction strip 45' extends from a point well forwardly of the first stencil screen S^1 and terminates adjacent the forward end of the screen and is adapted to impart clockwise rotation to the bottles B as viewed in Fig. 1 for a purpose subsequently to be described. The friction strip 45 extends from a point adjacent the forward end of the first stencil screen S^1 to a point adjacent the rear end of the second screen S^2 and is adapted to impart counter-clockwise rotation to the bottles B in order to establish positive tangential rolling line contact between the same and the screens S^1 and S^2 . Thus, as each moving bottle B is brought into decorating position in contact with the first screen S^1 , the friction wheel of the respective chuck 27 will engage the friction strip 45 and the bottle B, together with the chuck 27, will commence to rotate and will continue to rotate until the bottle has passed beneath the second stencil screen S^2 . It will be seen, therefore, that by properly adjusting the distance between the screen supporting standards 42 (Fig. 6) the bot-

tles B may be brought into decorating position in contact with the second screen S^2 in such a manner that the first color application applied to the bottles by the first screen S^1 will be so oriented that the second color application will be superimposed thereover or, if desired, applied to the bottle in a predetermined relation thereto.

Referring now to Figs. 3 and 6, the squeegees S^3 and S^4 are each carried in a squeegee holder 50 which is pivotally suspended from the outer end of a squeegee arm 51 which is rockably mounted on a rock-shaft 52 carried at the upper end of a standard 53 or carriage. A dispensing container C for the decorating material is secured to the holder 50 and is adapted to apply decorating material to the screen in the path of movement of the squeegee thereover. Supporting wheels 54 mounted upon trunnions 55 ride upon tracks 56 which extend longitudinally of the apparatus and thus the standards 53 are capable of longitudinal reciprocal motion independently of each other. A coil spring 57 serves to normally maintain each standard in an initial position on the tracks 56.

In order that the squeegees S^3 and S^4 shall follow the movements of each successive bottle passing beneath the respective screens S^1 and S^2 and pass across the surfaces of the screens in contact therewith along the respective lines of tangential contact between the screens and bottles undergoing decoration, a recess 58 providing a shoulder 59 is formed in the underneath side of each standard 53. One of the depending ears 35 of each article supporting unit 18 has pivoted thereto an arm 60 which carries at its free end a finger 61 which is designed for engagement with the abutments 59. A spring 62 serves to normally urge the arms 60 and fingers 61 into engagement with a cam track 63 (see also Fig. 1). The cam track 63 is discontinued as at 64 in the vicinity of the stencil screens S^1 and S^2 , and thus in these regions, the fingers 61 are adapted to engage the abutments 59 as the units 18 pass beneath the screens S^1 and S^2 to impel these standards 53 rearwardly and move the squeegees carried thereby across the surfaces of their respective screens. The extent of the actual decorating strokes of the squeegees S^3 and S^4 upon the stencil screens S^1 and S^2 respectively are illustrated in Fig. 1 by the dimensions d^1 and d^2 . After the squeegees have passed across the surfaces of their respective screens in operative decorating relation thereto, the arms 60 come into engagement with the cam track 63, thus moving the fingers 61 from the recesses 58 to clear the abutments 59 and release the standard 53 whereupon coil springs 57 serve to return the standards to their initial position.

In order that the squeegees S^3 and S^4 shall become elevated from their respective stencil screens S^1 and S^2 during return movement of the former, one end 65 of each squeegee arm 51 overlies a solenoid 66 (Fig. 3) bolted to the respective standard 53 and is connected to the armature thereof by a link 67. The solenoids 66 are adapted to be energized by means of electric switch devices 68 (Fig. 6) which are in turn actuated by means of slide bars 69 which reciprocate in guides 70 secured to the framework 15. One trunnion 55 of each standard 53 extends outwardly therefrom and is adapted to alternately engage upturned ends 71 formed on the slide bars 69. Thus, as each squeegee reaches the end of its decorative stroke d^1 or d^2 , the respec-

tive solenoid 66 is energized and the end 65 of the squeegee arm 51 is lowered and the arm is caused to tilt upon the shaft 52 to elevate the squeegee from the screen during its return movement to its initial position. Upon reaching its initial position, the solenoid is deenergized and the squeegee falls into contact with the screen preparatory to the next succeeding decorating stroke thereof.

Referring now to Figs. 1 and 4, the usual mold seams that occur on the bottles are designated at s. The bottles are placed in the article supporting units 18 in a cumbent position in the manner previously described as the units 18 move upwardly while rounding the forward end of the conveyor. Since the bottles are placed in the units 18 without regard to their angular position, means is provided for arresting rotational movement of the bottles after the friction wheels 46 have come into engagement with the friction strip 45' at precisely the moment when the bottles are properly oriented so that the seams have passed over the vertical plane passing centrally through the cumbent bottles. Thus, as each bottle proceeds into initial tangential engagement with the screen, the line of tangency between the bottle and screen will exist near the seam and to one side thereof so that the decoration, when applied to the bottle, will commence on one side of the seam. Means is also provided for releasing the arresting means whereby the bottle may, upon commencement of the decorating operation, assume a rolling line contact with the screen.

Toward these ends, in the forms of the invention illustrated in Figs. 1 to 10 inclusive, a protuberance P¹ is formed on each bottle adjacent the shoulder region thereof and is designed to cooperate with a switch control mechanism 75 associated with each unit 18 which serves to actuate a braking mechanism 76 also associated with each unit and designed to arrest the rotational movement of the respective base chuck 27. In the form of the invention illustrated in Figs. 11 and 12, a protuberance P² is formed on each head chuck 28 and is designed for engagement with a similar switch control mechanism.

The switch control mechanism just referred to comprises a standard 77 (Figs. 4 and 12) provided with a rock-shaft 78 at its upper end. A follower 79 is pivoted to the rock-shaft 78 and is provided with an arm 79' thereon carrying a roller 80 which is adapted to bear against the cylindrical surface of the bottle. A plunger 81 projects through the follower 79 and one end thereof is designed to extend into the proximity of the surface of the bottle by virtue of a coil spring 82 which normally urges the plunger outwardly from the follower. The other end of the plunger bears against a rocker arm 83 which carries a contact 84 which cooperates with a contact 85 carried by the follower 79 in opening or closing an electrical circuit through a solenoid 86 (Fig. 5) forming a part of the braking mechanism 76 previously mentioned. The plunger 81 rides around the surface of the bottle and is positioned directly in the path of movement of the protuberance P¹. The contacts 84 and 85 normally remain out of engagement, but upon engagement of the plunger 81 with the protuberance P¹, the contacts 84 and 85 are moved into engagement to close the circuit through the solenoid 86.

Referring now to Fig. 5, the braking mechanism 76 comprises a stop pawl 90 designed for engagement with a ratchet wheel 91 formed on the base chuck 27. The stop pawl 90 is nor-

mally held out of contact with the ratchet wheel 91 by means of a coil spring 92. The pawl 90 is connected by a link 93 to the armature of the solenoid 86 in such a manner that upon energization of the solenoid the pawl is moved into engagement with the ratchet wheel 91 against the action of the coil spring 92.

From the above description of the switch control instrumentalities 75 and braking instrumentalities 76 controlled thereby, it is apparent that precisely as the protuberance P¹ formed on each bottle engages the plunger 81, the solenoid 86 will be energized in the manner just described and the pawl 90 will engage the ratchet wheel 91 to instantly stop rotation of the base chuck 27 and bottle carried thereby.

Referring now to Figs. 3 and 13, the current for energizing the solenoid 86 is conducted from a suitable source E to a collector bar 95 carried by the upstanding wall 44. The body portion 25 of each unit 18 is provided with a collector shoe 96 designed for engagement with the collector bar 95 and connected electrically to the contact 84. Also included in the circuit through the solenoid 86 is a switch 97 provided with a controlling plunger 98 designed for engagement with the wall 44. The switch 97 remains closed normally by virtue of a recess 99 (Fig. 6) formed in the wall in order that closing of the contacts 84 and 85 by the switch control mechanism 75 will close the circuit through the solenoid 86 and stop rotation of the base chuck 27 as previously described. In order that after the decorating operation has commenced each successive contact of the protuberance P¹ with the plunger 81 shall not operate to stop rotation of the bottle, the wall 44 is provided with a raised portion 100 upon which the plunger 98 rides, thus opening the switch 97 and rendering the periodic closing of the contacts 84, 85, ineffective.

Whereas, in the form of the invention shown in Figs. 1 and 3 to 10 inclusive, the distance between the stencil screen supports 42 may be adjusted in order that the bottles in traversing the distance between the screen S¹ and S² will rotate throughout a complete number of revolutions, in the form of the invention shown in Fig. 2 the stencil screen supports 42 may be formed on or secured permanently to the stationary framework 15 with the standards spaced apart an arbitrary distance. The bottles B approach the first stencil screen S¹, are automatically oriented so that the first color application will be properly positioned thereon on one side of the seam s, and are decorated exactly as described in connection with the form of the invention shown in Figs. 1 and 3 to 10 inclusive. The friction strip 45, however, is discontinued a short distance rearwardly of the first screen S¹ and thus, after the bottles have passed the first screen and received the first color application thereon, rotation thereof ceases. A friction strip 101 is provided on the wall 44 and extends from a point well forwardly of the second screen S² to a point adjacent the forward end thereof and is designed for engagement with the friction wheels 46. Thus, as the bottles approach the second screen S² prior to the second color application, the base chucks 27 and bottles carried thereby are caused to rotate in a clockwise direction and are oriented prior to their initial contact with the second screen in the manner previously described by virtue of the engagement of the protuberance P¹ with the plunger 81.

It is obvious that whether protuberances P¹ be formed on each bottle or whether a protuber-

ance P² be formed on the head chuck 31 as previously described in connection with the decoration of seamless bottles, either the form of the invention illustrated in Figs. 1 and 3 to 10 inclusive or the form illustrated in Fig. 2 may be employed. In either event, the successive color applications made upon the bottles will be properly superimposed or applied to the bottles in a predetermined relation to each other or to the seams, if any, formed on the bottles.

Modifications may be resorted to within the spirit and scope of the appended claims.

I claim:

1. In an apparatus for decorating articles, a plurality of article supporting units for rotatably supporting and conveying articles to be decorated from a receiving zone to a decorating zone, means operable during the travel of the articles from said receiving zone to said decorating zone for successively rotating the articles about their respective axes, and means carried by said units and cooperating with the articles supported thereby for arresting such rotation when the articles have attained a predetermined orientation in their respective supporting units.

2. In an apparatus for decorating articles, a plurality of article supporting units for rotatably supporting and conveying articles to be decorated from a receiving zone to a decorating zone, tractional means whereby movement of the articles from said receiving zone to said decorating zone causes rotation of the articles, and means carried by said units and cooperating with the articles for arresting such rotation and thus causing slippage of said tractional means when the articles have attained a predetermined orientation in their respective supporting units.

3. In an apparatus for decorating articles, a plurality of article supporting units for supporting and conveying articles to be decorated from a receiving zone to a decorating zone, said units each including a pair of chucks for supporting an article therebetween, means operable during the travel of the articles and units from said receiving zone to said decorating zone for successively rotating one of the chucks of said units, and means carried by said units and cooperating with the articles for arresting rotation of the rotated chucks when said chucks have attained a predetermined angular position on their respective supporting units.

4. In an apparatus for decorating articles, a plurality of article supporting units for supporting and conveying articles to be decorated from a receiving zone to a decorating zone, said units each including a chuck for rotatably supporting an article, means operable during travel of the articles and units from said receiving zone to said decorating zone for successively rotating the respective chucks of the units, and means carried by said units and cooperating with the articles for arresting rotation of the chucks thereon when said articles have attained a predetermined orientation in their respective units.

5. In an apparatus for decorating articles, a plurality of article supporting units for rotatably supporting and conveying articles to be decorated from a receiving zone to a decorating zone, said units each including a head chuck and a base chuck, a protuberance on said head chuck, means operable during travel of the articles and units from said receiving zone to said decorating zone for successively rotating the base chucks of said units, and means carried by each unit and co-

operating with said protuberance for arresting rotation of the base chuck thereof when the head chuck thereof attains a predetermined angular position on the unit.

6. In an apparatus for decorating articles, a plurality of article supporting units for rotatably supporting and conveying articles to be decorated from a receiving zone to a decorating zone, said units each including a pair of chucks between which an article is adapted to be supported, means operable during the travel of the articles and units from said receiving zone to said decorating zone for successively rotating one of the chucks of said units, and means carried by each unit and cooperating with the other chuck thereof for arresting rotation of the rotated chuck thereof when the other chuck attains a predetermined angular position on the supporting unit.

7. In an apparatus for decorating articles, a plurality of article supporting units for supporting and conveying articles to be decorated from a receiving zone to a decorating zone, said units each including a head chuck and a base chuck, means operable during the travel of the articles and units from said receiving zone to said decorating zone for successively rotating the base chucks of said units, and means carried by each unit and cooperating with the head chuck thereof for arresting rotation of the base chuck thereof when the head chuck attains a predetermined angular position on the unit.

8. In an apparatus for decorating articles, a plurality of article holding units, each including a rotary chuck upon which the articles are supported, means for continually moving said units past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted to engage said chuck to impart rotation to the same before arrival of the units at said decorating zone, and means carried by each unit and cooperating with the article carried thereby for arresting rotation of the chuck thereof when the article has attained a predetermined angular position in the unit.

9. In an apparatus for decorating articles, a plurality of article holding units, each including a rotary chuck upon which the articles are supported, means for continually moving said units past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted to engage said chuck to impart rotation to the same before arrival of the units at said decorating zone, and means carried by each unit for arresting rotation of the chuck thereof when the article carried thereby has attained a predetermined orientation in said unit.

10. In an apparatus for decorating articles, a plurality of article holding units, each including a rotary chuck upon which the articles are supported, means for continually moving said units past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted to engage said chuck to impart rotation to the same before arrival of the units at said decorating zone, and means carried by each unit and cooperating with the chuck thereof for arresting rotation of the chuck when the latter has attained a predetermined angular position in the unit.

11. In an apparatus for decorating articles, a plurality of article holding units, each including a rotary chuck upon which the articles are sup-

ported, means for continually moving said units past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted

5 to engage said chuck to impart rotation to the same in one direction before arrival of the units at said decorating zone, means positioned at said decorating zone in the path of said units and adapted to engage said chuck to impart rotation

10 to the same in the opposite direction during decoration of the articles, and means carried by each unit for arresting rotation of the chuck thereof when the article first assumes a predetermined angular position in the unit due to rotation thereof.

12. In an apparatus for decorating articles, a plurality of article holding units, each including a rotary chuck upon which the articles are supported, means for continually moving said units

20 past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted to engage said chuck to impart rotation to the same in one direction before arrival of the units

25 at said decorating zone, means positioned at said decorating zone in the path of said units and adapted to engage said chuck to impart rotation to the same in the opposite direction during decoration of the articles, and means carried by

30 each unit and cooperating with the chuck thereof for arresting rotation of the chuck when the latter first assumes a predetermined angular position in the unit due to rotation thereof.

13. In an apparatus for decorating articles, a plurality of article holding units, each including a rotary chuck upon which the articles are supported, means for continually moving said units

35 past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted to engage said chuck to impart rotation to the same in one direction before arrival of the units

40 at said decorating zone, means positioned at said decorating zone in the path of said units and adapted to engage said chuck to impart rotation to the same in the opposite direction during

45 decoration of the articles, and means carried by each unit and cooperating with the article carried thereby for arresting rotation of the chuck

50 when the article assumes a predetermined angular position.

14. In an apparatus for decorating articles, a plurality of article supporting units for rotatably supporting and conveying articles to be decorated

55 from a receiving zone to a decorating zone, tractional means operable during the travel of the articles from said receiving zone to said decorating zone for successively rotating said articles about their respective axes, and means for arresting such rotation and thus causing slippage

60 of said tractional means when said articles have attained a predetermined orientation in their respective units.

15. In an apparatus for decorating articles, a plurality of article holding units, each including a rotary chuck upon which the articles are supported, means for continually moving said units

70 past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted to engage said chuck to impart rotation to the same in one direction before arrival of the units

75 at said decorating zone, means positioned at said decorating zone in the path of said units and adapted to engage said chuck to impart rotation

to the same in the other direction during decoration of the articles, and means carried by each unit and cooperating with the chuck thereof for arresting rotation of the chuck when said article assumes a predetermined angular position.

16. In an apparatus for decorating articles, a plurality of article holding units, each having a head chuck and a base chuck between which

10 chucks the articles are supported, means for continually moving said units past receiving, decorating and discharging zones, means positioned between the receiving and decorating zones in the path of said units and adapted to engage the

15 base chucks thereof to impart rotation to the same in one direction before arrival of the units at said decorating zone, means positioned at said decorating zone in the path of said units and adapted to engage said base chucks to impart

20 rotation to the same in the other direction during decoration of the articles, and means carried by each unit and cooperating with the head chuck thereof for arresting rotation of the respective

25 base chuck when the head chuck assumes a predetermined angular position on said unit.

17. In an apparatus for applying decorations to circumferentially spaced regions on the cylindrical sides of articles, a plurality of article holding units each including a rotary chuck for supporting an article, means for moving said units

30 successively past a receiving zone and first and second decorating zones, decorating instrumentalities in the vicinity of each decorating zone including a stencil screen with which the articles come into tangential rolling line contact, tractional means operable during the travel of the

35 articles from said receiving zone to the first decorating zone for successively rotating said articles about their respective axes, means for arresting such rotation and thus causing slippage of said tractional means when said articles have attained a predetermined orientation in their

40 respective units, and tractional means operable during travel of the articles from the first decorating zone to the second decorating zone for rotating the articles throughout a predetermined

45 angle.

18. In an apparatus for applying decorations to circumferentially spaced regions on the cylindrical sides of articles, a plurality of article holding units each including a rotary chuck for supporting an article, means for moving said

50 units successively past a receiving zone and first and second decorating zones, decorating instrumentalities in the vicinity of each decorating zone including a stencil screen with which the

55 articles come into tangential rolling line contact, means disposed between the receiving zone and first decorating zone for imparting to the articles a predetermined angular position on their

60 respective holding units, and tractional means operable during travel of the articles from the first decorating zone to the second decorating zone for rotating the articles throughout a predetermined

65 angle.

19. In an apparatus for applying decorations to circumferentially spaced regions on the cylindrical sides of articles, a plurality of article holding units each including a rotary chuck for supporting an article, means for moving said

70 units successively past a receiving zone and first and second decorating zones, decorating instrumentalities in the vicinity of each decorating zone including a stencil screen with which the

75 articles come into tangential rolling line contact, and tractional means operable during travel of

the articles from the first decorating zone to the second decorating zone for rotating the articles throughout a predetermined angle.

20. In an apparatus for applying multi-color decorations to circumferentially spaced regions on the cylindrical sides of articles, a plurality of article holding units each including a rotary chuck for supporting an article, means for moving said units successively past a receiving zone, a first decorating zone, a drying zone, and a second decorating zone, decorating instrumentalities in the vicinity of each decorating zone including a stencil screen with which the articles come into tangential rolling line contact and a squeegee therefor, means for moving said screen and squeegee relative to each other, means for applying heat to the articles in the drying zone, and tractional means operable during travel of

the articles from the first decorating zone to the second decorating zone for rotating the articles throughout a predetermined angle.

21. In an apparatus for applying multi-color decorations to the sides of bottles and the like, a plurality of bottle holding units each including a rotary chuck for supporting a bottle, means for moving said units successively past a receiving zone, a first decorating zone, a drying zone, and a second decorating zone, decorating instrumentalities in the vicinity of each decorating zone including a stencil screen with which the bottles come into contact and a squeegee therefor, means for actuating said decorating instrumentalities, and means for applying heat to the bottles in said drying zone.

LEONARD D. SOUBIER.