Feb. 24, 1948. H. J. McDERMOTT 2,436,481

APPARATUS FOR PREPARING YARN AND THREAD PACKAGES FOR LIQUID TREATMENT

Filed Dec. 16, 1944 3 Sheets-Sheet 1

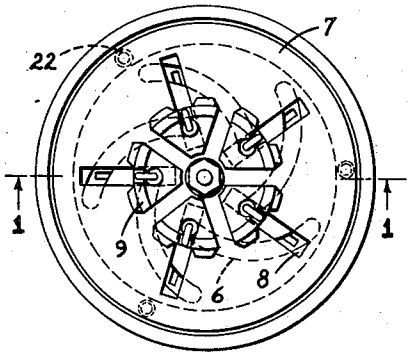


Fig. 2

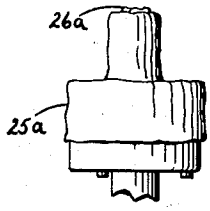


Fig. 3

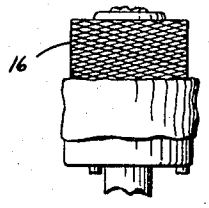


Fig. 4

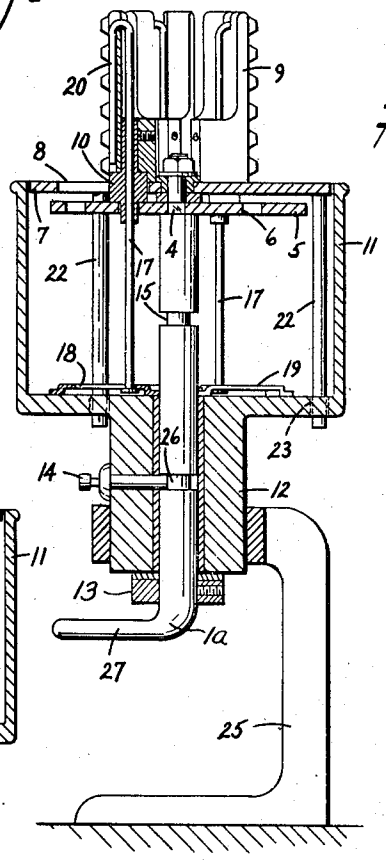


Fig. 8

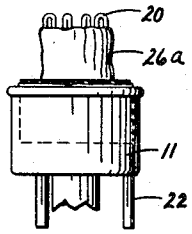


Fig. 5

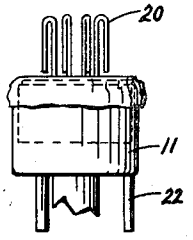


Fig. 6

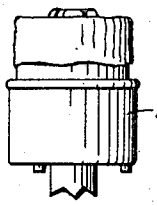


Fig. 7

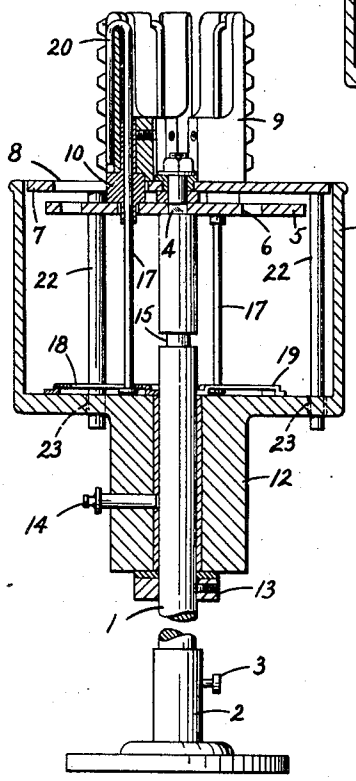


Fig. 1.

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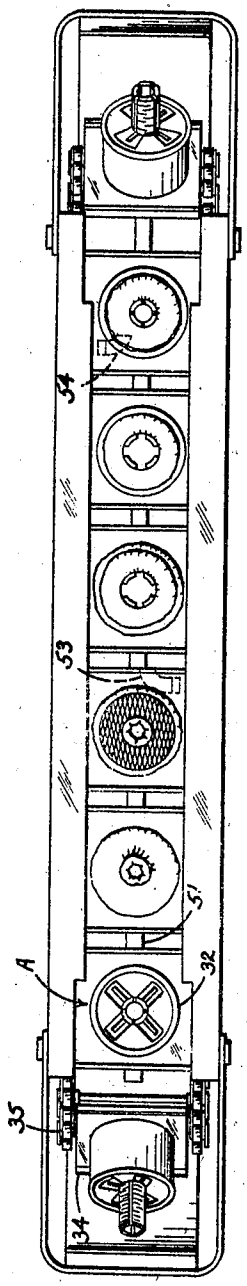


Fig. 10

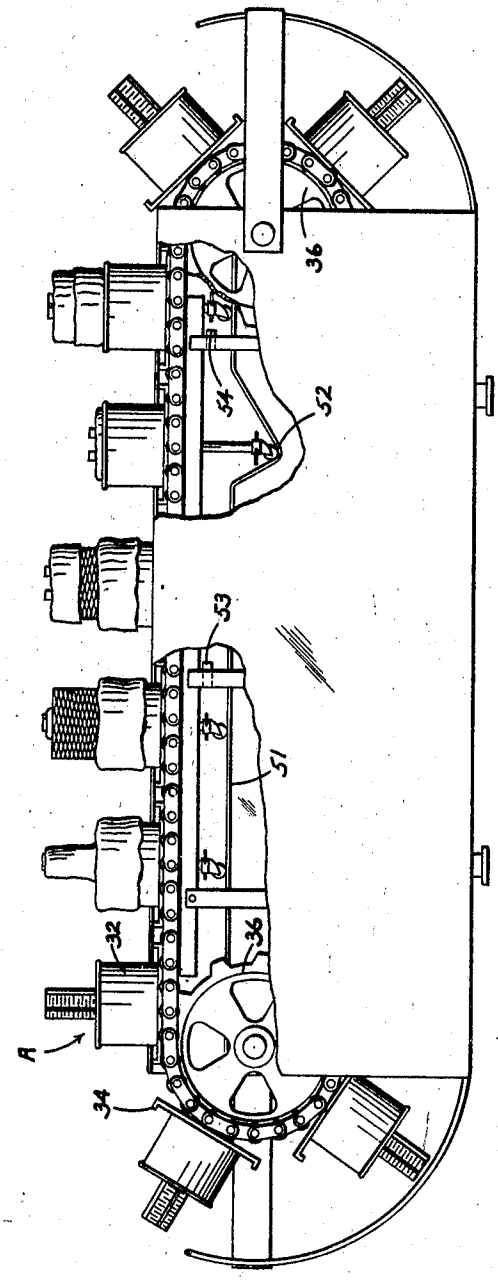


Fig. 9

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APPARATUS FOR PREPARING YARN AND THREAD PACKAGES FOR LIQUID TREATMENT

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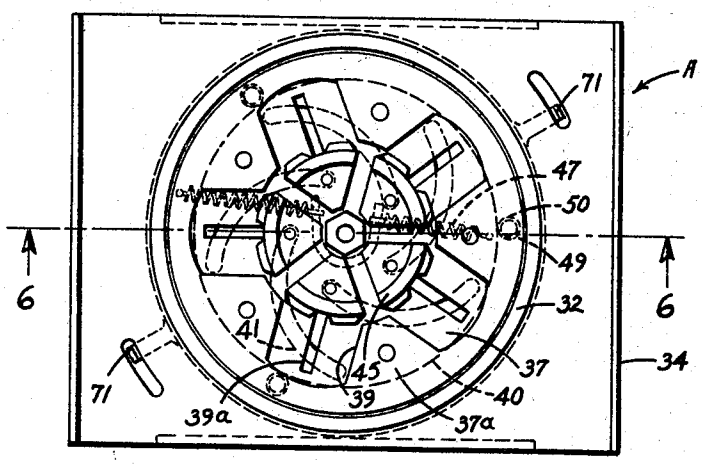


Fig. 11

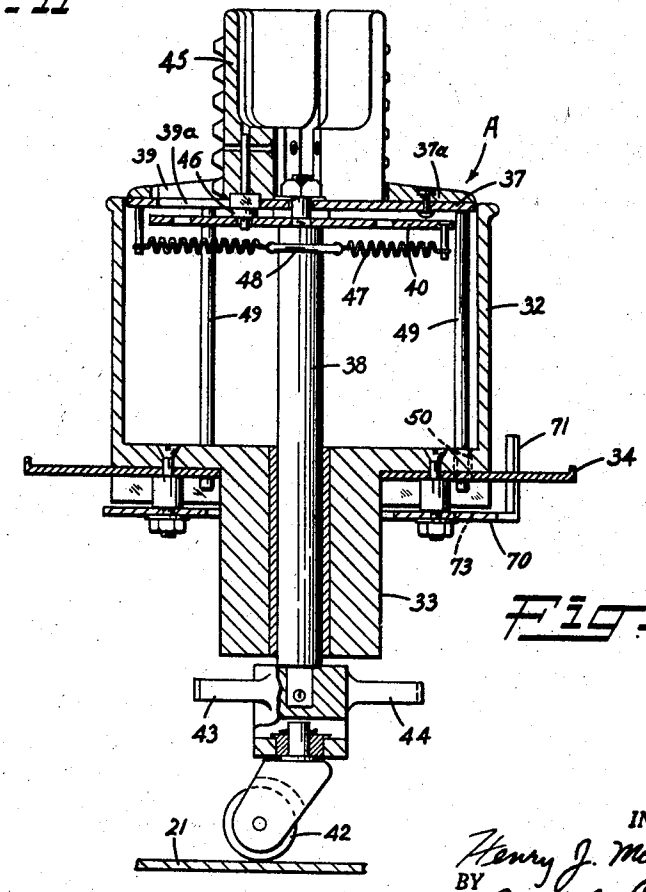


Fig. 12

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UNITED STATES PATENT OFFICE

2,436,481

APPARATUS FOR PREPARING YARN AND THREAD PACKAGES FOR LIQUID TREATMENT

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Application December 16, 1944, Serial No. 568,462

24 Claims. (Cl. 226—18)

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This invention relates to improvements in apparatus for applying a covering member to a package. More particularly, the invention relates to improvements in apparatus for preparing yarn or thread packages for liquid treatment by applying a protective covering member to the yarn or thread package. This application is in part a continuation of application Serial No. 437,728, filed April 4, 1942, now Patent No. 2,371,638, March 20, 1945, and is in part a continuation of application Serial No. 432,706, filed February 27, 1942, which has become abandoned.

In the liquid treatment of certain yarn or thread in package form, it is necessary to first wrap the package in a protective covering member. This is particularly true where the yarn or thread is freshly spun artificial filaments, such as spun rayon. The present practice of applying the covering member by hand requires considerable manipulation of the package, which is time-consuming and often results in damage to the yarn or thread.

This invention has for its principal object to provide improvements in apparatus for applying a covering member to a yarn or thread package.

Another object of the invention is to provide improvements in apparatus for applying a fabric-covering member to an annular package of yarn or thread.

Another object of the invention is to provide improvements in apparatus for applying a tubular fabric-covering member to an annular package of yarn or thread.

A further object of the invention is to provide improvements in apparatus for applying a tubular fabric-covering member to an annular package of yarn or thread which saves time and subjects the package to a minimum amount of handling.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings.

In the drawings—

Figure 1 is a vertical sectional view of a preferred embodiment of the invention taken on the line 1—1 in Figure 2;

Figure 2 is a plan view of the preferred embodiment of the invention shown in Figure 1;

Figures 3 to 7 inclusive are elevational views, which show the sequence of operations carried out in applying the covering member to the yarn or thread package in accordance with the invention;

Figure 8 is a view similar to Figure 1 of a modified embodiment;

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Figure 9 is an elevational view of a modified form of apparatus embodying the invention;

Figure 10 is a plan view of the embodiment of Figure 9;

Figure 11 is a plan view of one of the wrapping units of the embodiment of Figures 9 and 10; and

Figure 12 is a sectional view of one of the wrapping units, taken on line 6—6 in Figure 11.

Referring to Figures 1 and 2 of the drawings, reference character 1 indicates a standard telescopically supported in a base member 2. The height of the standard may be adjusted by means of the set screw 3 extending through the base member. A portion 4 of the standard near its upper end is square in cross section to which the scroll plate 5 is rigidly attached. The scroll plate is provided with outwardly extending scroll-like or spiral slots 6. A circular package-supporting plate 7, having a plurality of radially extending slots 8, is rotatably mounted on the upper end of the standard above the scroll plate. A plurality of substantially L-shaped package-gripping members 9 having depending portions 10 are mounted on the package-supporting plate with the depending portions passing through the slots in the package-supporting plate and the scroll plate. A sleeve-like member 11, having an inside diameter slightly greater than the diameter of the packaging supporting plate, and a hub-like portion 12, is mounted on the standard so as to be axially and rotatably movable thereon. The standard is provided with a stop means 13 of rubber or other cushioning material to support the sleeve when the sleeve is in its lower position. The hub is provided with a pin member 14 which may be pressed into a recess 15 extending around the periphery of the standard when the sleeve is raised, to retain the sleeve in its raised position. The standard may be provided with a plurality of such recesses spaced along the standard, whereby the sleeve may be retained in several positions on the standard. The package-supporting plate is provided with depending guide means 22 extending through guide holes 23 in the sleeve-like member which permit the sleeve-like member to be moved in an axial direction relative to the plate and the sleeve and the plate to be rotated together. Cover-manipulating members 17 are carried by the sleeve and are adapted to be moved radially inwardly and outwardly in the radially extending slots 18 in the brackets 19 attached to the bottom of the sleeve. The slots in the brackets are in line with the slots in the package-supporting plate. The cover-manipulating means extend

upwardly through the depending portions of the gripping members and the upper portions of the cover-manipulating means are bent over to form an inverted U-shape as shown by reference character 20. The package-contacting surfaces of the gripping members are recessed to accommodate the cover-manipulating means when the sleeve is in its lower position.

Instead of having the sleeve-like member movable in an axial direction relative to the package-supporting plate, as described above, the sleeve-like member may be attached to a base; and the standard, supporting the package-gripping members and the package-supporting and scroll plates, may be arranged so as to be axially movable and rotatable relative to the sleeve-like member. As in the embodiment of Figure 1, the package-supporting plate is supported for axial movement relative to the sleeve-like member and such movement is assured by the rods 22 secured to the plate and extending through apertures 23 in the sleeve-like member. This is illustrated in the embodiment of Figure 8 in which the hub 12 is fixed in a supporting bracket 25*a* and the shaft 1*a* (replacing the standard 1 of the embodiment of Figures 1 to 3) is rotatably and axially slidable with respect to the shell 11. Shaft 1*a* is provided with an additional groove or notch 26 to receive detent 14 when the shaft is raised, groove 15 serving when the shaft is lowered. The lower end of the shaft may be provided with a hand lever 27 to facilitate manipulation thereof. The operation is similar to that of Figures 1 to 3 as hereinafter described, but instead of manipulating the sleeve 11*a*, the lever 27 on the shaft 1*a* is manipulated to effect the relative movements needed.

In accordance with the preferred practice of the invention, an end portion 25*a* of a tubular fabric cover member, such as shown in the patent to Pedlow 2,230,067, is drawn over the gripping members and the sleeve, when they are in the lower position shown in Figures 1, 2 and 3 of the drawing. The other end portion 26*a* of the cover member is then placed over the tops of the gripping members and cover manipulating members and is inserted or tucked in a gathered condition in the space formed between the gripping members above the center of the package-supporting plate. An annular yarn or thread package 16 is placed on the package-supporting plate over the gripping members and the cover member, as shown in Figure 4. The sleeve and the package-supporting plate are rotated relative to the standard and the scroll plate to move the gripping members outwardly to engage and firmly grip the package and also to center the package on the package-supporting plate. The sleeve member is then raised, which uniformly applies the end portion of the cover member engaging the sleeve to the outer side of the package, as shown in Figure 5. At the same time the cover-manipulating members are raised, extending the other end portion of the cover member upwardly, as shown in Figure 5, where it is in position to be readily engaged by an operator. The sleeve member is retained in the upper position by the pin in the hub member which is pressed into the recess in the standard. The upper end of the cover is then folded down over the sleeve member, as shown in Figure 6. The pin member is withdrawn from the recess in the standard and the sleeve is lowered, causing the portion of the cover member engaging the sleeve to be uniformly applied to the outer side of the package and

in overlapping relation to the other portion of the cover member applied to the outer side of the package, as shown in Figure 7.

The apparatus as shown in Figures 9 to 12 of the drawings comprises a plurality of yarn or thread package-supporting units mounted on a conveyor and moved to various positions in which they receive protective covering means, then packages, then the covers are wrapped about the packages, and the wrapped packages are removed.

In this embodiment, reference character A indicates generally one of a plurality of units for engaging and supporting a yarn or thread package. The unit comprises a pot-shaped receptacle or member 32 comprising a flat bottom, an upright cylindrical or sleeve-like member or side wall, and an axially extending hub member 33 having an axial bore. The sleeve is fixed to a plate 34 which is attached to the links 35 of a conveyor chain. The conveyor moves in a closed path and passes over and is driven by the sprocket wheels 36. Means which are not shown are provided for driving the sprocket wheels. A circular package-supporting plate 37, of slightly less diameter than the inside diameter of the sleeve-like member, is centrally and rotatably mounted on the end of the shaft 38 which extends through the sleeve-like member and the axial bore in the hub member and carries fixedly secured thereto a facing plate 37*a* upon which the yarn or thread package actually rests. The shaft is adapted to be rotated and moved axially in the bore in the hub member. The package-supporting plate is provided with a plurality of radially extending slots 39*a*. A scroll plate 40 is fixed to the end of the shaft beneath the package-supporting plate and is provided with a plurality of scroll-like or spirally extending slots 41. A roller or cam follower 42 is fixed to the end of the shaft. Also a pair of substantially diametrically opposed outwardly extending arms 43 and 44 are fixed to the shaft above the roller. A plurality of substantially L-shaped package-gripping members 45 arranged for axial sliding motion within slots or guideways 39 formed in the facing plate 37*a* and having depending portions 46 are mounted on the package-supporting plate with the depending portions passing through the slots in the package-supporting plate and the scroll plate. The scroll plate is urged to rotate relative to the package-supporting plate by the spring means 47 attached at one end to a pin secured to the package-supporting plate and at the other end to a pin secured to the scroll plate. The spring is provided with a U-shaped member 48 intermediate its ends which straddles the shaft to permit the direction in which the spring exerts its force to pass from a position on one side of the shaft to a position on the other side. The spring may rotate the scroll plate relative to the package-supporting plate in either direction depending upon which side of the shaft the direction of force of the spring extends. The package-supporting plate is provided with depending guide means 49 extending through guide holes 50 in the bottom of the sleeve-like member which permit axial movement but not rotary movement of the package-supporting plate relative to the sleeve-like member. A track 51 on which the roller 42 is adapted to roll is positioned below and extends in the direction of travel of the conveyor. The track is provided with a drop or lower section 52 which lowers the package-supporting plate during a

portion of the movement of the package-supporting unit through the apparatus. Cam or deflecting members 53 and 54 are positioned above and on opposite sides of the track in the path of the outwardly extending arms 43 and 44 mounted on the shaft. Means are provided for rendering the unit inoperative comprising the annular plate member 70 rotatably supported on the bottom of the sleeve-like member. The annular plate is provided with handle means 71, whereby it may be rotated relative to the sleeve-like member about its axis. Guide holes 73 are formed in the annular plate which are of the same size as the guide holes 50 in the bottom of the sleeve-like member and are positioned so that they may be aligned with the guide holes in the sleeve-like member.

In accordance with a preferred practice of this embodiment of the invention, end portions of tubular fabric cover members such as of the type shown in the patent to Pedlow, 2,230,067 are drawn over the gripping members 45 and the sleeves 32 of the package-supporting units when they are in the upper position at the loading end of the machine as shown in Figures 9 and 10. The uppermost end portions of the cover members are then placed over the tops of the gripping members and are inserted or tucked in a gathered condition into the cup-like hollow space formed between the gripping members 45 above the center of the package-supporting units. Annular yarn or thread packages are then placed on the package-supporting units over the gripping members 45 and the cover members applied thereto. As the package-supporting units move along with the conveyor the arm 43 on the shaft 38 strikes the cam or deflecting member 53. This rotates the shaft 38 in a clockwise direction as shown in Figure 11. The rotation of the shaft and the scroll plate in a clockwise direction as shown in Figure 11 urges the package-gripping members outwardly. With this motion, the direction in which the spring extends is moved to the other side of the shaft. The spring thereby continues to urge the scroll plate and shaft in a clockwise direction and the gripping members radially outward. This operation centers the package on the package-supporting unit and retains it in position. The free end of the cover member is then withdrawn from the space formed within the upper portions of the gripping members 45 at the center of the package supporting unit and is placed over the outside of the upper portion of the package. As the package-supporting unit passes over the drop or lower portion 52 of the track section, the roller 42 rolling on the track permits the shaft 38 and package-supporting plate 37 to be lowered relative to the sleeve member 32. This axial movement of the package-supporting plate and the package carried thereon relative to the sleeve member causes the portion of the covering member that has been placed on the sleeve to be applied to the lower portion of the package and in overlapping relation to the other end portion of the cover member. After the package-supporting unit has passed over the drop or lower portion of the track, the package-supporting unit passes by the deflecting member 54 which is positioned on the side of the track opposite to the side on which the deflecting member 53 is positioned. The outwardly extending arm 44 fixed to the shaft 38 of the package-supporting unit strikes the deflecting member 54 causing the shaft and the scroll plate to be rotated in a counterclockwise direction, as shown in Figure 11.

The rotation of the scroll plate in a counterclockwise direction retracts the gripping members moving them radially inward. As the direction in which the spring member extends passes to the other side of the shaft, the spring member urges the scroll plate to continue to rotate in a counterclockwise direction which retains the gripping members in retracted position. The wrapped package may then be readily removed from the package-supporting unit by hand. If for any reason it is desired not to complete the application of the covering means to a certain package, the covering applying means for the unit supporting this package may be made inoperative. This is accomplished by rotating the plate 70 attached to this unit so that the holes 73 are out of alignment with the depending guide members 49. The plate member in this position prevents the package-supporting plate from moving in an axial direction relative to the sleeve member as the unit passes over the drop or lower portion of the track.

It is readily seen that with this invention the cover is uniformly and evenly placed on the package without rubbing the cover across the package and damaging the thread or yarn.

While preferred embodiments of the invention have been shown, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. An apparatus for applying a flexible tubular cover to an annular package comprising a support, means carried thereby for receiving the cover and package comprising bearing means presenting a substantially horizontal surface having a generally annular free portion against which the annular end of the package may bear and around the periphery of which one end of the cover may be drawn, and expansible core means comprising a plurality of generally L-shaped relatively movable members projecting upwardly from an inner portion of the surface for receiving the cover and the annular package thereabout, said core means having a free end away from the surface, the free end of the core means being recessed for receiving one end of the cover, and means carried by the support and extending beneath the surface for expanding the core means into gripping engagement with the cover and package thereabout.

2. An apparatus for applying a flexible tubular cover to an annular package comprising a support, means carried thereby for receiving the cover and package comprising a substantially plane surface having a generally annular free portion against which the annular end of the package may bear and expansible core means comprising a plurality of relatively movable members projecting from an inner portion of the surface for receiving the cover and the annular package thereabout, said core means having a free end away from the surface, the free end of the core means being recessed for receiving one end of the cover, means for expanding the core means into gripping engagement with the cover and package thereabout, at least one element mounted adjacent the outer portion of at least one of the movable members and movable in a direction toward and away from the surface, and means on the remote side of the surface for moving the movable element away from said surface.

3. An apparatus for applying a flexible tubular cover to an annular package comprising a support, means carried thereby for receiving the cover and package comprising a substantially

plane surface having a generally annular free portion against which the annular end of the package may bear and expansible core means comprising a plurality of relatively movable members projecting from an inner portion of the surface for receiving the cover and the annular package thereabout, said core means having a free end away from the surface, the free end of the core means being recessed for receiving one end of the cover, means for expanding the core means into gripping engagement with the cover and package thereabout, at least one element mounted adjacent the outer portion of at least one of the movable members and movable in a direction toward and away from the surface, and means connected to the core expanding means for moving the movable element away from the surface simultaneously with the expansion of the core means.

4. An apparatus for applying a flexible tubular cover to an annular package comprising a support, means carried thereby for receiving the cover and package comprising bearing means presenting a substantially horizontal surface having a generally annular free portion against which the annular end of the package may bear and around the periphery of which one end of the cover may be drawn, and expansible core means comprising a plurality of generally L-shaped relatively movable members projecting upwardly from an inner portion of the surface for receiving the cover and annular package thereabout, said core means having a free end away from the surface, the free end of the core means being recessed for receiving one end of the cover, means carried by the support and extending beneath the surface for expanding the core means into gripping engagement with the cover and package thereabout, at least one element mounted adjacent the outer portion of at least one of the L-shaped members and movable upwardly therefrom, and means connected to the core expanding means for effecting the upward motion of the movable element simultaneously with the expansion of the core means.

5. An apparatus for applying a cover to an annular package comprising a support, a package-supporting member mounted on the support and having a generally annular outer free portion against which the annular end of the package may bear, means spaced at all times well within the outer periphery of the outer free portion, disposed generally concentrically with respect thereto, and projecting away from an inner portion of the plane of the annular portion of the supporting member for supporting a tubular cover internally with a portion of the length of the cover projecting generally from the inner portion of the annular package-bearing surface of the package-supporting member, a concentrically arranged structure mounted on the support having an open end and an inside diameter greater than the lateral dimensions of the member, the mounting arrangement of the member and the structure being such as to permit relative motion therebetween in an axial direction from a position in which the member is near the open end of the structure to a position in which it is well within the latter structure.

6. An apparatus for applying a cover to an annular package comprising a support, a package-supporting member mounted on the support and having a generally annular outer free portion against which the annular end of the package may bear, means spaced at all times well within the outer periphery of the outer free portion, disposed generally concentrically with respect thereto, and projecting away from an inner portion of the plane of the annular portion of the supporting member for supporting a tubular cover internally with a portion of the length of the cover projecting generally from the inner portion of the annular package-bearing surface of the package-supporting member, a sleeve-like member mounted on the support having an open end and an inside diameter greater than the lateral dimensions of the package-supporting member, one of the members being movable in an axial direction relative to the other from a position in which the package-supporting member is near the open end of the sleeve-like member to a position in which it is well within the latter member.

7. An apparatus for applying a cover to an annular package comprising a supporting means, a package-supporting plate rotatably mounted on the supporting means, a hollow sleeve rotatably mounted on the supporting means and slidable thereon over and past the plate, radially expansible and contractible means having a generally hollow annular outermost portion projecting outwardly from an inner portion of the plate and radially slidable with respect thereto for receiving a tubular cover slipped therearound with the adjacent end of the cover lapped over the extreme edge into the interior of the annulus of said means, means for connecting the sleeve with the cover-receiving means for causing radial motion of the components thereof upon rotation of the sleeve.

8. An apparatus for applying a cover to an annular package comprising a standard, a package-supporting plate mounted on the standard, a hollow sleeve mounted on the standard and slidable thereon over and past the plate, and means projecting away from an inner portion of the plate for receiving the cover.

9. An apparatus for applying a cover to an annular package comprising a standard, a package-supporting plate mounted on the standard, a hollow sleeve mounted on the standard and slidable thereon over and past the plate, and means having a generally hollow annular outermost portion projecting away from an inner portion of the plate for receiving a tubular cover slipped therearound with the adjacent end of the cover lapped over the extreme edge into the interior of the annulus of said means.

10. An apparatus for applying a cover to an annular package comprising a standard, a package-supporting plate mounted on the standard, a hollow sleeve mounted on the standard and slidable thereon over and past the plate, and means having a generally hollow annular outermost portion projecting away from an inner portion of the plate for receiving a tubular cover slipped therearound with the adjacent end of the cover lapped over the extreme edge into the interior of the annulus of said means and at least one member slidably mounted adjacent the annulus of said means, said member being connected to the sleeve for motion therewith.

11. An apparatus for applying a cover to an annular package comprising a standard, a package-supporting plate rotatably mounted on the standard, a hollow sleeve rotatably mounted on the standard and slidable thereon over and past the plate, radially expansible and contractible means having a generally hollow annular outermost portion projecting away from an inner portion of the

plate and radially slidable with respect thereto for receiving a tubular cover slipped therearound with the adjacent end of the cover lapped over the extreme edge into the interior of the annulus of said means, means for connecting the sleeve with the cover-receiving means for causing radial motion of the components thereof upon rotation of the sleeve.

12. An apparatus for applying a cover to an annular package comprising a standard, a package-supporting plate rotatably mounted on the standard, a hollow sleeve rotatably mounted on the standard and slidable thereon over and past the plate, radially expansible and contractible means having a generally hollow annular outermost portion projecting away from an inner portion of the plate and radially slidable with respect thereto for receiving a tubular cover slipped therearound with the adjacent end of the cover lapped over the extreme edge into the interior of the annulus of said means, a scroll slotted plate fixed to the standard within the sleeve, radial slots in the package-supporting plate and connecting means between the sleeve and the cover-receiving means co-operating with the two sets of slots for causing radial motion of the components thereof upon rotation of the plate and sleeve.

13. An apparatus for applying a cover to an annular package comprising a standard, a package-supporting plate rotatably mounted on the standard, a hollow sleeve rotatably mounted on the standard and slidable thereon over and past the plate, radially expansible and contractible means having a generally hollow annular outermost portion projecting away from an inner portion of the plate and radially slidable with respect thereto for receiving a tubular cover slipped therearound with the adjacent end of the cover lapped over the extreme edge into the interior of the annulus of said means, means for connecting the sleeve with the cover-receiving means for causing radial motion of the components thereof upon rotation of the sleeve, said connecting means comprising at least one member mounted adjacent the annulus of said cover-receiving means for slidable motion radially of the sleeve and axially with respect to the annulus so that axial motion of the sleeve about the package-supporting plate causes the protruding of the last mentioned member axially of the annulus of the cover-receiving means.

14. An apparatus for applying a cover to a package comprising a standard, a package-supporting member mounted on the standard, a sleeve-like member mounted on the standard having an open end and an inside diameter greater than the lateral dimensions of the package-supporting member, both of said members being rotatable relative to the standard and one of said members being movable in an axial direction relative to the other, radially expansible and retractable means for receiving a tubular cover and pressing it against the internal periphery of a package on the package-supporting member, means connecting said members for causing radial motion of the first mentioned means upon the rotation of both of said members relative to the standard.

15. An apparatus for applying a cover to a package comprising a standard, a circular package-supporting member mounted on the standard, a sleeve-like member slidably and rotatably mounted on the standard and having an axial bore through which the standard extends and is

slidable, the inside diameter of the sleeve-like member being greater than the diameter of the package-supporting member, said sleeve-like member being movable in an axial direction relative to the package-supporting member and a collar secured to the standard for limiting the downward motion of the sleeve-like member.

16. Apparatus for preparing yarn packages and the like for liquid treatment comprising a package-supporting plate, supporting means for the plate centrally disposed means carried by the supporting means for retaining a package on the plate, a sleeve-like member surrounding the plate and carried by the supporting means, said package-supporting plate being movable in an axial direction relative to the sleeve-like member.

17. Apparatus for preparing yarn packages and the like for liquid treatment comprising a package-supporting plate, package-engaging members mounted on an inner portion of the plate, a shaft on which the plate is supported, a sleeve-like member through which the shaft extends surrounding the plate, means carried by the shaft for moving the package-engaging members to an operative position, said package-supporting plate being movable in an axial direction relative to the sleeve-like member.

18. Apparatus for preparing yarn packages and the like for liquid treatment comprising a package-supporting plate, package-engaging members mounted on an inner portion of the plate, a rotatable shaft on which the plate is supported, a sleeve-like member through which the shaft extends surrounding the plate, means carried by the shaft for moving the package-engaging members to an operative position, said package-supporting plate being movable in an axial direction relative to the sleeve-like member, and means for rotating the shaft relative to the sleeve-like member.

19. Apparatus for preparing yarn packages for liquid treatment comprising a package-supporting plate, package-engaging members mounted on an inner portion of the plate, a rotatable shaft on which the plate is supported, a sleeve-like member through which the shaft extends surrounding the plate, means carried by the shaft for moving the package-engaging members to operative and inoperative positions, spring means for retaining the package-engaging members in operative and inoperative positions, means for rotating the shaft, said package-supporting plate and shaft being movable in an axial direction relative to the sleeve-like member.

20. Apparatus for preparing yarn packages and the like for liquid treatment comprising a package-supporting plate, package-engaging members mounted on an inner portion of the plate, a rotatable shaft on which the package plate is supported, a sleeve-like member through which the shaft extends surrounding the plate, means carried by the shaft for moving the package-engaging members to operative and inoperative positions, spring means for retaining the package-engaging members in operative and inoperative positions, means for rotating the shaft, said package-supporting plate and shaft being movable in an axial direction relative to the sleeve-like member and means for moving the sleeve-like member, package-supporting plate, and shaft as a unit relative to the means for rotating the shaft.

21. Apparatus for preparing yarn packages and the like for liquid treatment comprising a package-supporting plate, package-engaging mem-

bers mounted on an inner portion of the plate, a rotatable shaft on which the plate is supported, a sleeve-like member through which the shaft extends surrounding the plate, means carried by the shaft for moving the package-engaging members to operative and inoperative positions, spring means for retaining the pack-engaging members in operative and inoperative positions, means for rotating the shaft, said package-supporting plate and shaft being movable in an axial direction relative to the sleeve-like member, a track having a cam surface on which the shaft is supported and means for transporting the sleeve-like member, package-supporting plate, and the shaft as a unit relative to the cam surface.

22. Apparatus for preparing yarn packages and the like for liquid treatment comprising a package-supporting plate, package-engaging members mounted on an inner portion of the plate, a rotatable shaft on which the plate is supported, a sleeve-like member through which the shaft extends surrounding the plate, means carried by the shaft for moving the package-engaging members to an operative position, said package-supporting plate being movable in an axial direction relative to the sleeve-like member, means for preventing movement of the package-supporting plate in an axial direction, and means for rotating the shaft.

23. Apparatus for preparing yarn packages and the like for liquid treatment comprising a package-supporting plate, package-engaging members mounted on an inner portion of the plate, a rotatable shaft on which the plate is supported, a sleeve-like member having a hub through which the shaft extends surrounding the plate, means comprising a scroll plate carried by the shaft for moving the package-engaging members to an operative position, said package-supporting plate and scroll plate being rotatable relative to each other and said plates being movable in an axial direction relative to the sleeve-like member, manually controlled means for preventing movement of the package-supporting plate in an axial direction, and means for rotating the shaft.

24. An apparatus for covering an annular wound package with a tubular cover which comprises a receptacle having a flat bottom and an upright cylindrical side wall having an inside diameter somewhat greater than the outer diameter of an annular package, said side wall being adapted to receive a tubular cover thereover and an annular package therein, a support for the receptacle comprising a base, means projecting vertically upwardly from the base through the flat bottom of the receptacle and concentrically with respect to the side wall to a position above the side wall for loosely retaining on the upper end of said means an end of the tubular cover in a gathered condition whereby when the other end of the cover is expanded over the side wall of the receptacle and an annular package is deposited over the above-mentioned concentrically disposed means retaining the gathered portion and inserted into the receptacle, the expanded portion of the cover is caused to cover the outer surface of the package and the gathered end is simultaneously unfolded whereupon the remainder of the package surface can be covered by spreading the upper portion outwardly over the side wall of the receptacle.

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