

[54] **CAN CHANGING APPARATUS FOR A TEXTILE SLIVER COILER**

*Primary Examiner—Dorsey Newton
Attorney, Agent, or Firm—Joseph H. Heard*

[75] Inventors: **Richard J. Savageau; Paul B. West,**
both of Clemson, S.C.

[73] Assignee: **Saco-Lowell Corporation,** Easley,
S.C.

[57] **ABSTRACT**

[22] Filed: **Oct. 16, 1973**

The coiler includes a can supporting turntable which during normal operation undergoes both rotary and reciprocatory movement in a generally horizontal plane. During doffing an empty can transporting member is moved forwardly toward the turntable, from a retracted position distal therefrom, along a path of travel parallel with the path of reciprocatory movement of the turntable. The extent of forward movement of the can transporting member is appropriately varied during each doffing operation so that, irrespective of the reciprocatory position of the turntable, an empty can transported by such member is moved into displacing engagement with, and is substituted for, a full can secured by releasable clamping rollers upon the turntable.

[21] Appl. No.: **406,882**

[52] **U.S. Cl.**..... **19/159 A**

[51] **Int. Cl.**..... **B65h 54/80**

[58] **Field of Search**..... **19/159 R, 159 A**

[56] **References Cited**

UNITED STATES PATENTS

2,939,184	6/1960	Watson et al.	19/159 A
3,221,374	12/1965	Fornes	19/159 R
3,411,188	11/1968	Walker et al.	19/159 A

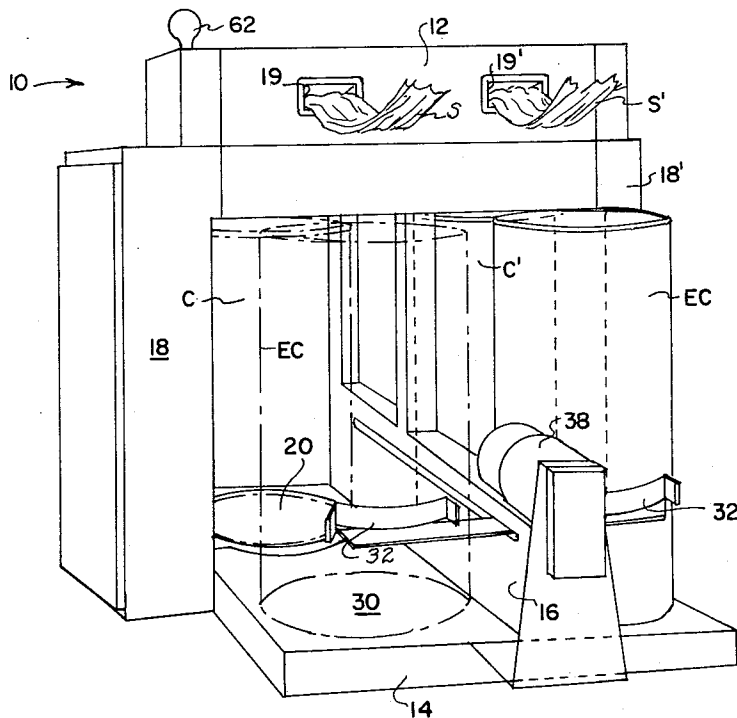
FOREIGN PATENTS OR APPLICATIONS

334,413	9/1930	United Kingdom	19/159 A
1,136,782	12/1968	United Kingdom	19/159 A

OTHER PUBLICATIONS

Publication "Reciprocating Turntable," printed Oct. 1971.

15 Claims, 6 Drawing Figures



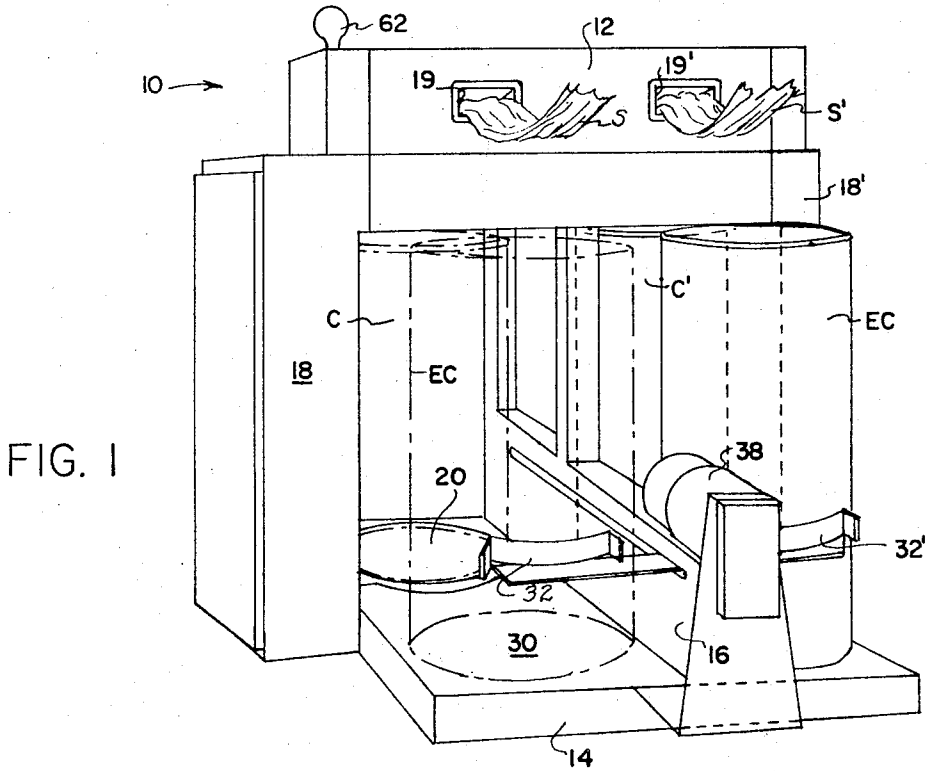


FIG. 1

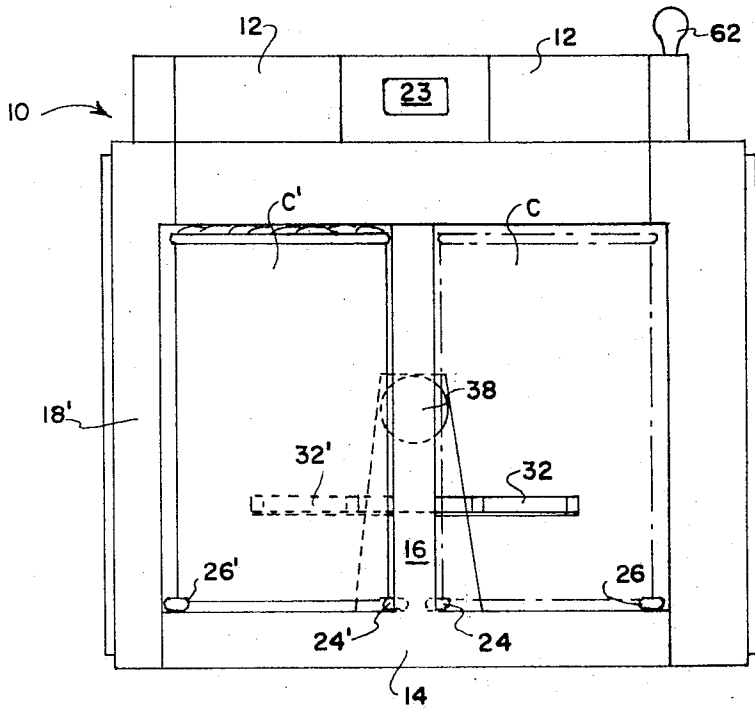


FIG. 2

FIG. 3

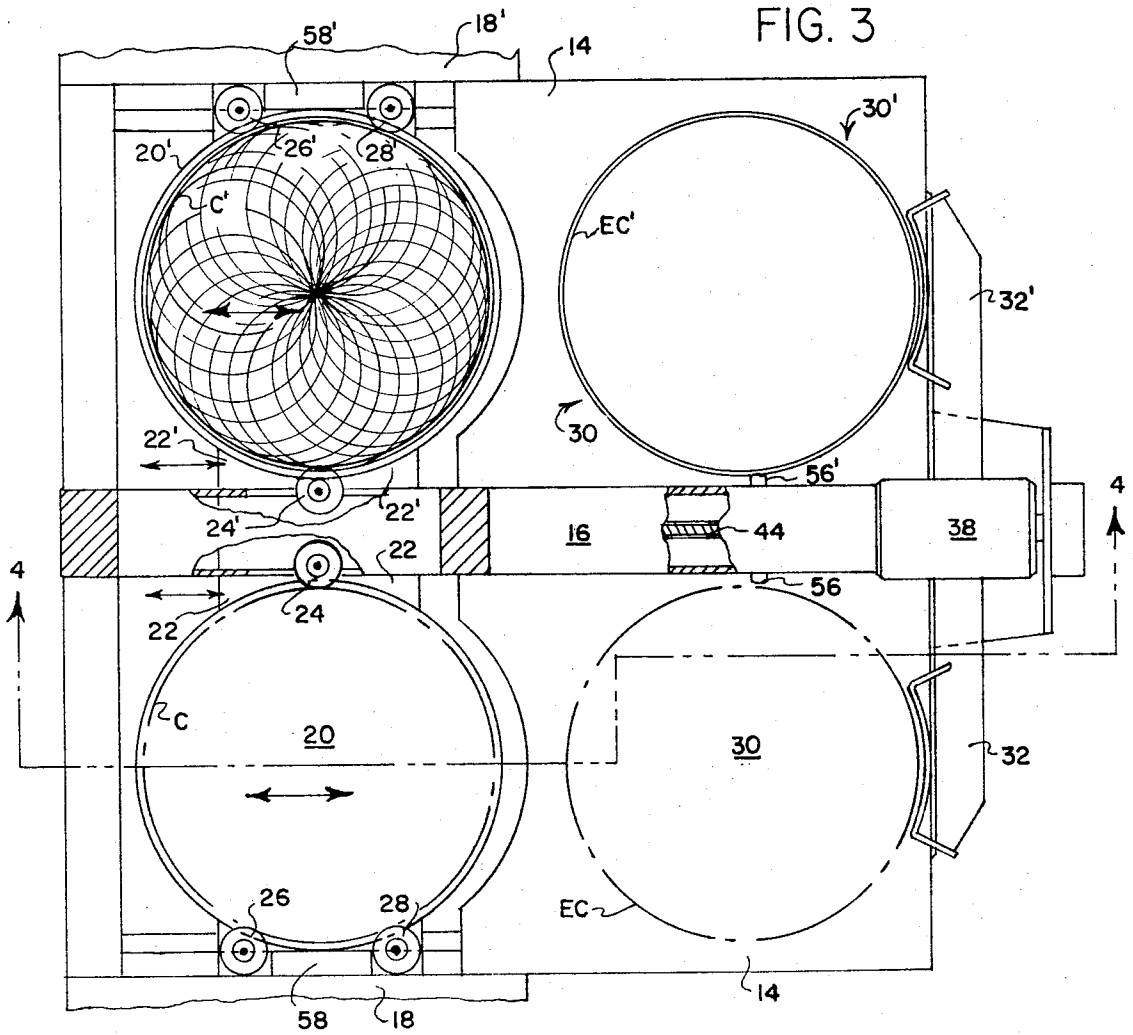
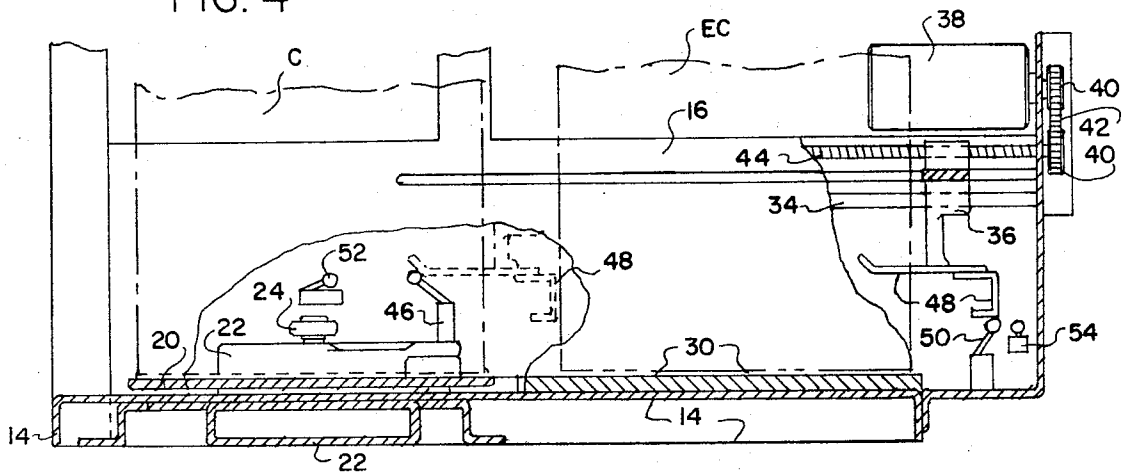


FIG. 4



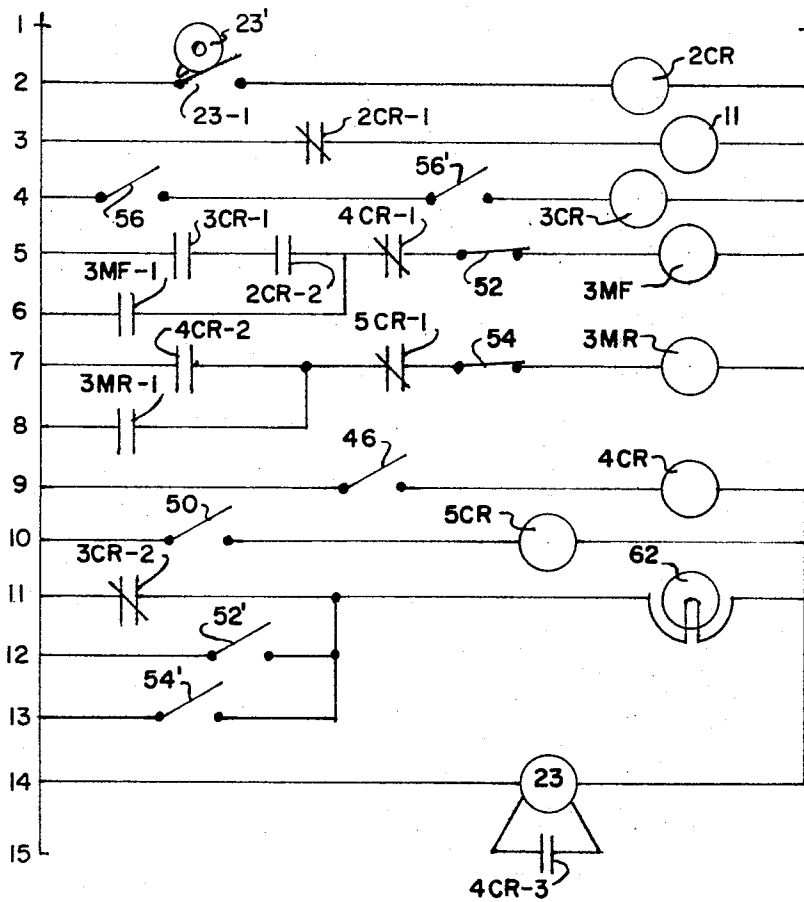


FIG. 5

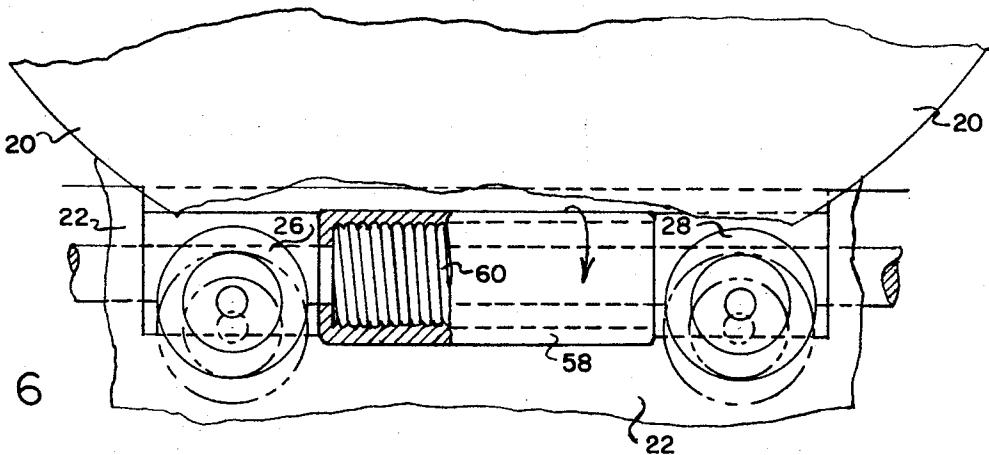


FIG. 6

CAN CHANGING APPARATUS FOR A TEXTILE SLIVER COILER

BACKGROUND OF THE INVENTION

This invention relates to textile coilers, such as might be used in association with drawing or other textile machines for filling cans with sliver, and more particularly relates to an improved doffing or can changing apparatus for a coiler of the type having a can supporting turntable which is reciprocatorily movable during operation of the coiler in a substantially horizontal plane.

In most textile coilers each can undergoing filling is supported in an upright and axially fixed position beneath a coiler plate and upon a turntable or other support member. It is known to provide automatic doffing or can changing apparatus, in association with such coilers, for the purpose of substituting an empty can for a full one beneath the coiler plate; see, e.g., U.S. Pat. Nos. 3,435,485; 3,698,041 and 3,729,776. Automatic doffing of cans at a coiler of the foregoing type presents relatively few problems since the center of the support member to and from which the cans are moved remains in a fixed position in a horizontal plane at all times. There are, however, other coilers in which the position of the can supporting member is not fixed, but rather is varied during operation of the coiler. Included among such other coilers are ones of the so-called "orbital" type, in which a can is not rotated but rather the coiler head and tube are moved in an orbital path during can filling, and ones of another type, hereinbefore made by Saco-Lowell, wherein a can is both rotated about its central axis and also reciprocatorily moved in a lateral direction during filling. Can doffers for orbital coilers are disclosed in U.S. Pat. Nos. 2,736,701 and 2,988,785. Therein, both full and empty cans are supported upon a supporting platform which itself moves and so moves the cans in an orbital path of travel and which, in the case of U.S. Pat. No. 2,736,071, is bodily rotatable during doffing to substitute an empty can for a full one beneath a coiler head. Doffing mechanisms of the aforesaid general type possess certain disadvantages, among which is the requirement that an operator position empty cans upon a support member which is not stationary, even in association with coilers of orbital type. In association with a coiler of the Saco-Lowell type, wherein a can undergoing filling is simultaneously rotated about its axis and reciprocatorily moved laterally, i.e., transversely, of its axis, a doffing mechanism such as disclosed in U.S. Pat. No. 2,736,071 could not be used unless a plurality of rotating turntables, each with their own drive means, were provided upon a bodily-rotatable platform. This would be impracticable, at best.

An alternative approach would be to provide a coiler of the Saco-Lowell type with a doffing mechanism such as employed in association with coilers wherein the cans are not moved laterally during filling. This might be possible if the Saco-Lowell coiler were modified so as to continue operation following receipt of a full-can signal from its yardage counter, and not stop until the full can reached a predetermined position in its path of reciprocatory movement. However, apart from other considerations such as possible structural damage resulting from over-filling of some cans, the aforesaid modification could cause the amount of sliver in the cans to vary considerably. This, in turn, would cause erratic "run-out" at the next textile machine processing

the sliver. Those skilled in the art will recognize that such a result would be highly undesirable.

OBJECTS OF THE INVENTION

With the foregoing in mind, the primary object of the present invention is the provision of a doffing or can changing apparatus, in association with a sliver coiler of the type imparting reciprocatory movement in a lateral direction to each can during filling thereof, which employs and possess the convenience of a fixedly located empty can station but which reliably and efficiently substitutes an empty can from such station for a full can upon a reciprocatorily movable can supporting member, during each doffing operation, irrespective of the reciprocatory position occupied by the can supporting member at the time of the doffing operation.

A related and more specific object is the provision, in a doffing or can changing apparatus of the described type, of a can transporting member movable during each doffing operation from a retracted position distal from the can supporting member of the coiler, forwardly toward such can supporting member and along a path of travel generally parallel with its path of reciprocatory movement, together with control means for varying the extent of forward movement of the can transporting member as required to properly correlate the same with the reciprocatory position then occupied by the can supporting member.

Another object is the provision in a doffer of the described type of can changing means which securely retains a can upon a rotating and reciprocatorily movable turntable during filling of such can, but which during doffing readily permits an empty can to be substituted for the one upon the turntable.

Still another object of the invention is the provision of a doffing or can changing apparatus of the described type which may advantageously be employed in association with coilers having multiple deliveries.

SUMMARY OF THE INVENTION

The present invention provides, in association with a sliver coiler having a reciprocatorily movable can supporting turntable for supporting a can in a generally upright position during filling thereof and for then reciprocatorily moving such can in a lateral direction, automatic doffing or can changing means for moving an empty can from a fixed location distal from the can supporting means, during each doffing operation, and for substituting such empty can for a full can upon the can supporting turntable, irrespective of the reciprocatory position then occupied by the turntable. In a preferred embodiment of the invention, the doffer includes a can transporting member movable forwardly from a retracted position toward the can supporting turntable and along a path of travel generally parallel with the path of reciprocatory movement of the turntable, and further includes control means for varying the extent of such forward movement of the can transporting member during each doffing operation as required for the proper substitution of an empty can for a full can upon the turntable irrespective of the reciprocatory position then occupied by the latter.

The invention also provides reliable and efficient can clamping means, reciprocatorily movable in unison with the can supporting turntable of a coiler of the described type, which automatically secures each empty

can moved onto the turntable in a precise position thereon suitable for filling of the can with sliver during operation of the coiler, but which is automatically releasable to permit movement of the can from the supporting member, once the can has become full, under the impetus of its engagement by another empty can moved onto the supporting member during the next ensuing doffing operation.

DESCRIPTION OF THE DRAWINGS

Still other features and advantages of the invention will be in part apparent and in part pointed out hereinafter in the following description of an illustrative embodiment thereof, which should be read in conjunction with the accompanying drawings in which:

FIG. 1 is a rear perspective view of a two delivery textile drawing and coiling machine equipped with automatic doffing or can changing apparatus embodying the invention, and of four sliver cans, two of which are shown in phantom lines, in association therewith;

FIG. 2 is a front elevational view of the machine of FIG. 1;

FIG. 3 is an enlarged fragmentary top plan view, partially in horizontal section and with some components broken away, of the base section and part of the center section of the machine of FIG. 1;

FIG. 4 is a side elevational view, partially in vertical section and with some components broken away, taken approximately along the line 4—4 of FIG. 3;

FIG. 5 is a diagrammatic view of the electrical circuitry of the doffing apparatus; and

FIG. 6 is an enlarged top plan view of two of the can clamping rollers of the doffing apparatus.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIGS. 1 and 2 the numeral 10 designates a two delivery textile drawing and coiling machine having an upper section 12, a base section 14, a center section 16 and side sections 18, 18'. Since the two side-by-side deliveries of machine 10 may be and illustratively are of identical construction and operation in unison with one another, the following description of one of them is also applicable to the other delivery, the components of which are identified in the drawings by the same reference numerals with the addition of a prime designation thereto. During operation of machine 10, sliver S extending from a suitable creel (not shown) is introduced through a port 19 into the rear of upper section 12 and passes forwardly through such upper section and a suitable drafting assembly (not shown) contained therein to and through a coiler plate (not shown) mounted within and adjacent the front of upper section 12 for rotation about a fixed vertical axis. The sliver passing through the coiler plate within upper section 12 of machine 10 is discharged downwardly therefrom into a sliver can C supported beneath the coiler plate by and upon can supporting means associated with base section 14 of machine 10. While the illustrated sliver cans are of a well-known cylindrical type having "piston" bottoms and no casters at their lower ends, other types of cans, including those with casters and/or without piston (vertically displaceable, upwardly spring-biased) bottoms, might be employed. Referring now also to FIGS. 3 and 4, as well as FIG. 1, the can supporting means at each processing station or delivery of machine 10 is generally of the known type made by Saco-

Lowell and including a horizontally extending turntable 20 mounted for rotation about its central vertical axis upon a base member 22 which, in turn, is mounted upon the frame of machine 10 for reciprocatory movement in a forward-rearward direction. The direction and approximate extent of such reciprocatory movement is indicated by double-headed arrows in FIG. 3. During operation of machine 10, suitable drive means (not shown, but including a main drive motor and an electromagnetically operable clutch 11 diagrammatically represented in FIG. 5 at line 3 which interconnects the drive motor with machine 10) imparts rotary movement to turntable 20 and reciprocatory movement to its base member 22 and thus to a sliver can C supported upon turntable 20 while can C is being filled with coils of sliver by machine 10, with sliver discharged into the upper end of can C from the rotating coiler gear and tube (not shown) within the upper section 12 thereof.

The foregoing components of machine 10 are conventional, and therefore need not be described in further detail. It is also conventional to provide a sliver delivery yardage counter 23 (line 14 of FIG. 5) having an electromechanical switch means 23' and 23-1 (lines 1 and 2 of FIG. 5) or the like for detecting when a desired quantity of sliver has been delivered to cans C, C' supported upon turntables 2, 20', and for at that time halting operation of machine 10. The present invention provides can changing or doffing means for, at such time and irrespective of the particular forward-rearward reciprocatory position of such turntables and cans then occupied, automatically substituting the empty cans EC, EC' for the then filled cans C, C'.

The present doffing means generally comprises releasable can clamping means including the sets of rollers 24, 26, 28 and 24', 26', 28' for releasably securing sliver cans in proper position respectively upon turntables 20, 20' for rotary and reciprocatory movements in unison therewith; stationary emptycan stations 30, 30' provided upon the base section 14 of machine 10, rearwardly of and at the same elevation as turntables 20, 20'; can transporting means including transporting members 32, 32' projecting horizontally outwardly from opposite sides of the center section 16 of machine 10, and normally occupying the retracted or rearward positions as shown in solid lines in the drawings wherein they overlie the rearward edges of respective empty-can stations 30, 30'; means mounting transport members 32, 32' for their movement in unison with one another forwardly from their retracted positions and toward respective turntables 20, 20' along the paths of travel which are parallel with the paths of reciprocatory movement of such turntables, said mounting means including a rod member 34 (FIG. 4) extending longitudinally through center section 16 of machine 10, and a carriage block 36 supporting the inner ends of members 32, 32' and mounted upon rod 34 for sliding movement longitudinally thereof within machine section 16; drive means for imparting the aforesaid movement to carriage 36 and members 32, 32', such drive means including a motor-brake unit 38 mounted upon the rear of center machine section 16 and connected by pulleys 40 and a timing belt 42 (FIG. 4) to a threaded shaft 44 extending within machine section 16 in parallel relationship to rod 34 and having a ball-nut type of driving connection with carriage block 36; and control means for, during each doffing operation and among other things, varying as required the extent of forward move-

ment of carriage block 36 and can transporting members 32,32', such control means including a switch element 46 (FIG. 4) carried by and reciprocatorily movable in unison with one of the turntable-supporting base members 22,22', illustratively base member 22, and a switch-actuating element 48 (FIG. 4) carried by block 36 and movable forwardly therewith into engagement with element 46. The doffing apparatus further includes additional switch elements 50,52,54,56 and 56'. Switch 50 (FIG. 4) is mounted adjacent the rear of center machine section 16 for engagement by actuator 48 upon return rearward movement of carriage 36 to a retracted position. Switches 52,54 (FIG. 4) are safety switches mounted within center machine section 16 at opposite extreme ends of the maximum path of travel of carriage 36 for engagement by actuator 48 in the event of a malfunction of switch 46 or 50. Switches 56,56' (FIG. 3) include flexible "feelers" extending outwardly from opposite sides of center machine section 16 into overlying relationship with empty can stations 30,30' respectively, and detect the presence or absence of sliver cans EC,EC' upon such stations.

Since the can clamping means provided at the two deliveries of machine 10 are identical to each other, only the one such means which includes rollers 24,26,28 will be more specifically described. Roller 24 (FIGS. 3 and 4) is mounted upon a portion of turntable base member 22, for reciprocatory movement in unison therewith, within center machine section 16. The axis of rotation of roller 24 lies in the vertical plane containing the axis of rotation of turntable 20 and extending perpendicular to the path of reciprocatory movement of turntable 20 and base member 22. A peripheral section of roller 24 projects from a slot in center machine section 16 into spaced overlying relationship to turntable 20, for engagement with the periphery of a sliver can C supported centrally upon such turntable. Rollers 26,28 (FIGS. 3 and 6) are mounted adjacent machine section 18, with roller 26 forwardly and roller 28 rearwardly of the previously mentioned vertical plane containing the axes of rotation of turntable 20 and roller 24, by a common bracket member 58 (FIG. 6). Bracket 58 is so associated with turntable base member 22 as to be reciprocatorily movable therewith in a forward-rearward direction at all times, but so as to also be pivotally movable in a lateral direction relative to turntable 20. A spring element 60 biases bracket member 58 inwardly such that the segments of rollers 24,26 overlying turntable 20 engage the periphery of a sliver can C supported upon turntable 20 and, in cooperating conjunction with roller 24, secure such can in a centered position upon turntable 20 for rotary and reciprocatory movement in unison therewith. However, rollers 24,26,28 automatically release can C and permit its discharge forward from machine 10, while simultaneously permitting the substitution of another can EC upon turntable 20, upon movement of can EC forwardly from empty can station 30 and into displacing engagement with can C. As can C upon turntable 20 is first engaged and moved forwardly by can EC, bracket 58 is pivoted outwardly by the increased force exerted upon roller 26 by can C. Since rollers 26,28 are both carried by bracket 58, the latter's pivotal movement not only permits passage of can C between rollers 24 and 26, but also displaces roller 28 outwardly. During continued movement of cans C and EC, bracket 58 is also pivoted outwardly by engage-

ment between can EC and roller 28, until such time as the maximum diameter portion of can EC passes through the imaginary vertical plane containing the axes of rollers 24 and 28. When this occurs, the inward movement of bracket 58 caused by the biasing of spring 60 completes the positioning of can EC upon the center of turntable 20, such that the same is secured between rollers 24,26,28 in the same manner as was previously described for can C.

The operation of the doffing mechanism will now be described, with reference taken to all of the figures and especially to FIG. 5 illustrating electrical control circuitry for effecting the operational steps, note being taken of the electrical elements at certain lines in FIG. 5.

At any time during operation of machine 10, with cans C,C' in place upon turntables 20,20', an operator manually places empty cans EC,EC' upon their respective empty can stations 30,30'. Such placement is rapidly and easily accomplished since stations 30,30' are, of course, stationary. Cans EC,EC' now in position close switches 56,56' (FIG. 5, at line 4) to energize control relay 3CR effecting closure of its contact 3CR-1 and opening of its other contact 3CR-2 (respectively at lines 5 and 11). The opening of contact 3CR-2 deenergizes a signal lamp 62 (also at line 11) which previously was illuminated to indicate to the operator that stations 30,30' required placement thereon by empty cans EC,EC'. When cans C,C' have been filled with a predetermined length of coiled sliver as sensed by yardage counter 23, a cam 23' thereon (at line 1) closes a switch 23-1 (at line 2) to energize control relay 2CR, which has contacts 2CR-1 (normally closed at line 3) and 2CR-2 (normally open at line 5) which are respectively opened and closed thereupon. The opening of contact 2CR-1 deenergizes an electromagnetic control clutch 11 (at line 3) which disconnects the main machine drive from machine 10 stopping its operation irrespective of the particular mode or position occupied by turntables 20,20' in their reciprocatory movement at time of deenergization and their stoppage. Closure of contact 2CR-2 in turn completes the circuit at line 5 through now closed contact 3CR-1 and normally closed contact 4CR-1 and switch 52 to energize control relay 3MF which energizes the forward winding (not shown) of motor brake unit 38. This produces forward movement of can transporting members 32,32' through pulleys 40, timing belt 42, threaded shaft 44 and carriage block 36. As members 32,32' move forwardly, the rearward surfaces of cans EC,EC' upon stations 30,30' are engaged by the complimentary curved portions of members 32,32' and such cans are moved forwardly with members 32,32' along base portion 14 of machine 10 toward and finally onto the respective turntables 20,20' in a centered position. The passage of cans EC,EC' out of engagement with switches 56,56' does not deenergize relay 3MF despite their deenergization of relay 3CR and consequent opening of its contact 3CR-1 at line 5, because now closed contact 3MF-1 of relay 3MF by passes contact 3CR-1 (at line 6) to maintain relay 3MR in an energized state. However, forward movement of members 32,32' is halted and reversed, irrespective of the particular reciprocatory position then occupied by turntables 20,20', once cans EC,EC' have been moved forward sufficiently onto turntables 20,20' for roller assemblies 24,26,28 and 24',26',28' to complete the final substitu-

tion of cans EC,EC' for cans C,C' upon turntables 20,20'. Reversal of forward movement of members 32,32' at the aforesaid time results from engagement (as shown in phantom lines in FIG. 4) of switch actuator element 48 (carried by block 36 for movement in unison with members 32,32') with the switch element 46 which is carried by and reciprocatorily movable with turntable base member 22. When so engaged, switch 46 closes (at line 9 of FIG. 5) to energize the control relay 4CR to thus open its normally closed contact 4CR-1 (at line 5) and in turn deenergize relay 3MF to stop forward motion of members 32,32' and cans EC,EC', and to thus close normally open contact 4CR-2 (at line 7) completing the circuit through the normally closed contact 5CR-1 and switch 54 to energize the control relay 3MR; relay 3MR upon energization effects closure of its contact 3MR-1 (at line 8), and also energizes the reverse winding (not shown) of brake motor unit 38. The latter energization causes return rearward movement of carriage 36 and members 32,32' back to their retracted positions as illustrated in solid lines in the figures. When members 32,32' reach their aforesaid retracted positions, further rearward movement is halted by engagement of actuating element 48 with switch element 50 (at line 10) closing it to energize a control relay 5CR to open its normally closed contact 5CR-1 and thus deenergize relay 3MR (at line 7) stopping rearward movement by its consequent deenergization of the reverse winding of brake motor unit 38 controlled thereby, and application of the brake component of unit 38. This prevents rearward "coasting" of carriage 36 and members 32,32' beyond their normal retracted positions, which coasting may otherwise occur in the absence of any load on the drive mechanism during return rearward movement of carriage 36.

If, due to operator oversight or other reason, an empty can should not be present upon station 30 and/or 30' when yardage counter 23 stops machine 10, empty can detector relay 3CR will not be energized and its normally open contact 3CR-1 (lines 4 and 5, respectively) will prohibit commencement of the doffing operation and subsequent resumption of operation of machine 10 until the missing can condition is corrected by an operator. This is a desirable safety feature since machine 10 may otherwise, except for it, be caused to resume normal filling operation with a filled can of sliver rather than an empty one upon one or both of turntables 20,20', which latter event could cause damage to the slivers, causing wasted materials and/or structural damage to the sliver cans and/or to machine 10.

Safety of operation of machine 10 and the avoidance of possible structural damage, in the event of some malfunction, also are assured by the provision herein of the additional switch elements 52,54 at the extreme ends of the path of travel of actuator 48 (see also lines 5 and 7 of FIG. 5). Thus, if for any reason switch element 46 (at line 9) carried by and reciprocatorily movable with turntable base 22 should malfunction during the forward movement of members 32,32', actuator 48 would engage would engage and open normally closed switch 52 (at line 5) prior to block 36 reaching its extreme forward position upon supporting rod member 34 and/or threaded shaft 44. Opening of switch 52 deenergizes relay 3MF thus to stop forward movement of members 32,32' permitting the braking component of unit 38 to be actuated when the forward coil thereof is deener-

gized thereby. Similarly, if malfunction of switch 50 (at line 10) should malfunction upon the return rearward movement of carriage 36, actuator 48 would engage and open normally closed switch 54 (line 7) to deenergize relay 3MR and thus the rear winding of unit 38 permitting the braking component of unit 38 to be actuated bringing members 32,32' to a halt. Whenever switch 52 and/or switch 54 are opened, their counterpart switch elements 52' and 54' are closed (lines 12 and 13), completing the circuit to signal lamp 62 (line 11), lighting lamp 62 and thus notifying an operator that machine 10 requires attention despite the fact that stations 30 and/or 30' may contain empty sliver cans.

Once members 32,32' have returned to their retracted positions following displacement of cans C,C' by cans EC,EC', and following placement of another pair of cans EC,EC' onto stations 30,30', all of the circuit elements are returned to their "normal" conditions as shown in FIG. 5, with switches 23-1, 46, 50, 52' and 54' opened and switches 52 and 54 are closed, with the exception of switches 56 and 56' which are closed due to placement of new cans EC,EC' onto stations 30,30'. The entire process of can changing takes but 6 to 7 seconds with a total of about 15 seconds until members 32,32' have fully retracted to receive additional cans EC,EC'. Resetting of yardage counter 23 (line 14) is effected upon the positioning of cans EC,EC' onto turntables 20,20' as detected by switch 46 (at line 9) which closes to energize relay 4CR as aforesaid and to close its normally open contact 4CR-3 (at line 15) which resets counter 23; in such resetting, mechanical cam 23' is rotated out of contact with switch 23-1 (at lines 1 and 2) opening the latter to deenergize relay 2CR and reclose its contact 2CR-1 to reenergize clutch 11 and reconnect the main drive thereby with machine 10 for filling of cans EC,EC' thereby with sliver, the yardage thereof being counted by 23.

While in the foregoing is described and shown a preferred embodiment of the present invention, this was merely for purposes of illustration and not for limitation, the scope of the invention being in accordance with its claimed definitions which follow.

That which is claimed is:

1. In combination with a textile sliver coiler adapted to fill cans with sliver, said coiler including an empty can station, can supporting means for supporting a can in a predetermined upright position thereon during filling of said can and for then reciprocatorily moving said can laterally along a linear path of travel, said can supporting means being located distal from said empty can station and reciprocatorily movable relative thereto in a substantially horizontal plane, the improvement comprising:

can changing means for, during can doffing of said coiler, moving an empty can from said empty can station onto said can supporting means, and into said predetermined position thereon, irrespective of the reciprocatory position then occupied by said supporting means; said can changing means including

can transporting means for engaging and transporting said empty can;

means mounting said can transporting means for guiding said can transporting means along a path of travel extending from said empty can station toward said supporting means and generally parallel to said linear path of travel;

and means for, during each doffing of said coiler, moving said can transporting means a distance along said path of travel thereof correlated to and variable in accordance with the particular reciprocatory position then occupied by said can supporting means.

2. Apparatus as in claim 1, wherein said empty can station is fixedly located beyond and in general alignment with said path of reciprocatory movement of said can supporting member, said empty can being moved from said empty can station toward and onto said can supporting means.

3. Apparatus as in claim 1, wherein said can supporting means comprises a base member reciprocatorily movable along said path of travel, and a can supporting turntable carried by said base member for reciprocatory movement therewith and for rotative movement relative to said base member, said can changing means including releasable can clamping means reciprocatorily movable with said base member and engagable with an empty can moved onto said turntable for releasably securing the same in an upright centered position upon said turntable.

4. Apparatus as in claim 3, wherein said can clamping means includes a plurality of roller members spaced about the circumference of said turntable and each having a peripheral section overlying said turntable and adapted to engage and center an empty can moved onto said turntable.

5. Apparatus as in claim 4, wherein said can clamping means includes three of said rollers, and bracket means mounting two of said rollers for movement in unison with each other generally toward and away from the central portion of said turntable and the third one of said rollers.

6. Apparatus as in claim 5, including spring means associated with said bracket means and biasing said two rollers generally toward the central portion of said turntable and said third one of said rollers.

7. In combination with a textile sliver coiler adapted to fill cans with sliver, said coiler including can supporting means reciprocatorily movable in a substantially horizontal plane during the filling of a can supported thereon and movable therewith, the improvement comprising:

can changing means for during doffing of said coiler substituting an empty can for a full can upon said can supporting means;

said can changing means including can transporting means movable, during doffing and from a retracted position distal from can supporting means, forwardly toward said can supporting means along a path of travel generally parallel with the path of reciprocatory movement of said can supporting means;

and control means for during each doffing of said coiler correlating, and varying as required, the extent of said forward movement of said can transporting means with the particular reciprocatory position then occupied by said can supporting means.

8. Apparatus as in claim 7, wherein said control means includes switching means for arresting movement of said can transporting means toward said can supporting means and having cooperating switch and switch actuating elements, one of said elements being reciprocatorily movable in unison with said can supporting means, and the other of said elements being movable with said can transporting means toward and relative to said one element.

9. Apparatus as in claim 7, including a stationary empty can station disposed distal from said can supporting means, and wherein during each doffing operation said can transporting means moves an empty can from said station onto said can supporting means and into displacing engagement with a full can upon said can supporting means.

10. Apparatus as in claim 9, including means for detecting the presence or absence of an empty can at said station.

11. Apparatus as in claim 7, including full can detecting means for detecting when a can supported upon said can supporting means has become filled with a desired amount of silver; and switching means responsive to the detection by said detecting means of a full-can condition for then arresting can-filling operation of said coiler, irrespective of the reciprocatory position then occupied by said can supporting means, and for then instituting a doffing operation.

12. Apparatus as in claim 11, including an empty can station disposed distal from said can supporting means, and wherein during each doffing operation said can transporting means moves an empty can from said station onto said can supporting means and into displacing engagement with a full can upon said can supporting means.

13. Apparatus as in claim 12, including empty can detecting means for detecting the presence or absence of an empty can at said station, and for prohibiting the institution by said switching means of a doffing operation upon the detection by said empty can detecting means of the absence of an empty can at said station.

14. Apparatus as in claim 7, wherein said can supporting means comprises a base member reciprocatorily movable along said path of travel, and a can supporting turntable carried by said base member for reciprocatory movement therewith and for rotative movement relative to said base member, said can changing means further including releasable can clamping means reciprocatorily movable with said base member and engagable with an empty can moved onto said turntable for releasably securing the same in an upright centered position upon said turntable.

15. Apparatus as in claim 14, wherein said can clamping means includes a plurality of roller members spaced about the circumference of said turntable and each having a peripheral section overlying said turntable and adapted to engage and center an empty can moved onto said turntable.

* * * * *