

Nov. 9, 1971

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3,618,306

BOBBIN PICKUP

Filed Nov. 25, 1969

3 Sheets-Sheet 1

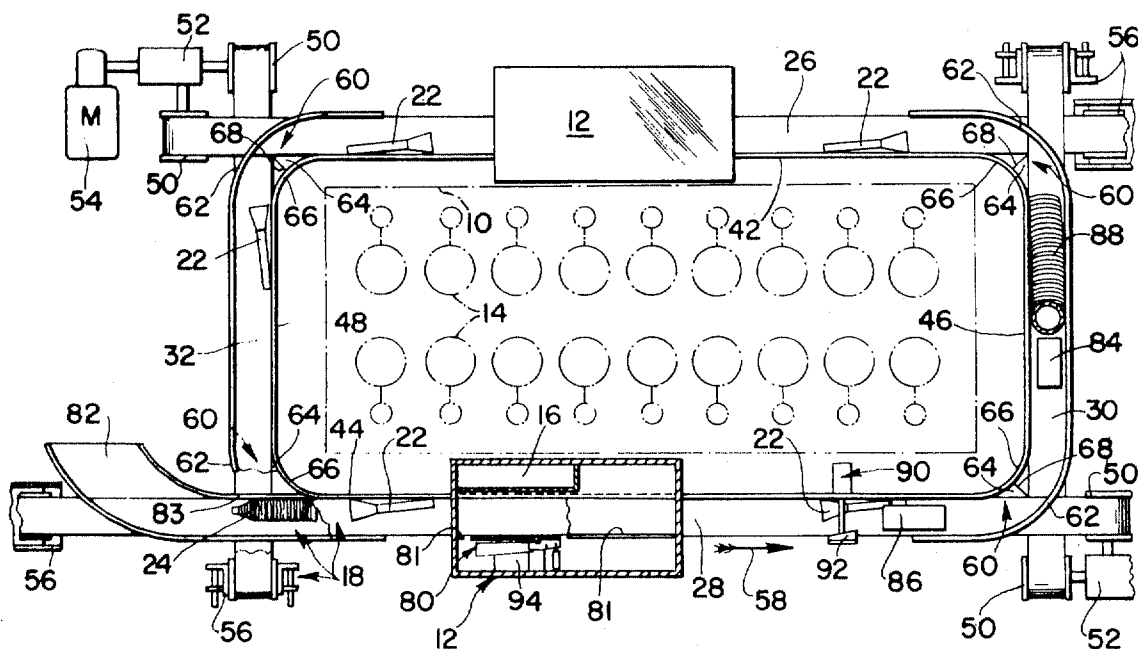


FIG. 1

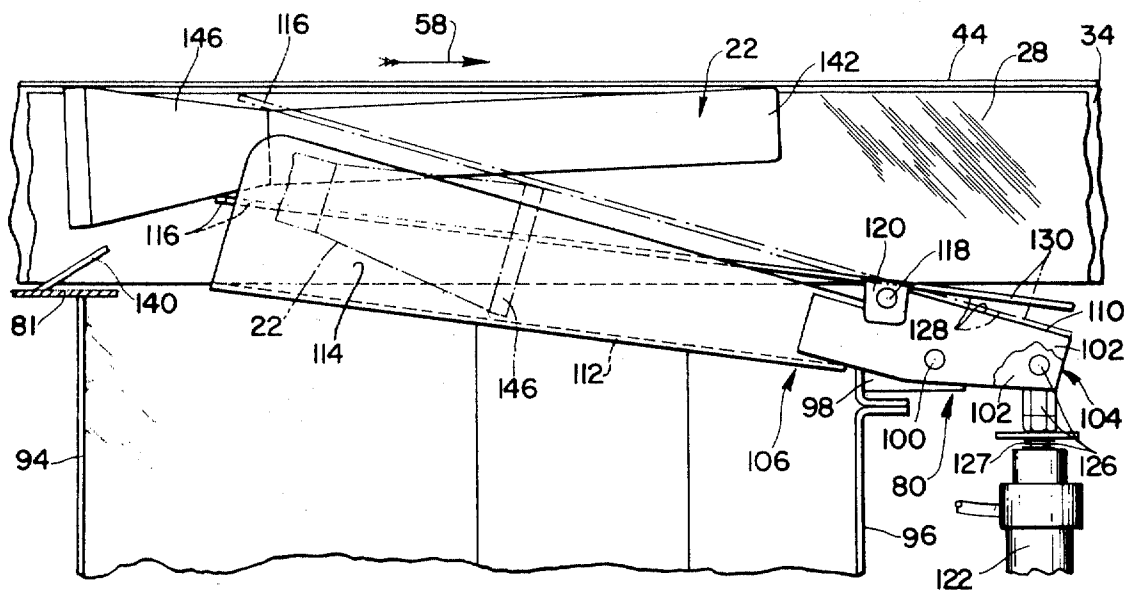


FIG. 5

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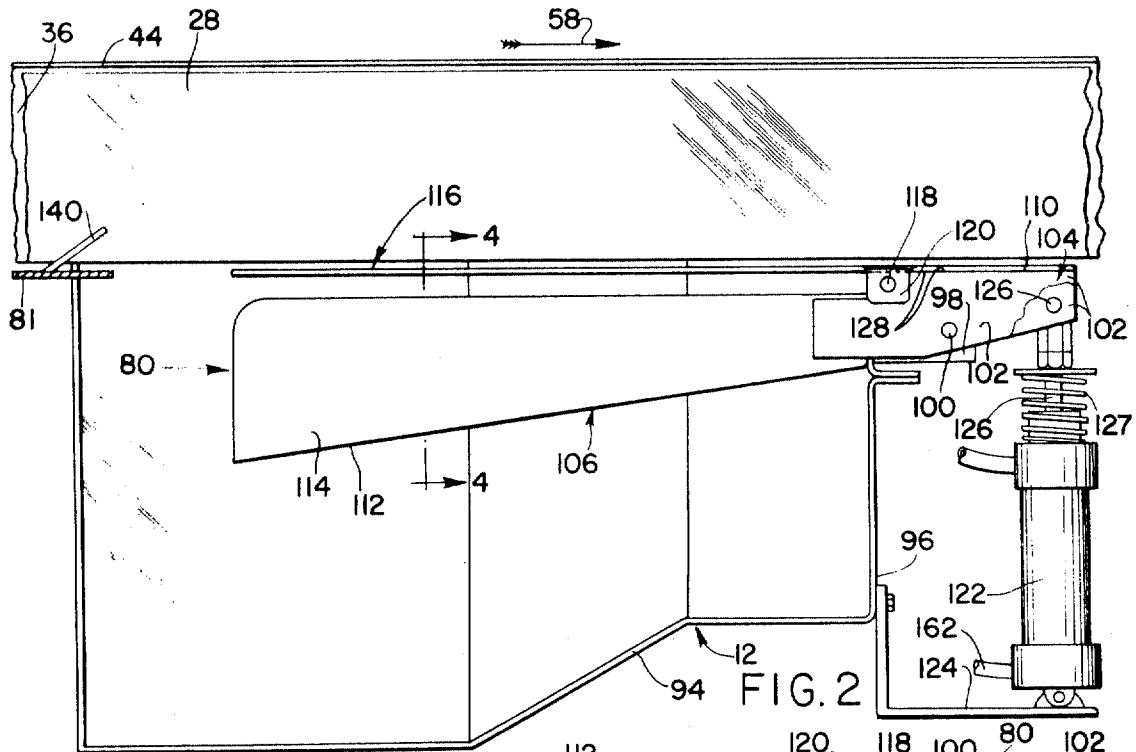
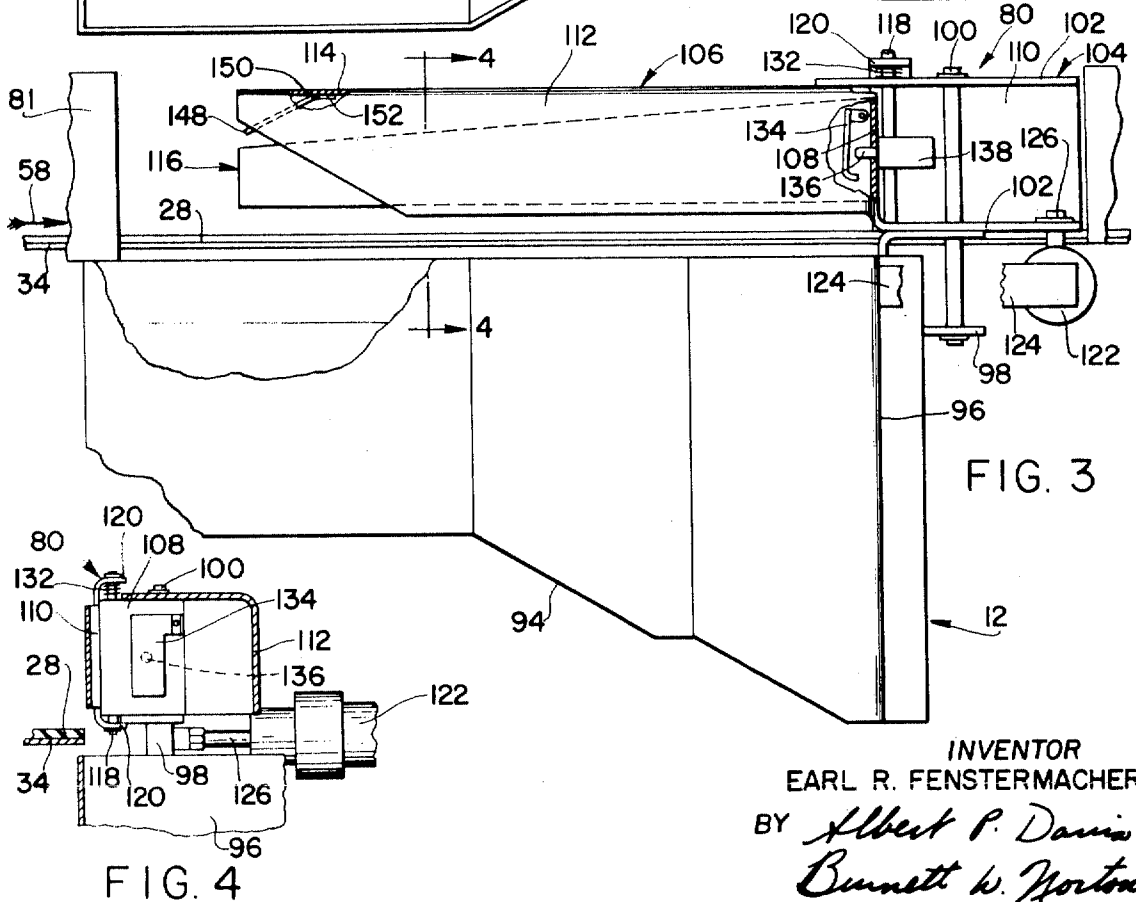
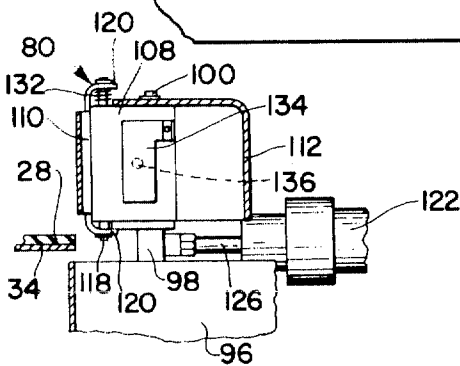
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BOBBIN PICKUP

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3 Sheets-Sheet 2



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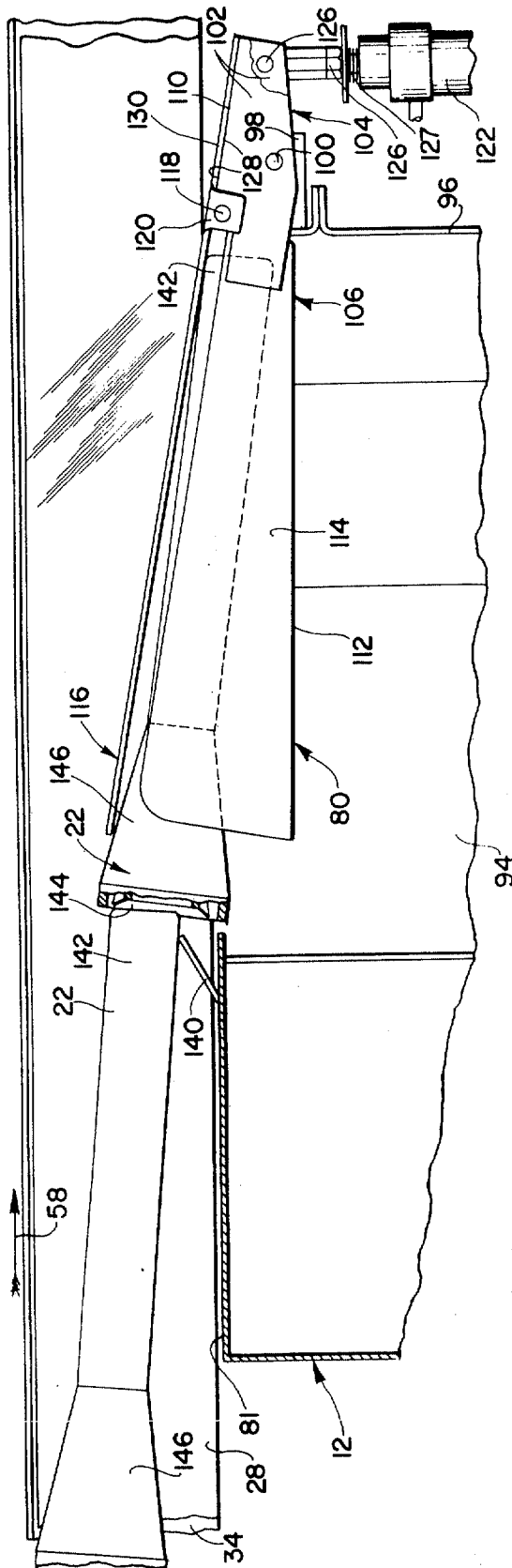
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BOBBIN PICKUP

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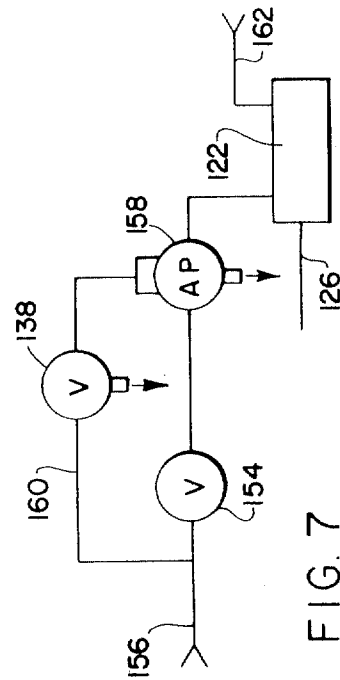


FIG. 7

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3,618,306

BOBBIN PICKUP

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Int. Cl. D01h 9/10

U.S. Cl. 57—53

26 Claims

ABSTRACT OF THE DISCLOSURE

A bobbin handling apparatus for a self-tending spinning frame includes tenders which move back and forth along spinning stations and stop, as required, to service the stations. For example, the tenders doff filled bobbins, and then don and thread-up empty bobbins. A belt conveyor encircles the spinning frame and has upper runs for carrying empty bobbins to the tenders and lower runs for receiving filled bobbins from the tenders. The empty bobbins are normally spaced from each other on the conveyor. Each tender is provided with a bobbin receiver alongside the conveyor. When the receiver is operated to an active position for receiving an empty bobbin, it by-passes any bobbin (or a string of bunched bobbins) alongside, and when a bobbin is not alongside it moves to a position for receiving a bobbin from the conveyor, the bobbin causing the receiver to close and the bobbin is moved into the tender.

This invention relates to textile machinery and, more particularly, to apparatus for automatically handling bobbins.

As used herein the term "bobbin" means a core carrying a body of yarn, so that the yarn may be readily moved from place to place, or to such a core without a body of yarn thereon. The term "filled bobbin" means a bobbin whether full or partially full of yarn. The term "empty bobbin" means a bobbin which is ready to be donned and filled with yarn. The term "yarn" is employed in a general sense to apply to all kinds of strand material, either textile or otherwise.

In a co-pending Leeson Corporation, U.S. patent application by Frank C. Di Mauro, filed Oct. 6, 1969, for a "Bobbin Monitoring System," Ser. No. 863,858, there is disclosed a system for delivering empty bobbins to a machine, such as a spinning frame or winder, and for receiving filled bobbins from the machine. The system includes a pair of tenders which traverse back and forth, one on either side of the machine, and stop for servicing the spinning or winding stations, as required. A continuous conveyor encircles the machine and has upper runs for delivering empty bobbins to the tenders and lower runs for receiving filled bobbins from the tenders and discharging the filled bobbins from the system. Each tender is provided with an empty bobbin pick-up gate or receiver which is automatically swung across the adjacent upper run of the conveyor for transferring an empty bobbin to the tender.

The invention, in brief, is directed to an improved apparatus including an empty bobbin pick-up gate or receiver on a tender of such a bobbin handling system. The receiver is normally in an inactive position to permit normal passing of empty bobbins. When the tender requires a bobbin its receiver is automatically operated to an active position extending across the path of the bobbin on the conveyor for receiving the bobbin, and then moves back to its inactive position for delivering the bobbin to the tender. In the event that the receiver moves to its active position as an empty bobbin or a string of empty bobbins is alongside the receiver, the receiver engages the side or sides of the bobbins and when it is clear of the bobbin

or the string of empty bobbins the receiver moves to receive another bobbin. Provision is made for straightening skewed bobbins and separating telescoped bobbins on the conveyor.

It is a primary object of this invention to provide a new and improved article handling apparatus and, more particularly, bobbin handling apparatus for a textile machine.

Another object is to provide a new and improved automatic bobbin handling apparatus having a receiver movable into a position for receiving a bobbin in closing relationship with the receiver, and for by-passing a bobbin alongside the receiver and then moving to the position for receiving a succeeding bobbin.

A more specific object is provision of a new and improved bobbin handling apparatus including provision for maintaining at least one bobbin along a path and including a receiver operable between an inactive position away from the path and an active position for by-passing a bobbin alongside the receiver, and for receiving a bobbin in closing relationship with the receiver and removing the last mentioned bobbin from the path. A related object is provision in such apparatus for assuring that the receiver is operated to its inactive position upon a power failure within the system. Still another related object is provision of a conveyor for moving the bobbin along the path and provision for moving the receiver relative to the bobbin.

These and other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which:

FIG. 1 is a fragmentary, schematic, top view of a preferred embodiment of the invention, with parts broken away and removed for clearer illustration;

FIG. 2 is an enlarged, fragmentary, schematic top sectional view of a portion of FIG. 1, showing a bobbin receiver in an inactive position, with parts broken away and removed for clearer illustration;

FIG. 3 is a fragmentary, schematic elevational view of the receiver shown in FIG. 2, with parts broken away and removed for clearer illustration;

FIG. 4 is a fragmentary, schematic vertical sectional view taken generally along the line 4—4 in FIGS. 3 or 4;

FIG. 5 is a view similar to FIG. 2, but with the receiver in an active position, and with parts broken away and removed for clearer illustration;

FIG. 6 is a view similar to FIGS. 2 and 5, but with the receiver moving from the active position to the inactive position, and with parts broken away and removed for clearer illustration; and

FIG. 7 is a diagram of a simplified control system suitable for operating the receiver.

Referring to FIG. 1 of the drawings, a machine which is illustrated as a spinning frame 10 (phantom lines) has two tenders 12 which move back and forth along either side of the spinning frame and are preferably of the type shown in a Leeson Corporation patent, U.S. 3,403,866. In brief, the tenders 12 are carried on tracks (not shown) and are self-propelled for movement back and forth along the adjacent side of the spinning frame 10 for scanning spinning stations 14 of the frame. Each tender stops to provide required services for any of its stations, and thereafter continues scanning the stations. Upon stopping at a station, a tender doffs a filled bobbin at the station, dons an empty bobbin onto the station and then threads the bobbin so that spinning may continue. The filled bobbins are dropped into a filled bobbin chute 16.

As is more fully described in the previously noted patent application, the bobbin handling apparatus includes a conveyor system 18 which encircles the spinning frame

10 for delivering empty bobbins 22 to the tenders 12 and for receiving filled bobbins 24 from the tenders. The illustrated conveyor system is a belt conveyor having four conveyor belts including two long belts 26 and 28, one for delivering the empty bobbins 22 to each of the tenders 12 and for receiving the filled bobbins 24 from each of the tenders. These long belts are interconnected at their adjacent ends by shorter, end belts 30 and 32. Both upper and lower runs of the belts 26-32 slide across and are supported by fixed shelves, as 34 (FIG. 4), which decline inwardly, at about 7°, toward retaining walls 42, 44, 46 and 48, respectively, so that the empty bobbins are maintained along a path about the spinning frame. Drive pulleys 50 (FIG. 1), one for each of the belts 26-32, are driven through dual take-off transmissions 52 by suitable motors 54 (only one being shown), so that one motor 54 drives two of the belts, as 28 and 30, for example. Belt tensioners 56 are provided at ends of the belts opposite their drive pulleys.

With continuing reference to FIG. 1, the empty bobbins 22 travel in a counterclockwise direction, as indicated by the arrow 58, on upper runs of the belts. The belts cross each other at corners 60 and the bobbins are transferred between the belts at the corners. At each corner, the delivering belt passes above the receiving belt so that the bobbins drop from the delivering belt to the receiving belt. In order to facilitate turning of the bobbins about the corners 60, a concavely curved inner surface of an outer wall 62 is provided at the outside of each corner. At the inside of each corner a bobbin guide 64 is provided. The guides 64 may be of any suitable low friction material such as nylon, for example. Each bobbin guide 64 is between a convexly curved outer surface of an inner wall 66 and adjacent inner edges of the adjacent belts, as 28 and 30, for example. As the leading end of a bobbin engages the outer wall 62 the wall urges a mid-portion of the bobbin inwardly toward an apex 68 of the guide whereupon the trailing end of the bobbin is caused to roll on the guide toward the outer wall 62.

When one of the tenders 12 requires an empty bobbin 22, a bobbin receiver or pick-up gate assembly 80 of the tender is swung from an inactive or closed position in which position it is substantially flush with a sidewall 81 of the tender, as shown in FIGS. 1-3, to an active or open position, as shown in FIG. 5, in which position the receiver 80 extends diagonally across the upper run of the adjacent, long conveyor belt 26 or 28. Regardless of the direction of movement, if any, of the tender 12, the upper run of the adjacent belt 26 or 28 is moved sufficiently fast to cause an empty bobbin 22 to close relative to (i.e. move toward) the receiver. In the illustrated embodiment the receiver can accept but one bobbin at a time. Upon receipt in the receiver, the bobbin causes the receiver to be operated to its inactive position, whereupon the empty bobbin is deposited in the tender, as will be more fully described later.

The filled bobbins 24 are deposited by the tenders 12 on the adjacent one of the lower runs of the long conveyor belts 26 or 28 through a side opening (not shown) at the bottom of the filled bobbin chute 16. The filled bobbins are carried about the machine in a clockwise direction on the lower run of the belt 28, or the belts 26-30, depending on which tender deposits the filled bobbin, and they pass into a discharge chute 82 for removal from the system. The general arrangement of the corners of the lower runs are substantially the same as that previously described for the upper runs with the exception that the lower run of belt 28 which deposits the bobbins in the discharge chute 82 has a retaining wall 83 which extends to the chute.

In order that the receiver 80 may function more efficiently in taking the empty bobbins 22 from the upper runs of the belts, the bobbins are maintained suitably spaced from each other by means of a bobbin monitoring control system. As shown in FIG. 1, the monitoring

system has first and second sensors 84 and 86, respectively, each freely pivoted above adjacent belts 30 and 28, respectively, to swing upwardly as a bobbin passes thereunder on the belt. Each time an empty bobbin engages a sensor 84 a timing function is initiated. If the timing span expires before trailing bobbin engages the sensor 86 (which is upstream of the first sensor 84) an empty bobbin is delivered through a tube 88 to the upper run of the end conveyor belt 30. If the second sensor 86 is engaged by a bobbin before the timing span has expired, the timing span is started anew and a bobbin is not delivered to the conveyor.

As the empty bobbins 22 travel with the upper runs of the conveyor belts 26-32, they could be caused to bunch together with ends abutting, as by a temporary obstruction on one of the belts, for example. The monitoring control system spaces such bunched bobbins from each other, as follows: When the second sensor 86 is engaged by a bobbin 22 a bobbin retarding apparatus 90 is actuated to move a bobbin holding abutment 92 inwardly toward the retaining wall 44 so that the abutment engages a head of a bobbin 22 moving on the upper run of the belt 28 and stops the bobbin. When the preceding bobbin 22 engages the first sensor 84, the holding abutment is operated to release the held bobbin, if any, which then continues its travel on the upper runs of the conveyor.

Referring now to FIGS. 2-4 of the drawings, each tender 12 has an empty bobbin trough 94 which slightly underhangs (FIG. 4) the adjacent upper run of the conveyor belt, as 28 and its shelf 34. The receiver 80 is mounted on an end wall 96 of the trough by means of a generally U-shaped bracket 98 which has its bight fixed to the wall 96. An upwardly extending pivot pin 100 is rigidly mounted in legs of the bracket 98 and extends through holes in upper and lower legs 102 of a U-shaped end portion 104 of a body 106 of the receiver 80. The pivot pin 100 may be retained operatively positioned in any suitable manner as by spring clips, and mounts the receivers for swinging movement about an axis generally normal to and spaced from the upper run of the adjacent conveyor belt, as 28. A transverse wall 108 of the body 106 extends from an inner end of a bight 110 of the U-shaped end portion 104. At an end of the transverse wall 108 opposite the bight 110 a sidewall 112 of the body 106 extends generally along the conveyor belt 28 and away from the body end portion 104. A generally horizontally top wall 114 of the body 106 is co-extensive with and extends from the top of the sidewall 112 toward the conveyor belt 28 (FIGS. 2 and 3) in the inactive position of the receiver. A member provides a bobbin deflecting gate 116 which is mounted on the body 106 by means of a pivot pin 118 for swinging movement across the upper run of the adjacent conveyor belt, as 28. The gate pivot pin 118 is received by the legs 102 of the U-shaped end portion 104 of the body 106 and by upper and lower tabs 120 on the gate 116 and may be retained in position in any suitable manner as by spring clips. The gate pivot pin 118 is generally parallel to the body pivot pin 100 and is spaced from the body pivot pin 100 toward the adjacent conveyor belt, as 28, and slightly upstream of the body pivot pin 100 relative to the direction of motion of the conveyor belt 28.

The receiver 80 is operated between the inactive and active positions by means of a double acting cylinder 122 which is pivoted at its closed end to a bracket 124 fixedly secured to the wall 96 of the trough 94. The cylinder has a plunger 126 pivoted to the outer end portion of the lower leg 102 of the body end portion 104. Operating fluid (60 p.s.i., for example) is applied to the cylinder 122 to retract its plunger 126 and swing the body 106 from the inactive position shown best in FIG. 2, to the active position shown in FIG. 5, and when the operating fluid is vented the control air (20 p.s.i., for example) and a fail safe compression return spring 127 received between the

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cylinder and a washer on the plunger returns the plunger and the body and gate to their inactive position.

The gate 116 is releasably held in inactive position through engagement of cooperating portions 128 (seen best in FIG. 5) of the body 106 and the gate to one side of the pivot pins 100 and 118 and, as shown in FIGS. 2 and 3, to the right of the pivot pins. These cooperating portions include the bight 110 of the body end portion 104 and an adjacent abutment portion 130 end of the gate 116. When the body 106 is swung to its active position, the gate 116 is free to swing to its active position which includes the positions shown by both the solid and the phantom lines in FIG. 5. Movement of the gate 116 to its active position is provided by a torsion spring 132 (FIGS. 3 and 4) telescoped about the gate's pivot pin 118 with ends of the spring engaging the gate 116 and the body 106 in normal manner.

Referring to FIG. 5, in the active position the gate 116 is free to swing across the upper run of the adjacent conveyor belt, as 28. In the event that an empty bobbin 22 is passing the gate 116 as it swings in its active position, the torsion spring 132 will yieldably urge the gate against the side of the bobbin so that the bobbin 22 and the receiver 80 may pass each other. After the bobbin and receiver have passed, the gate 116 is automatically urged to a bobbin receiving position (phantom lines in FIG. 5) by the torsion spring 132, and remains in this position with its abutment end 130 against the bight 110 of the body 106 until an empty bobbin is received.

When an empty bobbin 22 enters the receiver 80 it slides along the gate 116 and engages a valve actuator 134 (FIGS. 3 and 4) freely pivoted to the transverse wall 108 of the body 106 and causes the actuator 134 to depress a valve operator 136 extending through the transverse wall 108 to close a normally open valve 138 (FIGS. 3 and 7) fixed to the transverse wall. When closed, the valve 138 vents the operating cylinder 122 of operating fluid, preferably air, as will be described later, whereupon the cylinder's return spring 127 and the control fluid cause the plunger 126 to be extended and swing the body 106 to its inactive position. As the body swings to its inactive position the cooperating portions 128 cause the gate 116 to swing (FIG. 6) to its inactive position, and the empty bobbin 22 is wept off of the adjacent conveyor belt, as 28, and into the empty bobbin receiving trough 94. From the trough 94 the bobbin is picked-up by an elevator (not shown) for further handling by the tender 12.

As the empty bobbins 22 are carried about the spinning frame 10 on the upper runs of the conveyor belts 26-32, a bobbin may become skewed across one of the belts so that its leading end is directed toward the outer edge of the belt. When such a skewed bobbin approaches a receiver 80 in the active position (FIG. 5) it might become snagged on the front edge of the sidewall 112 of the receiver's body 106 and cause bunching of the trailing bobbins. To eliminate this possibility, a deflector in the form of a tab 140 (FIGS. 5 and 6) is provided on the tender's sidewall 81 and forms an obtuse angle with the path of the approaching belt, to deflect the leading end of the bobbin inwardly toward the retaining wall, as 44, so that the bobbin will enter the receiver 80 between the body sidewall 112 and the gate 116, in normal manner.

Should a string of bunched bobbins 22 in end to end abutting engagement approach a receiver 80 when it is in its active position, the leading bobbin of the string of bobbins will enter the receiver 80 in the normal manner and, with particular reference to FIG. 6, as the receiver is swung from its active position toward its inactive position, a small leading end 142 of a second bobbin 22 in the string will be nested in a hollow 144 in a large trailing end 146 of the first bobbin and could become jammed by the first bobbin against the adjacent sidewall 81 of the tender 12. To eliminate this possibility, the tab 140 deflects the leading end 142 of the second bobbin in the

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string generally as illustrated in FIG. 6 so that the receiver 80 may close fully and deposit the leading bobbin in the trough 94 whereupon the second bobbin is free to pass the receiver 80.

Should a bobbin on the upper runs of the conveyor belts 26-32 have its larger end 146 leading, it will not be operatively received by a receiver 80, thereby avoiding depositing of such a reversed bobbin in the tender's empty bobbin trough 94. As shown by phantom lines in FIG. 5, such a reversed bobbin will be wedged between the body sidewall 112 and the gate 116, which converge from the entrance of the receiver toward the transverse wall 108 of the body, so that the reversed bobbin cannot engage the valve actuator 134 to initiate movement of the receiver from its active to its inactive position. Additionally, as shown in FIG. 3, the receiver 80 may be provided with a stop plate 148 pivoted, as by a pin 150, to the inside of the top wall 114 of the body 106. The stop plate 148 is weighted about the pivot pin 150 so that its outer end is pivoted downwardly and an abutment 152 on its inner end engages the top wall 114 to retain the stop plate in a normal position. In the active position of the receiver 80 the outer end of the stop plate 148 is spaced above the upper run of the adjacent conveyor belt, as 28, so that only the small end 142 of the bobbin may pass thereunder to lead the bobbin into the receiver. After the small end of the bobbin has passed under the stop plate 148, the plate will ride across the side surface of the bobbin and over the large end 146 to permit the bobbin to be fully received within the receiver and to depress the valve actuator 134. However, if a bobbin approaches the receiver with its large end 146 leading, the large end will abut the outer end of the stop plate 148 to prevent the bobbin from entering the receiver, thus preventing a bobbin from being deposited in the trough in other than normal orientation.

A simplified operating circuit for the receiver is shown in FIG. 7. When a tender 12 requires an empty bobbin 22 a control system of the tender operates to open a normally closed shut-off valve 154 in a fluid and preferably an air supply line 156 so that operating air is provided through an air piloted valve 158 (which is normally open during operation of the apparatus) to the operating cylinder 122, causing the cylinder to retract its plunger 126 and move the receiver 80 into the active position. When an empty bobbin engages the valve actuator 134 (FIGS. 4 and 5) on the receiver 80 it closes the normally open valve 138 in a pilot air line 160 which shuts-off and vents the pilot air from the supply line 156 to the air piloted valve 158, whereupon the air piloted valve closes and vents the operating cylinder 122 so that its spring 127 and control air provided the cylinder through a line 162 extends the plunger 126 to return the receiver 80 to its inactive position. Should there be a failure of the air supply, pilot air to the air piloted valve is thereby cut-off so that the operating cylinder's plunger 126 is automatically extended by the fail safe spring 127 to remove the receiver 80 from the path of the bobbins 22 on the adjacent conveyor belt, as 28.

While this invention has been described with reference to a particular embodiment in a particular environment, various changes may be apparent to one skilled in the art and the invention is therefore not to be limited to such embodiment or environment except as set forth in the appended claims.

What is claimed is:

1. Bobbin handling apparatus comprising, first means for maintaining at least one bobbin along a path, and second means including a receiver operable for receiving the bobbin from said path, means for moving said bobbin and said receiver relative to each other, means mounting said receiver for movement between an inactive position away from said path, and an active position for by-passing the bobbin when the bobbin is alongside the

receiver, and for receiving the bobbin when the bobbin is in closing relationship with the receiver, and means for operating said receiver between said positions.

2. Apparatus as set forth in claim 1 in which said operating means includes means responsive to said receiver receiving a bobbin for returning the receiver to its inactive position.

3. Apparatus as set forth in claim 1 in which said moving means operates for normally moving said bobbin along said path and said receiver adjacent said path.

4. Apparatus as set forth in claim 1 in which said bobbin has a small end and a large end, and said receiver includes means for operatively receiving the bobbin only with a particular one of said ends leading, the last said means includes spaced apart surfaces for receiving the bobbin therebetween and said surfaces having adjacent ends defining an entrance for receiving the bobbin, said surfaces converging from said ends to opposite end portions spaced apart from receiving only the small end of the bobbin, the operating means includes actuator means operable for initiating movement of said receiver to its inactive position, and said actuator means being at said end portions in position for operation by only the small one of the bobbin ends.

5. Apparatus as set forth in claim 1 in which said second means provides for said receiver operatively receiving a leading bobbin of a series of abutting bobbins along said path, and by-passing the remainder of the abutting bobbins.

6. Apparatus as set forth in claim 1 including means for separating telescoped bobbins.

7. Apparatus as set forth in claim 1 including means for aligning a bobbin askew of said path.

8. Apparatus as set forth in claim 1 in which said receiver includes a body and a member, said mounting means mounts said body and said member for movement between said inactive and active positions, and mounts said member for movement in its active position into engagement with a bobbin alongside the receiver to bypass the bobbin, and into a receiving position when no bobbin is alongside the receiver to receive a bobbin in closing relationship with the receiver.

9. Apparatus as set forth in claim 8 in which said body includes a side spaced laterally from said member relative to said path and with said member forming a guide to receive and retain the bobbin when said receiver is in said active position and as said receiver moves to its inactive position.

10. Apparatus as set forth in claim 8 in which the operating means includes first actuating means for moving said body between its positions, and second actuating means for moving said member to its active position upon movement of said body to its active position.

11. Apparatus as set forth in claim 10 in which said mounting means mounts said member on said body, and said second actuating means includes means yieldably urging said member into its active position.

12. Apparatus as set forth in claim 10 in which said receiver includes cooperating means on said body and said member engaging each other for releasably retaining said member in its inactive position when said body is in its inactive position and for releasing said member for movement to its active position as said body moves to its active position.

13. Apparatus as set forth in claim 12 in which said cooperating means moves said member to its inactive position responsive to movement of said body to its inactive position, the first actuating means includes a fluid motor, fluid supply means for providing said motor with operating fluid to move said body to its active position, and means for returning said body from its active position to its inactive positions upon failure of said fluid supply means to provide said fluid.

14. Apparatus as set forth in claim 13 in which the

returning means includes normally closed valve means fluid piloted open to pass said operating fluid to said motor, said valve means having means for venting said operating fluid from said motor when the valve means is closed, and said fluid supply means being connected for providing pilot fluid to said valve means.

15. Apparatus as set forth in claim 14 in which said bobbin has a small end and a large end, said receiver may operatively receive only one bobbin at a time and includes means for operatively receiving the bobbin only with a particular one of said ends leading, and for operatively receiving a leading bobbin of a series of abutting bobbins along said path and by-passing the remainder of the abutting bobbins, means for separating telescoped bobbins and for aligning a bobbin askew of said path, said body includes a side spaced laterally from said member relative to said path to receive and retain the bobbin between the side and the member when said receiver is in said active position and as said receiver moves to its inactive position, said side and said member having adjacent ends defining an entrance for receiving the bobbin and converging from said ends to opposite end portions spaced apart for receiving only the small end of the bobbins, said body has opposite ends and said member has opposite ends, said mounting means mounts said body for swinging movement about an axis intermediate its ends and mounts said member on said body for swinging movement about an axis intermediate its ends, and said cooperating means are on adjacent sides of said axes, the operating means includes means responsive to said receiver receiving a bobbin for returning the receiver to its inactive position and including actuator means operable for initiating movement of said receiver to its inactive position, and said actuator means being at said end portions in position to be operated by only the small one of the bobbin ends, said second actuating means includes means yieldably urging said member into its active position, and said moving means operates for normally moving said bobbin along said path and said receiver adjacent said path.

16. Apparatus as set forth in claim 15 in which the bobbin is an empty bobbin, said apparatus is a self-tending spinning frame in which said second means includes a tender for servicing the spinning frame, said mounting means mounts said receiver on said tender, and the moving means includes a conveyor for moving empty bobbins along said path and moves said tender adjacent said path for supplying the empty bobbins to the tender.

17. Article handling apparatus comprising, a receiver operable for receiving an article along a path, means mounting said receiver for movement between an inactive position away from said path, and an active position for by-passing the article when the article is alongside the receiver, and for receiving the article when the article is in closing relationship with the receiver, and means for operating said receiver between said positions.

18. Apparatus as set forth in claim 17 in which said receiver includes a body and a member, said mounting means mounts said body and said member for movement between said inactive and active positions, and mounts said member for movement in its active position into engagement with an article alongside the receiver to permit passing of the article and the receiver, and into a position for receiving an article when no article is alongside the receiver.

19. Apparatus as set forth in claim 18 in which the operating means includes first actuating means for moving said body between its positions, and second actuating means for moving said member to its active position upon movement of said body to its active position.

20. Apparatus as set forth in claim 19 in which said second actuating means includes means yieldably urging said member into its active position.

21. Apparatus as set forth in claim 19 in which said receiver includes cooperating means on said body and said member engaging each other for moving said member to

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its inactive position responsive to movement of said body to its inactive position, for releasably retaining said member in its inactive position when said body is in its inactive position and for releasing said member for movement to its active position as said body moves to its active position.

22. Apparatus as set forth in claim 21 in which said body has opposite ends and said member has opposite ends, said mounting means mounts said body for swinging movement about an axis intermediate its ends and mounts said member on said body for swinging movement about an axis intermediate its ends, and said cooperating means are on adjacent sides of said axes, said body includes a side spaced from said member relative to said path and with said member forms a guide to receive and retain the article when said receiver is in said active position and as said receiver moves to its inactive position, said operating means includes means responsive to said receiver receiving a bobbin for returning the receiver to its inactive position, and said second actuating means includes means yieldably urging said member into its active position.

23. Bobbin handling apparatus comprising, means including a receiver operable between an inactive position and an active position for receiving a bobbin having a large end and a small end only with the small end leading, the receiver including spaced apart surfaces for receiving the bobbin therebetween and said surfaces having adjacent ends defining an entrance for receiving the bobbin, said surfaces converging from said ends to opposite end portions spaced apart for receiving only the small end of the bobbin, means mounting said receiver for movement between said positions, and in said active position for bypassing a bobbin when the bobbin is alongside the receiver, and for receiving the bobbin when the bobbin is in closing relationship with the receiver, and means for operating said receiver between said positions and including actuator means operable for initiating movement of said receiver to its inactive position, and said actuator means being at said end portions in position for operation by only the small one of the bobbin ends.

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24. A bobbin handling system for a textile machine having a series of stations each of which receives bobbins, comprising means including a tender movable for scanning the stations and delivering the bobbins to the stations, means for conveying bobbins from a source of supply, receiving means for removing the bobbins from the conveying means and delivering the bobbins to the tender, and means mounting the receiving means on the tender for movement therewith during scanning of the stations by the tender.

25. A system as set forth in claim 24 in which the conveying means includes means for moving the bobbins in a direction substantially coextensive with and generally in the direction of movement of the delivering means.

26. A system as set forth in claim 24 in which the conveying means includes means for moving the bobbins in a direction substantially coextensive with and generally opposite the direction of movement of the delivering means.

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