

Oct. 29, 1963

L. W. HAYES, SR
BOBBIN STRIPPER

3,108,354

Filed July 29, 1960

4 Sheets-Sheet 1

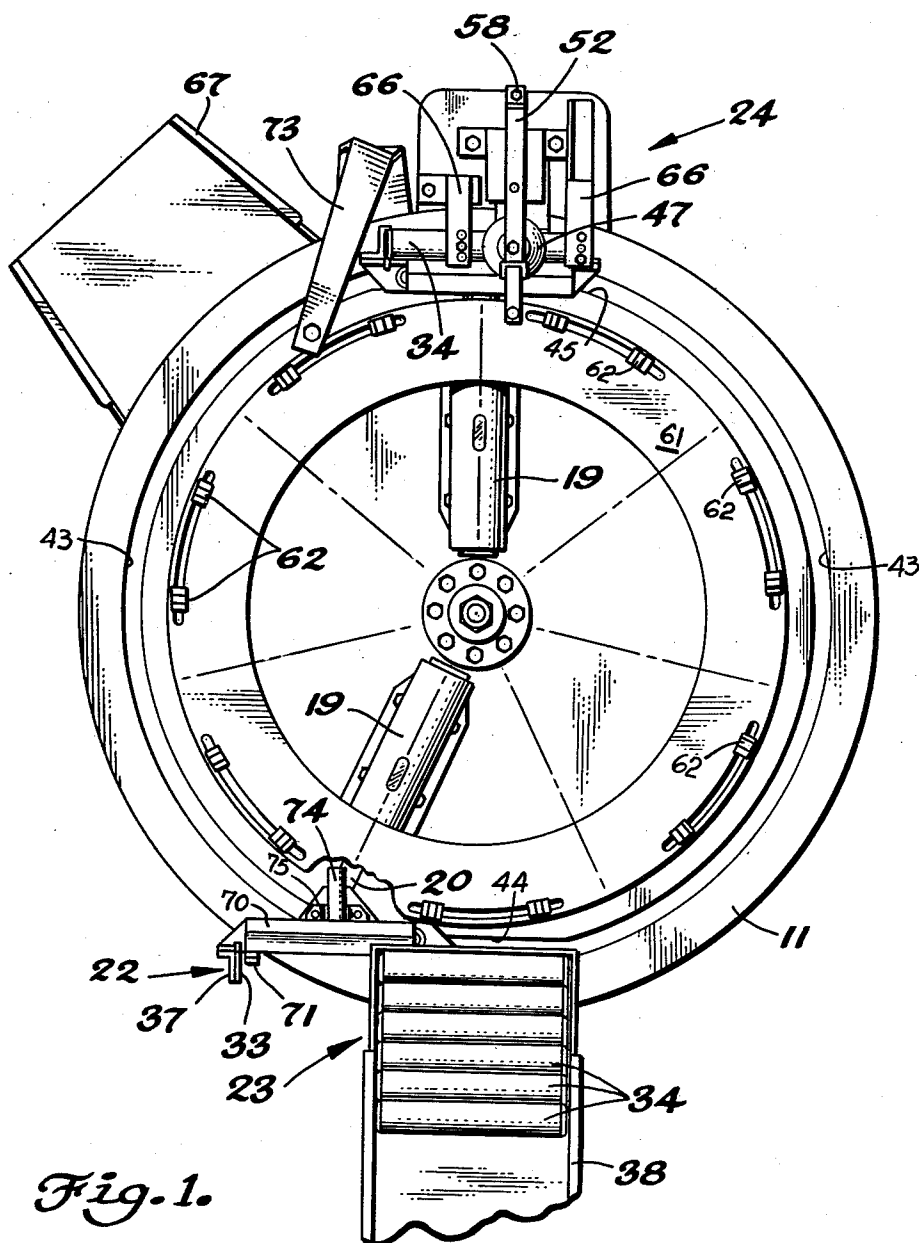


Fig. 1.

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4 Sheets-Sheet 2

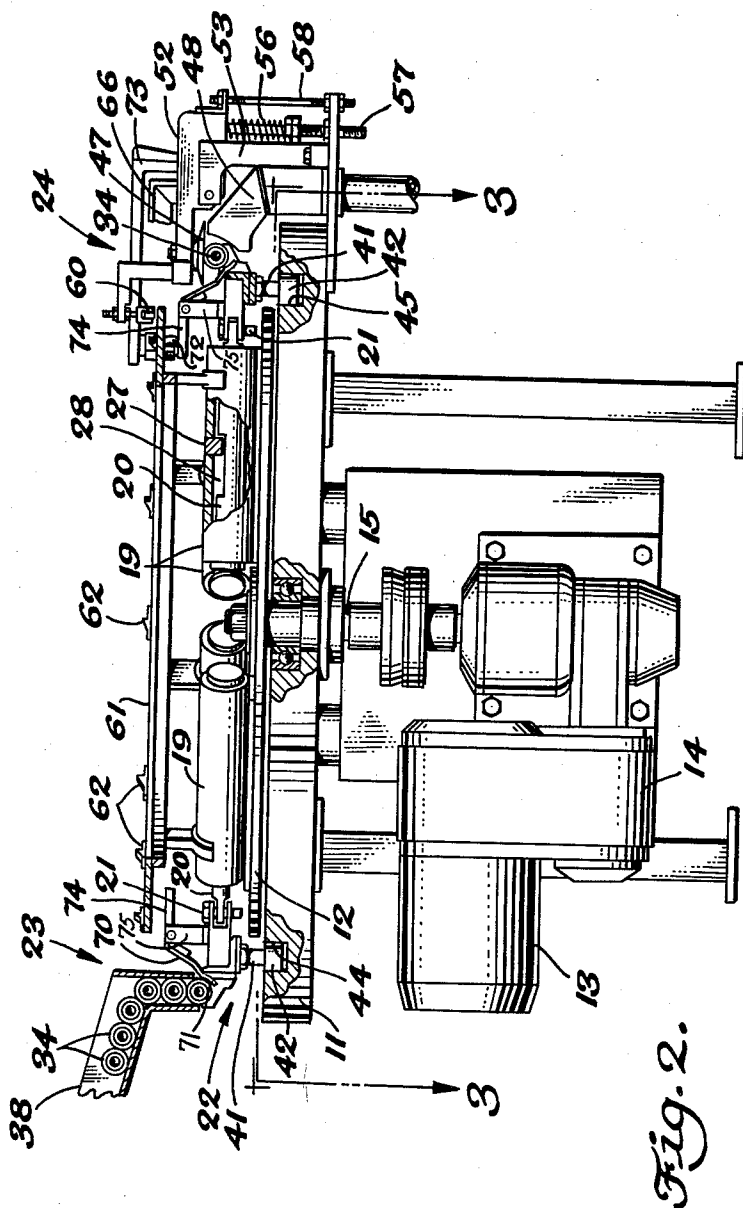


Fig. 2.

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4 Sheets-Sheet 3

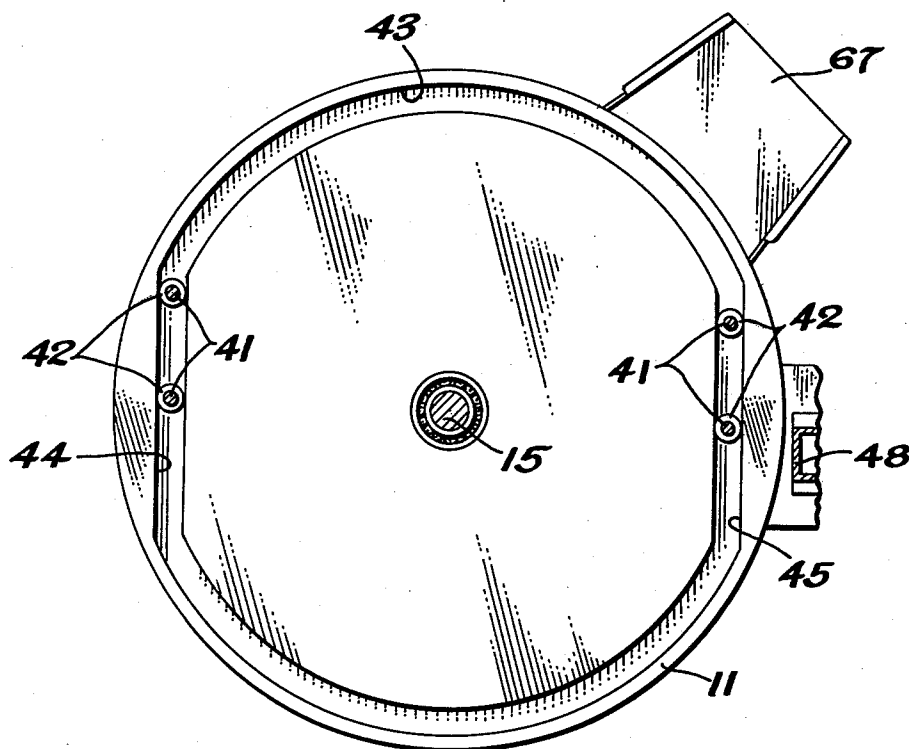


Fig. 3.

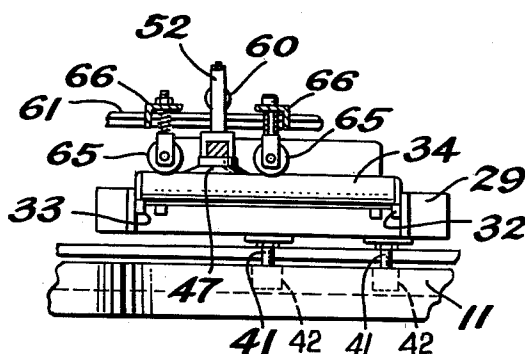


Fig. 4.

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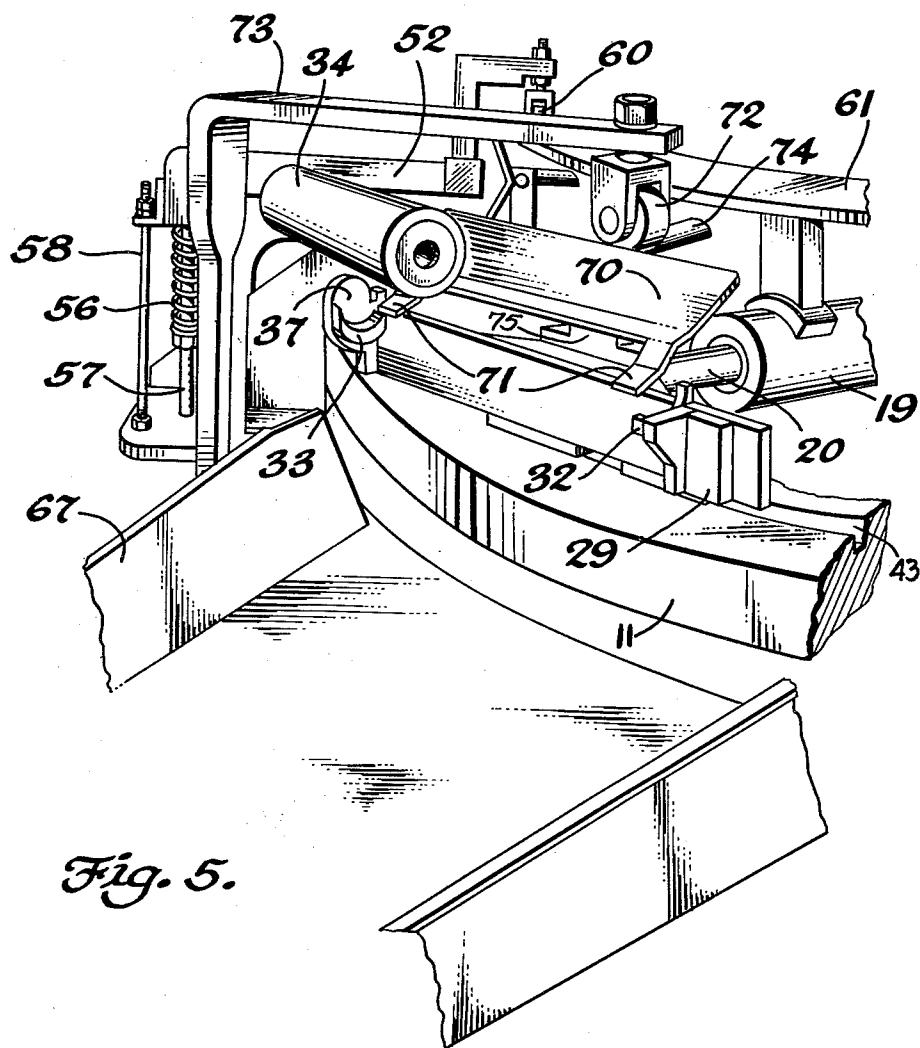
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4 Sheets-Sheet 4



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1

3,108,354

BOBBIN STRIPPER

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Filed July 29, 1960, Ser. No. 46,281

10 Claims. (Cl. 28—19)

This invention relates to bobbin strippers and more particularly to apparatus for automatically stripping waste yarn from bobbins.

In past practice, it has been common to strip waste yarn from bobbins by manually running a knife along the bobbin to sever the yarn and by then manually removing the yarn from the bobbin. This method has several disadvantages. It is slow, requires a larger number of operators, and often results in damage to the bobbin. As the knife is moved along the bobbin by the operator, the surface of the bobbin is frequently nicked. This results in damage to the yarn subsequently wound on the bobbin. With these problems in mind, one of the objects of this invention is to provide a novel and improved bobbin stripper.

Another object of this invention is to provide an apparatus for automatically stripping waste yarn from bobbins at a high rate of speed.

A further object of this invention is to provide an apparatus having a rotatable table adapted to pick up bobbins from a chute and carry the bobbins past a station where the waste yarn is severed and removed from the bobbin.

Another object of this invention is to provide a bobbin stripper wherein a cutter severs yarn from a bobbin as the bobbin is moved past the cutter at a uniform speed.

A still further object of this invention is to provide a bobbin stripper wherein a yarn severing cutter is elevated out of contact with the ends of a bobbin as the bobbin is moved longitudinally past the cutter.

Another object of this invention is to provide an automatic bobbin stripper wherein a cutter is held stationary and a bobbin is moved longitudinally therepast to sever waste yarn from the bobbin.

Still another object of this invention is to provide a bobbin stripper wherein a plurality of bobbin carriers are adapted to traverse a generally circular path having on opposite sides straight portions, the straight portions being provided so that bobbins on the bobbin carriers are carried along a linear path past a chute which deposits bobbins on the carriers and then along a second linear path where waste yarn is severed from the bobbins.

One embodiment of the invention contemplates a bobbin stripper wherein a rotatably mounted table supports a plurality of bobbin carriers which are adapted to receive bobbins from a feed chute and to advance the bobbins past a cutting or stripping station where the yarn is severed and withdrawn from the bobbin. A base positioned below the rotatable table is provided with a groove which receives portions of the bobbin carriers to properly align the bobbin carriers and to cause the bobbin carriers to travel along straight paths during the pickup and cutting operations, the purpose of the straight or linear paths being to insure alignment of the bobbin carrier with the feed chute and alignment of the bobbin with the cutter. After the bobbins are carried past the cutting or severing station, an ejection device removes the stripped bobbin from the bobbin carrier.

Other objects and advantages of the invention will become apparent when the following detailed description is read in conjunction with the appended drawings, in which:

FIGURE 1 is a plan view of an apparatus illustrating

2

one embodiment of the invention and showing the positioning of various stations around a table;

FIGURE 2 is a front view of the apparatus with portions broken away and showing a bobbin loading station and a yarn cutting or severing station mounted at opposite sides of a table;

FIGURE 3 is a sectional view taken on line 3—3 of FIGURE 2 showing a groove which controls the path of travel of bobbin carriers which transport the bobbins through the apparatus;

FIGURE 4 is an enlarged sectional view taken on line 4—4 of FIGURE 1 showing a pair of rollers provided for holding a bobbin in one of the bobbin carriers during the yarn cutting operation; and

FIGURE 5 is an enlarged fragmentary perspective view showing a stripped bobbin being ejected from a bobbin carrier after the yarn severing operation.

Referring now in detail to the drawings, there is shown a base 11 rotatably supporting a circular table 12 which is driven by a motor 13 through a gear reduction system 14 and a shaft 15. The table 12 has secured thereto a plurality of tubular guides 19 mounted radially on the table at spaced intervals therearound. The tubular guides 19 slidably support shafts 20 which are attached by pins 21 at their outer ends to bobbin carriers 22, the purpose of which is to transport the bobbins through the apparatus.

The bobbin carriers 22 follow a generally circular path having a pair of straight sides at a loading station 23 and a yarn cutting or severing station 24. In other words, the bobbin carriers move along a circular path until they reach the loading station 23 and the cutting station 24. In passing these two stations, the bobbin carriers travel along straight lines to insure that the bobbin carriers are properly positioned for picking up the bobbins and moving the bobbins past the yarn cutting station. Inasmuch as the bobbin carriers do not travel along a completely circular path, it is necessary that the shafts 20 be slidably mounted in the tubular guide 19. Pins 27 secured to the guides 19 and positioned in notches 28 in the shafts 20 limit the movement of the shafts 20 relative to the guides 19.

The bobbin carriers 22, as best illustrated in FIGURE 5, are provided with a supporting framework 29 which is pinned to the shaft 20 and which supports a pair of spaced brackets 32 and 33 which have arcuate recesses in the upper portions thereof for receiving and holding bobbins 34 of a well-known type. The supporting framework 29 is provided with a raised arcuate projection 37 adjacent to the bracket 33 for engaging the end of the lowermost bobbin in a supply chute 38 and pushing this bobbin longitudinally out of this supply chute for transportation through the apparatus. Since the bobbin carrier travels along a linear path past the chute 38, the carrier will not fail to pick up the lowermost bobbin in the chute. The supporting framework adjacent to the leading bracket 32 is low enough that it passes beneath the lowermost bobbin in the chute 38.

Each of the bobbin carriers is provided with a pair of spaced depending shafts 41 upon which are mounted rollers 42 positioned in a groove 43 (FIGURE 3) in the base 11. The purpose of the groove 43 is to guide the bobbin carriers along the above-described path. It can be seen from FIGURE 3 that, because of the configuration of the groove 43, each of the bobbin carriers will travel along a circular path except when passing the chute 38 and the cutting station 24. In passing these locations, straight portions 44 and 45 of the groove 43 will cause the bobbin carriers to travel along straight or linear paths.

The bobbins picked up from the chute 38 are carried past the cutting station 24 by the continuously moving

table 12 where a stationary circular or disc-like cutter 47 engages waste yarn on the bobbins and severs this yarn for removal. A duct 48 connected to a fan (not shown) terminates at a position adjacent to the cutter 47 for withdrawing the severed yarn from the bobbin.

The cutter 47 is secured to a lever 52 pivotally attached to a bracket 53 mounted on the base 11. A compression spring 56 mounted on an adjustment screw 57 urges the lever in a direction to move the cutter 47 downward toward the bobbin 34. A bolt 58 attached to the lever 42 and the base 11 is provided for limiting the downward movement and thereby the lowermost position of the cutter 47.

A roller 60 adjustably secured to the lever 52 rides along the upper surface of an annular plate 61 carried by the table 12 and passes over spaced cams 62 secured to the plate 61 for elevating the cutter 47 at the leading and trailing ends of the bobbin 34. Since it is necessary that the cutter 47 does not nick or damage the bobbin 34 and since the ends of the bobbin 34 may be slightly enlarged relative to the middle portion thereof, the cams 62 are provided for lifting the cutter out of engagement with the bobbin as the leading and trailing edges of the bobbin pass the cutter. It can be seen from FIGURE 2 that as the bobbin 34 is moved along a straight path past the cutter 47, any waste yarn on the bobbin will be severed by the cutter 47 and withdrawn through the duct 48.

To insure that the bobbin is held in the brackets 32 and 33 during the cutting operation, a pair of spring-loaded rollers 65 (FIGURE 4) positioned on opposite sides of the cutter 47 engage the bobbin to hold it in the brackets 32 and 33. The rollers 65 are attached to brackets 66 which are secured to the base 11.

After the bobbin passes the cutting or severing station 24, it is ejected from the bobbin carrier onto a discharge chute 67 (FIGURES 1, 3, and 5). An ejector 70 pivotally mounted on a bracket 75 (see FIG. 2) on the supporting framework 29 is provided with a pair of fingers 71 which extend between the brackets 32 and 33 downward beneath a bobbin held on these brackets. A roller 72 adjustably supported on a bracket 73 secured to the base 11 is adapted to engage an arm 74 secured to the ejector 70 for pivoting the ejector and raising the fingers 71 to kick or eject the bobbin out of the brackets 32 and 33 and into the chute 67 as shown in FIGURE 5.

In operation of the apparatus for stripping waste yarn from bobbins, the motor 13 continuously drives the table 12 at a uniform speed. Movement of the table 12 causes the bobbin carriers 22 to move along a path controlled by the configuration of the groove 43 in the base 11. As each bobbin carrier passes the loading station 23, the projection 37 adjacent to the bracket 33 engages the end of the lowermost bobbin in the chute 38 and moves this bobbin longitudinally out of the chute. When the bobbin 34 clears the chute 38, it drops into the brackets 32 and 33 for transportation through the apparatus.

Just before the bobbin carrier reaches the cutting or severing station 24, the rollers 42 enter the straight portion 44 of the groove 43 to carry the bobbin in a straight line past the cutter 47. Just before the leading end of the bobbin 34 reaches the cutter 47, the roller 60 rides up over one of the cams 62 to lift the cutter 47 so that the leading end of the bobbin will not be damaged. The cam 62 clears the roller 60 and the cutter 47 drops into engagement with the bobbin 34 for cutting any waste yarn thereon. The severed yarn is withdrawn from the bobbin through the duct 48.

After the stripped bobbin leaves the cutting station 24, the roller 72 engages the arm 74 and pivots the ejector 70 to kick or eject the bobbin 34 from the brackets 32 and 33 into the discharge chute 67. After the arm 74 clears the roller 72, the ejector 70 returns to its original position with the fingers 71 lowered and the bobbin car-

rier picks up another bobbin when it again passes the chute 38.

In the manner described above, the bobbins are automatically picked up from the chute 38, carried past the cutting station 24, and ejected into the discharge chute 67. Since it is not necessary to stop the table 12 during the yarn cutting operation, this apparatus can be operated at a high speed. The table 12 is driven at a constant speed and the steps of picking up the bobbin, severing the yarn on the bobbin and then ejecting the bobbin are performed automatically.

It is to be understood that the embodiment disclosed herein is merely illustrative of the invention and that many other embodiments may be contemplated which will fall within the spirit and scope of the invention.

What is claimed is:

1. An apparatus for stripping waste yarn from a bobbin, comprising a base, a table rotatably mounted on the base, a bobbin carrier mounted on the rotatably mounted table, means on the base for feeding a bobbin onto the bobbin carrier, a cutter mounted on the base and adapted to sever yarn on the bobbin as said bobbin is moved past the cutter, means on the base for actuating the table to carry the bobbin past the cutter, and means for ejecting the stripped bobbin from the bobbin carrier.

2. An apparatus for stripping waste yarn from a bobbin, comprising a base, a table rotatably mounted on the base, a bobbin carrier movably mounted on the table, means on the base for feeding a bobbin having waste yarn thereon onto the bobbin carrier, a cutter mounted on the base and adapted to sever said waste yarn when the bobbin is moved longitudinally therepast, means for driving the rotatably mounted table, and guide means for directing the bobbin carrier along a linear path past the cutter to align the bobbin with the cutter.

3. An apparatus for stripping yarn from a bobbin, comprising a base, a table movably mounted on the base, means for actuating the table, a bobbin carrier mounted on the table for carrying the bobbin along a predetermined path, a cutter movably mounted on the base adjacent to said path for severing yarn on the bobbin as the bobbin is advanced therepast, a cam mounted on the table, and means connected to the cutter and actuated by the cam for withdrawing the cutter from the bobbin as the ends of the bobbin pass said cutter.

4. An apparatus for stripping yarn from a bobbin, comprising a base, a table movably mounted on the base, said base having therein a groove defining a predetermined path having an arcuate portion and a straight portion, a bobbin carrier movably mounted on the table, a guide attached to the bobbin carrier and positioned in the groove in the base for guiding the bobbin carrier along said predetermined path, a stationary cutter mounted on the base adjacent to the straight portion of said path for severing yarn from the bobbin as said bobbin is moved therepast, and means for removing the severed yarn from the vicinity of the cutter.

5. A device for carrying an elongated bobbin, comprising a supporting framework, a pair of spaced elements attached to the supporting framework and having recessed portions for receiving and holding the bobbin, and an ejector movably mounted on the framework and having portions extending to positions beneath the bobbin for ejecting the bobbin from said recesses when said ejector is actuated, said ejector also having an extended portion adapted to be engaged to move the ejector and thereby eject the bobbin.

6. An apparatus for stripping yarn from bobbins, comprising a base, a table rotatably mounted on the base, a plurality of bobbin carriers mounted on the table for carrying bobbins along a predetermined path, a cutter mounted on the base adjacent to the path and movable away from said path for severing yarn from the bobbins, and means carried by the table for moving the cutter

5

away from the path as the ends of each bobbin pass said cutter.

7. An apparatus for stripping waste yarn from bobbins, comprising a base, a table rotatably mounted on the base, means on the base for driving the table, a plurality of supporting frameworks mounted at spaced intervals on the table, each of said frameworks having a pair of spaced elements for engaging the ends of a bobbin to support said bobbin, a plurality of bobbin ejecting members mounted on the supporting frameworks for ejecting the bobbins from said supporting frameworks, a chute mounted adjacent to the table for feeding bobbins having yarn thereon onto said spaced elements of the supporting frameworks, said base having therein a substantially circular groove having a straight portion, each of said supporting frameworks having a pair of guides positioned in the groove in the base for guiding the supporting framework along a path above the groove, a lever mounted on the base, a circular cutter mounted on the lever above the straight portion of the groove in the base and adapted to sever the yarn on the bobbin when said bobbin is moved longitudinally past said cutter, a pair of spring-loaded rollers positioned on opposite sides of the cutter for holding the bobbin on the supporting framework as the yarn is severed, a plurality of cams positioned at spaced intervals on the rotatably mounted table, a cam follower mounted on the lever and movable by the cams for pivoting the lever to elevate the cutter out of engagement with the bobbins at the ends thereof, means for removing severed yarn from the bobbin, and a member mounted above the base for engaging and actuating the bobbin ejecting members to eject the stripped bobbins from the supporting frameworks.

8. An apparatus for removing yarn from a bobbin, comprising a base, a bobbin carrier movably mounted on the base and having a pair of spaced portions having recesses therein for receiving and holding the bobbin, means on the base for moving the bobbin carrier along a predetermined path, a cutter mounted on the base adjacent to said path for engaging and severing the yarn on the bobbin, an ejector movably mounted on the carrier and

6

having a portion extending between the bobbin and said carrier for ejecting said bobbin from said recesses when said ejector is moved, and means on the base adjacent to said path for moving the ejector to eject the bobbin after said bobbin has passed the cutter.

9. An apparatus for removing yarn from a bobbin, comprising a base, means on the base for carrying a bobbin along a predetermined path above the base, a member movably mounted on the base, a cutter attached to the movably mounted member for engaging and severing the yarn from the bobbin, cam means carried by the bobbin carrying means for engaging and moving the movably mounted member to move said cutter away from the bobbin as the ends thereof pass the cutting edge of the cutter, and a pair of rollers positioned on opposite sides of the cutter for retaining the bobbin in the bobbin carrying means as said bobbin passes said cutter.

10. An apparatus for stripping yarn from bobbins, comprising a flat base having therein a groove having opposed arcuate portions and opposed linear portions, said portions being connected end-to-end to form a closed loop, a table rotatably mounted on the base, means supported by the base for rotating the table, a bobbin carrier connected to the table for movement therewith, a pair of spaced guide elements secured to the bobbin carrier and positioned in the groove in the base for guiding said carrier along a path above said groove, a chute attached to the base and positioned above one of the linear portions of the groove, said bobbin carrier having an element for extracting a bobbin from the chute, a yarn cutter positioned at the other linear portion of the groove for engaging and severing the yarn from the bobbin, and means for moving the cutter away from the bobbin as the ends thereof pass the cutting edge of the cutter.

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