

June 29, 1954

L. J. RYNISH

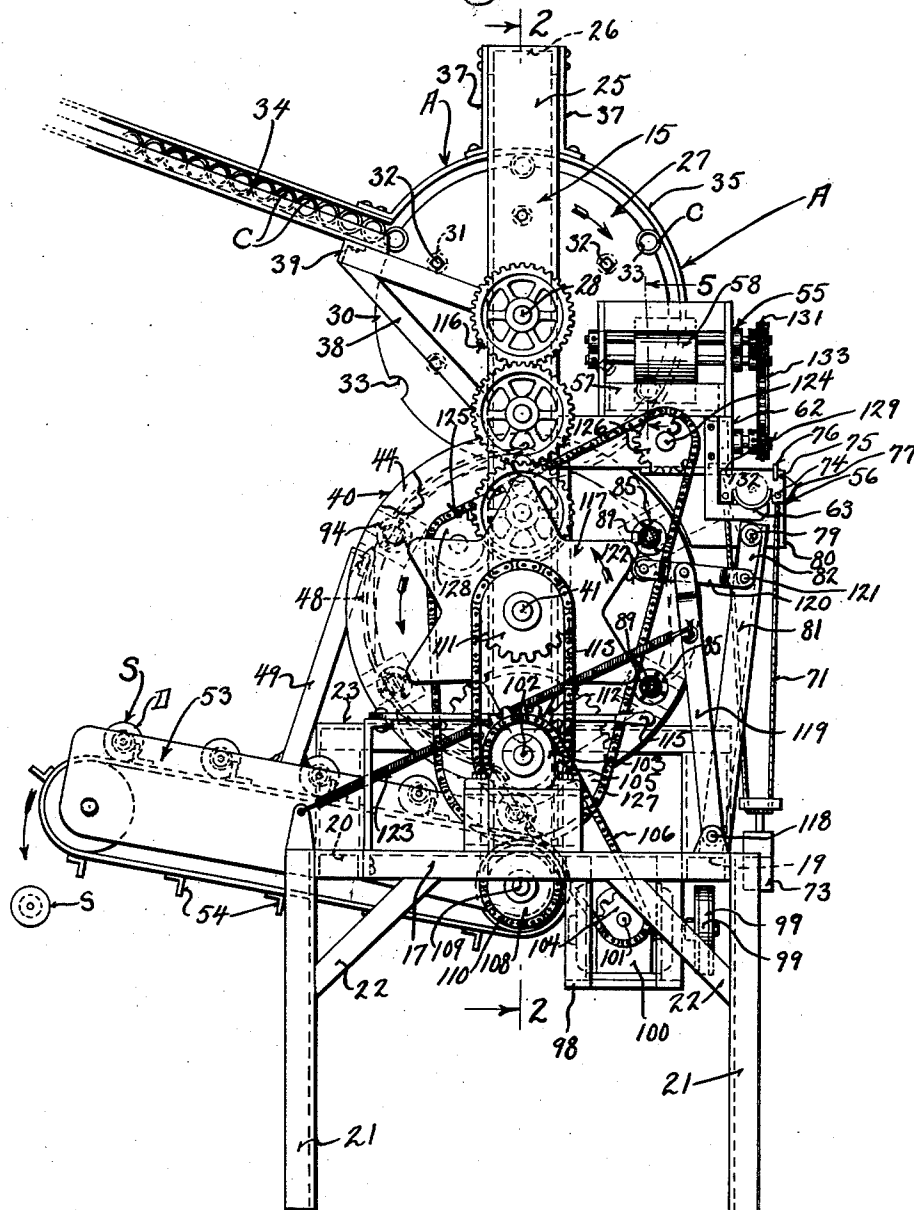
2,682,207

MACHINE FOR MAKING AND ASSEMBLING SPOOLS

Filed Sept. 7, 1951

6 Sheets-Sheet 1

Fig. 1.



INVENTOR
LOUIS J. RYNISH

BY

Young and Wright

ATTORNEYS

June 29, 1954

L. J. RYNISH

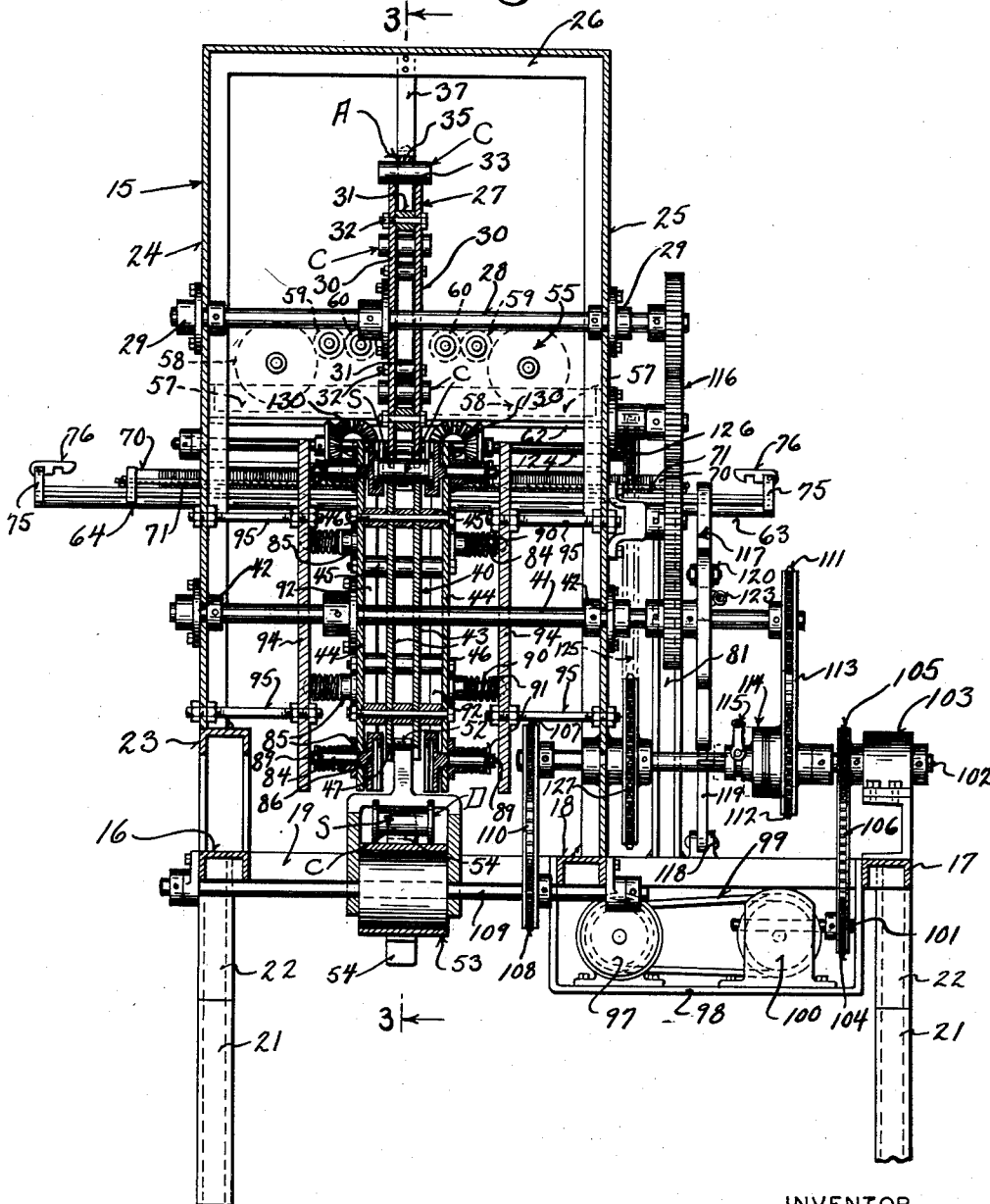
2,682,207

MACHINE FOR MAKING AND ASSEMBLING SPOOLS

Filed Sept. 7, 1951

6 Sheets-Sheet 2

Fig. 2.



INVENTOR
LOUIS J. RYNISH

BY

Young and Wright
ATTORNEYS

June 29, 1954

L. J. RYNISH

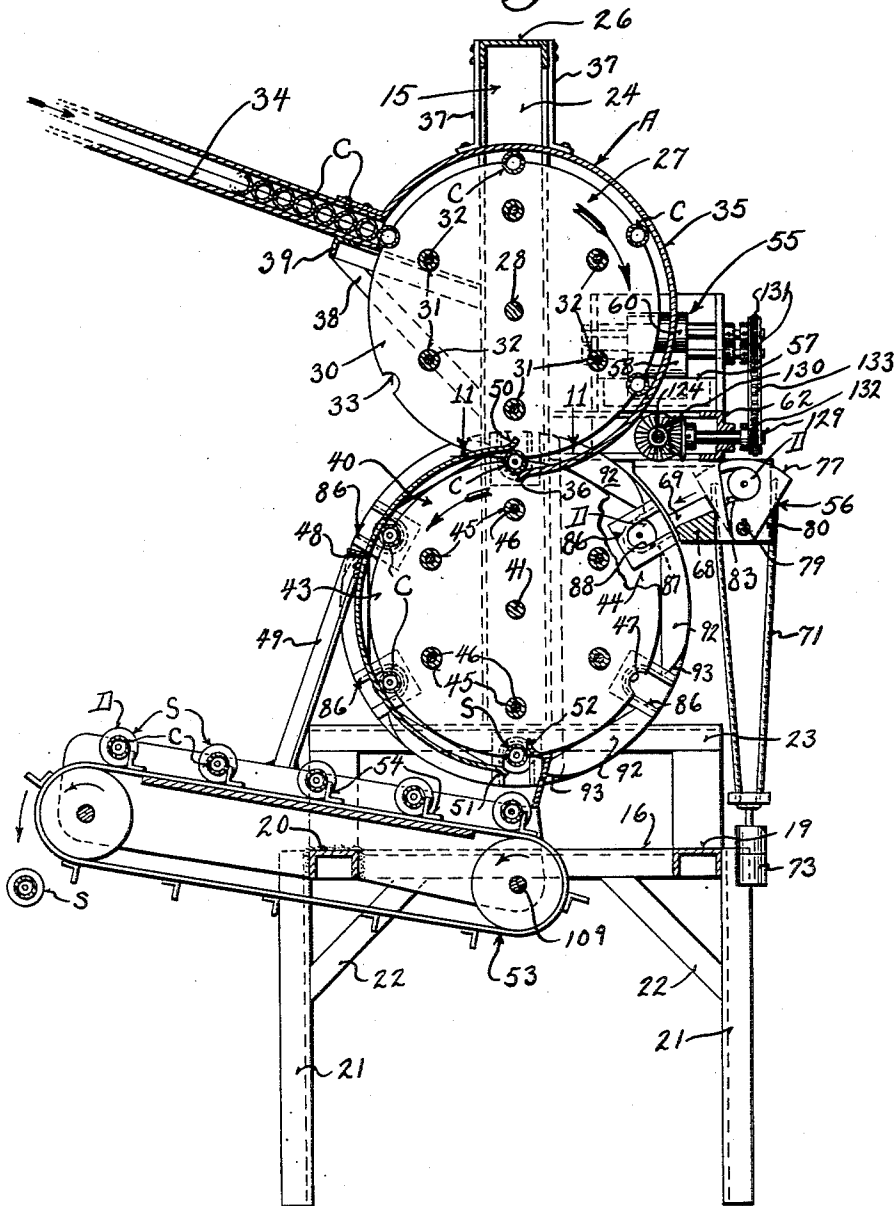
2,682,207

MACHINE FOR MAKING AND ASSEMBLING SPOOLS

Filed Sept. 7, 1951

6 Sheets-Sheet 3

Fig. 3.



INVENTOR
LOUIS J. RYNISH

BY

Young & Wright

ATTORNEYS

June 29, 1954

L. J. RYNISH

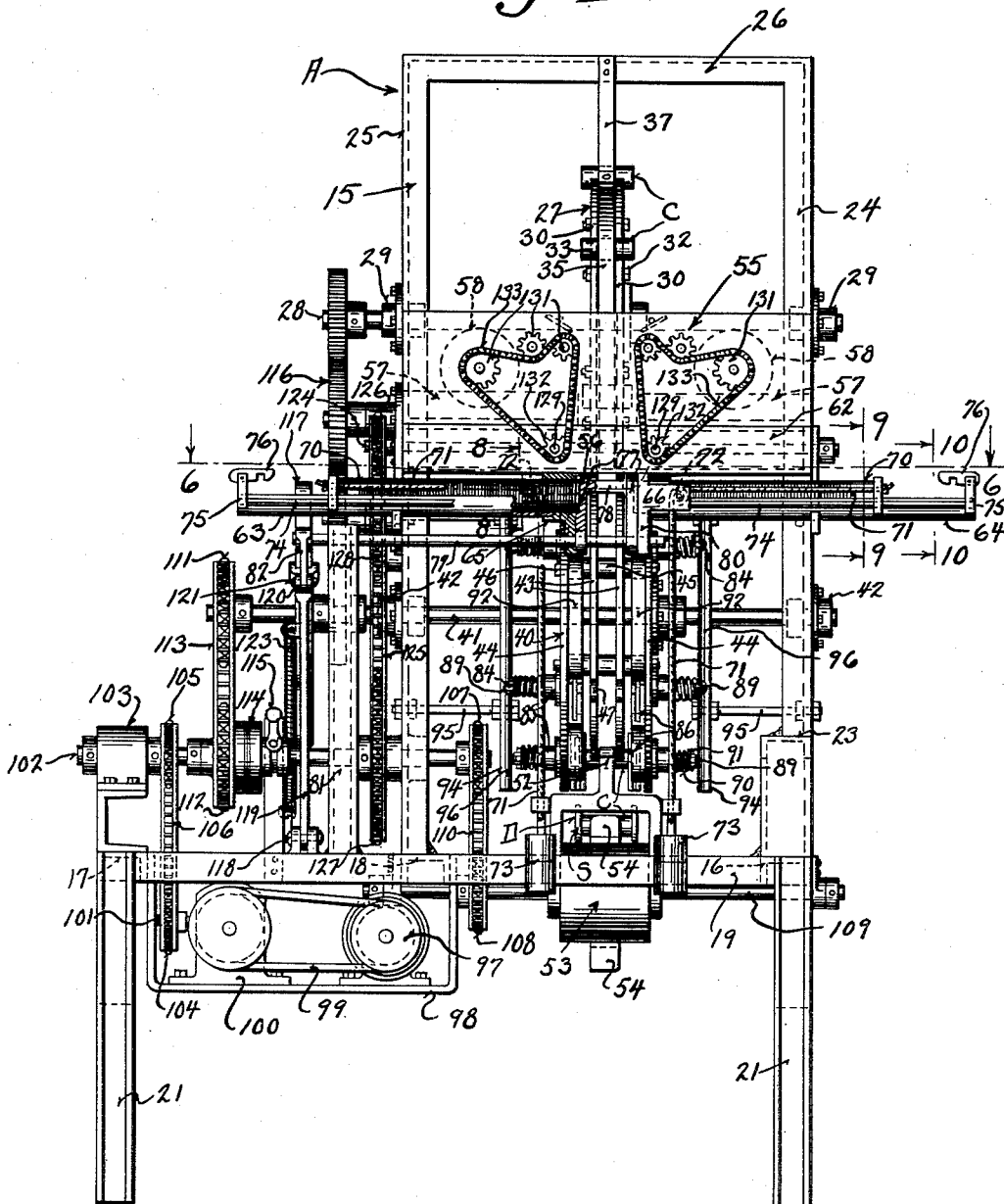
2,682,207

MACHINE FOR MAKING AND ASSEMBLING SPOOLS

Filed Sept. 7, 1951

6 Sheets-Sheet 4

Fig. 4.



INVENTOR
LOUIS J. RYNISH

BY

Young & Wright

ATTORNEYS

June 29, 1954

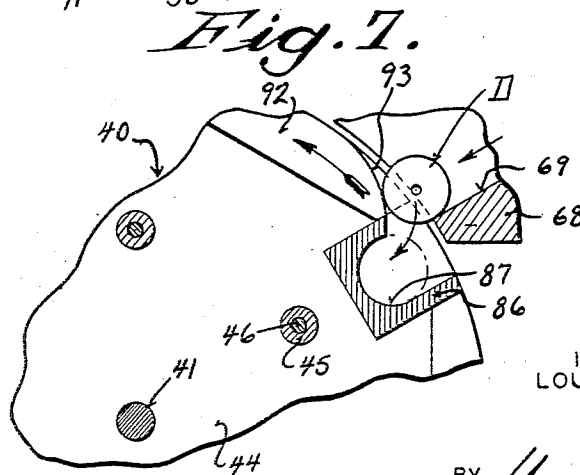
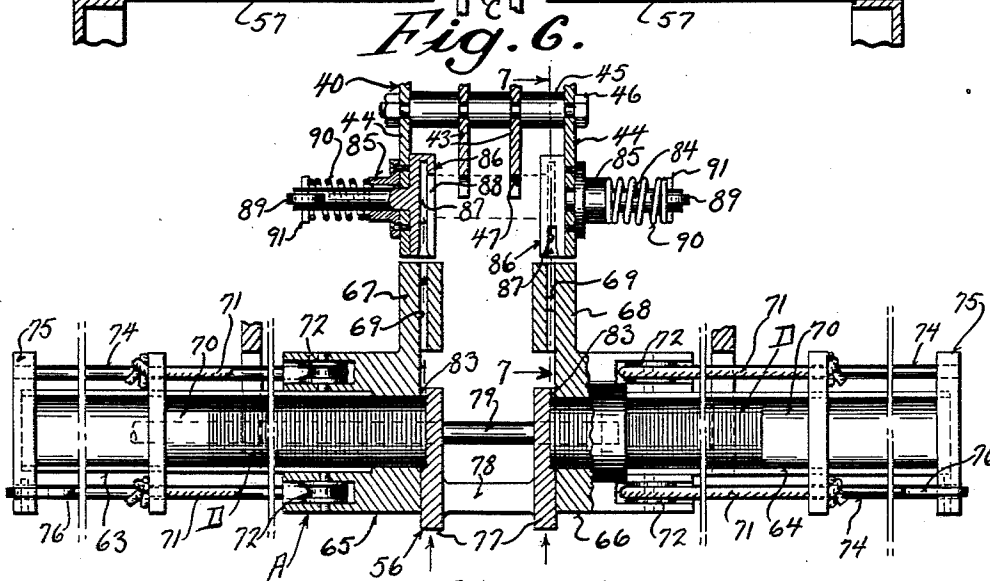
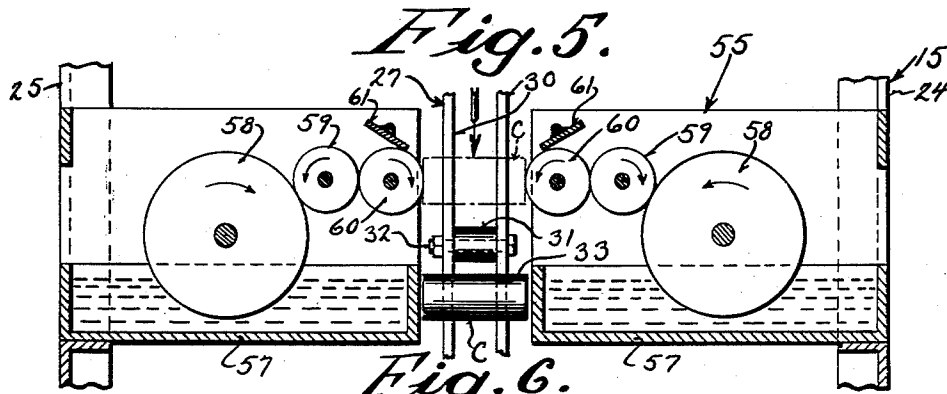
L. J. RYNISH

2,682,207

MACHINE FOR MAKING AND ASSEMBLING SPOOLS

Filed Sept. 7, 1951

6 Sheets-Sheet 5



INVENTOR
LOUIS J. RYNISH

BY *Young & Wright*
ATTORNEYS

June 29, 1954

L. J. RYNISH

2,682,207

MACHINE FOR MAKING AND ASSEMBLING SPOOLS

Filed Sept. 7, 1951

6 Sheets-Sheet 6

Fig. 8.

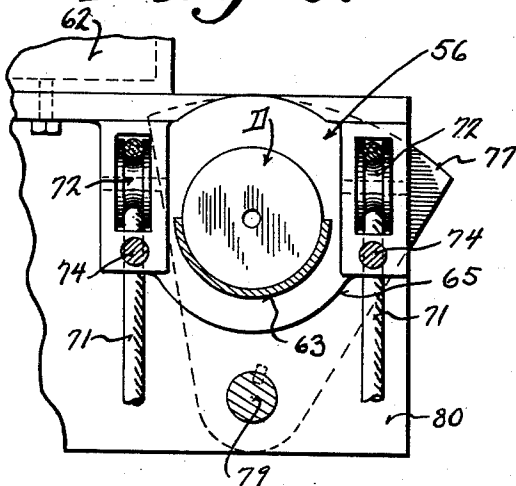


Fig. 9.

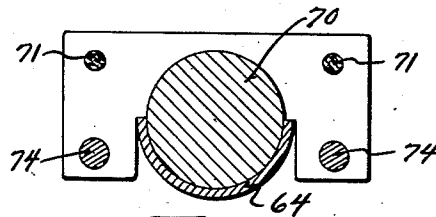


Fig. 10.

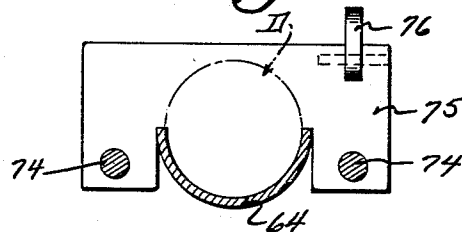


Fig.11.

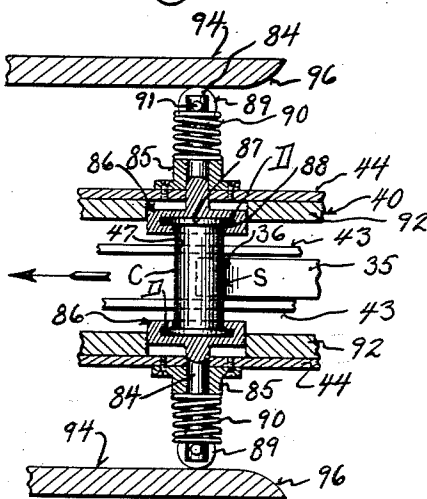


Fig. 12.

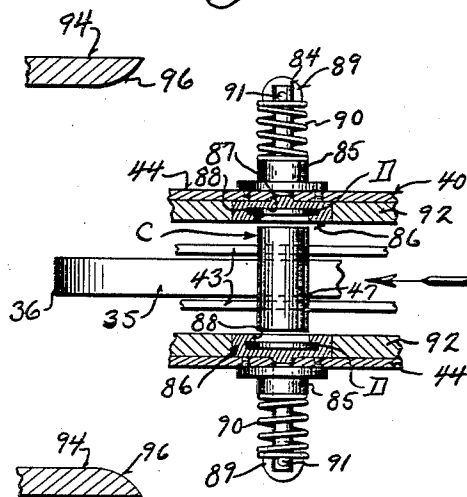


Fig. 13.

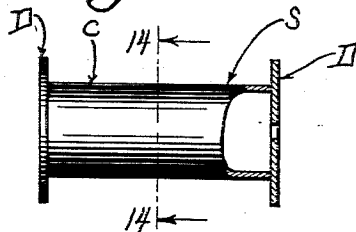
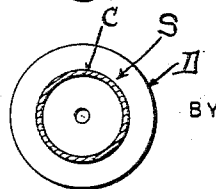


Fig. 14.



INVENTOR
LOUIS J. RYNISH

BY

Young Wrigley

ATTORNEYS

UNITED STATES PATENT OFFICE

2,682,207

MACHINE FOR MAKING AND ASSEMBLING
SPOOLS

Louis J. Rynish, Manitowoc, Wis., assignor to
Central Spool and Tube Company, Manitowoc,
Wis., a corporation

Application September 7, 1951, Serial No. 245,591

9 Claims. (Cl. 93—1)

1

This invention appertains to the making of reels, spools and the like, and more particularly to a novel machine for forming paper or cardboard spools of the type commonly used in the ribbon industry.

One of the primary objects of this invention is to provide a device for continuously forming spools in which means is provided for feeding cylindrical cores in proper timed relation to a mechanism for applying end discs thereto to complete the spools.

Another important object of the invention is to provide means for applying an adhesive to the terminals of the cores just prior to the feeding of the end discs to the cores for connecting said end discs to the cores.

A further object of the invention is to provide means for centering the discs relative to the cores and for holding the discs firmly against the cores until the adhesive has set so as to insure the delivery of a continuous uniform perfect product.

A further important object of the invention is the provision of means for feeding the cores to a feeding wheel or disc and for applying the adhesive to the terminals of the cores during movement of the wheel with novel means for transferring the cores with the coated terminals to a specially designed conveyor wheel, novel means being provided for feeding the end discs for the spools to the conveyor wheel and thereafter applying and holding the end discs properly centered on the terminals of the cores.

A still further object of the invention is to provide means for delivering the completed spools to a conveyor belt, which in turn carries the spools to suitable packing cases or cartons.

A still further important object of the invention is to provide a machine of the above character, which will be durable and efficient in use, one that will be simple to construct and one which can be placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described and claimed, and illustrated in the accompanying drawings, in which drawings,

Figure 1 is a side elevational view of the complete machine.

Figure 2 is a vertical sectional view through the machine taken on the line 2—2 of Figure 1, looking in the direction of the arrows, illustrating the delivery and conveyor wheels and a part of the drive for the various parts of the machine.

Figure 3 is a vertical sectional view taken at right angles to Figure 2, and on the line 3—3 of Figure 2, looking in the direction of the arrows illustrating the means employed for transferring

2

the cores from the delivery wheel to the conveyor wheel and the completed spools from the conveyor wheel to the conveyor belt.

Figure 4 is a front elevational view of the machine with parts thereof broken away and in section, the view illustrating a part of the end disc feeding mechanism.

Figure 5 is an enlarged detail vertical sectional view, through the machine taken on the line 5—5 of Figure 1, looking in the direction of the arrows illustrating one preferred means of applying the adhesive to the terminals of the spools.

Figure 6 is an enlarged horizontal sectional view taken on the line 6—6 of Figure 4, looking in the direction of the arrows illustrating the means for feeding the end discs in proper timed relation to the conveyor wheel for applying said discs to the ends of the cores.

Figure 7 is an enlarged fragmentary detail sectional view, taken at right angles to Figure 6 and on the line 7—7 of Figure 6, looking in the direction of the arrows, the view showing a part of the end disc feeding means.

Figure 8 is an enlarged detail transverse sectional view taken on the line 8—8 of Figure 4, looking in the direction of the arrows, showing one of the troughs for supporting the end discs.

Figure 9 is a view similar to Figure 8, but taken on the line 9—9 of Figure 4, looking in the direction of the arrows and illustrating more particularly the follower for one of the troughs for moving the end disc toward the inner end of a trough.

Figure 10 is a view similar to Figures 8 and 9, but taken on the line 10—10 of Figure 4, looking in the direction of the arrows, illustrating the latch for holding the follower back in its inoperative position during the loading of discs in a trough.

Figure 11 is an enlarged fragmentary detail horizontal sectional view, taken on the line 11—11 of Figure 3, looking in the direction of the arrows, showing the means carried by the conveyor wheel for carrying and holding the end discs against the terminals of the cores.

Figure 12 is a view similar to Figure 11 but showing the position of the disc carrying means prior to being cammed in toward a core.

Figure 13 is a front elevational view of a completed spool, parts of the view being shown broken away and in section.

Figure 14 is a transverse sectional view through a completed spool taken on the line 14—14 of Figure 13, looking in the direction of the arrows.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my improved core making or assembling machine and the same includes a frame and base 15, on which the various parts of the machine are mounted. The frame

3

and base 15 of the machine A can be constructed in various manners, and hence the drawings are merely illustrative of one type of frame and base. As shown, the frame and base 15 embody end side beams 16 and 17, and an intermediate spaced parallel beam 18. These beams 16, 17 and 18 are welded or otherwise rigidly secured to a front beam 19 and a rear beam 20. This forms a rugged, horizontally disposed frame and corner standards or legs 21 are provided therefor. The frame and the legs or standards can be braced in any desired way, such as by the use of diagonal brace bars 22. One end of the frame has rigidly secured thereto a fabricated bracket 23 and rigidly secured to this bracket is an upstanding pillar or upright 24. A similar upright or pillar 25 is rigidly secured to the intermediate brace beam 18 and the upper ends of these uprights or pillars 24 and 25 are rigidly connected by a top cross frame brace 26.

Mounted adjacent to the upper end of the frame 15 is rotatable feed wheel 27 for the cores C, which form the hub or body of the completed spools S. These cores C have applied thereto in a novel manner, as will be later described, end discs D. The wheel 27 is rigidly fastened to a cross shaft 28, and this shaft is supported in suitable bearings 29 carried by the uprights or pillars 24 and 25. The wheel 27 is of a special construction and preferably includes spaced parallel circular side plates 30 and these plates are held in their proper spaced position by spacer sleeves 31, on bolts 32, which connect the plates together to form the wheel. The periphery of the wheel is formed to provide seats at equidistantly spaced points for the cores C, and as illustrated, the edges of the side plates are provided with semi-circular notches 33, which form these seats. Hence, the cores are held at spaced points and a wide seat is thus provided. Leading toward the periphery of the wheel and preferably at the rear side thereof, and adjacent to its upper end, is a feed chute 34 for the cores C, and this chute can lead from a hopper (not shown) or any suitable source of supply. The wheel 27, see Figure 3, rotates in a clockwise direction and as a seat passes the open forward end of the chute 34, a core C will be deposited in the seat and the core will be carried around with the wheel. To prevent displacement of the cores from the wheel during the turning movement thereof, an arcuate guide plate 35 extends partially around the wheel and forms a partial housing therefor. The plate extends from the chute around the wheel and terminates below the wheel approximately in line with the vertical diametric center of the wheel, and the lower end of this guide plate has formed thereon a downwardly curved arcuate guide lip 36, the purpose of which will be later set forth. The guide plate is supported in any desired way, such as by the use of depending brackets 37 extending from the top cross beam or brace 26. The guide plate is also rigidly fastened to the upper end of the chute 34. If preferred, the chute itself can be supported at its front end from the frame 15 of the machine, and as shown in Figures 1 and 3, brackets 38 can be extended from the side uprights 24 and 25 toward the chute. These brackets in turn support a cross brace 39 which extends under the chute.

Positioned directly below the feed wheel 27 is a conveyor wheel 40, which receives the cores from the feed wheel after the terminals thereof have been coated with the desired adhesive. By

4

referring to Figure 3, it can be seen that the conveyor wheel 40 rotates in a counterclockwise direction and in an opposite direction from the feed wheel 27. The conveyor wheel 40 is rigidly secured to a cross shaft 41, which is arranged in parallel relation to the shaft 28, and this shaft 41 is rotatably mounted in suitable bearings 42, carried by the uprights 24 and 25. The wheel 40 is also of a special construction and includes a pair of inner spaced parallel circular plates 43 and an outer pair of spaced parallel circular plates 44. The plates 44 are of a greater diameter than the inner pair of plates 43. All of the plates 43 and 44 are held in their proper spaced position by spacer sleeves 45 fitted on bolts 46 which rigidly connect the plates together. The inner pair of plates 43 have their peripheries notched at equidistantly spaced points to form seats 47 for the cores C and as the upper and lower wheels 27 and 40 turn, the peripheries of the inner pair of plates 43 ride in close proximity to the peripheries of the plates 30 forming the wheel 27. The edges of the outer pair of plates 44 are disposed on opposite sides of the edges of the wheel 27, as is best shown in Figure 2 of the drawings. The inner pair of plates 43 of the wheel 40, has the same number of seats 47 as the wheel 27, and means is provided for holding the cores in the seats 47 for a part of a revolution of the wheel 40. This means includes a circular guide plate 48 and the guide plate 48 extends around the rear half of the wheel 40, as best shown in Figure 3. The guide plate 48 can be held in position by the use of a suitable bracket 49. The upper end of the guide plate 48 extends between the plates 30 of the wheel 27 and terminates just above the guide lip 36 and the upper end of the guide plate 48 is provided with an upturned guide lip 50. The guide lips 36 and 50 function to permit the falling of a spool from the lower part of the feed wheel 27 into a seat of the wheel 40 and the guide lip 50 functions as a stripper to insure the placing of a core from the wheel 27 into a pocket of the wheel 40. The lower end of the guide plate 48 has formed thereon a downturned guide lip 51. Arranged in spaced relation to the downturned guide lip 51 is an arcuate stationary stripper plate 52 and this stripper plate 52 rides between the inner pair of circular plates 43 and insures the stripping of a completed spool S from the conveyor wheel.

Directly below the conveyor wheel is a conveyor belt 53 for carrying the completed spools away from the machine. As shown, the conveyor belt 53 carries flights 54 for engaging the spools and this conveyor is carried by the frame 15 of the machine and extends rearwardly therefrom. The conveyor 53 can be utilized for carrying the spools directly to a suitable packing carton (not shown), if such should be desired.

The conveyor wheel will be later described more in detail and means 55 is provided for applying an adhesive to the terminals of the core C during the carrying of these cores by the wheel 27 to the wheel 40. Means 56 is also provided for carrying the end discs D to the coated terminals of the cores C carried by the wheel 40.

The means 55 utilized for applying the adhesive to the ends of the cores C includes a pair of pots 57 arranged in front of and on opposite sides of the wheel 27. Rotatably mounted in each pot is an adhesive pick up roller 58, a transfer roller 59 and an applying roller 60. The applying roller 60 can have engaging the same, a doc-

5

tor blade 61 for removing excess adhesive therefrom. The pick up rollers 58 are partially immersed in the glue pots and the rollers 59 engage the rollers 58 and the applying rollers 60. The applying rollers 60 extend out beyond the pots and are arranged in the path of the cores C and as the cores are carried down past the rollers 60, the rollers 60 function to coat the outer ends of the cores with the adhesive. The drive means for the various rollers will be later described and it is to be noted that the glue pots can be supported in any desired way, such as from an intermediate horizontal frame 62, which in turn is rigidly connected to the uprights or pillars 24 and 25. Obviously, as the feed wheel 27 rides between the applicator rollers 60, these rollers apply the desired quantity of adhesive to the ends of the cores C carried by the feed wheel.

Directly below the adhesive applying device 55 is a pair of troughs 63 and 64 for the end discs D. The troughs can be of a semi-cylindrical shape and the same extend transversely across the front of the machine and the inner ends thereof terminate in front of and on each side of the inner carrier plates 43 of the conveyor wheel 40. The troughs 63 and 64 extend into feeder heads 65 and 66, which in effect, form continuations of the troughs 63 and 64, and the heads have formed on their inner ends inwardly directed guides 67 and 68. These guides lead directly toward the periphery of the conveyor wheel 40 and are substantially in alignment with the outer plates 44 of the wheel 40, for a purpose which will later appear. The guides 67 and 68 each have downwardly inclined guide slots 69, through which the end discs D are adapted to roll, as also will later appear. The troughs 63 and 64 receive stacks of the end discs D, as is best shown in Figures 4 and 6, and the end discs are normally urged toward the inner ends of the troughs and out the heads 65 and 66 in front of the guide slots 69. Any desired means can be provided for urging the discs toward the inner ends of the troughs, and as illustrated, followers 70 are slidably mounted in the troughs and the ends of the followers have secured thereto pull cables 71, which are trained over idle pulleys 72, carried by the heads 65 and 66. The lower ends of these cables have attached thereto weights 73. Guide rods 74 can be carried by the opposite sides of the troughs for facilitating the guiding and easy sliding of the followers 70 in the troughs. The ends of the troughs can be closed by end caps 75, and each of the end caps carry a pivoted latch 76 and during the loading of the troughs with the discs D, the followers can be pulled back against the pull of the weights 73 and latched in their retracted position by the latches 76. In other words, the latches are hooked over the followers.

The troughs can be rigidly held in place on the frame 15 of the machine, in any desired way, and as illustrated, brackets 77 are carried by the horizontal supporting frame 62, which carries the glue applying mechanism 55. Operating in conjunction with the heads 65 and 66, is a pair of spaced wiper and feeder arms 77 for carrying a pair of discs at a time to the guides 67 and 68 from whence they are conducted to the conveyor wheel 40. The arms 77 move together and hence the same are preferably rigidly connected by a brace bar 78 and the arms are keyed or otherwise secured to a rock shaft 79, which extends transversely of the machine below the

6

troughs 63 and 64. The rock shaft is mounted in suitable bearings 80, carried by the lower ends of the heads 65 and 66. Other bearings can be provided along the length of the shaft, if so desired, and these bearings can be supported from the frame of the machine. As shown, an up-standing bracket arm 81 is secured to the frame adjacent to one end thereof, and adjacent to the outer end of the rock shaft, and this end of the rock shaft has keyed, or otherwise secured thereto, a crank 32, which forms a part of the operating mechanism for the wiper and feeder arms 77. This mechanism will be later described. The outer faces of the arms 77 ride in close engagement with the inner ends of the heads 65 and 66, and the outer faces of these arms are provided with pockets 83 and the pockets are just the thickness of a disc D. The inner ends of the pockets are open and as the arms 77 sweep past the troughs, a pair of discs are stripped off of the troughs and are carried to the guide heads 67 and 68, and these discs are then rolled into the guideways 69 (see Figures 3 and 6).

Special means is provided on the conveyor wheel 40 for receiving the pairs of discs from the guides 67 and 68, and for then applying the end discs to the cores carried by the conveyor wheel 40, which cores have already been coated with the adhesive. Now referring to the means for receiving the pairs of discs D from the guideways, the outer pair of plates 44 have mounted thereon at equidistantly spaced points and on opposite sides of the seats 47 of the inner plates 43, slide plungers 84. These slide plungers 84 extend through the plates 44 and the plates are preferably provided with guide sleeves 85 for the plunger. The inner ends of the plungers have formed thereon, or secured thereto, disc receiving heads 86 having open-ended pockets 87, substantially the thickness of a disc. As the conveyor wheel 40 rotates, a pair of heads is brought in alignment with the guides 67 and 68 so that a pair of discs can roll from the guideways 69 into the pockets 87. The inner ends of the pockets have communicating therewith, openings 88 which have a diameter substantially the same as the diameter of the cores C, so that the cores will be centered in the heads 86 and centered relative to the pair of discs carried by the heads. The outer ends of the plungers 84 carry anti-friction rollers 89 and the plungers are normally urged outward with the heads 86 in engagement with the inner surface of the plates 44 by expansion coil springs 90. These coil springs 90 are placed on the plungers and the inner ends of the springs bear against the guide sleeves 85 and against a washer or cross pin 91 carried by the outer ends of the plungers. The inner faces of the plates 44 have rigidly secured thereto guide strips 92 and these strips have their trailing edges arcuately curved downwardly, as at 93, toward the pockets 87 in the heads 86, so that as the discs roll down the guideways 69, the same will strike this curved guide surface and be directed into the pockets through their open mouths.

Disposed on opposite sides of the conveyor wheel 40 in proper spaced relation to the outer plates 44 are cam shoes 94. These cam shoes 94 are rigidly held in place by means of supporting bolts 95, which extend to and through parts of the frame 15. The shoes 94 can be in the nature of semi-discs and the leading edges thereof are beveled as at 96, see Figures 11 and 12, to facilitate the camming in of the plungers

84, as the plungers are carried with the conveyor wheel 40 past the shoes. These shoes are arranged at the rear half of the conveyor wheel and as a pair of plungers carrying a pair of discs reaches the upper part of the shoes, the rollers 89 will engage the curved cam surfaces 96 of the shoes and the plungers 84 will be forced inwardly, moving the heads 86 toward a core C and the discs D carried by said heads 86 will be forced into engagement with the cores and be held in firm contact therewith for substantially one-half of a revolution of the conveyor wheel 40. This will give a time lapse to permit a partial setting of the glue.

At this time, and before describing the driving mechanism, it will be noted that the machine operates as follows. The delivery wheel 27 and the conveyor wheel 40 operate in proper timed relation relative to one another, so that a pair of pockets 33 in the feeder wheel 27, will be in alignment with a pair of pockets 47, as the wheels move past one another. Hence, as the feeder wheel 27 rotates past the shoes, cores will be picked up by the wheel 27 and deposited in the pockets 33 and held in the pockets by the guide plates 35. As a pair of pockets reaches the bottom of the wheel, the guide lip 50 will strip a core from the wheel and guide the same into a pair of pockets 47 of the conveyor wheel 40. As the cores move past the applicator rollers 60, glue is applied to the ends of the cores and the glued cores are deposited on the conveyor wheel. At a proper time, and as the heads 86 ride toward the guideways 69, the arms 77 are moved past the troughs 63 and 64 and carry a pair of discs to the guideways 69, and the pair of discs will roll down the guideways toward the periphery of the wheel 40 onto the guide strips 92, and as the wheel continues to rotate, the pair of discs will fall into the heads 86. When these heads, with the discs, reach the cam shoes substantially at the top of the wheel, the heads 86 will be moved inwardly carrying the discs therewith, and the discs will be held in firm contact with a core and when the core with the discs now secured thereto reaches the bottom of the conveyor wheel, the lip 52 will strip the completed spool from the wheel and the completed spool will drop onto the conveyor belt 53. At this time, the open ends of the pockets 87 of the heads 86 will be lowermost. Now, referring to the drive, an electric motor 97 is connected to the frame, such as by the use of a hanger bracket 98. This motor drives through the medium of a belt 99, a speed reducing mechanism 100, which also can be carried by the hanger bracket 98. The speed reducing mechanism includes a drive shaft 101, which is directly below the main drive shaft 102 of the machine. This main drive shaft is mounted in suitable bearings 103 carried by the frame of the machine. The shaft 101 and the shaft 102, has keyed or otherwise secured thereto, sprocket wheels 104 and 105, which are connected together by a sprocket chain 106. The inner end of this main drive shaft 102 has keyed or otherwise secured thereto a sprocket wheel 107, and a similar sprocket wheel 108 is keyed or otherwise secured to a shaft 109 forming a part of the endless conveyor 53. The sprocket wheels 107 and 108 are connected by a sprocket chain 110. Hence, the endless conveyor 53 can be constantly driven from the electric motor, as soon as the circuit is closed through the motor, and this conveyor belt need not be in timed relation to the wheels 27 and 40

and other parts of the mechanism. It is to be understood, however, that the wheels 27 and 40 and other parts are driven in proper timed relation in the following manner. The shaft or axle 41 for the conveyor wheel 40 has keyed or otherwise secured thereto a sprocket wheel 111. Mounted for free rotation on the main drive shaft 102 is a sprocket wheel 112 and the sprocket wheels 111 and 112 are connected by a sprocket chain 113. The sprocket wheel 112 can be connected and disconnected to the shaft 102 by means of a clutch 114, the operating handle 115 of which can be located convenient to the operator. Hence, the conveyor wheel is driven directly from the main drive shaft. The shaft or axle 28 for the feed wheel 27 is operatively connected to the shaft 41 by means of a train of gearing 116, and these two wheels 27 and 40 rotate at the same speed, but in opposite directions. Also keyed or otherwise secured to the shaft or axle 41 is a star or cam wheel 117. The star wheel 117 is employed for actuating the crank 82 of the rock shaft 79 in proper timed relation relative to the feed wheel 27, and the conveyor wheel 40. Rockably mounted upon the lower part of the frame 15, as at 118, is a lever 119, and pivotally connected intermediate its ends to the upper end of the lever 119 is a link 120. The outer end of the link is pivoted, as at 121 to the crank arm 82 and the inner end of the lever carries an anti-friction roller 122, arranged in the path of the lobes or points of the star wheel 117. The lever 119 is normally urged in the direction of the star wheel 117 by means of a contractile spring 123. As the star wheel rotates, the points or lobes thereof will rock the crank 82 and actuate the pair of arms 77 of the disc feeding mechanism 56.

The means for operating the rollers of the glue applying mechanism can be operated from the main drive shaft 102, and this mechanism need not be timed relative to the operation of the wheels 27 and 40 and the disc feeding mechanism, but it is to be understood, of course, that the rollers of the glue applying mechanism should be operated at sufficient speed so that the ends of the cores will be effectively coated. Arranged below the glue pots 57 in suitable bearings is a cross shaft 124, and this shaft is rotated by means of a sprocket chain 125 trained over a sprocket wheel 126, keyed or otherwise secured to the shaft 124, and a sprocket wheel 127, keyed or otherwise secured to the main drive shaft 102. An idle sprocket 128 can also be provided for this chain to take up slack and to guide the chain around working parts of the machine. Countershafts 129 are rotatably mounted in suitable bearings carried by the horizontal frame 62, and the shafts are driven from the shaft 124 by the use of intermeshing beveled pinions 130 keyed or otherwise secured to the countershafts 129 and the shaft 124. The various shafts for the rollers 58, 59 and 60 of the glue applying mechanism protrude beyond the outer face of the glue pots and have keyed thereto sprocket wheels 131. The countershafts 129 have also keyed or otherwise secured thereto sprocket wheels 132 and sprocket chains 133 are trained about these sprocket wheels 131 and 132 so that all of the rollers will be properly driven.

From the foregoing description, it can be seen that a simple and efficient machine has been provided for expeditiously and continuously applying end discs in proper centered position relative to cores to form completed spools.

Changes in details may be made without departing from the spirit or the scope of this invention, but what is claimed as new is:

1. A machine for assembling spools comprising a frame, a feed wheel rotatably mounted in said frame having equidistantly spaced peripheral core receiving pockets, a conveyor wheel rotatably mounted in the frame including an inner pair of plates having equidistantly spaced core receiving pockets of a number equal to the pockets in the feeder wheel, said feeder wheel being arranged directly above the conveyor wheel, means for operating said wheels in proper timed relation so that pockets in the feed wheel will meet pockets in the conveyor wheel during rotation of said wheels, said conveyor wheel also including a pair of outer plates, plungers slidably carried by the outer plates in alignment with the pockets in the inner plates, disc receiving heads carried by the inner ends of the plungers having open ended centering disc receiving pockets, means for camming in the plungers for moving the heads toward the pockets during a part of a revolution of the conveyor wheel, disc receiving troughs arranged in front of the conveyor wheel terminating in spaced relation, rock arms movable past the inner ends of the troughs having pockets therein for stripping and carrying one end disc at a time from each trough, means normally urging the discs in the troughs toward the arms, means for rocking the arms for carrying the disc from the troughs toward the conveyor wheel, and guides for said discs disposed in front of the stripper arms for receiving discs therefrom and for guiding said discs into the pockets in the heads of the plungers.

2. A spool assembling machine as defined in claim 1, and a stationary guide finger on said frame for engaging a core in the lowermost pocket of the feed wheel to guide the core into a pocket in the conveyor wheel.

3. A spool assembling machine as defined in claim 1, and a stationary finger on the frame for engaging a spool in the lowermost pocket of the conveyor wheel for guiding a spool out of the conveyor wheel.

4. A spool assembling machine comprising a frame, a rotatable feed wheel mounted on said frame having equidistantly spaced peripheral core receiving pockets, an arcuate guide plate partially surrounding said feed wheel for holding cores in said pockets during rotation of the wheel, said guide plate terminating at the lower part of the wheel, glue applying mechanism arranged on each side of the feed wheel disposed in the path of the ends of the cores carried by the feed wheel to apply glue to the terminals thereof during the rotation of the wheel, a conveyor wheel including an inner pair of plates having equidistantly spaced peripheral pockets of a number equal to the pockets in the feed wheel, an arcuate guide plate partially surrounding the conveyor wheel for holding cores on the conveyor wheel, said last mentioned guide plate terminating at the upper end of the conveyor wheel and having an arcuate guide finger extending into the feeder wheel for guiding a core from a lowermost pocket in said feeder wheel into an uppermost pocket of the conveyor wheel, said conveyor wheel also including a pair of outer plates spaced from the inner plates, plungers slidably carried by the outer plates arranged in alignment with the pockets in the inner pair of plates, and disc receiving heads carried by the plungers having open ended disc

receiving pockets, spring means normally urging the plungers and the heads away from the inner pair of plates, cam means for urging the plungers and heads inwardly toward the ends of the cores carried by the conveyor wheel during partial rotation of the conveyor wheel, and means for supplying pairs of discs to the pockets of said heads.

5. A machine for assembling spools as defined in claim 4 in which said means for applying pairs of discs to the pockets of said heads includes a pair of stripper rock arms having disc receiving pockets in the inner faces thereof, horizontally disposed feed troughs leading toward said arms, and means normally urging end discs in said troughs toward said arms.

6. A machine for assembling spools as defined in claim 4 in which said means for applying pairs of discs to the pockets of said heads includes a pair of stripper rock arms having disc receiving pockets in the inner faces thereof, horizontally disposed feed troughs leading toward said arms, means normally urging end discs in said troughs toward said arms, and guide means between the conveyor wheel and said arms inclined downwardly toward the conveyor wheel for carrying discs from the arms to the periphery of the conveyor wheel, said outer plates having guide strips on the inner faces thereof provided with inclined terminals leading toward the open ends of the pockets in said heads.

7. A spool assembling machine as defined in claim 4, an endless conveyor leading out of said frame disposed below the conveyor wheel, and a guide finger disposed between the inner pair of discs for engaging a core in the lowermost pocket of the conveyor wheel for guiding a spool therefrom onto the endless conveyor.

8. A spool assembling machine as defined in claim 4, and said cam means including stationary shoes arranged on opposite sides of the conveyor wheel at the rear half portion thereof, the leading edges of said shoes having arcuate cam surfaces.

9. A spool assembling machine as defined in claim 4 in which said means for applying pairs of discs to the pockets of said heads includes a pair of stripper rock arms having disc receiving pockets in the inner faces thereof, horizontally disposed feed troughs leading toward said arms, means normally urging end discs in said troughs toward said arms, a rock shaft supporting said rock arms, a crank on said rock shaft, a star wheel rotatable with the conveyor wheel having lobes equal in number to the plungers, a pivoted lever carried by the frame normally urged toward the star wheel, a link rockably mounted intermediate its ends pivotally secured to the crank, and an anti-friction roller engaging the periphery of the star wheel.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
338,380	Baldwin	Mar. 23, 1886
831,905	Thom	Sept. 25, 1906
1,444,096	Beadle	Feb. 6, 1923
1,612,083	Watrous et al.	Dec. 28, 1926
2,015,382	Hokerk	Sept. 24, 1935
2,051,308	McCarthy	Aug. 18, 1936
2,229,116	Nagy	Jan. 21, 1941
2,277,128	Miller	Mar. 24, 1942
2,299,113	Seever	Oct. 20, 1942