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APPARATUS AND METHOD FOR TRANSFER TAIL WINDING
USING MAGNETICALLY ATTACHED RING

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2 Sheets-Sheet 1

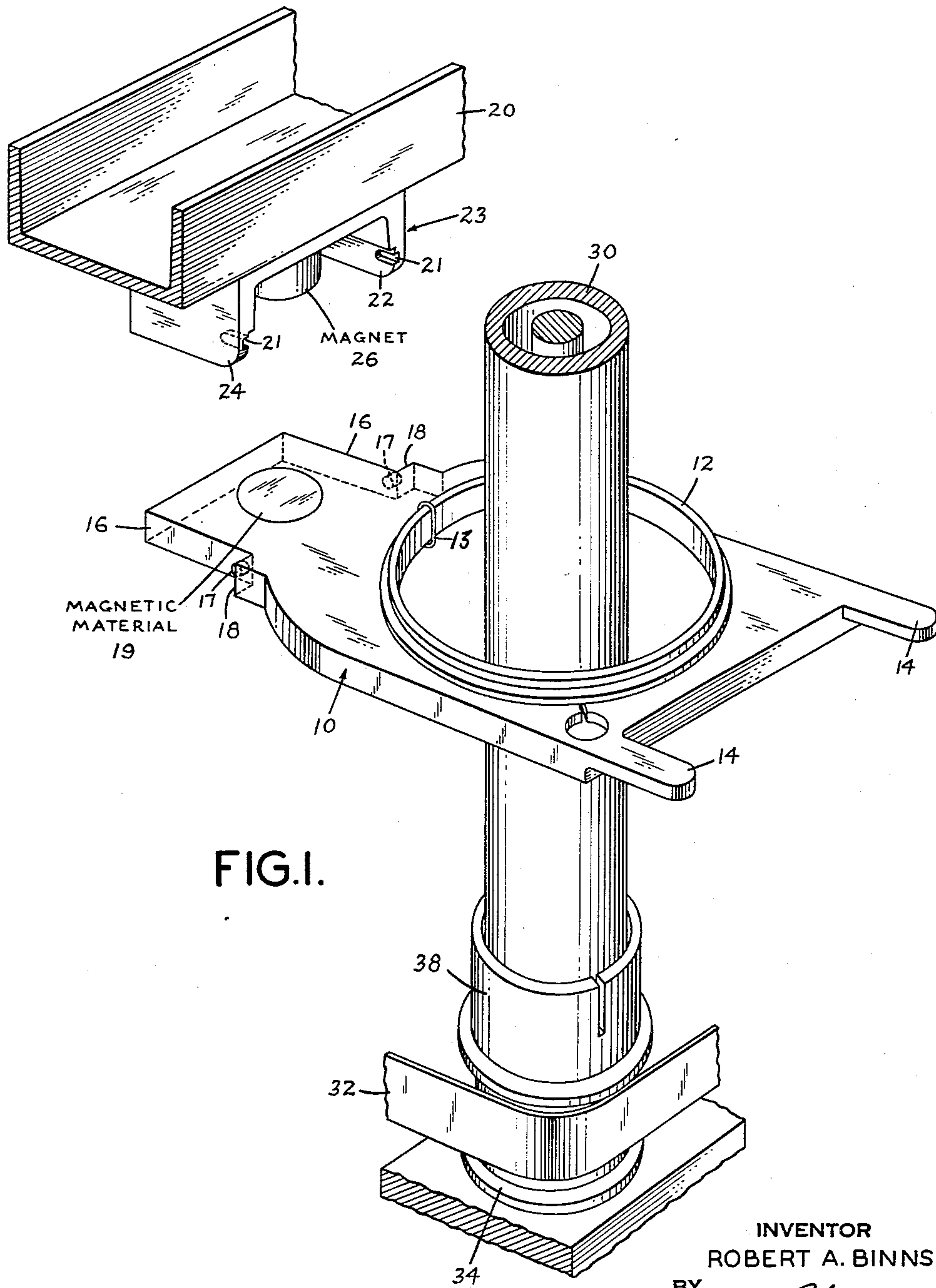


FIG.1.

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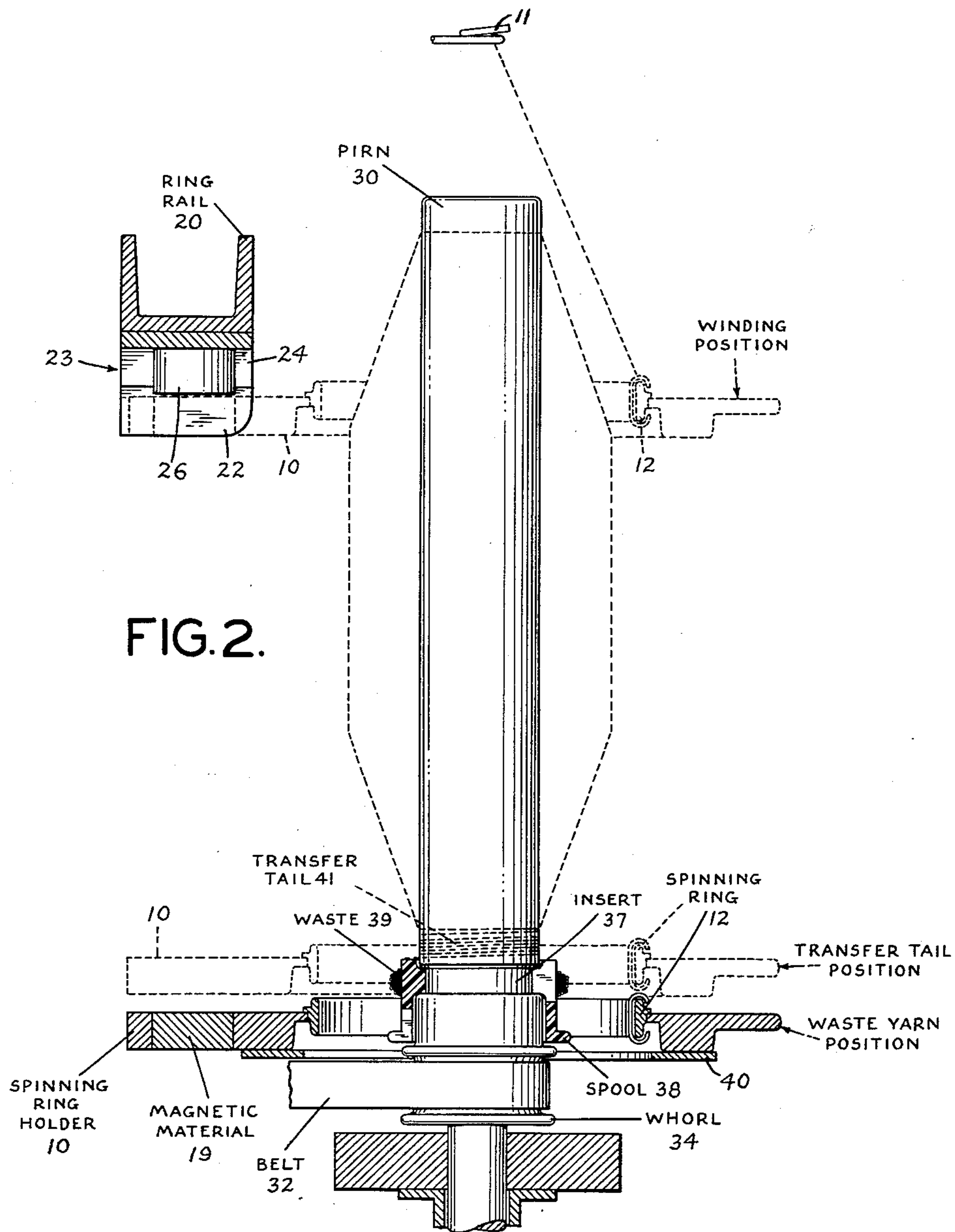
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APPARATUS AND METHOD FOR TRANSFER TAIL WINDING USING MAGNETICALLY ATTACHED RING

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8 Claims. (Cl. 57—34)

This invention relates to yarn twisting and winding apparatus, more particularly to a method and apparatus adapted for the removal of undrawn or waste yarn and the applying of a magazine wrap or transfer tail on the yarn package for use in further textile operations.

A magazine wrap or transfer tail is commonly understood in the textile art to refer to a portion of the inner end of the first yarn wound on the yarn support, which in turn is so disposed as to be positively secured during the winding of the yarn package, yet freely available for tying directly to the outer end of the yarn on another yarn package. The purpose of providing a magazine wrap or transfer tail is to enable an un-interrupted flow of yarn to be maintained from a depleted yarn package to a full yarn package adjacent thereto as in a creel or other yarn package holder on which both packages are supported.

Many types of apparatus have been devised for accomplishing this purpose. For the most part, the apparatus of the prior art is complicated, makes use of guide rods and bearings, is quite expensive to install and has a relatively high maintenance cost.

An object of this invention is to provide a device adapted for accomplishing the above noted objectives which is of simple design, is inexpensive and has a relatively low maintenance cost.

A further object of this invention is to provide a device which will make it relatively simple to remove and segregate the undrawn yarn from the yarn packages by a free ring method.

Another object of this invention is to provide a device in which the ring holder is attached to the ring rail of prior art devices in a very simple and easily removable manner.

Still another object of this invention is to provide a ring holder which is readily removed and replaced onto the ring rail, requiring no machine shutdown during this period and no mechanical skills or aid.

It has been found that these objects and other advantages incidental thereto can be attained by attaching the ring holder to the ring rail by magnetic means.

In the accompanying drawings, wherein a preferred embodiment of this invention is shown, Figure 1 is an isometric view showing the relative positions of the pinn, the ring holder and the ring rail in unattached position.

Figure 2 of the drawings is a side elevation partly in section showing the ring holder in various positions.

The winding device of this invention is in many respects similar to winding devices of the prior art which use the reciprocating vertical movement of a ring rail carrying a ring support and spinning ring to wind the yarn onto a rotary pinn. The novel features of this device are to be found primarily in the construction of the ring rail and the spinning ring holder.

The spinning ring holder, a preferred embodiment of which is shown in detail in Figure 1 of the drawings and identified by the number 10, is preferably made of a

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light weight material such as aluminum or plastic and is designed to hold the spinning ring 12 with its traveler 13. The ears 14 there shown are provided for ease in manual handling of the holder by the operator during certain phases of the process. The opposite end of the holder shown is oblong in shape and provided with contact surfaces 16, pins 17 and shoulder contacting surfaces 18. These are designed to snugly engage the walls 22, slots 21 and front edges 24, respectively, of the channel shaped guide piece 23 fastened to the underside of ring rail 20. The spinning ring holder 10 is further provided with an inlaid piece of magnetic material 19 located in the oblong section of the spinning ring carrier at a point which will come in contact with a magnet 26 attached to the guide piece 23 when the contact surfaces 16 and 18 are in intimate contact with walls 22 and front edges 24 of guide piece 23. When in this position the spinning ring holder 10 is held firmly in place and moves as an integral component part of ring rail 20. The two slots 21 in the guide piece 23 accommodate the pins 17 placed on each side of the ring holder 10. The pins and slots cooperate and help to more positively hold the ring holder 10 on the rail 20 while in operation. They also assist in making it easy to remove the ring holder from the rail 20 when so desired. Pins 17 insure against dislodging of holder 10 by accidental downward pressure, while removal is simplified by using an upward motion of the ears 14 with the pins 17 acting as a pivot to destroy the magnetic bond. When once the bond has been destroyed the ring holder 10 can readily be drawn away from the ring rail 20 by withdrawing the pins 17 and be free as shown in Figure 1 of the drawings. It is of course understood that the position of the magnet and magnetic materials could be reversed without in any way interfering with the functioning of the components in accordance with the above set forth outline.

In the illustration shown in the drawings, 30 is a pinn or yarn carrier driven by a spindle which, in turn, is driven by belt 32 and whorl 34. During the operation of the device, the ring rail 20 carrying the spinning ring holder 10 and spinning ring 12 traverses the rotating pinn 30. The waste collection piece shown is a spool 38 in frictional engagement with pinn 30 and driven by frictional contact with the whorl 34. This spool is described in greater detail in copending application Serial No. 695,070 filed November 7, 1957.

In the operation of the device, the ring holder may be completely detached from the ring rail and placed on plate 40 at the base of the spindle unit and just over the belt and whorl, waste yarn position, Figure 2. It is used in this position to eliminate and segregate the undrawn or waste yarn from the quality yarn. After all the undrawn yarn is wound, the ring holder may be lifted by the ears 14 and halted momentarily at transfer tail position, Figure 2, to put a few wraps on the base of the yarn carrier to provide a transfer tail. The ring holder may then be lifted and brought into contact with the holder guide and magnet, winding position, Figure 2, on the ring rail, where it then remains during the entire period the yarn is being wound on the rotating pinn. The reciprocating vertical movement of the ring rail causes the yarn fed through pig tail guide 11 then traveler 13 in spinning ring 12 to be evenly distributed over the surface of the pinn 30.

This operation of segregating the waste and applying the transfer tail can be carried out throughout without the aid of guide rods to align or aid in positioning the ring holder until it is attached to the ring rail. It is a simple operation, requiring a minimum of experience, and differs materially from other methods and apparatus where

the spinning ring carrier is firmly attached to the ring rail or to guide rods.

Since the ring holder can readily be removed from the ring rail and returned thereto by the operator without requiring a machine shut down or any mechanical skill or aid, and, since the ring holder is free of support other than the operator's hands during the period when it is out of engagement with the ring rail, the method of winding the transfer tail may be referred to as a free ring method, and, since no guides are necessarily followed, the operator may apply the transfer tail or magazine wrap either at the head of the pirn or at its bottom depending entirely upon his desires at the time he accomplishes this by merely grasping the ears 14 and holding the spinning ring holder at the proper position with respect to the pirn causing the yarn to wind on the pirn at the desired point to form the desired magazine or transfer tail. When the desired amount of yarn is wound on to the pirn to form the transfer tail the ring holder is brought into position and brought into engagement with the guide piece in such manner that the contact surfaces 16 and 18 respectively engage the walls 22 and front edges 24 of the guide piece 23 with the magnetic material 19 in contact with magnet 26 and the pins 17 in slots 21.

The magazine wrap or transfer tail applied in this manner is held firmly and securely on the pirn and is amply protected. It may easily be detached and employed for tying on to a reserve package as is necessary when drawing the yarn from the pirn during warping operations.

Although certain preferred embodiments of the apparatus of this invention have been disclosed for purpose of illustration, it will be evident that various changes and modifications may be made therein without departing from the scope and spirit of the invention.

I claim:

1. In a device for producing yarn packages having a transfer tail the combination with yarn traversing means including a ring rail, a spinning ring holder normally attached to said ring rail, a spinning ring in said holder, and means for magnetically holding said spinning ring holder in position on said ring rail.

2. In a device for producing yarn packages having a transfer tail the combination with yarn traversing means including a ring rail, a guide piece mounted on said ring rail adapted to hold a spinning ring holder, a spinning ring holder normally attached to said ring rail, a spinning ring mounted on said holder, and means for magnetically holding said spinning ring holder in intimate contact with said guide piece on said ring rail.

3. In a device for producing yarn packages having a transfer tail the combination with yarn traversing means including a ring rail, a guide piece mounted on said ring rail provided with a magnetic contact surface, a spinning ring holder, a spinning ring mounted on said holder, and a magnetic material mounted on said spinning ring holder adapted for intimate contact with a magnetic material on said guide piece of said ring rail.

4. In a device for producing yarn packages having a transfer tail the combination with yarn traversing means including a ring rail, a channel shaped guide piece mounted on said ring rail provided with a magnetic contact surface, a spinning ring holder adapted to be held attached to said ring rail by said guide piece, a spinning ring in said holder, and a magnetic material mounted on said

spinning ring holder adapted for intimate contact with the magnet contact surface of said guide piece of said ring rail.

5. In a device for producing yarn packages having a transfer tail the combination with yarn traversing means including a ring rail, a magnet mounted on said ring rail, a spinning ring holder, a spinning ring in said holder, and means for holding said spinning ring holder in intimate contact with said magnet mounted on said ring rail.

6. In a device for producing yarn packages having a transfer tail the combination with yarn traversing means including a ring rail, a channel shaped guide piece mounted on said ring rail provided with a magnetic contact surface, and slots in each of the legs of said guide piece, a spinning ring holder adapted to be held attached to said ring rail by said guide piece, a spinning ring in said holder, pins projecting from each side of said holder adapted to cooperatively engage the slots in said guide piece, and a magnetic material mounted on said spinning ring holder adapted for intimate contact with the magnet contact surface of said guide piece of said ring rail.

7. The free ring method of transfer tail winding comprising destroying a magnetic bond between the spinning ring holder and the ring rail of a winding machine, physically removing the spinning ring holder from the ring rail of said winding machine to a position where it is free and unattached to any part of said winding machine, guiding said spinning ring holder to a position near the base of the spindle unit of said machine adjacent a waste segregation spool, permitting undrawn yarn fed through a traveler on the spinning ring of said holder to accumulate on said waste segregation spool, raising the spinning ring holder to a position slightly above said segregation spool, permitting a few turns of drawn yarn to accumulate on the base of the yarn carrier to form a transfer tail and then raising the spinning ring holder and attaching it to the ring rail and winding the yarn onto the yarn carrier by the traversing movement of the ring rail with respect to the spinning yarn carrier.

8. The free ring method of transfer tail winding comprising destroying a magnetic bond between the spinning ring holder and the ring rail of a winding machine, physically removing the spinning ring holder from the ring rail of said winding machine to a position where it is free and unattached to any part of the winding machine, guiding said spinning ring holder to one end of the spindle unit carrying a yarn carrier, permitting a few turns of yarn fed through the traveler on the spinning ring to accumulate on said yarn carrier to form a transfer tail and returning the spinning ring holder to the ring rail and winding the yarn onto the yarn carrier by the traversing movement of the ring rail with respect to the spinning yarn carrier.

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