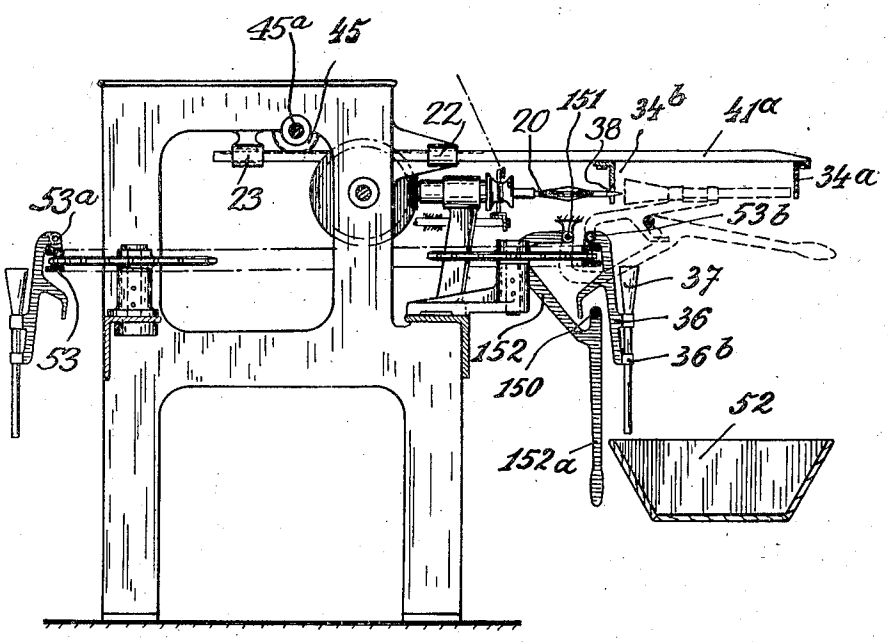
June 23, 1936. W. REINERS ET AL 2,045,202

COP WINDING MACHINE

Filed Jan. 27, 1934 2 Sheets-Sheet 1

Fig. 1.



Inventors:
Wilhelm Reiners
Gustav Kahlisch
By Knight Bros.
their attys.

June 23, 1936. W. REINERS ET AL 2,045,202

COP WINDING MACHINE

Filed Jan. 27, 1934 2 Sheets-Sheet 2

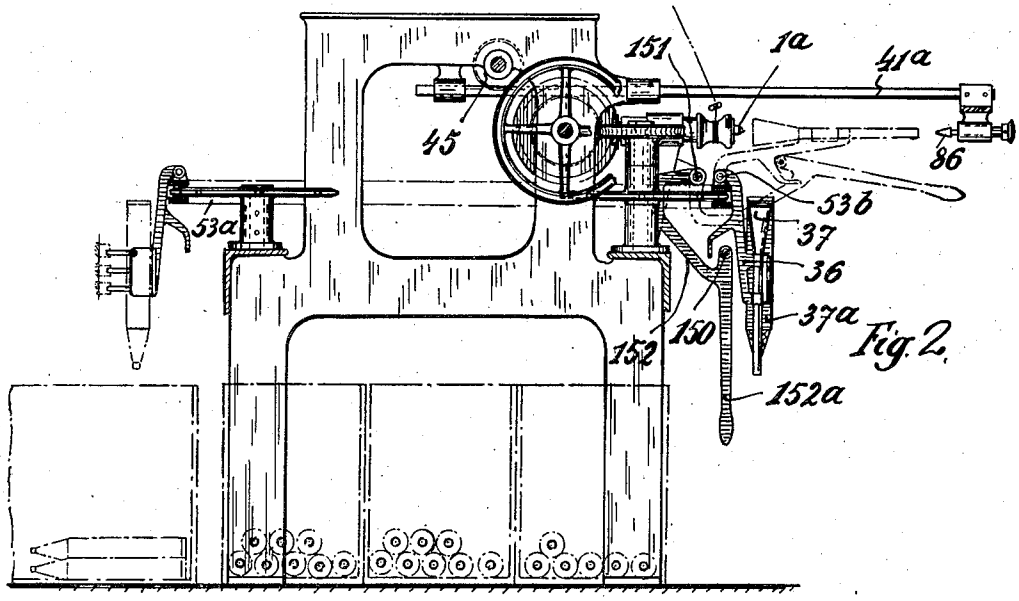


Fig. 2.

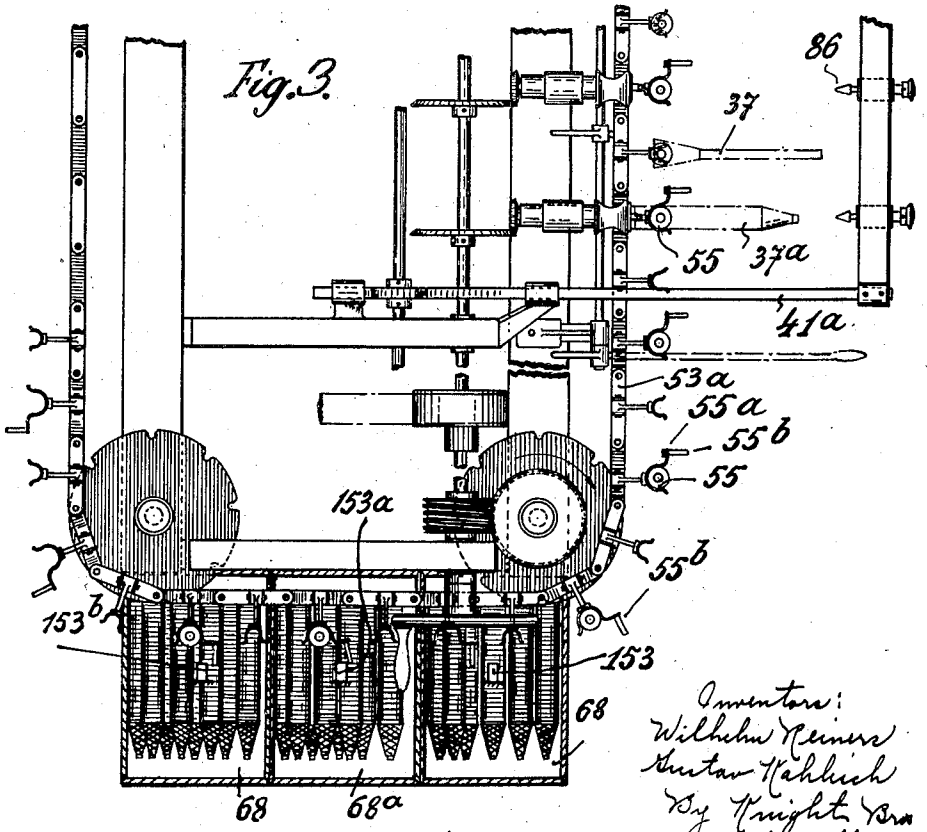


Fig. 3.

Inventors:
Wilhelm Reiners
Gustav Kahlich
By Knight Bros
their attys.

Patented June 23, 1936 2,045,202

UNITED STATES PATENT OFFICE

2,045,202

COP WINDING MACHINE

Wilhelm Reiners and Gustav Kahlisch, Gladbach-Rheydt, Germany, assignors to W. Schlafhorst & Co., Gladbach-Rheydt, Germany, a corporation of Germany

Application January 27, 1934, Serial No. 708,707
In Germany February 16, 1933

4 Claims. (Cl. 198—19)

The invention relates to cop winding machines of the kind having mechanism whereby cop tubes are placed on a plurality of spindles simultaneously, and whereby the cops are also taken off the said spindles simultaneously. In some machines this mechanism includes an endless conveyor working on pulleys, wheels or drums with horizontal axes, the conveyor serving to carry the tubes to the bank of spindles, and in some cases to carry away the cops.

In our invention we also use an endless conveyor, but we arrange the same so that it travels round the machine in a horizontal plane, that is to say it works on pulleys, wheels or drums having vertical axes, and we use this conveyor to carry holders for the cop tubes to be supplied to the spindles, and in some cases also holders for the cops taken from the spindles.

The tube holders and the cop holders may be pivoted to the conveyor, mechanism being provided for swinging them into position for delivering tubes or receiving cops, and then allowing them to swing back.

The cop holders may have clips which engage the cops and subsequently, in the course of the travel of the conveyor, strike an abutment whereby they are opened and caused to release the cops.

Where yarns of different kinds or different colors are wound on the same machine we may arrange the mechanism so that these are automatically sorted on delivery of the cops, there being a separate receptacle for each color or kind of yarn, with an abutment placed at a different level over each receptacle, the cop holders being divided into groups having clips disposed respectively at levels corresponding to those of the abutments, so that each group will deliver to one particular receptacle.

Two embodiments of the invention are illustrated in the accompanying drawings, in Fig. 1, and Figs. 2 and 3, respectively.

In the drawings,

Fig. 1 is a sectional view of the machine, with certain parts in elevation,

Fig. 2 is a sectional view of a second embodiment of the machine, with certain parts in elevation, and

Fig. 3 is a plan view of Fig. 2.

In the embodiment shown in Fig. 1, the endless conveyor is a chain 53 traveling around the machine and having cop tube holders 36 connected to its links by pivots 53*a* so as to swing from the position shown in full lines up to the position shown in dotted lines where the cop tubes 37 are aligned with the spindles 20. The tube holders 36 are provided with spring clips 36*b* for engaging the tubes. For swinging the cop tube holders 36 there is a lever mechanism comprising a rod 150 extending along the bank of spindles and carried by arms 152 pivoted to the frame of the machine at 151. The rod 150 can be swung up and down by means of a handle 152*a*.

For doffing and donning the cops and tubes, there are provided rack bars 41*a*, of which only one is visible in the drawing, upon which are mounted two angle bars 34*a* and 34*b* spaced apart a little more than the length of the cop tube. The rack bars 41*a* are guided in bearings 22 and 23 and their teeth engage pinions 45 mounted upon a shaft 45*a*. This shaft can be rotated in any suitable manner, as by means of a crank (not shown) to slide the bars 41*a* in and out.

The operation is as follows: Assuming the spindles to be empty and the parts in the position shown in Fig. 1, while the holders 36 are charged with a set of cop tubes, the handle 152*a* is swung up to align the tubes with the spindles. Thereupon the shaft 45*a* is rotated to move the rack bars 41*a* with their cross bars 34*a* and 34*b* inward. The bar 34*a* engages the tips of the tubes and slides them onto the spindles. Thereupon the handle 152 is dropped and the winding begins while the doffing and donning unit remains in this position. When the cops are fully wound, the shaft 45*a* is rotated to move the rack bars 41*a* outward, which causes the cross bar 34*b* to engage the bases of the cops and slide them off the spindles, so that they drop into a receptacle 52. The bar 34*b* is provided with notches 38 to allow it to fit the spindles and provide a well balanced engagement with the bases of the cops. Meanwhile the tube holders which are next to be brought into charging position have been supplied with tubes and the conveyor 53 is now started and carries a new set of tubes into position opposite the spindles. Thereupon the tubes are mounted on the spindles as previously described.

In the modification shown in Figs. 2 and 3 the tube holders are also swung upwards by means of a rod 150, but instead of full length spindles there are stub spindles or pegs 1*a*, upon which the tubes are held by means of counter-pegs 86 carried by a bar fixed to the racks 41*a*. In addition to pivoted holders 36 for the cop tubes the chain carries pivoted holders 55 for the cops. These cop holders 55 alternate with the tube holders 36, the gaps between the holders

36 and 55 being equal to half the pitch of the bank of spindles. The holders 55 are similar to the holders 36, except that their spring clips are of a size suitable for engaging the cops, and each of these clips has an arm 55a with a projecting pin 55b, the purpose of which will be explained hereinafter.

The chain moves stepwise, the steps being equal to the gaps between consecutive holders 36, 55. When a set of cops has been wound on tubes held by the pegs 1a and 86 the holders are swung upwards by means of the handle 152a, the holders 55 being then in a position to engage the cops. Then the bar carrying the pegs 86 is moved outwards by the racks 41a and pinions 45, so that the holders swing down into the position shown in full lines in Fig. 2. Then the chain moves a step, and the holders are swung upwards again. By this operation tube holders 36 with empty cop tubes 37 are placed opposite the pegs 1a and the counter pegs 86 are then moved inwards to engage the tubes and push them on to the pegs 1a. Another set of cops is then wound, and so on. The travelling chain carries the cops over a receptacle 68, and the pins 55b, hereinbefore mentioned, strike an abutment 153 in their path above this receptacle, so that the cop clips are opened and drop the cops. In the example illustrated there are additional receptacles 68a and 68b, with abutments 153a and 153b above them, and the abutments 153, 153a and 153b are at different levels. The cop clips are, in this case, also divided into groups, with their pins 55b at levels corresponding respectively, to those of the abutments 153, 153a and 153b so that each group of clips will drop its cops into a different receptacle. This arrangement may be adopted where yarns of different colours are being wound, each group of clips receiving cops of a particular colour.

We claim:

1. In a supply and discharge mechanism for winding machines having a plurality of spindles, an endless conveyor travelling in a horizontal plane and having a fixed position with respect to the winding machine, cop holders and tube holders pivoted on said conveyor to swing in a vertical plane, and means for simultaneously swinging a group of said holders.

2. In a discharge mechanism for winding machines having a plurality of spindles, an endless conveyor travelling in a horizontal plane and having a fixed position with respect to the winding machine, cop holders pivoted on said conveyor to swing in a vertical plane, said holders comprising spring clips, means for simultaneously swinging a group of said holders to receive cops in said clips, and means for expanding said clips to release the cops.

3. In a discharge mechanism for winding machines having a plurality of spindles, an endless conveyor travelling in a horizontal plane and having a fixed position with respect to the winding machine, cop holders pivoted on said conveyor to swing in a vertical plane, said holders comprising spring clips, means for simultaneously swinging a group of said holders to receive cops in said clips, a collecting receptacle past which said conveyor travels, an abutment adjacent said receptacle, and projections on said clips adapted to engage said abutment to expand said clips and release the cops.

4. In a discharge mechanism for winding machines having a plurality of spindles, and endless conveyor travelling in a horizontal plane and having a fixed position with respect to the winding machine, cop holders pivoted on said conveyor to swing in a vertical plane, said holders comprising spring clips, means for simultaneously swinging a group of said holders to receive cops in said clips, a plurality of collecting receptacles past which said conveyor travels, a series of abutments stationed adjacent the respective receptacles at different levels, and projections on said clips positioned so that each projection will engage a certain one of said abutments and no other to release the cops into said receptacles according to a classification.

WILHELM REINERS.
GUSTAV KAHLISCH.