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MEANS FOR FILLING A COLLECTOR WITH FIBER-WOUND BOBBINS

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Fig. 1

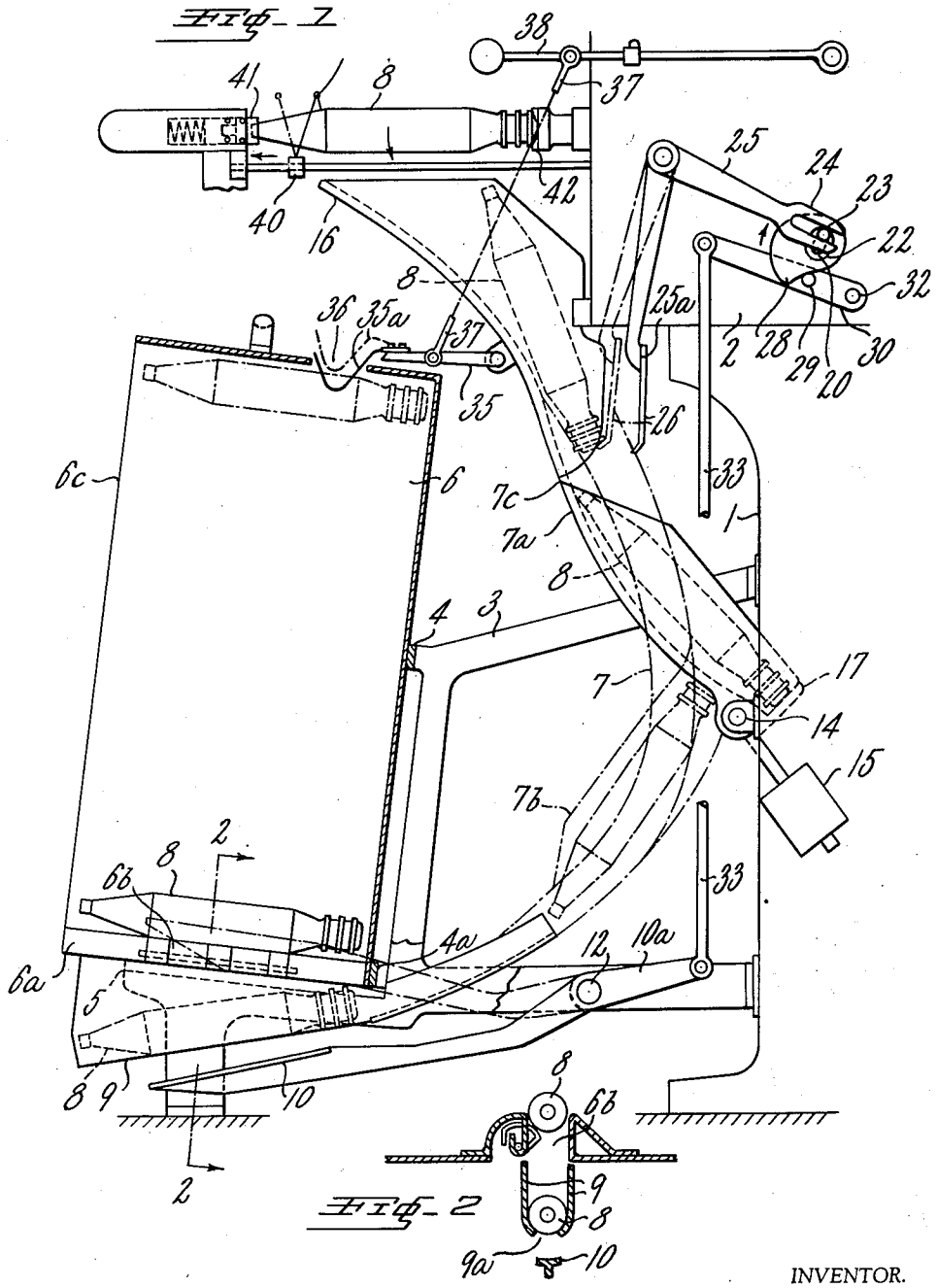

Fig. 2

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MEANS FOR FILLING A COLLECTOR WITH FIBER-WOUND BOBBINS

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8 Claims. (Cl. 53—59)

The present invention relates to a collector for bobbins wound with yarn and a device for filling a collector with said bobbins. In weaving mills where various types of yarns are processed at the same time, it is advantageous to attach to each automatic winder a bobbin filling device by means of which the bobbins are automatically filled into easily transportable collectors. A known method is to use for this purpose bobbin collectors into which the bobbins ejected from the automatic winder drop, although in this process the yarn coils are damaged by the bobbins falling on top of one another. The object of the present invention is to eliminate these drawbacks in the filling of bobbin collectors. The invention consists in the fact that the lower part of the bobbin collector possesses a filling hole which closes automatically and that the automatic winder is provided with a bracket on which these collectors are mounted, a chute along which the bobbin released from the automatic winder is conveyed to the filling hole of the collector, a lever actuated from the automatic winder for the purpose of pushing the bobbin in the chute into the collector, as well as a feeler which penetrates into the collector and stops the automatic winder when the collector is full of bobbins.

A typical embodiment of the invention is illustrated in the attached drawing. In the drawing:

Fig. 1 is a side view of the bobbin collector and of the bobbin filling device which is in operative connection with an automatic winder;

Fig. 2 is a section through the bobbin filling hole of the collector taken along the line I—I in Fig. 1.

On the stand 1 a row of automatic winders 2 are arranged next to one another and generally in one direction only. Secured to the stand 1 beneath each automatic winder are two frames 3 which are interconnected by means of stop bars 4 and 4*a*. The two frames 3 possess a bracket 5 which serves to hold in position a transportable bobbin collector 6. The transportable bobbin collector 6 has a bottom or base 6*a* with a bobbin filling hole 6*b* and possesses only three side walls so that the collector is open at 6*c*. Arranged between the two frames 3 is a bobbin chute 7, designated by dotted lines, through which the finish-wound bobbins 8 reach the filling station 9. The latter possesses a longitudinal slot 9*a* through which the lever 10 penetrates for the purpose of pushing a bobbin into the collector. The said lever 10 is rotatably located on the pin or shaft 12 which serves as connecting rod between the two frames 3. The channel 7, designated by dotted lines, is only used if the bobbins pass head first into the collector 6, a procedure which, however, is undesirable in the majority of cases because then the heaviest part of the bobbins comes to rest on the open side 6*c* of the collector 6. In order to lay the bobbins in the box 6 so that they are clearly arranged and their pointed ends are directed toward the front, a pivotally mounted chute portion 7*a* is provided for as seen in the attached drawing. This chute portion is rotatably secured on a pivot rod 14 and is provided with a counterweight 15. The foremost tongue 7*c* of the chute 7*a* thrusts against the funnel 16

which is in operative connection with the automatic winder 2. When the bobbin 8 falls out of the funnel 16 into the chute 7*a*, it thrusts against the stop 17 of the chute 7*a*. Since, now, the bobbin 8 in the chute 7*a* is heavier than the counterweight 15, the chute 7*a* pivots relative to the remainder of the chute into the position designated by 7*b* so that the bobbin turns end over end and then slides to the filling portion or station 9. Special mechanisms are provided between the automatic winder and collector. The cam shaft 20 of the automatic winder 2 makes one revolution at each change of bobbin. Mounted on this cam shaft is a crank 22, the pin 23 of which engages with the fork 24 of lever 25. Arranged at the end 25*a* of lever 25 is a stop plate 26 which at the beginning of the bobbin change is in the position marked in dotted lines for temporarily retaining a released bobbin. During the revolution of the shaft 20 the releasing plate 26 shifts to full line position and discharges the bobbin 8. Also secured to the shaft 20 is a curved disc 28 along which runs the roller 29 secured to the one-armed lever 30. The lever 30 is pivotally mounted to swing about a bolt 32, its front end being connected to the guide rod 33, the bottom end of which is secured to the rear arm 10*a* of the two-armed lever 10.

On completion of the winding process, when the desired length of coil has been obtained, the winding apparatus is inactivated and the bobbin changing apparatus is activated. The single revolution of the shaft 20 is effected by means of a cam (not shown), revolution of the shaft 20 producing the inactivation of the winding apparatus and the activation of the bobbin changing apparatus by mechanism which is well-known and which does not constitute a part of the present invention.

The counter member 41 normally serves to press the bobbin 8 against the carrier 42 of the winding mechanism, but upon revolution of the shaft 20 the thread carrier 40 together with the member 41 return to their initial position in which they are displaced to the left of the position shown. The movement of the member 41 frees the bobbin 8 and the latter falls below. The means for supplying a new bobbin to the winding apparatus is also known per se and an example of suitable means is described in U. S. Patent No. 2,639,098.

Revolution of the cam shaft 20 also serves to move the stop or release plate 26 into the position shown in dotted lines. The falling, fully wound bobbin 8 is retained thereby in the chute or funnel 16 until the bobbin change process is completed. Meanwhile, the lever end or pusher element 10, which is moved by the cam shaft 20 via the curved disc 28, roller 29 and levers 30 and 33, assumes its upward position and pushes a bobbin, which at the end of the previous bobbin change has reached the station of portion 9, through charging hole 9*a* in the base wall of the collector 6 thereinto and then returns to its lower or rest position. At the end of the bobbin change the funnel or chute 16 is again opened at the first portion of the chute by stop or release plate 26, which is swung outwardly, whereupon another bobbin slides down the chute to a portion thereof at 7*a*, is then tilted together with hinged chute portion 7*a* about an arbor 14 and finally reaches the second portion at 9, where it remains until the next bobbin change takes place.

When the bobbin collector is practically filled with bobbins, the automatic winder must be stopped. For this purpose a feeler lever 35 is secured to the funnel 16 and penetrates into the collector 6 through an opening or slot 36 in the collector top wall. As soon as the collector is full, the topmost bobbin presses the feeler 35*a* of the lever into dotted line position and by means of the rod 37, which is in operative connection with the stop motion mechanism 38 of the automatic winder, shuts down the latter.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. The combination, in an automatic winder for bobbins, of release means for fiber-wound bobbins having two opposed ends, with collector means for said bobbins and provided with an automatically closable charging hole, and bobbin-guiding chute means having a first portion disposed adjacent said winder and having a second portion disposed adjacent said hole, said chute means conveying bobbins released by said release means toward said collector means, and means operatively connected with said winder for actuation of said release means and extending in registry with said charging hole of said second portion of said chute means to facilitate discharge of a bobbin from said chute means through said hole into said collector means, whereby said collector means may be filled to a predetermined amount with said bobbins.

2. In a winder according to claim 1, said chute means including a hinged portion mounted for pivotal movement between said first portion and said second portion of said chute means, whereby upon movement of a bobbin with a predetermined end only thereof along said chute means and from said first portion into said hinged portion, the latter is adapted to pivot and thereby turns the bobbin end over end so that the other of its ends leads in subsequent movement of said bobbin along said chute means to said second portion thereof.

3. The combination, in an automatic winder for bobbins, of means for releasing bobbins from said winder, with collector means provided with an automatically closable charging hole for guiding said bobbins therethrough, and chute means for said bobbins and located between said releasing means and said collector means, said chute means having a first portion disposed adjacent said winder and having a second portion disposed adjacent said hole, said chute means conveying bobbins when disengaged by said releasing means from said first portion to said second portion for discharge into said collector means, operable means connected with said winder for actuation of said releasing means and provided with a pusher extending in registry with said charging hole of said second portion of said chute means to facilitate guiding of a bobbin from said chute means through said hole into said collector means, and means in driving connection with said winder for moving said operable means and said releasing means in timed relation.

4. In a winder according to claim 3, said chute means including a hinged portion mounted for pivotal movement

on said chute means and between said first portion and said second portion, whereby upon movement of a bobbin wtih a predetermined end thereof along said chute means to said hinged portion, the latter will pivot and thereby turns the bobbin end over end, so that the opposite end of said bobbin leads in subsequent movement along said chute means to said second portion.

5. In a winder according to claim 3, including feeler means operatively connected to said winder and reaching into said collector means for stopping said winder when said feeler means contacts a bobbin within said collector means.

6. In combination with an automatic winder for bobbins having two opposed ends; means for releasing from said winder bobbins wound with yarn, collector means positioned below said releasing means and having an open front, a top wall and a base wall, said base wall being provided with a charging hole, chute means having a first portion disposed adjacent said releasing means and a second portion disposed adjacent said hole of said base wall to thereby facilitate passage of a first bobbin upon its disengagement from said releasing means to move toward said collector means, said chute means including a hinged portion provided with a counterweight, said hinged portion being mounted on said chute means for pivotal movement relative to the remainder of said chute means, whereby when said first bobbin, upon movement from said first portion contacts said hinged portion with a predetermined end of said bobbin leading, said hinged portion is swung against said counterweight with said first bobbin end over end so that the opposite end of said first bobbin comes to lead in a subsequent movement thereof along said chute means to said second portion, lever means operatively connected with said releasing means through said winder and extending from the latter to said second portion of said chute means, and means for actuating an end of said lever means to push said first bobbin through said hole of said base wall into said collector means and for operating said releasing means to discharge a second bobbin from said first portion.

7. The combination according to claim 6, including feeler means operatively connected with said winder and extending through an opening provided in said top wall of said collector means, whereby when said collector means is filled with bobbins said feeler means abuts thereagainst and operates said winder for stopping the latter.

8. The combination according to claim 6, said collector means being inclined with respect to said end of said lever means, said open front of said collector means providing direct access to the interior of the latter.

No references cited.