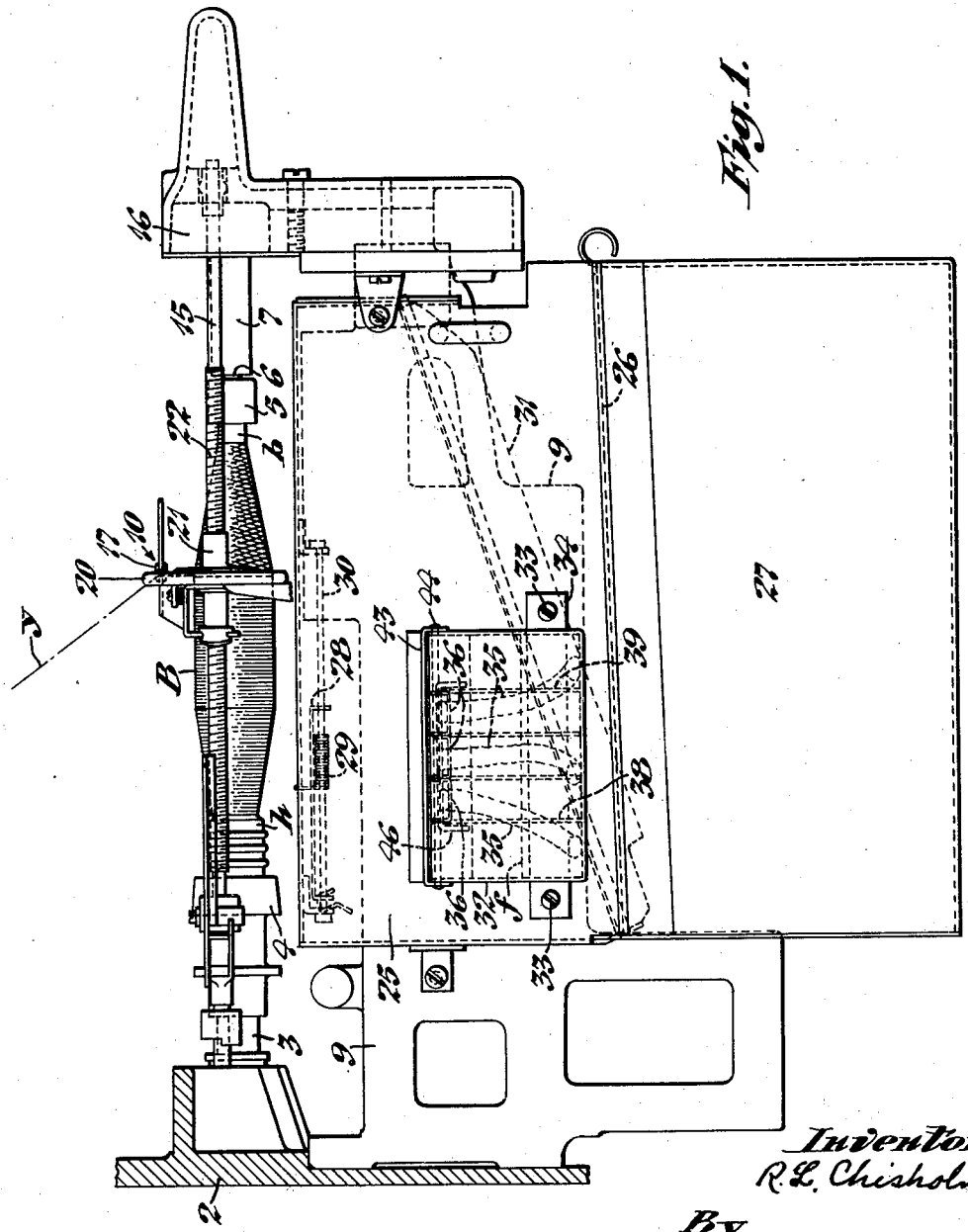
Feb. 5, 1946. R. L. CHISHOLM 2,393,973

BOBBIN-IDENTIFYING DEVICE FOR WINDING MACHINES

Filed July 2, 1941 2 Sheets-Sheet 1

Fig. 1.



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Filed July 2, 1941 2 Sheets-Sheet 2

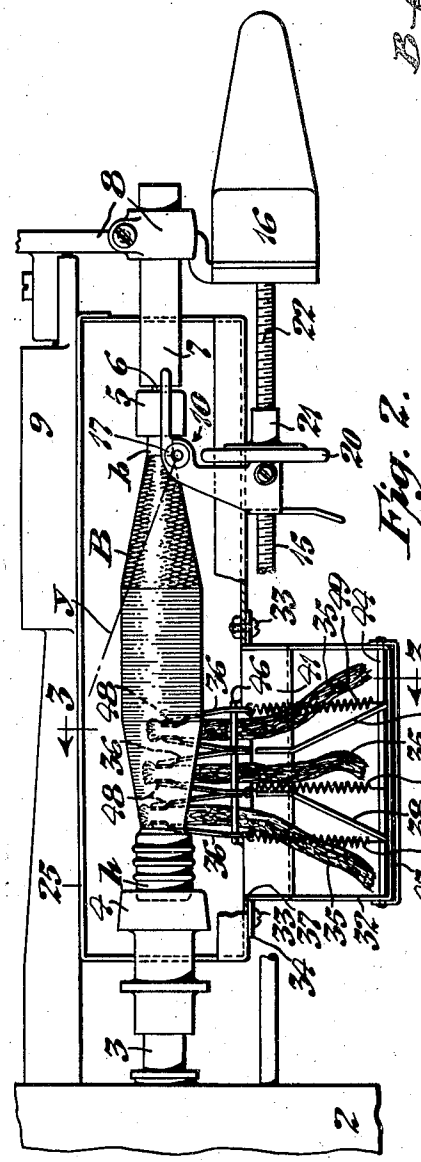


Fig. 2.

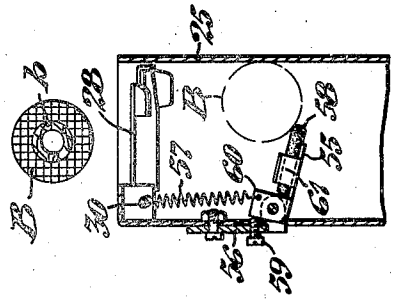


Fig. 5.

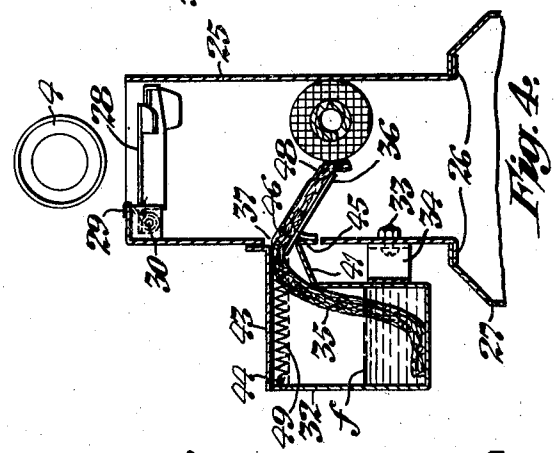


Fig. 4.

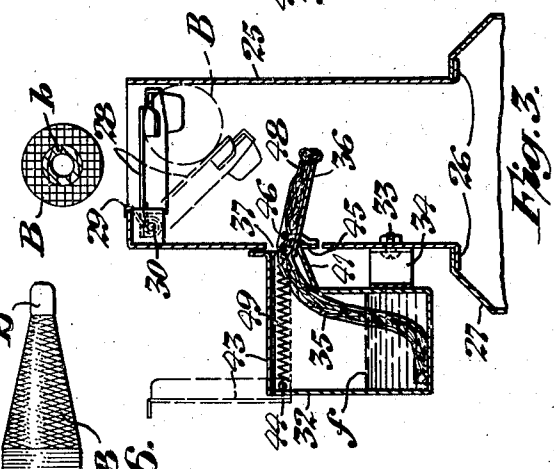


Fig. 3.

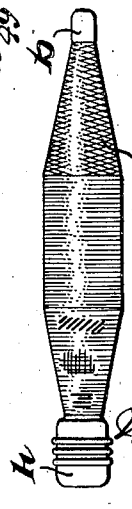


Fig. 6.

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UNITED STATES PATENT OFFICE

2,393,973

BOBBIN-IDENTIFYING DEVICE FOR WINDING MACHINES

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Application July 2, 1941, Serial No. 400,870

14 Claims. (Cl. 242—1)

This invention relates to winding machines for winding yarn, thread and similar textile materials into packages such as cops, bobbins, pirns and the like. More specifically, the invention consists in means for automatically applying identification marks to the wound bobbins either in the machine or as they are doffed therefrom.

In the present specification and claims the term "yarn" is employed to indicate all kinds of attenuated material and the term "bobbin" is used to designate the wound package whatever its form or character.

It is a common practice in textile mills to identify filling yarn by marking the bobbins with crayon or chalk to indicate different types and counts of the yarn and also to identify the machine or department in which the yarn is processed or handled. Usually, the operator of the machine marks the yarn on the bobbin by drawing a piece of chalk or crayon over the surface of the bobbin, but this operation has certain disadvantages as it is liable to cause the chalk dust to infiltrate into the mechanism of the machine to interfere with its proper functioning.

The practice of marking the bobbins as now generally used is for the purpose of preventing mixed counts of filling yarn going to the same loom and becoming incorporated in the fabric. In such case the difference in the size or count of the filling does not become evident until the cloth is woven and therefore it results in spoilage or seconds in the product of the mill. When the bobbins are properly marked the weaver can discover if mixed yarn is furnished to the weave room and place the responsibility in the winding room or other department of the mill where the yarn is processed or handled. In other instances, by applying several distinguishing marks to the yarn on the bobbin its progress from the source can be followed and when poor or imperfect bobbins reach the weave room they can be traced to the machine in which they were wound or to the department in which the yarn was processed. In some cases different types or counts of yarn are wound on different spindles of the same machine and the bobbins may become mixed through carelessness of the operator, as by the dropping of bobbins on the floor or by incomplete emptying of the collecting boxes for one type of yarn before bobbins or another type are placed therein. Most mills handle more than one count of yarn at the same time and as the counts must be kept separate it is an object of the present invention to provide automatically-operated means for marking the bobbins in the winding machine or as they are doffed therefrom with one or more distinguishing colors to prevent mixed counts from being woven in the loom; and further, to trace the steps in the processing of the yarn in different departments of the mill to correct defects or deficiencies in its manufacture.

Another object of the invention is to provide bobbin-identifying means which may be employed as an attachment on winding machines in which the bobbins are doffed either manually or automatically upon completion of the winding.

Another object of the invention is to provide means which may be applied to winding machines to mark the bobbins produced therein with different colors applied by wicks fed from reservoirs containing fugitive ink or dye liquid.

Another object of the invention is to provide means for marking the bobbins with different colored chalk or crayons after they have been doffed from the machine and during their delivery therefrom.

Further objects of the invention are set forth in the following specification which describes several forms of construction of automatic bobbin-identifying means as illustrated by the accompanying drawings. In the drawings:

Fig. 1 is a side elevational view of the essential elements of a winding machine showing a chute arranged below the winding spindle for receiving the doffed bobbins and illustrating one form of automatic bobbin-marking device as applied thereto;

Fig. 2 is a plan view of the same;

Fig. 3 is a transverse sectional view through the bobbin chute and marking device taken on line 3—3 of Fig. 2;

Fig. 4 is a similar transverse sectional view illustrating the manner in which the bobbin descends through the chute and is marked by a wick or wicks leading from a reservoir containing ink or dye liquid;

Fig. 5 is a view similar to Fig. 4 illustrating the use of crayons for marking the yarn on the bobbins; and

Fig. 6 is a view of a conventional type of bobbin illustrated as marked with three different identifying colors.

While the present invention may be applied to use with either manually-operated or automatic winding machines, it is herein described and illustrated in connection with a machine of the type disclosed in United States Letters Patent No. 2,257,651, dated September 30, 1941, and No. 2,302,715, dated November 24, 1942. The machine illustrated in these prior patents is com-

pletely automatic for donning empty cores or yarn-carriers, winding the yarn thereon, and doffing the bobbins as they are completed. It is therefore desirable that a machine of this type shall be further adapted for marking the bobbins automatically to identify them after they have been delivered from the machine. On the other hand, it is to be understood that the present invention is not limited to use with automatic winding machines, but may be applied to other types of winders for marking the bobbins before they are doffed or as they are doffed manually.

Referring to the drawings, in Fig. 1 the frame 2 or casing of the winding machine is indicated in section and projecting from bearings therein is a rotary winding spindle 3 at the end of which is a cup-shaped member 4 for receiving the head *h* of a wooden core or bobbin *b* such as used in automatic filling-changing looms. The opposite or tip end of the bobbin *b* is held in a similar recessed member 5 on a spindle 6 mounted free to rotate in a bearing sleeve 7 supported by an upright bracket 8 attached to the end of a horizontal arm 9 projecting forwardly from the side of the machine frame 2, see Fig. 2. In the type of machine herein illustrated the yarn *y* is wound on the core or wooden bobbin *b* by means of a thread-guide 10 which has a relative traversing motion axially of the bobbin and is progressively advanced longitudinally thereof to deposit the yarn in courses of cross-wound coils which overlap at their forward ends. In this way the bobbin grows by longitudinal extension, being formed with a conical base, a cylindrical body portion and a tapered or conical tip end.

The thread-guide 10 is carried on a reciprocable traverse-rod 15 mounted to slide longitudinally in a bearing in the frame or casing 2 with its outer end supported by an outboard bearing 16 carried on the bracket 8, referred to previously as the support for the spindle 6. The traverse-rod 15 is reciprocated longitudinally in its bearings by a suitable cam or similar means enclosed within the frame or casing 2 of the machine, but not herein illustrated as such traversing mechanism is well known to those versed in the art. The yarn *y* delivers from its source of supply, supported above the machine but not herein shown, and feeds to the bobbin through an eyelet 17 in the thread-guide 10. Connected to the thread-guide 10 is a rotatable contact-disk or traverse-wheel 20 mounted on a sleeve-like nut 21 which is interiorly threaded to engage the screw-threads 22 on the traverse-rod 15. It will be understood that the thread-guide 10 is positioned adjacent the rearward or butt end of the yarn-carrier or wooden bobbin *b* at the start of the winding and the traverse-wheel 20 is so related thereto that each time the guide makes a return stroke to the left, as viewed in Figs. 1 and 2, the periphery of the wheel will contact the yarn wound on the bobbin to turn the nut 21 through a part of a rotation to feed the guide forward to a slight extent along the traverse-rod. This method of advancing the layers of winding along the bobbin by the intermittent feed of the thread-guide is illustrated and described in the prior patents referred to above and well known to those versed in the art.

At the completion of the bobbin the thread-guide 10 will be positioned at the forward or tip end of the bobbin when at the furthermost limit of its forward stroke and at this point the guide, or a part connected therewith, engages a stop or abutment to move the latter to cause actuation of the stopping mechanism of the machine, this mechanism being employed generally in machines which require manual doffing and donning. In automatic machines such as described in the prior patents referred to above, the completion of the bobbin effects initiation of the operation of means for doffing the wound bobbin, donning an empty core or yarn-carrier, severing the yarn from the doffed bobbin, attaching the end of the yarn to the empty carrier, returning the thread-guide to initial winding position, and again starting the winding operation. The automatically-operated mechanism for performing these functions is described in the prior patents hereinbefore mentioned and is not referred to specifically herein as it forms no part of the present invention. Suffice it to state that as the wound bobbin B is doffed by releasing it from the driven winding spindle 3, it drops by gravity into a chute 25 arranged therebelow.

As illustrated in Figs. 1 to 4, inclusive, the chute 25 may be constructed in the form of a sheet-metal rectangular casing open at the top and bottom and having ledges 26 at its sides for supporting a box or receptacle 27 in which the wound bobbins are received; the box 27 being removable to empty it by sliding it off from the ledges 26 on the side of the chute 25. In the machine of the prior Patent No. 2,302,715 the upper end of the chute 25 is shown as provided with a yarn-trap in the form of a pivoted plate or shelf 28. The pivoted plate 28 is normally held in horizontal position, as shown in Figs. 3 and 4, by means of a spring 29 coiled around its pivot-pin 30 with one end hooked around the top of the chute and its opposite end bearing against the under side of the plate. The purpose of the yarn-trap or plate 28 is to catch the bobbin as it drops from the winding spindle and guide the length of yarn trailing therefrom to carry it into position across the forward face of the spindle-cup 4 to position it to be clamped against the end of the empty bobbin or yarn-carrier when the latter is donned. The yarn-trap or plate 28 also carries a knife, not herein shown, for severing the yarn after it has been connected to the empty bobbin and the latter starts to rotate to wind on the yarn.

Below the yarn-trap or plate 28 is another pivoted shelf or gate 31, shown by dotted lines in Fig. 1, onto which the wound bobbin drops and is retained momentarily before being delivered into the receiving box or receptacle 27. The gate 31 is normally supported in inclined position and is adapted to be released by suitable instrumentalities, not herein shown, to allow the the bobbin to drop into the box 27 with its butt or head end falling first. While these last two devices are shown in the present drawings and described briefly herein, they form no part of the present invention and are not essential to the operation of the bobbin-marking devices. In fact, they may be absent in machines in which the bobbins are released and dropped by hand through the chute 25 into the receptacle 27.

The bobbin-identifying device of the present invention may take different forms and as illustrated in Figs. 1 to 4, inclusive, it comprises a container or reservoir 32 for fugitive ink or liquid dye *f* and wicks 35 for applying the fluid to the bobbins. The reservoir 32 is fastened to the side of the chute 25 by means of bolts 33 passing through a bracket or support 34 welded or soldered to the forward side of the reservoir. The reservoir 32 may be provided with one or a plu-

rality of wicks 35 immersed in the fluid *f* and supported in troughs or holders 36 projecting through an opening 37 in the side of the chute 25 with their ends adapted to contact the bobbins as they descend therethrough. Figs. 1 and 2 illustrate the reservoir 32 as divided by partitions 38 and 39 into three separate compartments for containing three different colors of ink or dye liquid, a greater or lesser number being used in other instances. The reservoir 32 is formed with a neck or spout 41 directed toward the opening 37 in the side of the chute 25 and is provided with a hinged cover 43 mounted on a cross-pin 44 to adapt it to be swung open into the position illustrated by dash lines in Fig. 3 for filling the separate compartments with the dye liquid.

Fastened to a flange 45 at the end of the spout 41 is a wire bail 46, to which are pivoted a series of the shallow troughs 36 with their sides inclined toward each other at their outer ends. The troughs 36 have lips 48 projecting inwardly from their sides at their forward ends, see Figs. 3 and 4, to adapt them to partly encompass and compress the wicks 35 slightly at the ends projecting beyond the ends of the troughs. Helical springs 49 anchored at one end to the hinge-pin 44 for the cover 43 have their opposite ends hooked through openings in the sides of the troughs 36, thereby tending to maintain the latter in position slightly inclined to the horizontal, as shown in Fig. 3, with the inner ends of the troughs engaging the end of the spout 41 to limit their upward movement. The springs 49 permit the troughs 36 and the wicks 35 to swing downwardly as shown in Fig. 4 as the bobbins B descend through the chute 25 and contact the ends of the wicks to pass thereacross.

In automatic bobbin winders of the type disclosed in the prior patents previously referred to the spindle-center or cup 4 is withdrawn axially to release the bobbin B at the completion of the winding and as the bobbin falls into the chute 25 it depresses the yarn-trap or plate 28 as indicated by the dash lines in Fig. 3. The bobbin B will then continue its descent downwardly along one side of the chute 25 and as it encounters the ends of the wicks 35 it will swing their holders or troughs 36 downwardly as indicated in Fig. 4, thereby causing the wicks to wipe across the rearward portion of the bobbin to mark it with identifying colors as provided by the variously colored fluid in the reservoir 32. The bobbins thus marked drop down into the receptacle or box 27 and when the latter is filled it is removed to transport the bobbins to another location such as the weave room of the mill.

Fig. 6 illustrates the wound bobbin as being marked with three different colors, red, yellow and green, to indicate the size or count of the yarn and other particulars, for example, in what department the yarn was spun or processed, or in other cases the particular machine in which the bobbin was wound. The colored markings remain on the yarn when it is woven into the cloth, but when the fabric is later processed or finished, the dye, being fugitive, will disappear on treatment with water or other liquids.

Fig. 5 of the present drawings illustrates a modified form of device for marking the bobbins as they descend through the chute 25. In this embodiment of the invention a series of crayon-holders 55 are pivotally mounted on a bracket 56, bolted to the side of the chute 25. The holders 55 are maintained in inclined position in relation to the horizontal by helical springs 57 fastened thereto at one end and hooked around the pin 30 at the upper end of the chute 25. Set-screws 59 are adjustable to bear against the edge of ears 60 on the holders 55 to which the lower end of the springs 57 are attached to regulate the position of the holders. Pieces of chalk or crayon 58 of different colors are held on the holders 55 by means of clamping fingers indicated at 61, with the ends of the crayons projecting toward the opposite side of the chute 25 and at a distance therefrom slightly less than the diameter of that part of the bobbin to be marked. The crayons in this modified form of construction act in the same manner as the wicks previously described by being drawn across the periphery of the bobbin B as it drops through the chute to thereby apply the different identifying indicia thereto. Since the crayons are arranged below the winding mechanism of the machine and enclosed within the chute 25 the dust or particles dropping therefrom will not insinuate into the operating mechanism of the machine and therefore the use of the crayons in place of the dye liquid is not of disadvantage.

It will be observed from the foregoing specification that the present invention provides means for applying identifying indicia to the yarn on filling bobbins or other forms of packages whereby to indicate the character of the yarn and its source of manufacture. While the device is herein shown as embodied in several different forms of construction, it is to be understood that various other modifications may be made in the structure and arrangement of the parts of the device and the manner of applying it to use without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. In a winding or like machine, means for winding bobbins, means for doffing the bobbins from the winding means, a chute for receiving bobbins doffed from the winding means and transferring them therefrom, and means adjacent the chute for marking the yarn with identifying indicia during the transfer of the bobbins through the chute.

2. In a winding or like machine, the combination of means for winding bobbins, means for doffing the bobbins from the winding means, means for receiving and transferring the doffed bobbins from the winding means, and means adjacent the transferring means for marking the bobbins with identifying indicia during their transfer from the winding means.

3. In a winding or like machine, means for winding bobbins, means for doffing the bobbins from the winding means, means for receiving and transferring doffed bobbins from the winding means, and means in the machine adjacent the path of transfer of the bobbins and operative by the movement thereof to mark the yarn on the bobbins with identifying indicia.

4. In a winding or like machine, the combination of means for winding yarn on bobbins, means for doffing the bobbins from the winding means, means for discharging the doffed bobbins from the winding means into a receptacle, and marking means in the machine adjacent the discharging means and operative automatically upon movement of the bobbins by the discharging means to mark the yarn thereon with identifying indicia.

5. In a winding or like machine, the combination of means for winding yarn on bobbins, means

for automatically doffing the bobbins from the winding means, and means operated automatically by the movement of the bobbins as they are doffed from the winding means to mark the yarn thereon with identifying indicia.

6. In a winding or like machine, means for winding bobbins, means for doffing the bobbins from the winding means, a chute for receiving bobbins doffed from the winding means and transferring them therefrom, a reservoir for marking fluid adjacent the chute, and a wick immersed in the fluid in the reservoir and arranged in position to wipe across the bobbin as the latter passes through the chute.

7. In a winding or like machine, the combination of means for winding bobbins, means for doffing the wound bobbins from the winding means, a chute for receiving bobbins doffed from the winding means, a plurality of reservoirs adjacent the chute for containing different colored marking fluids, and wicks immersed in the fluids in said reservoirs and arranged in position to wipe across the yarn on the bobbins as they pass through the chute after being doffed from the winding means whereby to mark the bobbins with colors indicating various characteristics of the yarn and identifying the particular spindle on which the bobbins are wound.

8. In combination with a winding or like machine, means for winding bobbins, means for doffing the bobbins from the winding means, a chute for receiving bobbins doffed from the winding means, a reservoir for marking fluid adjacent the chute, a wick immersed in the fluid in the reservoir and projecting into the chute, and means for resiliently supporting said wick to adapt its end to wipe across the yarn on a doffed bobbin as the latter passes through the chute.

9. In a marking device for applying identifying indicia to wound packages of yarn, means for winding the yarn packages, means for doffing the yarn packages from the winding means, a chute for guiding the doffed packages in a predetermined path, a reservoir containing marking fluid, a trough hinged to an opening in the reservoir and extending into the chute to permit it to yield, and a wick having one end immersed in the fluid in the reservoir and held in the trough with its opposite end projecting therefrom in position to yieldingly contact and wipe across the bobbin upon relative movement between the latter and the wick.

10. A device for marking bobbins with identifying indicia comprising a reservoir having a plurality of compartments for containing different colored dye liquids, troughs hinged to openings in the compartments, resilient means for maintaining said troughs normally elevated in position, and wicks immersed in the liquids in the compartments and supported in the troughs with their ends projecting forwardly therefrom whereby to mark the bobbins with colors to indicate various characteristics of the yarn and identify the particular spindle on which the bobbins are wound.

11. In a device for marking bobbins with identifying indicia, the combination of a chute for receiving the bobbins, a crayon-holder pivotally mounted within the chute, a crayon held in the holder, and resilient means for holding the crayon-holder with the crayon projecting across the interior of the chute in position to contact the side of a bobbin passing therethrough.

12. In a winding or like machine, means for winding a yarn package, means in the machine for marking the yarn package wound by the winding means during relative movement of the package and marking means, and means in the machine operative automatically upon completion of the winding of a package to effect said relative movement between the package and marking means to mark the package.

13. In a winding or like machine, means for winding a yarn package, means in the machine for marking the yarn package wound by the winding means during relative movement of the package and marking means, means operative upon completion of the winding of a package to release it from the winding means, and means in the machine for effecting said relative movement between the released package and marking means.

14. In a winding or like machine, means for winding a yarn package, means in the machine for marking the yarn package wound by the winding means upon relative movement between the package and marking means, means operative upon completion of a package to release it from the winding means to adapt it to fall by gravity, and means in the machine for automatically guiding the wound package upon its release from the winding means to cause it to move relatively of the marking means to mark the package.

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