Sept. 13, 1938. J. M. BURNETT 2,130,067

BUNCH BUILDER ATTACHMENT FOR WINDING MACHINES

Filed Sept. 25, 1935 2 Sheets-Sheet 1

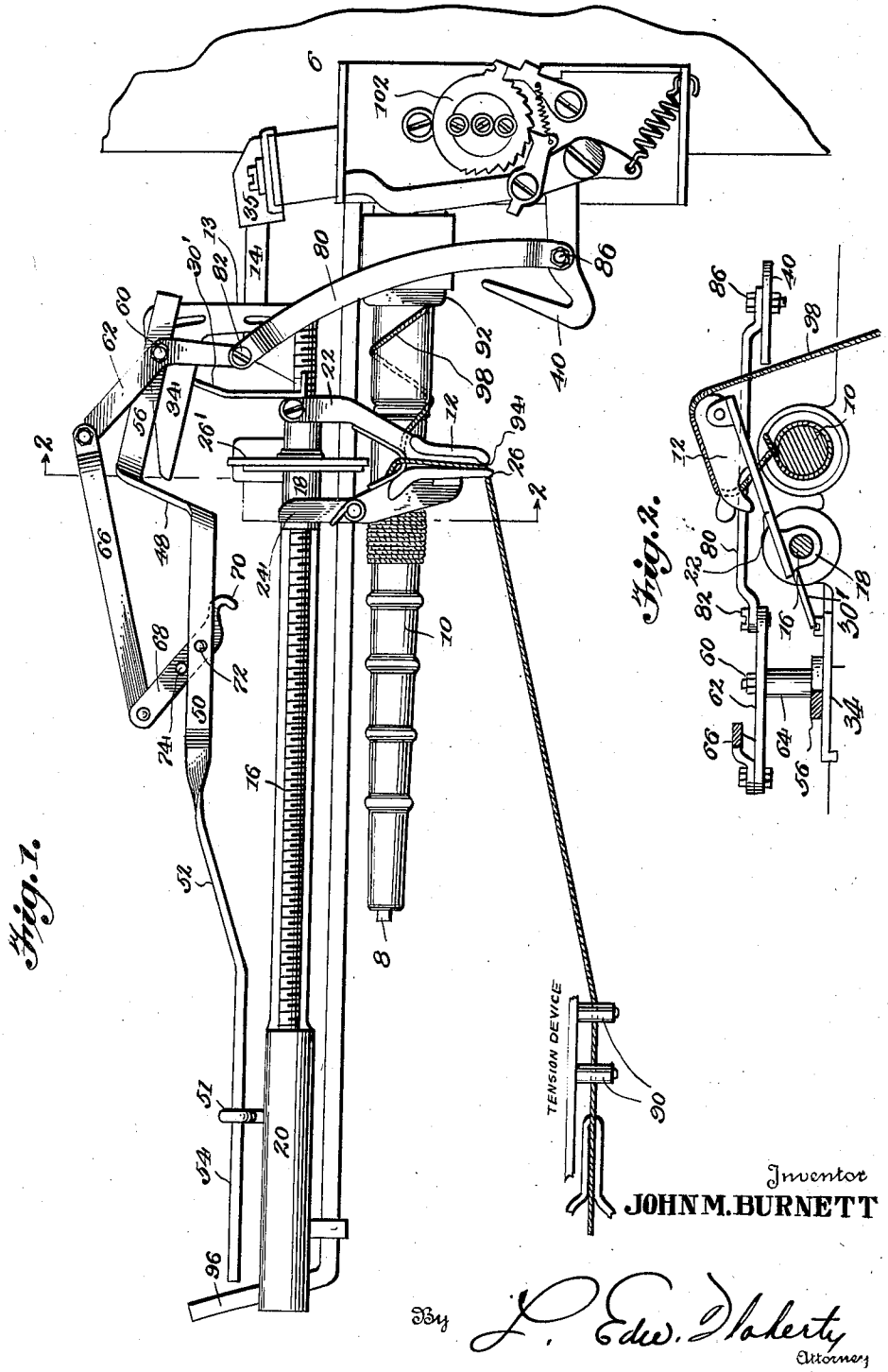


Fig. 1.

Fig. 2.

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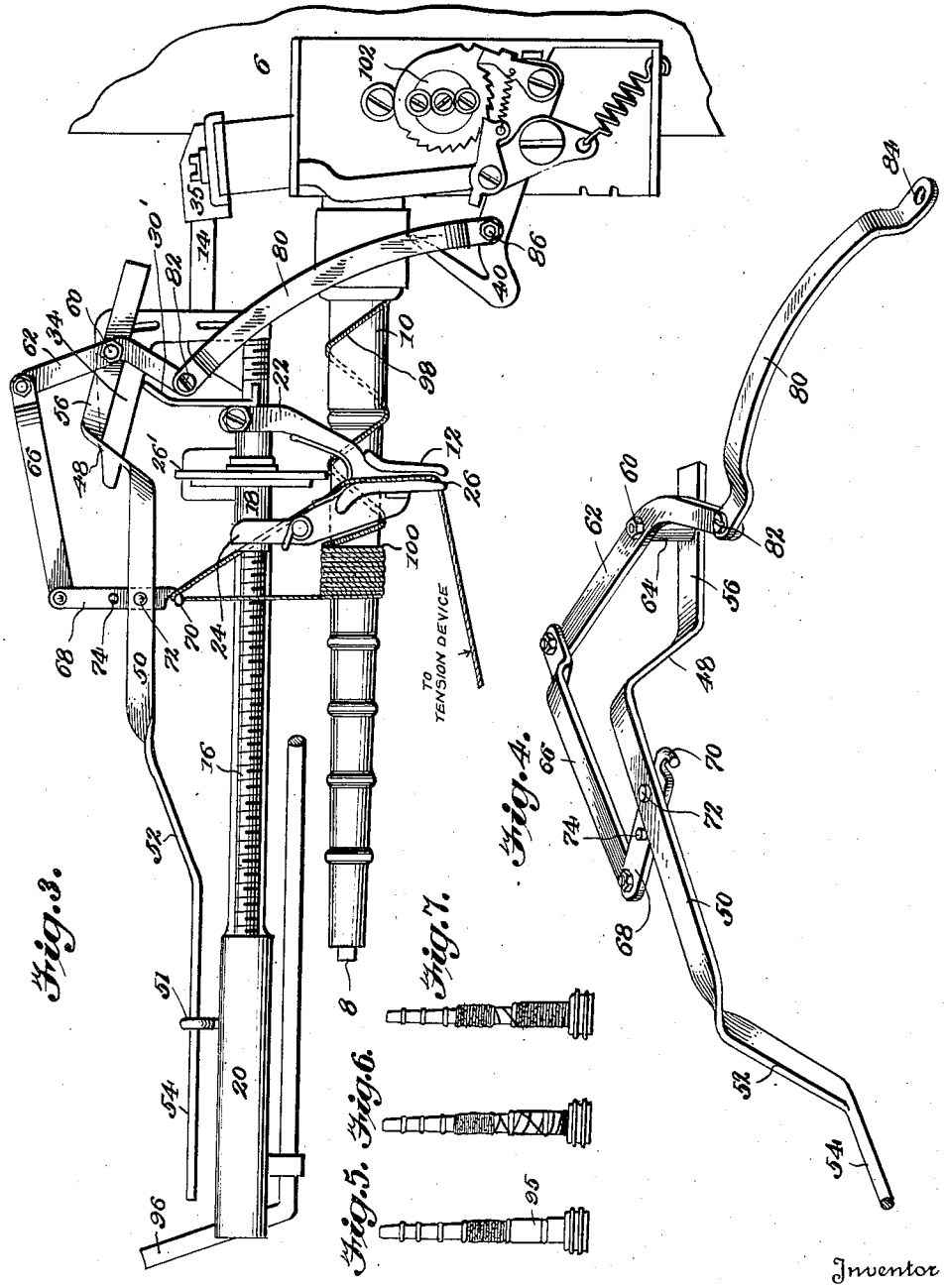


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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BUNCH BUILDER ATTACHMENT FOR WINDING MACHINES

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Application September 25, 1935, Serial No. 42,097

2 Claims. (Cl. 242—27)

The present invention relates to an attachment for winding machines and more particularly to an automatic bunch builder attachment especially adapted for use in connection with Universal winding machines, although it will become apparent as the description proceeds that it may be used in connection with any type of winding machine upon supplying the necessary structure for operating the attachment.

The invention is particularly adapted for use in connection with winding machines such as described and shown in United States Letters Patent No. 1,084,459, Jan. 13, 1914 and United States Letters Patent No. 1,809,217, June 9, 1931.

In the present type of winding machine, the bobbin winding comprises a bunching adapted to actuate the feeler in a manner which will leave on the discharged empty bobbin an amount of waste yarn consistent with the operation. This bunch winding is wound around the head or base of the bobbin and under the present practice there is a considerable waste.

It is therefore one of the important objects of the present invention, to provide a bunch builder which is automatic in its operation which will wind a bunch on the bobbin in such a manner as to eliminate this loss.

A still further important object of the invention is to provide a bunch building attachment of this character which is not only a waste saver, but which eliminates a great amount of labor incident to the operation of a winding machine of the aforementioned character.

A still further important object of the present invention will be found to reside in an attachment of this character which permits of winding a bunch which does not in the present case need to be wound with the precision of that type of bunch wound adjacent the head of the bobbin in order to contact with the feeler which actuates the machine which discharges the bobbin.

The present invention contemplates the provision of a bunch building attachment especially adapted for use in connection with the Universal type of winding machine, such as shown in the aforementioned patents, which attachment is actuated by the mechanism of the winding machine, for winding a bunch of yarn on the center of the bobbin as distinguished from building the bunch adjacent the head of the bobbin thereof.

In the accompanying drawings wherein like reference numerals designate corresponding parts throughout,

Figure 1 is a top plan view of a portion of a winding machine illustrating the manner in which the novel bunch building attachment forming the subject matter of this application is secured thereto and actuated thereby,

Figure 2 is a vertical sectional view of Figure 1, taken on line 2—2 thereof, looking in the direction of the arrows,

Figure 3 is a top plan view of the machine and the attachment secured thereto, illustrating the position, and the manner in which the bunch is wound on the bobbin,

Figure 4 is a perspective view of the bunch-building attachment,

Figure 5 is a front elevational view of a bobbin showing the bunch at the central portion of the bobbin in accordance with the present invention,

Figure 6 is a front elevational view of a bobbin wound in accordance with the present invention showing the first stage of winding and,

Figure 7 is a front elevational view of the bobbin showing the yarn in the second stage after the bunch has been completed.

In the accompanying drawings wherein for the purpose of illustration there is shown a preferred embodiment of the invention, the reference numeral 6 generally designates a winding machine of the Universal type such as disclosed and shown in the aforementioned patents. This machine is provided with the usual winding spindle which is automatically driven and controlled in a conventional manner not thought necessary to describe. The winding spindle 8 is adapted to rotatably support the wooden bobbin 10 or any other type of yarn receiver which may be of any suitable form as generally employed in the shuttles of automatic feeler looms. It is to be noted in this connection that the feeler acts to effect a change of filling when the yarn has been woven off from the bobbin down to the preliminary or bunch winding, the bunch being so designed to provide a sufficient amount of yarn to run while the change is being made so as to prevent mis-picks in the weave. In modern types of filling-replenishing looms a bunch of relatively wide extent is necessarily required in order that the feeler may properly co-act therewith when the surface winding is exhausted to effect replenishment of the shuttle before the yarn in the bunch has run out. As clearly set forth the present invention provides an improved bunch builder attachment for winding this particular type of bunch on the naked bobbin, the width of the bunch and the amount of yarn contained thereon being automatically regulated in accordance with requirements through adjustable means, to the end that the feeler on the loom may be set to operate on the empty bobbin principle as distinguished from the bunch at the bottom principle. It is to be noted that when the feeler on the loom is set to operate on the empty bobbin principle, this setting is accurate from bobbin to bobbin which is not the case in the bunch at the bottom principle for the reason that the bunch is not the same shape, size and of a permanent character.

In the well known type of winding machines, such as herein illustrated, the yarn is traversed on the bobbin 10, by means of a thread guide 12. The thread guide 12 is reciprocated with the traverse bar 13 to the extent required to deposit the winding on the bobbin and the guide is advanced longitudinally of the bar to progressively step the layers forward to build the yarn with the cylindrical body and a tapered nose in the usual manner. The means for reciprocating the traverse bar 13 is not disclosed and illustrated as it may be of any suitable construction and arrangement commonly employed in the art. This traverse bar 13 as illustrated includes two connected sections 14 and 16, the section 14 being slidable and projecting from the front of the frame of the machine in parallel relation with the axis of the winding spindle 8 as clearly disclosed. The threaded section 16 of the traverse bar is secured to the section 14 by means of the usual pin and slot connection so that it may be displaced laterally towards the winding spindle 8 necessary in the operation of such machines. The outer end of the section 16 is mounted in a fixed bearing 20 in the usual manner.

The thread guide 12 in machines of this character as illustrated is carried on a forked arm or yoke 22 which is provided with suitable bearings 24 encircling the bar 16 permitting it to pivot thereon and slide longitudinally thereof. The guide 12 is usually made as a separate element constructed of porcelain including an extended threadway or guide 26 through which the yarn draws. The thread guide 12 is advanced along the bar 16 by means of nut 18 disposed between the legs of the forked arm or yoke 22 and as clearly illustrated adapted to engage the thread on the bar 16. A contact wheel 26' of the usual construction is carried by the nut 18 and is adapted to make contact with the layers of yarn deposited on the bobbin, it being rotated intermittently therefrom at the end of each rearward traverse of the guide 12. As is apparent this intermittent rotation of the contact wheel 26' turns the nut 18 gradually feeding the thread guide 12 outwardly along the traverse bar to cause the layers of windings to be deposited in progressively advanced relation as is well known in the art.

The follower 30' projects from the yoke member 22 engaging the rearward end of the inclined edge of the arm 34. It will be seen as the thread guide 12 advances along the threaded section 16 the follower 30' slides outwardly on the inclined edge of the cop former 34 thus permitting the section 16 to gradually swing away from the winding spindle until it eventually assumes a position which is in alignment with the section 14. It is not thought necessary to be more specific in the manner of forming the heel or foundation for the winding in that type of machine inasmuch as the construction and arrangement of the winding mechanisms are well known and in common use and therefore need no further explanation herein.

In the present type of bunch builder employed in this type of machine, that is, the bunch builder which builds the bunch on the bobbin adjacent the head of the bobbin, there is provided an automatically actuated hook or sickle-shaped arm 40 operative in the usual manner in machines of this type to limit the extent of the traverse at the commencement of the winding to effect the building of a bunch on the bobbin adjacent the head thereof. This mechanism in this type of machine, is old and well known and the ratchet and cam mechanism for automatically actuating the hook 40 is well known and it is not thought necessary to be described in this application.

The invention forming the subject matter of this application which is an attachment for this type of machine hereinbefore described and which is well known in the art, is adapted as distinguished from the automatic bunch builder in this type of machine to build the bunch centrally of the bobbin as illustrated in Figures 1, 3, 5, 6, and 7 of the drawings.

The bunch building attachment, comprises a supporting arm 48 as clearly illustrated in Figure 4 which is provided with a flat central portion 50 one end of which tapers downwardly at 52 and which is provided with a laterally extending portion 54. The other end of the support 48 extends downwardly and is offset laterally the free end being bent as illustrated in Figure 4 to provide a flat portion 56.

Referring now to Figure 3, it will be seen that the support 48 is secured to the sleeve or bearing 20 by means of an eye-bolt 51 the free end 54 being slidable in the eye of the eye-bolt 51 which is screw-threaded in the sleeve 20. The other free end 56 of the support 48 of the attachment is provided with an aperture therein inwardly of the end and rests upon the cop former 34. The free end 56 is secured to the cop former 34, by means of a bolt and nut 60 extending through the aperture in the end 56 and the cop former 34. A substantially L-shaped link 62 is pivotally mounted on the bolt 60 adjacent the bend of the link, and is spaced from the end 56 of the support by means of the bushing 64. To one free end of the link 62 there is pivotally mounted a connecting rod 66 the free pivotal end of connection to the link 62 as illustrated in Figure 4 being offset from the main portion of the arm or rod. To the other end of the arm or rod 66 there is pivotally mounted a link 68 which is provided with a hooked inner end 70. As clearly illustrated in the drawings the link 68 is pivotally mounted on the central portion 50 of the support of the attachment by means of the pin 72 the point of attachment of the link 68 being adjacent the hooked end thereof so that when the link 68 is disposed at right angles to the support 50 the hook projects beyond the side thereof but when the same is disposed, or moved to a position substantially parallel to the central portion 50 of the support the hook end 70 moves inwardly of the inner end of the support out of hooking position. A stop member 74 projecting upwardly from the upper surface of the link 68 is adapted to abut the side of the support limiting the movement of the link 68 and of course movement of the hook end 70 thereof.

To the free end of the shorter section of the L-shaped member 62 there is pivotally mounted an arcuate shaped connecting link 80. It will be seen in this connection, that the connecting member 80 is bent outwardly, and has its ends offset downwardly with respect to the central portion of the member. One free end of the connecting member 80 is pivotally mounted on the free end of the member 62 by means of the nut and bolt 82, the other free end being apertured as at 84 and pivotally connected to the hook 40 of the machine by means of the connecting pin 86. It will be seen that the lengths of the member 80 and the connecting links 62, 66 and 68 are such, that when the hook 40 is pushed to its innermost position adjacent the front of the machine as illustrated in Figure 3, the hooked end 70 of the member 68 is in hooking position, the member 68 being

at substantially a right angle to the central portion of the support 50. Furthermore, the links are of such lengths that when the hook 40 is in the position as illustrated in Figure 1, the hooked end 70 is moved out of hooking engagement as illustrated.

In the operation of the attachment, the bunch building mechanism on the type of machine herein illustrated is only employed to release the hook 70. In operating the attachment, or building a bunch centrally of the bobbin, as illustrated, the yarn is passed over the the usual or customary tension guide 90 the loose end thereof being fastened or secured between the head of the bobbin and the bobbin holder as at 92 in the usual manner. The hook 40 is then pushed inwardly by hand to the position illustrated in Figure 3 causing the hooked end 70 to assume the hook position therein illustrated, to receive the yarn. The yarn is then picked up a few inches from the head of the bobbin and passed over the hook 70 under the guide 12 and thereover as illustrated as at 94. Upon pushing the operating lever 96 to operative position, the spindle revolves rotating the bobbin 10. Upon rotation of the bobbin 10 a few turns of the yarn is wound on the end of the bobbin as at 98 in Figure 3, from the head of the bobbin where the yarn is secured, to a position substantially central of the bobbin as at 100. It will thus be seen, that the bunch is built from the point 100 outwardly of the bobbin the width thereof depending on the setting of the bunch building attachment of the machine. The limit of winding of the bunch is controlled in the usual manner by regulating and setting the bunch building attachment 102 which is of the usual construction, it not being thought necessary to describe. When the required amount of yarn is wound on the bobbin completing the bunch, depending upon the setting of the bunch building attachment 102 the rear end of the cop former 34 strikes the bumper 35 in the usual manner releasing the hook 40 causing the member 68 to be moved by means of the link connection to the position illustrated in Figure 1, the hook end 70 disengaging the yarn permitting it to fall to the position illustrated in Figure 1, whereupon the spindle continues to rotate the bobbin until the bobbin is filled when in the usual manner it automatically stops.

It will thus be seen, that there is provided a bunch building attachment for winding machines of this character, which will overcome the present difficulty eliminating waste and decreasing the cost of operation.

While there is shown for the purpose of illustration a preferred embodiment of the invention, it is to be specifically understood that it is capable of various changes and modifications without departing from the spirit and scope thereof, and that it may be attached to winding machines of other types without departing from the spirit and scope of the invention, and it is intended therefore, that only such limitations shall be imposed thereon, as are indicated in the prior art or in the appended claims.

Having thus described the invention, what is claimed is:

1. In a winding machine, the combination with a winding spindle, a rotatably mounted screw-threaded shaft parallel to said spindle, yarn guide means associated with said shaft and reciprocated with respect to the spindle thereby, and an L-shaped cop former secured to said machine adjacent the inner end of said shaft having one arm extending outwardly longitudinally of said screw-threaded shaft, said L-shaped support at the central connecting portion thereof being provided with an aperture therein, an eye bolt secured to said machine adjacent the outer end of the screw-threaded shaft, of a support having one end slidably received in said eye bolt and the other end apertured and secured to said cop former by means of a bolt extending through the aforementioned aperture and the aperture in said cop former, a pivotally mounted arm on said support having a hooked end portion, said hooked end portion receiving the yarn from the guide, after one end of the yarn has been secured to the bobbin adjacent the head thereof, and adapted to guide the traversing of the yarn during a predetermined number of rotations of the spindle to wind a bunch centrally on the bobbin, a substantially L-shaped link pivotally mounted at its central portion to the support at the point of connection of the support and the cop former, a link connecting the outer end of the pivotally mounted arm and the L-shaped link, and an actuating arm pivotally connected to the free end of the L-shaped link and operated by the machine to actuate said link means to move the hooked end portion of the arm out of engagement with the yarn at the completion of the bunch to allow the yarn to be traversed by the yarn guide to build the main portion of the bobbin.

2. In a winding machine, the combination with a winding spindle, a rotatably mounted screw-threaded shaft parallel to said spindle, yarn guide means associated with said shaft and reciprocated with respect to the spindle thereby, an L-shaped cop former secured to said machine adjacent the inner end of said shaft, of an eye bolt secured to the machine adjacent the outer end of the screw-threaded shaft, a support having one end slidably received in said eye bolt extending substantially longitudinally of the screw-threaded shaft and having the other end secured to the cop former, a pivotally mounted arm on said support having a hooked end portion projecting inwardly toward the spindle and being disposed substantially centrally thereof, said hooked end portion receiving said yarn from said guide, after one end of said yarn has been secured to the bobbin adjacent the head thereof, and adapted to guide the traversing of the yarn during a predetermined number of rotations of the spindle to wind a bunch centrally on the bobbin, a substantially L-shaped link pivotally mounted at its central portion at the point of connection of the cop former and the end of the support, a link connecting the outer end of the L-shaped arm to the outer end of the pivotally mounted hooked end arm, an actuating arm pivotally connected to the other end of the L-shaped arm and to actuating means of the machine to actuate the actuating arm and the L-shaped arm to move the hooked end portion out of engagement with the yarn at the completion of the bunch to allow the yarn to be traversed to build the main portion of the bobbin.

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