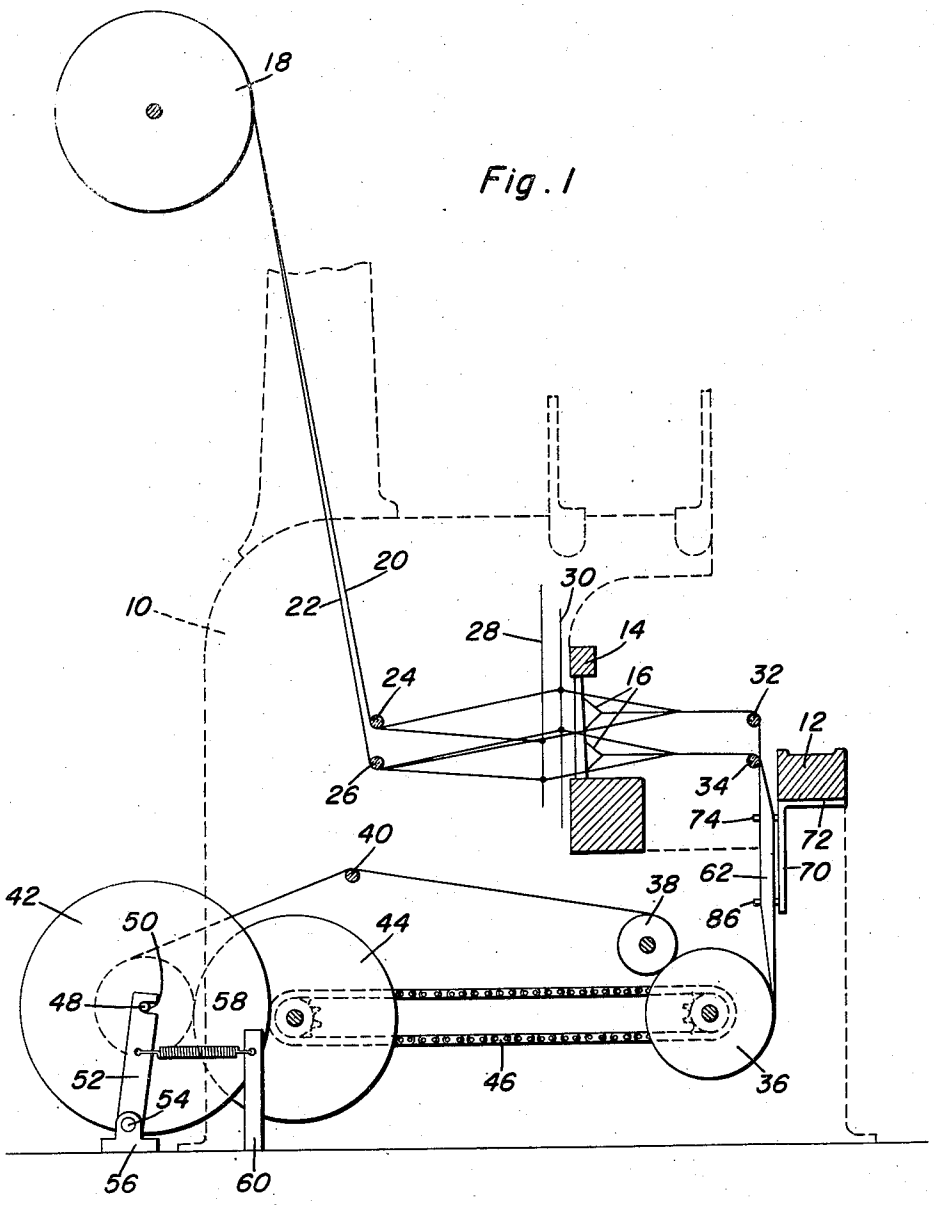
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RIBBON ROLLER ATTACHMENT FOR RIBBON LOOM

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Fig. 1



Tate Harvey Brown
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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Fig. 2

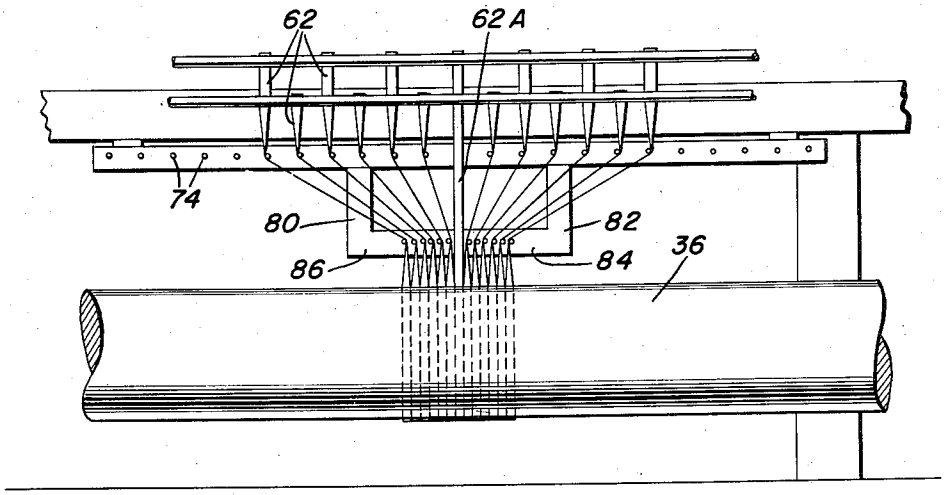


Fig. 3

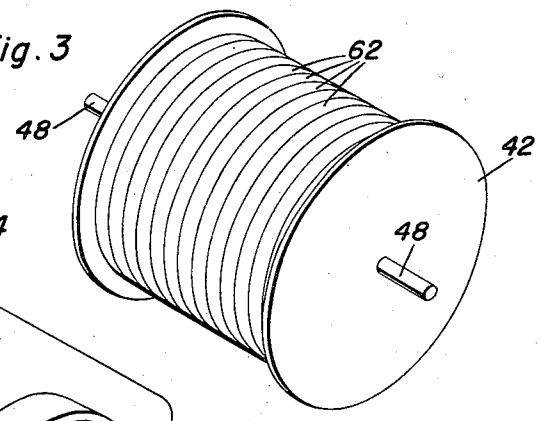
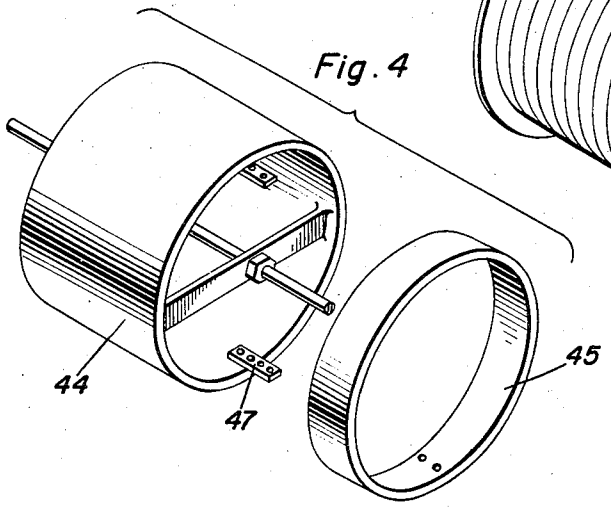


Fig. 4



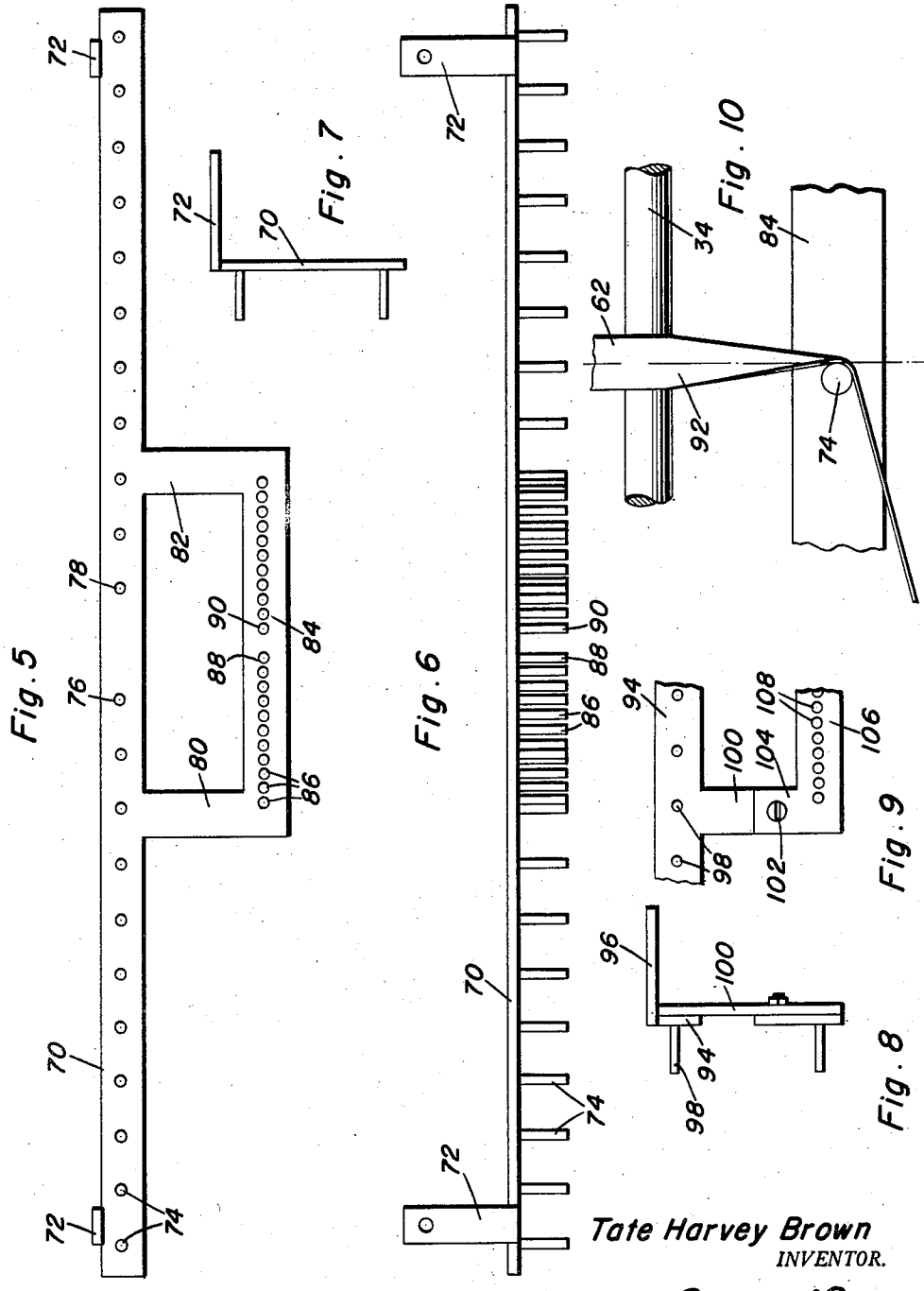
Tate Harvey Brown
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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Tate Harvey Brown
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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2,833,316

RIBBON ROLLER ATTACHMENT FOR RIBBON LOOM

Tate Harvey Brown, Atmore, Ala.

Application June 20, 1956, Serial No. 592,660

12 Claims. (Cl. 139—307)

This invention comprises a novel and useful ribbon roller attachment for ribbon looms and more particularly relates to an attachment which may be applied to conventional ribbon looms in order to more compactly wind ribbons or other similar woven fabrics in side-by-side relation upon a beam.

The primary purpose of this invention is to provide an attachment and a method whereby ribbons, webbing or narrow fabrics after being woven upon conventional ribbon or narrow fabric looms may be rolled up in any desired number in side-by-side relation upon a single beam or reel, thereby forming a firm, solid beam of ribbons.

A further important object of the invention is to provide a method and an attachment applicable to conventional ribbon looms whereby the number of operations of handling the ribbons or woven fabrics between the weaving of the same and the dyeing operation may be greatly reduced; and whereby a much longer length of ribbon may be efficiently handled.

Yet another purpose of the invention is to provide a method and an attachment for conventional ribbon looms whereby a plurality of ribbons may be compactly wound in side-by-side relation upon a single beam, thereby enabling the beam and the ribbons wound thereon to be directly positioned in a vat for pad dyeing or the like with a considerable reduction in the number of separate steps and operations of handling the ribbon that have been heretofore required.

Yet another object of the invention is to provide an apparatus and method whereby a plurality of ribbons produced from a single ribbon loom may be simultaneously rolled upon a single beam with equal tension of the ribbons thereon, thereby enabling dyeing with even colors for all of the ribbons and enabling the operation of level dyeing to be more easily performed than with other methods involving variances in the tensions of the ribbons.

Yet another object of the invention is to provide an attachment of an interchangeable nature whereby the same loom may be adapted for winding a plurality of different widths of ribbons in any selected number in side-by-side relation, under a constant tension and upon a same beam.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a somewhat diagrammatic view showing in end elevation a conventional form of a ribbon or similar loom to which the principles of this invention have been applied, and showing the beam upon which the ribbons are wound;

Figure 2 is a fragmentary elevational view showing

the manner in which the attachment in accordance with this invention is applied to a ribbon loom;

Figure 3 is a perspective view of a beam showing the manner in which a plurality of ribbons from a loom are wound thereon in side-by-side relation;

Figure 4 is a perspective view of a further element of the invention;

Figure 5 is a front elevational view of the attachment;

Figure 6 is a top plan view of the attachment of Figure 5;

Figure 7 is an end elevational view taken from the right end of Figure 6;

Figure 8 is a view similar to Figure 7 but showing a modified construction permitting interchanging of a ribbon guide means of the attachment;

Figure 9 is a fragmentary elevational view of a portion of the embodiment of Figure 8; and,

Figure 10 is a diagrammatic view, taken upon an enlarged scale, of a portion of Figure 2 and showing an important feature and principle of the invention.

Referring first to Figure 1 of the drawings, it will be seen that there is disclosed a conventional type of loom such as the well known Fletcher ribbon loom, the same including a frame **10** supporting the breast beam **12**, the batten **14** with the shuttles **16**. Indicated at **18** is the warp beam by which the warp threads are dispensed in two sets of warp threads **20** and **22**, each passing under the back bars **24** and **26** to the harnesses **28** and **30** whereby for convenience and compactness they are fed into the upper and lower sheds of the loom. The two sets of warp threads pass over the glass bars **32** and **34**, then over the sand roll **36** and about the pressure roll **38**, from thence over the ribbon guide rod **40** to the ribbon beam **42** which is driven by the friction drum **44** from the sand roll **36** through a chain and sprocket drive **46**.

The present invention relates to an attachment which is operatively interposed between the glass bars **32**, **34** and the sand roll **36**; and to improvements in the friction drive of the ribbon beam **42** from the friction drum **44**.

It will be understood that the warp threads are woven into narrow fabrics such as ribbons, webbing, or other narrow fabrics between the batten **14** and the glass bars **32**, **34**. From the glass bars the ribbon passes through the attachment forming the principal subject matter of this invention to the sand roll **36**, and thereafter is wound upon the ribbon beam **42**.

Referring next to Figure 1, it will be seen that the ribbon beam **42** is provided with trunnions **48** which are journaled in notches **50** provided in the upper ends of the levers **52**. The latter, in turn, are pivoted, as at **54**, to support brackets **56** suitably secured upon the floor upon which the loom rests. Tension springs **58** are connected to the members **52** and to standard **60** to thereby yieldingly urge the spindle of the ribbon beam **42** against an appropriate friction surface of the friction drum **44**.

The latter is preferably driven at a very slightly greater surface speed than that of the sand roll **36**, by the sprocket chain drive **46**, in order to apply a slight tension to the ribbons, as the same are wound upon the ribbon beam **42** by the frictional engagement of the drum **44** upon the surface of the ribbons wound upon the spindle of the drum **42**.

It will be observed that the friction drum **44** thus serves to maintain an even tension for all of the ribbons wound in side-by-side relation upon the ribbon beam **42**, in the position shown in Figure 3. As shown in this figure, the series of ribbons **62** are wound in close side-by-side relation thus permitting even and uniform winding of the ribbons in a compact manner, and at a uniform tension, whereby up to 2,000 yards of ribbon can be

wound upon a single warp beam in each of the side by side rolls of ribbons.

It should be noted that by this arrangement the customary loose coiling of the ribbon in boxes, as in prior conventional practice, which necessitates the subsequent winding of the ribbons upon spools or reels, as well as a much greater provision of floor space for receiving the ribbons after they pass over the driving roller **44**, is obviated.

It should be here noted that the warp beams will be of sufficient length to accommodate any desired number of ribbons to be wound side-by-side upon the same, and in order to accommodate different sizes of ribbons, as desired.

Referring next primarily to Figures 2, 5–7, it will be seen that there is provided a transversely extending plate **70** provided at its upper end with horizontally extending mounting brackets **72** whereby the plate may be mounted upon the breast beam **12** of the loom in a suitable manner, and below the glass bars **32**, **34**. At evenly spaced intervals longitudinally of the plate **70** there are provided a plurality of guide pins **74** projecting laterally from the plate. These pins are disposed at appropriate intervals corresponding to the ribbon **62** passing over the glass bars **32**, **34**. It will be noted, however, that a somewhat greater space is provided between the two central pins **76** and **78**, which permit the central ribbon of a set of ribbons which are to be wound upon the same warp beam, such as the ribbon **62***a*, see Fig. 2, to pass between these guide pins.

Depending from the central portion of the plate **70** are a pair of arms **80** and **82** which support in dependent relation a guide plate **84** which may be integrally connected with the arms **80**, **82**, or may be detachably secured thereto, as set forth hereinafter. The plate **84** is provided with a plurality of longitudinally spaced laterally extending ribbon guide pins **86**, the spacing between which is in accordance with the length of the particular width of ribbon which is being produced upon the loom. As will be now readily apparent, the number of the guide pins **86** will correspond with the number of the guide pins **74**, and the two central guide pins **88** and **90** are spaced apart a distance sufficient to permit the passage of the central ribbon **62***a* previously referred to therebetween, and also the two adjacent ribbons as will be apparent from Figure 2.

While the spacing between and the actual position of the guide pins **74** are relatively unimportant and subject to wide variation, the actual positioning and spacing of the pins **86** is extremely important. As will be apparent from the diagrammatic view of Fig. 5, any particular ribbon **62** which passes over the glass bars **32** or **34** has the plane of its surface tangent to the glass bar **34**. However, as will be apparent from Figure 10, the ribbon **62** or **62***a*, as the same pass over the glass bars **32** or **34**, travel with their surfaces tangent to that of the glass bars. The ribbons, however, are then turned through 90 degrees in order that their surface may be now tangent to the guide pins **74** as the ribbons travel from thence towards the second set of guide pins **86**. It will be observed that the vertical medial plane through the ribbons **62** or **62***a*, as indicated by the line **92** in Figure 10, is tangent to the surface of the pins **74** about which the ribbon turns, in order that the tension may be along the center line of the ribbon.

In a similar manner, as will be apparent from Fig. 2, the ribbons after passing about the second set of guide pins **86**, are again rotated through 90 degrees and then pass in close parallel side-by-side relation from the last set of guide pins onto the sand roller **36**. It will therefore be observed that when the present attachment is applied to a ribbon loom, the weaving of the ribbons is exactly in accordance with previous practice, and the woven ribbons then pass from the glass bars and to the first set of guide pins of the attachment in exactly the

same relationship as in conventional looms. However, at this point the ribbons are brought more closely together so that the selected number of ribbons to be wound upon a single ribbon beam will be in close side-by-side juxtaposition, and yet wherein there will be no tendency to pull a ribbon on a bias or other than along its medial line.

It will now be understood that the guide attachment assembly consisting of the plates **70** and **84** will be each arranged with its corresponding guide pins in an appropriate position to take different sizes of ribbons; and also to take a different number of ribbons and dispose them in side-by-side relation. When it is desired to change either the number of the ribbons to be wound upon the warp beam or the width of the ribbons, it will be necessary to replace the attachment with another having the appropriate spacing and number of the guide pins thereon.

It is possible, however, to provide a further guide attachment which may be more readily adapted for use with different sizes and widths of ribbons. For that purpose, the arrangement shown in Figures 8 and 9 may be employed. In this arrangement, there is provided an upper guide plate **94** having the horizontal mounting brackets **96** thereon, together with the first set of guide pins **98**, corresponding to the respective members **79**, **72** and **74** of the preceding embodiment. However, in place of the arms **80** and **82**, there are provided depending arms **100** which are welded or otherwise secured to the back side of the plate **94**, and which at their lower ends have detachably secured thereto as by fastening bolts **102** the upstanding arms **104** of a replacement lower plate **106** having thereon the second set of guide pins **108**. The plate **106** of pins **108** will, of course, correspond to the plate **84** and pins **86** of the preceding embodiment. In this latter form it is therefore evident that the second set of guide pins may be readily replaced with a plate having a different spacing of pins thereon in order to permit the weaving of ribbons of different widths.

Referring now to Figures 3 and 4, it will be seen that an increase in the length of the ribbon beam, for receiving wider and/or a greater number of ribbons thereon will necessitate a variation in the length of the friction drum **44** in order to uniformly apply tension to the surfaces of the rolls of ribbons. For this purpose, either or both ends of the drum **44** are provided with a series of interchangeable extension sleeves **45** detachably secured by means of suitable bolts to the brackets **47**. If desired, the brackets could be carried by the extension sleeves.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A method of gathering and winding ribbons in close side-by-side relation upon the ribbon beam of a ribbon loom of the type having a glass bar which comprises: moving the ribbons in parallel paths as they leave the glass bar and rotating them perpendicularly about their longitudinal axes, moving the ribbons into a relatively close juxtaposition and parallel relation, thereafter rotating the ribbons back into their original attitude.

2. The method of claim 1 including the step of winding said ribbons while in said close juxtaposition upon a warp beam in close side-by-side relation.

3. The method of claim 1 including the step of winding said ribbons while in said close juxtaposition upon a warp beam in close side-by-side relation maintaining uniform tension on all of said ribbons during their winding upon said warp beam.

4. A ribbon loom including a plurality of battens disposed in endwise arrangement and each constituting a unit for weaving a ribbon, a ribbon beam having means

each of sufficient size for receiving in side by side abutting relation a ribbon from each batten, a friction drum engaging simultaneously the surface of all of the ribbons wound upon the beam whereby to maintain a uniform tension and pressure upon all of the rolls of ribbon wound upon said beam.

5. The combination of claim 4 including extension cylinders attachable to the friction drum of the loom whereby to adapt the drum for cooperation with different sizes of ribbon beams.

6. The combination of claim 4 wherein said loom includes a sand roller engaging said ribbons and means drivingly interconnecting the friction drum and said sand roller.

7. The combination of claim 4 wherein said loom includes a sand roller engaging said ribbons and means drivingly interconnecting the friction drum and said sand roller and at a slightly greater surface speed than that of the said drum whereby to tension the ribbons passing from the said drum to the ribbon beam.

8. The combination of claim 4 including support means journaling each ribbon beam, means resiliently urging said support means towards said friction drum whereby to drive the beam from the drum.

9. The combination of claim 4 including a first guide means for receiving the ribbons from said battens and holding the same in parallel laterally spaced paths of travel, a second guide means interposed between the first guide means and the ribbon beam and displacing said

ribbons from their spaced parallel relation to a parallel, side by side abutting relation for winding upon said ribbon beam.

10. The combination of claim 9 wherein at least one of said first and second guide means comprises a set of guide pins.

11. The combination of claim 4 including a first guide means for receiving the ribbons from said battens and holding the same in parallel laterally spaced paths of travel, a second guide means interposed between the first guide means and the ribbon beam and displacing said ribbons from their spaced parallel relation to a parallel, side by side abutting relation for winding upon said ribbon beam, said first and second guide means comprising first and second sets of guide pins, the first set of guide pins being spaced by a distance equal to the spacing between the center lines of the ribbons emerging from the battens.

12. The combination of claim 11 wherein the second set of guide pins are spaced by a distance equal to that between the center lines of the ribbons when disposed in abutting side by side relation.

References Cited in the file of this patent

UNITED STATES PATENTS

459,173	Hutchins	Sept. 8, 1891
1,865,118	Lindsjo	June 28, 1932
2,416,098	Holt	Feb. 18, 1947
2,442,127	Heiss	May 25, 1948