May 13, 1924. 1,493,954

J. T. BOLTON

FABRIC GUIDING MECHANISM

Filed March 24, 1922 2 Sheets-Sheet 1

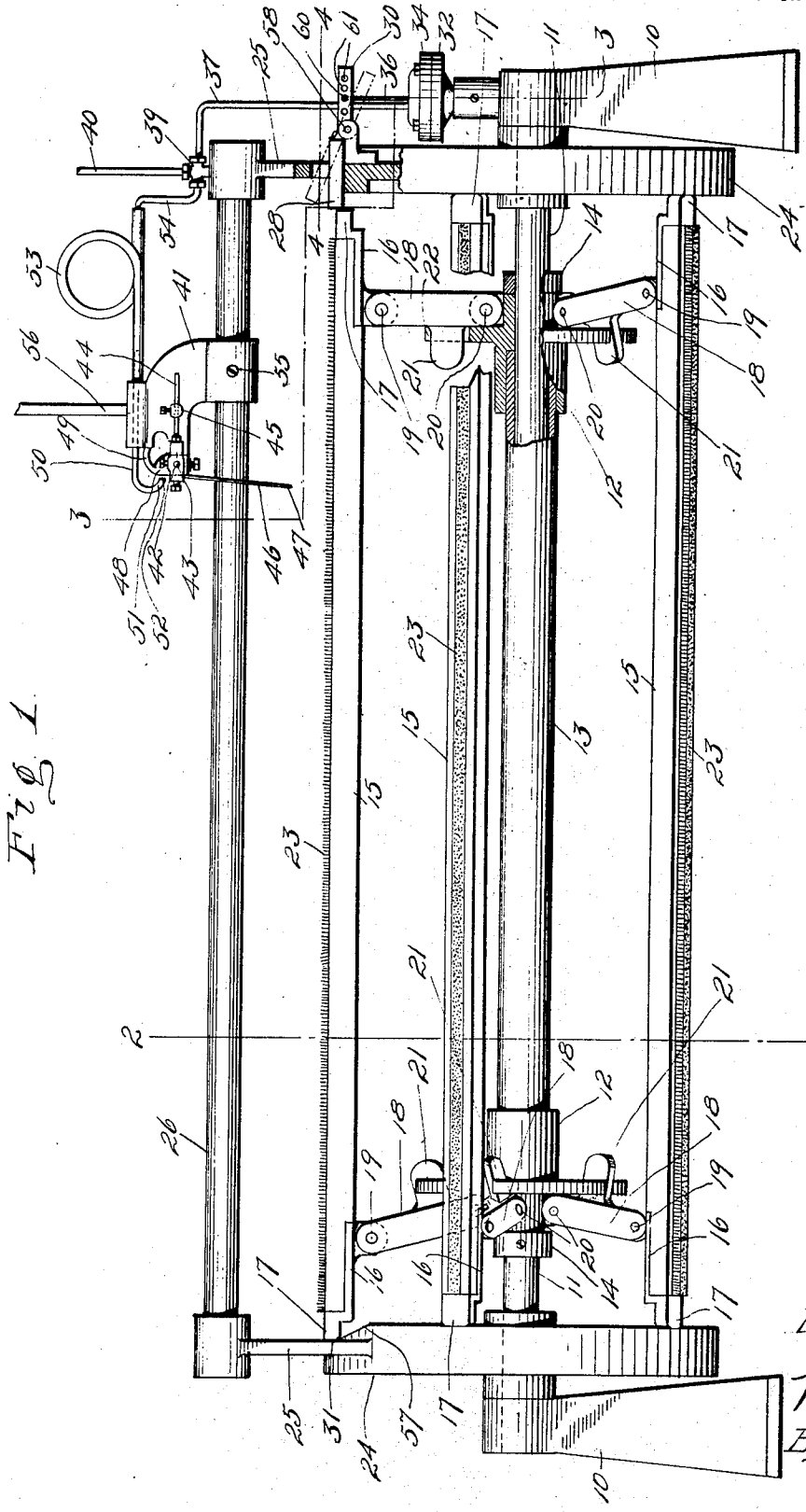

Fig. 1

Inventor
John T. Bolton
By George E. Hall
Atty

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J. T. BOLTON

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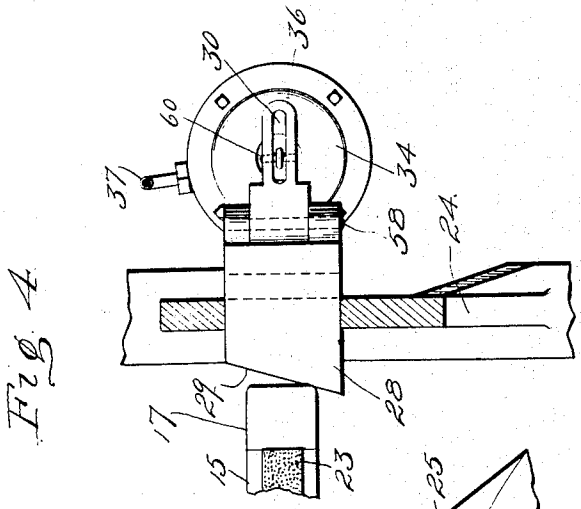

Fig. 4

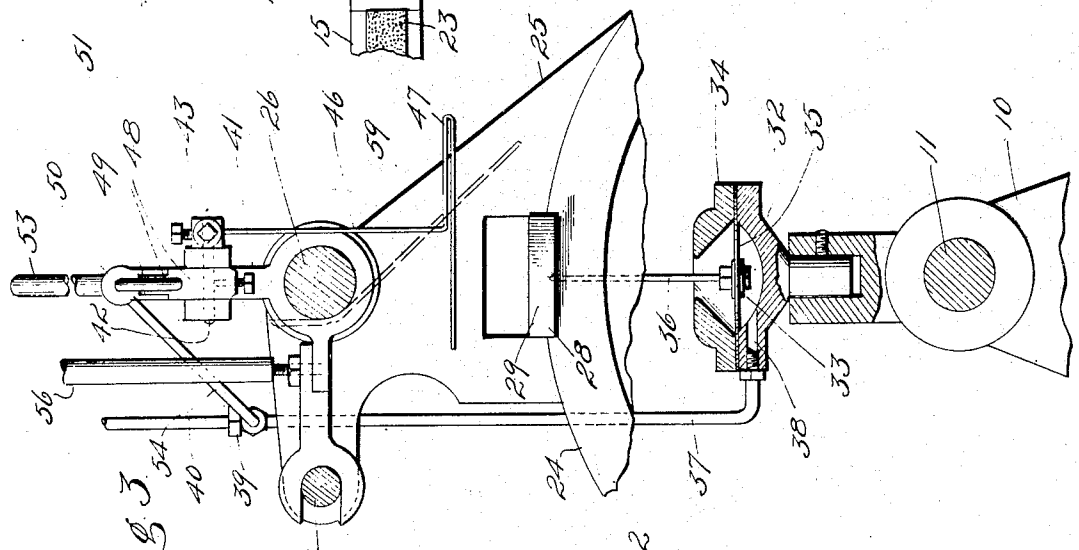

Fig. 3

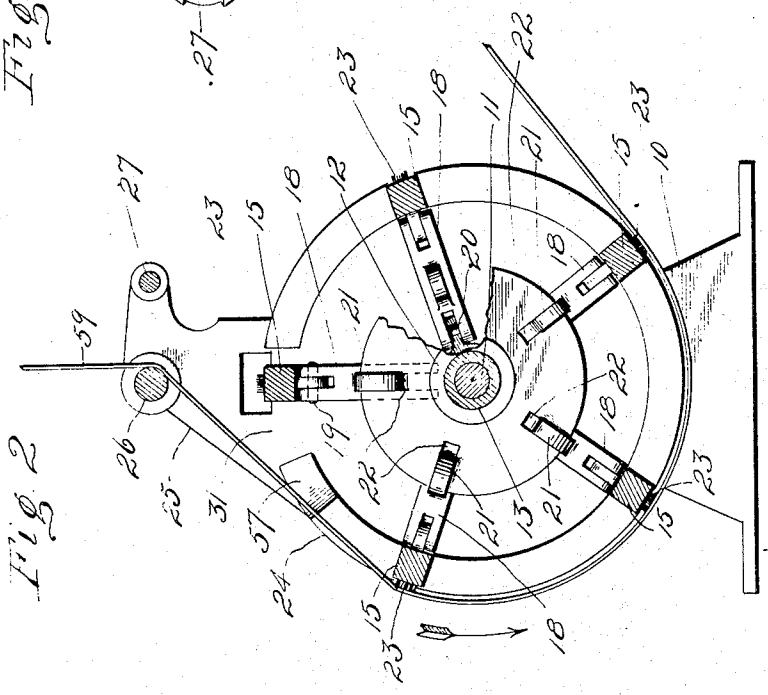

Fig. 2

Inventor
John T. Bolton
By George E. Hall
Atty

Patented May 13, 1924. 1,493,954

UNITED STATES PATENT OFFICE.

JOHN T. BOLTON, OF NEW HAVEN, CONNECTICUT.

FABRIC-GUIDING MECHANISM.

Application filed March 24, 1922. Serial No. 546,248.

To all whom it may concern:

Be it known that I, JOHN T. BOLTON, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Fabric-Guiding Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and improved fabric guiding mechanism, referring more particularly to mechanism for controlling the movement of a piece of fabric so that it may be uniformly rolled, each convolution of the rolled fabric being exactly over the preceding convolution, thus leaving one end of the roll flat.

It is the object of this invention, among other things, to provide a device of the character mentioned with a view to compactness, in which the number of parts are few, the construction simple, cost of production small, and efficiency and operation high.

The improvements in the details and arrangements of parts will be apparent from an inspection of the accompanying drawings in connection with the description hereinafter contained, and wherein a preferred embodiment of the invention is disclosed for the purpose of imparting an understanding of the same.

In the drawings, wherein like characters of reference designate like parts in the several figures;

Figure 1 is a front elevation, partly in section, of my improved mechanism;

Figure 2 is a transverse sectional view thereof, taken generally upon line 2—2 of Figure 1;

Figure 3 is an enlarged fragmentary detail of a portion thereof, taken generally upon line 3—3 of Figure 1; and

Figure 4 is an enlarged plan of the movable cam and some of its adjacent mechanism.

It is desirable in winding fabric whether taken from a roll, a box, or other device where it has been folded or plaited, that the ends of the completed roll should be flat and smooth and that in the winding operation the lateral position of the fabric be maintained in a uniform path so that such a result may be obtained. Efforts have been heretofore made to bring about such desirable roll winding, but so far as at present advised, these attempts have always been confined to mechanisms that contact with the fabric near the edges only and sometimes with an independent and supplemental device located therebetween, and these have usually been arranged at an angle to the width of the fabric. In practice, this type of mechanism has been found quite objectionable, especially with some classes of fabric, because in their operation the pressure is only applied where the mechanism contacts with the fabric, this distorts the shape of the fabric, produces a gathering, a buckling fold or a wrinkle in the fabric adjacent to the edges thereof, which frequently remains and cannot be readily smoothed or ironed out. Obviously, with fabric of very fine texture or having a print or figure thereon or therein, such distortion is especially objectionable. Then again, with such mechanism, each of the devices is separate and independent of every other one and must be arranged in a predetermined position relatively to each other, frequently a difficult task.

All of these, and other objections, that are known to those versed in the art, are overcome in my improved mechanism, wherein the device is self contained, in that it is a single unitary structure provided with a plurality of members that successively contact with and are in part controlled by the fabric throughout substantially the entire width thereof, and apply a lateral pressure that is exerted throughout the entire width of the fabric. By this action the fabric is not distorted, neither can a gathering, buckling, fold or a wrinkle be formed therein.

In the practice of my invention, I provide the standards 10, which support a shaft 11, upon which is rotatably mounted the reel heads 12 that are connected with each other by the sleeve 13 and are held against endwise movement by the collars 14.

Located equally distant about the axis of the shaft 11 are a plurality of rods 15, each being provided with a shoe 16 at each end with a cam lug 17 thereon. All of the shoes at one end of the rods 15 are connected with one of the reel heads 12 by links 18 that are hinged at one end to the shoes by the pins 19 and at the other end to the reel head by the pins 20. The links are held against lateral movement by the lugs 21 thereon that pass through radial slots 22 in the flange of the reel head 12. These several rods 15, constructed and associated with the

reel heads 12, as above described, move in a rotary path about the shaft 11 and are capable of a synchronous movement parallel with the axis of said shaft.

Each of the rods 15, may, if desired, be provided upon their outer faces with a friction member 23, which may be either of wire cloth, rubber or other similar device that will grip the fabric and hold it in contact therewith. As shown in Figure 1, this friction member 23 extends the entire length of each of the rods 15, but it may be shorter if so desired.

Adjacent to the inside of each of the standards 10 and fixed in relation thereto are the frames 24, upon each of which is a projecting lug 25 within which is fixed the rods 26 and 27. Upon the inner face of one of the frames is a cam 57 and pivotally connected to the other frame 24 by the pintle 58 is the movable cam 28 having a cam face 29 thereon, and a slotted arm 30.

The reel, composed of the reel heads 12, rods 15, and connecting mechanism, is rotated in the direction of the arrow in Figure 2 by the fabric designated 59 traveling in the same direction. A lateral movement of the bars 15, that is, parallel with the axis of the shaft 11, is accomplished by engagement thereof with the cam 57 at one end and by the movable cam at the other end, and when out of contact therewith the bars travel only in a rotary path being held against endwise movement by the substantially parallel inner faces of the frames 24, substantially as shown in Figure 1. The space between the ends of the lugs 17 on the opposite ends of the rods 15 is slightly less than that between the parallel inner faces of the frames 24 so that no friction is created by their otherwise constant contact therewith. The position of the cam 28 is such that the lug 17 contacts with the cam face 29 when the same is traveling through a rotary path at the top of the reel, at which time this particular rod 15 is out of contact with the fabric. The lug 17 at the opposite end of the rod is opposite the low face 31 adjacent to the cam 57 upon the frame 24. This rod, moved as above described, to the left in Figure 1, is, it will be remembered, constantly rotating and is thus brought into contact with the fabric 59 (see Figure 2) in its laterally extended position. As soon, however, as the rod contacts with the fabric, the shoe 16 thereon opposite the cam 28 engages the cam 57 and the rod is moved axially during its rotary travel to a position wherein the said lugs will pass between the parallel faces of the frames 24, during which time the fabric is moved laterally therewith. Thereafter the fabric travels in this new path and is taken off the reel onto a roll or such other device as may seem necessary or desirable. When the rods 15 of the reel move in the same rotary path no lateral movement is imparted to the fabric, but contra when the rods are actuated axially. This lateral movement of the fabric is controlled in my device automatically by the fabric itself, by mechanism about to be described.

Adjustably secured in one of the standards 10, is an air plug 32 having an air chamber 33 therein and affixed thereto is the cap 34, between which and the plug is a flexible diaphragm 35, connected with the cam 28 by the link 36.

Leading into the air plug 32 is an inlet pipe 37, which connects with a port 38 that extends from the chamber 33. This pipe 37 extends from a union 39, joined by a pipe 40 to a vacuum cylinder, not shown. When the vacuum is maintained the diaphragm 35 is flexed downwardly and through the link 36 moves the cam 28 upon its pivot mounting, lifting the cam face 29 upward and out of the path of the lugs 17 so that the same passes thereby without contacting therewith. The means for automatically controlling this vacuum comprises a bracket 41, which is movable upon the rod 26 and held against rotary movement thereon by its engagement with the rod 27 (Figure 3). In this bracket is a rock shaft 42 having a block 43 fixed thereon, within which is secured a rod 44 having an adjustable weight 45 thereon and a trip arm 46 terminating at its lower end in a contact finger 47, that projects upon both sides thereof a substantial distance so as to be entirely certain that it will be engaged by the moving fabric.

Also fixed on the rock shaft 42 is a closure plate 48 having a stop arm 49 connected therewith.

Secured in the bracket 41 by any preferred means, is a pipe 50 formed with a curved end 51, which terminates a slight distance in advance of the face of the closure plate 48 when the stop 49 is in contact with the bracket 41, as shown in Figure 1, thereby leaving a slight space 52 therebetween. A flexible tube 53 connects the pipe 50 with the union 39 preferably through a rigid pipe member 54. This flexible tube 53 is provided so as to accommodate the movement of the bracket 41 along the rods 26 and 27, and be operative in any one of such adjusted positions. This bracket 41 may be secured in any of its adjusted positions by a screw 55 or the like, or it may be held in its adjusted positions through a connection with another co-operating mechanism and a stud 56.

The weight 45 is so adjusted upon the rod 44 as to actuate the rock shaft 42 and maintain the end of the stop finger 49 against the bracket 41, thus leaving the open space

52 in front of the curved end of the pipe 50. When the parts are in these relative positions there is no vacuum in the air chamber 33, the same being destroyed by reason of the leakage at the open space 52, at which time the weight of the movable cam 28 is such as to cause it to occupy its down position, substantially as shown by full lines in Figure 4. The cam 28, now being in the path of movement of the lugs 17, will impart lateral movement to the rods 15 as above described. When lateral pressure is applied to the contact finger 47 the closure plate 48 is actuated so as to move the face thereof into contact with the end of the pipe 50, thus closing the space 52 and sealing the vacuum system. The movable cam 28 is now actuated through the movement of the diaphragm 35 and lifted out of the path of said lugs, thus permitting the several rods 15 to travel in a uniform rotary path, at which time no lateral movement is imparted to the fabric on the reel.

As the position of the bracket 41 is adjusted so that the finger 47 rides against the edge of the fabric, it is obvious that when the fabric is traveling in a correct path the vacuum system is closed, the movable cam 28 is out of the path of the several rods 15 and the fabric continues to travel in its defined correct path. If, however, the fabric does not contact with the finger, as above indicated, there is no pressure thereon, the rock shaft 42 is actuated through the weight 45 and the stop arm 49 is brought up against the end of the bracket 41, thus destroying the vacuum. The weight of the cam 28 now causes it to move downwardly and in its then position moves the rods 15 successively parallel to the axis of the shaft 11, which rods then automatically as they contact with the fabric move the same laterally until it is again brought into contact with the finger 47, when pressure being then applied thereto, the vacuum system is sealed, the cam 28 is lifted and the fabric continues to travel in its predetermined path as before. As each successive rod, when it contacts with the fabric exerts a slight lateral pressure thereon, a very extended lateral movement may be applied to the fabric, if necessary to bring it into contact with the finger 47. As the rods 15 contact substantially through the entire width of the fabric, it is obvious that no portion thereof is distorted, and as the mechanism is entirely automatic in its operation, the results obtained are obviously certain, fixed and definite, and the efficiency of the device extremely high, while the mechanism itself is quite simple in its character and is easily constructed and readily assembled, and when so assembled not liable to be easily disarranged or get out of order.

As shown and described herein the movable cam 28 is lifted out of the path of the lugs 17 by the diaphragm through the action of the vacuum thereon. Obviously the connection between the diaphragm and movable cam may be so arranged however that the reverse movements will result, that is, the vacuum through the diaphragm will hold the movable cam in its down position in the path of the lugs 17.

There are minor changes and alterations that may be made within my invention, aside from those herein suggested, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging the fabric throughout substantially its entire width and before it joins the roll, the axis of said means and roll being substantially parallel, which parallel position continues during the lateral movement of the fabric.

2. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging the fabric substantially parallel with its width and before it joins the roll, the axis of said means and roll being substantially parallel, which parallel position continues during the lateral movement of the fabric.

3. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging the fabric adjacent to the edges thereof, at points therebetween, and substantially parallel with the width thereof, and before the fabric joins the roll, the axis of said means and roll being substantially parallel, which parallel position continues during the lateral movement of the fabric.

4. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging and exerting a lateral pull upon the fabric throughout substantially its entire width and before the fabric joins the roll, the axis of said means and roll being substantially parallel, which parallel position continues during the lateral movement of the fabric.

5. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging the fabric and exerting a pull thereon that is substantially uniform throughout the entire width thereof and before the fabric joins the roll, the axis of said means

and roll being substantially parallel, which parallel position continues during the lateral movement of the fabric.

6. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging the fabric throughout substantially its entire width and before it joins the roll, the said means being actuated primarily by the fabric, and the axis thereof and the roll being substantially parallel, which parallel position continues during the lateral movement of the fabric.

7. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging said fabric throughout substantially its entire width, actuated by the fabric when the same is in a predetermined alignment and before it joins the roll, the axis of said means and roll being substantially parallel, which parallel position continues during the lateral movement of the fabric.

8. In mechanism for guiding a piece of fabric onto a roll or the like; means for moving the same laterally, said means engaging said fabric throughout substantially its entire width and before it joins the roll, the axis of said means and roll being substantially parallel, which parallel position continues during the lateral movement of the fabric; and air controlled means for actuating the same.

9. In mechanism for guiding a fabric; a rotary reel composed in part of members having axial movement thereon and against which the fabric contacts; and means for imparting said axial movement to one of said members during a portion of the rotation of said reel and while the other of said members are held against such axial movement.

10. In mechanism for guiding a fabric; a rotary reel composed in part of members having axial movement thereon and against which the fabric contacts; and means for imparting said axial movement to one of said members during a portion of the rotation of said reel, and while the other of said members are held against such axial movement, said means being actuated in one direction primarily by said fabric when in a certain relation to the reel.

11. In mechanism for guiding a fabric; a rotary reel composed in part of a plurality of members having independent axial movement thereon; means for imparting said axial movement in one direction to one of said members during a portion of the rotation of said reel and while the other of said members are held against such axial movement, said means being actuated primarily by the fabric when in a certain relation to the reel and when out of contact with that one of said plurality of members so actuated.

12. In mechanism for guiding a fabric; a rotary reel composed in part of a plurality of members having independent axial movement thereon; means for imparting said axial movement in one direction to one of said members during a portion of the rotation of said reel and while the other of said members are held against such axial movement, said means being actuated primarily by the fabric when in a certain relation to the reel; and means for moving such axial movement in the reverse direction by mechanism independent of the fabric.

13. In mechanism for guiding a fabric; a rotary reel composed in part of a plurality of members having independent axial movement thereon; means for imparting said axial movement in one direction to one of said members during a portion of the rotation of said reel and while the other of said members are held against such axial movement, said means being actuated primarily by the fabric when in a certain relation to the reel; and means for moving said members in the reverse direction by mechanism independent of the fabric and after said fabric is in contact therewith.

14. In mechanism for guiding a fabric; a rotary reel composed in part of a plurality of members having axial movement thereon, some only of said members being in contact with said fabric during the rotation thereof; a frictional device connected with each of said members having engagement with the fabric; and means for imparting said axial movement in one direction to one of said plurality of members that is out of contact with the fabric during the rotation of said reel and while the other of said members are held against such axial movement, said means being actuated primarily through the relative position of said fabric with the reel.

15. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon, some only of said members being in contact with said fabric during the rotation thereof; means for imparting axial movement in one direction to one of the members out of contact with said fabric, during the rotation of said reel, actuated primarily through the relative position of said fabric with said reel; and means for holding said member in its new position relative to the other members of said reel until after being brought into contact with said fabric.

16. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon, some only of said members being in contact with said fabric during the rotation thereof; means for imparting axial movement in one direction to one of the members out of contact with said fabric, during the rotation of said

reel, actuated primarily through the relative position of said fabric with said reel; means for holding said member in its new position relative to the other members of said reel until after being brought into contact with said fabric; and means independent of said fabric for returning said member to its original position after the same has engaged said fabric and moving the latter therewith.

17. In mechanism for guiding a fabric; a rotary reel composed in part of members having axial movement thereon; means for imparting said axial movement in one direction to one of said members during a portion of the rotation of said reel and while the other of said members are held against said axial movement, comprising in part an element movable into and out of the path of said members; and means initiated by the fabric for actuating said element when said fabric occupies a certain relation to said reel.

18. In mechanism for guiding a fabric; a rotary reel composed in part of members having axial movement thereon; means for imparting said axial movement in one direction to one of said members during a portion of the rotation of said reel and while the other of said members are held against said axial movement, comprising in part an element movable into and out of the path of said members, said element being gravity actuated in one direction and through the fabric in the opposite direction when said fabric occupies certain relations to said reel.

19. In mechanism for guiding a fabric; a rotary reel having members independently connected therewith with an open space therebetween; means for mounting said members whereby the same may have an axial movement in relation thereto; and means for imparting said axial movement to one of said members during a portion of the rotation of said reel and while the other of said members are held against such axial movement.

20. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member and an element movable into and out of the path of said members, a connection between said flexible member and said element, and a vacuum system so arranged in relation to said flexible member as to actuate the same; and means, the action of which is initiated by said fabric when the same is in certain positions relative to said reel, for opening and closing said vacuum system.

21. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon and means, initiated by the fabric, for determining the axial movement of one or more of the members of said reel without imparting similar movement to other of said members.

22. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a movable element for imparting axial movement in one direction to said members, one at a time; and fixed means for moving said members in the reverse direction.

23. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a movable element for separately imparting said axial movement in one direction to each of said members; and fixed means for moving said members in the reverse direction, said movable element being so controlled that it may remain in the path of one or more succeeding members as the relative position of the fabric may initially determine.

24. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member, an element movable into and out of the path of said members; a connection between said flexible member and said element; a vacuum system so arranged in relation to said flexible member as to actuate the same; a trip member in the path of movement of said fabric; and means connected with said trip member for opening and closing said vacuum system.

25. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member, an element movable into and out of the path of said members; a connection between said flexible member and said element; a vacuum system so arranged in relation to said flexible member as to actuate the same; a trip member in the path of movement of said fabric; means connected with said trip member for opening and closing said vacuum system; and means for adjusting the relative position of said trip member in relation to said reel.

26. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member, an element movable into and out of the path of said members; a connection between said flexible member and said element; a vacuum system so arranged in relation to said

flexible member as to actuate the same; a trip member in the path of movement of said fabric, actuated in one direction by said fabric; and means connected with said trip member for opening and closing said vacuum system.

27. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member, an element movable into and out of the path of said members; a connection between said flexible member and said element; a vacuum system so arranged in relation to said flexible member as to actuate the same; a trip member in the path of movement of said fabric, actuated in one direction of said fabric and in the opposite direction by gravity; and means connected with said trip member for opening and closing said vacuum system.

28. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member, an element movable into and out of the path of said members; a connection between said flexible member and said element; a vacuum system so arranged in relation to said flexible member as to actuate the same: a trip member in the path of movement of said fabric, actuated in one direction by said fabric and in the opposite direction by adjustable weighted mechanism; and means connected with said trip member for opening and closing said vacuum system.

29. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member, an element movable into and out of the path of said members; a connection between said flexible member and said element; a vacuum system so arranged in relation to said fabric; means for adjustably securing a trip member in the path of movement of said fabric; means for adustably securing said trip member substantially parallel with the axis of said reel; and means connected with said trip member for opening and closing said vacuum system.

30. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part a flexible member, an element movable into and out of the path of said members; a connection between said flexible member and said element; a vacuum system so arranged in relation to said flexible member as to actuate the same; a bracket adjustable substantially parallel with the axis of said reel; a trip member connected with said bracket in the path of movement of said fabric; and means connected with said trip member for opening and closing said vacuum system.

31. In mechanism for guiding a fabric, a rotary reel composed in part of a central element; a plurality of bars substantially parallel with the axis of said central element; means for connecting said bars to said central element whereby the same may be moved axially in relation thereto; and means exterior of said reel for preventing the axial movement of said members during a portion of the rotation thereof comprising a fixed member adjacent to each end of the said bars and between which said bars move during their rotation.

32. In mechanism for guiding a fabric, a rotary reel composed in part of a central element; a plurality of bars substantially parallel with the axis of said central element; means for connecting said bars to said central element whereby the same may be moved axially in relation thereto; and means exterior of said reel for preventing the axial movement of said members during a portion of the rotation thereof, said latter means having a movable element connected therewith at one end to cause an axial movement of said bars in one direction during a limited portion of the rotation of said reel.

33. In mechanism for guiding a fabric; a rotary reel composed in part of a central element; a plurality of bars substantially parallel with the axis of said central element; means for connecting said bars to said central element whereby the same may be moved axially in relation thereto; and means exterior to said reel for preventing axial movement of said bars during a portion of the rotation thereof, said latter means having a movable element connected therewith to cause an axial movement of said bars in one direction, which bars are returned to their former positions by the engagement of said bars with said means exterior to said reel but at the end of said bars opposite to said movable element.

34. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a frame at each end of said reel fixed in relation thereto; a trip member adjustably mounted relatively to said frames and projecting into the path of movement of said fabric; a movable element connected with one of said frames; and means for actuating said movable element in one direction through the engagement of said fabric with said trip member.

35. In mechanism for guiding a fabric, a

rotary reel composed in part of members having axial movement thereon; a frame at each end of said reel fixed in relation thereto, one of said frames having a fixed cam thereon; and a movable cam connected with the other of said frames, said cams being arranged relatively to each other so as to impart axial movement to said members during the rotation thereof.

36. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a frame at each end of said reel fixed in relation thereto, one of said frames having a fixed cam thereon; a movable cam connected with the other of said frames, said cams being arranged relatively to each other so as to impart axial movement to said members during the rotation thereof and said frames preventing said axial movement except when the members are in the path of said cams.

37. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a frame at each end of said reel fixed in relation thereto, one of said frames having a fixed cam thereon; a movable cam connected with the other of said frames and said movable cam projecting into the path of said members while moving through the rotary path defined by the said frames and causing the member brought into contact therewith to move in a direction parallel to the axis of the reel when brought into contact therewith.

38. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a frame at each end of said reel fixed in relation thereto, one of said frames having a fixed cam thereon; a movable cam connected with the other of said frames, said movable cam projecting into the path of said members while moving through the rotary path defined by the said frames and causing the member brought into contact therewith to move in a direction parallel to the axis of the reel when brought into contact therewith, and the fixed cam upon one of said frames being so arranged relatively to said movable cam that the member actuated by the movable cam will be returned to its original endwise position by said fixed cam after it has traveled in a rotary path different than that of the other members of said reel.

39. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a frame at each end of said reel fixed in relation thereto, one of said frames having a fixed cam thereon; and a movable cam connected with the other of said frames, said cams being arranged relatively to each other so as to impart axial movement to said members during the rotation thereof, the relative arrangement of all of said parts being such that the members associated with the rotary reel will travel in a path with their axial position determined by said frames or cams.

40. In mechanism for guiding a fabric, a rotary reel composed in part of members having axial movement thereon; a frame at each end of said reel fixed in relation thereto, one of said frames having a fixed cam thereon; and a movable cam connected with the other of said frames, said cams being arranged relatively to each other so as to impart axial movement to said members during the rotation thereof and act only upon one of the members when out of contact with the fabric.

41. In mechanism for guiding a fabric; a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part an air member having a chamber therein; a flexible member connected therewith; an element movable into and out of the path of the said members forming part of said reel; a connection between said flexible member and said element; a vacuum system, so arranged in relation to said flexible member as to flex the same in one direction; a trip member in the path of movement of the fabric; and means actuated through said trip member for opening and closing said vacuum system.

42. In mechanism for guiding a fabric; a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part an air member having a chamber therein; means for adjustably securing said air member; a flexible member connected therewith; an element movable into and out of the path of the said members forming part of said reel; a connection between said flexible member and said element; a vacuum system, so arranged in relation to said flexible member as to flex the same in one direction; a trip member in the path of movement of the fabric; and means actuated through said trip member for opening and closing said vacuum system.

43. In mechanism for guiding a fabric; a rotary reel composed in part of members having axial movement; means for imparting said axial movement in one direction during a portion of the rotation of said reel, comprising in part an element movable into and out of the path of said members; a chambered air plug; a flexible diaphragm connected therewith and covering the chamber in said air plug; a connection between said flexible member and said element; a vacuum system connected with said air plug so that the vacuum created there-

by will flex said diaphragm and impart movement to said element; a trip member in the path of movement of the fabric; and means actuated by said trip member for opening and closing said vacuum system.

44. In mechanism for guiding a fabric; a rotary reel, comprising reel heads having radial openings therein; a connection therebetween; a plurality of links pivotally mounted upon each of said reel heads and projecting radially therefrom, each of said links having a lug thereon that projects into one of said radial openings; a bar pivotally connected with each of said links associated with one of said reel heads, and also with the opposite link of the other reel head; and means exterior to said reel that permits said bars to move endwise relatively to said reel heads, and said links to swing upon their pivot connection during the rotation of said reel.

45. In mechanism for guiding a fabric; a rotary reel, comprising companion reel heads; a connection therebetween; a plurality of links pivotally mounted upon said reel heads and projecting radially therefrom; a shoe connected with the outer end of each of said links; a plurality of bars each connected at one end with a shoe associated with one of said reel heads and at the other end with a shoe associated with the other reel head and opposite thereto and means that engage the said shoes for imparting axial movement to said bars relatively to said reel heads.

In testimony whereof, I have hereunto affixed my signature.

JOHN T. BOLTON.