

J. T. BOLTON.
WEB STRETCHING AND GUIDING DEVICE.
APPLICATION FILED NOV. 15, 1918.

1,343,385.

Patented June 15, 1920.
2 SHEETS—SHEET 1.

Fig. 1

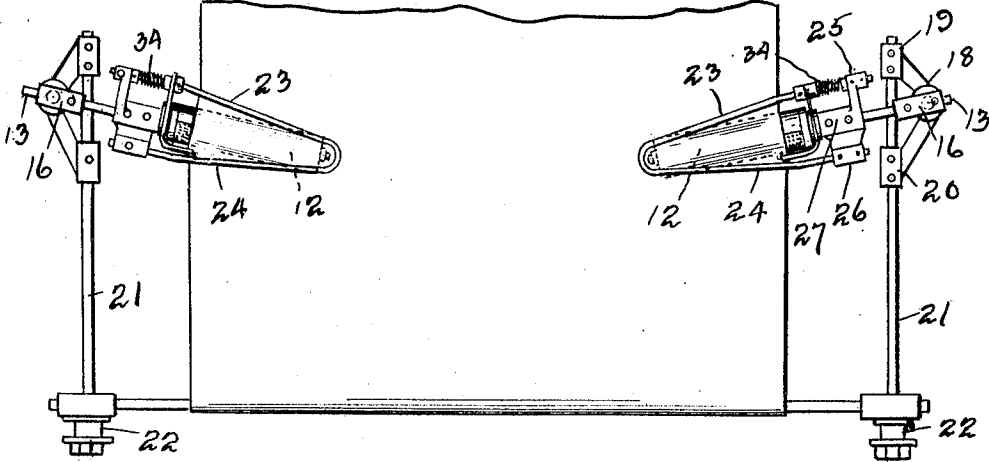


Fig. 6

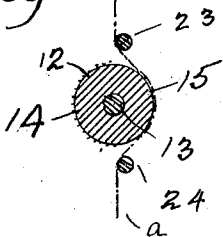


Fig. 2

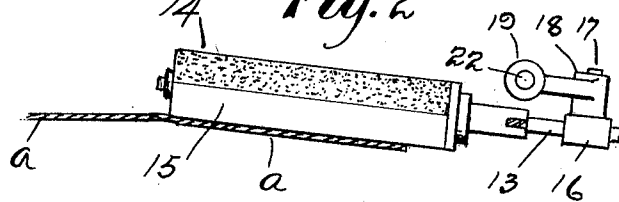


Fig. 5

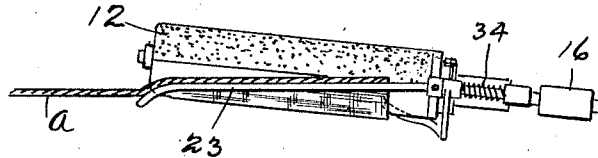
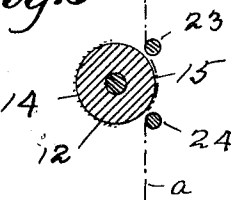


Fig. 3

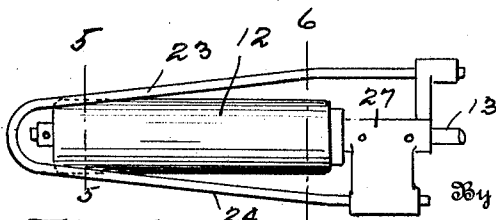


Fig. 4

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Fig. 7

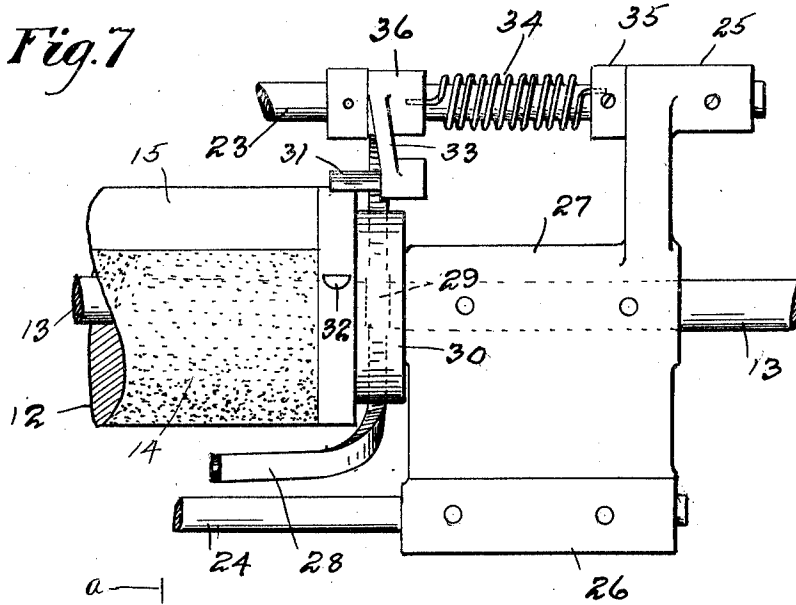


Fig. 8

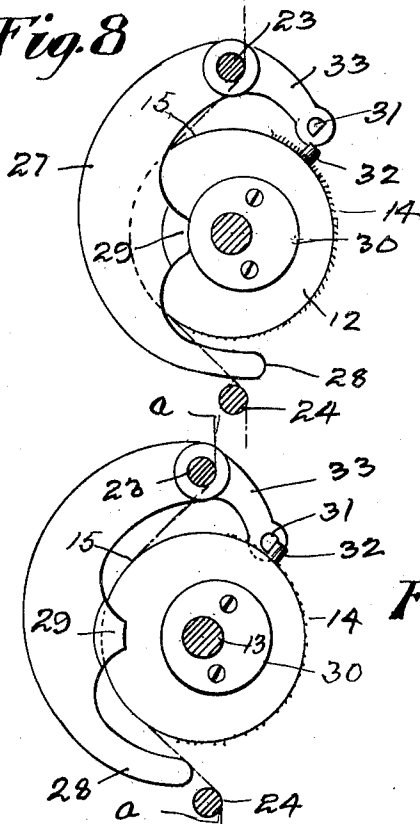


Fig. 9

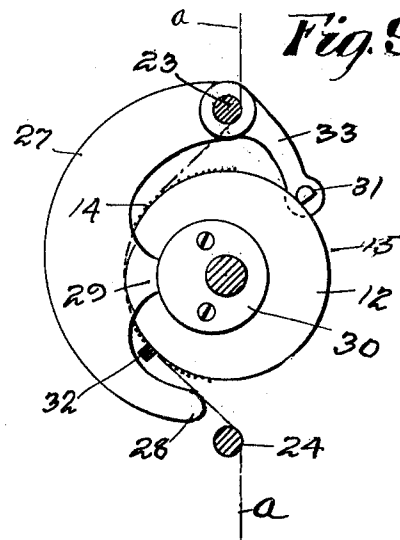
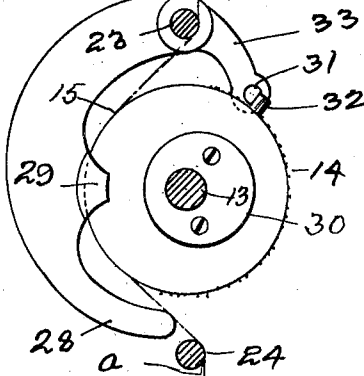


Fig. 10



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UNITED STATES PATENT OFFICE.

JOHN T. BOLTON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO THE FORSYTH DYEING CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

WEB STRETCHING AND GUIDING DEVICE.

1,343,385.

Specification of Letters Patent.

Patented June 15, 1920.

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To all whom it may concern:

Be it known that I, JOHN T. BOLTON, a citizen of the United States, and resident of the city of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Web Stretching and Guiding Devices, of which the following is a specification.

10 This invention relates to web-stretching and guiding devices for operating upon webs or strips of different materials such as cloth, paper, or the like, while being fed to a machine such for instance as a tenter, calender, 15 drier, printing machine and the like, to be subsequently operated upon, and this invention is an improvement on my prior Patents Numbers 1,237,607 and 1,262,740.

20 The object of this invention is to simplify the construction of the device and increase its operating efficiency over others of this character.

25 With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

30 Figure 1— is a front view illustrating a traveling web of material with my improved stretching and guiding device applied to opposite edges thereof.

35 Fig. 2— is a top view illustrating the operating roll as having its axis set at an angle to the normal plane of the traveling web so that the deflection of the web from such plane is gradual.

40 Fig. 3— illustrates the setting of the axis of the roll on an angle to the plane of the web, and also shows the guide rods as set on an angle to the axis of the roll for the purpose of causing a gradual increase of the extent of the surface contact of the web upon the roll.

45 Fig. 4— shows the axis of the guide rods as being set on an angle to each other converging toward the free end of the roll.

50 Fig. 5— is a sectional end view on line 5—5 of Fig. 4, showing the inner portion of the guide bars as arranged to cause the minimum amount of surface contact of the web upon the roll adjacent its free end.

55 Fig. 6— is a section on line 6—6 of Fig. 4, illustrating the outer portion of the guide bars arranged to cause the maximum amount

of surface contact of the web upon the roll at a point farthest from its free end.

Fig. 7— is a side elevation showing a portion of the roll, and the feeler member mounted on the roll frame and arranged to operate the positive stop for the roll.

Fig. 8— is an end view showing the roll and the feeler-member, also the cam which lifts the feeler out into position to be engaged by the surface of the web.

Fig. 9— is the same as Fig. 8 but which shows the cam as having raised the feeler-member into position to be engaged by the surface of the web.

Fig. 10— shows one arm of the feeler as having engaged the web to hold the stop arm in position to be engaged by the stop pin on the roll to positively arrest the rotation of the latter.

It is found in practice where the direct engagement of the feeler fingers with the web is relied upon to arrest the rotation of the roll, that unless the edge of the web extends a considerable distance into the grip of the fingers the web is likely to draw away and slip out without stopping the roll, and so impair the sensitiveness of action of the device. To overcome this difficulty I have in my present invention provided a positive stop for the roll, which is operated by a very light pressure of the end of the feeler arm upon the surface of the web, this stop being quite independent of any gripping action upon the web.

To accomplish this result in a simple and practical way, I have mounted a pair of rolls 12, each to freely rotate on its fixed shaft 13 and I have shown one-half of the surface 14 of the roll as being roughened and the other half 15 as being smooth but any other suitable arrangement of roll may be employed. The outer end of this shaft is firmly held by set screws in the bearing 16, which bearing is provided with a trunnion 17 extending at a right angle therefrom, see Fig. 2, passing through and fixed in another bearing 18, the latter being supported by bearings 19 and 20 fixed to the standard 21 rising from the frame 22.

By this arrangement of mechanism the axes of these rolls may be set at any angle relative to each other and also relative to the surface of the traveling web.

In order to control the extent of contacting surface of the web upon the roll, I have

provided a pair of guide rods 23 and 24 made somewhat in the form of a hair pin, the spaced ends of which are supported, one in the upper bearing 25 and the other in the lower bearing 26, both of which bearings are supported from the middle bearing 27 on the main shaft 13, by which construction the ends of these guide rods are held spaced apart and in proper operating relation to the roll 12.

One feature of my present invention is that I set the axes of these guide rods at an angle to the axis of its roll, as best illustrated in Fig. 3, whereby the extent of the contacting surface of the web upon the roll at its end is very light and gradually increases from this free end outwardly toward the outer end thereof. Then again to further control this extent of bearing surface of the web upon the roll I set these guide rods so that their axes converge toward the free end of the roll as best illustrated in Fig. 4, thus again assisting in minimizing the extent of contacting surface of the web upon the free end of the roll, which effect is further illustrated in Fig. 5.

An essential feature of this invention is the construction and arrangement of the positive stop device which is controlled in its operation by action of the feeler member.

This feeler member comprises a plate 27 pivotally mounted on the upper guide rod 23, the lower end of the plate being formed into an arm 28 to engage the surface of the web, while the inner edge of the plate is provided with the contact portion 29 arranged to engage the cam 30, which cam is connected to rotate with the roll 12. Rearwardly extending from the upper portion of this plate is a stop arm 33 which is provided with a stop pin 31 adapted to contact with the stop pin 32 on the roll when the end of finger 28 rests upon the surface of the traveling web *a*, as illustrated in Fig. 10.

In the operation of this feeler member the contact portion 29 is normally held against the surface of the cam 30 by action of the spring 34, one end of which spring is connected to the adjustable collar 35 while its opposite end engages the boss 36 on the feeler plate. By this action the stop arm 33 with its pin 31 is raised permitting the stop pin 32 on the roll to pass thereunder and after this roll pin has passed beneath the arm pin, cam 30 begins to move arm 28 outwardly so that the edge of the fabric when spread or deflected excessively, will extend beneath this feeler arm 28 and so retain the arm pin 31 in the path of travel of roll pin 32 thereby providing positive means for arresting the rotation of the roll with its smooth surface to the web, in which case the edge of the traveling web naturally draws inwardly from its excessive deflection disengaging the arm 28 and permitting it

under action of the spring 34 to move inwardly and cause the stop pin 31 to again be controlled in its position by action of the cam 30 upon the feeler member.

By this construction it will be seen that the feeler member is adapted to operate with its maximum sensitiveness upon the lightest and most delicate fabric, which is not the case where the body of the fabric itself is depended upon to serve as a stop for arresting the rotation of the spreader roll against the friction of the fabric being drawn thereover.

In some instances particularly where delicate fabrics are being operated upon whose surfaces have a highly starched finish it is found to be of advantage to set the axes of the guide rolls at an angle to the normal surface of the traveling web engaged by them, so as to prevent a sharp bend in the fabric at the point where it contacts with the end of the roll. In this way the end of the roll engages the fabric very lightly and is caused to present a gradually increasing contact surface to the fabric.

By my improved web-stretching and guiding device I am enabled to handle the most delicate fabrics without injury. The device is extremely sensitive and by its use the stretching of the web is nicely controlled and excessive lateral movement is effectively prevented.

The foregoing description is directed solely toward the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a web-stretching and guiding device, a roll mounted to work in continuous contact with and be rotated by the traveling web, means for guiding the web partially around said roll, means whereby the rotation of the roll exerts a spreading action on the web, a stop independent of the web, and a feeler moved by an excessive lateral movement of the web to engage said stop and positively arrest the rotation of said roll while still in contact with the traveling web.

2. In a web-stretching and guiding device, a roll mounted to be rotated by contact with the traveling web, a pivotally mounted feeler member, a cam operated in time with said roll for positioning said feeler to engage the surface of the web, and means actuated by said feeler when contacting with the web to positively arrest the rotation of said roll.

3. In a web-stretching and guiding device, a roll mounted to be rotated by contact with the traveling web, a pivotally mounted

feeler member having an arm extending into the path of travel of the web when deflected excessively, a cam operated in time with the roll for positioning the arm to engage the web surface, and a stop member positioned by engagement of the feeler with the web to positively arrest the rotation of the roll.

4. In a web-stretching and guiding device, a roll mounted to rotate by contact with the traveling web, a spring pressed feeler member pivotally mounted and having a web-engaging arm and a roll stop arm, a cam for lifting the web arm into web-engaging position, and a stop on the roll to engage the stop arm to arrest the rotation of the roll when the web is engaged by the web arm.

5. In a web-stretching and guiding device, a roll having opposite rough and smooth surfaces and mounted to be rotated by surface contact with the traveling web, a feeler member arranged to engage the surface of the web by spring pressure when the web is excessively deflected, a positive stop, and means whereby the engaging of the web by said feeler causes said stop to arrest the travel of the roll with its smooth surface to the web.

6. A web-stretching and guiding device comprising a pair of rotatable rolls adapted to engage opposite edges of the traveling web, each roll having opposite rough and smooth surfaces, a feeler member for each roll arranged to engage the surface of the web by spring pressure when the web is excessively deflected, a stop for each roll, and

means whereby the engaging of the web by said feeler positions said stop to positively arrest the travel of its roll with its smooth surface to the web.

7. In a web-stretching and guiding device, a roll mounted to be rotated by contact with the traveling web, the axis of said roll being set at an angle inclined to the plane of the normal surface of the traveling web, and a guide-bar for controlling the extent of surface contact of the web with the roll.

8. In a web-stretching and guiding device, a roll mounted to be rotated by contact with the traveling web, the axis of said roll being set at an angle inclined to the plane of the normal surface of the traveling web, and a guide-bar set at an angle to the roll axis for gradually increasing the extent of surface contact of the web upon the roll inwardly from its free end.

9. In a web-stretching and guiding device, a roll mounted to be rotated by surface contact with the traveling web, a pair of web guide bars adjacent the roll set at an angle to the axis of the roll, the axis of said guide bars also being set at an angle to each other converging toward the free end of the roll whereby the extent of the contacting surface of the web upon the roll is gradually increased from the free end of the roll inwardly.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN T. BOLTON.

Witnesses:

L. E. FORSYTH,
C. A. BRADLEY.