

No. 782,909.

PATENTED FEB. 21, 1905.

J. P. JEFFERIS.

WEB TENSION DEVICE FOR WEB WINDING OR OTHER MACHINES.

APPLICATION FILED APR. 24, 1902.

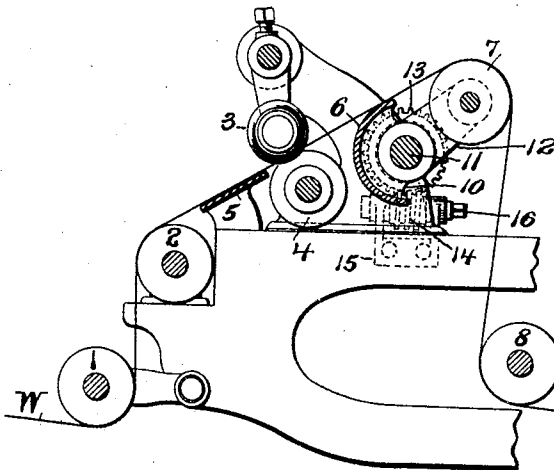


Fig. 1.

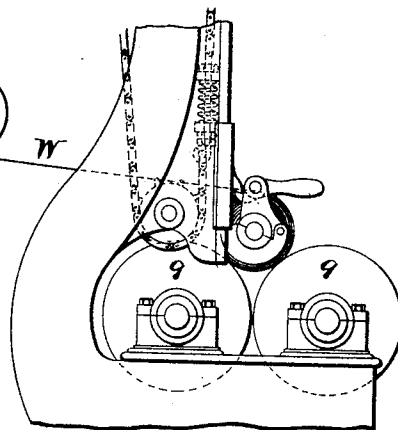


Fig. 2.

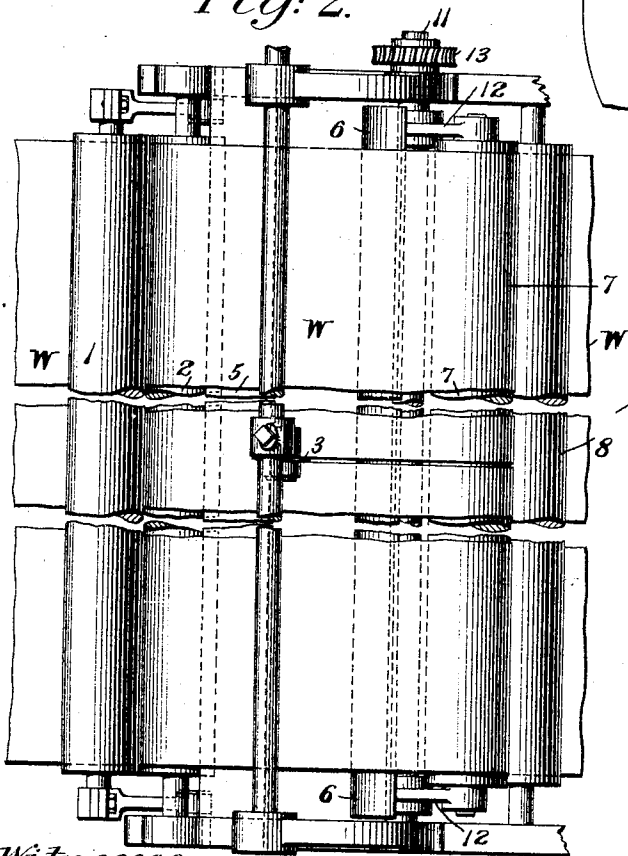
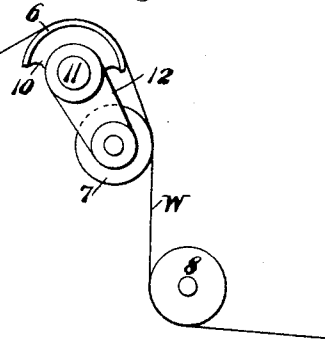


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN PARKER JEFFERIS, OF WILMINGTON, DELAWARE.

WEB TENSION DEVICE FOR WEB-WINDING OR OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 782,909, dated February 21, 1905.

Application filed April 24, 1902. Serial No. 104,459.

To all whom it may concern:

Be it known that I, JOHN PARKER JEFFERIS, a citizen of the United States, residing at Wilmington, county of Newcastle, and State of Delaware, have invented certain new and useful Improvements in Web Tension Devices for Web-Winding or other Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in web tension devices designed particularly for use on drum winding-machines for winding slit or unslit webs into rolls, machines of this character being illustrated, for example, in Letters Patent granted to V. G. Hazard, No. 667,879, to T. H. Savery, No. 667,893, and to myself, No. 674,919.

In drum winding-machines the web passes over suitable guides to a winding mechanism consisting of a pair of winding-drums which by frictional contact with the web wind the web into a roll upon a suitable core upon which the leading end of the web is first wound and which after the winding of the web is completed may be withdrawn from the roll for use in the winding of other webs. In these machines in order to secure smooth and even winding of the web it is necessary to employ tension devices which by frictional engagement with the traveling web will resist its onward movement, and thus maintain the web constantly under tension throughout the winding operation. The paper operated upon by these drum winding-machines varies widely, however, in weight, strength, texture, thickness, and in other particulars, and because of this it is further necessary in order to secure smooth and even winding of the webs that the tension or friction put upon the web should be varied according as the character of the paper thus varies.

It is the object of the present invention to provide for this purpose a tension device having a surface for frictionally engaging the webs, this device being adjustably mounted, so that the position of its surface relatively to the web may be varied within wide limits and with great nicety, so as to cause said sur-

face to offer greater or less resistance to the travel of the web.

In the accompanying drawings, Figure 1 is a side elevation of a combined web slitting and winding apparatus embodying the present invention in its preferred form. Fig. 2 is a plan view of the same, omitting the winding-drums and their connections; and Fig. 3 is a detail in end view of the web tension device.

Referring to said drawings, 1 2 represent a pair of web-guiding rolls for guiding a web W of paper from the usual unwinding mechanism (not shown) or other source of supply, 3 4 a pair of web-slitters, and 5 a web-guiding board or plate for guiding and supporting the web in its way from guiding-roll 2 to the slitters 3 4. The upper slitter 3 is, as shown, adjustably mounted in the frame of the machine, so that it may be swung out of slitting position in case it should not be desired to slit the web. The web (slit or not, as the case may be) passes from the slitters 3 4 over a segment 6 and a guiding-roll 7 and under a guiding-roll 8 and thence to the drums 9 of the winding mechanism. The particular form of winding mechanism shown forms no part of the present invention, being selected merely for illustration, and is the same as that shown and described in the patents to Hazard, No. 667,879, and Savery, No. 667,893, before referred to, to which patents reference is made for a full description of the construction and operation of such winding mechanism.

The tension or friction device constituting the present invention will now be described. It consists, in the embodiment shown in the drawings, of the segment 6, which instead of being fixed, as in prior machines, is pivotally mounted, as presently described, so as to be rotarily adjustable for the purpose of bringing a greater or less portion of its surface into engagement with the web or webs, and thus increasing or decreasing its frictional resistance to the pull or drawing action of the winding-drums 9 upon the web or webs. The segment 6 is provided with end brackets 10, fixed bearings in the frame of the machine when to a shaft 11, free to be turned in suitable

ever it is desired to adjust the segment. To the brackets 10 are rigidly secured radial arms 12, in the outer ends of which is journaled the guiding-roll 7 before referred to, so that as the segment 6 is swung or adjusted upwardly or toward the web the roll 7 is simultaneously swung or adjusted downwardly or away from the web, and vice versa, as shown in Fig. 3.

The manner of using the adjusting device is as follows: As the parts are shown in Fig. 1 there is but little contact between the web and the surface of segment 6, so that the latter offers but little frictional resistance to the web's onward movement. Should the next web to be wound be of different quality, so as to require greater tension in order to secure smooth and even winding thereof, the operator will swing or adjust the segment 6 outwardly or toward the web, and thus bring more of its surface into contact with the web until the segment has reached the point where it offers the proper amount of frictional resistance to the web. As the segment is thus adjusted the guiding-roll 7 is moved with it in the opposite direction or away from the web, as shown in Fig. 3. The surface of segment 6 is preferably concentric to its axis of rotation and is also, as will be observed, of such length as to permit of quite a large range of adjustment, so that the frictional engagement of the segment with the webs may be adjusted with very great nicety.

The segment 6 may be provided with means for adjusting it; but this is not essential. Means suitable for that purpose are shown in the drawings, consisting of a worm-wheel 13 upon shaft 11, which is engaged by a worm 14, mounted in a bracket 15 on the frame of the machine and provided with a squared end 16 for the reception of a wrench.

What I claim is—

1. The combination with mechanism for drawing a web onward, of a tension device having a surface for frictionally engaging and resisting the onward movement of the web, said tension device being rotarily adjustable whereby a greater or less portion of its surface may be brought into engagement with the web, said surface being curved on an arc substantially concentric with the axis of rotation of the tension device, substantially as described.

2. The combination with mechanism for drawing a web onward, of a tension device having a surface for frictionally engaging and resisting the onward movement of the web, said tension device being adjustable toward and from the web whereby a greater or less portion of its surface may be brought into engagement with the web, and a guiding-roller adjustable with said tension device but in the opposite direction, substantially as described.

3. The combination with mechanism for drawing a web onward, of a tension device having a curved surface for frictionally engaging and resisting the onward movement of the web, said tension device having a swinging movement of adjustment whereby a greater or less portion of its surface may be brought into engagement with the web, and a guiding-roller adjustable with said tension device but in the opposite direction, substantially as described.

4. The combination with mechanism for drawing a web onward, of a tension device having a curved surface for frictionally engaging and resisting the onward movement of the web, said tension device being rotarily adjustable whereby a greater or less portion of its surface may be brought into engagement with the web, and a guiding-roller adjustable with said tension device but in the opposite direction, substantially as described.

5. The combination with mechanism for drawing a web onward, of a tension device having a surface for frictionally engaging and resisting the onward movement of the web, said tension device being rotarily adjustable whereby a greater or less portion of its surface may be brought into engagement with the web, said surface being curved on an arc substantially concentric with the axis of rotation of the tension device, and a guiding-roller adjustable with said tension device but in the opposite direction, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN PARKER JEFFERIS.

Witnesses:

VINCENT G. HAZARD,
WILLIAM H. KIRN.

Correction in Letters Patent No. 782,909.

It is hereby certified that in Letters Patent No. 782,909, granted February 21, 1905, upon the application of John Parker Jefferis, of Wilmington, Delaware, for an improvement in "Web Tension Devices for Web-Winding or other Machines," an error appears in the printed specification requiring correction, as follows: On page 1, lines 97 and 98 should be transposed; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of April, A. D., 1905.

[SEAL.]

F. I. ALLEN,
Commissioner of Patents.