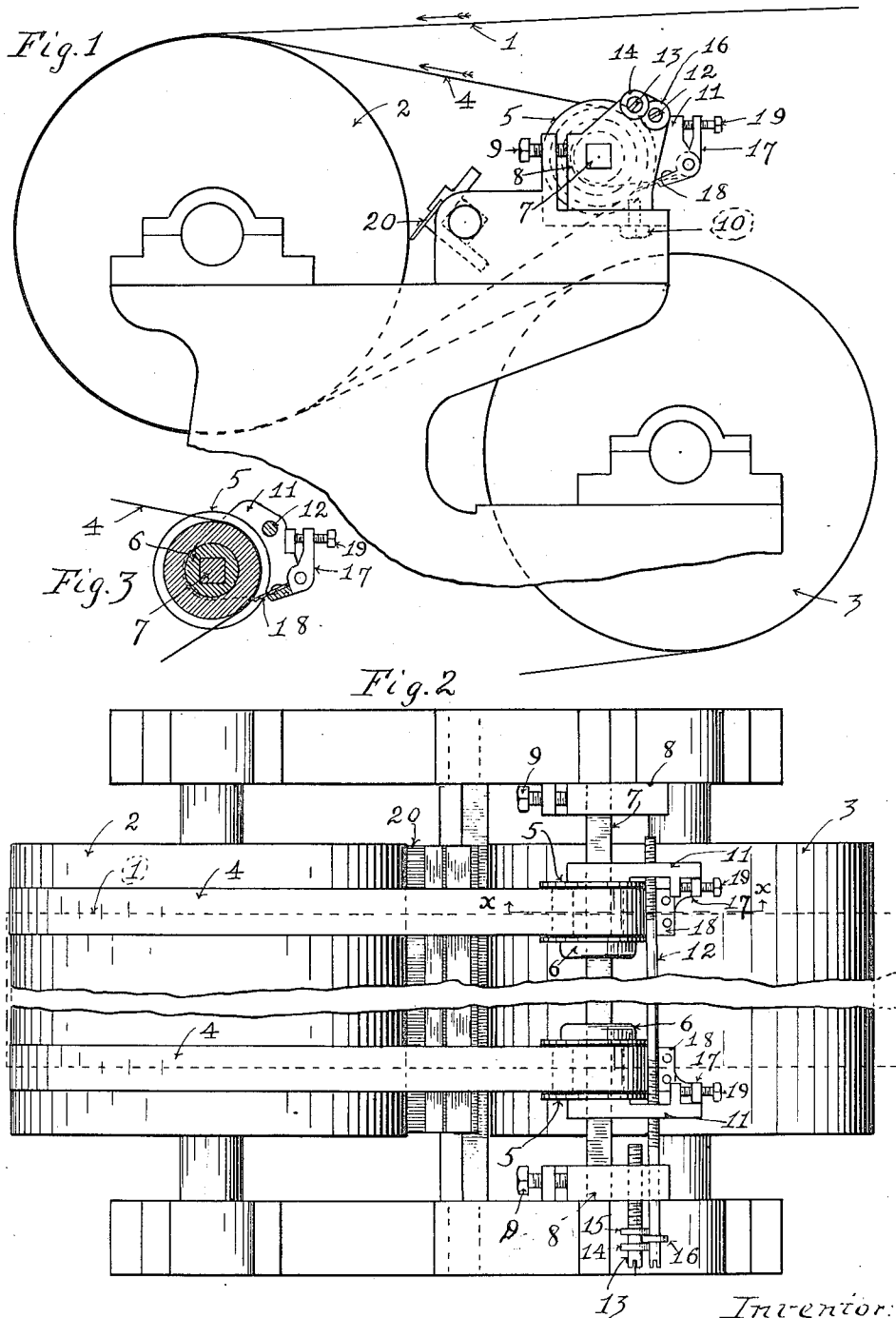


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STRETCHING DEVICE FOR WEB CARRYING ROLLS.  
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1,288,643.

Patented Dec. 24, 1918.



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# UNITED STATES PATENT OFFICE.

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## STRETCHING DEVICE FOR WEB-CARRYING ROLLS.

1,288,643.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, CHARLES W. MAYER, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Stretching Devices for Web-Carrying Rolls, of which the following is a specification.

This invention relates to stretching devices for web-carrying rolls. It is a device for stretching or spreading a web, such as paper or other fabric, transversely to prevent wrinkling or piling as it passes over a calender roll or other roll.

Heretofore, in order to produce lateral or side stretching of paper or other rolled fabric in passing over a roll or rolls to prevent piling up or wrinkling, it has been practice to put tape or thin bands around the roll over which the web passes and positioned to engage partly under the two edges of the web, thus slightly increasing the diameter of the roll at these points. The tendency of a web passing over such a roll or cylinder in rotation is to climb to the greater diameters, and thus stretch the web transversely.

Owing to the fact that webs, such as paper, expand or contract from coating, or heating, or cooling; that no two rolls are exactly alike in regard to the tension across the surface or along either edge; that when such bands are used and the web is coated or impregnated with any substance which may adhere to the roll or bands the same cannot be readily removed; owing to the fact that a roll or web does not run constantly against the roll on the same marginal lines; and owing to the fact that there is not only variation in width of two supposedly identical rolls, but also variation in width of the fabric of a single web or roll from end to end;—owing to these and other well-known conditions, it has been necessary constantly to remove, replace, or adjust such bands heretofore used. It is not uncommon with the use of such bands to lose forty per cent. of an actual day's run in the replacing and adjustment of such bands.

The object of my invention is to provide means for effecting such lateral spreading or stretching which may be adjusted quickly and while the machine is operating to adapt said means to all changing conditions, to be able to adjust the same quickly to webs of

different widths or passing over the roll at different marginal lines; and also to provide means in connection therewith for cleaning both the stretching belts and the roll itself over its entire length.

In the drawings herewith, which show my invention adapted to a roll of a coating machine, which is a typical and illustrative use of my invention,—

Figure 1 is a side elevation.

Fig. 2 is a plan view.

Fig. 3 is a detail section on  $x-x$ , Fig. 2.

The web 1 travels in the direction of the arrow over roll 2 and thence over roll 3. This web is shown in broken or dotted outline in Fig. 2. It will be understood that the web comes from a supply roll and passes to a wind-up roll, and that power means for progressing the web through the machine are provided; also that coating, waxing or other treating means may be employed. Such means are known in the art.

Thin, flexible metal belts 4, 4, engage over the roll 2 and pass around the flanged pulleys 5, 5. These metal belts are the spreading belts and are so positioned that the edges of the web overlap them usually from a quarter to half an inch. The flanges of the pulleys 5, 5, serve not only to maintain established axial position of the belts 4, 4, when so established, but render the shift or adjustment positive whenever said pulleys are moved axially.

The pulleys 5, 5, are rotatably carried on collared bearings 6, 6, which are axially cored square and which are carried axially slidable on the square shaft 7. This shaft 7 is supported in blocks 8, 8, adjustably mounted on the frame of the machine by means of adjusting screws 9, 9 and clamping screws 10, 10. This adjusting means is to regulate the tension of the belts 4, 4.

The collared bearings 6, 6, have arms or extensions 11, 11, and threaded right and left through these arms is a screw-rod 12, which extends outwardly on one side of the machine, is supported in a boring in one of the blocks 8, and has turning means upon its outer end. By turning this screw-rod 12 the bearings 6, 6, are moved axially on the square shaft 7 toward or away from each other, depending on the direction of rotation of the screw-rod, and as the bearings are thus moved the pulleys 5, 5, are likewise

moved and move the belts 4, 4, laterally. Thus the depth or underlap of the belts 4, 4, may be varied to vary the stretching action on the web 1,—the greater the lap the greater the tension or stretching.

Next, in order to adjust the tensioning to both edges of the web to meet the inequalities on the edges, and also to accurately adjust the lap to varying line travel of the web (that is, variation in one roll or variation in one roll following another), I provide the following means: Threaded in a block 8 is a screw 13, which has two collars 14 and 15, which engage either side of a collar 16 on the screw-rod 12. The screw 13 is provided with turning means, and by turning the same the collars 14 and 15 will move the collar 16 axially, and this movement axially of the rod 12 will move both arms 11, 11 axially on the rod 7, and through the bearings 6, 6, and pulleys 5, 5, the belts 4, 4 will be moved simultaneously in the same direction; and as this movement may be in either direction it will be evident that, in addition to the amount of lap produced by rotating the screw-rod 12, adjustment of the lap one side to the other is secured.

Since both of these adjustments may be made, and are in fact made, while the machine is running, not only time is saved, but also both accuracy and variation of the stretching to meet the conditions changing from time to time are attained. And this, of course, results also in reduction of stock loss due to wrinkling or piling where such constant and accurate adjustment is not had.

When wax or other material is used, some of it may adhere to the belts 4, 4. To remove the same I pivot to the arms 11, 11 scraper-arms 17, 17, clearly shown in Fig. 3, and these arms carry scrapers 18, 18 which bear against the belts 4, 4, and remove material adhering thereto. To adjust the scraping action, the scraper-arms 17, 17 have adjusting-screws 19, 19 which, by adjustment against lugs on the arms 11, 11, regulate the pressure of the scraper blades against the belts. Preferably these blades contact only the lap portions of the belts 4, 4 and a little more—the outer portions of the belts being left free from scraper contact to permit eye-letting of the belts.

The improvements now described render it possible to scrape or clean the entire surface of the roll 2. This was not possible with former methods of stretching, because the bands, extending entirely around the roll at the edge positions of the web, permitted scraping and cleaning only between the bands. But by the use of the belts 4, 4, I am able to mount upon the frame of the machine a scraper 20 which occupies a position between the two leads of the belts 4, 4 to the pulleys 5, 5. This scraper is of the usual type, mounted adjustably in the frame

of the machine, and has the usual adjusting means (not shown) for regulating its action against the roll.

I have shown a construction wherein the web is in contact with a large arc of the roll 2. I have found that the stretching mechanism described operates effectively when there is a comparatively small arc contact between the web and the roll.

Having shown a typical application of my invention and without limiting myself to the specific construction or devices employed, what I claim is:—

1. In a device of the type described, the combination with a web-carrying roll around which the web passes, of means for stretching or spreading a web comprising spreading belts on said roll adapted to engage under the edges of a web and pulleys for said belts.

2. In a device of the type described, the combination with a web-carrying roll around which the web passes, of means for stretching or spreading a web comprising spreading belts on said roll adapted to engage under the edges of a web, pulleys for said belts and means for adjusting said pulleys toward any away from each other to vary the amount of lap.

3. In a device of the type described, the combination with a web-carrying roll around which the web passes, of metal belts adjustably engaging over said roll, flanged pulleys for said belts, bearings for said pulleys, a shaft carrying said bearings slidably, arms on said bearings and a right- and left-hand screw-rod engaging said arms to move said pulleys toward and away from each other.

4. In a device of the type described, the combination with the elements of claim 3, of means for adjusting said belts simultaneously in the same direction comprising a screw threaded to a fixed element and engaging with said screw-rod to move the same axially.

5. In a device of the type described, the combination with a web-carrying roll around which the web passes, metal belts engaging thereover, pulleys for said belts and bearings and supports for said pulleys, of scrapers adjustably secured to said supports for removing material adhering to said belts.

6. In a device of the type described, the combination with a web-carrying roll around which the web passes, of means for stretching or spreading a web comprising metal belts on said roll and pulleys engaging said belts, bearings for said pulleys, a shaft carrying said bearings and adjustable blocks carrying said shaft to adjust the tension of said belts.

7. In a device of the type described, the combination with a web-carrying roll around which the web passes, of metal bands on said

roll and pulleys for said bands, mechanism for adjusting said bands to regulate their underlap with the web, scrapers for removing adhering material from said bands and  
5 a scraper positioned between the two reaches of said bands and acting on said roll to remove adhering material.

8. In a device of the type described, the combination with a web-carrying roll around  
10 which the web passes, of metal web-spread-

ing belts on said roll and positioned to underlap a web, pulleys for said belts, means for moving said pulleys axially to regulate the position of said belts, scraping means movable with said pulleys for removing ad- 15 hering material on said belts and a scraper for said roll positioned between the reaches of said belts.

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