

(No Model.)

W. P. MATHER.

CLOTH STRETCHING AND CALENDERING MACHINE.

No. 504,927.

Patented Sept. 12, 1893.

Fig. 1.

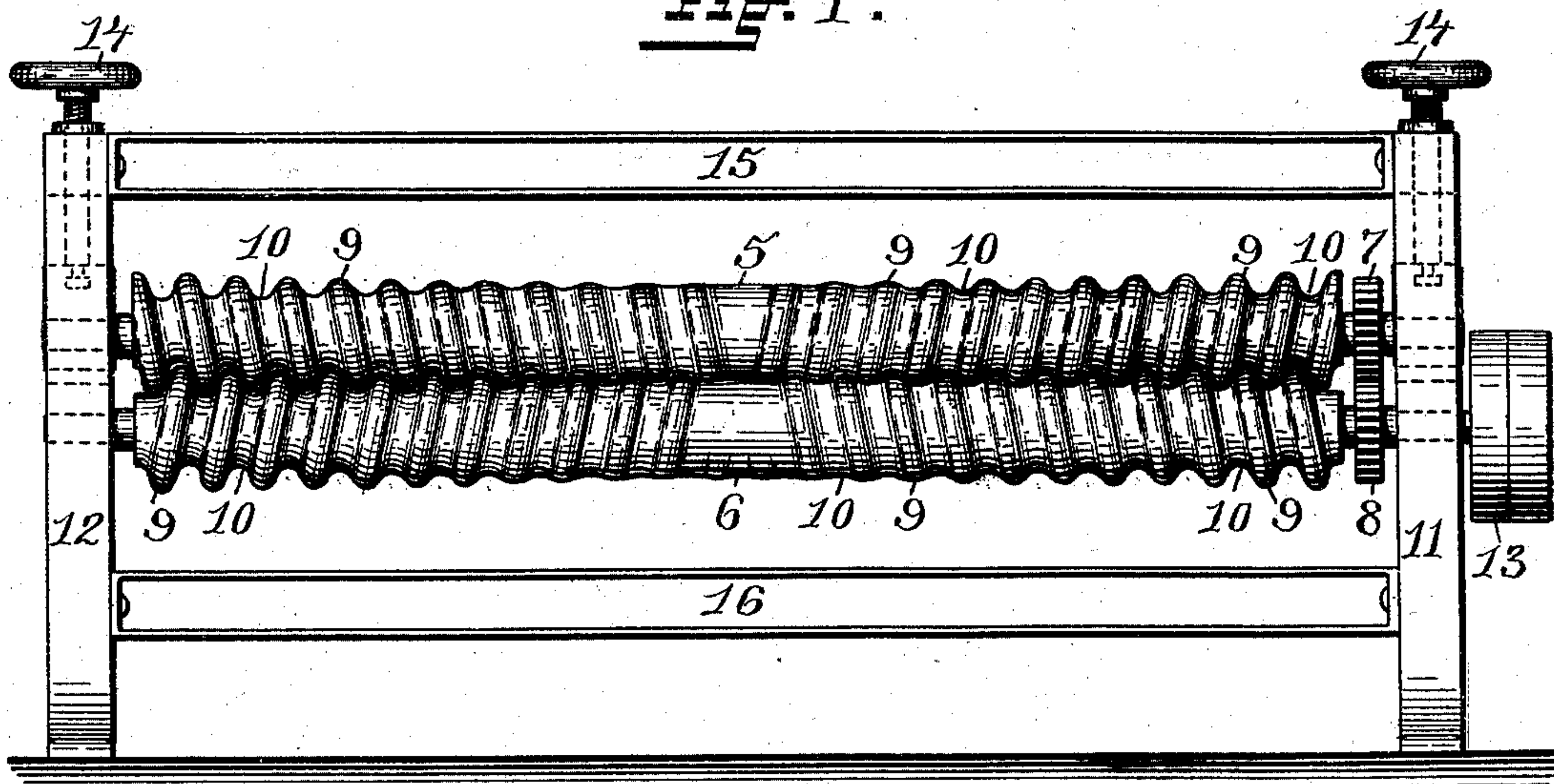
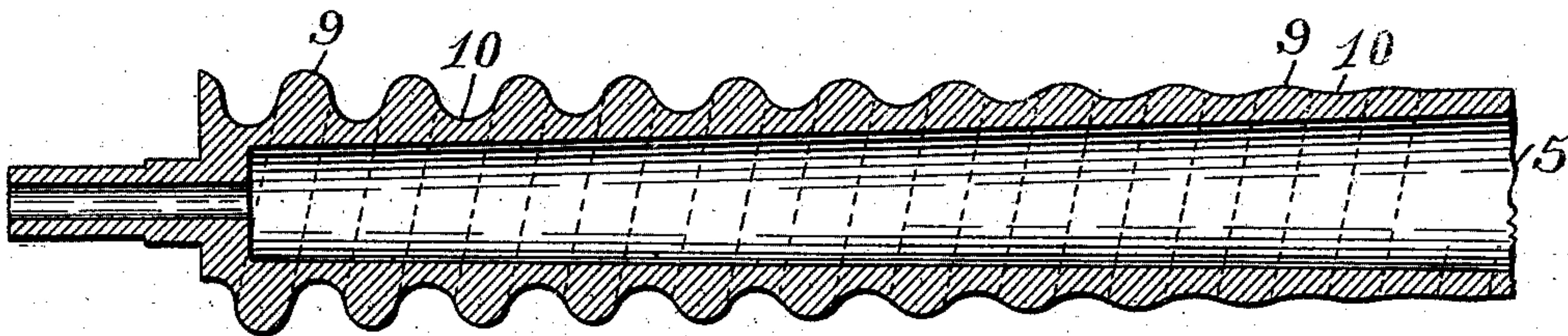


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## CLOTH STRETCHING AND CALENDERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,927, dated September 12, 1893.

Application filed March 20, 1893. Serial No. 466,884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM PENN MATHER, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Cloth Stretching and Calendering Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to improvements in machines for stretching, calendering, or drying, textile material.

One object of the invention is to more thoroughly stretch the material from the center simultaneously toward both edges.

Another object of the invention is to produce a mechanism by which both surfaces of the material are, or may be, calendered, while at the same time the material is stretched outward from the center.

Still another object of the invention is to provide a peculiar cloth-stretching roll by means of which the material may be subjected to the action of heat supplied to the interior of the roll while being stretched or calendered.

The invention consists in the peculiar construction of the rolls and their combination with each other and with driving-mechanisms, as will hereinafter be more fully described and pointed out in the claims.

Figure 1 represents a front elevation of a cloth stretching and calendering machine embodying my invention. Fig. 2 represents an enlarged longitudinal sectional view of a portion of one of the rolls removed from the machine.

Similar numbers of reference designate corresponding parts throughout.

In the manufacture of textile material it becomes necessary to stretch the same to overcome the shrinkage which takes place and to maintain the cloth at the desired width; in calendering and drying it is also desirable that the tendency of movement in the material will be simultaneously outward from the center toward the edges in a corresponding degree. Moreover, it is found that, in calendering, this tendency of side movement, when caused by the rolls themselves, presents the cloth to the action of the calendering-rolls in

longitudinal and slightly diagonal directions and it is thereby subjected to more thorough calendering.

In the drawings 5 and 6 represent two rolls of a stretching or calendering machine of which any number may be used. These rolls are hollow and have tubular shafts to allow of the admission of hot air or steam to the interior of the rolls, one, or both, of the shafts of each roll being furnished with gears 7 and 8 which intermesh. The surfaces of the rolls are arranged in spiral convex ribs 9—9 between the convolutions of which are spiral concave grooves 10—10; beginning at the central portion of the rolls the ribs 9—9 are but slightly raised above the plain surface of the roll, but as these ribs approach the ends thereof they become much more prominent, increasing the diameter of the rolls toward such ends, the grooves 10—10 in like manner extending farther into the surface of the rolls toward the ends and decreasing the diameter of these portions of the rolls toward the ends. The shafts of the rolls are mounted in bearings in the end frames 11 and 12 in such a manner that the ribs 9—9 of one roll enter the grooves 10—10 of its companion and a driving pulley 13 is secured to one of the shafts by means of which rotation is imparted. The bearings for the upper roll are adjustable as in the ordinary calendering machine and pressure is applied either by the screws 14—14 or by levers and weights in the usual manner which is adapted to press the rolls together. The end frames are secured together by the upper and lower braces 15 and 16. It will be apparent that when the cloth to be treated is entered between the rolls near the center thereof, the tendency of the ribs 9—9 will be to draw the edges of the cloth outward, and, as the resistance to such outward movement increases when the cloth begins to be stretched, the convolutions of the ribs become more pronounced and exert a greater strain on the cloth, this strain being governed by the degree of compression between the rolls, this movement also tending to straighten out any wrinkles in the cloth.

When the rolls are used in a calendering or drying machine a supply pipe may be introduced into one of the hollow-shafts and hot

air or steam may be thus supplied to keep the rolls warm in order to dry the cloth as it passes between the same.

Having thus described my invention, I  
5 claim as new and desire to secure by Letters Patent—

1. In a cloth stretching or calendering machine, rolls furnished with spiral ribs extending in opposite directions from the center of  
10 the rolls and increasing the diameter of the rolls toward the ends of the same.

2. In a cloth stretching or calendering machine, rolls having spiral convex ribs extending from the center in opposite directions becoming more prominent toward the ends, and  
15 spiral grooves between the convolutions of

the ribs which gradually reduce the diameter of the roll, between the ribs, toward the ends of the roll.

3. In a cloth stretching and calendering machine, a hollow roll 5 having hollow shafts and provided on its surfaces with ribs 9 and grooves 10 extending in opposite directions from the center, the ribs becoming more prominent toward the ends of the rolls, the  
25 grooves gradually extending farther into the surface of the rolls to reduce the diameter of the same, as described.

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