

N. SIMMONS.

Cloth Stretching Mach.

N^o 13,888.

Patented Dec. 4, 1855.

Fig. 1.

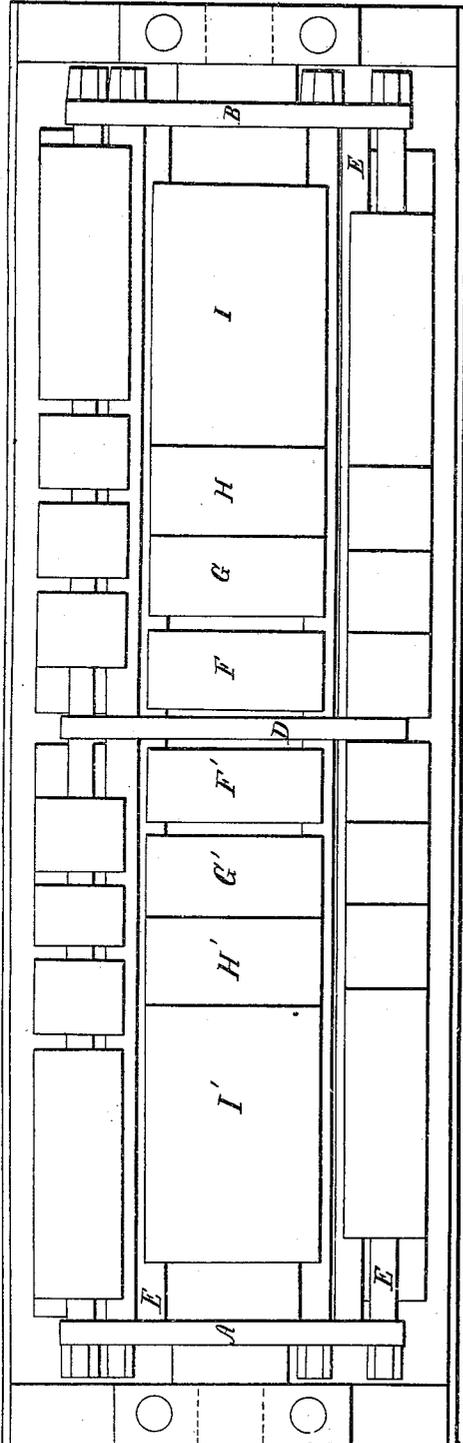
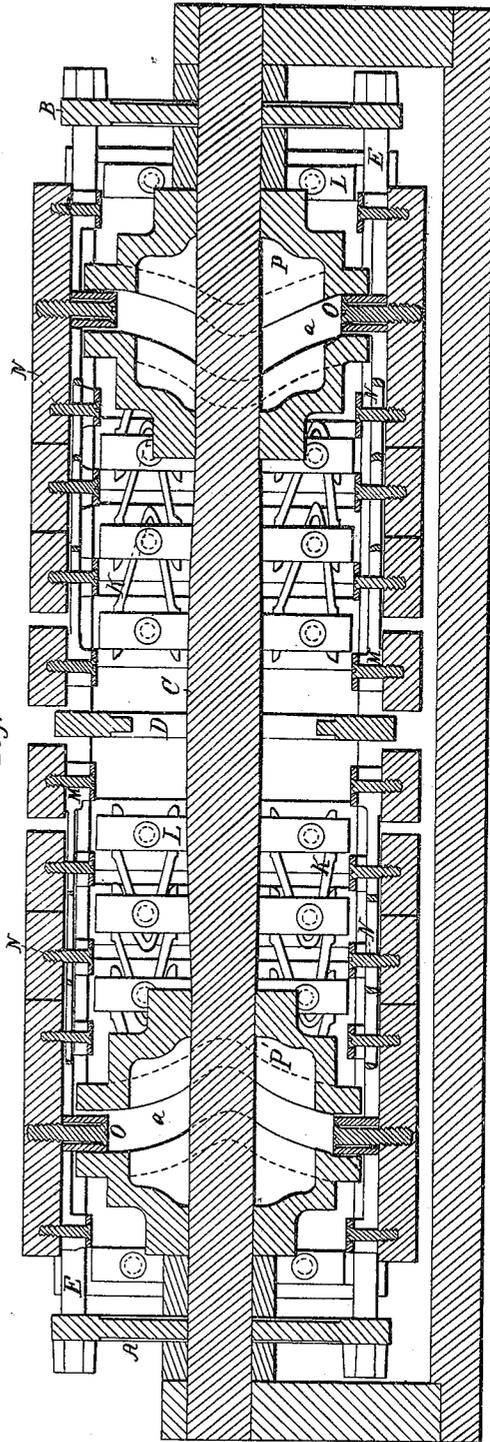


Fig. 2.



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Fig. 3.

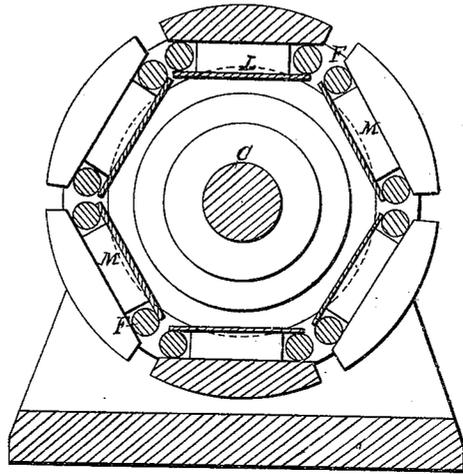


Fig. 4.

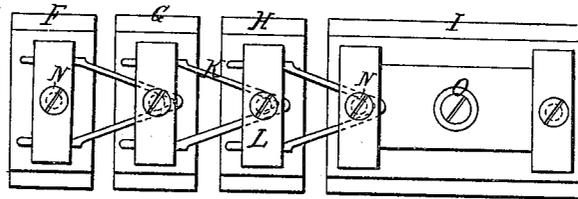
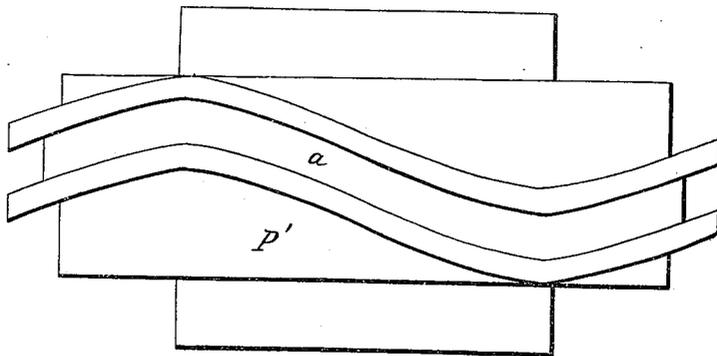


Fig. 5.



UNITED STATES PATENT OFFICE.

NATHAN SIMMONS, OF PROVIDENCE, RHODE ISLAND.

CLOTH-STRETCHING ROLLER.

Specification of Letters Patent No. 13,888, dated December 4, 1855.

To all whom it may concern:

Be it known that I, NATHAN SIMMONS, of Providence, in the county of Providence and State of Rhode Island, have invented an Improvement in Cloth-Stretching Rollers or Cylinders; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, is a top view of one of my improved rollers. Fig. 2, is a vertical and longitudinal section of the same. Fig. 3, a transverse section of it. Fig. 4, is an underside view of one of its trains of stretchers. Fig. 5, is a view of one of its stretcher cams as developed on a plane surface.

In the said drawings, A, and B, are two disks or heads placed at a suitable distance apart and on a fixed or stationary shaft, C, such disks being applied to said shaft, in such manner as to have a free revolution thereon. Through these, and an annulus D, placed midway between them, rods E, E, pass and connect one disk with the other, the same being arranged as seen in Figs. 1, 2 and 3. These rods are arranged parallel to one another and serve to support the stretchers, which slide freely on and between them. The stretchers, which are shown at F, G, H, I, and F' G' H' I', are arranged in trains as seen in the drawings and on opposite sides of the annulus, D, the outer curved surfaces of these stretchers being made rough or smooth as occasion may require. From each stretcher F, G, H, or F', G', H', a staple K extends and passes underneath the next adjacent stretcher as seen in Fig. 4, and between it and a cross bar L, supported by projections M, M, extending downward from the stretcher as seen in Fig. 3. Through the said cross bar and into the stretcher a screw N, passes and thereby shackles or connects one stretcher with the other. The length of each of the staples should be such as to permit each two stretchers connected by it, to be moved a short distance apart from one another, before the vertex of the angle of the staple of one stretcher is brought up against the screw of the other stretcher. From the underside of the outer stretcher (I, or, I') of each train of stretchers, a stud or friction roller, O, is made to extend and pass into the groove, a, of one of two cams P, P', arranged and fixed upon the stationary shaft, C, as seen in the drawings. The groove of

each of the cams P, P', should be so formed that not only during a half revolution of the stretching roller it shall move the stretcher, I, or, I', in a direction parallel to the axis of the roller and away from the annulus, D, but during the succeeding half revolution of said roller, it shall move the said stretcher in an opposite direction or toward the said annulus and with a like degree or extent of motion. Thus it will be seen that each two sets or trains in line with each other, are first moved in directions away from one another, and next in directions toward one another, and that by the movement of their outer stretchers, I, or I', the several stretchers of each train will be moved consecutively, that is to say, after the outer stretcher I, or, I', has been moved by its cam a short distance, it will act upon and draw after it, its rear stretcher, H, or H', which after being moved a short distance, will in like manner act upon and draw after it, the next stretcher G, or, G', and such stretcher G, or G', will also in like manner after being moved a short distance draw after it and put in motion its next stretcher, F, or F'. Thus during a half revolution of the stretching roller, the stretchers of each train of it will be moved consecutively in a direction away from the annulus or middle of the roller. During the next half revolution of the roller, the stretchers of each train will be similarly moved so as to close them together their movements, however, being in the opposite direction or toward the annulus. The effect of such consecutive stretching movements of the stretchers, when a piece of cloth is strained over and moved across the upper surface of the roller is to stretch the cloth widthwise, in a manner very similar to what would take place were it taken hold of at the selvages and pulled in opposite directions. The first strain or draft is on the selvage and is followed by consecutive strains acting in a direction away from the middle of the cloth and to strain the cloth between the middle of it and each stretcher in action upon it. This operation of the stretchers upon the cloth differs materially from that of a roller, whose curved surface is provided with screws in opposite directions from its middle, for in this latter case the stretching mechanism operates simultaneously on the whole width of surface exposed. Every portion of cloth in contact

with the stretcher is moved at a like velocity. Consequently, the cloth is generally strained mostly, in its middle, the strain being so great there as frequently to tear it.
5 Besides this, screens are apt to cut or wear off the nap of the cloth, more or less. With my improved roller there is no such action upon the cloth, it being stretched by a series of consecutive strains, each stretcher
10 drawing it or causing it to slip over the others in rear of it while they are at rest relatively to it.

I claim—

15 My improvement in the cloth stretching roller or cylinder, the same consisting in

imparting to its sectional stretchers, while the roller is in revolution, consecutive movements in one direction or away from the middle of the roller in the order as described and by mechanism substantially as
20 specified or any mechanical equivalent therefor.

In testimony whereof, I have hereunto set my signature, this seventh day of November A. D. 1855.

NATHAN SIMMONS.

Witnesses:

NATHAN A. COOK,
GEO. L. SAYLES.