

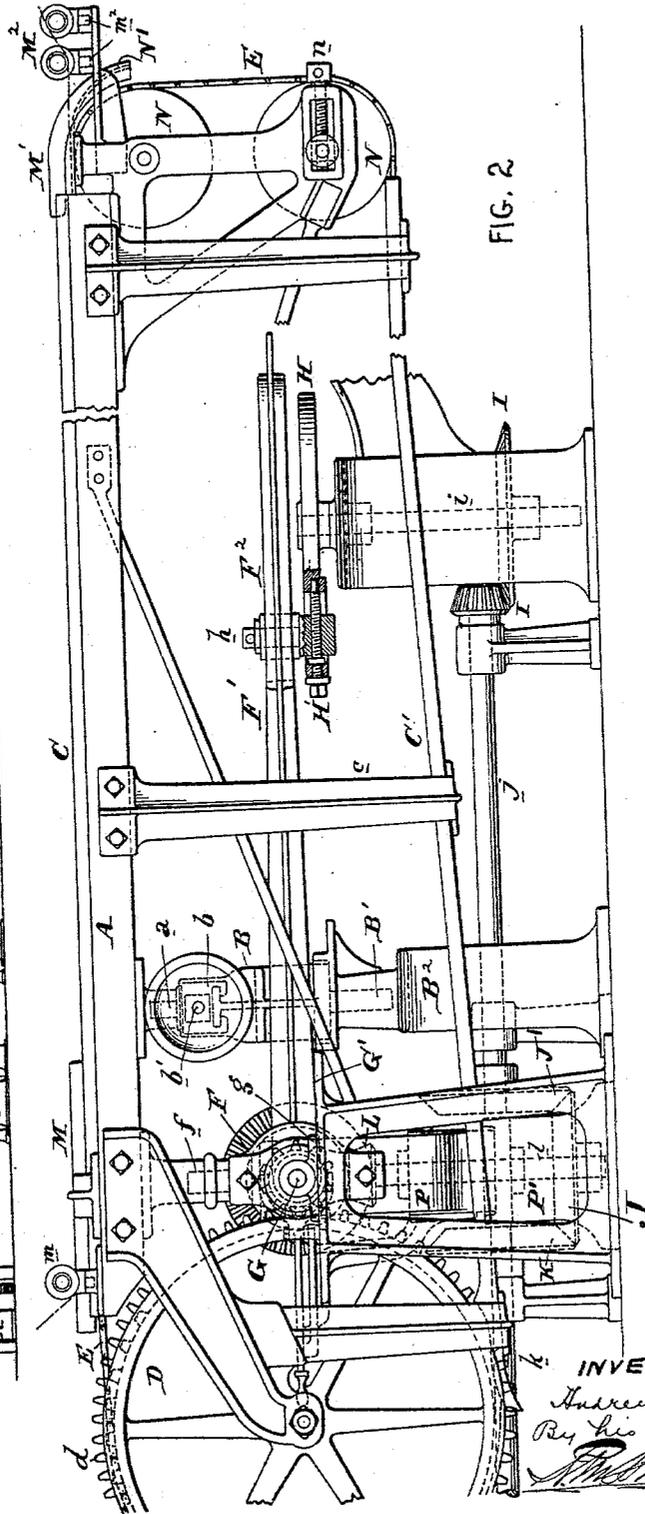
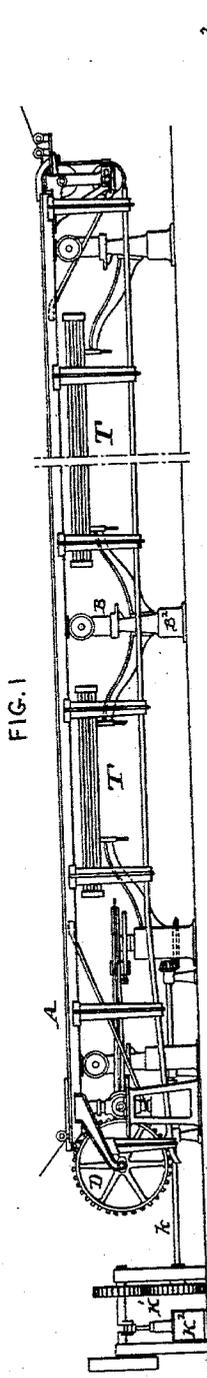
(No Model.)

3 Sheets—Sheet 1.

A. McLEAN.  
TEXTILE TENTERING MACHINE.

No. 569,763.

Patented Oct. 20, 1896.



WITNESSES:  
*Samuel Dwyer*  
*Thos. L. Evans*

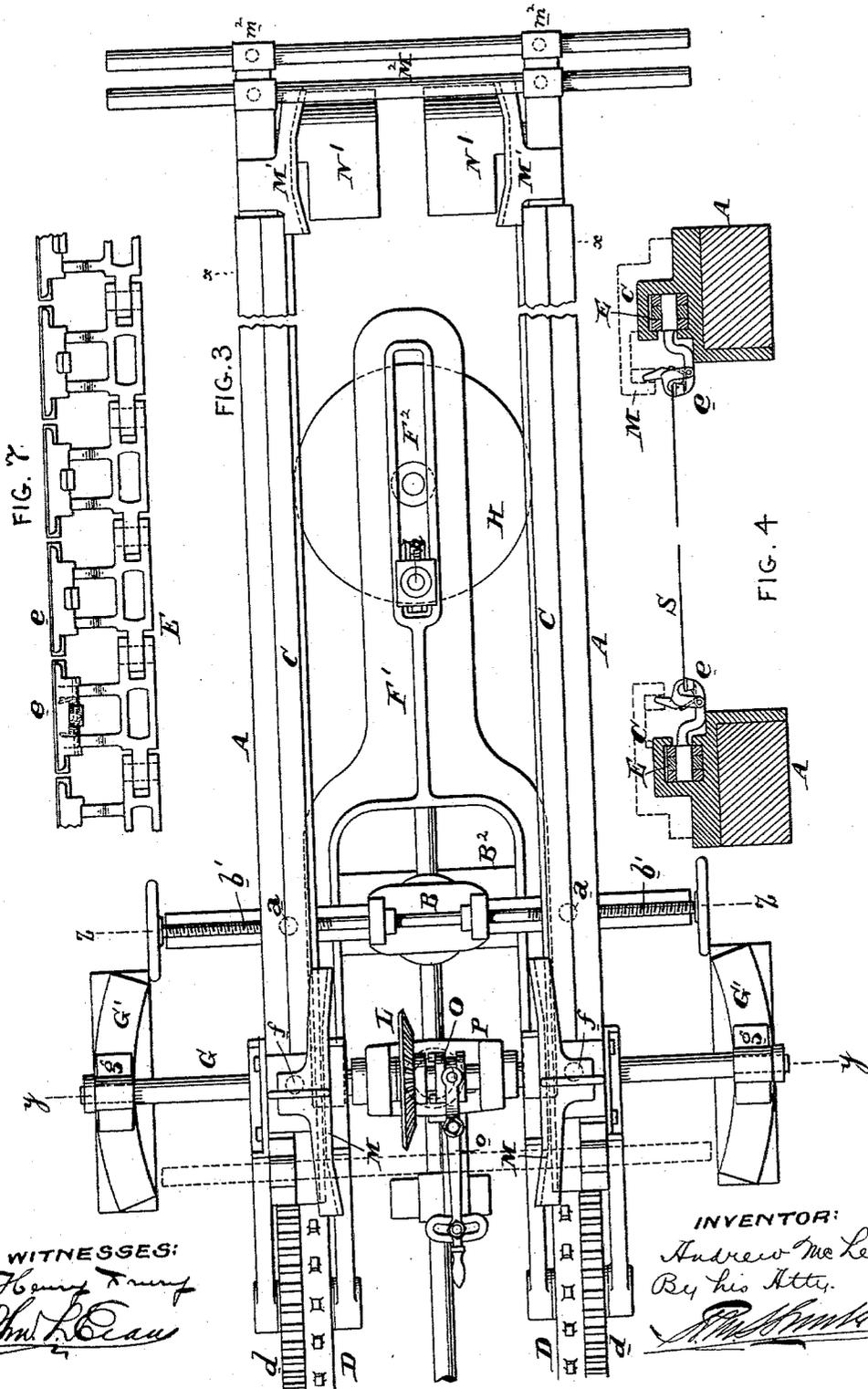
INVENTOR:  
*Andrew McLean*  
 By his Atty.  
*[Signature]*

(No Model.)

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WITNESSES:  
*Henry T. ...*  
*John L. ...*

INVENTOR:  
*Andrew McLean*  
 By his Atty.  
*[Signature]*

(No Model.)

3 Sheets—Sheet 3.

A. McLEAN.  
TEXTILE TENTERING MACHINE.

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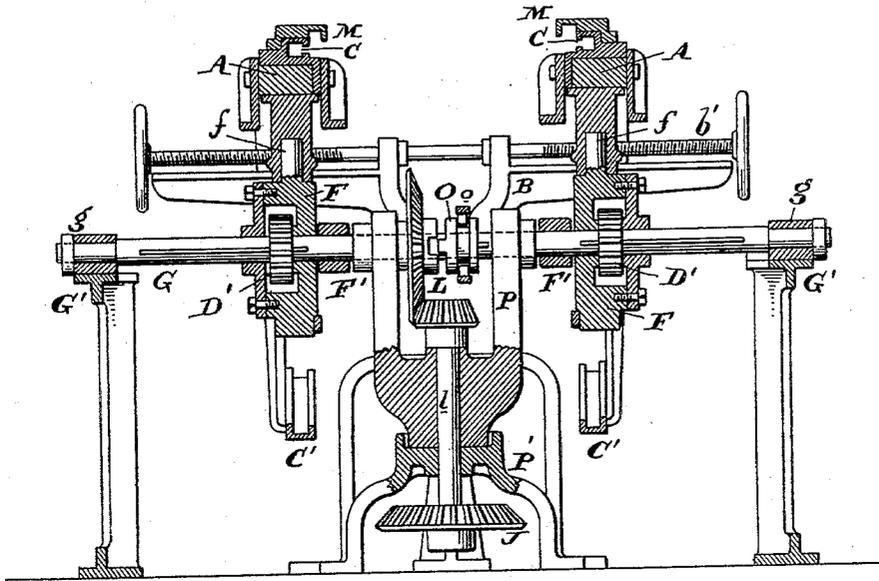


FIG. 5

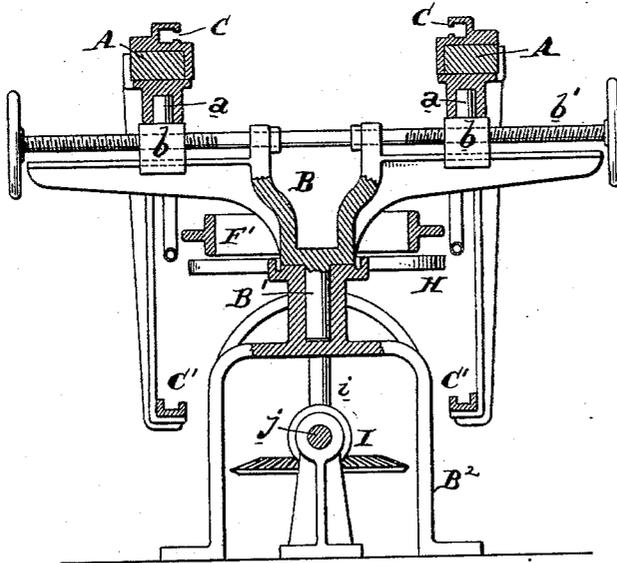


FIG. 6

WITNESSES:

*Henry Dwyer*  
*Wm. L. Deane*

INVENTOR:

*Andrew McLean*  
 By his Attor.  
*[Signature]*

# UNITED STATES PATENT OFFICE.

ANDREW McLEAN, OF PASSAIC, NEW JERSEY, ASSIGNOR TO THE H. W.  
BUTTERWORTH & SONS COMPANY, OF PENNSYLVANIA.

## TEXTILE-TENTERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,763, dated October 20, 1896.

Application filed June 21, 1895. Serial No. 553,598. (No model.)

To all whom it may concern:

Be it known that I, ANDREW McLEAN, of the city and county of Passaic, State of New Jersey, have invented an Improvement in Textile-Tentering Machines, of which the following is a specification.

My invention has reference to tentering-machines for treating textile fabrics; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

Heretofore tentering-machines have been made with two endless chains of pins or clamps combined with mechanism for reciprocating said chains bodily simultaneously in opposite directions and at the same time moving them toward or from each other, so as to stretch the fabric on the diagonal while feeding it forward.

My invention relates to improvements on this class of machines and comprehends certain features of construction specially designed with the object of reducing the space required for the operation of the machine and increasing its facility of operation.

In carrying out my invention I combine the transverse rocking shaft (which is pivoted to the reciprocating guides for the chains) with a lever journaled to the end of said shaft and a crank device for rocking or oscillating the said lever horizontally, and I prefer to arrange the said lever and crank in the space between the reciprocating guides for the chains and clamps.

My invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a tentering-machine embodying my invention. Fig. 2 is an enlarged side elevation of the same with all the intermediate portion removed. Fig. 3 is a plan view of Fig. 2. Fig. 4 is a cross-section on the line *xx* of Fig. 3 with the conveying-chains shown in position and holding the fabric. Fig. 5 is a sectional elevation on the line *yy* of Fig. 2. Fig. 6 is a sectional elevation on the line *zz* of Fig. 2, and Fig. 7 is a plan view of a portion of the conveying-chains.

A A are two longitudinal side frames hav-

ing chain-guides C formed thereon in any suitable manner. These frames are supported upon the vertical pivots *af*, there being a large number of pivots *a* arranged at intervals apart and varying in number according to the length of the machine. The pivots *a* are carried by sliding blocks *b*, guided upon a transverse frame B, as clearly shown in Fig. 6. The blocks *b* are adjustable to or from each other by the right and left hand screw-threaded shaft *b'*, the said adjustment being intended to suit fabrics of different widths. The frame is pivoted upon a vertical axis at B', the journal of said axle being formed in a pedestal B<sup>2</sup>, resting upon the floor. By employment of these devices any longitudinal movement to one of the frames A imparts an opposite longitudinal movement to the other frame. It will also be seen that as these frames reciprocate they also approach and recede from each other. Each of the frames is provided with downwardly-extending arms *c*, which carry at their lower ends grooved guides C'. Chains E, provided with a series of clamps *e*, are arranged to travel in the guides C C' of these side frames. The said chains are guided at one end of the machine over the guide-wheels N and at the other end over the guide sprocket-wheels D, which latter are also provided with gears *d*, by which they are driven. These several guide-wheels are half carried with one of the frames A and the remaining half with the other frame, so that they move independently.

The clamps *e* are clearly shown in Figs. 4 and 7 and are adapted to clamp the edge of the fabric S by spring action, and are provided with upwardly-extending portions adapted to come into contact with the cams M M' upon the frames A. The cams M M' are so shaped as to open the clamps and enable them to be brought into position relatively to the edges of the fabric, so that when they are released the springs will snap them down upon the fabric to hold it. The fabric is fed between the two rollers M<sup>2</sup> at one end of the machine adjacent to the cams M' and over curved guides N', the said rollers being supported in bearings M<sup>3</sup>, having vertical pivots, so as not to interfere with the reciprocating

motion of the frames A. After the fabric has been received by the clamps it is fed along the machine until the clamps reach the cams M at the opposite end of the machine, these  
 5 cams operating upon the upwardly-projecting portions of the clamps, as indicated in dotted lines in Fig. 4, and causing the clamps to open to release the fabric, which fabric is then guided upwardly from under a roller *m*  
 10 of similar construction to the rollers M<sup>2</sup>.

T represents drying steam-coils and are arranged at a level below that of the fabric when traveling in the machine, so as to cause the same to be dried while being subjected  
 15 to the tentering or stretching operation.

G is a transverse shaft adjacent to the sprocket-wheels D and carries the pinions D', which mesh with the gears upon the wheels D and by which the latter receive their motion.  
 20 These pinions are clearly shown in Fig. 5. The shaft G is journaled in sliding bearings *g* at each end, which bearings rest upon curved guide-pedestals G' to insure the said shaft remaining horizontal and cause it  
 25 to move with a steady action. The shaft is also journaled near its middle in a frame P, which is provided with a vertical axis, about which it oscillates, and is supported by a fixed pedestal P'. Loosely journaled upon  
 30 the shaft G near its middle is the larger of a pair of bevel-gears L, the said gear being thrown into and out of action with the shaft by means of a clutch O and lever *o* to control the feeding of the fabric through the  
 35 machine. The smaller of the bevel-gears L is secured to a vertical shaft *l*, which is rotated by bevel-gears J and K, the latter being driven by shaft K, gearing K', and a steam-engine or other motive power K<sup>2</sup>. The bevel-  
 40 gear J also meshes with a bevel-gear J', which in turn drives a shaft *j*, and this operates a pair of bevel-gears I and thereby rotates a vertical shaft *i* and a crank-head H. The crank-pin *h* of this crank is made adjustable  
 45 to or from the center of the crank-head by means of a screw H', Fig. 2, to vary the throw of the crank. The crank operates in a slot F<sup>2</sup> in the free end of the frame F'. The said arm F' is journaled upon the shaft G in such  
 50 a manner that any lateral rocking of the arm F' will cause a corresponding horizontal oscillation of the shaft G. The shaft G is also provided with frames F, which contain the pinions D' and insure their proper lateral ad-  
 55 justment, and also carries the vertical pivots *f*, through which the reciprocating longitudinal movement is imparted to the side frames. By rocking the arm F' horizontally it is evident that the shaft G will, through the frames  
 60 F and the pivots *f*, cause one of the longitudinal frames A to be moved in one direction simultaneously with the movement of the other frame in the opposite direction, and vice versa. The extent of this movement will  
 65 vary with a given crank-throw with every increase of the distance between the two side frames A A. It may also be varied by the

adjustment of the crank-pin *h*. It is evident that by the proper adjustment of this crank-pin any degree of relative reciprocating motion may be secured that is desired to suit  
 70 the particular fabrics under treatment.

The operation of the machine in acting upon the fabric is such that the fabric is being constantly pulled on the diagonal, first in one di-  
 75 rection and then in the other, and at the same time being stretched and loosened laterally to give an elastic finish. The operation which thus takes place during the drying of the fabric imparts in addition to a diagonal action,  
 80 which imparts an elastic finish, what is technically termed "tentering." In machines of this class great trouble has been experienced from the excessive width of the machines and consequent great floor-space which was nec-  
 85 essary.

By my improvements I have condensed the apparatus to the smallest space possible.

I do not confine myself to the mere details of construction, as they may be modified in  
 90 various ways without departing from the principles of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a tentering-machine, the combination  
 95 of two longitudinal reciprocating frames each provided with conveying devices for holding and stretching the fabric arranged between them, supports arranged at intervals for the said longitudinal frames whereby they are  
 100 permitted to reciprocate and at the same time move to and from each other, sprocket-wheels for operating the conveyers carried upon the respective frames, gearing for operating the sprocket-wheels, a transverse driving-shaft  
 105 for operating the gearing, gearing and shafts for operating the driving-shaft, a vertical pivot for the transverse driving-shaft arranged intermediate of the two longitudinal frames and adapted to oscillate about a ver-  
 110 tical axis, an oscillating arm movable about the vertical axis of the driving-shaft and having journals upon each side and at a distance from the vertical axis so as to receive the horizontal driving-shaft to oscillate it while  
 115 it rotates, a crank adapted to oscillate the said arm, and adjustable power-transmitting devices between the sprocket-wheels and driving-shaft.

2. In a tentering-machine, the combination  
 120 of two longitudinal reciprocating frames each provided with conveying devices for holding and stretching the fabric arranged between them, supports arranged at intervals for the said longitudinal frames whereby they are  
 125 permitted to reciprocate and at the same time move to and from each other, sprocket-wheels for operating the conveyers carried upon the respective frames, gearing for operating the sprocket-wheels, a transverse driving-shaft  
 130 for operating the gearing, gearing and shafts for operating the driving-shaft, a vertical pivot or axis for the transverse driving-shaft arranged intermediate of the two longitudi-

nal frames, an oscillating arm having widely-separated bearings in which is journaled the horizontal driving-shaft so that the power is applied upon each side of its vertical pivot, and a crank adapted to oscillate the said arm.

3. In a tentering-machine, the combination of two side guides, supports or frames therefor to enable them to be reciprocated simultaneously in opposite directions, conveying devices carried upon the said frames for conveying the fabric through the machine while being treated, an oscillating or rocking arm arranged between the two frames, a crank to oscillate or rock the said arm, power devices to operate the crank, bearings carried by the said oscillating or rocking arm on each side of its axis of oscillation and close to a vertical plane through the respective reciprocating frames, journals in said bearings connected with the said frames, and adjustable connections between the oscillating arms and frames.

4. In a tentering-machine, the combination of two longitudinal reciprocating frames each

provided with conveying devices for holding and stretching the fabric arranged between them, supports arranged at intervals for the said longitudinal frames whereby they are permitted to reciprocate and at the same time move to and from each other, sprocket-wheels for operating the conveyers carried upon the respective frames, gearing for operating the sprocket-wheels, a transverse driving-shaft for operating the gearing, gearing and shafts for operating the driving-shaft, a pivoted support for the oscillating driving-shaft, an oscillating arm journaled upon the driving-shaft upon each side of its vertical axis and supported thereby, and power devices for oscillating the oscillating arm arranged between the longitudinal frames.

In testimony of which invention I hereunto set my hand.

ANDREW McLEAN.

Witnesses:

L. A. WILLIAMS,  
JAMES M. STRACHAN.