

(No Model.)

R. M. HUNTER.
TENTERING MACHINE.

No. 568,349.

Patented Sept. 29, 1896.

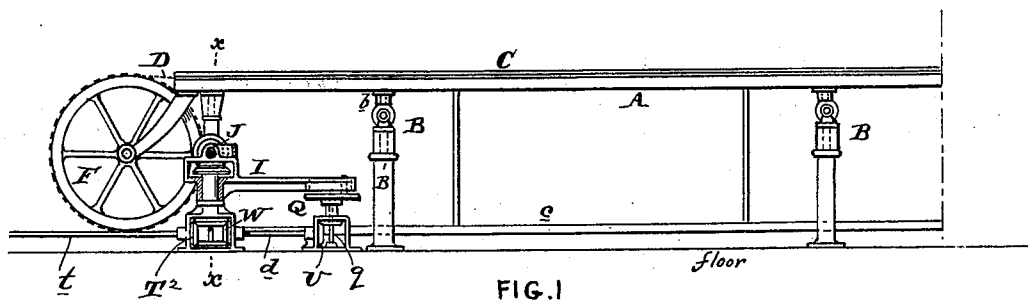


FIG. 1

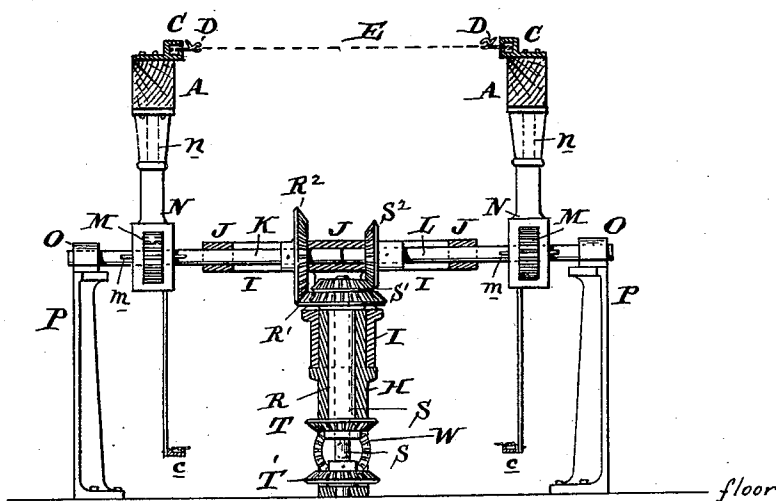


FIG. 2

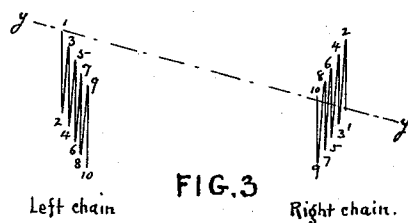


FIG. 3

Attest
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RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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TENTERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 568,349, dated September 29, 1896.

Application filed February 12, 1896. Serial No. 578,989. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in 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 conveyers of pins or clamps, combined with mechanism for reciprocating said conveyers longitudinally bodily simultaneously in opposite directions, and at the same time moving them toward or from each other while they are being driven, so as to stretch the fabric on the diagonal while feeding it forward. Such class of machines is clearly disclosed, for example, in Patent No. 237,225, dated February 1, 1881, to C. P. Wood. It has been customary, as is clearly disclosed in said patent, to connect the driving-shaft and both of the pinions which rotate the large sprocket-wheels of the endless conveyers or clamps with a vertical operating-shaft by means of bevel-gears, the vertical shaft being pivoted so that its vertical axis passes through the axis of oscillation of the driving-shaft and pinions. The objection to this construction has been that while the total forward movements of the chains or clamps on each side are the same the movements of said chains are relatively irregular, that is to say, the forward feeding of the left-hand chain on the backward reciprocation would be materially greater than the corresponding movement of the chain upon the right-hand frame; and, inversely, the forward movement of the left-hand chain would be materially less in its forward reciprocation than the corresponding movement of the right-hand chain. The object of my invention is to overcome these defects by making the feeding movement of the two chains of clamps or conveyers absolutely uniform, so that they operate upon each side of the fabric in exactly the same manner and to the same extent.

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

Figure 1 is a longitudinal sectional elevation through one end of a tentering-machine embodying my improvements. Fig. 2 is a transverse section of same on line *xx*, and Fig. 3 is a diagram illustrating the uniformity of the movements of the two chains.

A A are longitudinal side frames having chain-guides C formed thereon in any suitable manner. These longitudinal frames are supported upon transverse arms B by pivots *b*, and said transverse arms are pivoted upon pedestals B' in any of the well-known manners, so that when one of said frames advances the other recedes, and vice versa.

F is a large sprocket-wheel, about which the endless conveyer or chain B works, the said chain being guided in guides C and fed by means of the sprocket-wheel F. Each of the longitudinal frames is provided with a similar sprocket-wheel and chain in the well-known manner. In the return the chain may pass through grooved guides *c*, arranged close to the floor and moving with frames A. The chains D are provided with clamps or pins, as is customary.

The sprocket-wheels F are driven by means of pinions M M, which are respectively supported upon shafts K L and made to rotate positively therewith by means of feathers or splines *m*, while being permitted to slide longitudinally thereon. The said shafts K L are journaled in bearings J, so as to be held in line and oscillated as a unit, and the outer ends of the respective shafts are also journaled in sliding blocks O, adapted to move upon the guiding-pedestals P, though this latter construction is not absolutely necessary. The bearings J are formed in the frame I, which is journaled upon a central pedestal H, securely bolted to the floor. The said frame I is oscillated upon the pedestal H by means of a crank Q, which may be driven in any suitable manner. The pinions M are held in substantially vertical alinement with the longitudinal frames by means of inclosing boxes N, which are pivoted upon vertical pivots *n* to the longitudinal frames and are the direct means of reciprocating them. It will be evi-

dent that if the frame I be oscillated the shafts K L also oscillate therewith and through the media of the boxes N cause the longitudinal frames A A to be reciprocated back and forth.

5 During this reciprocation the frames A are caused to move toward and from each other, as is well known, by means of the transverse pivot-frames B.

In the vertical pedestal H, I arrange two
10 shafts R and S, journaled concentrically to the pivot-bearing of frame I, and at the upper end of shaft S, I secure a bevel-gear S', which meshes with a similar bevel-gear S² upon the shaft L. Upon the upper end of the outer or
15 tubular shaft R, I secure a bevel-gear R', which meshes with a similar bevel-gear R² upon the shaft K. It is desirable that the relation between the bevel-gears S' and S² shall correspond to the relation between the
20 bevel-gears R' and R². The lower ends of the shafts R and S are respectively provided with bevel-gears T and T', arranged to face each other and mechanically connected by a driving bevel-gear T² upon the power-shaft t. It
25 will now be observed that by rotating the shaft t the gears T and T' will rotate the shafts R and S in opposite directions, and this will cause the shafts K and L to rotate in the same direction and at the same speeds.

30 It is of course evident that if the gears T and T' are of different sizes or driven at different rates of speed by the power devices the relative proportions between the gears S' and S² and R' R² will be modified, the essential
35 point being to so arrange the gears that the separate shafts K and L, which drive the pinions M M, will always rotate at the same rates of speed or numbers of rotations and in the same directions.

40 Geared with the bevel-gears T and T' is a bevel-gear W, which, by means of the shaft d, drives the vertical shaft q of the crank Q by means of the power or miter gears V. This enables all of the parts to be driven from the
45 same power-shaft t. It will further be observed that by this construction great simplicity is secured and no expensive machine-work is required.

It will be seen that as the shafts R and S,
50 together with their gears R' and S', constantly rotate in one direction, and with a uniform speed, the oscillation of the frame I will so move the shafts K L that when the frames A A move backward the speed of the chains
55 is greater than when they moved forward, but this change of speed is exactly the same for each one of the two chains, and consequently the effect or action of said chains or conveyers upon both edges of the fabric is
60 exactly the same. In the construction of the machine as heretofore made, and an example of which is shown in the patent before referred to as illustrating the state of the art, the chains moved more rapidly for the back-
65 ward movement of one of the longitudinal frames than for the backward movement of the other longitudinal frame, and inversely

the said chains of the first-mentioned longitudinal frame moved more slowly in the forward movement thereof than the corresponding chain of the other longitudinal frame in its forward movement. In my improved construction these irregularities are entirely eliminated, and the operation upon the chains or conveyers is identically the same with both
75 longitudinal frames both in their backward and in their forward movements, and hence the action upon the fabric is uniform upon both edges and to the same extent.

The diagram, Fig. 3, illustrates the action
80 of the movement of the conveying-chains of my improved machine, assuming the line y y to be in line with corresponding clamps of the two chains. The first position is indicated at 1 1, the second position would be indicated at 2 2, the third at 3 3, and so on. It
85 will be perceived that the advances between the terminals of any reciprocation, such as between 1 and 3, 3 and 5, 2 and 4, &c., will be uniform and equal, and hence is exactly
90 the same both for the left and right chains.

While I prefer the construction shown, I do not confine myself to the minor details thereof, as they may be modified without departing from my invention.

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

1. In a tentering-machine, the combination of two longitudinal reciprocating frames provided with conveyer or chain guides, means
100 for reciprocating the frames, an endless chain or conveyer for the fabric carried by each of said frames, a driving sprocket or chain wheel for and moving with each of the longitudinal frames, pinions for driving the respective sprocket or chain wheels, two shafts
105 for driving said pinions independently, means for rotating the shafts, a pedestal forming a vertical axis of oscillation for said pinion-shafts, vertical concentric shafts extending
110 through the pedestal, bevel-gears R' S' respectively secured to the concentric shafts, and gears R² S² on opposite sides of the center of the pedestal and concentric shafts respectively connected with the pinion-shafts.

2. In a tentering-machine, the combination of two longitudinal reciprocating frames provided with conveyer or chain guides, an endless chain or conveyer for the fabric carried
120 by each of said frames, a driving sprocket or chain wheel for and moving with each of the longitudinal frames, pinions for driving the respective sprocket or chain wheels, two shafts for driving said pinions independently, means for oscillating said shafts upon a vertical axis
125 intermediate of the pinions and reciprocating the longitudinal frames, a power-shaft, and connecting-gearing between said power-shaft and the two pinion-shafts consisting of two vertical concentric shafts respectively con-
130 nected at their top ends with the respective pinion-shafts by bevel-gears on opposite sides of said concentric shafts, and at the bottom ends by gears with the power-shaft.

3. In a tentering-machine, the combination
of two longitudinal reciprocating frames pro-
vided with conveyer or chain guides, an end-
less chain or conveyer for the fabric carried
5 by each of said frames, a driving sprocket or
chain wheel for and moving with each of the
longitudinal frames, pinions for driving the
respective sprocket or chain wheels, two
shafts for driving said pinions independently,
10 means consisting of a pedestal and a frame
pivoted thereto intermediate of the pinions
and having bearings for the pinion-shafts,
connections whereby the oscillations of the
pivoted frame shall reciprocate the longitu-
15 dinal frames and their chains or conveyers,

a power-shaft, a crank operated by the power-
shaft for oscillating the pivoted frame, and
independent gearing connecting the power-
shaft with the two independent pinion-shafts
upon opposite sides of the pedestal and axis 20
of oscillation of said pinion-shafts whereby
they are caused to rotate at the same variable
speeds.

In testimony of which invention I have
hereunto set my hand.

R. M. HUNTER.

Witnesses:

ERNEST HOWARD HUNTER,
WM. L. EVANS.