

(No Model.)

5 Sheets—Sheet 1.

J. M. CHARNOCK.
LEATHER STRETCHING MACHINE.

No. 501,920.

Patented July 25, 1893.

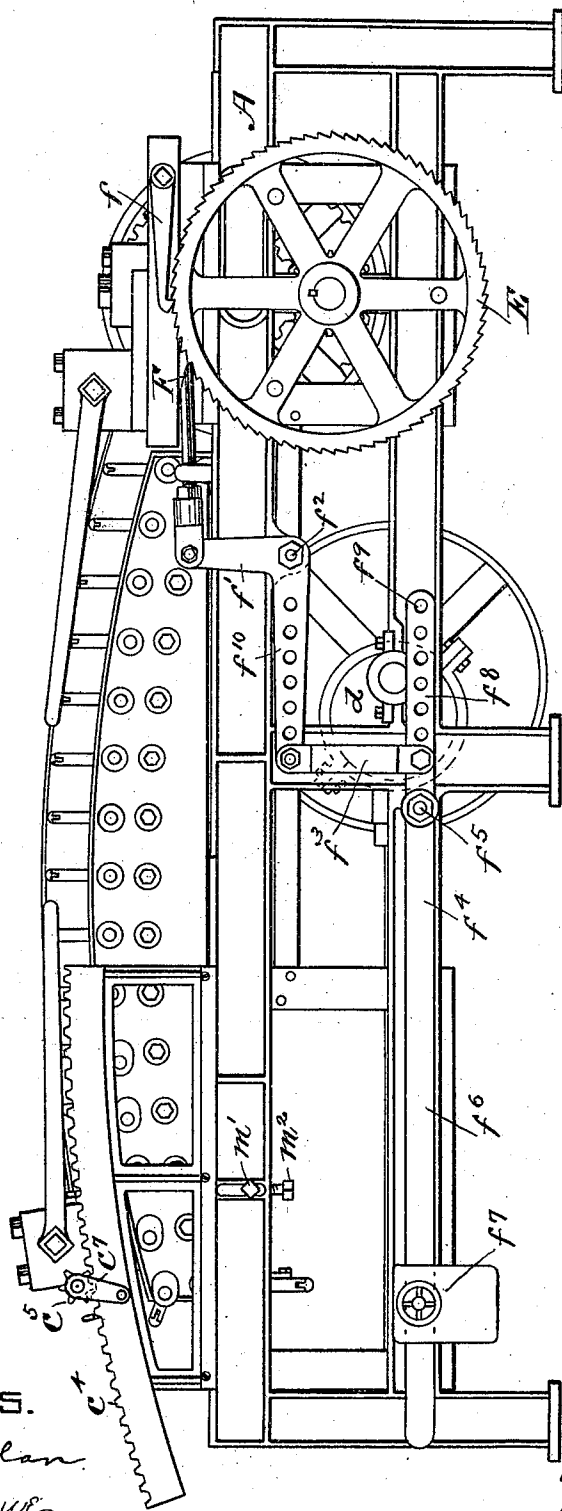


Fig. 1.

WITNESSES.

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W. W. Hague

INVENTOR.

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by his attorney
Charles E. Raymond

(No Model)

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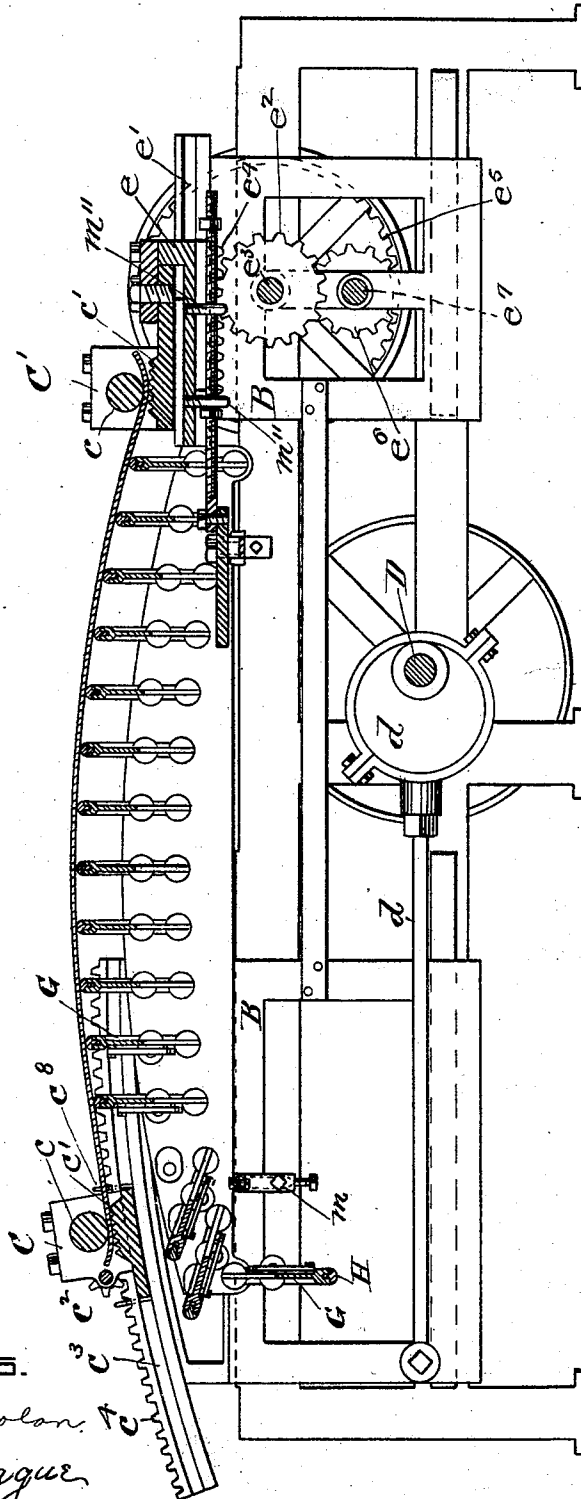


Fig. 2-

WITNESSES.

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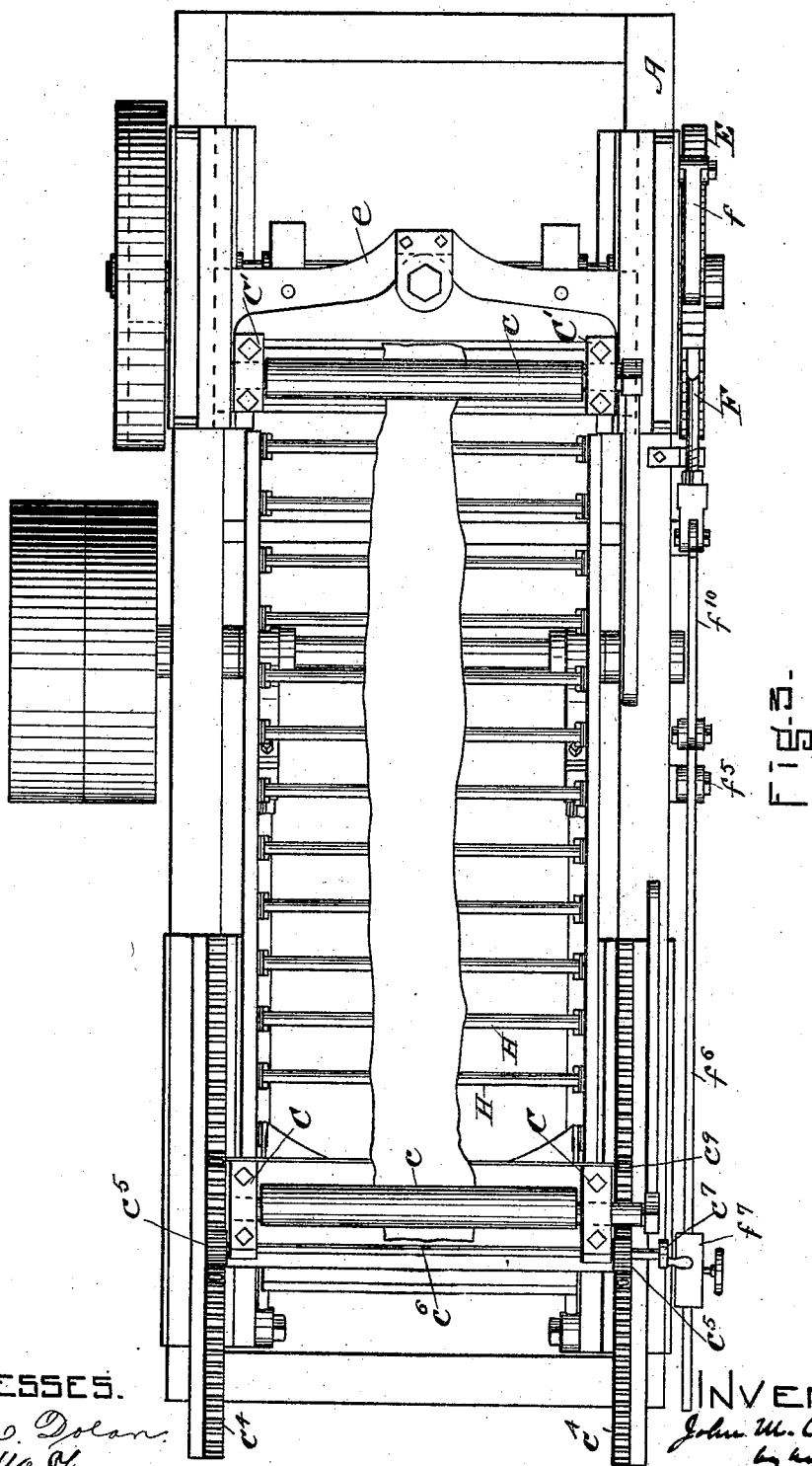
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Patented July 25, 1893.



WITNESSES.

J. W. Dolan
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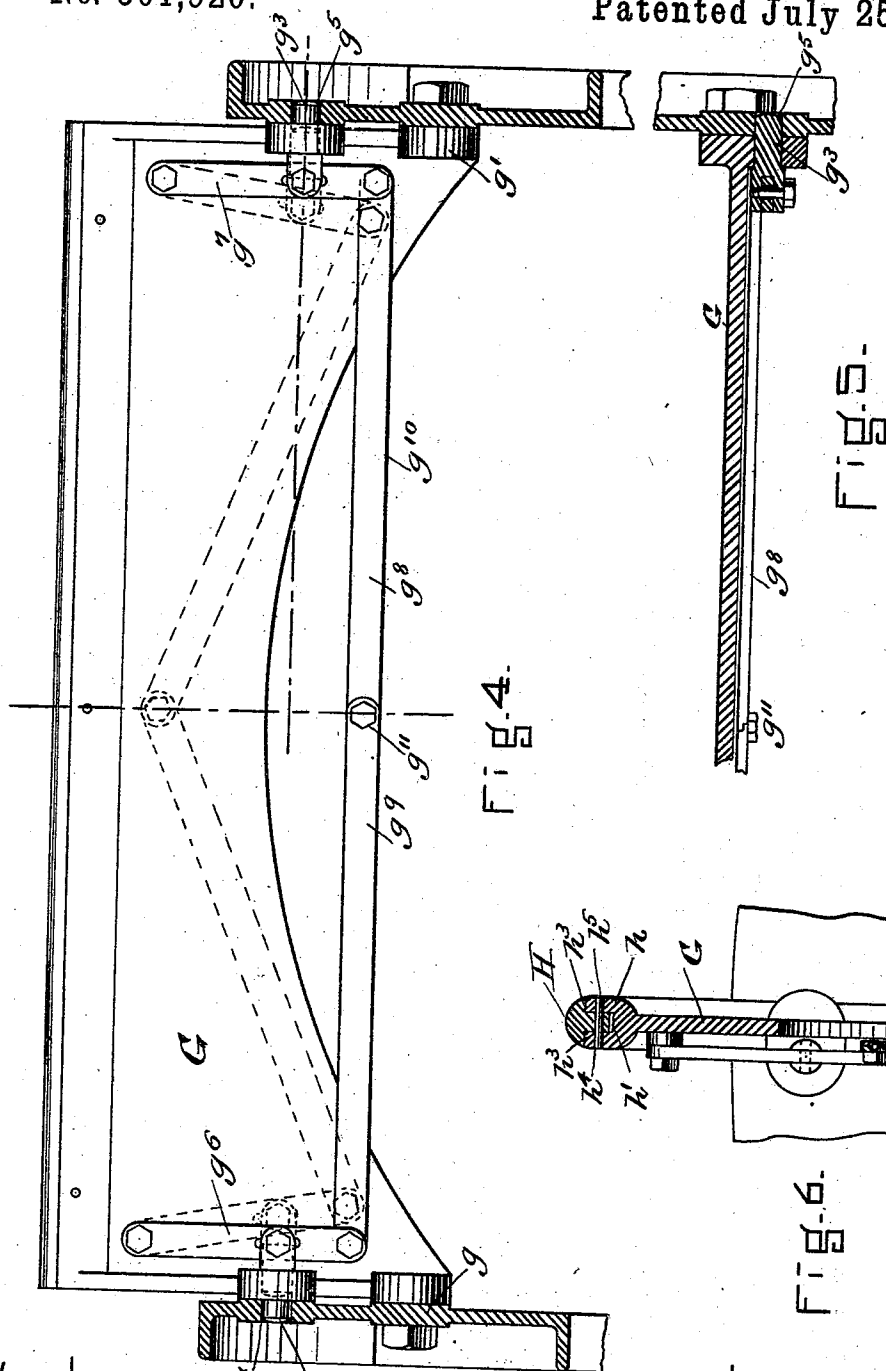
(No Model.)

J. M. CHARNOCK.
LEATHER STRETCHING MACHINE.

5 Sheets—Sheet 4.

No. 501,920.

Patented July 25, 1893.



WITNESSES

J. M. Dolan.
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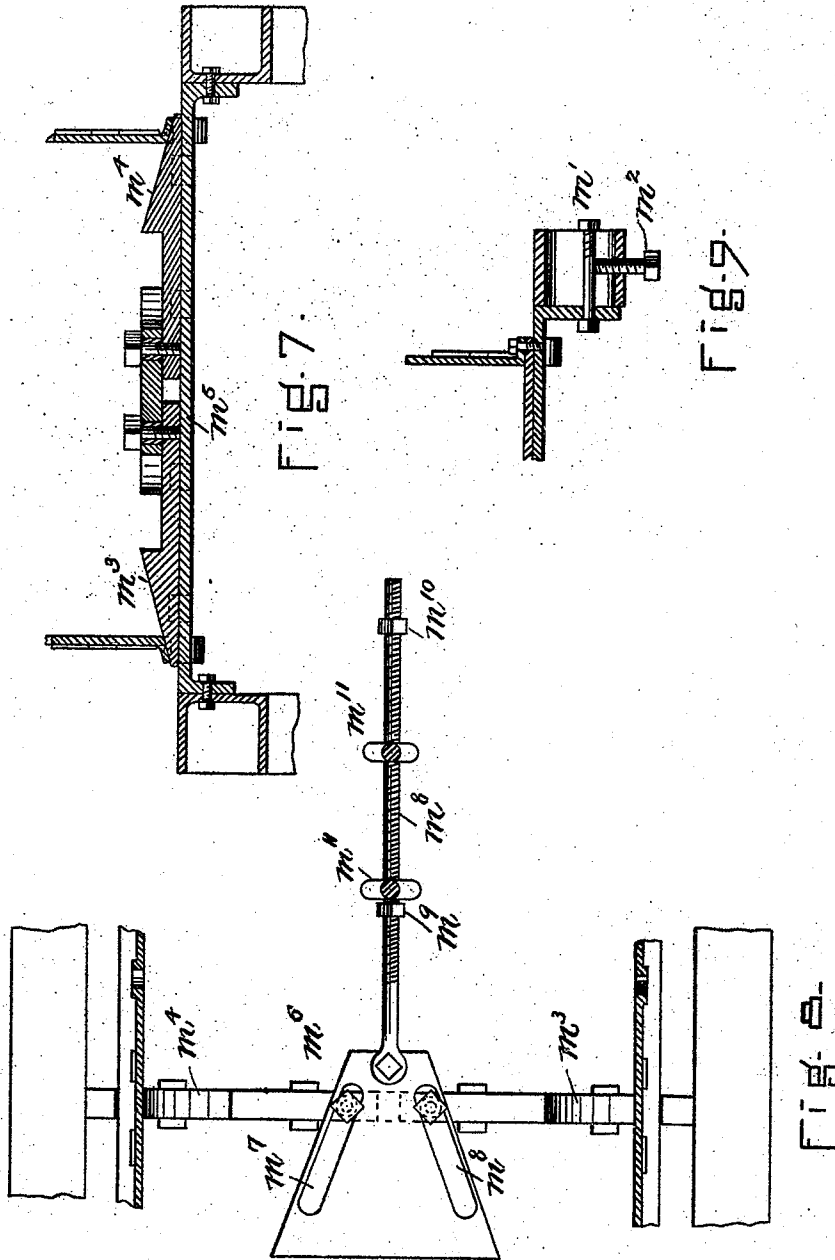
(No Model.)

5 Sheets—Sheet 5.

J. M. CHARNOCK.
LEATHER STRETCHING MACHINE.

No. 501,920.

Patented July 25, 1893.



WITNESSES.

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UNITED STATES PATENT OFFICE

JOHN M. CHARNOCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HARRIET E. HOLMES.

LEATHER-STRETCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 501,920, dated July 25, 1893.

Application filed February 18, 1892. Serial No. 421,923. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. CHARNOCK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Leather-Stretching Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention is in many respects an improvement upon that described in Letters Patent No. 446,847, dated February 24, 1891, granted Henry R. Behrens, and it relates to various details of construction and organization, all of which will hereinafter be fully described.

In the drawings, Figure 1 is a view in side elevation of the machine. Fig. 2 is a view in vertically central section thereof. Fig. 3 is a view in plan of the machine. Fig. 4 is a detail view enlarged, representing a part to which reference is hereinafter made. Fig. 5 is a detail view in section upon the horizontal dotted line of Fig. 4. Fig. 6 is a view in section upon the vertical dotted line of Fig. 4. Figs. 7, 8 and 9 are detail views of parts which will hereinafter be fully described.

The machine comprises a stationary bed and a movable frame mounted upon the bed, to be horizontally reciprocated thereon. This frame has at one end an adjustable clamp for holding one end of a piece or strip of leather, and at the other end a clamp for holding the other end of the piece or strip of leather; and there is attached to the frame to extend upwardly therefrom and between the clamps a series of rubbers, stationarily held as regards the movement of the clamps, over which the leather is reciprocated. One of the reciprocating clamps is also automatically movable from the other during the stretching of the strip of leather, for the purpose of taking up the stretch and maintaining a constant tension upon the strip. A number of the rubbers at one end are hinged to the frame to be folded downward beneath the clamp, so that the clamp at that end may be adjusted easily to take shorter or longer strips, and without removing the rubbers from the machine. There is also embodied in the machine means

for varying automatically the level of those rubbers which are next the clamps having the take-up movement.

Referring to the drawings, A represents the bed.

B is the movable frame.

C is the adjustable clamp; C' the take-up clamp. Each clamp comprises an eccentric roll c, which is supported in bearings over a roughened face or block c', and the turning of the eccentric rolls opens or closes the space between them and the other or roughened section of the clamp. The adjustable clamp C is mounted upon a slide c² movable in curved ways c³ (see Fig. 2); and over each of these ways is a segmental rack c⁴, with the teeth of which mesh pinions c⁵ on the shaft c⁶ carried by the frame of the clamp C. At one end of the shaft is a handle c⁷, by which it and the pinions are turned, and the rotation of the pinions moves the clamp in the slide ways. The clamp is held rigidly in its adjusted position by pins c⁸ to enter one of a series of holes c⁹ formed in the racks.

The frame and clamps are reciprocated by means of a main shaft D, the eccentric d, and the connecting rod d', (see Fig. 2.) The clamp C' is mounted upon a slide e, which is movable in the guide ways e' in the movable frame, and the take-up movement is imparted to the clamp by means of the gear e² upon the shaft e³, which gear meshes with the rack e⁴ on the under side of the slide e. The gear shaft e² is turned by the internal gear e⁵ and gear e⁶, which meshes with the internal gear and is upon the shaft e⁷ which carries the ratchet wheel E. (See Figs. 1 and 2.)

To understand the operation of the take-up it must be borne in mind that the ratchet wheel E and other parts of the take-up are reciprocated with the frame, and as the ratchet wheel approaches one end of the reciprocating movement its teeth are brought successively into contact with a pawl F, and the horizontal movement of the ratchet wheel is thereby converted into a rotary movement, and this rotary movement is transmitted through the gearing to the clamp-frame of the take-up clamp, and moves it slightly each reciprocation, away from the rubbers.

A detent pawl f engages the ratchet wheel

at the end of its take-up rotary movement and holds it during the remainder of the reciprocation or until it again engages the pawl F. The pawl F is a balanced pawl; that is, it is held against the movement of the ratchet wheel E by any required force or stress, so that the amount of draft exerted by the take-up clamp upon the leather may be varied at will. And I have represented this result as obtained by mounting the pawl F upon the bent or rock lever f^1 (see Fig. 1) which is a right angled lever pivoted at f^2 to the bed, and carrying at the end of its vertical arm the pawl holder which is pivoted to it. The other end of the arm is connected by an adjustable link f^3 with a weighted lever f^4 . This lever is pivoted at f^5 to the bed, has the long arm f^6 upon which is mounted the adjustable weight f^7 and the short arm f^8 , which has perforations f^9 . The horizontal arm f^{10} of the rock lever is also perforated, and the link f^3 is connected with the two levers by removable pins or bolts passing through one hole at a time in each lever end or section, and by withdrawing the pins and moving the link the leverage may be changed at pleasure. By varying the position of the weight f^7 on the arm f^6 , the force or power with which the pawl F is held against the thrust of the ratchet wheel is also varied.

To shorten the length of the rubbing bed, I have made a number of the rubbers at the end toward the adjustable clamp to be movable downward to substantially a horizontal position. This result is obtained by mounting each of the rubbers in question upon a leaf or hinged support G, (see Fig. 4,) which is pivoted at g g' respectively to the frame M or bed, in any suitable way, and locked to the frame or bed when in a vertical position by means of pins g^2 g^3 respectively, which are carried by the leaf and enter holes g^4 g^5 respectively in the frame or bed. These pins are connected together to be simultaneously withdrawn from their holes by means of vertical levers g^6 g^7 , pivoted to the leaf at their upper ends, one of which is directly connected with the pin g^2 and the other with the pin g^3 , and the hinged cross-bar g^8 , comprising two links g^9 g^{10} , which are pivoted at their outer ends to the levers g^6 g^7 respectively and are also pivoted together at their center g^{11} . When these links are straightened like a toggle the pins are held in the pin holes and the rubber and its leaf are locked in operative position. Upon the breaking of the toggle and the movement of the links g^9 g^{10} to the position represented by dotted outline in Fig. 4, the pins are removed from their holes, and the leaf can then be turned upon the pivots g g' to a horizontal or other position.

It is not necessary that all the rubbers be so constructed, and in the drawings I have represented the first five from the adjustable clamp end of the machine as so made. Each of the rubbers comprises the leaf G above spoken of, preferably of metal, having at its

upper end an enlargement h in which is a longitudinal recess or groove h' . The rubber H is preferably made of a brass alloy or composition. It has the rounded upper surface h^2 and the straight under surfaces h^3 on each side of a downward extending tenon or section h^4 . This tenon or section is of a size to enter the recess h' in the upper end of the holding leaf, and the surfaces h^3 of the rubber rest upon the upper surfaces of the leaf upon each side of the recess, and the rubber is held secured to the leaf by cross pins h^5 . (See Fig. 6.) As the strip is lengthened by being passed over the stationary rubbers, the take-up clamp is moved away from the rubbers nearest it, and this changes the angle which the strip bears to those rubbers. It is desirable, however, that the original angle, as nearly as possible, shall be maintained during the entire stretching operation, and in order to accomplish this it is necessary that the end rubbers near the take-up clamp be provided with a vertical adjustment or movement which shall also be automatic. This is accomplished by lifting the end of the frame toward the take-up clamp gradually, as the take-up clamp is moved relatively away from them.

The frame M supporting the rubbers is hinged to the bed of the machine at m , and preferably in a manner to permit of the adjustment vertically of this end. And to obtain such adjustment I have extended from the frame into a vertical slot on each side of the bed a pivot m' which rests upon the end of an adjusting block or pin m^2 . The other end of the frame M is mounted on wedges m^3 m^4 respectively. (See Fig. 7.) These wedges are supported upon a cross-bar m^5 , and the frame M has downward extending sections on each side of the wedges and cross-bar, and also a wedge surface to correspond in inclination with the surface of the wedge upon which it rests. These wedges are automatically separated by a slide m^6 , having the diverging slots m^7 m^8 respectively, with one of which the wedge m^3 is connected by a stud and roll, and with the other of which the wedge m^4 is connected. This slide m^6 is provided with a threaded rod m^8 attached to the slide e of the take-up clamp, by means of eyes or in any other desired way. This rod is provided with adjusting nuts m^9 m^{10} , set as may be desired. The movement of the slide e as it is gradually forced away from the rubbers, brings the eye m^{11} into contact with the nut m^{10} , and at the ends of its outward movement causes the slide m^6 to be drawn sufficiently to separate the wedges m^3 m^4 , and lift the end of the rubber frame M next the take-up clamp, and thereby lift the rubbers. By this organization it will be seen that the height of the rubbers is automatically controlled by the take-up slide, and regulated so that as the take-up is moved away from them they are raised, and as it is moved toward them they are lowered.

It will be understood that the leaves or hold-

ers G upon the end of the sliding frame next or adjacent to the clamp C are so attached to the frame that they may be moved from an operative to an inoperative position, and that when in an inoperative position, they are so held to the frame that the clamp C may be moved over them (see Fig. 2), and thus permit the adjustment of the machine to shorter lengths of leather, without removing from the machine any of its parts.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a leather stretching machine, the combination of the frame of the machine, a leather holding clamp at one end thereof, the adjustable leather holding clamp C at the other end thereof, and an intermediate reciprocating frame having a number of rubbers mounted thereon, of which those adjacent to the adjustable clamp C are movable from operative position to a position which permits the adjustment of the clamp C over them, without being detached from their operative frame, as and for the purposes described.

2. In a machine of the character specified the rubber frame, one or more rubber holders or leaves pivoted to the frame to be swung on a vertical axis, and a locking device for locking the leaves or holders in vertical position, substantially as described.

3. In a machine of the character specified one or more leaves or supports for carrying the rubbers hinged to their supporting frame, and having bolts or pins g^2 g^3 respectively, to enter holes in said frame when in vertical position, said bolts being connected together

to be simultaneously withdrawn to release the leaf, substantially as described.

4. The combination of the leaf or holder G pivoted as specified, the bolts or pins g^2 g^3 , the levers g^6 g^7 , and the toggle connecting links g^8 g^9 , as and for the purposes described.

5. In a machine for stretching leather the leaves or supports G having imparted to them a reciprocating movement upon the same plane, and each of which has in its upper edge a cross recess h' and the rubbers H having their working surfaces rounded regularly on each side from their top to provide working surfaces on each side thereof, and having extensions to enter said cross recesses respectively, all as and for the purposes described.

6. A combination in a machine of the character specified of the frame M, the rubbers mounted thereon, the said frame being pivoted to the bed, means for adjusting the vertical position of said pivots, and automatic means for varying the heights of the frame from the pivotal point forward to the take-up clamp, as and for the purposes described.

7. In a machine of the character specified the adjustable slide C having the pinions c^2 and racks c^4 , the pinions being mounted upon a shaft carried by the adjustable clamp frame, and being turned to move the frame and clamp in their guide-ways, the racks having pin holes and the pins c^3 to enter said holes, substantially as described.

JOHN M. CHARNOCK.

Witnesses:

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