

(No Model.)

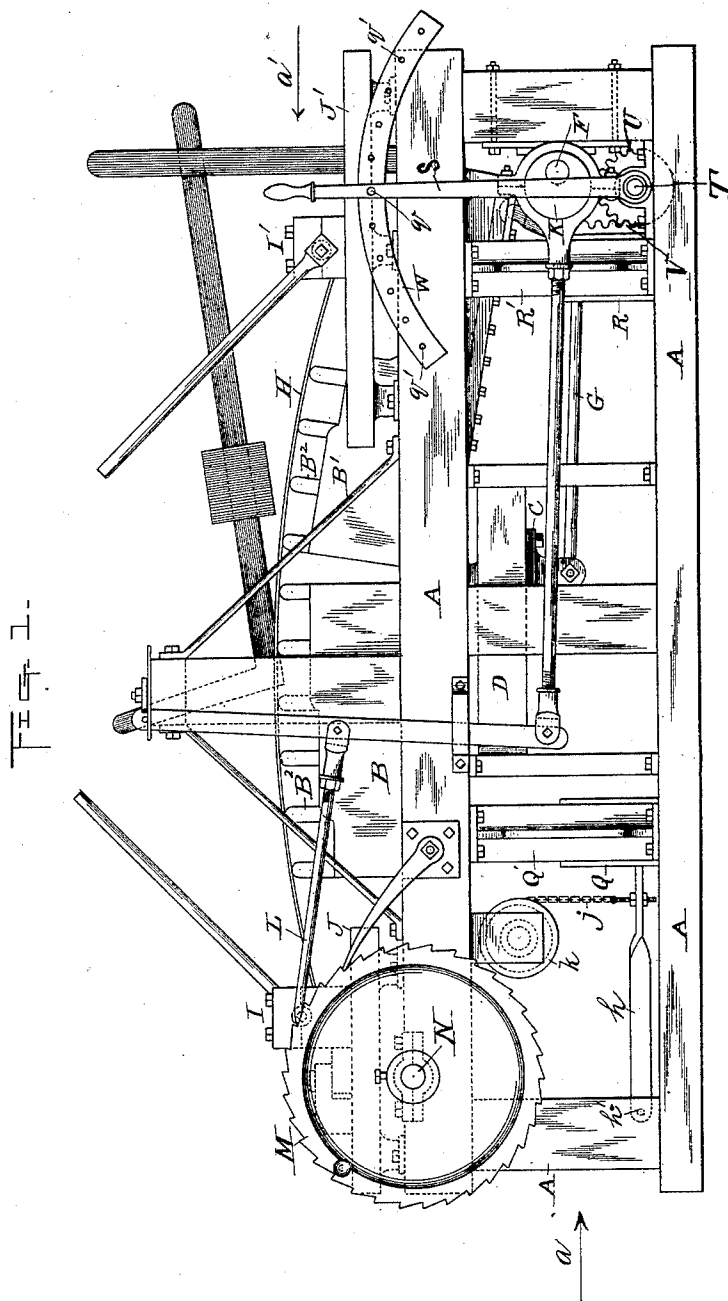
3 Sheets—Sheet 1.

H. R. BEHRENS.

LEATHER STRETCHING MACHINE.

No. 468,392.

Patented Feb. 9, 1892.



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Walter B. Noirse,
C. Forrest Wilson.

Inventor.

Henry R. Behrens.
By A. A. Barker. Att'y.

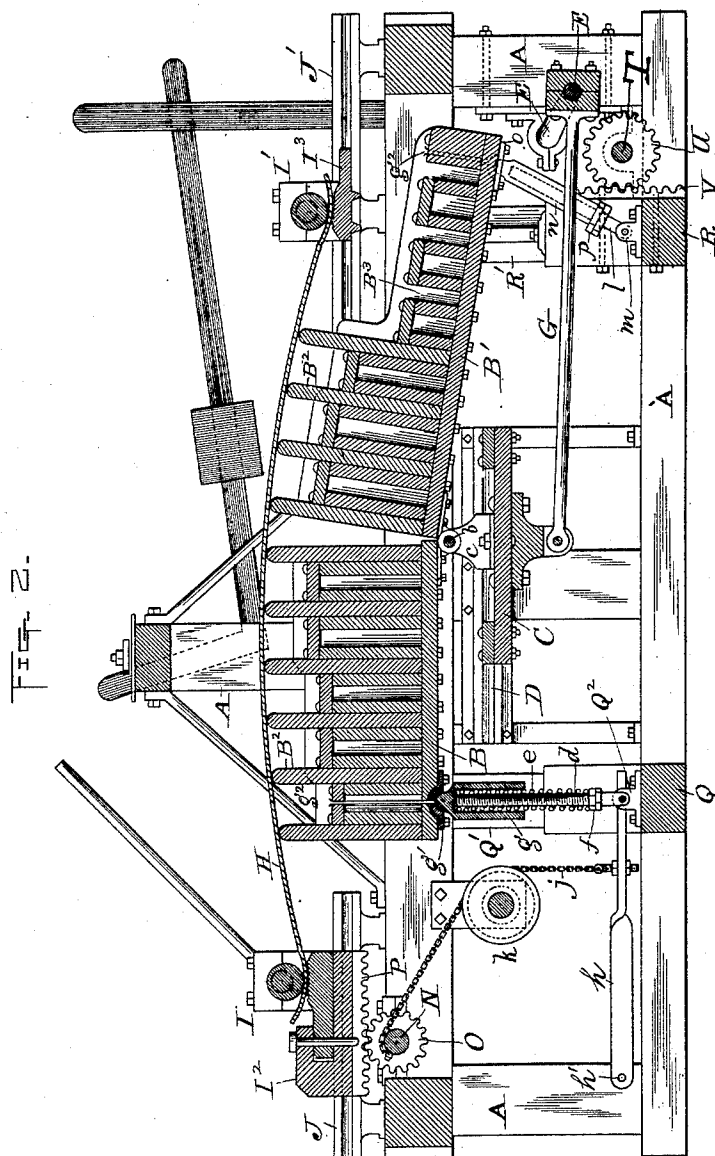
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WITNESSES.

Walter B. Nourse,
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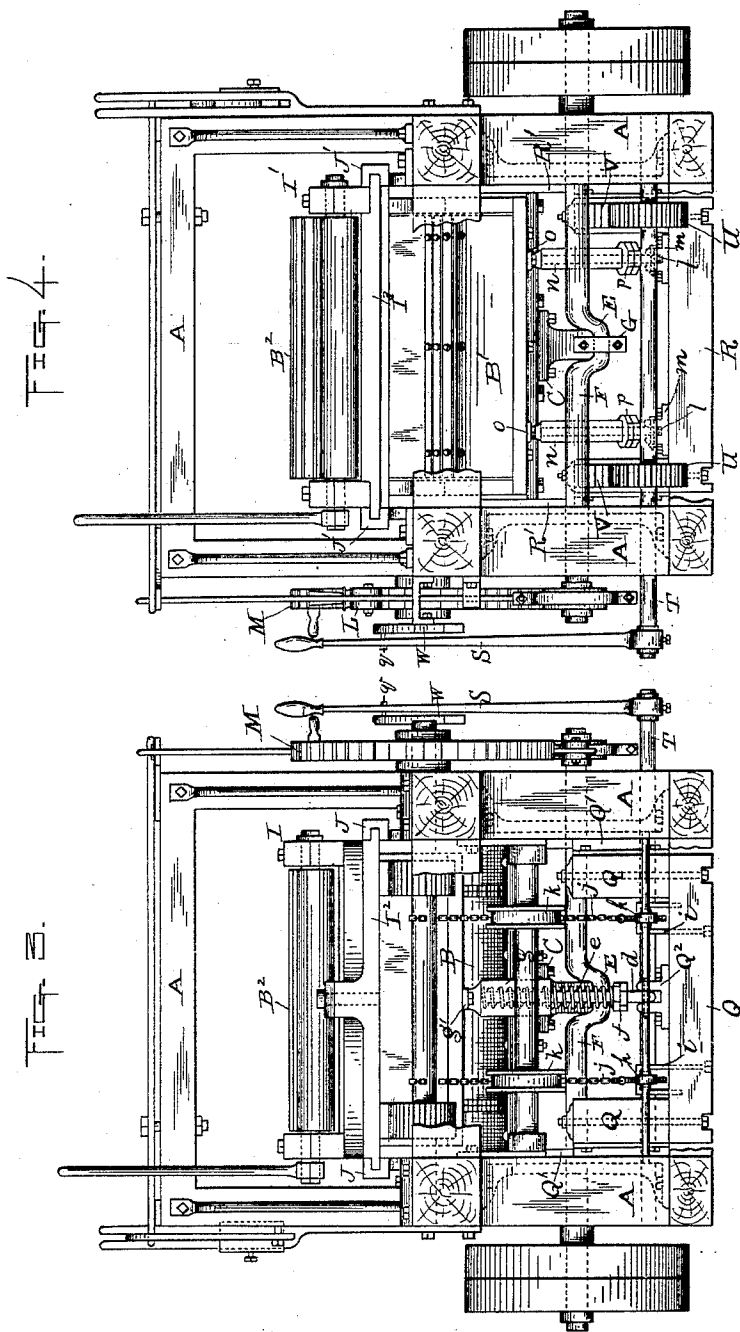
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Walter B. Nourse,
G. Forrest Vernon.

INVENTOR.
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UNITED STATES PATENT OFFICE.

HENRY R. BEHRENS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO
ARTHUR M. TAFT, OF SAME PLACE.

LEATHER-STRETCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,392, dated February 9, 1892.

Application filed June 20, 1890. Serial No. 356,082. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. BEHRENS, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Leather-Stretching Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a side view of a leather-stretching machine embodying my improvements. Fig. 2 is a central vertical longitudinal section thereof. Fig. 3 is an end view of the machine, looking in the direction of arrow *a*, Fig. 1; and Fig. 4 is an opposite end view of said machine, as shown by arrow *a'*.

My invention relates to that class of leather-stretching machines employed for stretching leather for belting and similar purposes by power mechanism operating automatically; and it consists in certain improvements in the means employed in said machines for elevating and lowering the ends of the racking or rubbing frames to adjust the blades thereof to the leather being stretched, as will be hereinafter more fully specified.

Following is a detailed description of my invention with reference to the accompanying drawings.

The parts marked A represent the framework of the machine. B B' are the racking-frames thereof, which are pivoted at the bottom of their inner ends to a bolt *b*, mounted in suitable standards *c*, extending up from the carriage C. Said carriage is moved forward and back in suitable stationary guideways D with short reciprocating movements by means of a crank E on the main shaft F, through the connecting-rod G, pivoted at its inner end to said carriage and at its outer end to the crank. Driving-power may be imparted to the main shaft in any well-known way. Each racking-frame is provided with a series of transverse removable blades B², which fit in vertical slots B³ in said frames. The leather H to be stretched extends lengthwise of the machine, resting on the top edges of the blades and held at the ends by adjustable clamp devices I I', mounted on carriages I² I³, both of which carriages are fitted to slide

in suitable longitudinal guideways J J', secured to frame A. During the stretching operation the clamping device I' is held stationary in its supports, while the device I is moved forward with short intermittent movements to gradually draw out the leather longitudinally as it is stretched by the racking-blades rubbing back and forth upon the under surface thereof. Said forward intermittent movement is imparted by an eccentric K on the main shaft through suitable connections with a pawl L, which engages with a ratchet-wheel M, and thence through said wheel, the shaft N, on which it is secured, a pinion O, also secured on said shaft, and a rack P on the under side of carriage I², with which said pinion engages, as is shown in Fig. 2. Up to this point in the description the construction and arrangement of the various parts are old, and therefore no claim is made thereto.

My invention, as previously stated, consists in improvements in the means employed for elevating or lowering the outer ends of the racking-frames, the object thereof being to provide means whereby the pressure on the leather may be adjusted close up to its fastenings, and thus maintain the same relative pressure upon said leather as it is lengthened out by stretching.

The device for adjusting the end of frame B works automatically in connection with the automatic feed movement previously described, while that for adjusting frame B' is operated by hand. Said automatic device is constructed and operated in the following manner: A transverse frame Q is fitted to slide vertically in suitable stationary guideways Q' Q', one upon each side of the machine. To the upper side of said slide-frame Q is centrally secured a bearing Q², to which is pivoted the lower end of a supporting screw-rod *d*, having a spiral spring *e* fitted over the same, said spring being held at its lower end by a nut or collar *f* on the rod and at its upper end in the opening of an inverted socket-piece *g*, whose upper end is ball-shaped and fits into a socket-bearing *g'* on the bottom of frame B, as is fully shown in Fig. 2, thus forming a ball-and-socket joint which permits the frame to rest unattached, so that it may

work freely on said bearing, and yet be securely supported thereby. In order that a yielding pressure may be imparted against the leather, only the spiral spring has a bearing in the upper end of the socket-piece *g*, the latter not striking the upper end of rod *d*, except when the frame is lowered below its bearing-point on the leather. As said leather is gradually stretched and pulled out lengthwise in the manner previously described, the slide-frame *Q* is correspondingly elevated, so as to elevate frame *B* through the above-described connections by means of lifting mechanism connected with the ratchet-wheel shaft *N*. Said connections consist of the swinging levers *h h*, pivoted at one end to frame *A* at *h' h'*, and each engaging with a loop *i* or other suitable bearing on slide-frame *Q*. To the inner ends of said levers are attached the chains *j j*, preferably passed over the guide-pulleys *k k* or their equivalents, and attached at their upper ends to shaft *N*, so that when said shaft is turned the chains will be wound or unwound upon or from the same to elevate or lower the frame. By this construction it is obvious that the rotation of shaft *N* causes the front end of frame *B* to be elevated simultaneously and in conjunction with the longitudinal draft imparted upon the leather, and said upward pressure is performed in a simple and effective manner.

The mechanism for elevating the outer end of the other frame *B'* is somewhat similar, with the exception of being constructed so as to be operated by hand. In the former instance only one supporting device is preferably used and at the center, as described; but in the latter instance two of said supports are preferably employed. I do not limit myself, however, to either number in constructing the machine in practice. A slide-frame *R*, fitted to slide in suitable stationary guideways *R' R'*, is employed in the hand-operating device, as in the other instance. Rods *l l*, bearings *m m*, socket-pieces *n n*, and bearings *o o*, similar to those corresponding thereto in the automatic device, are also used; but instead of employing springs over the rods *l* they are dispensed with and the socket-pieces *n n* extended down longer than the socket-pieces *g*, with their bottom ends bearing upon the nuts or collars *p p*, corresponding to the nut or collar *f* in the automatic device. The slide-frames are elevated in this instance by means of a hand-lever *S* through the horizontal shaft *T*, fitted to turn in suitable bearings, and to which shaft said lever is secured, pinions *U U*, also secured to said shaft, and vertical racks *V V*, secured to slide-frame *R*, the pinions being adapted to engage with said racks.

By the above construction it is obvious that by turning the lever the slide-frame and its connections, as well as the outer end of frame *B'*, may be elevated or lowered, according to which way it is turned, and after adjustment

the lever may be fastened by passing a pin *q* transversely through the same and into a stationary frame *W*, preferably made in segment form and provided with a series of transverse holes *q'*, as is shown in Fig. 1. If desired, the joints between the bearings *g' o* and upper ends of the pivoted frame-supports may be oiled through the oil-passages *g²*. (Shown in Fig. 2.)

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

1. In a leather-stretching machine, the combination, with the outer end of pivoted racking-frame *B*, of slide-frame *Q*, fitted to slide vertically in suitable stationary guideways and having means for supporting said frame *B* thereon, and shaft *N*, operatively connected with frame *B*, so as to automatically elevate and lower frame *Q* when said shaft *N* is turned, substantially as and for the purpose set forth.

2. In a leather-stretching machine, the combination of pivoted frame *B*, operatively connected with frame *Q*, and said frame *Q*, fitted to slide vertically in suitable stationary guideways, with chains *j* and shaft *N*, said chains being operatively connected with the slide-frame at one end and with said shaft at the other end and preferably passed over guide-pulleys *k*, substantially as and for the purpose set forth.

3. In a leather-stretching machine, the combination of slide-frame *Q*, fitted to slide vertically in suitable guideways and having means, substantially as described, for elevating and lowering the same, with pivoted spring-rods *d*, socket-pieces *g*, and the outer end of the pivoted racking-frame *B*, preferably provided with a suitable bearing-piece *g'*, substantially as and for the purpose set forth.

4. In a leather-stretching-machine, the combination, with the outer end of the pivoted racking-frame *B*, of a device for elevating and lowering the same, consisting of the spring-rod and socket-piece *d g*, bearing at its upper end in a suitable bearing on said frame *B*, and whose bottom end is pivoted to the slide-frame *Q*, said frame *Q*, fitted to slide vertically in suitable stationary guideways, levers *h h*, connecting with frame *Q* at one end and pivoted to frame *A* at the other, chains *j j*, connected with levers *h h* at one end and with shaft *N* at the other, guide-pulleys *k k* or their equivalents, and said shaft *N*, substantially as and for the purpose set forth.

5. In a leather-stretching machine, the combination of shaft *T*, having means for turning the same, with pinions *U U*, secured thereon, vertical racks *V V*, secured to slide-frame *R* and meshing with said pinions, said frame *R*, fitted to slide vertically in suitable guideways, and rods *l*, pivoted to frame *R* and fitting in socket-pieces *n n*, said socket-pieces *n n*, and the outer end of pivoted frame *B'*, hav-

ing suitable bearings *o o* to receive the upper ends of the socket-pieces, substantially as and for the purpose set forth.

6. In a leather-stretching machine, the combination of shaft *T*, fitted to turn in suitable stationary bearings and having means for turning the same, with pinions *U U*, secured thereon, vertical racks *V V*, secured to slide-frame *R* and meshing with said pinions, said frame *R*, fitted to slide in suitable stationary guideways, and pivoted frame *B'*, operatively connected with said frame *R*, substantially as and for the purpose set forth.

7. In a leather-stretching machine, the combination of frame *R*, fitted to slide vertically in suitable stationary guideways, with rods *l l*, pivoted to said frame, fitting in socket-pieces *n n* and provided with the nuts or shoulders *p p*, said socket-pieces *n n*, and pivoted rack-

ing-frame *B'*, having suitable bearings *o o* to receive the upper ends of the socket-pieces, substantially as and for the purpose set forth.

8. In a leather-stretching machine, the combination of pivoted frame *B'*, operatively connected with slide-frame *R*, and said slide-frame *R*, having the vertical racks *V V* thereon, with pinions *U U*, secured on shaft *T* and engaging with said racks, said shaft fitted to turn in suitable stationary bearings, lever *S*, secured to shaft *T*, stationary frame *W*, and means for temporarily fastening the upper end of lever *S* thereto, substantially as and for the purpose set forth.

HENRY R. BEHRENS.

Witnesses:

A. A. BARKER,
W. B. NOURSE.