No. 685,254. Patented Oct. 29, 1901.

J. CALDWELL.

LEATHER STRETCHING DEVICE.

(Application filed Dec. 14, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig 1.

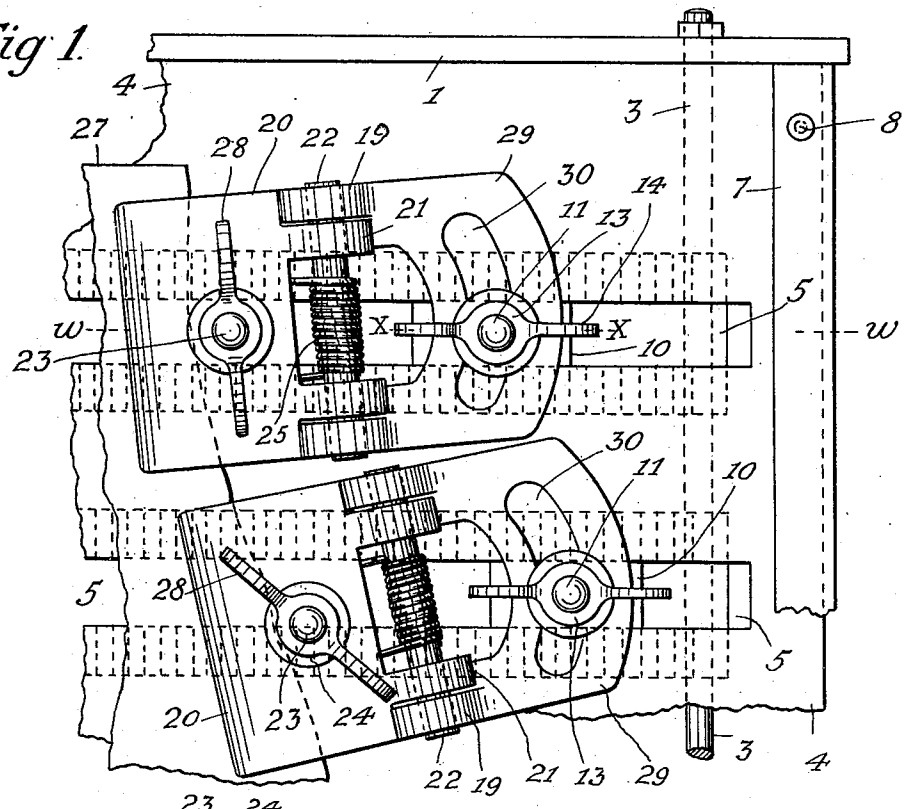
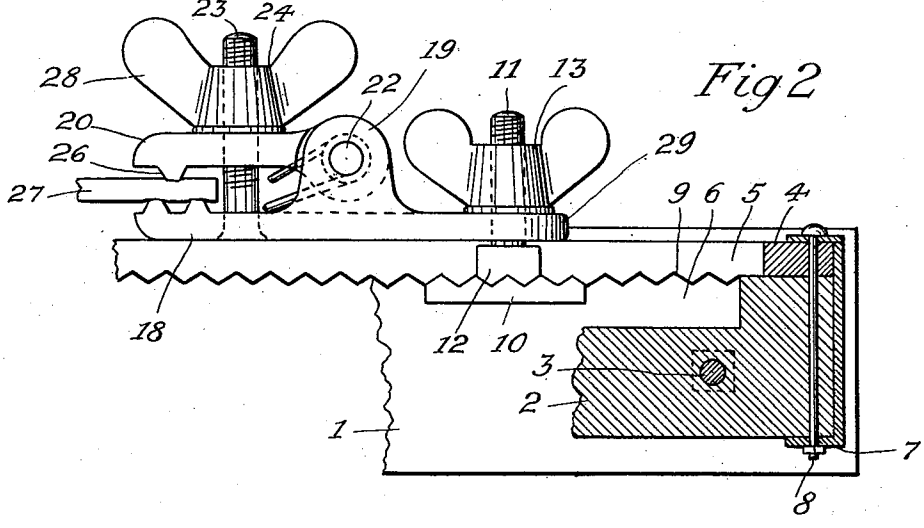


Fig 2



Witnesses
Theo: Lagaard
A. L. Whelan.

Inventor
John Caldwell
By P. H. Gunckel
his Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 3 Sheets—Sheet 2.

Fig 7

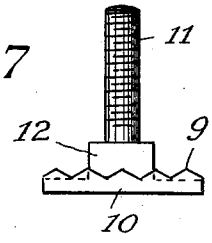


Fig 3

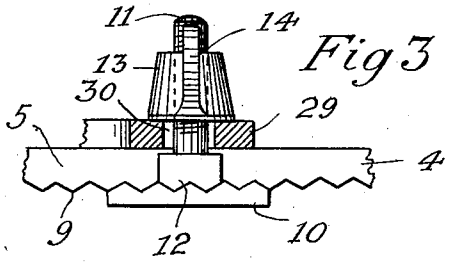


Fig 8

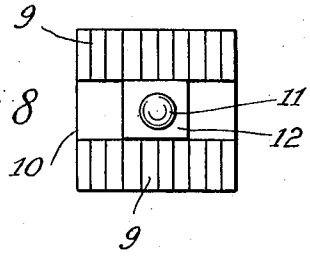


Fig 4

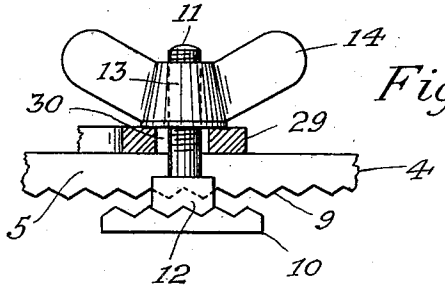


Fig 5

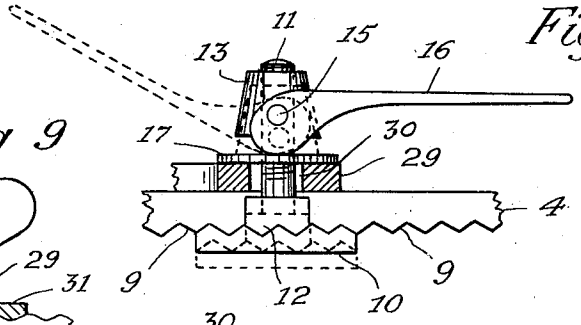


Fig 9

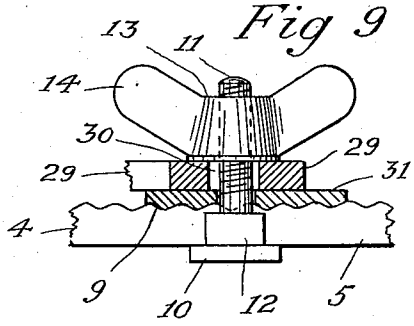
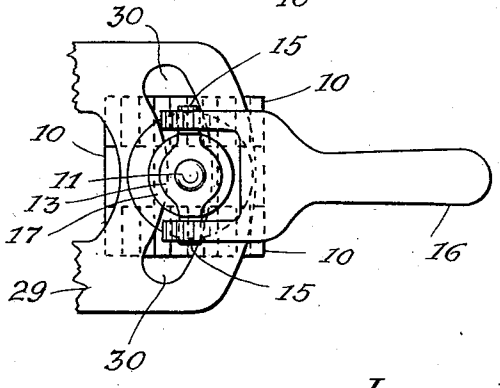


Fig 6



Witnesses
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No. 685,254. Patented Oct. 29, 1901.

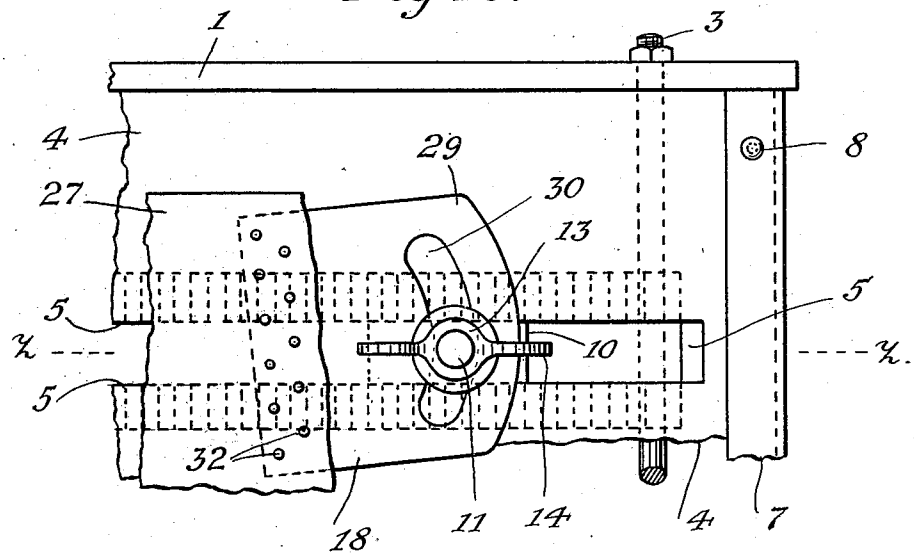
J. CALDWELL.

LEATHER STRETCHING DEVICE.

(Application filed Dec. 14, 1900.)

(No Model.) 3 Sheets—Sheet 3.

Fig 10.



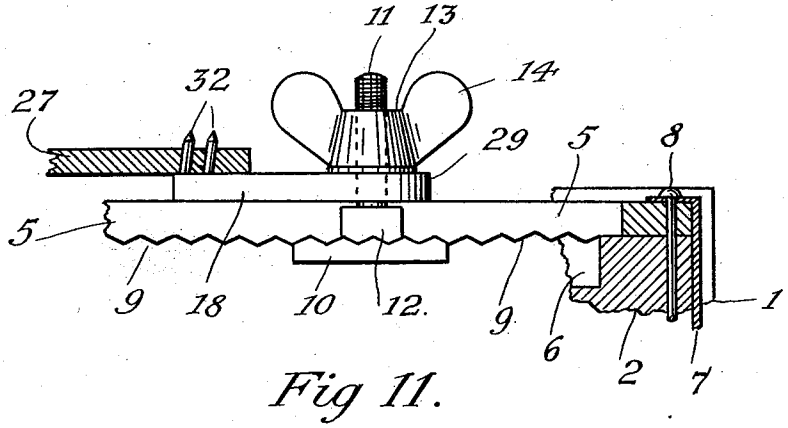


Fig 11.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN CALDWELL, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE W. S. NOTT COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION.

LEATHER-STRETCHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 685,254, dated October 29, 1901.

Application filed December 14, 1900. Serial No. 39,844. (No model.)

To all whom it may concern:

Be it known that I, JOHN CALDWELL, a citizen of the United States, residing at Minneapolis, county of Hennepin, and State of Minnesota, have invented certain new and useful Improvements in Leather-Stretching Devices, of which the following is a specification.

My invention relates to the clamps or devices used in connection with leather-stretching machines for holding the ends of the leather during the operation of stretching it; and the object of the present invention is an improvement of the means for adjustably and pivotally connecting such leather-holders to the heads or other appropriate parts of the stretcher mechanism. Briefly stated, the improvements consist in providing the stretcher-head with means for guiding the movements for adjustment of the holders in the direction of the leather tension and providing the holders with means for pivotally connecting them to the head when adjusted; and the means illustrated for accomplishing this object consist in a plate on the stretcher-head provided with a series of slots extending lengthwise of the stretcher-frame and transverse corrugations or serrations on the upper or lower surface of the plate adjacent to the slots, bolts or equivalent devices extending vertically through the slots and arranged to engage portions of the holders, and carrying devices for engaging the corrugations or serrations on the plate, and nuts, cams, or other suitable means for raising or lowering the bolts to lock or release the leather-holders. Such devices are illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of portions of a stretcher-frame and head provided with my improvements. Fig. 2 is a side elevation, partly in section, on the line *w w* of Fig. 1. Fig. 3 is a transverse section of one of the holders and a portion of the head-plate on the line *x x* of Fig. 1, showing one of the holders and its locking device in elevation, the holder being shown locked on the plate. Fig. 4 is a similar view showing the bolt lowered and the holder unlocked and free to be moved on the plate. Figs. 5 and 6 show in elevation and plan, respectively, a modification of the means for raising and lowering the locking-bolt. Figs. 7 and 8 are details of the bolt and the device it carries for engaging the serrations on the plate. Fig. 9 shows a modification in which the upper instead of the lower surface of the plate has corrugations or serrations and a corresponding modification of the locking device. Fig. 10 is a plan view similar to Fig. 1, showing tines instead of clamps as the means for engaging the leather; and Fig. 11 is a side elevation, partly in section, on the line *z z* of Fig. 10.

In the drawings the reference-number 1 designates one of the sides of an ordinary rectangular stretcher-frame, and 2 its stationary head, secured thereto by bolts 3 or in any suitable way. The portion of the apparatus containing the stationary head is selected for convenience of illustration, but my improvements are applicable as well to the slidable head of the apparatus. On the surface of the head (which may be of wood) is secured a metal plate 4, extending from side to side of the head and having a series of slots 5 a suitable distance apart and extending parallel with the frame sides 1 or in line with the direction of movement of the sliding stretcher-head. The head 2 is recessed, as shown at 6, to provide a sufficient space between its surface and the under side of the plate 4 for the free movement of the holder-locking devices. The plate 4 may be secured to the head by means of flanged end plates 7 and bolts 8.

On the under surface of the plate 4, adjacent to the slots 5 and running parallel therewith, are racks or serrated or corrugated portions 9, and beneath such racks there is provided a series of independent plates or heads 10, having suitable serrations 9 or equivalent means for engaging the serrations or corrugations of the racks when raised to contact with them. These heads 10 are carried on the lower ends of bolts 11, which have square portions 12, adjacent to the heads 10, and which fit loosely in the slots 5, so as to be freely movable both longitudinally of and vertically in the slots, but of sufficient width to prevent the bolts from turning in the slots.

The upper portions of the bolts are threaded to receive suitable nuts 13, which may be provided with any desired means for turning

them for purposes of adjustment or for lifting or lowering the bolts to cause their heads 10 to engage the racks or release such engagement. As illustrated in Figs. 1 to 4, the nuts are shown seated directly on the tailpieces of the leather-holders and as adapted to be turned on the threads of the bolts to raise or lower them. In Figs. 5 and 6 the nuts are shown as supporting cam-levers, the operation of which in vertical direction effects the raising or lowering of the bolts. In the one instance the nuts have pins or trunnions 15 at opposite sides, and to these are pivoted cam-levers 16 in position to have their eccentric surfaces bear upon the tailpieces (or washers 17 on the tailpieces) of the leather-holders when the handles are turned downward toward horizontal position, thereby lifting the bolts to lock their heads to the racks. It is obvious that the result of raising and lowering the bolt by means of the cam-lever could be accomplished by dispensing with the threads on the bolt and substituting for the separate trunnions a single pin extending from side to side through the cams and bolt. Such construction would not permit vertical adjustment of the point of pivotal connection of the cam-lever to the bolt; but it would permit the lever to be freed by removal of the pivot-pin, and so accomplish the same result as is effected by unscrewing the nut in the other construction—viz., disconnecting the parts of the locking device, so that they can be detached from the machine.

In the modified construction shown in Fig. 9 the corrugations or serrations 9 are provided on the upper instead of the lower surface of the plate 4, and the head 10 on the bolt 11 has a smooth surface for sliding contact with the lower surface of the plate 4, which is also smooth. The engagement of the rack or roughened plate-surface is by means of a suitably corrugated or serrated locking-plate 31, interposed between the holder tailpiece 29 and the plate 4. In other respects the construction and operation of this modified device may be the same as the devices heretofore described. Other variations of structure will be obvious to the skilled constructor in adapting the devices to the purpose set forth, whether the upper or lower surface of the plate 4 be provided with the resisting rough surface.

To illustrate practical applications of my improvements, I have shown in the drawings two desirable forms of holders, in one of which clamping-jaws are employed and in the other a base or plate provided with upright tines for engaging the leather; but as the locking devices described are intended for use in connection with leather-holders of any character adapted to be locked in place by the means set forth I do not wish to restrict my claim to their use in connection with holders of the specific kind shown in the drawings. The limitation as to the character of the holders is that they be of the class adapted to be used in series for engaging relatively short marginal portions of the irregular end of a body of leather, and thereby hold it in place under the tension of the stretching apparatus.

The clamp form of holder illustrated comprises a base-plate 18, having standards 19 at opposite sides; an upper member or jaw 20, having ears 21, which are pivoted by a pintle 22 to the standards 19; a post 23, supported by the base 18 and extending upward through an opening in the jaw 20 and having its upper portion threaded; a nut 24 on the latter for pressing the upper toward the lower clamp member, and a coil-spring 25 on the pintle 22 (or it might be arranged on the post 23) for separating the jaws when the nut is moved upward. The adjacent front portions of the jaws have intermeshing transverse ridges 26 to enable them to take a firm hold of the margin of a body of leather 27. The nut 24 may have wings 28 or may be otherwise adapted to be conveniently turned for causing the jaws to grip or release the leather.

The clamp-base 18 is supported on the stretcher-head plate 4, and its rear portion or tailpiece 29 has an opening 30, through which the bolt 11 is loosely passed and operates to clamp the tailpiece to the stretcher-head. It is desirable that the opening or openings 30 (for several may be provided) be of such form or arrangement as to enable the operator to vary the points through which the bolt may pass in order that the tailpiece may be adjusted laterally relative to the position of the bolt 11 and plate-slot 6. The object of such adjustment is mainly to enable the clamp to be turned laterally to engage an irregular portion of leather at an angle to the direction of tension and then to enable the location of the locking-bolt to be adjusted as required by such inclined position of the clamp.

In the arrangement shown the bolt 11 serves as a pivot about which the clamp may be turned laterally; but obviously the tailpiece 29 might be so connected to the locking-head 10 as not to admit of its being turned laterally, while permitting the device 10 to be raised or lowered to perform its function, and the lateral swinging movement of the clamp proper could be provided for by pivoting the base member of the clamp to a stud on the forward portion of such tailpiece or connection.

In the alternative form of holder illustrated in Figs. 10 and 11 the base-plate 18 instead of being a part of or support for a clamp is provided with upright pointed pins or tines 32, that pass through the leather margin, as shown.

In the practical application of the devices a series of the holders is placed on the stretcher-head over the slots, with their tailpieces loosely connected to the plate 4 by the bolts, so that they may be separately moved on the surface of the plate in line with the slots as well as turned laterally on their piv-

otal connections, and a strip of leather is then placed in the frame with its irregular end near the holders. Each holder is then separately advanced along its slot toward the leather and made to grasp it, either on lines at right angles to the axis of the body of leather or at inclinations varying therefrom, and when the holders have been so adjusted and made to grip the leather their respective locking-bolts are operated to connect them securely to the head, and tension may then be applied to the leather by the stretcher mechanism. After the leather has been stretched and dried the clamps can be readily disengaged by turning their clamping and locking nuts and moved along their slots toward the end of the frame.

As the guiding of the holders may be done in other ways than by means of the slots in the stretcher-head and their adjustment and locking effected by means varying from those shown, I do not wish to limit my claim to the specific devices shown and described.

The subject-matters of invention herein disclosed and not herein claimed relating to the devices for engaging the leather by means of tines or clamps and the means for adjustably and pivotally connecting such leather-holders to a stretcher-head are reserved to be claimed in my pending applications, Serial No. 1,424, filed January 15, 1900; Serial No. 9,199, filed March 19, 1900; Serial No. 40,215, filed March 26, 1900; Serial No. 21,061, filed June 21, 1900, and Serial No. 10,128, filed March 26, 1900.

Having described my invention, what I claim is—

1. In a leather-stretching machine, the combination with the head of a stretching-frame having a series of parallel guideways extending in the direction of the tension of the machine upon said head, of a series of coupling devices independently slidable lengthwise of said ways, a series of leather-holders pivotally connected to said coupling devices and adapted to swing thereon in lateral direction, and means for independently and successively locking the coupling devices to the head, substantially as set forth.

2. In a leather-stretching machine, the combination with a stretcher-head having a series of guideways extending parallel with the direction of tension of the machine upon said head, of a series of leather-holders loosely supported on said head, a corresponding series of coupling devices slidable along and guided by said ways, means for pivotally connecting the holders to the coupling devices so as to permit them to swing laterally on the head, and means for locking the coupling devices separately and successively to the head, substantially as set forth.

3. In a leather-stretching machine, the combination with a stretcher-head having a series of guideways extending parallel with the direction of tension of the machine upon said head, of a series of independent leather-holders adjustably supported on said head, a corresponding series of coupling devices pivotally connected and carried by the holders and slidable in said guideways, and means for independently locking the coupling devices to the head, substantially as set forth.

4. The combination with the head of a stretching-frame having a series of slots extending in the direction of the tension upon said head, of a series of pivots or posts slidable lengthwise of and guided by said slots, leather-holders pivotally connected to the pivots or posts, and means for locking the latter to the head in their adjusted positions, substantially as set forth.

5. The combination with the head of a leather-stretching frame having a series of parallel slots extending in the direction of the tension upon said head and having serrations or like irregularities of surface adjacent to the slots, of a series of coupling and locking devices separately slidable in said slots and adapted to engage such serrations, a corresponding series of leather-holders pivotally connected to the coupling devices, and means for locking the latter to the head to retain the holders in place, substantially as set forth.

6. A lock for connecting a leather-holder to a stretcher-head, comprising a bolt extending vertically through openings in portions of the holder and head, devices thereon beneath the head for engaging it, and a superposed device for lifting the bolt to clamp the holder to the head; in combination with a leather-holder pivotally connected to said bolt, substantially as set forth.

In testimony whereof I have hereunto set my hand this 10th day of December, 1900.

JOHN CALDWELL.

In presence of—
P. H. GUNCKEL,
A. L. WHELAN.