

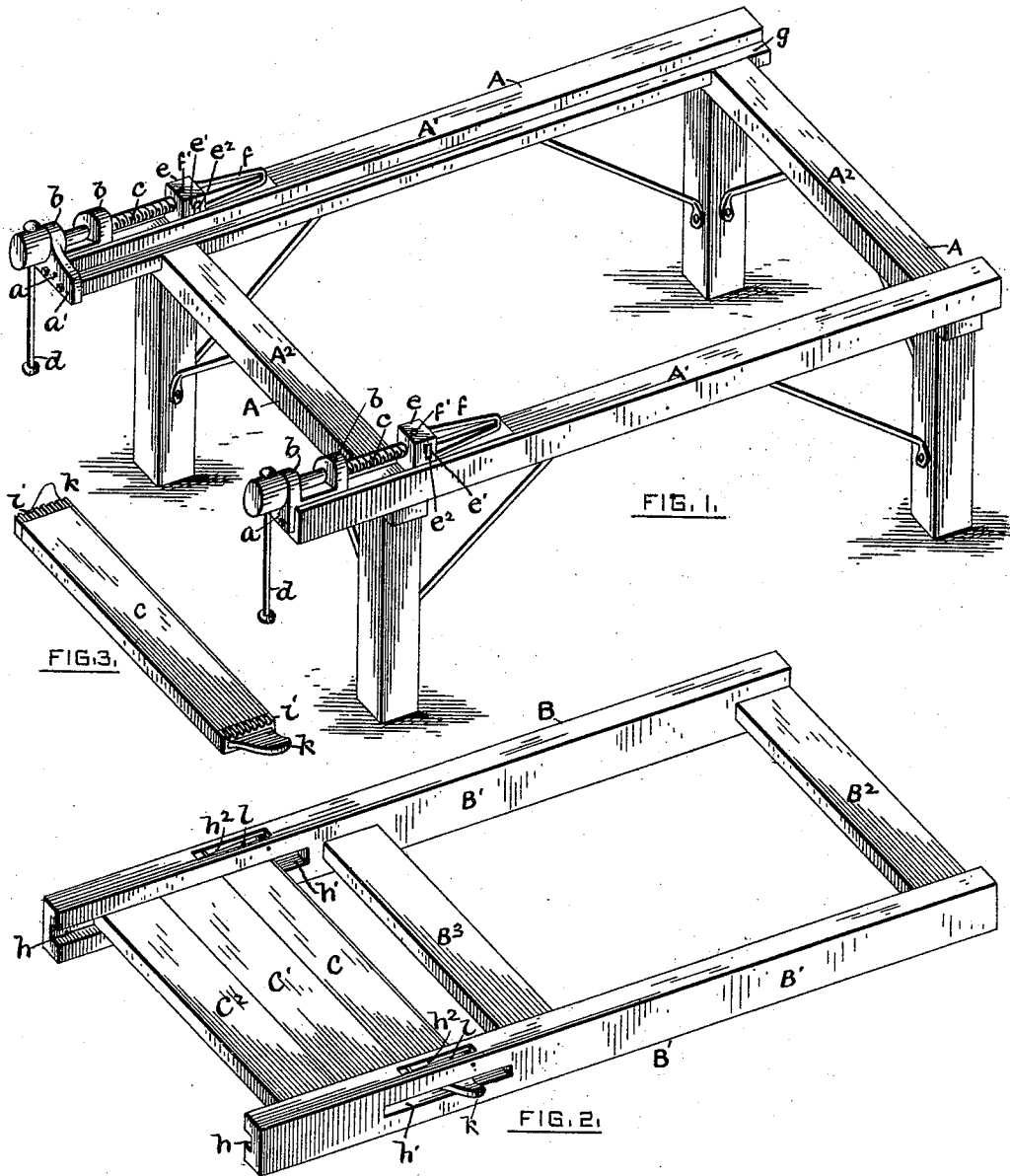
(No Model.)

2 Sheets—Sheet 1.

W. COUPE.  
STRETCHING MACHINE.

No. 464,794.

Patented Dec. 8, 1891.



WITNESSES.

W. H. Thurston  
A. J. Murphy

INVENTOR.

William Coupe

(No Model.)

2 Sheets—Sheet 2.

W. COUPE.  
STRETCHING MACHINE.

No. 464,794.

Patented Dec. 8, 1891.

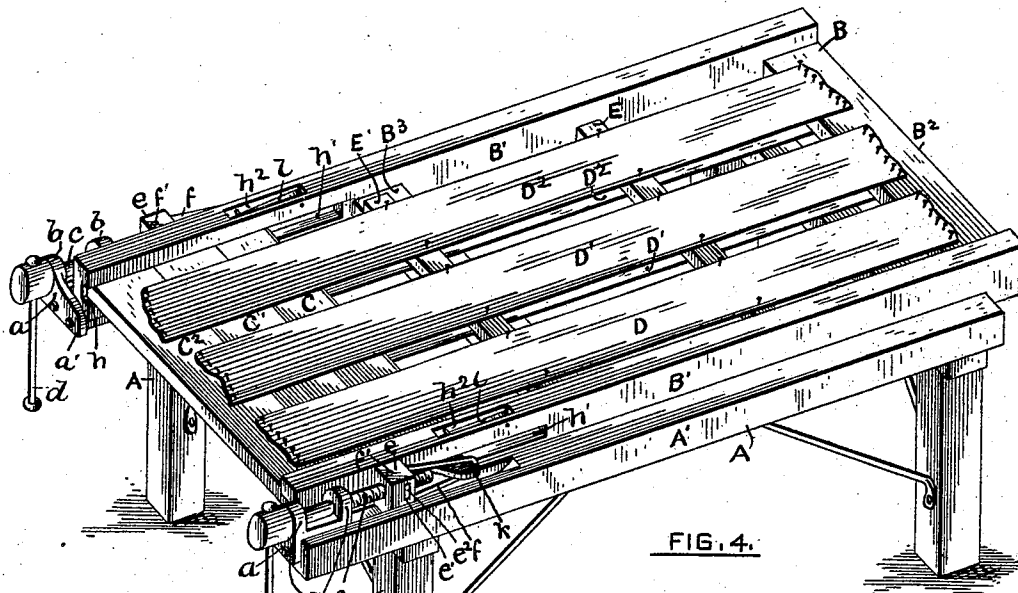


FIG. 4.

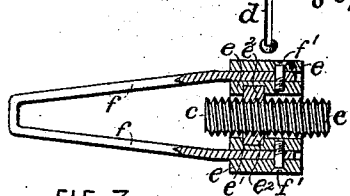


FIG. 7.

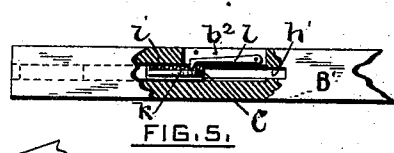


FIG. 5.

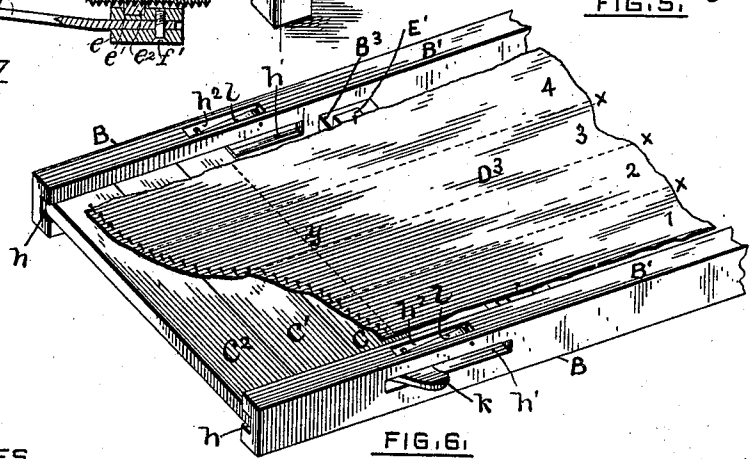


FIG. 6.

WITNESSES.

H. B. Thurston  
S. J. Murphy

INVENTOR.

William Coupe

# UNITED STATES PATENT OFFICE.

WILLIAM COUPE, OF ATTLEBOROUGH, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO MICHAEL MCGOWAN, OF PAWTUCKET, RHODE ISLAND.

## STRETCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 464,794, dated December 8, 1891.

Application filed July 24, 1890. Serial No. 359,778. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM COUPE, of Attleborough, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Stretching-Machines; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a full, clear, and exact description thereof.

The machine hereinafter described is designed for stretching leather in strips as distinguished from whole hides or what are known as "sides," and is especially adapted for stretching strips of partially tanned or what is known as "rawhide leather" for use in the manufacture of belts.

The object of the invention is to secure a machine by means of which the strips of leather may be quickly and thoroughly stretched, and so organized that the strips of leather can be held and left in their stretched condition for a suitable length of time to set and dry.

To this end the invention consists, primarily, in a certain novel construction of removable stretching-frame to which the strips of leather may be secured, and in the combination of the same with a suitable stationary standard or support and means for imparting stretch to the strips of leather, the organization being such that the frame, with the strips of leather secured to it may be removed from the standard and laid one side for the stretched strips to dry and set and another frame, with strips of leather attached to it, put upon the standard in place of the one removed, and the strips attached to this second frame in turn stretched, the frame removed and laid away for the leather to dry in its stretched condition, and so on.

The invention also consists in certain mechanical combinations and arrangements of parts hereinafter described.

Referring to the drawings, Figure 1 is a perspective view of the standard or support. Fig. 2 is a perspective view of the removable stretching-frame. Fig. 3 is a perspective view of one of the movable boards of the stretching-frame. Fig. 4 is a perspective view of the standard with the stretching-frame mounted

in place thereon and with the parts in the position which they will occupy after the strips of leather have been stretched. Fig. 5 is a side view of a portion of the stretching-frame partially broken away. Fig. 6 is a perspective view of a portion of the stretching-frame, showing the manner of securing a wide strip of leather with an irregularly-shaped end; and Fig. 7 is a vertical section on an enlarged scale, showing the construction of certain of the parts.

A represents a rigid rectangular framework or standard consisting of side pieces  $A' A'$  and end pieces  $A^2 A^2$ , mounted upon suitable legs and properly braced, all as shown in Fig. 1. This frame-work may, if desired, be rigidly secured to the floor. Secured at one end of each of the side pieces  $A' A'$  is a casting  $a$ , which is provided with a lug or projection  $a'$ , which lugs form abutments for the ends of the side pieces of the stretching-frame when the latter is in place upon the standard, as shown in Fig. 4. Each of the castings  $a a$  is provided with two upwardly-extending ears  $b b$ , which are bored out to form bearings for the screws  $c c$ , mounted therein, as shown in Figs. 1 and 4. Each of the screws  $c c$  is provided at its outer end with a suitable handle or lever  $d$  for turning the same, and to the other end of each screw is connected a head-piece  $e$ . This head-piece  $e$  has a slot  $e'$  cut through it, into which slot is fitted a threaded nut  $e^2$ , adapted to engage with the thread upon the screw  $c$ , and thereby connect the head-piece  $e$  with the screw, so that it will be operated thereby.

$f f$  are links, which are pivoted to the head-pieces  $e e$  by means of the pivot-pins  $f' f'$ , and so as to be capable of being turned toward or away from the side of the stretching-frame when the latter is in place.

As clearly shown in Fig. 1, each of the side pieces  $A' A'$  of the standard is channeled out, as at  $g$ , to receive the side pieces of the stretching-frame.

B represents the stretching-frame. (Shown in perspective at Fig. 2.) Said stretching-frame is composed of two side pieces  $B' B'$ , rigidly connected together by two cross-pieces  $B^2 B^2$ , one located at or near one end of the frame and the other near the middle of the

frame, as shown. Each of the side pieces B' B' is provided at one end with a groove *h*, said grooves extending lengthwise of the side pieces for a considerable distance, as shown at Fig. 2. Fitted to slide in the grooves *h h* are one or more bars or boards C C' C<sup>2</sup>. One of these boards C is provided at each end with ratchet-teeth *i* and with a projecting lug or ear-piece *k*, as shown in Fig. 3. At their inner ends the grooves *h h* are cut entirely through the side pieces B' B', so as to form slots *h' h'* therein, through which slots project the lugs *k k* on the board C when the latter is in place. Vertical slots *h<sup>2</sup> h<sup>2</sup>* are also cut in each of the side pieces B' B', which vertical slots communicate with and lead into the slots *h' h'*. Secured in each of the vertical slots *h<sup>2</sup> h<sup>2</sup>* is a pawl *l*, loosely pivoted so as to be freely acted upon by the force of gravity and to engage, when the stretching-frame B is laid upon one of its sides, with the ratchet-teeth *i* on the board C.

If only one sliding board is employed, it is to be constructed with the ratchet-teeth and projecting lugs, as shown in Fig. 3. If more than one sliding board is employed, as shown in the drawings, one of them C is to be constructed with the ratchet-teeth and lugs and the others, as C' C<sup>2</sup>, are simply fitted to slide in the grooves *h*. The purpose of employing more than one board is to enable strips of different lengths to be stretched at the same time or to properly stretch a strip of varying length, such as shown in Fig. 6.

The operation of stretching strips of leather upon the machine herein described is as follows: The stretching-frame B is laid upon that one of its sides which will cause the gravity-pawl *l* to fall out of engagement with its ratchet-teeth and the boards C C' C<sup>2</sup> pushed toward the middle of the frame and toward the inner ends of the grooves *h*. It will be observed that by having the gravity-pawl out of engagement with its ratchet-teeth at this time the sliding boards can be moved by hand into any desired position. One or more strips of leather, as D D' D<sup>2</sup>, Fig. 4, according to the capacity of the frame and the width of the strips to be stretched, are then secured to the stretching-frame in the following manner: One end of each strip is firmly nailed to the cross-piece B<sup>2</sup>. The strip is then pulled out by hand and its other end is firmly nailed to that one of the sliding boards which is in the most convenient position for it to be attached to. In Fig. 4 of the drawings the strips D D' D<sup>2</sup> are represented as all of the same length, and all of a length to be secured to the outermost board C<sup>2</sup>. As will be evident, however, if the strips were all short strips, they could all be secured to the innermost board C, and if the three strips were each of a different length the end of one could be secured to the board C, the end of another to the board C', and the end of the third to the board C<sup>2</sup>. If a wide strip of varying length—that is, with an irregularly-shaped end—such, for instance,

as the strip D<sup>3</sup> in Fig. 6, and which represents a strip of very common form taken from the side of a hide—is to be stretched, its irregular end may be secured part to one of the boards, part to another, and part to the third, as shown. When strips of leather sufficient to fill one side of the frame have been thus nailed on, the frame is turned over, and other strips of leather are then in like manner secured upon the opposite side of the frame, as shown in Fig. 4. It will be observed that when the stretching-frame is thus turned over the gravity-pawl *l* will fall into engagement with one of the ratchet-teeth *i*, as shown in Fig. 5. It is usually desirable, especially in the case of wide strips, to provide against the drawing in of the strips at or along their middle portions measuring lengthwise of the strip. This may be accomplished, when desired, by laying a narrow board E crosswise of the strips of leather and between the two sets of strips and tacking the edges of the strips thereto, as shown in Fig. 4. If deemed desirable, two boards E E' may be employed for this purpose, as shown.

It will be found convenient to place the stretching-frame B in position upon the standard A prior to attaching the strips of leather and to attach the strips to said frame while in position upon the standard, as the frame is thus at a convenient height. If desired, however, the strips may be attached to the frame before it is placed upon the standard, in which latter case, after the strips have been secured to the frame, the latter is then placed in position upon the standard, the side pieces B' B' resting in the channels *g g*. The screws *c c* are then turned so as to advance the sliding heads *e e* and the links *f f* pivoted thereto until said links are in proper position to engage the lugs *k k* on the board C. The links *f f* are then turned inward toward the sides of the frame and so as to hook over and engage the lugs *k k*, as shown in Fig. 4. The screws *c c* are then turned by means of the handles *d d* in a direction to draw the nuts *e<sup>2</sup> e<sup>2</sup>* onto the screws, which will draw the head-pieces *e e*, with the attached links *f f*, in the same direction and thus exert a pull upon the board C toward the end of the frame and in a direction to stretch the strip or strips of leather secured thereto by reason of the engagement of the links *f f* with the lugs *k k*. The sliding movement thus given to the board C will be necessarily imparted to the other sliding boards C' and C<sup>2</sup>, which will thereby be likewise forced toward the end of the frame, and so as to stretch the strip or strips of leather secured to said latter boards, respectively. As the board C is advanced under the pull of the screws, the gravity-pawls *l l* will ride up their respective ratchet-teeth and permit the movement of the board in that direction; but each pawl after it has thus ridden over any given tooth will immediately under the influence of gravity fall in behind said tooth, and

thus hold the boards in their advanced position. In this connection it may be stated that, if desired, springs may be employed to actuate the pawls *ll*; but pawls acted upon by gravity are preferred, as requiring less manipulation, for the reason that they will be automatically disengaged when the stretching-frame is turned over on one side. When the strip or strips of leather secured to the stretching-frame have been sufficiently stretched, the links *ff* are unhooked from the lugs *kk*, the stretching-frame, with the strips of leather still secured thereto, is removed from the standard and laid away for the leather to become dry and set in its stretched condition, and another frame placed upon the standard in its place, to which in turn other strips of leather are to be secured and stretched, as before. The pawls *ll* will serve to hold the sliding boards in their advanced position and the strips secured thereto under strain. When the strips of leather have become sufficiently dry and set, they are to be removed from the stretching-frame by withdrawing the nails which secure them, when the frame will be again ready for use.

It will be observed that by the employment of mechanism, as above described, a large number of stretching-frames may be employed with only one standard or support, thus enabling the successive frames to be packed away as they are in turn filled and the leather secured thereto, properly stretched, to allow the leather to become set and dry in its stretched condition. It will also be observed that by the use of a stretching-frame such as shown and described strips of leather may be secured to opposite sides thereof, and also that more than one strip can be attached to each side, so that a comparatively large number of strips can thus be simultaneously stretched, resulting in a great saving of time and also in the number of frames required and consequent saving in cost. Moreover, by the employment of two or more sliding boards the strips to be simultaneously stretched may be either of the same or of different lengths, which saves altogether the necessity of sorting the strips preparatory to stretching, as would be necessary if only strips of substantially the same length could be stretched at the same time. This again results in a great saving of time.

By the method employed of securing the strips of leather to the stretching-frame by nails instead of by the employment of some form of clamping device a material increase in the amount of marketable leather is effected. This is due to the fact that the nails may be inserted comparatively near to the end of the strip and in an irregular line corresponding substantially with whatever may chance to be the irregular shape of the end of the strip, with the result that, particularly in the case of wide strips, which are to be subsequently cut up into narrower strips, there is comparatively little waste or unmarketable

leather. This fact is clearly illustrated in Fig. 6. The strip *D*<sup>3</sup> there shown is a wide strip capable of being cut up into four narrow strips 1 2 3 4, as indicated by the dotted lines *xxx*, running lengthwise of the strip in said figure. It is apparent that if some form of straight-edged clamping device were employed the strip *D*<sup>3</sup> would have to be secured to the board *C* along a straight line indicated by the dotted line *y*, running crosswise of the strip, for the reason that the clamp would have to be applied back of all the irregularities in the end of the strip. This would result in all that portion of the strip *D*<sup>3</sup> which lies to the left of the dotted line *y* having to be cut off as waste leather, for the reason that the clamp would necessarily so injure and deface the leather that all marks made thereby would have to be removed from the marketable portion of the strip. By employing a series of nails to secure the strip, and by applying them in an irregular line along the irregular end of the strip, as shown in Fig. 6, it is apparent that only a small portion of the strip along its irregular edge will have to be removed, leaving the remainder of the strip as marketable leather, with the result that all those portions of the strips 1 2 3 4 lying to the left of the dotted line *y*, except a narrow margin along the line of the nails, will be saved and go to increase the amount of marketable leather. The saving thus effected is very material and of great importance.

While the machine above described is especially designed for stretching strips of leather, it is evident that it may, if desired, be employed for stretching other material in strips.

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

1. A stretching-frame for stretching one or more strips of leather or other material, composed of two parallel side pieces rigidly connected together and provided at one end with a fixed bar or board and at the other end with two or more sliding boards, one of said sliding boards being provided with means for applying power thereto, whereby power applied to such sliding board will operate to move all said sliding boards in a direction to stretch the strips of leather secured to the frame, substantially as described.

2. A stretching-frame for stretching one or more strips of leather or other material, composed of two parallel side pieces rigidly connected together and provided at one end with a fixed bar or board and at the other end with a sliding board, said sliding board being provided with means for applying power thereto to stretch the strips of leather and with ratchet teeth and pawls pivoted to the side pieces of the frame to engage said ratchet-teeth and hold said sliding board against the pull of the stretched strips, substantially as described.

3. A reversible stretching-frame for stretching one or more strips of leather or other ma-

terial, composed of two parallel side pieces rigidly connected together and provided at one end with a fixed bar or board and at the other end with a sliding board fitted to slide  
 5 in grooves in said side pieces, whereby strips of leather may be secured to opposite sides of said frame and simultaneously stretched, substantially as described.

4. A reversible stretching-frame for stretching  
 10 ing one or more strips of leather or other material, composed of two parallel side pieces rigidly connected together and provided at one end with a fixed bar or board and at the other end with a sliding board fitted to slide  
 15 in grooves in said side pieces, one of said boards being provided with lugs for applying power thereto and with ratchet-teeth to be engaged by pawls pivoted to the side pieces of the frame and acted upon by gravity,  
 20 whereby when the frame is laid upon one side the said pawls will fall out of engagement with their ratchet-teeth and when the frame is turned over upon the other side the said pawls will fall into engagement with  
 25 their ratchet-teeth and thereby hold the said sliding board against the pull of the stretched strips, substantially as set forth.

5. The combination, with a standard or support, of a removable stretching-frame composed of side pieces rigidly connected together and provided at one end with a fixed  
 30 bar or board and at the other end with a movable board, to which boards strips of leather or other material may be secured, and means, substantially as described, mounted upon said  
 35 standard for applying power to said movable board to stretch the strips of leather secured thereto, substantially as described.

6. The combination, with a standard or support provided with suitable abutments, of a removable stretching-frame composed of side pieces rigidly connected together and provided at one end with a fixed board and at the other end with a movable board, to which  
 4 boards strips of leather or other material may be secured, screws mounted upon said standard, pivoted links connected with and operated by said screws, and lugs attached to the  
 5 movable board of the stretching-frame and adapted to be engaged by said pivoted links, whereby power may be applied to said movable board to stretch the strips of material secured thereto, substantially as described.

7. The combination, with a standard or support provided with suitable abutments, of a removable stretching-frame constructed substantially as described and provided with one or more sliding boards, one of said sliding boards being provided with projecting lugs and with ratchet-teeth at its opposite ends,  
 60 pawls pivoted to said stretching-frame and adapted to engage said ratchet-teeth, screws mounted upon said standard, pivoted links connected with and operated by said screws and adapted to engage the projecting lugs  
 65 upon the sliding board of the stretching-frame, whereby power may be applied to said sliding board to stretch the strips of leather secured thereto, and the same may be held in their stretched condition after the stretching-frame is removed from its standard, substantially as described.

WILLIAM COUPE.

Witnesses:

W. H. THURSTON,  
 S. J. MURPHY.