

No. 686,506.

Patented Nov. 12, 1901.

J. CALDWELL.
LEATHER STRETCHING DEVICE

(Application filed Mar. 19, 1900.)

(No Model.)

Fig 1.

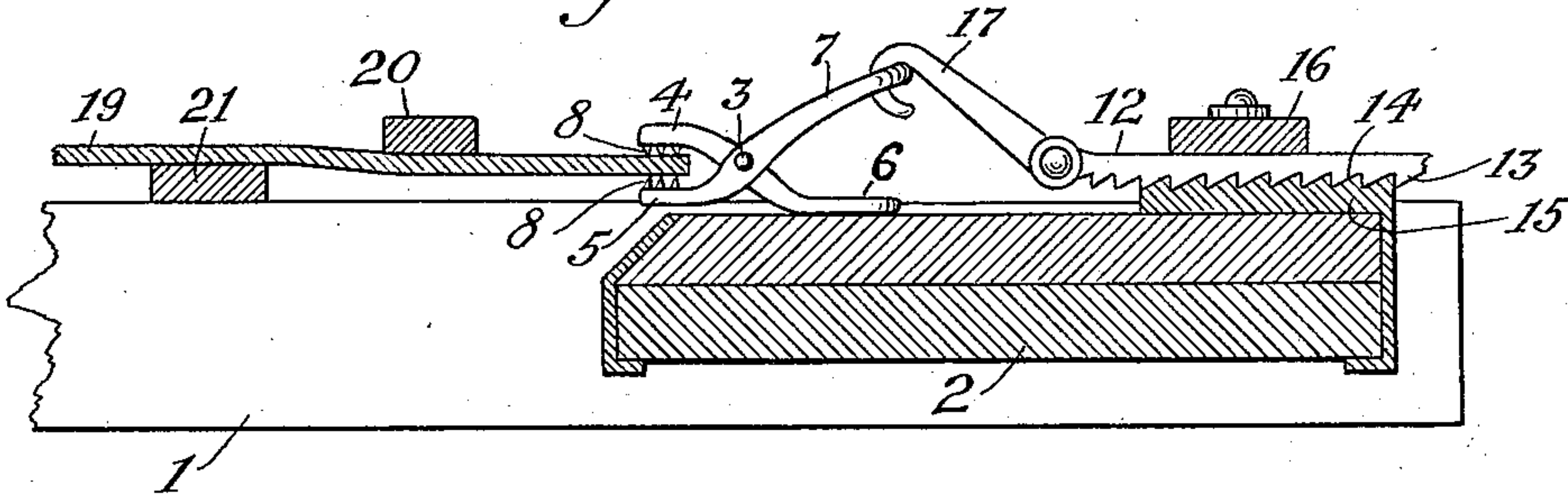


Fig 2.

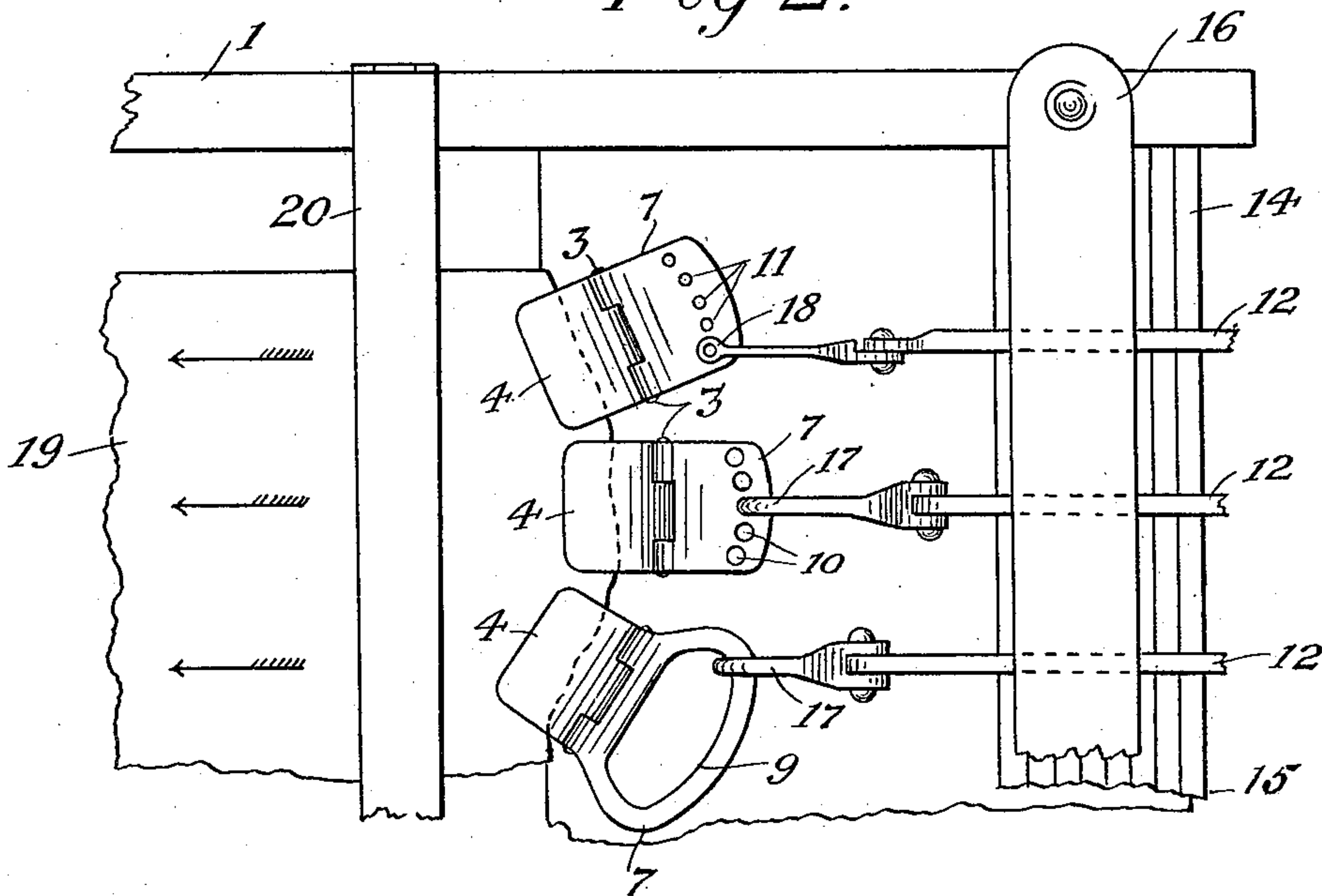


Fig 3

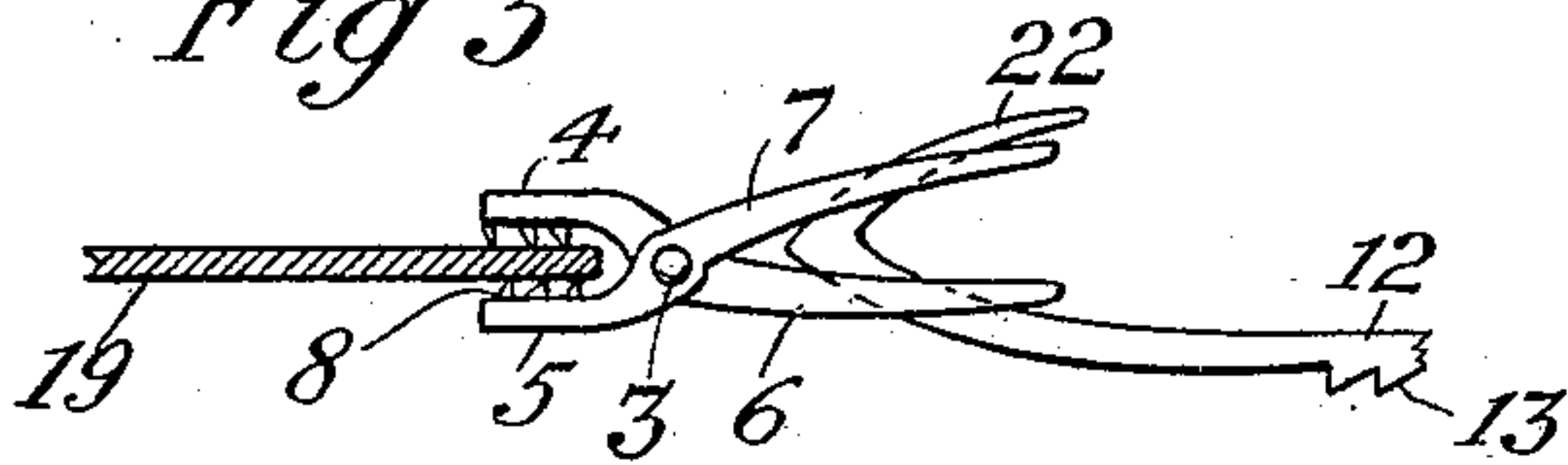
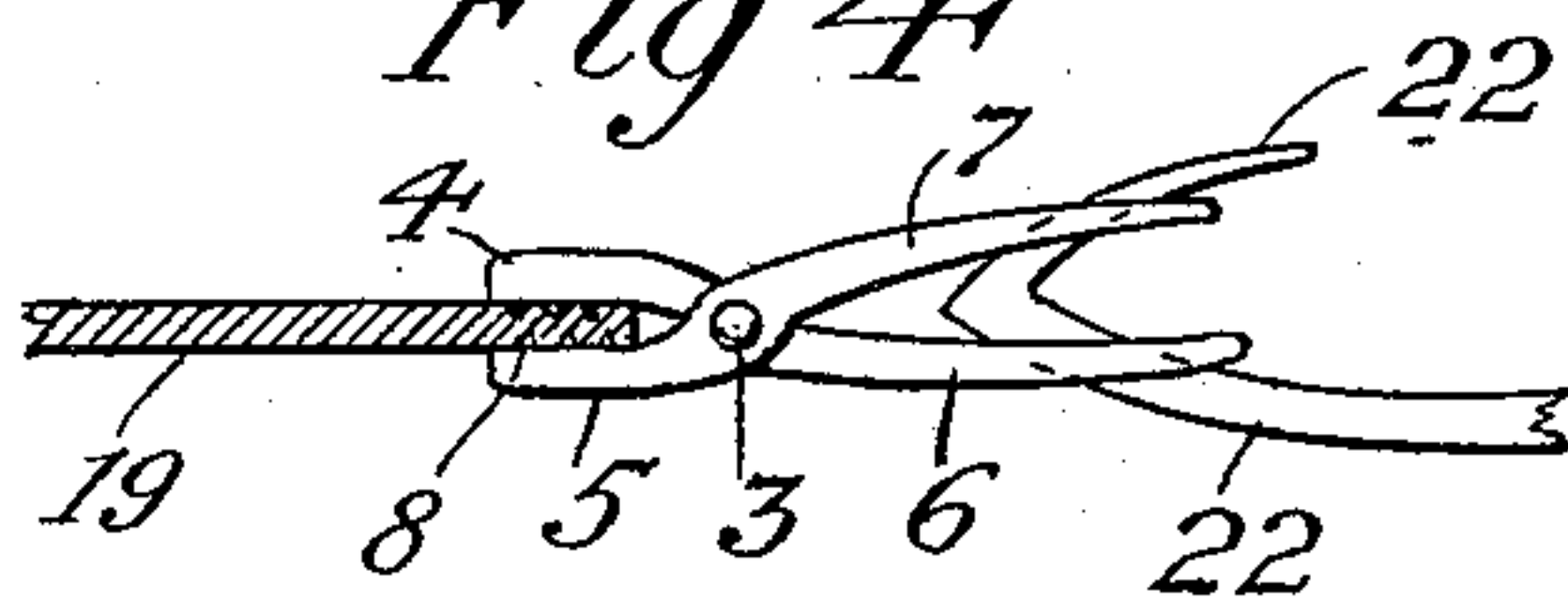


Fig 4



Witnesses
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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. 686,506, dated November 12, 1901.

Application filed March 19, 1900. Serial No. 9,199. (No model.)

To all whom it may concern:

Be it known that I, JOHN CALDWELL, a citizen of the United States, residing at Minneapolis, in the 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 devices employed for engaging and holding the leather in stretching-machines; and the object of the invention is to provide a series of separate and independently-operated clamping or gripping devices, each of which engages only a relatively short section of the margin of the leather, and means for pivotally and detachably connecting them to the machine.

The devices for my improvements, stated in a general way, comprise a series of independent clamps, each clamp adapted to grasp only a small portion of the margin of a piece of leather and to be freely pivoted to a coupling device (preferably at variable points on the clamp conformably to its inclination to the line of tension) and to be separately and successively connected to a head or other proper member of a stretching-machine and each preferably adapted to increase its grip with the increase of tension. Such devices are illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a portion of a stretching-machine, showing one of the improved clamps in operative position. Fig. 2 is a plan view of Fig. 1 and shows also two modifications of the means for pivotally connecting the clamps to the coupling-bars. Figs. 3 and 4 are side elevations of a modified construction of the clamp and coupling device, the former view showing the relative positions of the parts before and the latter after tension has been applied.

In such drawings, 1 designates one of the side pieces of an ordinary stretcher-frame, which is adapted to support a side, back, or other division of leather during the operation of stretching it and to be afterward removed from the stretching-machine and still support the leather and its holders until the leather is dried and set and taken off for use. To this frame is secured a fixed head or member 2 for supporting one end of the leather

and the devices which hold it, and a sliding head (not shown) is also provided for supporting the other end of the leather and arranged to be connected to a cross-head or equivalent moving part of a stretching-machine.

While my improvements are here shown in connection with the fixed head of the frame, it will be apparent that they may with equally good results be used in connection with the movable head or member.

The device for grasping the leather and holding it consists of relatively wide and flat pincers or grippers composed of crossed members pivoted together by a stout pintle 3 and having relatively short jaws 4 and 5 and relatively long lever-handles 6 and 7. The pivoting or hinging connection of the crossed gripper members 4 6 and 5 7 to each other is preferably made by passing the pintle 3 through knuckles, a knuckle on one of the members being fitted in the recess between a pair of knuckles on the other member, thereby strengthening the joint to withstand lateral strain. The jaws, to enable them to take a firm hold of the leather, should have teeth, tines, corrugations, or other suitable irregularities 8 on their contact-surfaces. A width of two to three inches will be found a desirable and convenient size for the jaws. The lever-handles 6 7 may be constructed in any desirable or convenient form for connecting them to the head or other proper part of the stretching-frame. While the jaws are in engagement with the leather the lower handle 6 rests on the surface of the stretcher-head 2, which prevents downward movement of that handle, and the strain upon the upper handle during tension tends to depress it, and thus the two handles are caused to cooperate in tightening the grip of the jaws on the leather as the tension increases. As the more important use for such devices is in securing an irregular end of the leather, it is desirable that the means for connecting them with the stretcher-head be capable of lateral adjustment or variation when the jaws are set at an inclination to the line of tension. To this end the upper handle 7, if connection is to be made with it alone, may be provided with a curved opening 9 or with suitably-lo-

cated separate holes 10 or pins 11. The connection of the holder with the stretcher-head may then be made by any suitable coupling device. As shown in Figs. 1 and 2, such coupling device may consist of a bar 12, having teeth 13 on its under surface for engaging serrations 14, formed on a plate 15, that is secured to the surface of the stretcher-head 2. The coupling-bars being independent of the grippers, their pivotal connection is made when desired preferably by means of vertically-swinging arms 17, hinged to the bars and provided with hooks and adapted to engage in the elongated slots 9 or the separate openings 10 in the gripper-handles, or the arms may be provided with eyes 18 for engaging the pins 11 on the gripper-handles. In either case the connection is such as to permit free lateral swinging of the grippers at all times, as well while engaging the leather and subjected to tension as when free from the leather. When the coupling-bars have all been made to engage the serrations on the stretcher-head, they may be held down to engagement by a locking-bar 16, that is hinged to one of the frame sides and arranged to swing over the coupling devices and be connected to the other frame side. For preventing the end portion of a piece of leather 19 from rising to an objectionable extent under stress a bar 20, hinged to one of the sides of the frame, is turned down across the leather and secured to the opposite side of the frame. Forward of the bar 20 is shown one of the usual movable strips 21, resting on the sides of the frame, and which prevent the leather from sagging.

In the modified construction shown in Figs. 3 and 4 both handles 6 and 7 have curved openings 9 and both are engaged by a hook 22 of suitably curved or angular shape to tend to draw them together under tension. Any of the well-known devices for engaging such lever-handles may be employed for this purpose, and their connection with the stretcher head or member may be made in any convenient way.

In practice in securing an irregular end of a strip of leather that is laid on the frame each clamp is separately placed substantially at a right angle to the edge of the portion of leather it is to hold and with its jaws in contact with the margin. The connections are then made anywhere in the curved slots, for the hooks will adjust themselves under tension, but at suitable points, if pins or separate holes are employed to properly distribute the strain at opposite sides of the connections. In Fig. 2 the arrows *z* indicate the direction of the pull of the leather and also the axial lines of the connecting-bars 12 and show that the extent of surface grasped by the jaws 4 and 5 is practically equal on the opposite sides of such axial lines. Such arrangement avoids unequal stress upon different portions of the jaws and the tendency of the jaws to

twist under tension that an unvariable connection would produce.

It is preferable that all of the holders be arranged in their proper places on the head and caused to grasp the leather sufficiently to retain them in place before their coupling devices are connected to them, and then such connections may be made separately and consecutively and, if desired, while the machine is in operation. As illustrated in Fig. 2, either or both of the holders shown as engaging the shorter portion of leather near its side (such portion being the softer and more yielding portion) may be connected to the head and put in service before the intermediate holder or holders are connected and operated. In this way different longitudinal portions of the leather that vary in firmness or condition can be stretched in succession and to different degrees.

I do not wish to limit my claims to such leather-clamping devices when provided with means for lateral variation of their points of pivotal connection to their coupling devices, nor do I wish to limit my protection to the specific forms and arrangements of the devices shown or described, for I believe it to be broadly novel to employ a series of clamping or gripping devices adapted to engage successive marginal portions of leather and a corresponding series of coupling devices adapted to be separately and successively pivotally connected to such leather-holders, whereby the latter may swing freely under tension, and means provided on a stretcher-head and on the coupling devices whereby the latter may be adjusted both laterally and longitudinally upon and operatively connected to the stretcher-head.

Patentable subject-matter herein disclosed relating to the free pivotal connection of the holders to their coupling devices, whereby they may swing freely upon each other under tension, and relative to the means for connecting the latter to the stretcher-head, is reserved to be claimed in concurrently pending applications Serial No. 1,424, filed January 15, 1900, and Serial No. 10,128, filed March 26, 1900, and the subject-matter of invention herein disclosed and not claimed relative to the means for varying the point of pivotal connection of the holder to the coupling device conformably to the direction of tension of the leather is reserved to be claimed in my pending application Serial No. 10,128, filed March 26, 1900.

Having described my invention, what I claim is—

1. The combination with a stretcher-head, of an independent leather-holder, and an independent coupling-bar adapted to be adjustably connected to the stretcher-head and carrying a hook arranged to swing in vertical direction and to engage the holder for freely pivoting it to the bar, substantially as set forth.

2. The combination with a coupling-bar

adapted to be adjustably connected to a
stretcher-head and carrying a vertically-
swinging hook or like device, of a leather-
holder provided with means for receiving such
hook at variable points in rear of its leather-
engaging devices and to be thereby freely
pivoted to such bar, substantially as set forth.

3. A leather-holder for a stretching-machine, consisting of hinged gripping-jaws,
crossed lever-handles for operating them, a
base or support for the lower handle, and an
independent coupling device for pivotally and
adjustably connecting the upper handle to the
machine, substantially as set forth.

4. The combination with a leather-holder
provided with means on its front portion for
engaging the leather and having an opening
in its rear portion, of a coupling device pro-
vided with a hook for engaging in such open-
ing for pivotally connecting the coupling de-
vice to the holder, and means for adjustably
connecting the former to a member of a
stretching-machine, substantially as set forth.

5. A leather-holder for a stretching-machine, consisting of hinged gripping-jaws,
handles for operating them, and a pivotally-
connected coupling device for detachably se-
curing the holder to the machine, and means
provided on a handle of the holder for lateral
adjustment of the point of pivotal connection
of the coupling device with it, substantially
as and for the purpose set forth.

6. In a leather-stretching machine, the com-
bination with a stretcher-head, of a series of
independent leather-holders consisting of
gripping-jaws and means for operating them
to grip the leather, and a corresponding se-
ries of independent coupling devices adapted
to be adjustably connected to the stretcher-
head and to be detachably and pivotally con-

nected to the holders to permit the latter to
swing freely under tension, substantially as
set forth.

7. In a leather-stretching machine, the com-
bination with a stretcher-head; of independ-
ent leather-holders consisting of hinged grip-
ping-jaws and crossed handles for operat-
ing them, the lower handles resting on the
stretcher-head; coupling devices for connect-
ing the upper handles to said head, and means
provided on the head and coupling devices
permitting the lateral and longitudinal ad-
justment of the latter on the former and their
operative connection thereto, substantially as
set forth.

8. In a leather-stretching machine, the com-
bination with a stretcher-head, of independ-
ent leather-holders consisting of hinged grip-
ping-jaws and crossed handles for operat-
ing them, the lower handles resting on the
stretcher-head, and coupling devices connect-
ing the upper handles to the stretcher-head,
and means provided on the upper handles for
lateral adjustment of the points of connec-
tion of their coupling devices with them, sub-
stantially as set forth.

9. A leather-holder for a stretching-machine, consisting of hinged gripping-jaws,
crossed lever-handles for operating them,
both handles being provided with openings in
curved arrangement, and a coupling device
provided with a hook for engaging in said
openings to connect the holder to the stretch-
ing-machine, for the purpose set forth.

In testimony whereof I have hereunto set
my hand this 13th day of March, 1900.

JOHN CALDWELL.

In presence of—

P. H. GUNCKEL,
M. F. HARRISON.