F. W. TUCKER.

MACHINE FOR STRETCHING HIDES.

APPLICATION FILED JULY 25, 1918.

1,338,050.

Patented Apr. 27, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

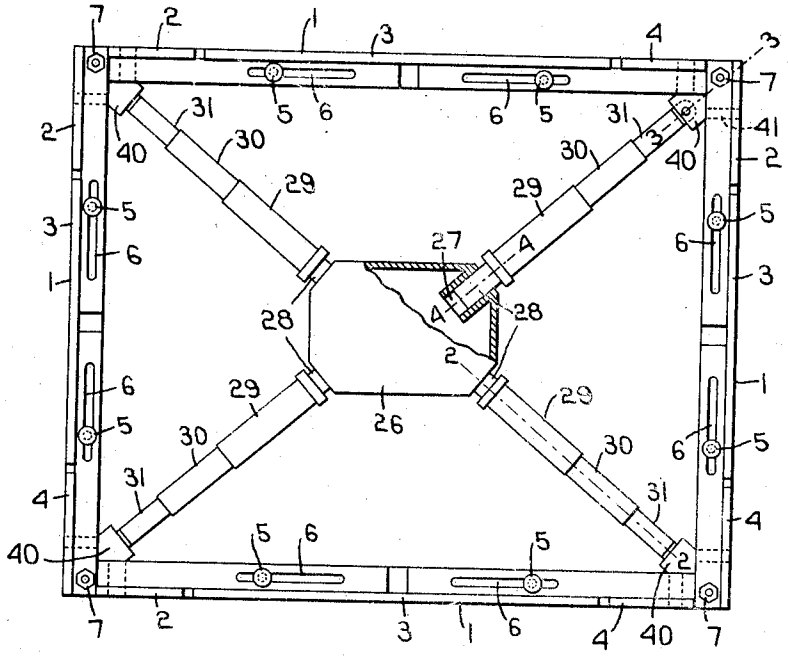


Fig. 2.

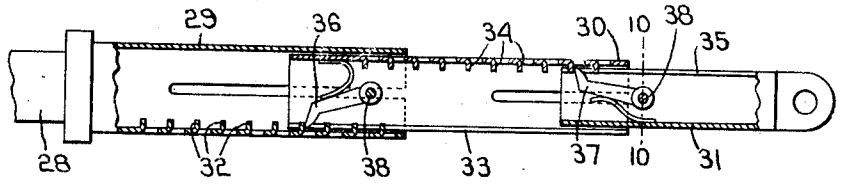


Fig. 3.

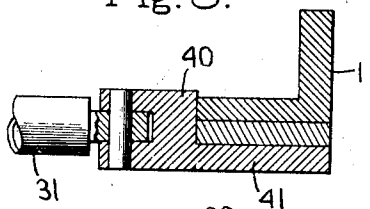


Fig. 10.

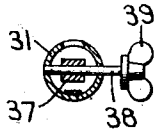
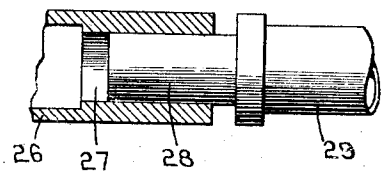


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

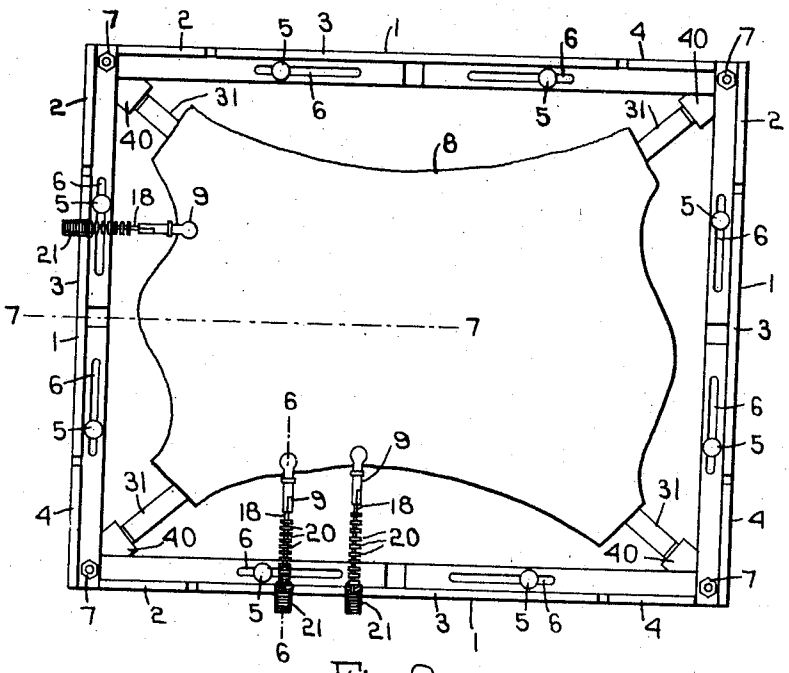


Fig. 6.

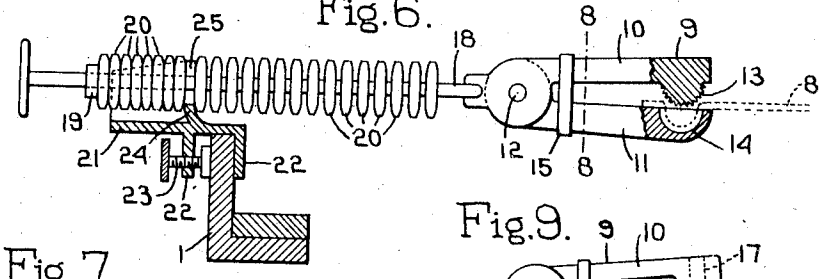


Fig. 7.

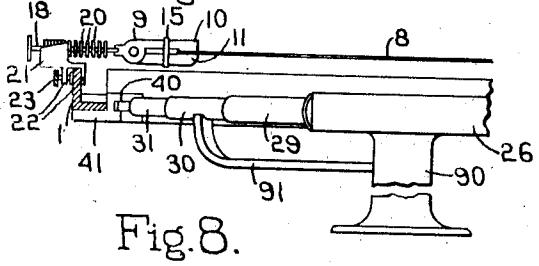


Fig. 8.

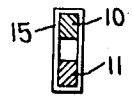


Fig. 9.

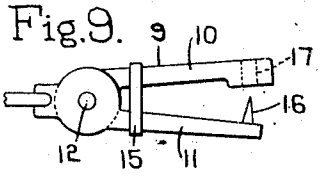
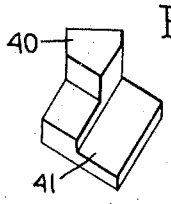


Fig. 11.



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UNITED STATES PATENT OFFICE.

FRANK W. TUCKER, OF LYNN, MASSACHUSETTS, ASSIGNOR TO FRANCIS A. SHEA, OF BOSTON, MASSACHUSETTS.

MACHINE FOR STRETCHING HIDES.

1,338,050. Specification of Letters Patent. Patented Apr. 27, 1920.

Application filed July 25, 1918. Serial No. 246,625.

To all whom it may concern:

Be it known that I, FRANK W. TUCKER, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Machines for Stretching Hides, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a machine for stretching hides while they are being dried after having been tanned or otherwise treated by being submerged in some liquid.

The invention comprises an expansible rectangular frame to which the edges of the hide are secured and pneumatic means for expanding the frame and thereby stretching the hide in all directions. The frame is detachable from the pneumatic-expanding means so that after the frame has been expanded and the hide has been stretched, the frame with the stretched hide thereon can be removed from the expanding means and another frame with another hide thereon associated with the expanding means.

In order to give an understanding of my invention I have illustrated in the drawings a selected embodiment thereof which will now be described, after which the novel features will be pointed out in the appended claims.

Figure 1 is a plan view of the machine.

Fig. 2 is an enlarged section on the line 2—2 Fig. 1.

Fig. 3 is an enlarged section on the line 3—3 Fig. 1.

Fig. 4 is an enlarged section on the line 4—4 Fig. 1.

Fig. 5 is a plan view of the machine showing a hide being stretched thereby.

Fig. 6 is an enlarged section on the line 6—6 Fig. 5.

Fig. 7 is a section on the line 7—7 Fig. 5.

Fig. 8 is a section on the line 8—8 Fig. 6.

Fig. 9 shows a different form of gripping members.

Fig. 10 is a section on the line 10—10 Fig. 2.

Fig. 11 is a view of the head at the end of each strut.

As stated above, the device comprises an expansible rectangular frame to which the hide to be stretched is secured and pneumatic means for expanding the frame thereby to stretch the hide. The frame is removably sustained by the frame-expanding means, so that after the frame has been expanded to stretch the hide, it can be removed from the expanding means and another frame supporting an unstretched hide can be placed thereon.

The frame is shown as comprising the four frame members 1 which are arranged to form a rectangular frame. The frame is constructed to be expansible and this will preferably be provided for by making each of the frame members 1 with a plurality of sections adjustable relative to each other. In the illustrated embodiment of my invention each frame member comprises the three sections 2, 3, 4; said sections being adjustably secured together by the clamping bolts 5 that operate in the slots 6. The end sections of the adjacent frame members 1 are secured together at the corners by clamping bolts 7.

The hide to be stretched is indicated at 8. During the stretching operation the edges of the hide are secured to the frame members 1 by suitable connections so that when the frame is expanded the hide will be subjected to a pulling strain. Any suitable means for connecting the hide to the frame members may be employed. I have herein shown for this purpose a plurality of gripping members 9, adapted to grip or clamp the edges of the hide and each provided with a connection by which it may be connected to a frame member. Each gripping member 9 is shown as comprising the gripping jaws 10 and 11 which are pivotally-connected at 12. These jaws 10 and 11 are provided with complemental gripping surfaces 13 and 14 between which the hide is received. In Fig. 6 the gripping surface 13 is shown as having a ball shape, and the gripping surface 14 is in the form of a socket. 15 indicates a locking-device in a form of a link, which is slidably mounted on the jaws 10 and 11, so that when the locking link 15 is moved toward the ends of the jaws they will be held firmly clamped against the hide. When the link 15 is moved toward the pivot 12 the jaws will be released to permit the hide to be removed. In Fig. 9 I have shown another form of gripping member in which one jaw is pro-

vided with a spur 16 adapted to pierce the hide and enter an aperture 17 formed in the other jaw.

Each gripping member has a stem or flexible member 18 connected thereto which has a collar 19 fast thereon, and a plurality of buttons or washers 20 loosely mounted thereon. These buttons or washers 20 are adapted to have inter-locking engagement with an anchoring member 21 that is arranged to be secured to one of the frame members 1. The frame members 1 are shown as having an angle-iron shape and each anchoring member 21 is provided with two arms 22 adapted to fit over the vertical flange of the angle-iron as shown in Fig. 6. One of the arms 22 carries a clamping screw 23 by which the anchoring member is clamped to the frame member. The anchoring member is shown as formed with a flange 24 having a slot 25 therein into which stem or connection 18 may be inserted. When the stem or connection is placed in the slot the flange 24 will pass between two adjacent buttons 20 and these buttons will thus serve as connecting clamping members to the frame members.

Any suitable number of gripping members 9 may be employed and when a hide has to be attached to the expansible frame the requisite number of gripping members will be applied to the edges of the hide and then the operator will draw the hide tight by pulling outwardly on the stems or connections 18 of the gripping members, each stem or connection 18 being dropped into the slot 25 of an anchoring member when the operator has drawn the connection as taut as he can.

After the hide has thus been attached to the expansible frame, said frame is placed on a pneumatic frame-expanding device which is constructed to expand the frame and thus to stretch the hide. During the operation of expanding the frame the clamping bolts 5 are loosened so as to permit the frame members to expand and after the frame has been expanded sufficiently then the clamping bolts 5 are tightened thus keeping the frame in its expanded condition.

The pneumatic frame-expanding means comprises a chamber 26 into which air under pressure may be admitted and which is provided with a plurality of cylinder portions 27 in which operate plungers 28. The chamber 26 is supported on a standard 90. Each plunger 28 has an extensible strut connected thereto which is adapted to engage the frame, the construction being such that when air under pressure is admitted to the chamber 26 the consequent outward movement of the plungers 28 will operate through the struts to expand the frame 1.

The struts are extensible and this is provided for by making each one in a plurality of sections. In the construction herein shown each strut comprises the three sections 29, 30, 31; said sections having a telescopic relation. The section 29 is provided with inwardly directed teeth 32 which extend through a slot 33 formed in the section 30, and the section 30 is provided with inwardly directed teeth 34 which extend through and operate in a slot 35 formed in the section 31. The section 30 carries a pivoted pawl 36 which is adapted to engage the teeth 32 and the section 31 is provided with another pivoted pawl 37 adapted to engage the teeth 34. These pawls are mounted on shafts 38 provided with handles 39 by which they may be turned.

The outer section 31 of each strut is connected to a head 40 adapted to engage the corner of the frame, said head having an extension 41 on which the frame rests. The standard 90 is provided with arms 91 which support the struts, said struts resting loosely on the arms.

In using the device the wet hide is attached to the frame, as above described, and then the frame will be placed over the pneumatic frame-expanding device, said frame resting on and being supported by the extension 41 of the heads. The struts are, of course, extended so that the heads 40 will engage the corners of the frame. The pawls 36 and 37 hold the struts in their extended condition. After the frame with the hide thereon has been placed in position, shown in Fig. 5, then air under pressure will be admitted to the chamber 26. The plungers 28 will thus be forced outwardly and the frame will be expanded, thus stretching the hide. The amount which the hide is stretched depends on the pressure which is allowed to accumulate in the chamber 26 and by regulating this pressure the hide can be stretched to any desired degree. After the hide has been sufficiently stretched the bolts 5 are tightened so as to hold the frame in its expanded condition and the frame may then be removed from its expanding device and placed in some suitable location to permit the hide to dry. The hide will thus be retained in its stretched condition until it is thoroughly dried, after which it may be removed from the frame.

The reason for making the struts extensible is so that they can be used with frames of different sizes and with frames which are expanded to a greater or less extent.

The advantage of the pneumatic expanding device is that the hide will be subjected to an even stretching strain, and any undue strain which is liable to injure the hide is avoided.

I claim:

1. The combination with a chamber hav-

ing a plurality of cylinder portions, of an independently-movable plunger operating in each cylinder portion, and means connecting said plungers with different portions of an expansible hide-supporting frame whereby when air under pressure is admitted to the chamber the outward movement of the plungers will expand the frame and subject the hide supported thereby to a uniform stretching operation.

2. In a machine for stretching hides, the combination with an expansible frame comprising sides which are rigidly connected at their corners and each of which is made in sections that are adjustable longitudinally relative to each other thereby to permit said side to be extended, a strut member engaging the frame at each corner, and means acting on the strut members to force them outwardly with a uniform pressure thereby to expend the frame.

3. In a machine for stretching hides, the combination with a plurality of independently-movable struts adapted to engage different portions of an expansible hide-supporting frame, of a chamber adapted to contain air under pressure, and movable means associated with each strut and subjected to the air pressure in the chamber to transmit such pressure to each strut whereby such pressure will operate through the strut to expand the frame and thereby stretch the hide supported thereon.

4. In a machine for stretching hides, the combination with an expansible frame comprising side members rigidly connected at the corners, each side member comprising a plurality of sections adjustable longitudinally relative to each other thereby to permit said side members to be extended, of a strut member engaging the frame at each corner, and pneumatic means acting on the strut members to force them outwardly and thereby expand the frame.

5. In a machine for stretching hides, the combination with a plurality of strut members adapted to engage an expansible hide-supporting frame, each strut member being composed of several sections having a telescopic relation and having latches to hold the sections in adjusted position, of means acting on the strut members thereby to expand the frame with which the strut members have engagement.

6. In a machine for stretching hides, the combination with a plurality of strut members adapted to engage an expansible hide-supporting frame, each strut member being composed of several sections having a telescopic relation and having latches which permit the sections to be extended but prevent them from contracting, of means acting on the stretched members to cause them to expand the frame engaged thereby.

7. In a machine for stretching hides, the combination with a stand or support, of an air chamber sustained thereby and provided with a plurality of divergently-arranged cylinder portions, plungers operating in said cylinder portions, a strut associated with each plunger, said struts being adapted to engage different portions of an expansible hide-supporting frame, and supporting means for the struts extending from the stand or support.

In testimony whereof, I have signed my name to this specification.

FRANK W. TUCKER.

Correction in Letters Patent No. 1,338,050.

It is hereby certified that in Letters Patent No. 1,338,050, granted April 27, 1920, upon the application of Frank W. Tucker, of Lynn, Massachusetts, for an improvement in " Machines for Stretching Hides," an error appears in the printed specification requiring correction as follows: Page 3, line 21, claim 2, for the word "expend" read *expand;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of May, A. D., 1920.

[SEAL.]

M. H. COULSTON,

Acting Commissioner of Patents.

Cl. 149—21.