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SETTING-OUT FRAME

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

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This invention relates to a setting-out frame for leather. Previously wooden frames have been used for this purpose. More recently, frames provided with perforated metal plates have been employed. The size of the frames is adapted to the maximum length and width of the leather to be set out and the leather is affixed to the frame by straining clamps. Special tools are provided to tension the leather before the clamp is connected to the frame. Each of said straining clamps must be individually tensioned by the workers. In spite of the use of appropriate tools that work is most wearisome and strenuous.

It is an object of the invention to provide a setting-out frame for leather, which is capable of stretching the leather after it has been affixed to the frame.

It is another object of the invention to provide a setting-out frame for leather, which is capable of automatically stretching the leather after it has been affixed to the frame.

It is another object of the invention to provide a setting-out frame for leather, which facilitates a uniform stretching of the leather.

It is another object of the invention to provide a setting-out frame for leather, which comprises means for exercising a continued stretching force on the leather.

It is another object of the invention to provide a setting-out frame for leather, in which the leather can be subjected to predetermined stretching forces.

With these and other objects in mind, which will become apparent as the specification proceeds, the invention provides a setting-out frame for leather, which comprises a plurality of frame members relatively slidably assembled to form a closed frame.

Other features of the invention will be explained more fully with reference to the drawing, which shows diagrammatically some illustrative embodiments of a quadrangular setting-out frame.

Fig. 1 is a top plan view of a setting-out frame illustrating the principle of the invention.

Fig. 2 is a sectional view of a corner of one embodiment of the frame, wherein tension springs are used.

Fig. 3 is a sectional view of an embodiment comprising compression springs.

Fig. 4 is a view of an embodiment provided with an adjusting screw spindle arrangement.

Fig. 5 shows a method by which a pressure fluid is used to produce the stretching forces.

According to Fig. 1 the setting-out frame consists of outer side members 1, which may be of tubular form and carry perforated plates 2, which may have substantially the form of a triangle connected at its base to said side members 1. In the present embodiment said triangles are cut off at the top to form trapezoids having longer and shorter parallel sides and connected to said side members 1 at said longer parallel sides. At the corners of the frame the side members 1 are slidably interconnected by inner corner members 3, which are also of tubular form and each of which comprises two arms extending at an angle to each other. In the present embodiment four side members 1 and four corner members 3 are provided and the arms of each corner member 3 extend at right angles to each other. It is obvious that another cross-sectional shape may be employed for the frame members 1 and 3. Preferably the cross-sectional shape should be such as to enable a relative displacement of adjacent frame members while preventing them from relative turning, unless other means are provided to prevent such turning, as will be illustrated hereinafter.

Thus the frame members 1 and 3 are slidably assembled in alternation to form a closed frame, with the inner corner members 3 being telescoped in the outer side members 1. The contour of the frame may differ from a rectangle and may form, e.g., a polygon, preferably a hexagon, or may approximate a circle, oval or ellipse.

The several frame members 1 and 3 are forced apart by straining forces which become effective after the frame members have been pressed together and a hide or piece of leather 17 has been affixed thereto. Thus the force required to stretch the leather while it is being set out need not be applied to the leather in affixing it to the frame. For affixing the leather to the perforated plates the conventional straining clamps 18 or other suitable means may be employed. After the leather has been affixed the frames may be passed through a tunnel drier and subsequently may be re-compressed, e.g., with the aid of a press, to facilitate the removal of the leather after setting-out.

In the embodiment shown in Fig. 2 the right-angled tubular inner corner members 3 are received in the outer side members 1. To hold the frame members apart, tension springs 4 are provided, one end of which is fixed at 5 to the end of the frame members 3, whereas the other end is connected at 6 to the bolt 7. Each of the bolts 7 is connected to a frame member 1 and extends through a pair of diametrically opposite axial slots 8 formed in each arm of the right-angled inner corner member 3 adjacent to the end of the respective outer member 1 in which it is fitted. The bolts 7 and slots 8 are illustrative of means for guiding the tubular frame members while preventing them from relative turning, to hold plates 2 in a common plane.

When the frame members are compressed, e.g., by a mechanical press, the springs 4 will be strained correspondingly and in that compressed position the leather may be affixed with straining clamps to the perforated plate 2. This requires only a very small tension on the leather which need only be pulled taut. After the hide has been affixed the mechanical press is opened to subject the hide to the action of the spring stress. That action continues while the frames are passed through a tunnel drier. Thus a uniform and careful setting-out is achieved.

In the embodiment according to Fig. 3 a compression spring 9 for pushing the frame members 1, 3 apart is arranged between every pair of right-angled inner frame members 3 received in an outer member 1. This setting-out frame may be used in the same manner as has been described with reference to Fig. 2.

In the embodiment according to Fig. 4, an adjusting screw spindle arrangement is provided for urging the frame members apart. This arrangement comprises an internally threaded bored bar or tube 10 fixed to one side member 1, and an externally threaded spindle 10a threaded in said internally threaded member 10. The spindle 10a is rotatably but axially nondisplaceably connected to the opposite side member 1 by a bearing block 15 and is formed outside of the bearing block, e.g., with a square 16 to enable the connection of any suitable
power drive, e.g., an electrically driven crank. An overstraining of the leather may be prevented by the provision of a friction coupling (not shown) between the drive and the spindle 16a.

Fig. 5 illustrates that the stretching force required may be applied by means of a pressure fluid, such as compressed air. To this end the inner frame members are formed as pistons 11 whereas the outer frame members 12 serve as cylinders. For the admission of the pressure fluid each cylinder 1 may have a connection 13, which may be closed by a valve 14. Alternatively the several frame members 12 serving as cylinders may be interconnected by pipelines so that a single connection fitting such as 13 is sufficient for forcing the frame apart.

What we claim is:

A setting-out frame for leather, comprising a plurality of elongated side members, a plurality of corner members, each having a pair of relatively angularly extending legs, each of said legs being telescopically mounted in an end portion of one of said side members, a trapezoidal-shaped perforated plate affixed to and extending inwardly from each of said side members, said plates having their shorter parallel sides inwardly with respect to the frame, a bolt extending transversely through each end portion of each of said side members, said legs each having a pair of longitudinally extending diametrically opposed slots adjacent their inner ends, said bolts each extending slidably in one of said pairs of slots, and a tension spring interconnecting each bolt with the outer end of its associated leg whereby said legs are normally urged outwardly of their associated side member.

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