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Finiels

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[54] **MACHINE FOR OPERATING ON AN ARTICLE OF LEATHER OR SKIN**

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **69/33**

[51] **Int. Cl.** **C14d 1/40**

[58] **Field of Search** 69/33, 34, 35, 1, 46

[56] **References Cited**

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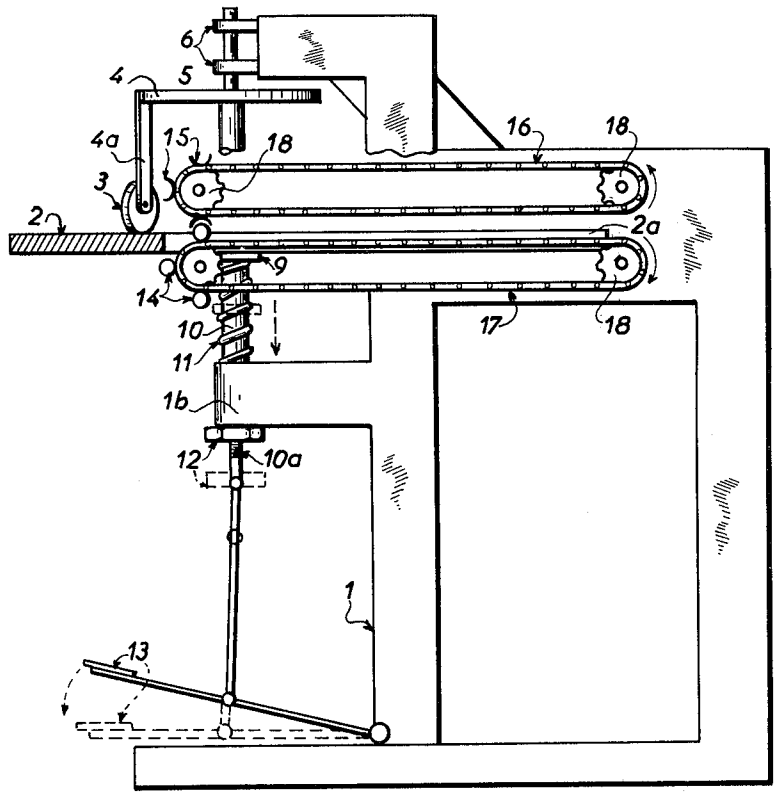
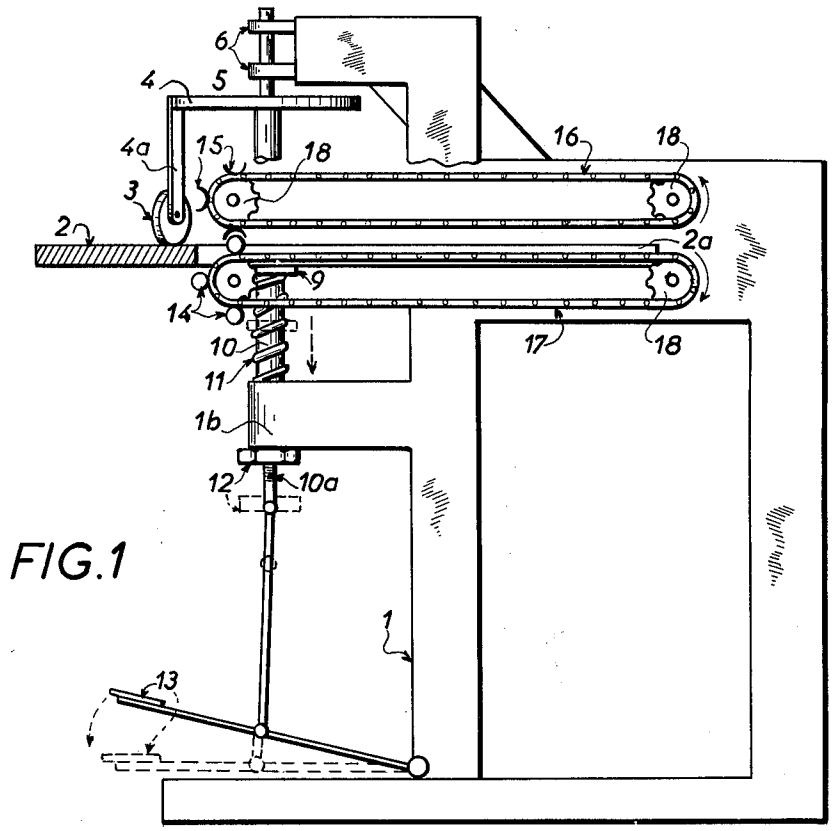
[57] **ABSTRACT**

A machine for operating on an article of leather or skin in which the article is supported on a plate and during the working operation the article is pressed by rollers against the plate while a pair of tools grip the article and moves therealong from the center of the article to its edges. The tools are carried on respective upper and lower endless chains driven at the same speed, one clockwise the other counterclockwise. When the tools leave the article after working a narrow band thereof, a support of the rollers is rotated and the rollers roll on the article whereafter the support is reversed and returned to its initial position, the rollers being then locked for entraining the article therewith to present a new band thereof to be worked by the tools.

10 Claims, 5 Drawing Figures




6
5
4
4a
15
18
3
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16
18
2a
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14
10
11
1b
12
10a
17
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1
13

FIG.1

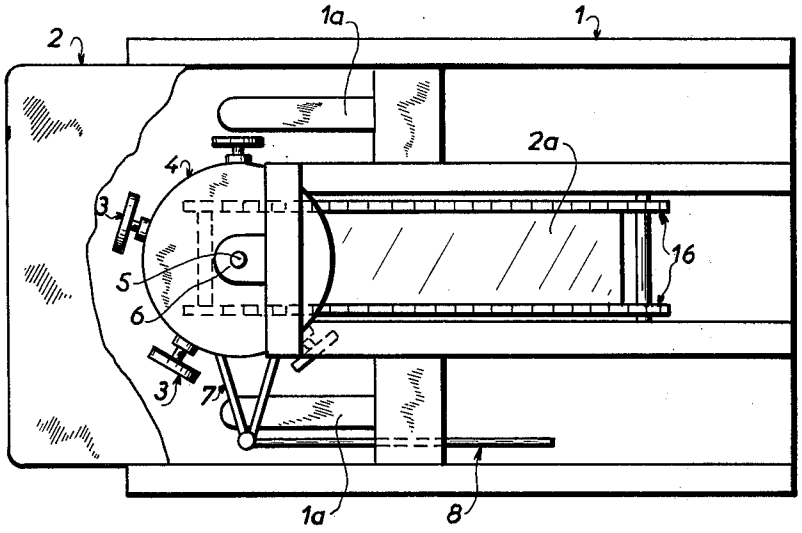
2
1a
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FIG.2

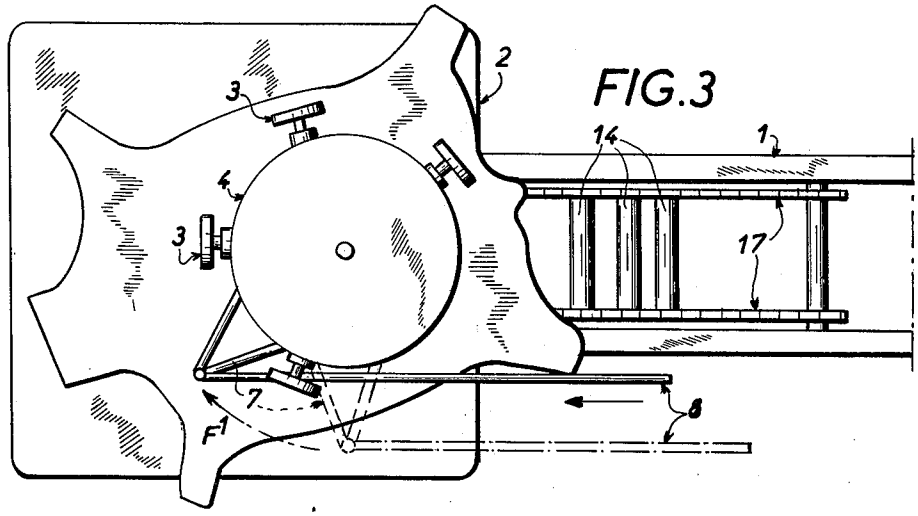

FIG.3

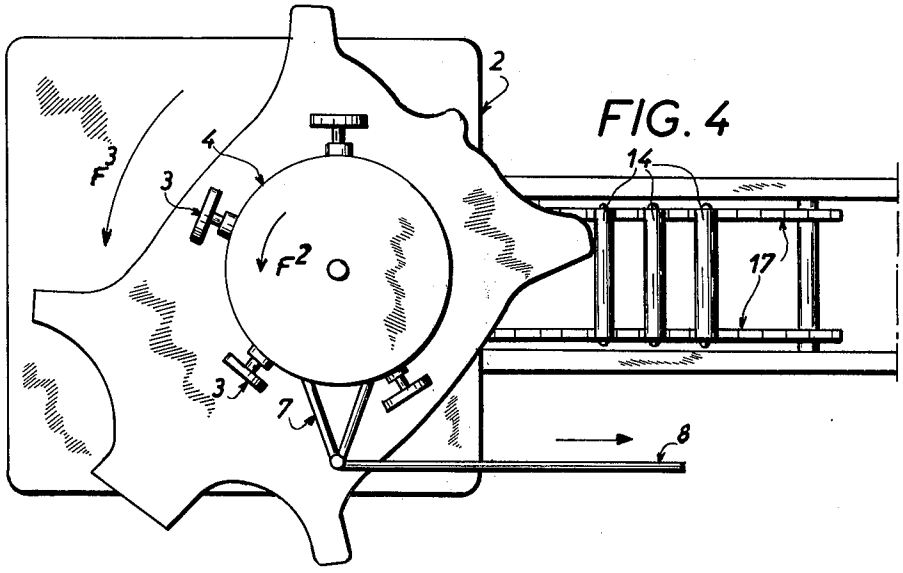

FIG. 4

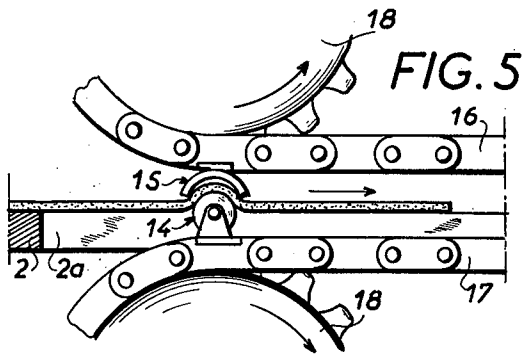

FIG. 5

MACHINE FOR OPERATING ON AN ARTICLE OF LEATHER OR SKIN

BACKGROUND

a. Field of the Invention

The invention relates to apparatus for operating on an article of skin or leather and particularly to apparatus for holding the article, for rotating it and for performing a working operation thereon.

b. Prior Art

Machines are known for the treatment of articles of leather and skins, notably those with jaws which work the article from its center towards its edges. The transport of the articles is effected generally by parallel cylinders, clamps, or rug or filament transporters or the like which are complex and burdensome. In these machines the tools are driven in an alternating sinusoidal movement by a connecting rod and crankshaft assembly, and the tools are arranged as upper and lower members which are put into rough contact with the article.

The work from the center to the edges in these machines does not permit rapid operation of the tools which is adverse to the development of the fibres of the skin. Additionally, the alternating movement of the tools can cause when changing directions, jamming of the flexible and drooping skin.

SUMMARY OF THE INVENTION

An object of the invention is to provide a machine for operating on an article of leather or skin which avoids the disadvantages noted above in relation to conventional machines.

This object is satisfied by a machine according to the invention on which the tools operate at a constant speed and in a single direction while pulling the skin or leather article, which is firmly held in place, in a progressive manner and continuously.

The machine according to the invention is characterized in that it comprises support means for an article to be worked on, a pair of tools for gripping the article therebetween to work the article, means for driving the tools along respective closed paths at the same speeds, said paths being in part coextensive and said tools traveling in the same direction thereat with the article disposed therebetween such that the tools operate on the article from the center thereof towards its edges, and means for alternately clamping the article onto the support means when the tools operate on said article and for rotating the article on the support means when the tools have left said article in order to present a different portion of the article to said tools in a subsequent pass thereof along said coextensive paths.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a diagrammatic side elevation view of the machine according to the invention,

FIG. 2 is a plan thereof with a portion broken away,

FIGS. 3 and 4 are plan views showing a portion of the machine in different operation positions, and

FIG. 5 is an elevation view on enlarged scale showing the operation on the leather or skin being worked in the machine.

DETAILED DESCRIPTION

Referring to the drawing, the machine illustrated therein comprises a frame **1** having brackets **1***a* guidably supporting a pressure plate **2** on which the article of skin or leather to be worked is spread out and firmly maintained by an arrangement constituted by rollers **3** or similar elements carried by arms **4**a of a support **4** in the shape of a disc. The support **4** is supported for rotation on an axle **5** mounted in bearings **6** fixed in the frame, and the support **4** is driven in rotation by any suitable means such as arm assembly **7** and lever **8**, the latter being manually operated or coupled to a suitable control means for effecting the work cycle.

The plate **2** is pressed against rollers **3** by at least one pressure shoe **9** which includes a stem **10** slidably supported in a bearing support **1***b* of the frame, preferably in a plane passing through the axis of rotation of axle **5**. The shoe **9** is acted on by a suitable elastic means such as coil spring **11** to urge the plate **2** against the rollers **3**. An abutment means for limiting the upward movement of stem **10** is mounted on the opposite end of the shoe, such abutment means comprising a nut **12** screwed onto a threaded portion **10***a* of the shoe and adapted to abut the bearing support **1***b*. Another suitable means for applying adjustable pressure to the plate **2** could be a hydraulic jack or the like.

The stem **10** is pivotably connected to a treadle **13**, which is pivotably connected at one end thereof to the frame, such that the stem **10** can be lowered to release the plate **2** and free the skin resting thereon.

The leather or skin is subjected to a treatment by tools traversing a slot **2**a in plate **2**, said tools being constituted of two parts such as roller **14** and curved plate **15** adapted to cover roller **14** and engage the skins therebetween as shown in FIG. **5**.

The tools are mounted on special links of upper and lower chains **16** and **17** respectively which travel on sprockets **18** rotatably supported on the frame **7**.

Each of the chains comprises a pair of chain elements separated by a horizontal spacing corresponding substantially to the length of the tools. The vertical spacing between the chains is such that the tools **14** and **15** can interpenetrate in the slot in the plate while leaving between them a space for the skins. The chains are driven by driving the sockets by any suitable drive means such that the lower chain travels, for example, clockwise while the upper chain travels counterclockwise i.e., they turn in opposite senses, in order that the adjacent runs of the chains viz. the lower run of the upper chain and the upper run of the lower chain travel in the same direction, e.g., from left to right in the drawing. Thus the tools fixed to the chain engage the skins and work them from their center towards the edge at constant speed and in the same direction as the tools glide along the skin.

The pairs of tools **14** and **15** can be of any suitable number mounted in succession on their respective chains and can be of the same value or of progressive effect according to the nature of the skins and the results to be obtained.

The skin is maintained under pressure on the plate while being subjected to the action of the tools on a portion of its surface from the center to the edge.

When the tools are released from the skin and until they return to the position on and under the skin, it is necessary to pivot the skin to present a different region thereof over slot **2***a* to be ready in a subsequent pass of the tools. For this purpose, the rollers **3** are equipped with a unidirectional system **3***a* giving an entrainment in one direction and a free wheeling in the opposite di-

rection. Such system 3a can be a conventional one-way clutch which is well known in the art and requires no elaboration whatsoever, these being interposed between arms 4*a* and rollers 3.

The pivoting of the support 4 in the direction of the arrow F^1 in FIG. 3, which permits the rotation of the rollers without entrainment of the skin, takes place when the tools are substantially midway between the sprockets of the chains.

During the time when the tools travel over the distance permitting them to return to the proximity of the skin, the support 4 is pivoted in reverse direction (arrow F^2 in FIG. 4) and the rollers 4 now blocked in rotation entrain the skin in the direction of arrow F^3 in FIG. 4. The tools can thus successively engage a new portion of the skin.

The introduction of the skin on the support is effected by the operator as desired.

The movements of the support and the tools are controlled in any suitable manner which may be mechanical, electrical, hydraulic, pneumatic or electronic and in synchronism to assure correct operation on the skin and their perodic rotation. The operation can also be effected under manual control.

Safety members are provided, as in all machines of this type, and by way of non-limitative example, the treadle 13 in lowered position can automatically operate a switch S to interrupt the electrical supply circuit of the drive of the machine.

The drive of the machine is preferably effected only by manipulations involving both hands of the operator, for example, to operate right and left switches or buttons.

The thus disclosed machine can be used in working leather and skins notably in operations of ribbing, softening, smoothing, glossing or the like.

The advantages attributible to the described device are readily self-evident, however, a number thereof will be enumerated hereafter:

- the machine only operates and arrests itself at the end of each rotational transfer which permits a single operator to alternately service a plurality of machines;
- by mounting the tools on chains which are constantly driven in the same direction from the center of the skin towards the edges, the tools follow the fibres of the leather, and provide for a smooth and soft contact of the tools against the skin and avoids catching of supply skins;
- the mouting of the tools is rapid and simple permitting easy interchangeability and replacement and the adaptation of tools which are the same or progressively work the skins.

The invention is not limited solely to the embodiments disclosed and those skilled in the art will readily perceive modifications and variations which fall within the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. Apparatus for operating on articles of leather or skin comprising support means for an article to be worked on, a pair of tools for gripping the article therebetween to work the article, means for driving the tools along respective closed paths at the same speeds, said paths being in part coextensive and said tools traveling in the same direction thereat with the article disposed therebetween such that the tools operate on the article from the center thereof towards its edges, and means for alternately clamping the article onto the support means when the tools operate on said article and for rotating the article on the support means when the tools have left said article in order to present a different portion of the article to said tools in a subsequent pass thereof along said coextensive paths, said means for alternately clamping and rotating the article on the support means comprising rollers resting on the article on said support means, and means urging said support means against said rollers.

2. Apparatus as claimed in claim **1** wherein said means urging said support means against said rollers comprises a presser element acting on said support means from below thereof, and spring means acting on said presser element.

3. Apparatus as claimed in claim **2** wherein said presser element comprises a vertically slidable column, said spring means comprising a coil spring acting on said column, and an adjustable abutment means on said column for limiting the upward travel of said column.

4. Apparatus as claimed in claim **3** wherein said means for alternately clamping and rotating said article further comprises a disc element supporting said rollers and rotatable in opposite directions.

5. Apparatus as claimed in claim **4** wherein said means for alternately clamping and rotating said article further comprises one-way clutch means between said rollers and said disc element such that in one direction of rotation of the disc element the rollers are locked against rotation and entrain the article in rotation on said support means while in the other direction of rotation the rollers roll freely on the article.

6. Apparatus as claimed in claim **4** comprising control means connected to said column and including a pedal pivotably connected to said column for lowering said support means to permit release of the article and insertion of a new one.

7. Apparatus as claimed in claim **1** wherein said means for driving the tools comprises upper and lower chains each carrying a respective tool, one chain being driven clockwise, the other counterclockwise.

8. Apparatus as claimed in claim **7** wherein a plurality of pairs of said tools are mounted on said chains in succession.

9. Apparatus as claimed in claim **7** wherein said support means comprises a plate having a slot therein through which said tools pass to engage said article.

10. Apparatus as claimed in claim **6** comprising safety means controlled by depressing said pedal for interrupting power supply to the apparatus.

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