

May 8, 1951

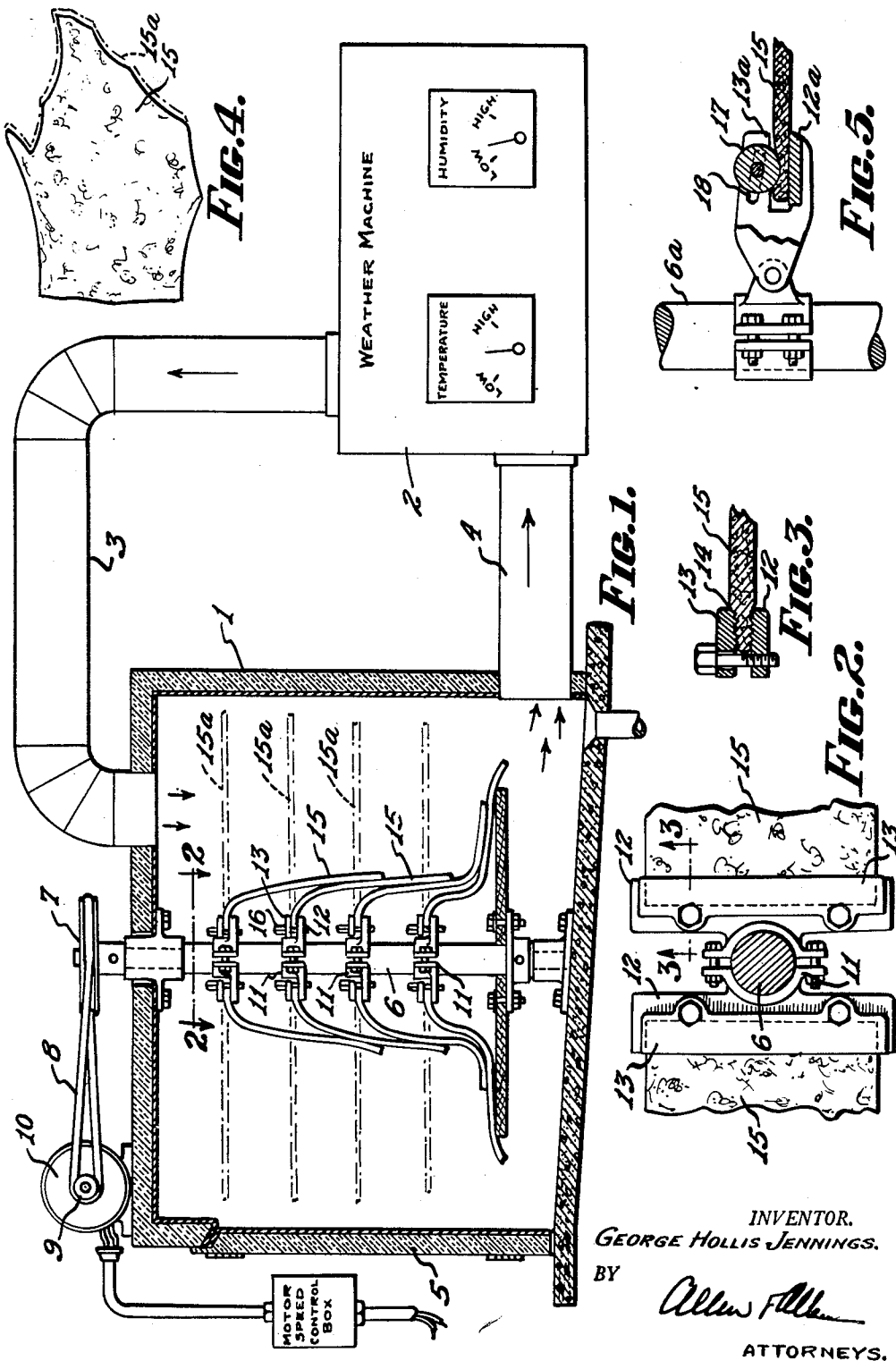
G. H. JENNINGS

2,552,322

CENTRIFUGAL WRINGING AND SETTING PROCESS FOR LEATHER

Filed June 19, 1948

2 Sheets-Sheet 1



May 8, 1951

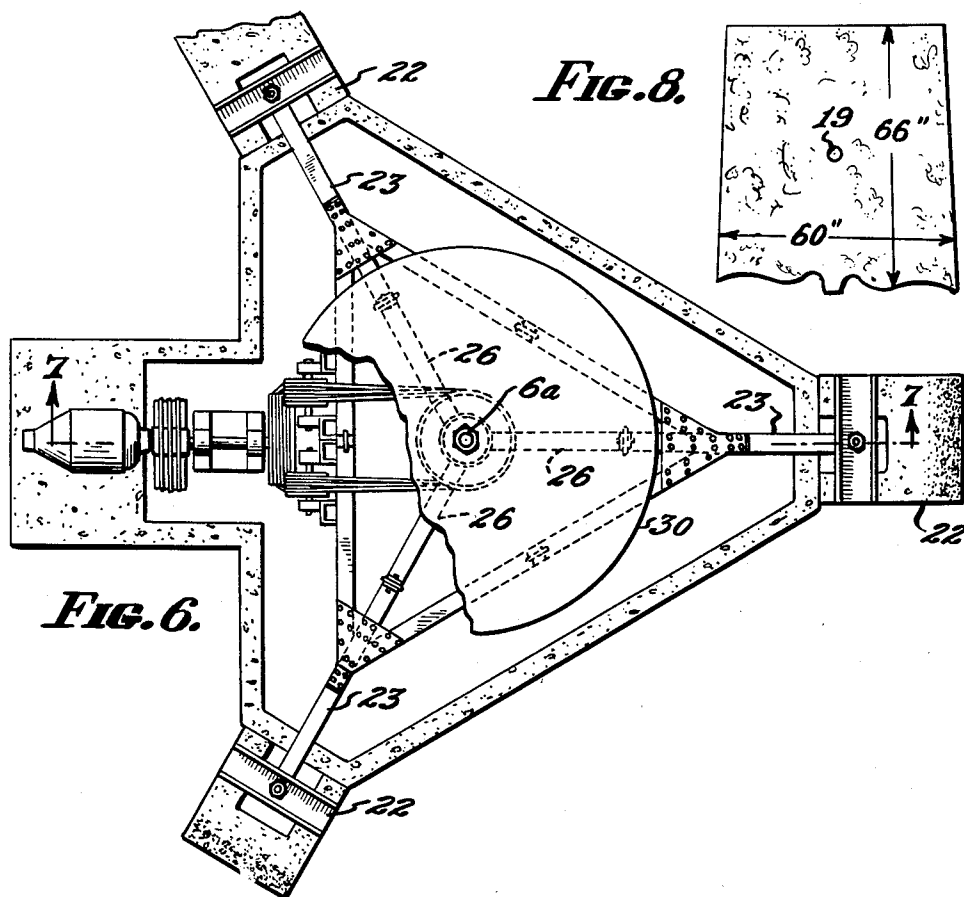
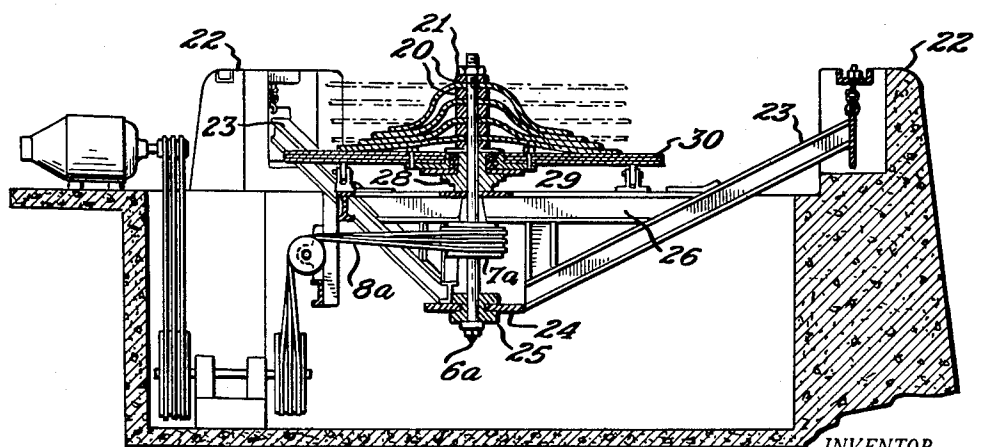
G. H. JENNINGS

2,552,322

CENTRIFUGAL WRINGING AND SETTING PROCESS FOR LEATHER

Filed June 19, 1948

2 Sheets-Sheet 2



INVENTOR.
GEORGE HOLLIS JENNINGS.

BY

Allen & Allen

ATTORNEYS.

UNITED STATES PATENT OFFICE

2,552,322

CENTRIFUGAL WRINGING AND SETTING
PROCESS FOR LEATHERGeorge Hollis Jennings, Cincinnati, Ohio, as-
signor, by mesne assignments, to Howes Leather
Company, Inc., Boston, Mass., a corporation

Application June 19, 1948, Serial No. 33,997

9 Claims. (Cl. 69—1)

1

My invention relates to a novel process where-
in leather pieces are mounted on a centrifugal
machine in which the pieces are rotated rapidly
in a predetermined plane which wrings, sets out
and dries the pieces so that no separate wring-
ing and setting out and no tacking or pasting on
frames to dry is required.

In the art prior to the invention set forth
herein, in the production of chrome retan sole
leather, for example, after the hides are taken
from the retanning or fat liquor treatment, (i. e.,
after the last tanning operation), the next opera-
tion is to wring the pieces, which may be full
hides or hides cut into parts such as crops, bellies,
sides, double bends, etc., to prepare them for
setting out.

The setting out operation as previously prac-
ticed, smooths, flattens and stretches the pieces
to prepare them for tacking on frames to dry.
This operation has commonly been done on a
setting out machine in which the leather piece
is supported and brought into contact with a
spirally fluted and ribbed roll which flattens,
stretches and smooths the leather primarily
along the line of the roll axis.

Following this the leather has been tacked out
on a frame to dry, tacking being required to keep
the piece from curling or shrinking too much in
drying.

After drying, which may take three or four
days, the leather is stripped from the frames and
the further processing takes place.

It is my object to take the leather piece and
mount it so that wringing or throwing out of the
moisture in the piece takes place through centrifu-
gal action, and further drying may take place
by evaporation. At the same time the piece is
properly stretched and flattened and actually set
out more uniformly and better than by treatment
in the ordinary setting out machine. Continued
rotation of the piece until dry maintains the
area and flatness of the piece thereby eliminating
the necessity of tacking out to prevent shrink-
age and curling. Ordinarily the throwing out
of moisture occurs during the stretching and
flattening of the leather piece. In some instances
there is a controlled elimination of moisture, the
stretching and flattening being the essential re-
sult of the centrifugal operation.

Further it is my object to greatly minimize the
time required for this combination of wringing,
setting out, tacking, drying and stripping from
tacking frames, whereby in two or three hours
more satisfactory results can be accomplished by
my centrifugal machine than the ordinary pro-
cesses can accomplish and which take four or five
days.

With vegetable tanned leather the piece is
run through the setting machine to stretch and
smooth out the piece. Ordinarily vegetable

2

tanned leather is not tacked out on a frame but
merely hung upon drying racks.

In eliminating the wringing, setting, tacking
and drying, saving in the leather is effected both
from the point of view of eliminating the tacking
operation, (which makes holes in the hide) and
to a desirable extent because of the production
of a greater surface area of leather. The leather,
due to the centrifugal action spreads out and
thus may be controlled to give a greater yield
than is possible with the present method of
wringing, setting, tacking and drying.

Broadly, it is my idea to eliminate the ordi-
nary operations of wringing, setting out and
handling for drying (as tacking, pasting, hang-
ing, etc.) for any kind of leather on which these
operations are ordinarily performed.

Further, it is my object to produce a more uni-
form and/or properly stretched piece of leather
than is obtained from the tacking, pasting or
hanging methods.

In addition to the process involved, it is the
object of my invention to provide a novel ma-
chine which will accommodate itself to quickly
securing leather pieces and rotating them in a
predetermined plane thereby accomplishing both
the wringing, setting and drying of the leather.

The foregoing objects and other objects to
which reference will be made in the ensuing de-
scription, I accomplish by practicing the steps
which will be recited, using for accomplishing this
purpose a machine similar to that illustrated in
which:

Figure 1 is a diagrammatic section of a wring-
ing, setting and drying out chamber.

Figure 2 is a sectional view along the lines 2—2
of Figure 1.

Figure 3 is a detail showing the gripping jaws
of a leather clamp as would appear along the
lines 3—3 of Figure 2.

Figure 4 is a diagram showing in dotted lines
how the leather stretches and sets during the
centrifugal treatment.

Figure 5 is a detail of a modified type of
leather clamp.

Figure 6 is a plan view of a modified type of
centrifugal machine adapted for processing a
complete double bend or butt bend of leather.

Figure 7 is a sectional view of the machine
shown in Figure 6 as would appear along the
lines 7—7 of Figure 6.

Figure 8 is a plan view of a double bend or butt
bend, which is approximately 66 inches in length
and 60 inches in width.

Referring to Figure 1, I have shown a casing
1 connected with a weather machine 2 through
which air of a desired humidity and temperature
may be drawn through the conduit 3, into the
chamber 1. The discharge of the conditioned

air from the chamber may be through a conduit 4.

The chamber 1 is provided with a door 5 which is removed when the machine is loaded.

It will be observed that a vertical shaft 6 having a pulley 7 is rotated by means of a twist-belt 8 from the pulley 9 of an electric motor generally indicated at 10.

Mounted on the shaft 6 are a series of spider-clamps 11. The spider clamps have a fixed lower plate 12, and adjustable upper plates 13 which have serrated under surfaces indicated at 14. A leather piece indicated generally at 15, is inserted between the plates 12 and 13 and the bolt 16 is tightened down so as to securely hold the leather piece along one of its edges.

When the centrifugal machine has started up the leather pieces swing from the position shown in solid lines at 15 in Figure 1, to a horizontal position indicated in dotted lines at 15a. During this centrifugal wringing the piece stretches as suggested in Figure 4, to the dimensions as indicated at 15a. The wrinkles are substantially removed and the fibers set in a flat plane avoiding the necessity of scraping, rolling and setting the piece in a mechanical setting machine.

In Figure 5 a slightly different type of a clamp is suggested in which upper and lower jaws 12a, 13a, are provided with a roller 17, pivotally mounted in a slot 18. The rollers 17 tend to run down the inclined slot to hold the edge of the leather piece 15.

As soon as the machine is started up the rollers 17 are thrown still further down in the inclined slot 18, thereby causing the roller 17 to grip all the more tightly against the edge of the leather piece 15. When the machine is shut down, the clamp caused by the movement of the roller 17 will immediately release itself as the roller is pushed back up the inclined slot.

In Figures 6 and 7, I have shown a different type of machine in which a double bend of leather about 66 inches long and 60 inches wide as shown in Figure 3, has an opening 19 punched out close to the center of the piece. A vertical shaft 5a is driven by a belt 8a which engages the pulley 7a, on the shaft 6a. A series of collars 20 are secured on to the shaft 6a by means of a nut 21. The collars are removable from the shaft and the leather pieces are mounted on the shaft with collars between each piece. For fitting over the shaft 6a the openings 19 provide a secure method of holding the leather pieces balanced at their axial centers. Then when the nut 21 is tightened down the double bends of leather are securely held in substantially axially balanced position as shown in Figure 7.

For supporting the centrifugal rotor shaft 6a from above, I have provided three arcuately spaced columns 22 which support I beams 23 which extend down as shown in Figures 6 and 7 to a centrally arranged disc 24 which engages a hub member 25. A framework supporting structure 26 carries a plate 27. The shaft 6a carries the hub 28 and a horizontal thrust bearing 29 permits the table 30 to either rotate or remain stationary, depending on the weight of the hides on the table. Ordinarily at the start of the rotor shaft the table 30 turns but as the hides swing out to the positions shown in dotted lines in Figure 7, the table stops revolving.

In carrying out the process the shaft 6a is rotated at a speed, for example, of 750 R. P. M. The leather pieces stretch considerably, become perfectly dry and at the same time the leather

pieces are flattened and set much more perfectly than where mechanical setting is used. All the labor involved in tacking pieces of hide on to frames, where tacking has in the past been required, is avoided.

I distinguish between mechanical setting in which the leather piece is subjected to the pressure of fluted rollers in a leather setting machine and centrifugal setting in which the piece spins around rapidly on its own axial center and is stretched and flattened entirely by the centrifugal effect on the fibers of the leather. So far as I am aware, leather has never, prior to my invention, been set excepting by a mechanical or hand treatment in which the leather was physically set out and stretched. In other words, centrifuging a leather piece to flatten, stretch and set is an entirely new proposal.

Modifications in the particular mechanism illustrated for wringing, setting and drying either whole hides or pieces of hide will readily occur to those skilled in the art without departing from the inventive principle involved. Whether the fibers of the leather are stretched is perhaps debatable. At least the fibers are "arranged" during the centrifugal drying and setting.

I have found that instead of centrifugally rotating a leather piece at great speed in a horizontal plane thereby causing the piece to stretch, set and dry all in one continuous operation, I may centrifugally set and dry leather pieces by inclining the shaft of the centrifugal machine at a desired angle to the vertical. The shaft may be horizontal and the pieces may be set and dried while being rotated in a vertical, instead of a horizontal plane. As to the plane of rotation all that is necessary is that the setting and drying occur while the piece is being rapidly rotated in a predetermined plane. To cut a hole in the middle of a piece of leather to be set and dried and thereby mount it on a rapidly drivable shaft has many advantages over gripping the edge of leather pieces.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In the art of setting and drying leather, the method which comprises clamping a plurality of pieces of leather in superposed relationship, the pieces being clamped throughout relatively small areas with said areas in spaced parallel planes and their remaining portions collapsed into contact with each other, and then rotating the pieces about an axis perpendicular to said planes to cause the pieces to stretch out by centrifugal force into parallel planes out of contact with each other.

2. In the art of setting and drying leather, the method which comprises clamping a plurality of pieces of leather in superposed relationship, the pieces being clamped throughout relatively small areas along their margins with said areas in spaced parallel planes and their remaining portions collapsed into contact with each other, and then rotating the pieces about an axis perpendicular to said planes to cause the pieces to stretch out by centrifugal force into parallel planes out of contact with each other.

3. In the art of setting and drying leather, the method which comprises clamping a plurality of pieces of leather in superposed relationship, the pieces being clamped throughout relatively small areas approximately at their centers with said areas in spaced parallel planes and their peripheral portions collapsed into contact with

5

each other, and then rotating the pieces about an axis perpendicular to said planes to cause the pieces to stretch out by centrifugal force into parallel planes out of contact with each other.

4. In the art of setting and drying leather, a rotatable shaft, a series of clamps distributed along the shaft for clamping a plurality of pieces of leather in spaced relationship, the clamps having pairs of opposed surfaces spaced lengthwise of the shaft, the surfaces of each pair extending transversely of the shaft and the space surrounding the shaft being unobstructed, and means for rotating the shaft, whereby a plurality of pieces of leather may be clamped as aforesaid throughout relatively small areas, with their remaining portions collapsed into contact with each other, and then caused to stretch out in parallel planes out of contact with each other by centrifugal force when the shaft is rotated.

5. In the art of setting and drying leather, a rotary table, a shaft extending upwardly from the center of the table, a series of clamps distributed along the shaft for clamping a plurality of pieces of leather in superposed spaced relationship, the clamps having pairs of opposed surfaces spaced lengthwise of the shaft, the surfaces of each pair extending transversely of the shaft and the space surrounding the shaft above the table being unobstructed, and means for rotating the shaft, whereby a plurality of pieces of leather may be clamped as aforesaid throughout relatively small areas, with their remaining portions collapsed into contact with each other on said table, and then caused to stretch out in planes parallel to the table out of contact with each other by centrifugal force when the shaft is rotated.

6. In the art of setting and drying leather, a rotatable shaft, a series of clamps distributed along the shaft on different sides of the shaft for clamping the margins of a plurality of pieces of leather respectively, the clamps having pairs of opposed surfaces spaced lengthwise of the shaft, the surfaces of each pair extending transversely of the shaft on one side thereof and the space surrounding the shaft being unobstructed, and means for rotating the shaft, whereby the margins of a plurality of pieces of leather may be clamped as aforesaid throughout relatively small areas, with their remaining portions collapsed into contact with each other, and then caused to stretch out in parallel planes out of contact with each other by centrifugal force when the shaft is rotated.

7. In the art of setting and drying leather, a rotary table, a shaft extending upwardly from the center of the table, a series of clamps distributed along the shaft on different sides of the shaft for clamping the margins of a plurality of pieces of leather in superposed spaced relation-

6

ship, the clamps having pairs of opposed surfaces spaced lengthwise of the shaft, the surfaces of each pair extending transversely of the shaft on one side thereof and the space surrounding the shaft above the table being unobstructed, and means for rotating the shaft, whereby the margins of a plurality of pieces of leather may be clamped as aforesaid throughout relatively small areas, with their remaining portions collapsed into contact with each other on said table, and then caused to stretch out in planes parallel to the table out of contact with each other by centrifugal force when the shaft is rotated.

8. In the art of setting and drying leather, a rotatable shaft, a series of clamps distributed along the shaft for clamping a plurality of pieces of leather in spaced relationship, the clamps comprising a series of rings fitting over the shaft with pairs of opposed surfaces spaced lengthwise of the shaft and means to force the rings together, and means for rotating the shaft, whereby a plurality of pieces of leather may be clamped as aforesaid throughout relatively small areas, with their remaining portions collapsed into contact with each other, and then caused to stretch out in parallel planes out of contact with each other by centrifugal force when the shaft is rotated.

9. In the art of setting and drying leather, a rotary table, a shaft extending upwardly from the center of the table, a series of clamps distributed along the shaft for clamping a plurality of pieces of leather in superposed spaced relationship, the clamps comprising a series of rings fitting over the shaft with pairs of opposed surfaces spaced lengthwise of the shaft and means to force the rings together, and means for rotating the shaft, whereby a plurality of pieces of leather may be clamped as aforesaid throughout relatively small areas, with their remaining portions collapsed into contact with each other on said table, and then caused to stretch out in planes parallel to the table out of contact with each other by centrifugal force when the shaft is rotated.

GEORGE HOLLIS JENNINGS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,879,942	Meyer	Sept. 27, 1932

FOREIGN PATENTS

Number	Country	Date
153	Italy	Mar. 25, 1878