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(12) # EUROPEAN PATENT APPLICATION

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(54) **An apparatus for turning hides, furs, pelts, and the like, inside out.**

(57) An apparatus for turning inside out hides, furs, pelts and the like to be processed, comprises a vacuum chamber (10) and a structure (17,22) defining an opening through a wall of the chamber (10) and thereto a portion of the hide (23) may be fixed. The opening defining structure includes an outside communicating duct (17), effective to be coupled to a nozzle (22) provided for fitting thereon the hide (23) and controlled by a control valve (18) adjusting the air flow through the chamber opening.

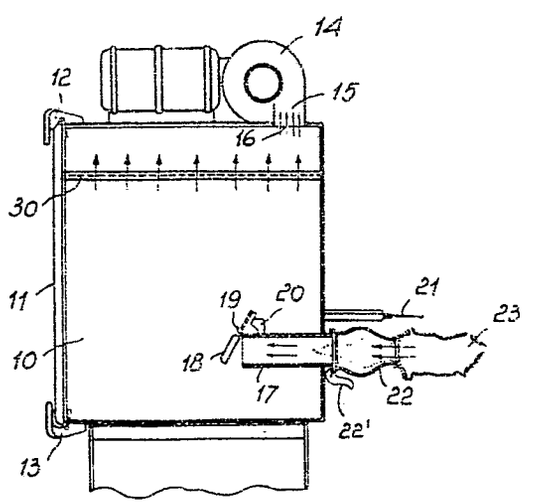

Fig. 2

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This invention relates to an apparatus for turning hides inside out during the preparation and tanning or dressing thereof. The term "hide" as used through this specification and claims should be intended to include any animal skin, either raw or dressed, such as furs, pelts and the like.

As is known, in the hide processing industry, and particularly so with furred hides, it is often necessary to turn raw hides inside out, which are usually removed undevided from the animal carcass.

Heretofore, this operation has been carried out in a purely manual fashion, so that trained personnel had to be put in charge of the job if the hides had to remain undamaged.

The most widely applied current technique provides the use of a rod, secured with one end to a bench, which carries at its other end a head or enlarged body of a suitable diameter, whereon a hide is forcibly fitted to be then turned inside out by the application of a sharp pull in the opposite direction, which completes in practice the hide inside-out turning process.

It will be appreciated that this procedure is extremely tiring for the operator and, moreover, a time-consuming one.

Another drawback is that the quality of the processed hide is allowed to depend wholly on the operator's skill, thereby uniform processing is unlikely to be achieved.

This invention sets out to eliminate the aforesaid problems by providing an apparatus for

turning hides inside out during the preparation and tanning or dressing thereof, which affords the possibility of carrying out the inside-out turning process in an automated manner, with attendant reduced labor requirements.

Within that general aim, it is possible to arrange that the apparatus for turning hides inside out according to the invention can minimize any wear and deterioration of the hides during their processing steps, while shaking at the same time off the hides any processing materials, such as salts, sawdust, powders, and the like.

It is further possible to arrange that the apparatus according to the invention is highly reliable in operation and quite safe to use.

According to one aspect of the present invention, there is provided an apparatus for turning hides inside out, particularly during the preparation and processing thereof, characterized in that it comprises a chamber in communication with a vacuum source, at least one structure defining at least one opening through at least one wall of said chamber, said structure having a formation for securing a portion of a hide to be turned inside out thereon, and air flow control means for controlling the air flow through said opening.

Further features and advantages will become more clearly apparent by making reference to the following detailed description of a preferred, though not limitative, embodiment of an apparatus for turning hides inside out during the preparation

and processing thereof as illustrated by way of example only in the accompanying drawing, where:

Figure 1 illustrates somewhat diagramatically the solution adopted by conventional techniques; and

Figure 2 is a sectional view showing diagramatically the apparatus according to the invention.

With reference to Figure 1, a conventional apparatus is shown which comprises in practice, as mentioned hereinabove, a rod 1 secured with one end to a bench, schematically indicated at 2, which rod is provided at its other end with a head or shaped body 3 whereon an operator, utilizing the inherent elasticity of a hide, fits the hide itself and then, with a sharp pull, pulls the hide in the opposite direction, thus turning it inside out.

It will be apparent that such conventional procedure is purely manual, thus resulting in the substantial drawbacks mentioned above, which drawbacks are instead overcome by the apparatus according to this invention, shown in Figure 2.

The inventive apparatus comprises a chamber 10 which is advantageously closed on one side by a tightly closing door 11, mounted by means of sealed pintles and handles, as indicated at 12 and 13.

The cited chamber 10 is in communication with a vacuum source and comprises advantageously an exhaust fan 14 having its suction port 15 open to the top of the chamber 1.

Advantageously, the suction port will be provided with a filter screen 16.

The chamber 10 which can be evacuated by means of the exhaust fan 14, communicates with the outside environment through a conduit 17 the inside end whereof is regulated by a tightness valve 18, which is pivoted at 19 to the end of the conduit 17 and can be operated through a valve-opening solenoid 20 driven by valve-opening means including a flexible rod switch 21 which is accessible externally to said chamber. The solenoid 20 could be replaced, if desired, with an externally operated linkage system.

To the outside end of said conduit 17, there can be removably connected a nozzle 22 of substantially ogival shape with rounded smooth edges to prevent it from damaging a hide to be turned inside out and having connection means 22' for mounting the nozzle on the conduit.

Over the edges of the nozzle 22, a hide 23 to be turned inside out can be fitted utilizing the inherent elasticity of the hide. Expandible annular straps can be provided to secure one end of the hide.

Obviously, it will be possible to provide interchangeable nozzles of different sizes to accommodate hides of varied sizes.

Inside the chamber 10, and more precisely in the top portion thereof, there is provided a filtering diaphragm 30 effective to prevent any impurities suspended within the chamber 10 from being drawn into the exhaust fan and damaging it;

understandably, the filtering diaphragm 30 will be removable, with the apparatus in its inoperative condition, for cleaning or replacement purposes.

The operation and use of the apparatus for turning hides inside out are as follows. The operator will first fit the end of the hide to be turned inside out over the nozzle 22, then the operator activates, through the flexible rod switch 21, the solenoid 20 which opens the tight sealed valve 18. In this condition, the chamber 10 being at a negative pressure level, the nozzle 22 is drawn in sharply to pull the hide 23 toward the inside and cause the hide, which is held back on the nozzle edges, to instantaneously turn inside out.

The hide end opposite to the nozzle fixed end may, advantageously but not necessarily, be closed since, through suitable adjustment of the airflow, such hide inside-out turning can also be accomplished even if said ends are partially opened.

The hide inside-out turning as obtained by pneumatic suction has the advantage of quickly shaking the hide, thereby any foreign matter, such as salts, sawdust, powders, etc., as deposited on the hide during prior treatments, can be effectively shaken off.

Upon completion of the hide turning process, the operator releases the flexible rod switch 21, thereby the tight sealed valve 18 restores the closed

condition of the chamber 10, the conduit 17 and nozzle 22 being reset to atmospheric pressure conditions.

Theoretically, it would be possible to allow the hide 23 to be sucked into the chamber 10, but this procedure would not be recommended because the hide could foul itself again by falling inside the chamber.

As a precaution measure, a perforated diaphragm may be provided on the conduit 17, which has the function of catching any hides which might become disengaged from the nozzle and preventing them from being drawn into the chamber 10.

The impurities drawn off the hide are entrained to the chamber 10 inside, where they are deposited by gravity on the chamber bottom; any suspended particles, as already mentioned hereinabove, will be caught by the filtering diaphragm 30 to prevent them from damaging the exhaust fan 14.

From the foregoing description, it will be appreciated that the invention achieves its objects, and the fact is stressed in particular that the apparatus provided, by utilizing a pneumatic suction principle, allows hides to be automatically turned inside out, while subjecting them to a powerful shaking action which frees them of all the impurities left over from prior treatments.

The invention as described is susceptible to many modifications and variations within the purview of the instant inventive concept.

C L A I M S

1. An apparatus for turning hides inside out, particularly during the preparation and processing thereof, characterized in that it comprises a chamber (10) in communication with a vacuum source (14), at least one structure (17,22) defining at least one opening through at least one wall of said chamber (10), said structure (17,22) having formation for securing a portion of a hide (23) to be turned inside out thereon, and air flow control means (18) for controlling the air flow through said opening.

2. An apparatus according to Claim 1, characterized in that said structure comprises an externally communicated conduit (17) controlled by a tightness valve (18), to said conduit (17) there being removably connectable a nozzle (22) whereon the hide (23) to be turned inside out can be fitted, means (20,21) being also provided for opening said tightness valve which can be actuated from said chamber (10) outside.

3. An apparatus according to Claim 2, characterized in that said vacuum source comprises an exhaust fan (14) having its suction port located at the top of said chamber (10).

4. An apparatus according to one or more of the preceding claims, characterized in that it comprises an opening solenoid (20) for actuating said tightness valve (18) and being operated through said opening means including a flexible

rod switch (21).

5. An apparatus according to one or more of the preceding claims, characterized in that said conduit (17) is provided with a perforated diaphragm therein effective to prevent said hide (23) from being drawn into said chamber (10).

6. An apparatus according to one or more of the preceding claims, characterized in that it comprises,in the inner top portion of said chamber, a filtering diaphragm (30) effective to bar impurities from entering said exhaust fan (14).

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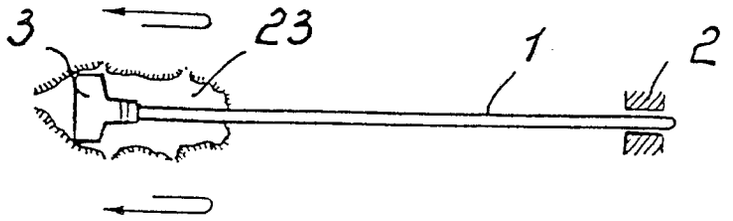

Fig. 1

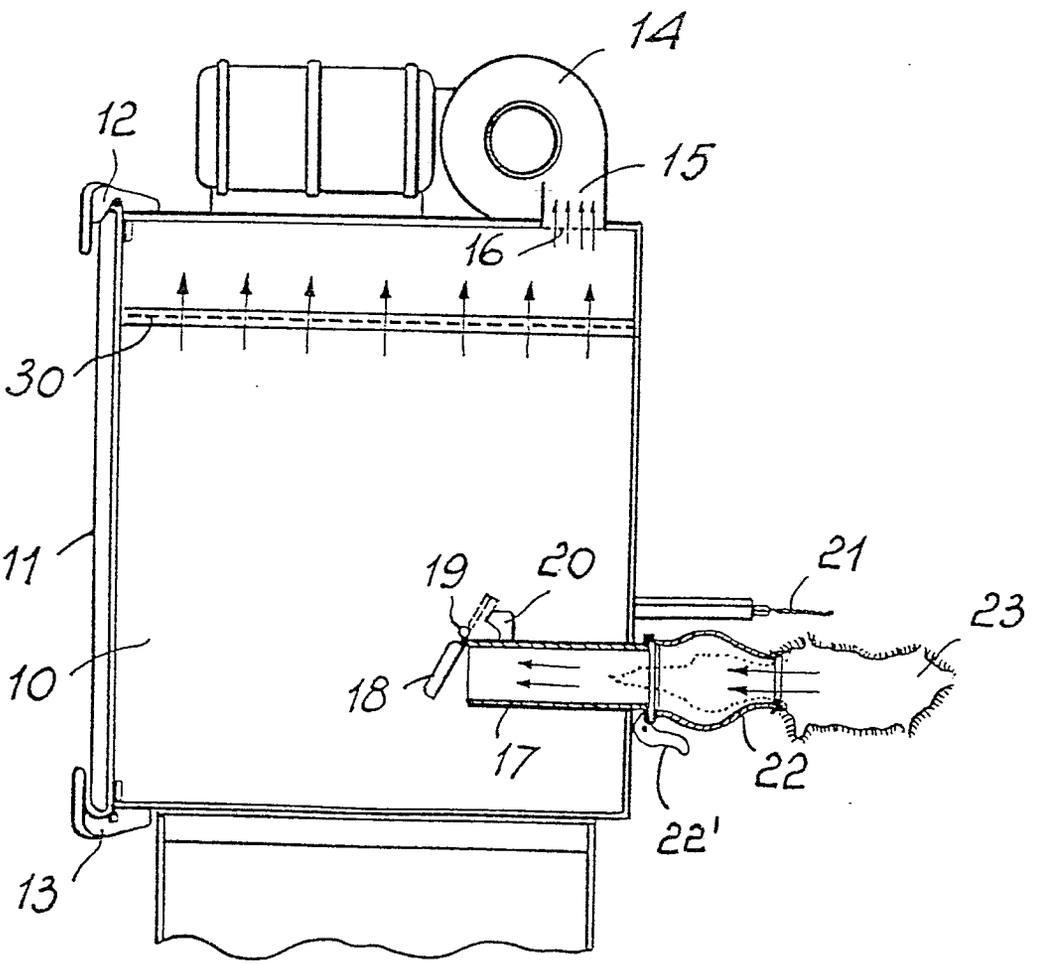

Fig. 2

European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 80 10 1599

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	GB - A - 1 164 831 (SUNBRAND CORPORATION) * Page 1, lines 46-63; page 2, lines 2-86; page 3, lines 3-39; claim 1; figures 1-3 * & FR - A - 1 492 695 --	1,2,3 4,5
	US - A - 1 437 025 (A.E. SCHULZ) * Page 1, lines 53-110; page 2, lines 1-100; figures * --	1,5
	FR - A - 1 493 683 (SOCAM) * Page 1, column 2, lines 16-43; page 2, entirely; figures * --	1,2,6
	DE - A - 1 901 994 (DEUTSCHE BUNDESPOST) * Page 2, last paragraph; page 3, entirely; claim 1; figure * --	1,2,3, 5,6
P	GB - A - 2 029 470 (OGM-TRADING APS) * The whole document;figures * ----	1,2,3, 6

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

D 06 G 3/04

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

D 06 G

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	04.07.1980	GARNIER