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3,474,647

TANNING APPARATUS

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Fig. 1

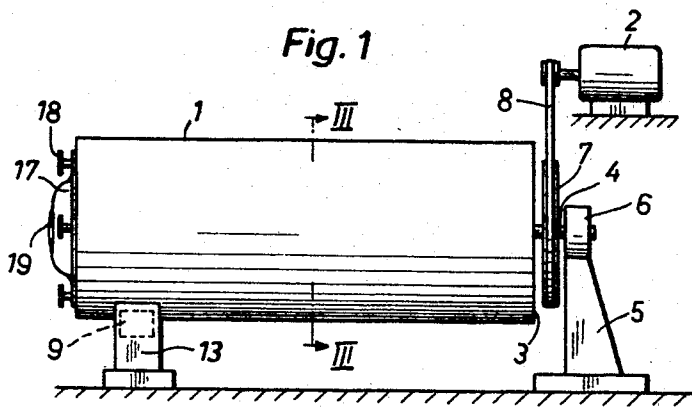


Fig. 2

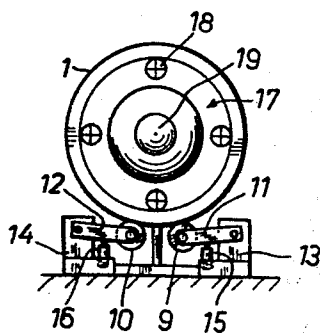


Fig. 3

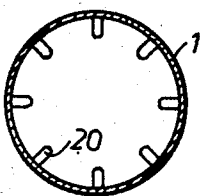


Fig. 4

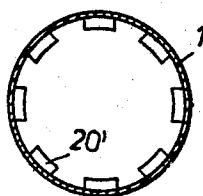
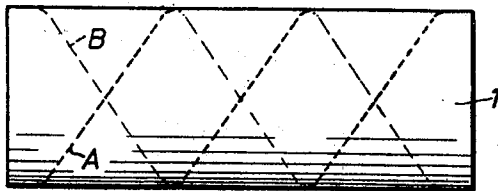


Fig. 5



1

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TANNING APPARATUS

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12,622/65

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12 Claims

ABSTRACT OF THE DISCLOSURE

In accordance with the invention there is provided an apparatus for tanning hides or skins. This apparatus comprises a rotatably mounted horizontal drum having a length which exceeds its diameter. The drum includes a cylindrical side wall and two end walls thereon. There are provided inwardly projecting elements on the interior surface of the cylindrical side wall, each spaced from the other and arranged along at least one helical line extending substantially over the entire length of the drum. These elements move the goods being tanned back and forth between the end walls of the drum when the drum rotates. An opening is provided in one of the end walls for filling and emptying the drum and a cover is provided for the opening. A bearing is provided adjacent one end wall of the drum and an axle is accommodated in the bearing and is coupled to this one end wall. Rollers are employed which support the drum adjacent the other end wall and a drive means is coupled to the axle between said one end wall and the bearing.

The present invention relates to apparatus for carrying out various tanning operations, by which is to be understood all fulling operations from soaking to coloring and grease and oil impregnation.

Up to the present the drums employed for these operations have been mounted for rotation at each end and have been short; that is, the drums are as large in diameter as they are long. One or more radial plane elements are provided inside the drum, for keeping the goods being tanned under continuous movement, when the drum rotates, or for lifting the goods and then allowing them to fall.

A disadvantage of these short drums is that a relatively high energy consumption is required to overcome the large counter rotation moment with both dry and wet tanning, and that with wet tanning, for example, the goods must be bound together.

The purpose of the invention is to avoid, at least partly, this disadvantage. The invention requires less power because the counter rotation moment is reduced and assures, by moving the goods back and forth between the two ends of the drum, a thorough working of the goods being tanned.

The invention will now be described, with reference to the accompanying drawings, wherein:

FIG. 1 is a schematic side view of the invention;

FIG. 2 is a front view of the left end of the apparatus;

FIGS. 3 and 4 are sectional views along line III—III of two possible forms of the interior construction; and

FIG. 5 shows schematically the two helical lines along which the interior elements are spaced.

Referring to FIGS. 1 and 2, the apparatus for carrying out various tanning operations essentially comprises an imperforate drum 1 rotatable about a horizontal axis and driven by an electric motor 2.

The cylindrical wall of the drum is made of selected wood, for example. The one end of the drum is supported by means of an axle 4, secured to the center of the drum end wall 3, turning in the bearing housing 6 located at

the upper end of a support 5. The bearings in the housing 6 can accommodate a slight pivoting of the axle 4.

A three-chain wheel 7 is mounted rigidly on the axle, between the end wall 3 and the bearing housing 6. The drum 1 is driven by the motor 2 through three chains 8. The drive, obviously, could be transmitted by other means, such as a toothed belt.

The opposite end of the drum is left unencumbered by supporting the drum with two rollers 9, 10 bearing against the underside of the drum.

The rollers are mounted to rotate freely on arms 11, 12 pivotally connected to posts 13, 14. The arms are supported by buffer springs 15, 16 which damp the shocks that can arise during operation, appreciably lengthening the service life of the bearings in housing 6 and of the other parts of the apparatus.

The left end of the drum (FIG. 1) has an opening closed which is during operation by a removable cover 17. The cover is provided with a quick closing arrangement 18 and a window 19, permitting observation of the drum's interior during operation. The opening serves to permit the drum to be filled and emptied and results in a considerably more rapid employment of the apparatus. Advantageously, the diameter of the opening is at least one half that of the drum.

The internal surface of the drum-wall is provided with radially inwardly projecting wooden elements 20 or 20'. These elements, which may be in the form of pegs 20 (FIG. 3) or thick slats 20' (FIG. 4), are regularly spaced apart along helical lines extending over the entire length of the drum. FIG. 5 schematically shows two such lines A, B, offset by 180°, and along which the elements 20 or 20' are located. Although not so shown in the figure, each line preferably encircles the drum twice and extends the entire drum length.

During operation these elements cause the hides and skins being tanned to move back and forth continuously between the two end walls of the drum. Depending on the shape of the elements 20 or 20', there are located 8–16 of these elements along one revolution of a line A or B, the pitch of the helical line being substantially greater than the diameter of the drum as shown by FIGURE 5.

In a particularly advantageous embodiment of the invention the drum 1 has a diameter of two meters and a length of five meters. In any case, the drum's length is preferably at least twice its diameter.

Tests have shown that the power consumption, as against earlier apparatus, is reduced by approximately one half.

I claim:

1. An apparatus for tanning hides or skins comprising, in combination: an imperforate rotatably mounted horizontal drum having a length exceeding its diameter and including a cylindrical side wall and two end walls at opposite ends of the side wall; a series of inwardly projecting elements on the interior surface of said cylindrical side wall each spaced from the other and arranged in a uniform spacing arrangement along at least two helical lines extending substantially over the length of the drum while the remainder of the interior surface of the drum is bare, the pitch of said helical lines being substantially greater than the internal diameter of said drum and of opposite rotational direction so that said elements are adapted to move the goods being tanned back and forth between the said end walls of the drum when the latter rotates in either direction; an opening being provided in one of said end walls of the drum for filling and emptying the drum; and a cover for said opening.

2. An apparatus according to claim 1, wherein said elements are arranged along at least two offset helical lines of equal pitch.

3

3. An apparatus according to claim 2 wherein adjacent helical lines have a spacing which substantially exceeds the spacing between successive elements in each line, the interior surface of the cylindrical side wall of the drum being bare between adjacent lines.

4. An apparatus according to claim 1, wherein each of said at least one helical lines has at least two turns.

5. An apparatus according to claim 1, wherein said end wall opening is of circular shape and has a diameter greater than one half that of the drum.

6. An apparatus according to claim 1, wherein said cover incorporates an observation window.

7. An apparatus according to claim 1, wherein there are 8 to 16 of said inwardly projecting elements for every complete turn of said line.

8. An apparatus according to claim 1, wherein the drum has a length which is at least twice its diameter.

9. An apparatus according to claim 1 comprising a bearing adjacent one end wall of said drum, an axle accommodated in said bearing and coupled to said one end wall, rollers supporting the drum adjacent the other end wall, and a drive means coupled to said axle.

10. An apparatus according to claim 9 comprising springs loading said rollers and adapted to accommodate shock and wherein said drive means is coupled to said axle between said one end wall and said bearing.

11. An apparatus according to claim 10 comprising

4

pivotal levers supporting said rollers, said springs acting on said levers to urge the rollers against said drum.

12. An apparatus according to claim 1 wherein said elements are arranged along only two helical lines which are offset by 180°, the remainder of the interior surface of the cylindrical side wall of the drum being bare.

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U.S. Cl. X.R.

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