Dec. 13, 1938. H. W. GUETTLER 2,140,287

COMBINED BARKING AND WASHING DRUM

Filed June 15, 1936 5 Sheets-Sheet 1

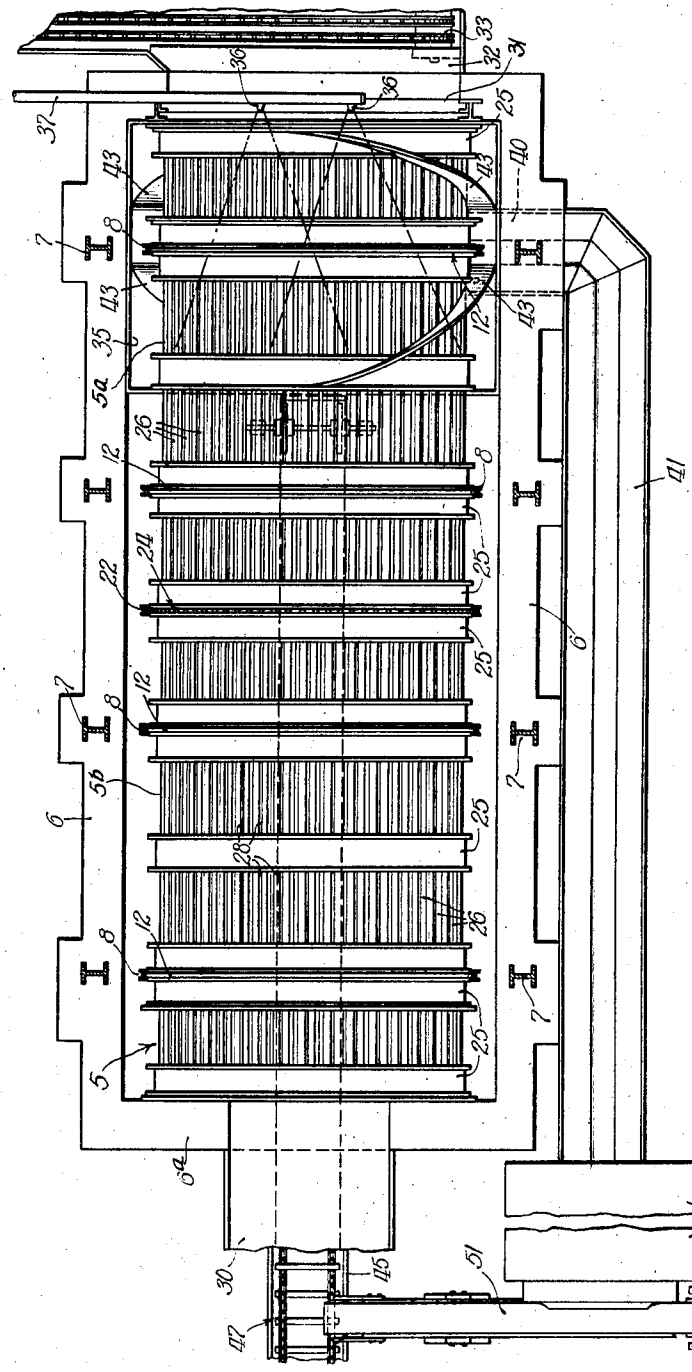


Fig. 1.

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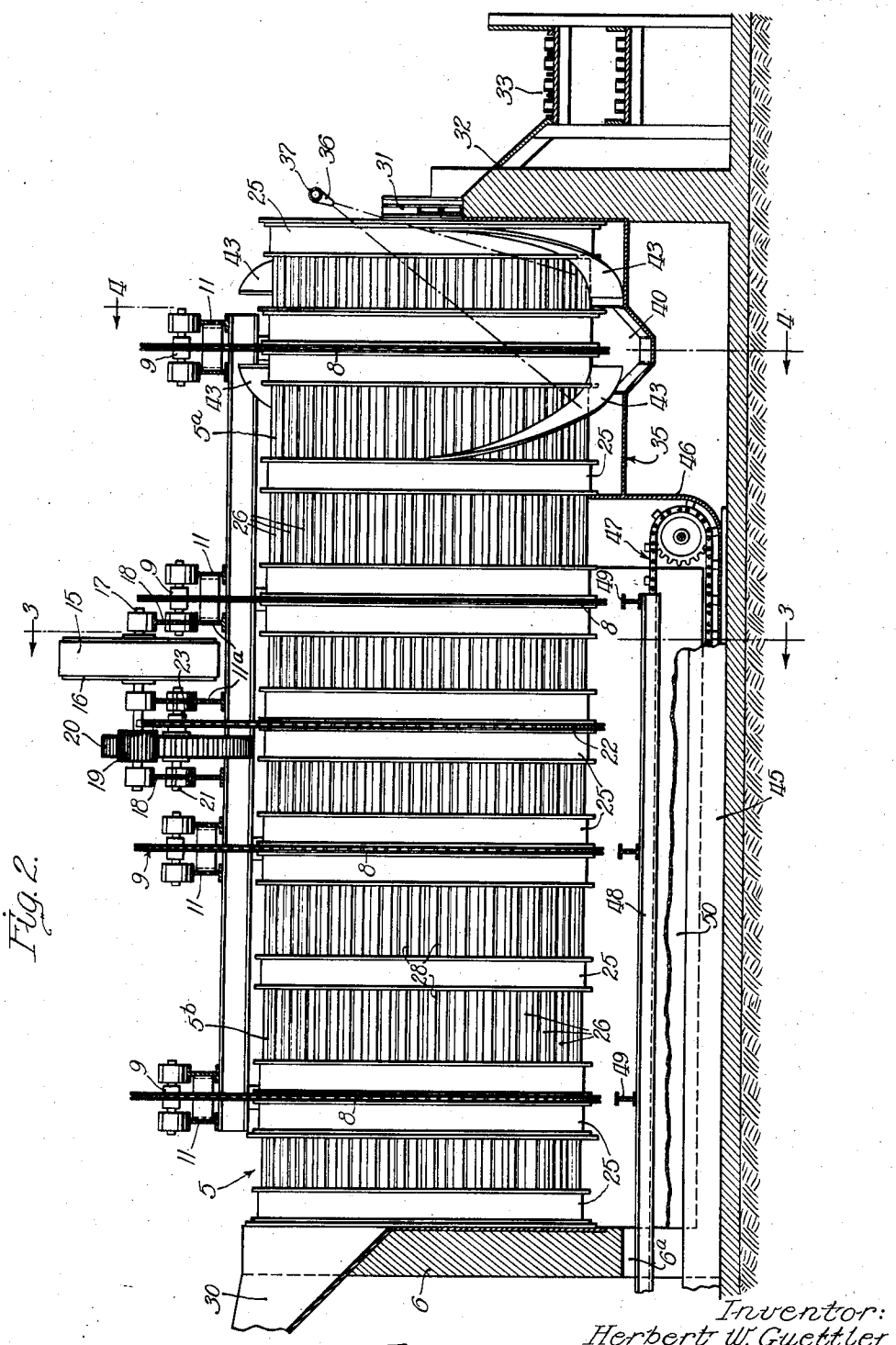


Fig. 2.

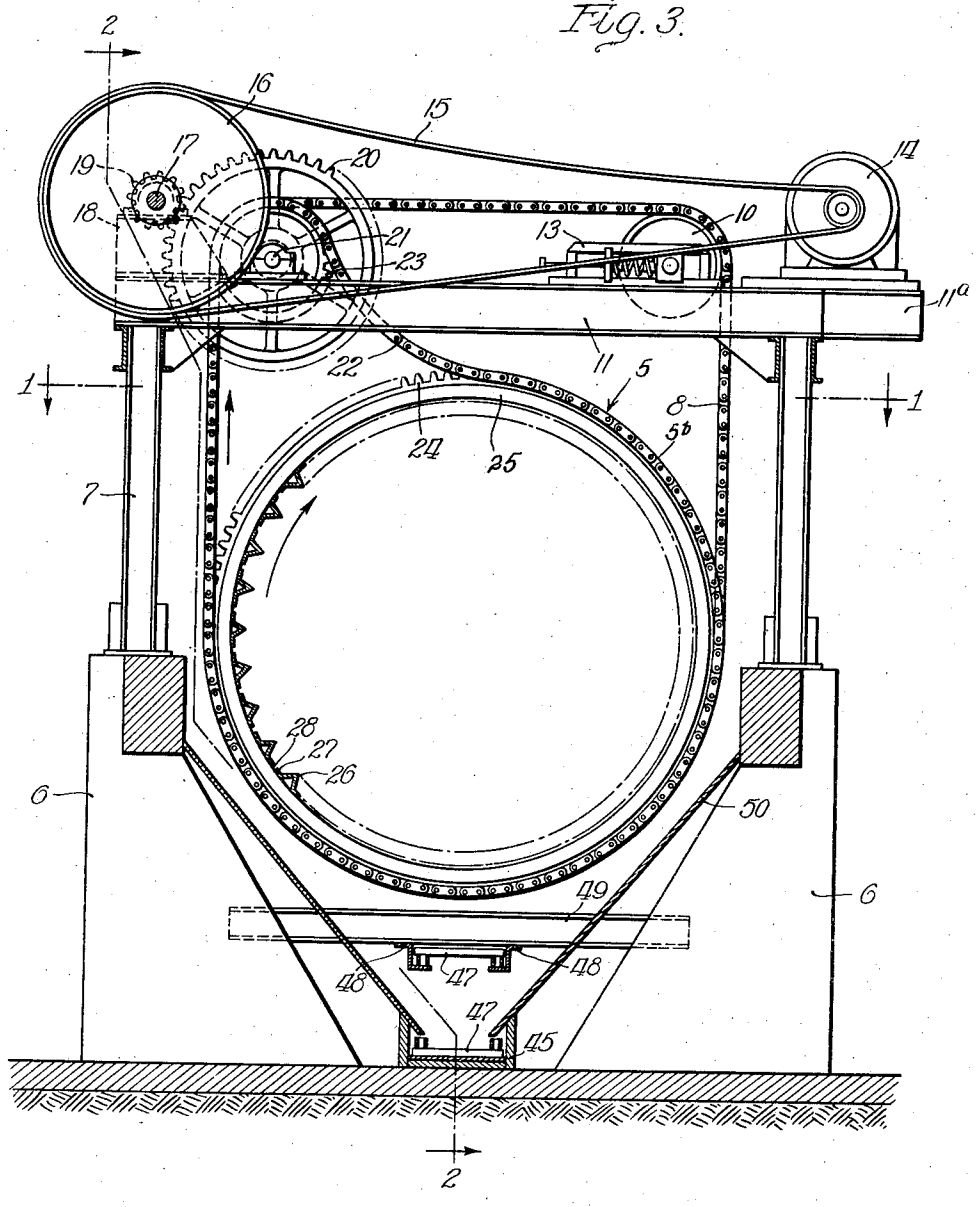
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Fig. 3.



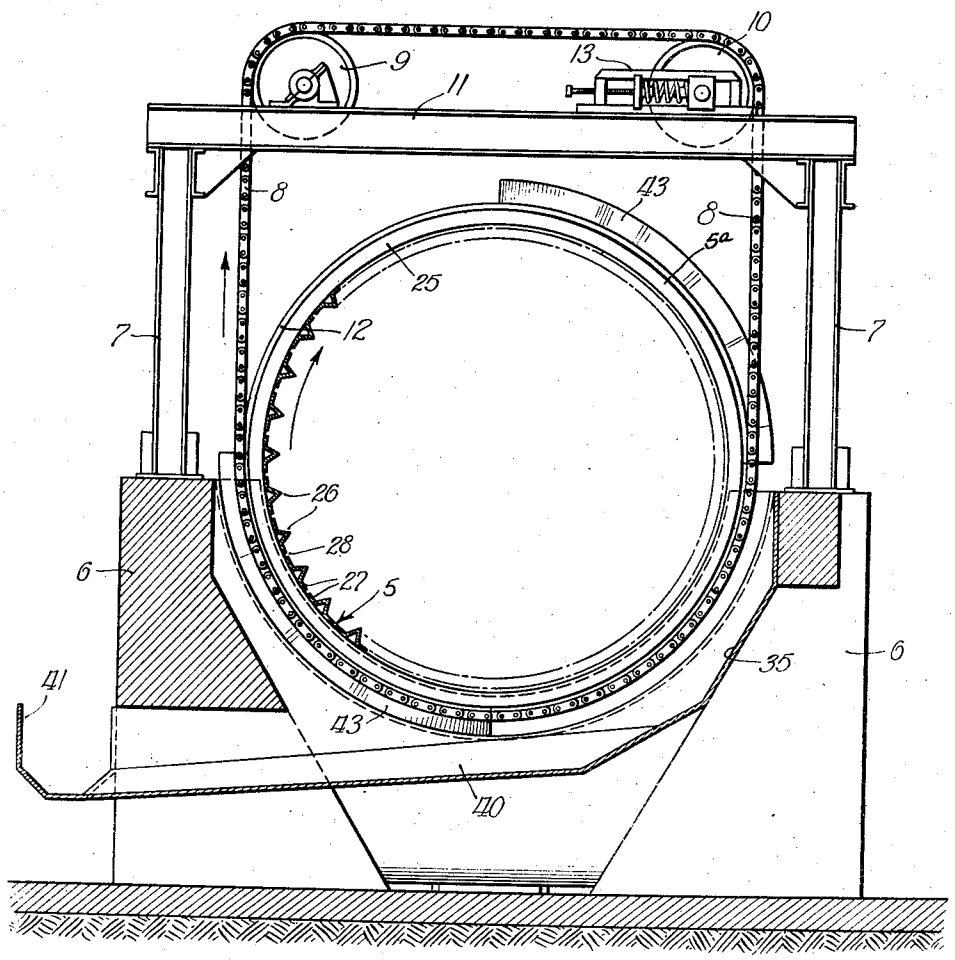
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Fig. 4.



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COMBINED BARKING AND WASHING DRUM

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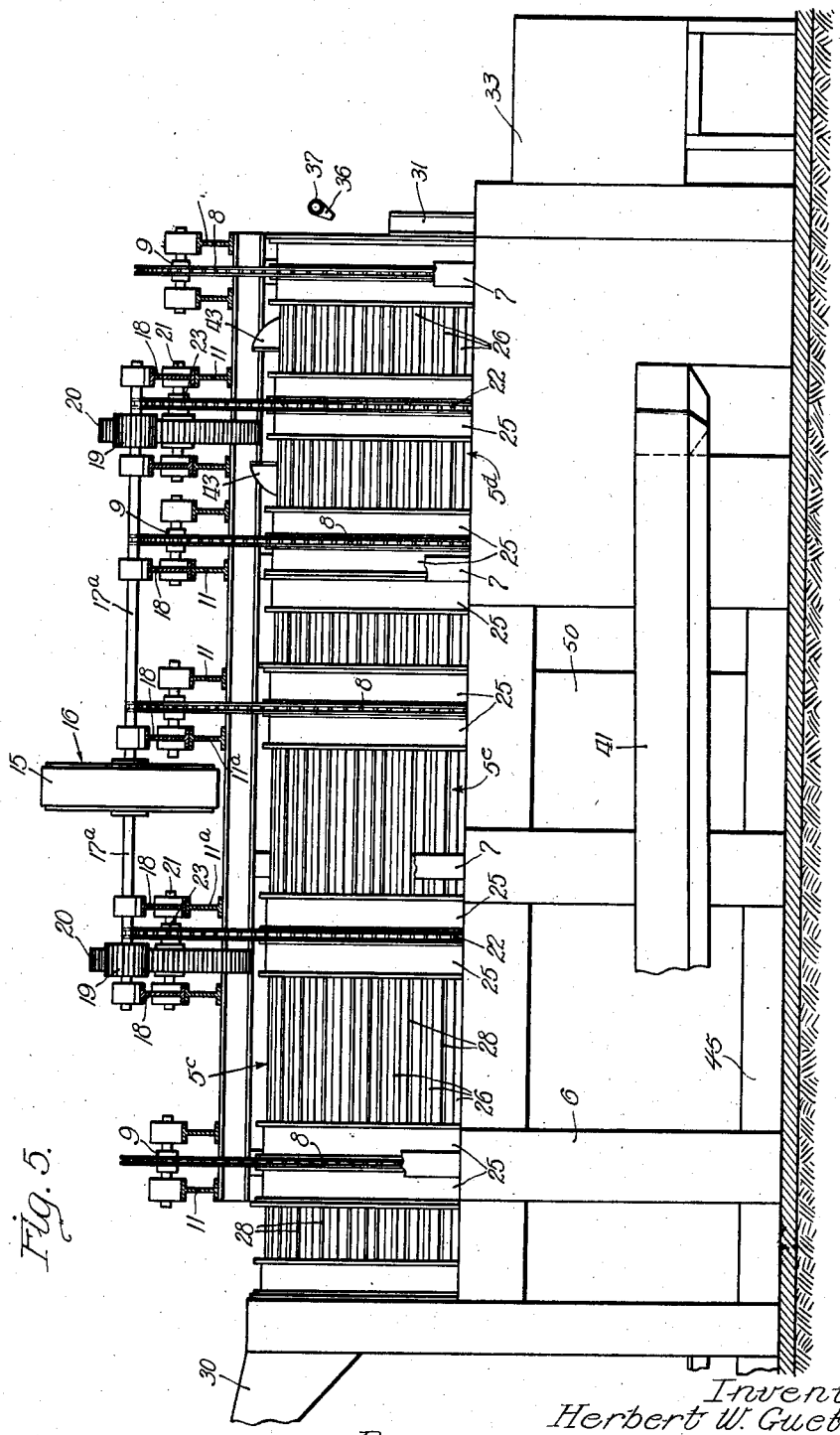


Fig. 5.

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UNITED STATES PATENT OFFICE

2,140,287

COMBINED BARKING AND WASHING DRUM

Herbert W. Guettler, Glencoe, Ill.

Application June 15, 1936, Serial No. 85,214

1 Claim. (Cl. 144—208)

This invention relates to wood treating means, and has to do with means for barking wood for use in the paper industry and other purposes.

It is known to provide barking apparatus in which logs are barked and separate apparatus for washing of the barked logs. It is also known to provide a drum immersed in water, in which the logs are barked and washed. In the first case it is necessary to duplicate apparatus with resulting increase in cost and loss of time in handling of the logs, or wood, and in the second case, all of the bark removed from the wood is wet and is not suitable for use as fuel.

Among the objects of my invention are the provision of simple and improved apparatus for barking and washing logs with expedition and facility, maintaining the removed bark in condition for burning with increased efficiency, and disposing the barking and washing apparatus and associated conveying and wet bark treating means to the best advantage. Further objects and advantages will appear from the detail description.

In the drawings:

Figure 1 is a plan view of a barking and washing drum embodying my invention, and associated conveying and wet bark treating means, this view being taken substantially on line 1—1 of Figure 3, parts being broken away and parts being omitted for clearness of illustration;

Figure 2 is an elevation of the barking and washing drum, parts being broken away and parts being shown in section, this view being taken substantially on line 2—2 of Figure 3;

Figure 3 is a sectional view taken substantially on line 3—3 of Figure 2;

Figure 4 is a sectional view taken substantially on line 4—4 of Figure 2; and

Figure 5 is a side view of a modified form of washing and barking drum embodying my invention, showing the drum structure as formed in two separate sections, parts being broken away and parts being shown in section.

I provide a drum 5 disposed in part within a suitable setting 6, conveniently of concrete construction. A framework 7 extends upward from setting 6 above and across the drum 5. The latter is supported from the framework in a known manner, by means of sprocket chains 8 passing over traction wheels 9 and 10 mounted upon cross-beams 11 of framework 7. Chains 8 pass about traction rings 12 suitably secured to drum 5 and each of the traction wheels 10 has adjusting means 13, of known type, associated therewith for tensioning the chains 8. In this manner the drum 5 is supported for rotation about a substantially horizontal axis. The drum may be supported in any other suitable or preferred manner known in the art.

Any suitable means may be provided for rotating the drum. In the illustrated embodiment of my invention I have shown an electric motor 14 mounted upon certain of the cross-beams 11*a* which are extended somewhat beyond the cross-beams 11. Motor 14 has driving connection, by means of belt 15, to a pulley 16 secured upon a shaft 17 rotatably mounted in bearing members supported by blocks 18 secured to the cross-beams 11*a*. A pinion 19, secured upon shaft 17, meshes with a gear 20 secured upon a countershaft 21 rotatably mounted in bearing members suitably secured upon the cross-beams 11*a*. A sprocket drive chain 22 passes about a sprocket wheel 23 secured upon shaft 21 and about a sprocket ring 24 secured about drum 5 at the mid-length thereof.

The drum 5 is, in general, of known construction. It comprises a plurality of suitably disposed rings 25, preferably of channel cross-section, and bars 26 extending through the rings and secured thereto. The bars 26 are preferably of V-shape in cross-section, as shown in Figure 3, and are provided with lateral flanges 27 which seat against the inner faces of the rings 25 and are secured to the latter by welding or in any other suitable manner. The edges of flanges 27 of adjacent bars 26 are spaced apart to provide openings or slots through the drum for escape therefrom of the removed bark, these slots being designated 28.

The wood or logs to be treated are delivered into the drum 5 at one end thereof, by means of a chute 30. During rotation of the drum the logs are barked in a known manner, the removed bark being discharged through the openings or slots 28 of the drum. In the rotation of the drum the logs progress therethrough toward the other or outlet end and are there discharged over a barrier 31 into a chute 32 and thence to the conveyor 33 by means of which the discharged logs are delivered to suitable apparatus for further treatment or to a storage pile.

I provide means for washing the logs prior to discharge thereof from the drum 5. A water pan 35 is disposed beneath drum 5 and extends substantially concentric therewith and lengthwise thereof a suitable distance, this portion of the drum constituting the washing portion 5*a* thereof. The remainder of the drum constitutes the dry barking portion 5*b*. Water is supplied to portion 5*a* of the drum, interiorly thereof, in a suitable manner, conveniently by means of spray nozzles 36 connected to a water supply pipe 37, these nozzles being so directed as to project water downward and inward into the drum, above the barrier 31 and within the length of portion 5*a*, as indicated in Figure 2. The bottom of water pan 35 is disposed below drum 5, as shown in Figure 4, and this pan is provided with a depressed discharge spout 40 extending at a

downward and outward inclination through one side of the pan centrally thereof. Spout 40 discharges into a trough 41 which extends parallel with drum 5 and is inclined downward to wet bark treating means 42, to which trough 41 delivers materials discharged from pan 35.

Drum 5 is rotated in a clockwise direction as viewed from the discharge end thereof, as indicated by the arrow in Figure 4. Portion 5a of the drum is provided, at the outer surface thereof, with pairs of oppositely directed spirally curved vanes 43, the vanes of each pair converging contra to the direction of rotation of the drum. Vanes 43 are of such width that they pass across the upper face of pan 35 in proximity thereto, during rotation of the drum, and serve to deflect bark discharged into the pan, from wet portion 5a of the drum, so as to move this bark from the end portions of pan 35 to spout 40 thereof. This precludes possibility of an objectionable amount of bark collecting within the pan 35.

A trough 45 extends beneath dry portion 5b of drum 5 centrally thereof, and through an opening 6a in the end wall of setting 6 adjacent chute 30. This trough is separated from pan 35 by a metal partition wall 46 which may form a continuation of the inner end wall of the pan and may also be extended along the trough 45 to provide a facing for the bottom of the trough. An endless conveyor 47, of known type, extends through opening 8a and the lower end of this conveyor operates in trough 45. The upper run of conveyor 47 travels along angle guide rails 48 suitably secured to I-beams 49 anchored in setting 6 and extending above and across trough 45. Conveniently, the conveyor is of open-work slat type, though any other suitable or preferred form of conveyor may be used. Plates 50 are disposed beneath dry barking portion 5b of drum 5, conveniently supported by beams 49, and are inclined downward and inward to trough 45, projecting inward of the latter a short distance beyond the side walls thereof. The plates 50 define a hopper effective for delivering to the lower run of conveyor 47 the dry bark discharged through slots 28 of dry portion 5b of the drum. Conveyor 47 and trough 45 may be of any suitable length and are intended for delivering the bark to the furnace room of the plant for use as fuel in the furnaces.

The wet bark treating means 42, shown diagrammatically in Figure 1, may be a screen or a bark press, or both, or any other suitable means for removing as much water as practicable from the bark delivered thereto from the wet portion of the drum. The treated bark is delivered from the means 42 to a conveyor 51 of suitable type, which conveyor delivers the treated bark to the conveyor 47.

Substantially all of the bark is removed from the logs in the dry portion 5b of drum 5, and is discharged therefrom and delivered to the conveyor 47. The water supplied to wet portion 5a of the drum, together with the remaining small proportion of bark removed from the logs in the wet portion, readily flows into the water pan 35, so that no water penetrates the dry portion of the drum and the bark discharged from the latter portion is in its normal dry condition such that it will readily burn. The logs are thoroughly washed in wet portion 5a of the drum, in which any slight remaining bark is removed from the logs. The amount of moist bark discharged from the wet bark treating means 42 is quite small relative to the amount of dry bark delivered to the conveyor 47 from the dry portion of the drum. Accordingly, the moisture content of the bark finally delivered by conveyor 47 is quite small and does not interfere with ready burning thereof. This means that the bark removed from the logs during passage thereof through drum 5, as delivered to the furnace room, is in such condition that it will readily burn in the furnace and may, therefore, be used as fuel. This is an important consideration in this art.

Preferably the drum structure 5, including dry portion 5b and wet portion 5a thereof, is constructed as a unit of uniform diameter. It may, however, be formed in two or more separate sections. In Figure 5 the drum structure, designated 5c, is shown as constructed in two separate sections 5d and 5e, of which 5d is the washing section and 5e is the dry barking section. These sections are disposed coaxially and are supported for rotation about their common axis, in a suitable manner, conveniently in the same manner as the drum structure 5 of Figures 1 to 4, inclusive, is supported. Sections 5d and 5e are conveniently driven from a common drive shaft 17a, corresponding to shaft 17 of Figures 2 and 3, extended for this purpose and having gear and sprocket driving connection to the respective sections, at the mid-length thereof, in the same manner as in Figures 2 and 3. The drum sections may, however, be driven in any other suitable manner.

In the drum structure shown in Fig. 5, section 5d is shown as considerably shorter than section 5e, and the water pan extends the full length of section 5d. It is to be understood, however, that this is by way of example only, and section 5d may be of any suitable or preferred length, and either the full length of this section, or a portion only thereof, may be utilized as the washing portion of the drum structure.

Some barking units are of considerable length and, for mechanical reasons, the drum structure is constructed in two or more separate sections forming a continuous drum. In such cases, the last section, or a portion thereof, at the discharge end of the structure, constitutes the washing portion and has associated therewith a water pan and water supply means, in the manner above described. My invention comprehends a combined barking and washing drum in which the dry barking portion and the washing portion are united to form a single unitary structure, or which is formed in two or more separate coaxial sections which together constitute the drum structure, the last section, either in whole or in part, being utilized as the washing portion of the structure.

What I claim is:

In wood barking and washing means, a rotatably mounted barking drum structure comprising a dry barking portion and a washing portion, a shallow water pan extending beneath the washing portion and about the latter substantially concentric therewith and in proximity thereto provided with a central discharge spout depressed below the bottom of said structure, vanes on the outside of said washing portion disposed to move wet bark in said pan from the ends thereof toward said spout, and a trough receiving material discharged from said pan through said spout.

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