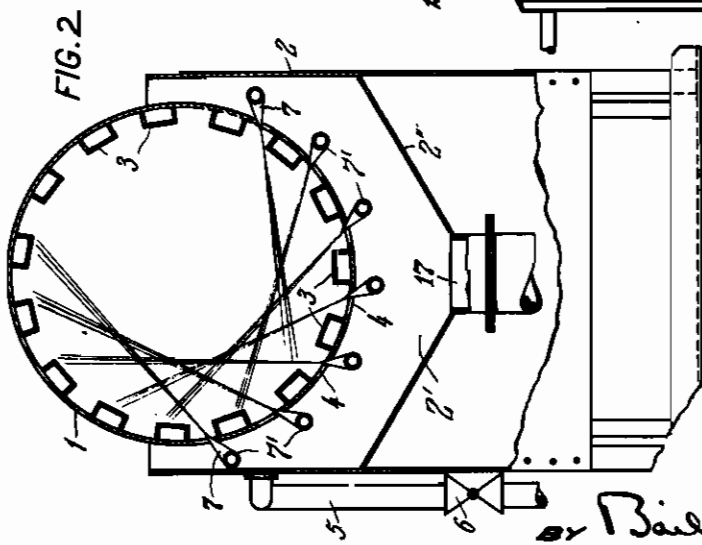
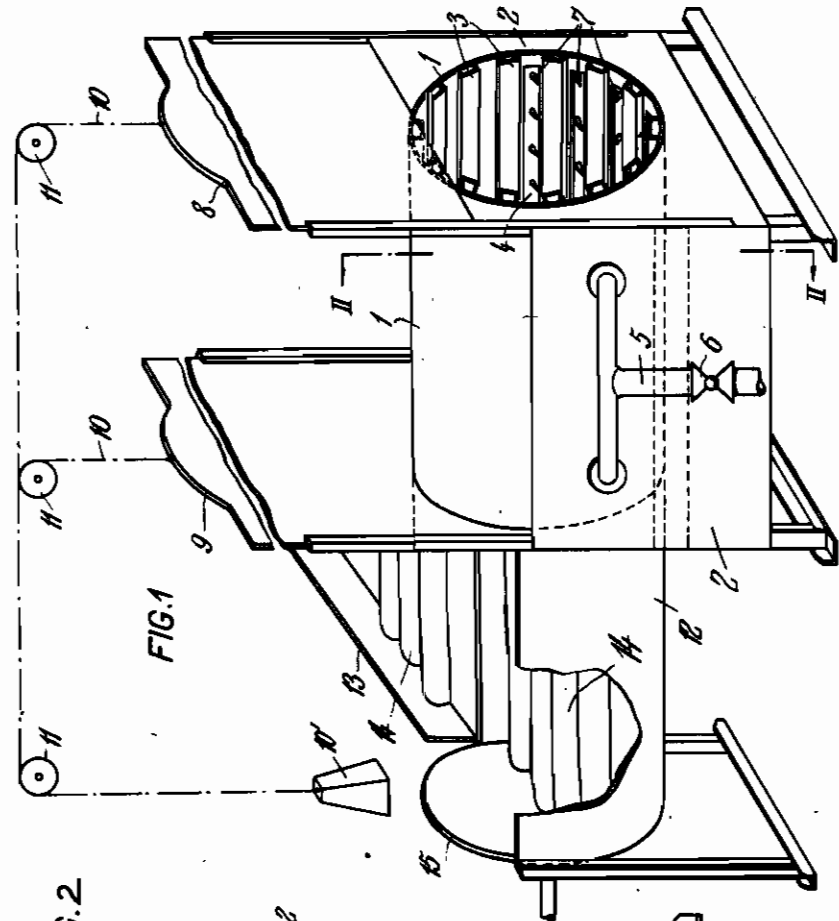


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A. HOLZHEY ET AL
SYSTEM FOR DISBARKING TRUNKS
Filed Aug. 29, 1940

Serial No.
354,762
2 Sheets-Sheet 1



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FIG. 3

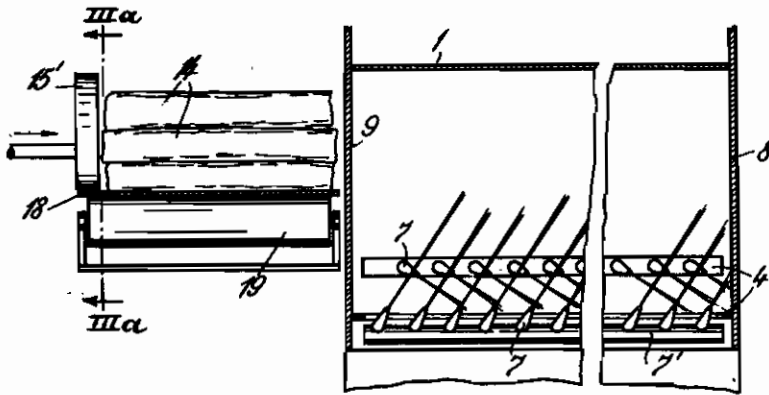


FIG. 4

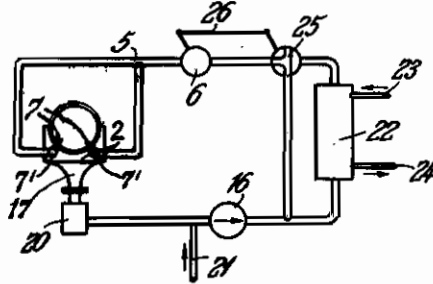


FIG. 5

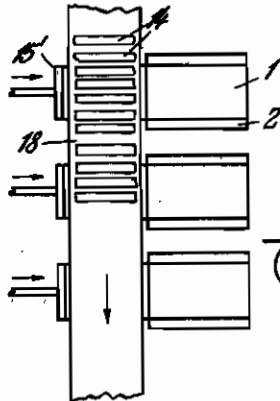
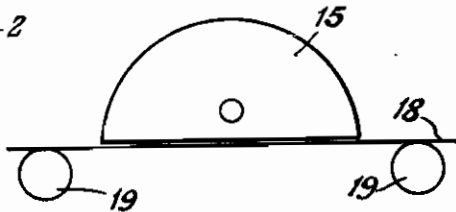


FIG. 3a



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ALIEN PROPERTY CUSTODIAN

SYSTEM FOR DISBARKING TRUNKS

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Lech, Germany; vested in the Alien Property
Custodian

Application filed August 29, 1940

This invention relates to a process and device for stripping bark from trunks.

Various processes and devices are known for removing bark or rind and bast from trunks. It has been suggested to apply acids, sand-blasting or other mechanical means such as revolving blade rollers for this purpose.

The process of placing the trunks in revolving drums filled with water is also known. In this way the bark would be softened by the water and then peeled off by the trunks rubbing against each other as well as against certain projections on the inside walls of the drums. It has finally been suggested to expose each single trunk to the effect of water sprays under pressure and pushing the trunk by mechanical means against the direction of the sprays.

The said methods as well as other known processes embody great disadvantages. Above all, acids and sand-spraying are not suited for the treatment of high-quality wood since its quality is greatly impaired thereby. On the other hand, when mechanical stripping means are used, such as rotating blades and the like, there will be a considerable loss of material in stripping. Moreover, the treatment of the wood in revolving drums requires much time and results only in insufficient stripping. Besides, special driving apparatus is required for rotating the drums which also require considerable space, capital investment and operating expenses.

The present invention has among its objects to remove said disadvantages by using a process in which several trunks of wood placed in a vessel are stripped simultaneously by directing water sprays under pressure against the trunks in such a way that these are made to push and rub constantly against each other as well as against the walls of the vessel. Simultaneously through the water sprays under pressure the bark is thus removed. Through the chafing and rubbing as well as through the soaking effect of the water, the bark is loosened, while the intense water sprays under pressure tend to lift the same and cause it to be carried off through suitable openings provided in the vessel. In this way a thorough stripping of the bark is accompanied with a minimum of energy. Moreover, there will be no further loss of material and the whole stripping process is carried out within a very short time.

Another object of the present invention is the provision of a specially shaped device for carrying out the inventive process, consisting of a stationary vessel, preferably of cylindrical shape,

which over a part of its circumference and especially on its lower half is equipped with suitably pointed nozzles for injecting the water under pressure. This vessel also has horizontal longitudinal slots, especially within the range of the said nozzles, as well as ribs and/or projections extending towards the inside over the whole circumference of the vessel.

Such contrivance is simple in its construction, occupies little space and is easily and cheaply produced.

The invention and the advantages derived from the same will be better understood by reference to the following detailed description of the device in connection with the accompanying drawing showing by way of example and purely schematically some embodiments and characteristics of the invention and in which:

Fig. 1 is a perspective view of a plant having the invention applied thereto.

Fig. 2 is a cross section through the stripping vessel on the line II—II of Fig. 1.

Fig. 3 is an axial section through a plant similar to Fig. 1.

Fig. 4 is a diagram showing the circulation of the working agent.

Fig. 5 is a diagrammatic plan view of a plant including a plurality of working drums.

Similar characters of reference denote similar parts in the figures.

Referring now to the drawings in greater detail, the apparatus comprises a stationary vessel 1 in the shape of a horizontal drum which is mounted in and partly surrounded by a box-shaped enclosure 2.

The vessel 1 is provided with ribs and projections over its whole inside circumference which can assume various shapes and forms. The illustration shows by way of example ribs consisting of U-irons 3 arranged at certain uniform intervals and extending in longitudinal direction of the vessel 1. The legs of said U-irons may be welded to the inside wall of the vessel 1. In the lower part of the vessel apertures are provided in the wall between the single ribs 3. These apertures consist of slots 4 running parallel to the U-irons 3 and extending in longitudinal direction not quite as far as the walls of the vessel. The water pressure nozzles 7, which are provided on the lower half of the circumference of the vessel, on feed pipes 7', protrude through the said slots 4 towards inside. These nozzles are distributed side by side at comparatively short intervals so as to form a certain number of rows of nozzles which corresponds with the number of

slots 4 available. The mouths of said nozzles lie below the outside surface of the ribs 3 which faces the inside of the vessel, and are thus protected against damage by the logs. Furthermore, the axes of said nozzles are lined up so that their extensions as referred to the cross section of the vessel, would run like the chords of a circle, see Fig. 2. If desired, the axes of all nozzles or of a part thereof can simultaneously be made to run at a slope to the longitudinal direction of the vessel, as indicated in Fig. 3, so that beside the rotating movement the logs are given simultaneously a push forward in the direction of the longitudinal axis of the vessel.

It is also possible to mount the nozzles for moving or adjusting so that the direction of the emitting water sprays under pressure can be regulated with relation to the logs. The changes required for this purpose will readily occur to those skilled in the art and, therefore, have not been illustrated.

The single nozzles are connected with the pressure water line 5 which is fed from any pressure water source of known type, for example, a pump 16, Fig. 4. The feed line for the pressure water should have some means of adjusting as for instance the valve 6.

An intermediary bottom 2' with inclined walls is mounted inside the housing 2. At its lowest place the intermediary bottom has been provided with a drain 17 of large dimension, fig. 2, for the used pressure water and the bark. It is particularly emphasized that also with relation to this arrangement, other ways or means can be devised for draining the used water and the bark.

The drum-like vessel 1 is equipped at both front ends with slides 8 and 9 operating within slots in the housing 2, i. e., manually, mechanically, electrically or hydraulically. In the illustration said slides are hung on chains or ropes 10 which run over guide rollers 11 and are balanced by a counter weight 10' so that they can easily be worked by hand.

In front of the stripping vessel 1 another vessel 12, Fig. 1, preferably in trough shape, has been placed which can be filled with the round logs 14 to be stripped, by way of a chute 13, a conveyer 18, 19, Fig. 3, or by some other appropriate means. The logs collected in the vessel 12 form a bundle which by the punch 15 operated by manual, hydraulic, mechanical or electrical means is pushed into the stripping vessel 1 after the slide 9 has been previously opened. The slides 9 and 10 are then lowered so that the vessel 1 is closed. Now the cock 6 is opened allowing the water under pressure to enter through the nozzles 7 into the vessel 1 where it strikes against the logs almost tangentially causing them to revolve around their longitudinal axis. Simultaneously the whole bundle of logs turns around its own axis so that the single logs jostle and rub each other as well as against the ribs 3 fastened to the vessel. Owing to this jostling and rubbing mechanical action as well as through the softening effect of the water, the bark is loosened so that it can be lifted by the vital force of the pressure water sprays and through the slots 4 together with the used water is conducted into the collecting trough 2, whence it is drained by way of the pipe 17 mentioned above.

The whole stripping process is carried out at a considerable speed and in many cases is already finished after a period of 25 to 45 seconds

figured from the time the pressure water sprays have started acting upon the logs. The supply of pressure water is then shut off by closing the cock 6. The two slides 8, 9 can now be opened and a new bundle is pushed into the vessel by means of the punch 15. Through this shoving-in of the new bundle, the ready stripped trunks are simultaneously pushed out in front upon a conveyer, a wagon or other means of transportation to be carried off to their destination.

The contrivance also serves for cleaning stripped logs which have become dirty in storage or during transportation or to liberate them from snow and ice in the winter.

In the case of larger plants it is advisable to set up side by side several of the described contrivances 1, 2, as shown in Fig. 5, and to feed them from a common conveyer 18, which makes continuous operation possible. As best seen in Fig. 3, the conveyer belt 18 in this case is disposed at the level of the center axis of the drum 1, and supported on rollers 19, while the punch 15' takes a semi-circular form.

The bark which has been ejected from the vessel 1 through the slots 4 is appropriately collected by means of screens 20, Fig. 4, and conveyed to some place for further use. Since the stripping waste received during the inventive process consists of uniform material and does not contain any pieces or parts of wood, it can be treated for other purposes in one and the same working process. This has not been possible heretofore with any known processes, as the stripping waste received contained bast and wood which are difficult to separate from each other. The bark obtained from this inventive process can either be treated for cellulose or it can be used as litter or used for insulating purposes (cork substitute).

After the water has been liberated from the bark it can be re-circulated, but it is advisable to put it through a purifying process before further use. A plant of this type has been shown in Fig. 4. The water together with the bark and bast are directed from the drain pipe 17 through a filter and sieving device 20, for removal of bark, bast and other impurities from the water, and re-cycled through pump 16, with addition of fresh water through pipe 21 to make up for the unavoidable waste which is due to absorption of water by the wood and bark, evaporation, leakage etc.

It might be recommended to carry out the stripping process by using alternately cold and hot water sprays. These sudden changes of temperature will bring about an expansion which will even accelerate the loosening of the bark. It has also been tried to operate with variable water pressure, first applying water with a higher pressure and later on lowering the pressure. For example, the water might first be ejected with 12 at. from the nozzles 7, then with 8 at. and then again with a higher pressure. It is also possible to operate with alternately hot and cold water sprays of a constantly changing pressure. In this case, hot water is applied for the low-pressure sprays which serve to soak the bark and cold water for the high-pressure sprays. A system of this kind has been embodied in Fig. 4, showing an additional branch including a water heater 22 having steam feeding and exhaust pipes 23 and 24, respectively. Thus, hot or cold water may be delivered alternatively to the delivery pipes 7' of the nozzles 7, by operation of a three-way valve 25. If desired, the three-way valve

may be mechanically coupled with the pressure-control valve 6, as by a rod 26, so as to bring about the reduction of pressure simultaneously with the change-over to hot water, in accordance with the procedure suggested above.

If continuous operation is desired, a longer vessel should be used in which the nozzles are mounted in such a way that the emitting sprays will cause the logs to revolve not only around their own longitudinal axes but simultaneously 10 cause them to be moved forward in the direction of the axis of the vessel, as shown in Fig. 3. For the same purpose, the nozzles can also be ar-

ranged along a helix, or certain worm-like installations could be provided which through their action and guidance would automatically move the logs forward longitudinally.

- 5 The method and apparatus of the present invention have been described in detail with reference to specific embodiments. It is to be understood, however, that the invention is not limited by such specific reference but is broader in scope and capable of other embodiments than those specifically described.

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