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TOOL MEANS FOR A ROTARY DEBARKING MACHINE AND MOUNTING MEANS THEREFOR

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Fig. 1.

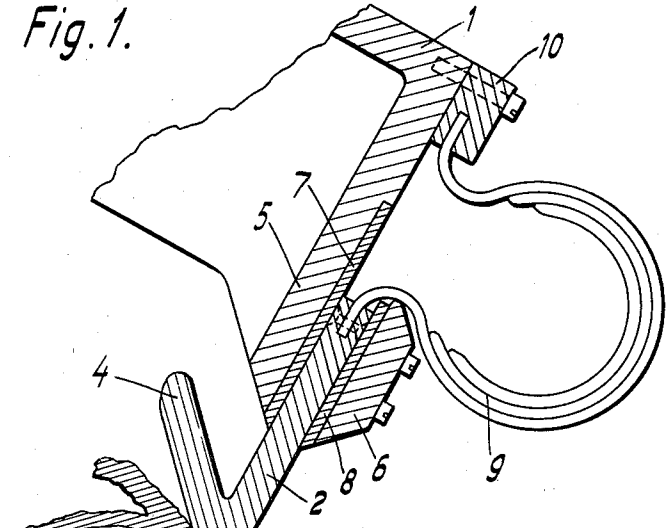
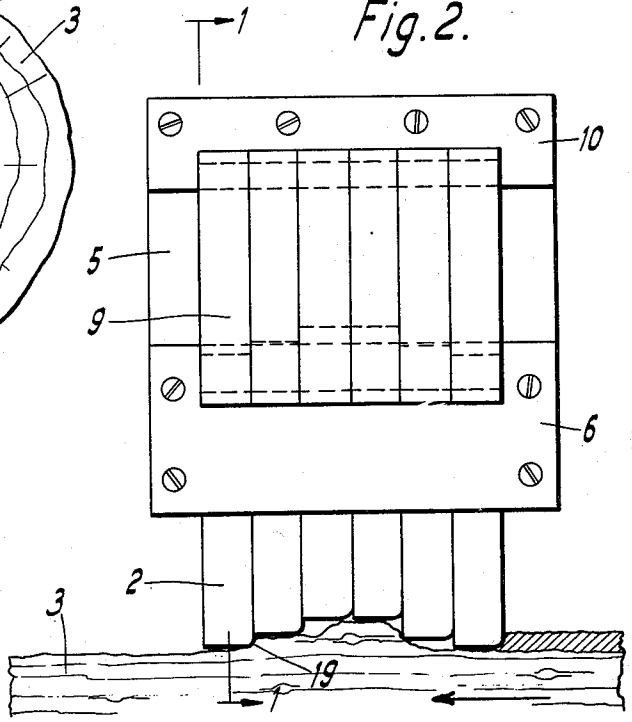


Fig. 2.



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Fig. 3.

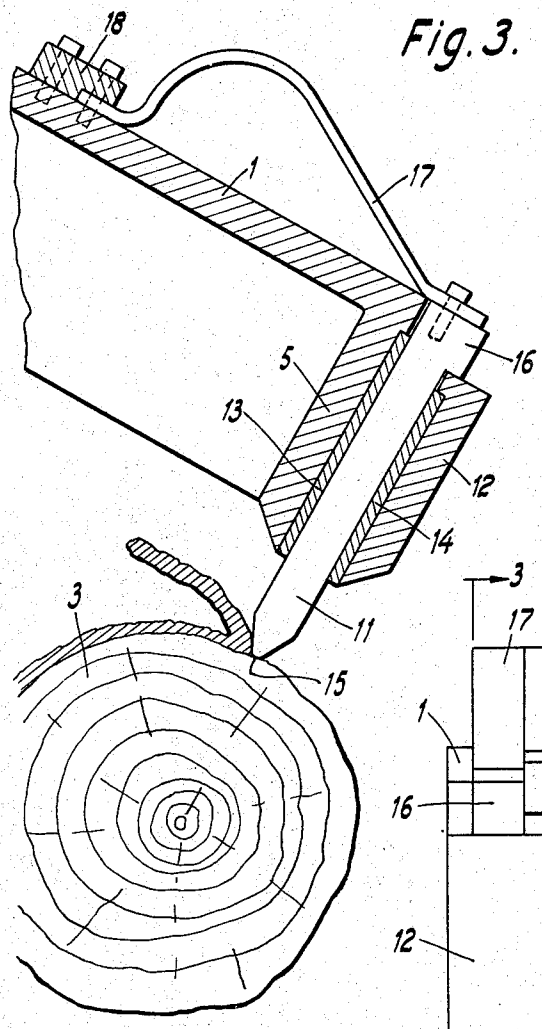
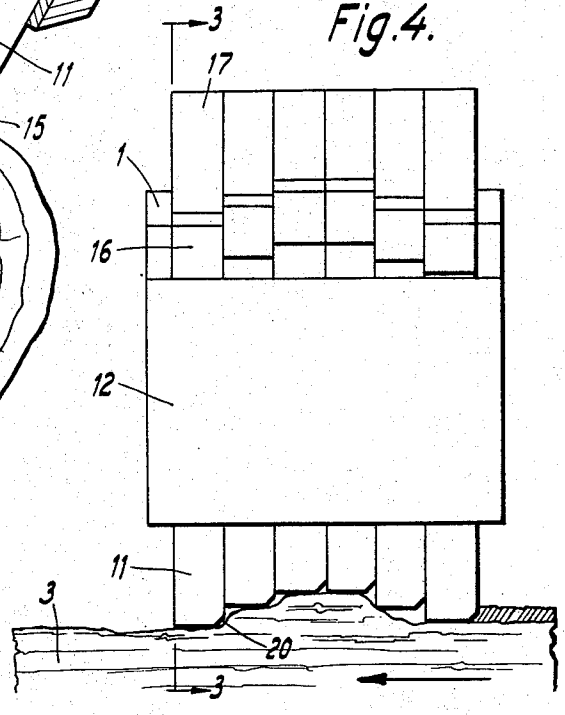


Fig. 4.

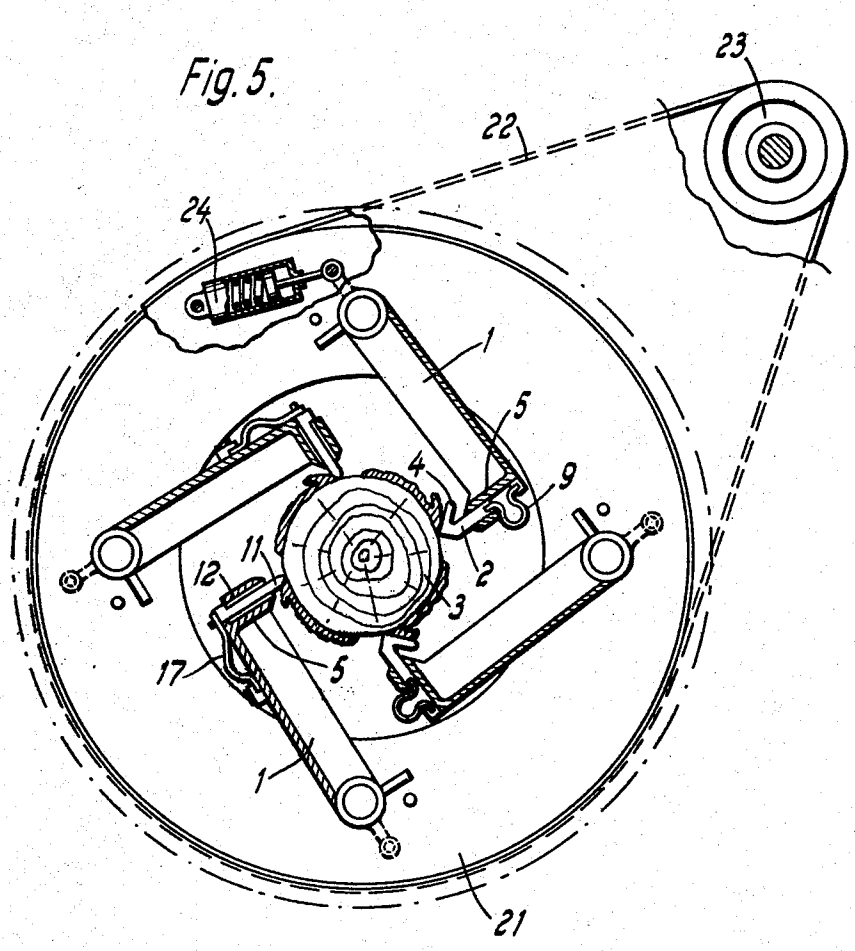


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Fig. 5.



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3,125,142

TOOL MEANS FOR A ROTARY DEBARKING MACHINE AND MOUNTING MEANS THEREFOR

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Claims priority, application Sweden Mar. 24, 1961
7 Claims. (Cl. 144—208)

The present invention relates to debarking machines of the so-called hollow head type, wherein logs while restrained against rotation are fed axially to and through the machine, comprising a hollow annular frame, a tool-carrying rotor, infeed and outfeed mechanisms, said rotor carrying a plurality of tool-supporting arms mounted for pivotal movement about axes parallel to the axis of the rotor.

The principal object of this invention is to provide debarking tools whose performance in comparison with previously known debarking tools is quite favorable even with a considerably lower number of revolutions of the rotor of the darking machine. Another object of the invention is to construct the debarking tools so that they are readily interchangeable.

A further object of the invention is to provide debarking tools so constructed as to easily follow the surface or contour of the logs despite any alternating elevations and depressions therein.

The invention is principally characterized in that each of the debarking tool means in the end of the tool arms is subdivided into a plurality of individual shaped members arranged one behind another i.e., adjacent to each other in the feed direction of the logs with each member being provided with a blunt debarking edge, and mounted so as to be displaceable in a plane substantially at right angles to the longitudinal axis of the associated tool arm and biased to press the debarking edge against the surface of a log by elastic means connected to said tool arm.

Other characterizing features of the invention will be apparent from the following description of illustrative embodiments shown in the attached drawings, in which

FIG. 1 is a sectional view along line 1—1 of FIG. 2 illustrating one embodiment of the debarking means of the invention;

FIG. 2 is an end view of the embodiment of the debarking tool means illustrated in FIG. 1.

FIG. 3 is a sectional view along line 3—3 of FIG. 4 illustrating another embodiment of the debarking tool means of the invention;

FIG. 4 is an end view of the embodiment shown in FIG. 3; and

FIG. 5 is an end view partly in section and partly in elevation, with parts broken away, diagrammatically illustrating a rotary debarker having pivotably mounted tool arms carrying the tool means of the invention.

In FIG. 1 the free end portion of one of the pivotally mounted tool arms 1 on the rotor 21 (FIG. 5) of the debarking machine is designated by 1. One of the individual shaped debarking tool members is designated at 2, with its blunt debarking tip or end in contact with a log 3. This end is provided with a shaped feeler part 4 extending at an oblique angle from this blunt edge, and serving as feeler or climbing means for riding over knots. In this embodiment of the debarking tool means there are six shaped debarking members arranged one behind another in the feed direction of the log.

Between the end 5 of the tool arm 1 and a plate shaped part 6 fixed by means of bolts to the end of the arm the debarking tool members 2 are displaceably arranged. The end 5 and the plate shaped part 6 are provided with

bronze linings 7, 8 facing the shaped members 2. Each of said members 2 is at its opposite end connected to elastic means consisting of a plurality of plate-springs 9, which at their opposite end are connected to a part 10, which in turn is detachably fixed to the end portion of the arm 1.

As mentioned above, each debarking tool means is subdivided into a plurality of shaped debarking members tool arranged one behind another, whereby each of these members is separately actuated by a spring, which arrangement from debarking point of view is very favourable. By detaching the plate shaped part 6 and also the detachable part 10 it is possible to rapidly remove the debarking tool members and replace the same by others if repair of the debarking tool means is required.

In the embodiment FIG. 3 one of the tool arms on the rotor of the debarking machine is designated by 1'. Each of the disk shaped debarking members 11 is displaceably arranged between the end 5' of the arm 1' and a plate shaped part 12 fixed to the arm by means of welding. In order to decrease the friction, the end 5' and said part 12 are provided with bronze linings 13, 14 on the sides facing the shaped debarking tool members 11. Each of these debarking members 11 has its end sloped and provided with a blunt debarking edge 15.

For limiting the displacement of each debarking member 11, the same is provided with an offset projecting part 16, to which is connected a plate-spring 17, which at its opposite end is detachably connected to the arm 1' by means of a plate shaped part 18. If any of the shaped debarking members 11 has to be replaced by another such member, it is only required to release the spring 17 at its mounting at 18, whereafter the debarking member 11 can be lifted up and removed. As is the case in the first mentioned embodiment, the debarking tool means consists of six shaped tool members 11 arranged one behind another, whereby the debarking tool in spite of its rather great width easily will adapt itself to unevennesses in the surface of the log. The end of the debarking edge of the members 2 and 11 facing the feed direction of the log are rounded as shown at 19 and 20 respectively.

FIG. 5 illustrates diagrammatically the debarking tool members of the invention as applied to tool arms, one mounted for swinging movement toward and from axially of the rotor 21. Each of the tool arms is moved inwards towards the log to be debarked by the spring mechanism diagrammatically illustrated at 24. The rotor is driven by drive belt 22, trained over the periphery of the rotor and over a drive pulley 23. For purposes of illustration, two of the tool arms of FIG. 5 illustrate the tool means 2 of FIGS. 1 and 2 whereas the other tool arms carry the tool means 1 of FIGS. 3 and 4.

It is pointed out that the prior art practice in connection with pivotly mounted tool arms incorporate debarking tool members having blunt debarking edges that are relatively long in the direction of log feed so that each debarking edge in the debarking operation removes what could be termed a strip of bark. Where a tool member strikes a knot or protuberance of relatively small size, i.e., of less size that the extent of the tool member axially of the rotor, the tool member and its arms move away from the log so that there is a portion of the log on each side of the protuberance or knot that is not debarked. The concept of this invention is to provide a plurality of individual debarking members guided for movement in direction at right angels to the longitudinal axis of each tool arm so that each member is individually displaceable in a plane substantially perpendicular to the longitudinal axis of the associated tool arm. Thus, as shown in FIGS. 2 and 4, only the individual members

that engage a knot or protuberance on a log are moved away from the log whereas the other members remain in engagement and remove bark. The structure of the tool means of the invention is not only applicable to knots but also operates to adequately remove the bark from logs having surface irregularities other than knots or protuberances.

The invention is, of course, not limited to the above described embodiments, but can be varied in a number of different manners within the scope of the invention. Thus instead of the described and illustrated plate-springs, other elastic means can be used to actuate the individual debarking tool members to hold them into contact with a log fed through the machine.

What is claimed is:

1. In a debarking machine of the type in which logs while restrained against rotation are fed axially to and through the machine, a rotor having a central opening through which the logs to be debarked are fed, a plurality of tool-supporting arms carried by said rotor and mounted for pivotal movement about axes parallel to the axis of the rotor whereby such arms can move toward and away from the axis of the opening in the rotor, debarking tool means mounted at the free end of each arm comprising a plurality of shaped, individual bark-removing members, support means carried by the free end of each arm for supporting said individual members one behind another in the feed direction of logs to be debarked, each member terminating in a blunt debarking edge, said support means including surfaces guiding the individual members for displacement in a plane substantially at right angles to the longitudinal axis of the associated arm, elastic means interconnected between each of the individual bark-removing members and the associated arm for yieldingly maintaining the debarking edge of each such member against the surface of a log to be debarked and means for moving the tool arms about their axes to urge such arms toward said log to be debarked.

2. In a debarking machine as claimed in claim 1 in which said supporting means comprises a housing connected to the free end of each arm and enclosing the associated individual bark-removing members, and plate spring means removably connected at one end to the end of each member remote from the blunt debarking edge and at the other end to the associated arm.

3. In a debarking machine as claimed in claim 1 in which said support means comprises a housing removably connected to the free end of each arm, said housing having spaced, opposed, planar surfaces, said individual bark-removing members being in engagement with said surfaces and slidable with respect thereto, each of said bark-removing members including a feeler portion extending at an angle from the associated blunt edge toward the direction of rotation of the rotor, each of said bark-removing members further having the end thereof facing the direction of log feed inclined and said elastic means comprising at least one plate spring removably connected at one end to the end of each bark-removing member remote from the blunt edge and at the other end to the associated arm.

4. In a debarking machine as claimed in claim 1 in which said support means comprises a housing connected to the end of each arm and surrounding the associated individual bark-removing members and guide linings on the interior of the housing constituting guide surfaces for said members in their movement relative to one another and to the associated arm.

5. Debarking tool means for a debarking machine comprising the combination of a tool-supporting arm adapted to be mounted for swinging movement about an axis parallel to the axis of a log to be debarked, said arm terminating in a free end, bark-removing means carried by said arm whereby when such arm is moved toward a log to be debarked the bark-removing means upon relative rotary movement between the arm and the log to be debarked will remove bark from such log, said bark-removing means comprising a plurality of shaped, bark-removing members each having opposed planar surfaces extending substantially perpendicular to the longitudinal axis of the associated arm, housing means connected to the arm and including guide surfaces engaging the exposed surfaces of the respective members for supporting said members in mutual engagement one behind the other in the direction of the longitudinal axis of a log to be debarked, said members being individually displaceable within said housing in a plane at right angles to the longitudinal axis of said arm whereby said members can move relative to one another and relative to the surface of a log to be debarked, each of said members terminating in a blunt bark-removing edge and individual spring means interconnected between the arm and the end of each member remote from its debarking edge for yieldingly pressing such edge against the surface of a log to be debarked.

6. Debarking tool means as claimed in claim 5 in which said housing is removably connected to the arm.

7. Debarking tool means as claimed in claim 5 and bronze lining members on the interior of the housing and in engagement with the exposed surfaces of said members.

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