April 14, 1959 P. AVARD 2,881,814

METHOD OF DEBARKING LOGS

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Fig. 1

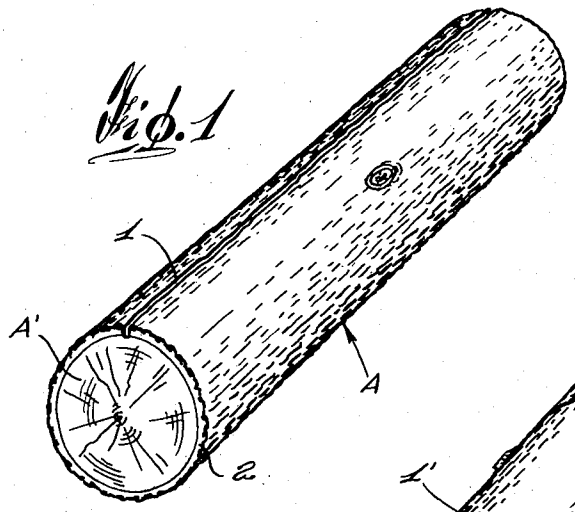


Fig. 2

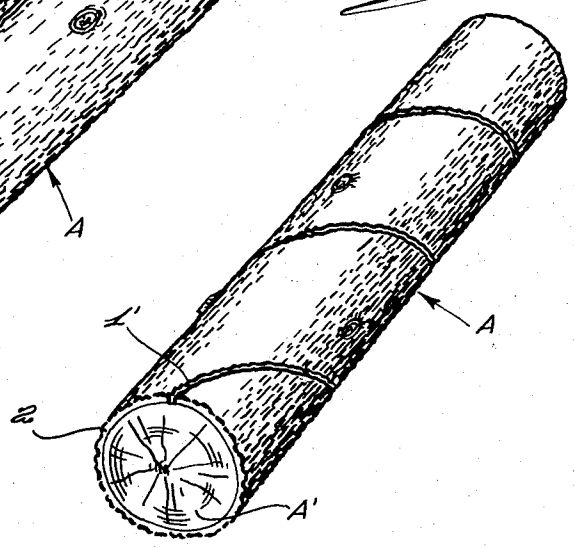


Fig. 3

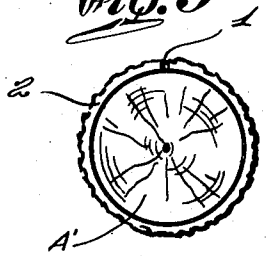


Fig. 4

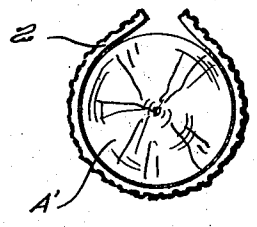


Fig. 5

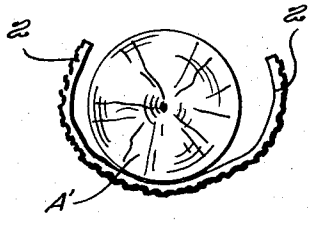
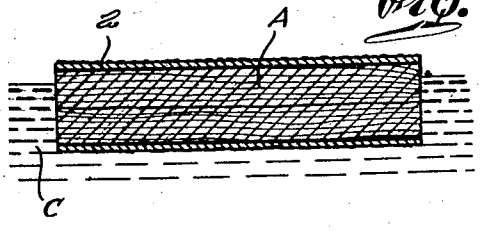


Fig. 6



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METHOD OF DEBARKING LOGS

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2 Claims. (Cl. 144—309)

The present invention relates to a novel and improved method for debarking or peeling logs, said method being more particularly adapted for debarking pulp wood logs preparatory to the making of pulp.

In present day pulp wood logging operations, one preferred method of feeding peeled or debarked logs to the grinding mills of a pulp manufacturing process consists of the following steps.

The trees are felled in the woods, cut into standard four foot lengths or longer, transported to the pulp mill, either by truck or by floating down a river. At the mill the logs are stacked into huge piles from which they are fed to rotary debarking drums or other debarking devices.

The treatment of the logs in the debarking drums is a time consuming operation and often several logs have to be reprocessed to remove bark pieces still clinging to the logs.

It is known that a tree grows by adding layers or rings to the peripheral part of the core. Therefore, the bark is normally under a certain tension in a peripheral direction. On the other hand, the bark forms a substantially impervious layer surrounding the wood of the tree and this imperviousness is maintained even when the tree is cut into logs. The strong bond which exists between the bark and the wood of the log is kept, due to this imperviousness, more or less intact during the entire series of manipulations and operations on the logs from the moment the trees are felled in the woods to the moment the logs are fed to the debarking drums at the mill site. Bacteria of the type which promote the decaying of this bond are prevented from gaining access thereto on account of the imperviousness of the bark. Thus the majority of logs fed to the debarking drums are intact and only those logs which have been subjected to severe mechanical friction, as by rubbing over rocks and the like during the river drive, will be found to be partly debarked upon reaching the debarking drums.

The general object of the present invention is the provision of an improvement in the debarking method above described, which consists of effecting an additional step which considerably facilitates and reduces the time of debarking of the logs in the debarking drums and which may eventually completely eliminate the debarking operation in such drums.

The present invention is characterised by the step of making a longitudinal slit in the bark of the log which extends completely through the bark and the cambium to the sapwood of the log from end to end thereof, said slit being effected over the entire length of the log so as to release the tensional stress, mentioned above, normally present in the bark.

In accordance with the present invention the said slit is made at the timber site as soon as possible after the trees are felled in the woods. Due to the natural resiliency of the bark, the latter will tend to contract and exert a substantial shearing action in the bond between the bark and the sapwood of the log thereby starting

destruction of said bond. The logs thus slit are thereafter subjected to the normal handling to bring the same to the pulp wood mill for the mechanical debarking operation. During this time, which may last from a few days to several months, the logs are exposed to the natural elements which soon destroy said bond, whereby the logs arrive at the debarking station with the bark either completely removed or at least very substantially detached from the wood of the logs.

When the logs are subjected to a river drive, the water will be able to impregnate and saturate the cambium or cork-like part between the bark proper and the wood of the log by entering through the slit in said bark, thereby activating the disintegration of this cork-like part; if the water freezes and forms ice in said part, disintegration will be accelerated. When the logs are removed from the water, air will penetrate the cork-like part and promote the activity of the bacteria which will cause further decaying of the bond.

From the foregoing, it will be apparent that the present invention consists in a method for facilitating the debarking of trees which comprises the steps of making, as soon as possible after the trees are cut into logs, one or more slits in the bark of the logs, said slits extending through the bark to the wood and in such a manner as to stop the continuity of the bark around the wood of the log, allowing the bark to gradually detach itself from the log under the action of atmospheric elements, and then subjecting, if necessary, the thus conditioned logs to a mechanical debarking operation, such as subjecting the logs to the action of debarking drums.

The above described method will become clearer by referring to the annexed drawings in which:

Figure 1 is a perspective view of a log provided with a straight slit;

Figure 2 is a perspective view of a log provided with a spiral slit;

Figure 3 is a cross-section of the log just after the making of the slit;

Figure 4 is a cross-section of the same log showing how the bark becomes gradually detached from the wood of the log;

Figure 5 is a cross-section of the log with the bark practically completely detached from the wood of the log; and

Figure 6 is a longitudinal section of a log floating in water.

Referring now more particularly to the drawings in which like reference characters indicate like elements throughout, it will be seen that the slit 1 is made through the bark 2 of the log and down to the wood A' of the log. In the embodiment shown in Figure 1, the slit extends axially of the log and is substantially straight, while in the embodiment of Figure 2 the slit 1' extends along a helix through the whole length of the log. More than one slit may be made in each log. The helical slits may be made at any angle with respect to the longitudinal axis of the log. Due to the presence of the slits, the continuity of the bark around the wood of the log is broken and the peripheral tension existing in the natural bark causes said bark to take an unstressed condition thereby contracting peripherally of the log. This contraction causes shearing stresses in and initial breaking down of the bond existing between the bark and the wood of the log. It will be found that several days after the slits have been made and after exposure of the log to the natural elements, that the bark will gradually detach itself from the wood of the log, as shown in Figures 4 and 5.

If the logs are floated in water C, as shown in Figure 6, the water will be able to penetrate through the slits 1 or 1' between the bark and the wood of the log

thereby promoting the decaying of the bond existing between the bark and the wood.

At the present time mainly spruce trees are used for pulp making purposes and it has been found that birch trees could also be used for making pulp wood due to the ease with which the bark can be removed by using the method in accordance with the present invention.

The method, according to the present invention, is also applicable to logs for lumber. By debarking said logs prior to sawing them into boards, the slabs or waste wood, free of bark, can be utilized to make pulp. It is estimated that about two million cords of waste wood are discarded each year by the Canadian lumber industry.

The method, according to the present invention, has also been found applicable to the debarking of dried trees which, prior to the present invention, were usually left standing in the woods. Such trees, dried by forest fires or tree diseases, are very difficult to debark by the conventional method. By slitting the bark of such trees in the manner described hereinabove, and thereafter subjecting the slit logs to a river drive, the logs, upon arrival at the mill, are easily debarked.

While preferred ways of carrying out the method according to the present invention have been illustrated and described, it is understood that various modifications may be resorted to without departing from the spirit and scope of the appended claims.

I claim:

1. In a method of debarking a batch of logs sawn from felled trees, the steps of making, at the timber site, a slit in each log of the batch through the bark and the cambium of the log to the sapwood and along a continuous line extending from end to end of the log, thereby releasing the tensional stress of the bark and initiating a shearing action on the cambium, and exposing the slit logs to air and water under outdoor conditions during transportation of said slit logs from the timber site to the mill site for a period of time sufficient to enable naturally occurring microorganisms to attack the cambium and destroy the bond between the bark and the wood, thereby allowing the easy removal of the bark at the mill site.

2. In a method as claimed in claim 1, wherein the slit logs are exposed to air and water during transportation thereof from the timber site to the mill site by river drive.

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