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APPARATUS FOR BARKING WOOD.

APPLICATION FILED FEB. 26, 1915.

1,148,136.

Patented July 27, 1915.

2 SHEETS—SHEET 1.

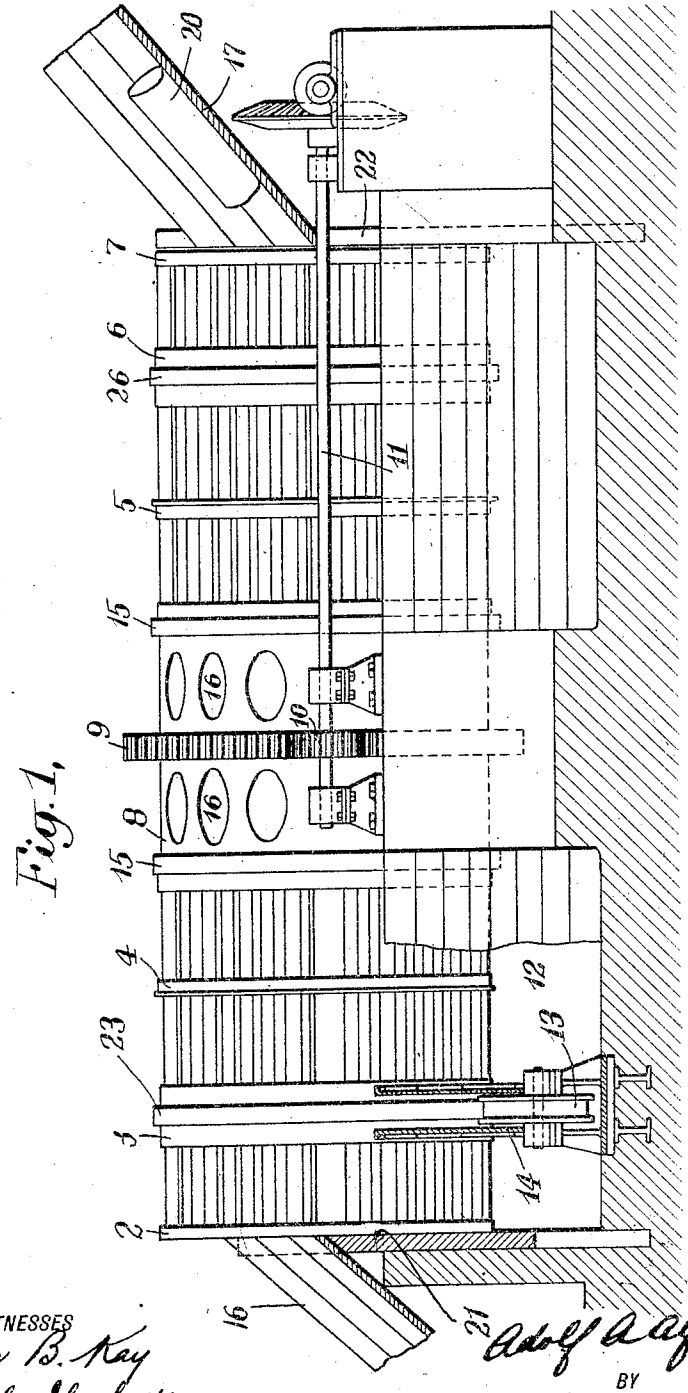


Fig. 1.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

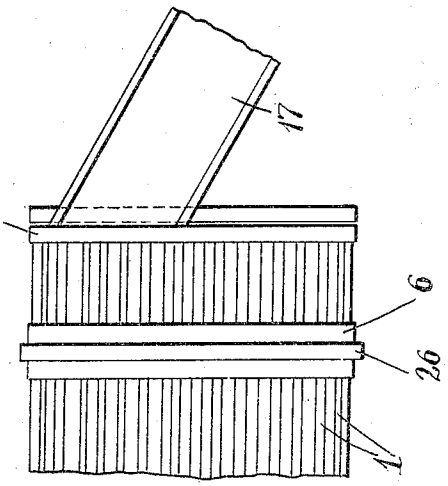
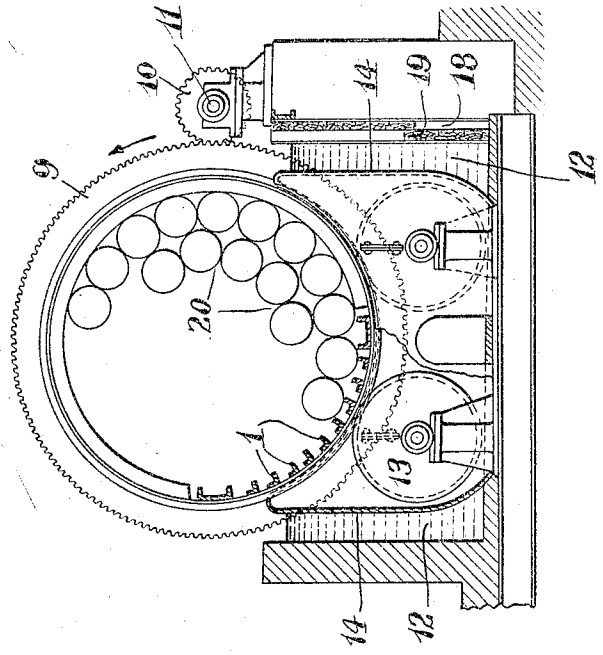


Fig. 2.



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APPARATUS FOR BARKING WOOD.

1,148,136. Specification of Letters Patent. Patented July 27, 1915.

Continuation in part of application Serial No. 649,900, filed July 3, 1911. This application filed February 26, 1915. Serial No. 10,717.

To all whom it may concern:

Be it known that I, ADOLF A. ALFSEN, a subject of the King of Norway, residing at Hönefos, Norway, have made a certain new and useful Invention Relating to Apparatus for Barking Wood, of which the following is a specification, taken in connection with the accompanying drawing, which forms part of the same.

This invention relates especially to apparatus for the barking of wood in connection with the manufacture of paper therefrom.

The logs of wood from the cutting-off saws are fed into one end of an open-ended internally ribbed barking drum provided with slots in its periphery and arranged to be rotated while its lower portion is immersed in a water tank. The charge of logs within the drum is thus agitated and tumbled by being periodically lifted to a considerable height in the drum and then dropped upon the other logs and the internal ribs or projections of the drum, this action and the incidental rubbing of the logs loosening and separating the bark which passes through the slots in the drum and is thereby torn from the logs and washed into the outer tank by the agitation of the water in which the drum is partly immersed. The logs are continuously fed into one end of the drum preferably adjacent the descending side thereof in such manner as to keep up a heap of logs at this end of the drum, thereby producing a pressure of the material toward the opposite end of the drum. In this manner the gradual feeding of the logs longitudinally through the drum is effected while their substantial alinement approximately parallel to the drum axis is maintained and this effects their automatic discharge from the opposite end of the drum.

In the accompanying drawings showing in a somewhat diagrammatic way illustrative embodiments of apparatus for carrying out this invention, Figure 1 is a side view partly in section. Fig. 2 is a corresponding end view in which parts are shown in section for greater clearness; and Fig. 3 is a partial top view of the apparatus.

A suitable form of barking drum for carrying out this process is illustrated in the drawing as constructed of angle irons 1 which may extend the full length of the drum and be riveted or secured to a number of iron rings 2 to 7 and also if desired to a central reinforcing cylinder of sheet metal to which the crown gear 8 may be secured through which the drum is rotated by the drive pinion 10 on the shaft 11. By means of this arrangement the drum may be rotated at the desired speed and it is advantageous to keep the drum in continual rotation for many hours or days at a time. The angle-irons are preferably spaced apart at suitable distances from one another so as to form slots in the periphery of the drum through which water and bark may pass under operating conditions. It is also desirable to have one or more flanges of these angle-irons project inwardly in a substantially radial direction or inclined so as to form internal ribs or projections to promote the barking action. The dimensions of the angle-irons and the distance between them and the radially arranged ribs formed thereby are so proportioned in relation to the logs to be barked that the logs are carried up a considerable distance by the revolving drum before tumbling or falling down to the lower part of the drum over the charge of logs and thus forcibly shaking the ribs or projections and the other logs to promote the barking action.

The drum may be provided with a number of tires such as 25, 26, spaced apart at suitable distances along the drum and cooperating with large bearing rolls, such as 13, which are preferably flanged and mounted within suitable roll casings, such as 14, which shroud them and prevent undesirable access of bark and other material in connection with the rings 3, 6 which are made broad enough to substantially close the inner faces of these casings. These rolls may with advantage be given a diameter of about a third to a half of that of the cooperating tires which considerably promotes their wearing qualities and continued efficiency under this service. As indicated the lower part of the drum may be arranged within a suitable tank such as 12, filled with water to the desired height so as to submerge the lower third or so of the height of the drum which may be operated in a substantially horizontal position, although in some cases increased efficiency and reliability in the feed of the logs therethrough can be secured by a slight in-

clination toward the discharge end which may also be promoted by giving the drum a slightly increased diameter at that end where the drum axis is substantially horizontal.

As indicated in the drawings two supporting tires 23, 26 are arranged adjacent each end of the drum and it is also desirable in most cases to use the additional intermediate tires in connection with coöperating bearing rolls and casings in the tank which are not shown for greater clearness. The reinforcing cylinder 8 may with advantage be formed with one or more series of large openings, such as 16, so as to give the desired freedom of access to the slots in this part of the drum and allow the washing of bark therethrough into the tank. The bark may be allowed to collect in the tank for several days or more at a time and then be removed therefrom by draining the tank as by raising the gate 19 in the side 18 of this tank so as to withdraw the water and suspended bark in this way, additional water being used if desired to wash out any remaining portions of bark. An inclined discharge chute 16 may be arranged to coöperate with the open discharge end of the barking drum and may be arranged in connection with the rising side of the drum as indicated in Fig. 3, the remainder of the drum end being preferably closed, as for instance, by a stationary casing or partition, such as 21. A similar casing or partition 22 may be arranged adjacent the inlet end of the drum, there being arranged in connection therewith any suitable means to feed into the drum the sections of logs which are preferably elongated so as to have a length at least several times as great as their diameter which assists in maintaining their alinement within the drum and preventing their ends coming into undesirable contact with the drum ribs which might cause objectionable splintering of the wood. This chute 17 which is preferably arranged on the descending side of the drum may be vertically inclined and may also be preferably inclined in a horizontal direction as shown in Fig. 3, so as to direct the logs 20 toward the inner walls of the drum on its descending side where there is normally a free space under operating conditions so that the entering logs can assume a position substantially parallel to the drum axis and sides.

Under the manufacturing conditions in Norway where the logs have a diameter up to about a foot, they are given a uniform length of about two and one-half to three feet and the barking drums may be given an internal diameter of about six or seven feet or so. Under American conditions where the wood runs considerably larger up to a diameter of something like two feet it is desirable to have the logs correspondingly longer and the drums may with advantage be given a diameter of ten or twelve feet or more and their length may be made as great as desired in connection with convenience of construction and operation. It is also desirable to avoid excessive differences in size of the logs which are fed into the drum at any one time, since otherwise there is a tendency for the smaller logs to be fed through the drum and discharge more rapidly than those of large diameter and weight.

Under normal operating conditions the charge of logs may fill the interior of the drum up to about half its capacity as roughly indicated in Fig. 2 and be continually agitated and tumbled by the rotation of the drum which carries upward the logs in contact with the ribbed walls of the drum and then drops them over the other logs of the charge into contact therewith and with the barking ribs or projections on the drum itself. This loosens and breaks off the bark adhering to the logs and the energetic washing action of the water in the bottom of the drum washes the ends of the bark through the slots in the periphery of the drum so that it becomes more or less entangled and held there in connection with the logs which roll over it so that the bark is torn and knocked off the logs and finally washed out through the drum slots and remains suspended in the water in the tank outside. This action takes place, furthermore, without material loss or injury of the wood itself such as is incident to the usual barking processes and the process may be substantially automatic and effected with a relatively slight expenditure of power.

If desired the logs may be fed into the drum in a substantially continuous manner by feeding them in preferably toward the wall of the drum on its descending side so that these entering logs are brought into proper alinement with the other logs of the charge and maintained in position substantially parallel to the drum axis during this tumbling process. The incoming logs form a heap at this end of the drum and this heap exerts a pressure in axial direction on the other logs, whereby is caused a gradual feeding of the logs longitudinally through the barking drum so that they are automatically discharged in a substantially continuous manner from the opposite end of the drum by being thrown out into the discharge chute coöperating with the rising side of the drum at this discharge end.

The invention in this application, which is in part a continuation of my pending application 849900, filed July 9th 1914, has been described in connection with a number of illustrative examples, embodiments, forms, proportions, materials, parts, kinds and or-

ders of steps, to the details of which disclosure the invention is not of course to be limited.

What is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

1. The apparatus for barking wood comprising an open-ended substantially cylindrical barking drum having a length several times as great as its diameter and having perforated sides, tires mounted on said drum, a water tank inclosing the lower portion of said drum, bearing rolls in said tank coöperating with said tires, roll casings substantially inclosing said rolls, rings on said drum adjacent said tires and substantially closing the upper ends of said casings, means to rotate said drum.

2. The apparatus for barking wood comprising an open-ended elongated substantially cylindrical horizontally mounted barking drum having sides consisting largely of separated angle irons extending substantially the full length of the drum and secured to a number of rings, a drive gear secured to one of said rings adjacent the central part of the drum and a water tank inclosing the lower part of said drum to wash the disengaged bark through the longitudinal spaces between said angle irons.

3. The apparatus for barking wood comprising an open-ended elongated barking drum having sides consisting largely of angle iron extending substantially the full length of the drum and secured to rings, tires mounted on said rings, bearing rolls coöperating with said tires, roll casings substantially inclosing said rolls and having their upper ends substantially closed by the coöperating rings on said drum and a water tank inclosing the lower part of said drum to wash the disengaged bark through the openings in the sides of said drum.

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Witnesses:
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