

G. HELLSTRÖM.
MACHINE FOR REMOVING BARK, BAST, AND SIMILAR MATERIAL FROM LOGS
AND LIKE ARTICLES.

APPLICATION FILED FEB. 4, 1919.

1,373,243.

Patented Mar. 29, 1921.

4 SHEETS—SHEET 1.

Fig. 1.

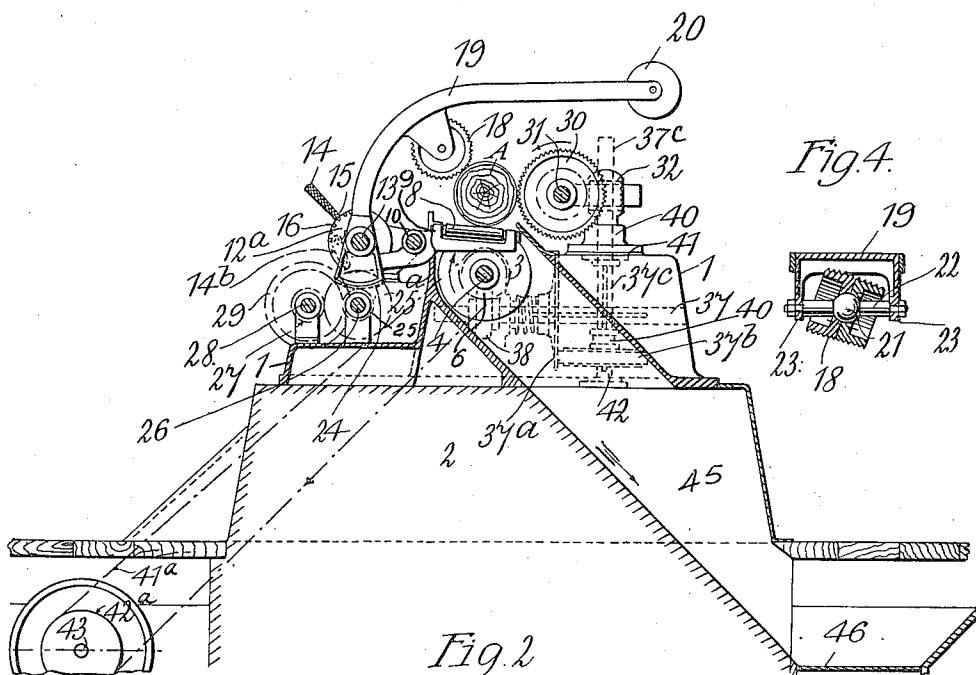
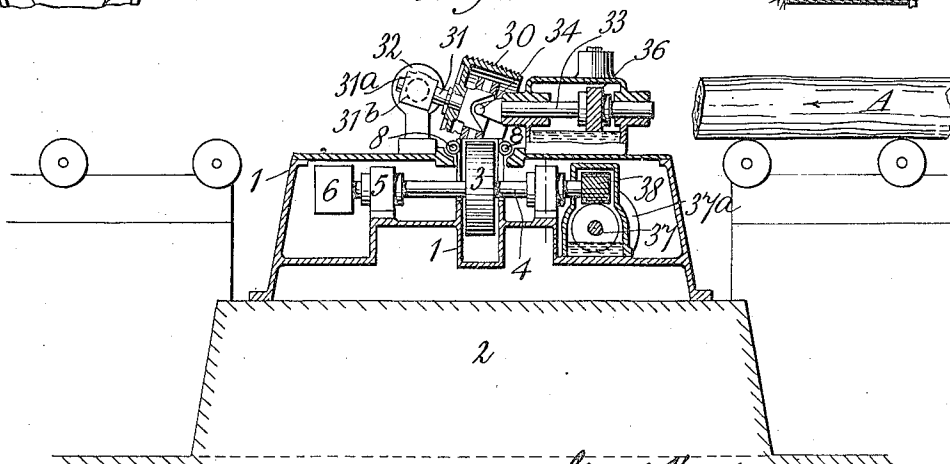


Fig. 2.



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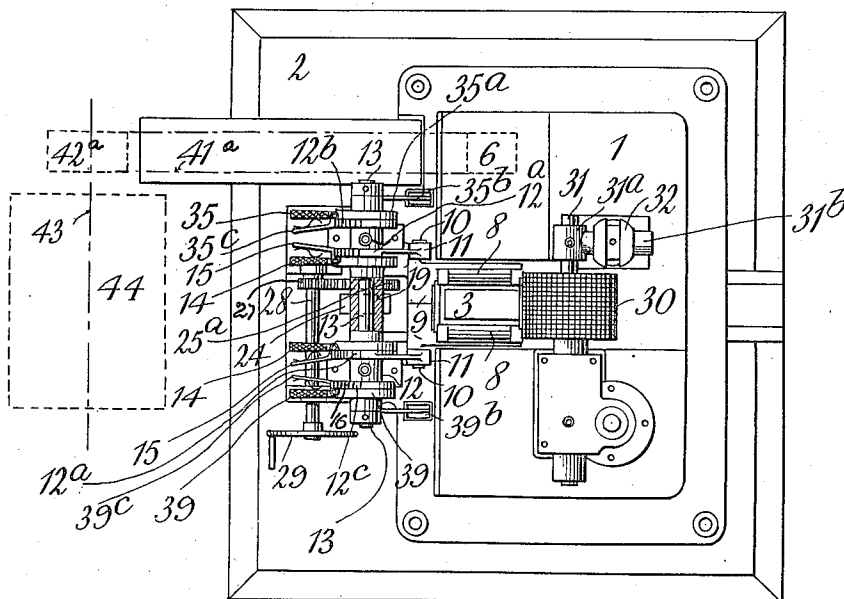
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Fig. 3.



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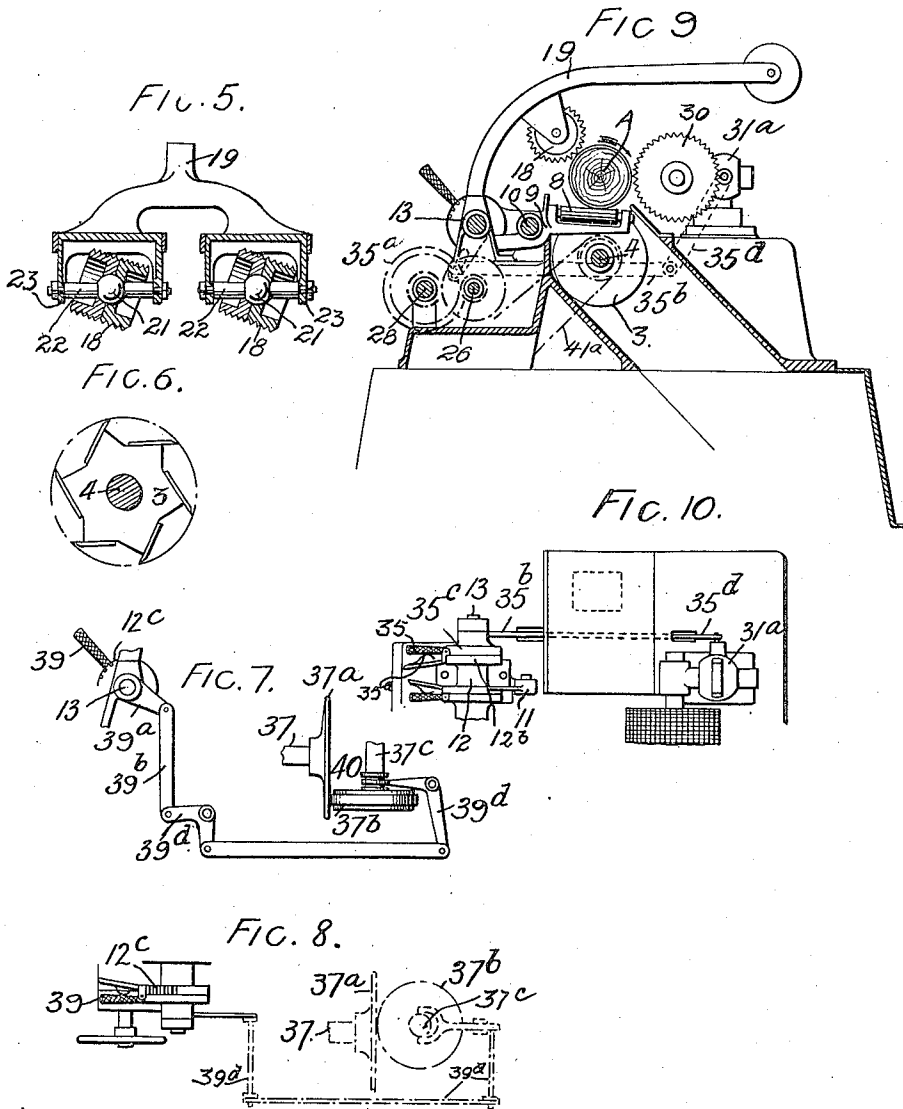
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FIG. 11.

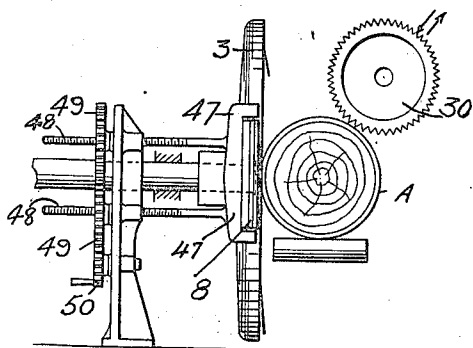


FIG. 13.

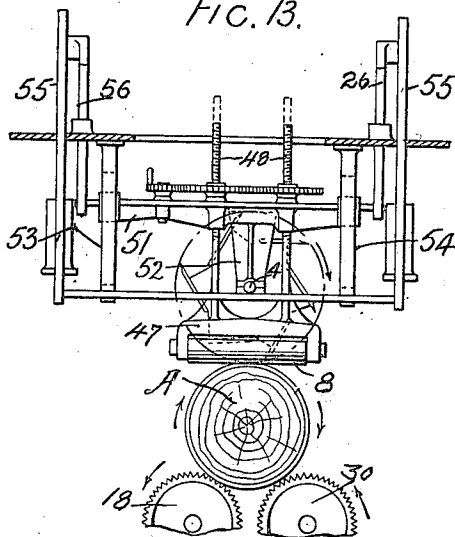


FIG. 12.

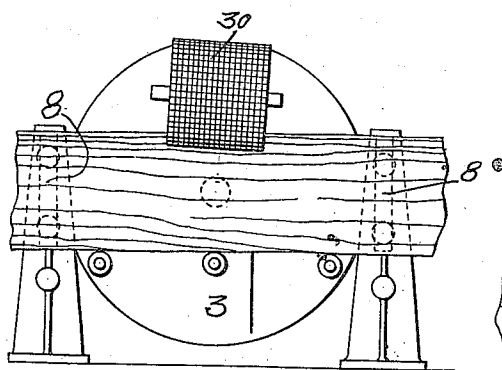
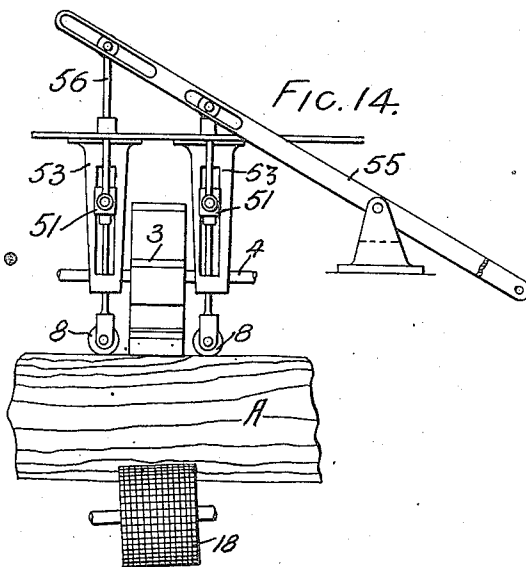


FIG. 14.



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UNITED STATES PATENT OFFICE.

GUSTAF HELLSTRÖM, OF LONDON, ENGLAND.

MACHINE FOR REMOVING BARK, BAST, AND SIMILAR MATERIAL FROM LOGS AND LIKE ARTICLES.

1,373,243.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GUSTAF HELLSTRÖM, a subject of the King of Sweden, residing at London, England, have invented Improvements in or Relating to Machines for Removing Bark, Bast, and Similar Material from Logs and like Articles, of which the following is a specification.

This invention has reference to machines of the kind known as barking machines for removing bark, bast and like material (hereinafter referred to as bark) from logs of wood and like articles of various kinds, (hereinafter referred to as logs). It has for its object to provide various improvements in machines of this kind whereby logs can be adjusted in relation to the barking knives or cutters so as to enable the degree of barking to be regulated at will to suit varying requirements and thus to diminish waste of wood, and also to enable logs to be held in position for barking and fed endwise in a better manner than usual so as to enable not only straight but also crooked logs to be effectively dealt with. The invention also has for its object to provide an improved construction of barking machine embodying the features above indicated and capable of working in an efficient and advantageous manner.

For these purposes, in a log barking machine according to the invention, there is associated with the barking knives or cutting means (hereinafter referred to as the cutters) regulating means in the form of rollers arranged to be at the same side of a log to be treated as the cutters for regulating the depth of cut and to rotate about axes in vertical planes at right angles to the length of the log, the said regulating means and cutters being so relatively arranged in relation to one another that the distance between a log under treatment and the cutters can be readily varied from time to time to adjust the depth of cut to a definite and temporarily fixed amount to suit requirements. Conveniently, the cutters may be mounted to rotate around a fixed axis and the regulating means be made adjustable in a direction toward and from the path of the cutters. The regulating means will usually be arranged below the log so as also to support the log and for this reason such regulating means will hereinafter usually be referred to as log supporting means.

In conjunction with such relatively adjustable log supporting means and cutters and the means used for automatically feeding the log lengthwise and rotating it, there is provided means for holding the log firmly against the log supporting means and in the path of the cutters and also against the log feeding and rotating means. Such log holding means may advantageously be adapted to act automatically so that upon adjustment of the log supporting means in relation to the cutters, to adjust the position of the log in relation to the cutters, the holding means will adjust itself automatically to suit.

The log feeding and rotating means may be of ordinary kind, driven through variable speed gearing of known or suitable construction. Conveniently however it may comprise a toothed or roughened feed roller fixed to a shaft mounted in a swivel bearing and connected to the driving gear by means of a universal joint, the arrangement being such as to allow of the feed roller being adjusted so that it can take up a correct position in relation to the log in such a manner that not only is the pressure which it exerts applied to the right part and in the right direction to the log but a change in the angle of the roller relatively to the log can be made so as to alter the rate of feeding of the log by, in effect, altering the pitch of the feed roller. The driving shaft of the feed roller may receive its motion through an adjustable friction gear or similar arrangement in order to facilitate further adjustment of the rate of feeding of the log.

Log supporting means, log holding means and log feeding and rotating means according to the invention can be variously constructed and arranged in various ways in relation to one another and the cutters.

Conveniently, the adjustable log supporting means may comprise two vertically movable seats or saddles spaced apart at opposite sides of the path of a set of rotary cutters fixed to the periphery of a wheel mounted to rotate about a horizontal axis. The log feeding and rotating means, as hereinbefore described, is carried by a shaft mounted to rotate about a horizontal axis at one side of the path for the log. The log holding means may comprise a wheel or roller, preferably provided with a roughened or toothed periphery, mounted to rotate in a holder that is supported in an inclined

or overhanging position and is acted upon by a yielding load so as normally to keep the wheel or roller pressed against the log under treatment and hold it in the path of the cutters and against the feeding and rotating means.

A barking machine according to the invention and embodying log supporting means, log feeding and rotating means and log holding means, can be variously constructed.

In the accompanying illustrative drawings, Figure 1 shows partly in end elevation and partly in transverse vertical section, Fig. 2 partly in side elevation and partly in longitudinal vertical section and Fig. 3 in plan, one construction of log barking machine embodying the invention. Fig. 4 is a sectional detail view. Fig. 5 is a view similar to Fig. 4 of a modification of the latter. Fig. 6 is a view of the rotary cutter. Fig. 7 is an elevation and Fig. 8 a plan of a portion of the mechanism of the machine hereinafter referred to and Figs. 9 and 10 are similar views of another portion of the mechanism. Fig. 11 is an elevation and Fig. 12 another elevation at right angles thereto, of a modification and Figs. 13 and 14 are views corresponding to Figs. 11 and 12 of another modification.

In the example according to Figs. 1 to 10 the various parts of the machine are mounted on a bedplate 1 of cast iron conveniently grouted or otherwise fixed upon a concrete foundation 2. 3 is a cutter wheel, shown alone in Fig. 6, carried by a horizontal shaft 4 mounted to rotate in bearings 5 fixed to the base plate, the shaft being driven by a pulley 6. To the periphery of the wheel 3 are fixed a number of cutters arranged to revolve in a vertical plane. At opposite sides of the upper portion of the rotary cutter wheel 3 are two vertically adjustable seats 8, shown in the form of rollers arranged to rotate about axes in vertical planes at right angles to the length of the log to be treated, each roller being carried by a lever 9. The two levers 9 are journaled on a common shaft 10 held in two fixed supports 11. Each of these supports is carried by a bearing 12 fixed to the bed plate 1, the two bearings carrying a horizontal shaft 13. Each bearing 12 is provided at its inner end with a stationary disk like part 12^a adjacent to which is a disk 14^a mounted to turn on the shaft 13. Each disk 14^a is provided with a handle 14 and connected, as by a link 14^b, to one arm of the corresponding lever 9 so that by turning the disk 14^a by its handle 14 in one or other direction, the other arm of the lever carrying the roller seat 8 can be readily raised or lowered to adjust the position of the log under treatment in relation to the rotary cutters.

The two levers 9 can be turned independ-

ently of each other upon the shaft 10 by means of their handles 14 each of which is provided with means, such as a spring trigger 15, adapted to be engaged with notches 16 in the adjacent fixed disk 12^a, for the purpose of temporarily holding the corresponding roller seat 8 in the position into which it has been moved.

As will be seen, the log supporting means and the cutters act against the same side of the log under treatment so that a log of varying diameter at different parts of its length can be readily and safely dealt with.

By the means described, a log A supported by the roller seats 8 and moving forward over them, can, while the machine is in action, be raised or lowered in relation to the cutter wheel 3 by the said roller seats 8, to adjust the depth of cut to suit varying requirements and the seats can be temporarily fixed in their adjusted positions. Thus, for instance, the roller seat 8 shown at the right hand side of Fig. 2, can be adjusted to support the lower side of the unbarked portion of the log in a position say a quarter of an inch below the outer periphery of the path of the revolving cutters on the cutter wheel 3, and the left hand roller seat 8 be adjusted to a height to support the barked portion of the log, and the two seats then be temporarily fixed in their adjusted positions by the means described. Then, no matter how the diameter of the log may vary, a layer of bark one quarter of an inch in thickness will be removed from the log as it is fed forward across the path of the cutters and simultaneously rotated. When it is desired to vary the depth of cut for any reason, this can be quickly done, while the machine is running, by vertical adjustment of the roller seats 8.

Means, such as pointers, fixed to the levers 9, may be arranged to move in relation to fixed scales, to enable adjustment of the seats 8 to be accurately made to suit any desired depth of cut.

18 is a log pressing wheel or roller carried by an overhanging lever 19 which is mounted to turn upon the shaft 13 and carries at its free end a weight 20 that serves to cause the roller to press against the log with a constant pressure. The roller 18 is mounted on a spherical bearing or seat 21, (see Fig. 4) carried by a shaft 22 fixed in bearings 23 carried by the lever 19, the arrangement being such that the said roller can adjust itself automatically to the correct angle toward a log A under treatment and can yield, when necessary, to suit irregularities in the circumference of the log, or two such rollers 18 as shown in Fig. 5 may be carried by the lever 19.

The lever 19 may, as shown, be provided at its lower end, with a toothed segment 24 in gear with a pinion 25 fixed to a shaft

26 mounted in bearings in the base plate 1. Fixed to the shaft 26 is a toothed wheel 25^a in gear with a pinion 27 fixed to a shaft 28 mounted in other bearings on the base plate 1 and provided with a hand wheel 29. The arrangement is such that by rotating the hand wheel 29 in one direction, the weighted lever 20 can be lifted when a new log has to be fed into position between the cutter wheel 3, pressing wheel 18 and the log feeding and rotating means. By rotating the hand wheel 29 in the opposite direction, the roller 18 can be caused to exert an additional pressure on the log when this may be desired. When the hand wheel is released, the roller and lever are free to exert a constant pressure on the log and to automatically adjust themselves as hereinbefore mentioned, under the action of the log under treatment.

The log feeding and rotating means comprise, in the example shown, a toothed roller 30 fixed on a shaft 31, which, at one end, is supported in a bearing 31^a carried by a pin 31^b mounted in an adjustable swivel bearing 32. The other end of the shaft 30 is connected to a driving shaft 33 through a universal coupling 34. The height of the bearing 31^a and therefore the angle of the shaft 31 and roller 30 to the horizontal, can be adjusted by a handle 35 on a lever 35^a that is mounted to turn on the shaft 13 and is suitably connected, as by a sliding link 35^b, to a link 35^a, Figs. 9 and 10, which carries the said bearing 31^a. The handle 35 is provided with a spring trigger 35^c adapted to be engaged in one or other of a series of recesses in the adjacent disk like part 12^b at the outer end of the corresponding bearing 12. The arrangement is such that the height of the bearing 31^a can be adjusted while the machine is in action to alter the rate of feed of the log and then fixed in its adjusted position. The shaft 33 receives its motion through double helical gearing 36 which is driven from a horizontal shaft 37, through adjustable friction gearing of known kind, shown more particularly in Figs. 7 and 8, comprising friction wheels 37^a and 37^b and a vertical shaft 37^c. The shaft 37 is driven through worm gearing 38 from the main driving shaft 4. The speed ratio of the friction wheels 37^a and 37^b is controlled by shifting the position of one of the friction wheels, say 37^b, along the shaft 37^c by a handle 39 fixed to a lever 39^a mounted to turn on the shaft 13 and suitably connected, as by a link 39^b, and lever mechanism 39^a, to a sleeve 40 movable on the shaft 37^c. The handle 39 is provided with a spring trigger 39^c adapted to engage in one or other of a series of recesses in the adjacent disk-like part 12^c of the corresponding bearing 12 in order to hold it and the sleeve 40 and corresponding friction disk 37^b in the adjusted

position. 41 and 42 are upper and lower bearings for the vertical shaft 37^c.

The belt pulley 6 may be driven through a belt 41^a from a pulley 42^a on a shaft 43 driven by a motor 44. 45 is a chute through which the bark removed from the logs treated is discharged, it may be on to a belt conveyor 46.

Instead of fixing the cutters to the periphery of the cutter wheel so as to act upon the lower side of a log, they may be fixed to one side of the cutter wheel, as shown in Figs. 11 and 12, and the log be pressed sideways into the path of such cutters, the adjustable log supporting means, the log feeding and rotating means and log pressing and holding means being suitably arranged to meet this altered position of the cutters and log. In these figures each roller 8 is shown as carried by a frame 47 provided with two reversely threaded screws 48 having toothed wheel nuts 49 in mesh with each other and with a toothed operating wheel 50.

The number of adjustable log supports can be varied. Also, more than one log pressing and holding wheel or roller may be used; for example there may be two, as shown diagrammatically in Fig. 5.

In some cases the cutters and regulating means may be arranged to be above the log in which case the log feeding and rotating means and the log holding means will serve to support the log. In this case the cutters and regulating means will be arranged to press on the log and what has hereinbefore been referred to as pressing and holding means, will become simply part of supporting means for the log, the other part being constituted by the rotating and feeding means. An example of this kind is shown in Figs. 13 and 14 where the rollers 8 each mounted in a frame 47 and adjustable as in Figs. 11 and 12 are borne by a base 51 adapted to carry also the bearings 52 for the rotary cutter 3. Each base 51 is free to slide in a pair of guide brackets 53, 54 so that they can move automatically in response to variation in cross sectional dimensions of the log A. A yielding load can be placed upon the rollers 8 through the pivoted frame 55 and links 56.

The cutter drum and the log feeding mechanism may, if desired, be driven separately, as by belt pulleys and belts, or otherwise as may be desired.

What I claim is:—

1. In a log barking machine, the combination with a rotary cutter wheel, of log supporting rollers arranged at the same side of a log to be treated as the cutter wheel and each arranged to rotate about an axis in a plane transverse to the length of the log to be treated so that it will form an anti-friction device against which the log can freely move, said log supporting rollers and

cutter wheel being independently and relatively movable to adjust the distance between the log and the path of the cutters, and self adjustable holding means arranged to act against the log and press it against the said supporting rollers.

2. In a log barking machine, the combination with a rotary cutter wheel mounted to rotate about a horizontal axis, and log feeding and rotating means, of log supporting rollers arranged at the same side of a log to be treated as the cutter wheel and each arranged to rotate about an axis in a plane transverse to the length of the log to be treated so that it will form an antifric-tion device against which the log can freely move, said log supporting rollers being independently movable to adjust the distance between the log and the path of the cutters, and self adjustable holding means adapted to hold the log against the log supporting rollers and against the log feeding and rotating means.

3. In a log barking machine, the combination with a rotary cutter wheel, and means adapted to act against the side of a log and simultaneously rotate it and feed it endwise past the cutters, of adjustable log supporting rollers arranged to bear against the side of the log and each arranged to rotate about an axis in a plane transverse to the length of the log to be treated so that it will form an antifric-tion device against which the log can freely move, hand operated means whereby each of said log supporting rollers can be moved separately toward and from the rotary path of the cutters to thereby regulate the depth of cut of the cutters on the log and whereby it can be held in the adjusted position and a self adjustable loaded pressing device adapted to press the log against the log rotating and feeding means and against the log supporting rollers.

4. In a barking machine, the combination with a rotary cutter wheel having peripheral cutters adapted to operate upon the periphery of a log, means adapted simultaneously to rotate the log and advance it longitudinally in relation to the cutter wheel and means adapted to press the log toward the rotary cutter wheel and toward the rotating and feeding means and capable of adjusting its position automatically to suit irregularities in external dimensions and shape of the log, of log supporting means comprising two rollers arranged at opposite sides of said cutter wheel so as to bear on the same side of the log under treatment, as the cutter wheel, each roller being arranged to rotate about an axis in a plane transverse to the length of the log, a pair of independent levers carrying said rollers, means for independently adjusting the position of each lever and its roller toward

and from the log and means for holding the adjusting means in a fixed position, substantially as described.

5. In a barking machine, a rotary cutter wheel mounted to rotate in a vertical plane and having the cutters on its periphery, a pair of rollers arranged at opposite sides of and near to said cutter wheel, said rollers extending above and transversely to the axis of said wheel and adapted to support a log above said cutter wheel, independent levers carrying said rollers and movable in vertical planes, said levers being mounted to turn about a common axis, independent roller adjusting means mounted to turn about a common axis and connected to the respective roller carrying levers and means whereby said roller adjusting means can be held in position after adjustment.

6. In a barking machine, a base, a horizontal driving shaft carried by said base, a rotary cutter wheel on said shaft having the cutters at its periphery, a pair of transversely arranged supporting rollers arranged at opposite sides of said cutter wheel, each carried by an independent lever mounted to turn in a vertical plane, bearings fixed to said base, each having a disk like part and a lateral support, a shaft carried by the lateral supports, a horizontal shaft extending through said lateral supports and on which said levers are mounted to independently turn, a horizontal shaft extending through said bearings and disks mounted to turn on the last mentioned shaft adjacent to said bearings, each disk being connected to one of said levers and provided with an operating handle and holding device adapted to be engaged with the adjacent bearing and to be held thereby.

7. In a barking machine, a base, a driving shaft carried thereby, a rotary cutter carrying wheel fixed on said shaft and adapted to rotate in a vertical plane, vertically adjustable log supporting rollers arranged at opposite sides of said cutter wheel to support a log in proper position relatively to the path of the cutters on said wheel and log rotating and feeding means comprising a roller having a roughened periphery to engage a log being barked by said cutter wheel, a second shaft on which said roller is fixed, a vertically adjustable bearing for one end of said roller shaft, a third horizontal driving shaft, a universal coupling connecting the latter shaft to the second end of said roller shaft, means for raising and lowering said adjustable bearing and means for rotating the third shaft.

8. In a barking machine, a base, a driving shaft carried thereby, a rotary cutter carrying wheel fixed on said shaft and adapted to rotate in a vertical plane, vertically adjustable log supporting rollers arranged at opposite sides of said cutter wheel to sup-

port a log in proper position relatively to the path of the cutters on said wheel and log rotating and feeding means comprising a roller having a roughened periphery to engage a log being barked by said cutter wheel, a second shaft on which said roller is fixed, a vertically adjustable bearing for one end of said roller shaft, a third horizontal driving shaft, a universal coupling connecting the latter shaft to the second end of said roller shaft, hand operated means for raising and lowering said adjustable bearing and adjustable frictional driving mechanism between the first and third shafts.

9. In a barking machine, a base, a driving shaft carried thereby, a rotary cutter carrying wheel fixed on said shaft and adapted to rotate in a vertical plane, vertically adjustable log supporting rollers arranged at opposite sides of said cutter wheel to support a log in proper position relatively to the path of the cutters on said wheel, log rotating and supporting means arranged to bear against a log under treatment, and log holding means whereby a log can be firmly held against the supporting rollers and against the log rotating and feeding means, said log holding means comprising a loaded lever mounted to turn in a vertical plane, a horizontal shaft carried by said lever and provided with a spherical bearing and a roller mounted on said bearing whereby it is adapted automatically to adjust itself to

suit the varying shape of the log under treatment.

10. In a barking machine, a cutter wheel mounted to rotate in a vertical plane, independent vertically movable rollers arranged at opposite sides of said cutter wheel and adapted to support a log above said cutter wheel, independent levers carrying said rollers and mounted to rotate about a horizontal axis, means for independently adjusting and holding said levers and rollers in desired positions relatively to the path of the cutters on said wheel, log rotating and feeding means arranged to act against one side of a log bearing on said rollers, an adjustable loaded lever mounted to turn about a horizontal axis, an automatically adjustable pressure roller carried by said loaded lever and adapted to act against a log and press the same upon said rollers and against the log rotating and feeding means, a toothed segment connected to said loaded lever and toothed gearing in gear with said segment and provided with hand operating means whereby said lever can be caused to force said pressure roller against the log under treatment but which gearing when free, can be moved in the opposite direction by irregularities in the log acting through the pressure roller and loaded lever.

Signed at London, England, this 13th day of January, 1919.

GUSTAF HELLSTRÖM.