(No Model.) 3 Sheets—Sheet 1.

A. F. JONES.

BARK MILL.

No. 561,054. Patented May 26, 1896.

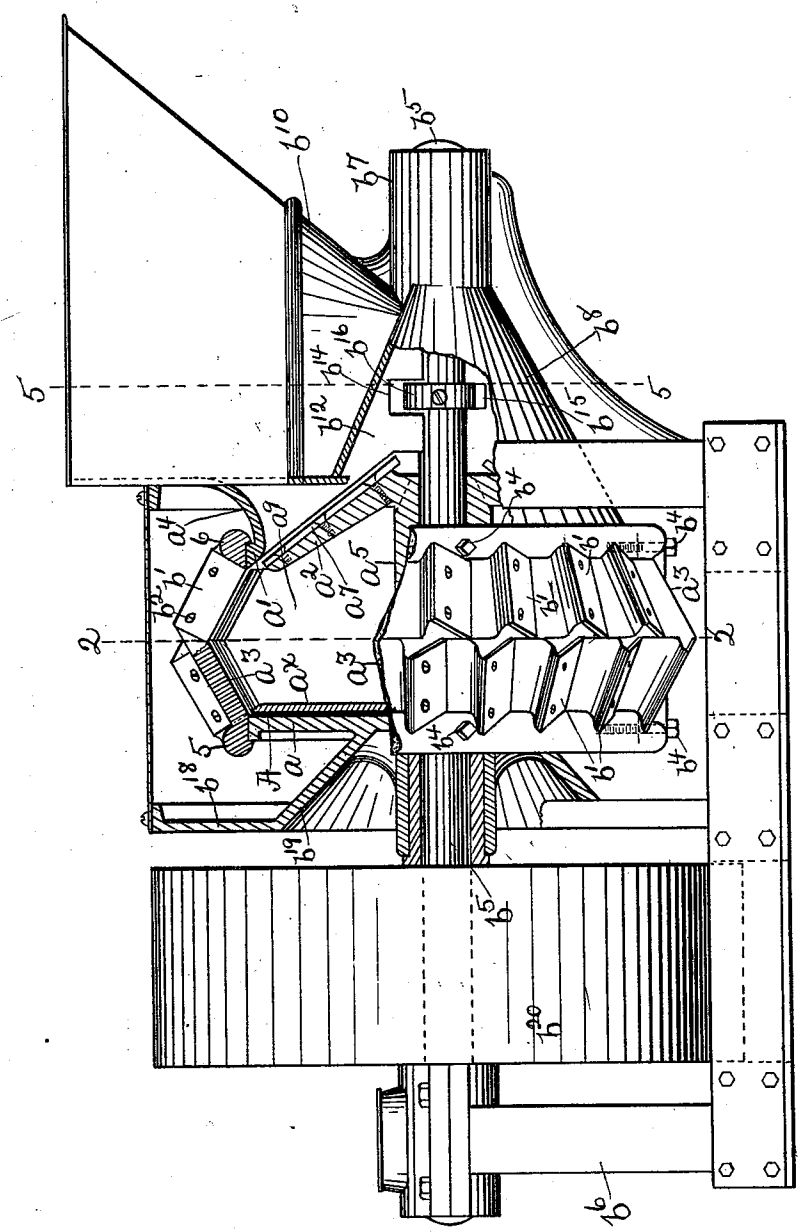

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

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BARK MILL.

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Fig. 2.

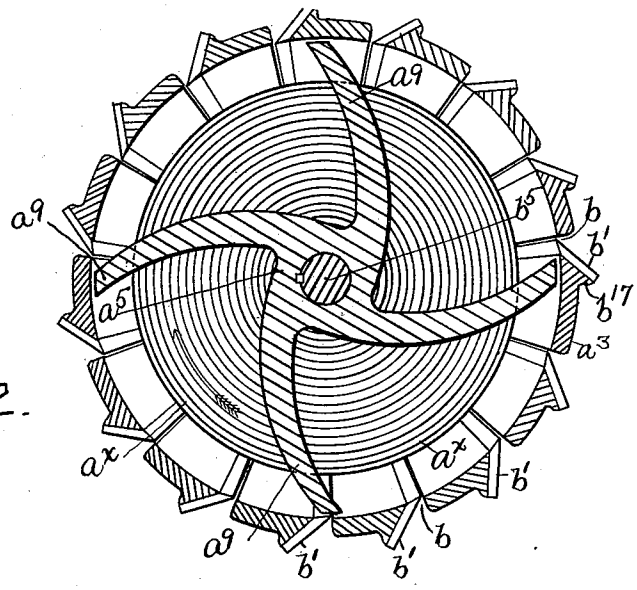


Fig. 3.

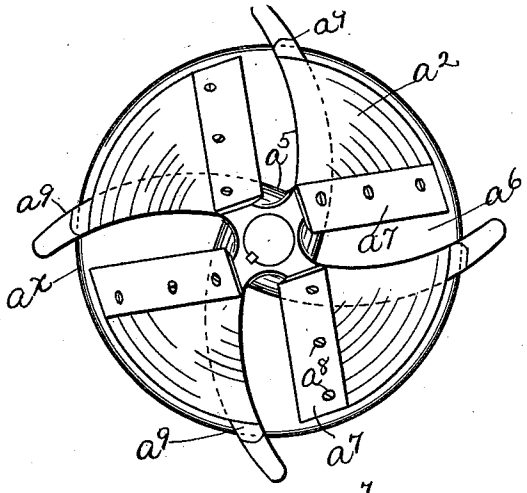
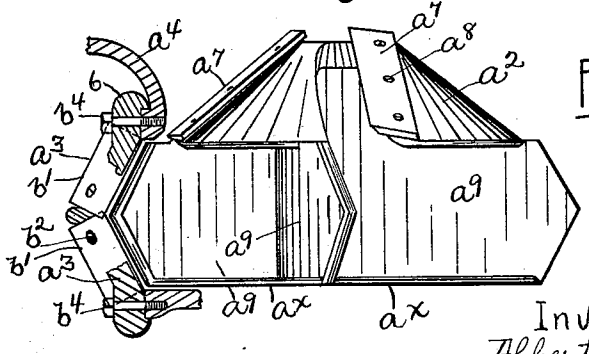


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

A. F. JONES.

BARK MILL.

No. 561,054. Patented May 26, 1896.

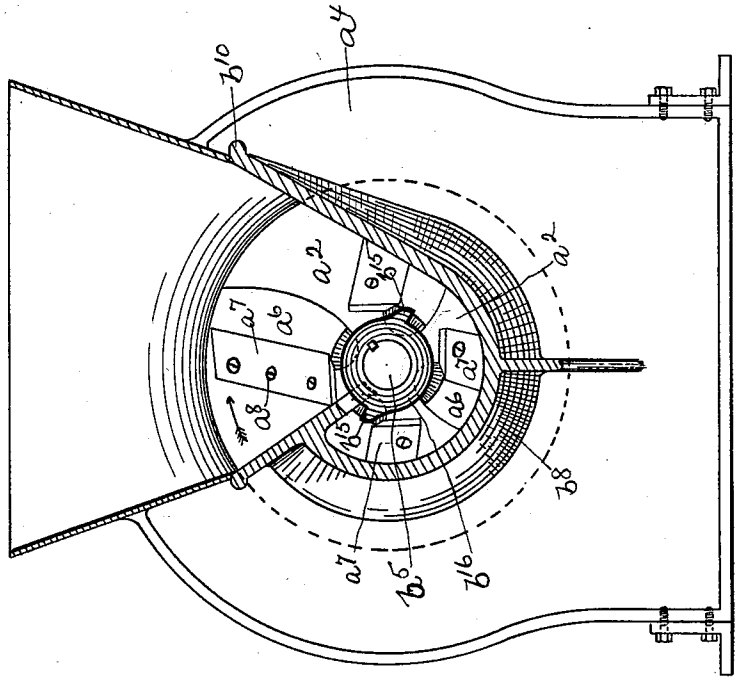

Fig. 5.

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UNITED STATES PATENT OFFICE.

ALBERT F. JONES, OF SALEM, MASSACHUSETTS, ASSIGNOR TO THE VAUGHN MACHINE COMPANY, OF PORTLAND, MAINE.

BARK-MILL.

SPECIFICATION forming part of Letters Patent No. 561,054, dated May 26, 1896.

Application filed January 14, 1896. Serial No. 575,483. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. JONES, residing at Salem, in the county of Essex and State of Massachusetts, have invented an Improvement in Bark-Mills, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to machines of that class known as "bark-mills," now commonly employed in cutting bark preparatory for use in tanning leather. In order to obtain a superior tanning of the leather, the bark should be reduced to a fine state approaching that of powder and should be of a uniform degree of fineness—that is, the finely-divided bark should be free from coarse bark. Prior to this invention I am aware that machines have been made with a view of obtaining these results; but, prior to my present invention, I am not aware of a successfully operative machine which will produce uniformly fine bark free from coarse bark. To accomplish the object sought, the bark-mill should be constructed so as to prevent admixture of the coarse bark with the finely-divided bark and also to prevent setting fire to the finely-divided bark and thereby to the contents not only of the bark-mill but also of the tannery.

This invention has for its object to provide a bark-mill which will satisfy the conditions referred to, and I accomplish the said object by providing a bark-mill with a chamber having two sets of knives and two sets of openings for the bark, one set of knives effecting a coarse cutting of the bark, which passes through substantially large openings into the said chamber, and the other set of knives effecting the fine cutting of the bark, which passes out from the said chamber through smaller openings of the desired size to insure that the bark passed out therethrough is of the desired degree of fineness, the said chamber being closed to the passage of the bark except through the said smaller openings. This construction insures a uniform and proper degree of fineness to the finished bark. The chamber referred to has located in it a carrier for the coarsely-cut bark, which carrier is preferably of a construction as will be described, whereby the bark is prevented from becoming lodged between the carrier and the closed or imperforate wall of the chamber and is fed to the finer or discharge openings, where it is acted upon by the finishing-knives. As a result, danger of the bark being heated by friction sufficient to set it on fire is avoided, and this danger is still further reduced by making the rim pitched or inclined, as will be described.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a front elevation with parts broken out of a bark-mill embodying this invention; Fig. 2, a section of the bark-chamber on the line 2 2, Fig. 1, looking toward the left; Figs. 3 and 4, details to be referred to; and Fig. 5, a section of the bark-mill shown in Fig. 1 on the line 5 5, Fig. 1, looking toward the left.

In accordance with this invention the bark-mill comprises, essentially, a chamber A, substantially cylindrical in shape and composed of a closed or imperforate stationary side wall or disk a, an opposite side wall preferably consisting of two parts or members a' a^2, and a rim portion a^3, the part a' being made, as herein shown, in the form of a ring, which is secured to or forms part of a side-supporting frame a^4, the part a^2 being made, as shown, in the form of sections of a cone, as best shown in Figs. 3 and 4, the said conical sections being herein shown as four in number and secured to or forming part of a central hub a^5. The conical sections a^2 constitute, in the present construction, a movable part of one side wall, which may be referred to as the "front" wall of the chamber, and are separated from each other by substantially wide openings or passage-ways a^6, one wall of which is formed by the rear edge of one section and the other wall of which is formed by a knife or cutter a^7, secured in any suitable manner to the front edge of the next adjacent section, the said knives or cutters being shown as secured by screws a^8. The hub a^5 has secured to or forming part of it a series of outwardly-extended arms a^9, extending substantially the length of the said hub and herein shown as

secured to or forming part of the rear edge of the conical sections, the said arms having secured to or forming part of them a circular plate or wall $a^{\times}$, forming with the conical sections and the arms a^9 a series of pockets or buckets within the chamber A, entrance into which is obtained only through the passages or openings a^6. The arms a^9 are preferably made substantially wedge or V shaped at their ends, and the rim a^3 is preferably made of corresponding shape and composed of two inclined parts 5 6, secured to or forming part of each other, and each part provided with substantially narrow passage-ways or openings b, (see Fig. 2,) which for the best results are alternately arranged on the parts 5 6, and each of which has coöperating with it a knife or cutter b', secured in any suitable manner, as by screws b^2, to the parts 5 6 of the rim a^3. The substantially V-shaped rim a^3 is preferably made in sections and secured to the side wall a and to the ring portion a' of the opposite or front side wall by screws or bolts b^4. (See Figs. 1 and 4.)

The knives or cutters b', for the best results, have their cutting edges extended beyond the center line of the rim, as clearly shown in Fig. 4, so that the central inner surface of the rim may not be left continuous and smooth, which would afford opportunity for the creation of friction by the rubbing of the bark against it as the bark is carried around the chamber in contact with its rim; but, on the other hand, the said knives are extended as described, so that the entire inner surface of the rim may be practically broken up as to continuous smoothness by the knives b', for when opportunity is given to the bark to be acted upon by knives, and openings are provided for the passage out through them of the bark, the creation of friction is avoided or reduced to a minimum, and consequently the danger of setting fire to the bark is reduced to a minimum. The danger of setting fire to the bark is still further avoided by preventing the bark becoming lodged between the imperforate or closed side wall a and the revolving arms a^9, which result may and preferably is effected by making the carrier for the bark bucket-shaped or in the form of pockets, with a closed side adjacent to the closed wall a of the chamber. The part a^2 of the front side wall, being attached to the hub a^5, is movable as the said hub is keyed or otherwise secured to a shaft b^5, having bearings at its opposite ends, as shown, in an upright b^6 and in a hub b^7, secured to or forming part of a conical closed frame or casing b^8, which, in the present instance, is represented in Figs. 1 and 5 as forming an extension of the side-supporting frame a^4, the said conical casing having secured to or forming part of it an upright hopper b^{10}, into which the bark to be ground or cut is placed by hand or by suitable machinery, the hopper b^{10} being preferably provided with a partition plate or deflector b^{12}, (see Figs. 1 and 5,) which extends to the ring a', so that the bark placed in the hopper b^{10} will be forced or drawn toward the revolving knives a^7, thereby effecting a coarse cutting of the bark, and which knives I prefer to designate as the "preliminary cutting-knives." The partition-wall b^{12} is preferably inclined, as shown in Fig. 5, and provided with an opening b^{14}, in which revolves one or more lugs or projections b^{15} on the collar b^{16}, which lugs act as agitators or displacers to dislodge the bark which falls upon the shaft b^5, and thereby insuring a regular feed to the knives and an easier running machine. The rim a^3 is provided, as herein shown, with raised portions b^{17} on its outer surface, which raised portions afford a backing for the knives b', and these rim-knives I prefer to designate as the "finishing-knives." The stationary wall a is supported, as herein shown, by a side-supporting wall or frame b^{18}, to which the wall a is secured, as shown, by a conical web b^{19}. The shaft b^5 may be rotated by means of a pulley b^{20}, suitably belted to a driving-pulley, (not shown,) or the said shaft may be rotated in any other suitable manner. By reference to Fig. 1 it will be seen that the coarse or preliminary knives a^7 extend to and substantially in line with the inner edge of the ring portion a' of the front side wall, and that no opening is afforded for the bark placed in the hopper, except through the passages or inlets a^6 for the chamber A, and, further, it will be noticed that the said chamber is closed for the passage of the bark out therefrom, except through the fine or narrow outlets or openings b, which preferably extend from near the center of the rim to near the opposite edges or sides thereof. This construction insures a finished product of uniform fineness, as there is no chance for the coarse bark to pass out of the chamber A except through the openings b.

The rim or periphery of the chamber A is preferably made V-shaped or pitched toward its center, as above described, so that the fine bark, as it is carried around by the buckets or carriers, may be deflected or forced toward the center of the rim, and on its passage from the sides of the rim toward the center of the same a free outlet is afforded through the openings b, and the bark is subjected to a drawing or sliding cut, which reduces the power required to cut the bark.

I prefer to construct the bark-mill as herein shown—namely, with a pitched or V-shaped rim; but I do not desire to limit my invention in this respect, as the carrier herein shown may be used to advantage with a cylindrical rim having knife-openings, and also the construction of the chamber herein shown may be used to advantage with other forms of carrier, but the coöperation of the chamber herein shown with the carrier herein shown makes a most efficient bark-mill.

The finished bark discharged through the openings b in the stationary rim a^3 may fall

into a suitable receptacle placed below the chamber A, or it may fall upon the floor between the side-supporting frames a^4 b^{18}.

I claim—

1. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with side or end walls and a connecting-rim having bark-outlet openings, one of the said side walls having an opening for the passage of the bark into the said chamber, a knife to act on the bark on its passage into the chamber, knives secured to the said rim and coöperating with the openings therein, and a carrier for the bark revoluble within the chamber and consisting of a series of buckets open at one side and end, and closed at its other side, substantially as described.

2. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with a substantially V-shaped rim having openings, knives coöperating with said openings, and means movable within said chamber to carry the bark around the chamber and to the rim-openings, substantially as described.

3. In a bark-mill, the combination of the following instrumentalities, viz: a chamber comprising side or end walls and an annular rim, one of said walls being open for the passage of bark into the chamber, a knife to act on said bark on its passage into the chamber, openings in said rim for the passage of the bark out of the chamber, and revolving means to carry the partially-cut bark to the rim-openings, substantially as described.

4. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with side or end walls and with a rim, one of the said side walls being closed and the other provided with bark-inlet openings, revolving knives coöperating with the bark-inlet openings, bark-outlet openings in said rim, knives coöperating therewith, and revolving arms in the said chamber movable with the revolving knives, substantially as described.

5. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with side or end walls and with a substantially V-shaped rim, one of said side walls being closed and the other provided with bark-inlet openings, revolving knives coöperating with the bark-inlet openings, bark-outlet openings alternately arranged in the said rim, knives coöperating therewith, and revolving arms in the said chamber, substantially as described.

6. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with a side or end wall having bark-inlet openings, a stationary rim provided with bark-outlet openings, knives coöperating with said openings, revolving arms located within the chamber to carry the bark admitted into the chamber to the rim-openings, and means to prevent accumulation of fine bark between the said revolving arms and the side of the chamber opposite to the bark-inlet openings, substantially as described.

7. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with a rim having bark-outlet openings, a revoluble carrier located in said chamber and consisting of a series of knife-carrying sections forming bark-inlet openings for the chamber, a plate or disk and intermediate arms forming with the said sections and the said plate or disk, buckets for the reception of the bark, and knives carried by said sections and coöperating with the bark-inlet openings, substantially as described.

8. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with a rim having bark-outlet openings, and a bark-carrier revoluble in said chamber and consisting of a series of buckets closed at one side and open at the opposite side and at the circumference, and knives carried by the open side of the buckets, substantially as described.

9. In a bark-mill, the combination of the following instrumentalities, viz: a stationary chamber provided with a pitched or V-shaped rim having bark-outlet openings, and with a closed or imperforate side wall and with an opposite side wall having bark-inlet openings, knives coöperating with said inlet and outlet openings, and a carrier for the bark revoluble within the chamber and consisting of a series of buckets open at one side and at their end and closed at the side adjacent to the closed side wall of the chamber, substantially as described.

10. In a bark-mill, the combination of the following instrumentalities, viz: a chamber provided with a rim having openings and with a closed side wall and with an opposite side wall having bark-inlet openings, knives coöperating with said openings, and a carrier for the bark revoluble within the chamber and consisting of a series of buckets open at one side and end and closed at the side adjacent to the closed side wall of the chamber, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT F. JONES.

Witnesses:
JAS. H. CHURCHILL,
J. MURPHY.