2 Sheets—Sheet 1

S. R. THOMPSON.

Bark-Cutting Machine.

No. 200,361. **Patented Feb. 12, 1878.**

Fig. 1.

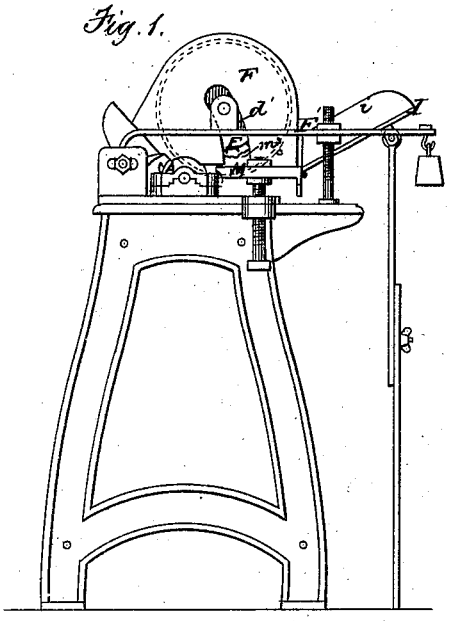


Fig. 3

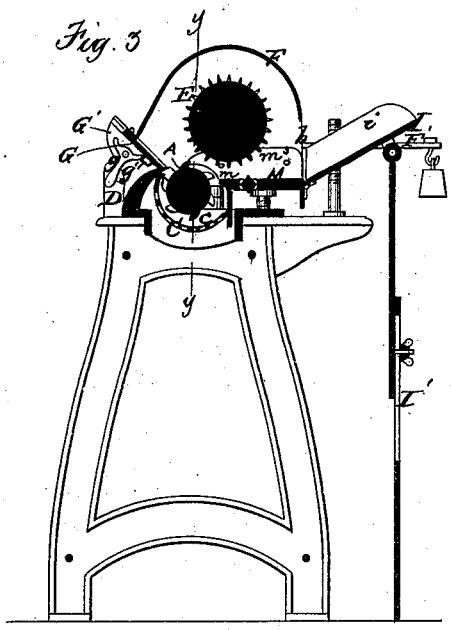


Fig. 2.

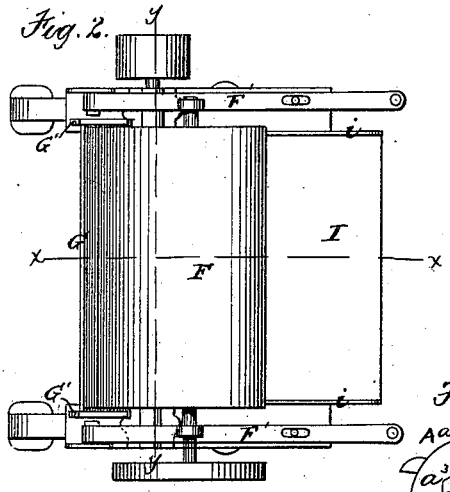


Fig. 4.

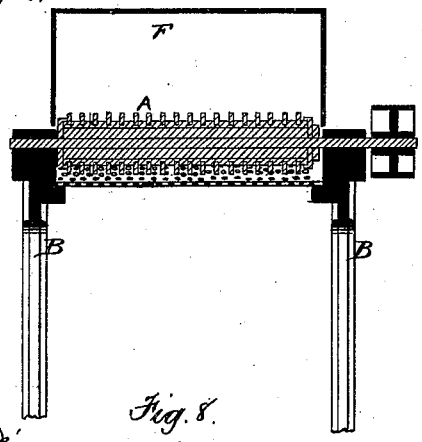


Fig. 7.

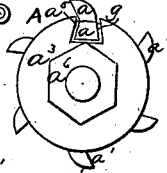


Fig. 8.

Fig. 5.

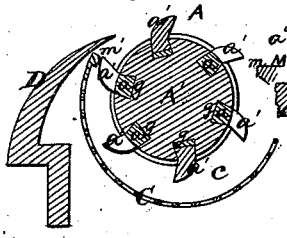
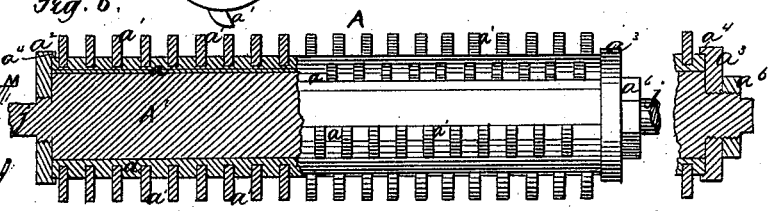


Fig. 6.



Witnesses.

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2 Sheets—Sheet 2.

S. R. THOMPSON.

Bark-Cutting Machine.

No. 200,361. Patented Feb. 12, 1878.

Fig. 9.

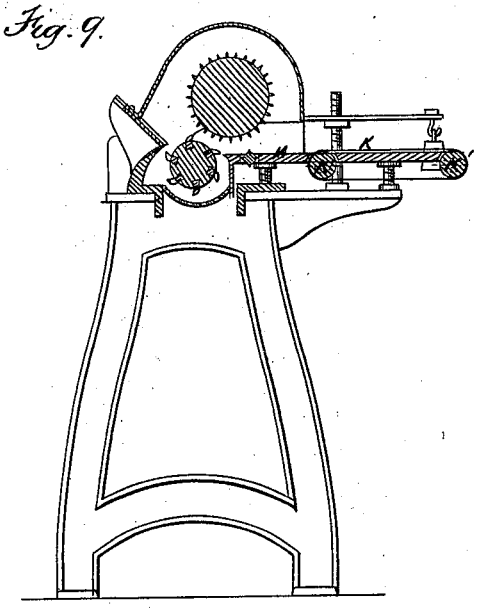
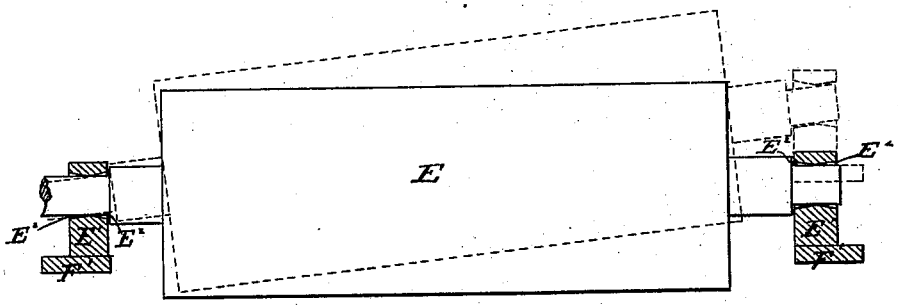


Fig. 10



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL R. THOMPSON, OF BROOKLINE, MASSACHUSETTS.

IMPROVEMENT IN BARK-CUTTING MACHINES.

Specification forming part of Letters Patent No. **200,361**, dated February 12, 1878; application filed January 26, 1878.

To all whom it may concern:

Be it known that I, SAMUEL R. THOMPSON, of Brookline, in the State of Massachusetts, have invented certain Improvements in Bark-Cutting Machines, of which the following is a specification:

This invention is an improvement on the bark-cutting machine for which Letters Patent No. 176,907 were granted to me April 25, 1876.

The present invention consists in certain improvements looking to the more perfect operation of the machine in cutting or reducing bark to particles, all of which are duly set forth and claimed hereinafter.

In the drawings, Figure 1 represents a side elevation of my improved machine. Fig. 2 represents a top view of the same. Fig. 3 represents a section on line *x x*, Fig. 2. Fig. 4 represents a section on line *y y*, Figs. 2 and 3. Fig. 5 represents an enlarged sectional view of the cutter. Fig. 6 represents a side view of the cutter, partly in section. Fig. 7 represents an end view of the cutter. Fig. 8 represents a perspective view of a portion of one of the tooth-holding rods or blocks. Fig. 9 represents a transverse vertical section of the machine, showing an endless feeding-belt applied to the bed-plate. Fig. 10 represents a side view of the feed-roll without its teeth, showing its bearing-blocks in section.

Similar letters of reference indicate corresponding parts.

A represents the rotary cutter which reduces or rosses the bark. M represents the adjustable bed-plate which supports the bark as it passes to the cutter. E represents the adjustable feed-roll which feeds the bark to the cutter, and is located on hinged arms F′, so as to rise and fall; and D represents the back plate, which is located behind the cutter, these parts being in construction and operation, excepting in certain hereinafter-mentioned particulars, like the corresponding parts in my before-mentioned patent, to which reference is made for a full description. The cutter A is provided with isolated teeth a^1, as in my previous patent, and is journaled in blocks or bearings located on the side pieces B B of the supporting-frame, the teeth a^1, when revolving, coming in close proximity to a shoulder, *m*, in which the bed-plate M terminates, and detaching fragments of bark from a sheet supported on said bed-plate.

C represents a concave formed as a sieve or perforated partition, which is located under the cutter A, and entirely fills the space provided for the descent of the particles of bark from the cutters to the receptacle or chute below. The sieve C is composed of a perforated plate or of wire, as preferred, the openings therein being no larger than is necessary to permit the passage through them of particles of bark of the maximum size desired for leaching, so that larger or coarser particles will be arrested. The sieve is parallel with the cutter A longitudinally, and is curved transversely, and is preferably arranged so that its rear edge is nearer the cutter than its front edge, a space, *c*, being thus formed between the sieve and the cutter A, which space converges from the front to the rear side of the cutter, as shown in Figs. 3 and 5. The rear edge of the sieve C forms a shoulder, m^1, which is in close proximity to the teeth of the cutter.

It will be seen that as the particles of bark are cut by the teeth a' they fall onto the sieve C, so that the particles of the desired size pass through the sieve, while the coarser particles are arrested thereby. The rotation of the cutter forces the coarser particles toward the shoulder m^1, where they are arrested and cut up by the teeth a^1, the space between the shoulder m^1 and the points of the teeth being such that the particles arrested by the sieve cannot pass between the shoulder and the cutter until reduced to a smaller size. Hence all the bark is reduced to a condition of uniform fineness before it leaves the machine. The rotation of the cutter forces the particles of bark against the converging or inclined surface of the sieve, and thus crowds or forces the properly-reduced fragments through the sieve, so that the latter is not liable to become clogged.

In cutting bark and preparing it for leaching it is very important that the bark should be reduced to particles of as near a uniform size as possible. The particles should neither be in the form of coarse lumps nor of dust or powder, as in the latter condition it forms in masses, which float on the surface and resist

the action of the water, and in neither condition is its full value readily extracted by the leaching process.

By the above-described combination, viz., the rotary cutter having isolated cutting-teeth, and the sieve or perforated partition, I avoid the formation of powder to a great extent, and the presence of coarse lumps in the reduced bark, the lumps which may be broken down by the cutter from the bark resting on the bed-plate being arrested by the sieve and cut up by the teeth of the cutter without any considerable percentage being crushed into powder.

The sieve and cutter may be employed to equalize the particles of bark which have been cut in another machine, in which case the bed-plate M and its shoulder *m* will not be required, and the cut bark will be introduced into the space *c* by any suitable means.

The shoulder m^1 on the sieve C need not project inwardly toward the cutter, as shown, as the edge of the sieve C, arranged at a proper distance from the cutter, will form a sufficient shoulder.

F represents a hood or cover, which is attached to the bed-plate M, and is arranged to cover the cutter A and feed-roll E, as shown. I prefer to bolt the sides of the hood or cover to the side pieces m^3 of the bed-plate, as shown in Figs. 1 and 3. The rear edge of the cover is bolted, preferably, to a gate or partition, G, which is located on the back plate D. These parts—viz., the hood F, the gate G, and the side pieces m^3—form a close casing over and around the cutter and the feed-roll, which prevents the particles of bark from being scattered by the cutter, and causes the particles which are thrown upwardly by the cutter to return to the space *c*, to be forced through the sieve. The front portion of the hood or cover is open, as shown at *b*, for the admission of bark. The sides of the hood or cover are provided with slots *d'*, through which the journals of the feed-roll pass, and in which said journals rise and fall. I represents an extension, which is hinged to the bed-plate M, and is adapted to be inclined at any desired degree, an extensible leg, I', being provided to support the extension. *i i* represent side pieces with which the extension I is provided. When the extension I is inclined upwardly, as shown in Figs. 1 and 3, it facilitates the passage of the bark to the cutter, both when the bark is presented in large sheets or in small fragments. When the sheets of bark are to be rossed, and are warped or curved longitudinally, the extension may be inclined downwardly, so that the central portion of the sheet of bark will not project too far above the bed-plate, the bark being presented with its concave inner side down. The gate or partition G is located in guides or holders G' on the back plate, and is removable from said holder, so that, when the machine is used for rossing, the ross will pass over the back plate. I prefer to provide the guides with catches or buttons *g*, adapted to engage with lugs or projections *g'* on the partition G, and hold said partition down against the back plate D, or raised and separated from said back plate.

If desired, the bed-plate M may be extended outwardly, and provided with an endless apron, K, running on rolls K', which are journaled in the bed-plate, as shown in Fig. 9, and are positively rotated by any desired means, so as to cause the apron K to convey bark toward the cutter A. The feed-roll E is journaled in bearing-blocks E^1 E^1, which are located on the independently-pivoted arms F' F', as shown in my aforesaid patent.

When the bark passing under the feed-roll varies in thickness transversely, the roll E is liable to be inclined longitudinally one of its ends being raised independently to facilitate the inclination of the roll E. I provide the block E^1 with double conical sockets E^2, arranged to give the journals of the roll E a steady bearing, and prevent them from wabbling, and at the same time permit the roll to be inclined, as shown in dotted lines in Fig. 10.

In my before-named patent the cutter A was composed of a series of disks or collars, each having two or more teeth formed on its periphery, the collars being arranged on a rod or mandrel.

I now construct the cutter as follows: A' represents a cylinder, which composes the body of the cutter, and is suitably provided with journals *j j*. The periphery of the cylinder is provided with a suitable number of parallel longitudinal grooves, *g*, placed at equal distances apart. Into each of these grooves is closely fitted a rod or bar, *a*, which is provided with a series of detachable teeth, a^1, the bar being slotted to receive the bases of the teeth, so that the latter can be readily inserted and removed. The bars *a* are adapted to be removed from the grooves *g*, and are held therein by any suitable means. I prefer to make the grooves *g* and bars *a* in dovetail form, as shown in Fig. 5, so that the bars cannot be removed outwardly; and to hold the bars longitudinally I prefer to provide the cylinder, at its end, with detachable caps a^2 a^3, these being provided preferably with inwardly-projecting flanges a^4, as shown in Fig. 6, and screwed or otherwise affixed to the journals of cylinder A'. The flanges a^4 project over the ends of the bars *a*. I provide the cap a^3 with a recess, a^5, adapted to register with one of the grooves *g* when the cap is properly turned, as shown in Fig. 7, to permit the longitudinal movement of the bar in that groove. The cap a^3 may be turned to cause the recess a^5 to register with any of the grooves *g*. I prefer to provide a jam-nut, a^6, to hold the cap a^3.

By the described construction I am enabled to readily remove a broken tooth and supply its place with a new one, and, as each tooth is independent, it will be seen that it will be an

easy and inexpensive matter to replace a broken one.

I do not limit myself to the precise details of construction of the cutter, as any suitable means for securing the rods or bars *a* and their teeth a^1 may be employed without departing from the spirit of my invention.

I claim as my invention—

1. The combination of a rotary cutter, having isolated cutting-teeth, and a converging concave, formed as a sieve or perforated partition, whereby the larger particles or lumps of bark between the cutter and concave are separated from the smaller particles, and subjected to the action of the cutter, to be cut up thereby without crushing, and the smaller particles impelled through the sieve.

2. In a bark-cutting machine, the combination of a rotary cutter, A, a bed-plate, M, having a shoulder, *m*, and a curved sieve or perforated partition, C, arranged to form a laterally-converging space under said cutter, and terminating in a shoulder, m^1, all arranged substantially as and for the purpose specified.

3. In a bark-cutting machine employing a rotary cutter, A, and a rising and falling feed-roll, E, a hood or casing, F, supported on the bed of the machine, arranged to cover the cutter and feed-roll, and provided with slots d', in which the journals of the feed-roll may rise and fall, substantially as described.

4. The feed-roll E, combined with the blocks E^1, adapted to rise and fall independently, and provided with the double conical bearings E^2, substantially as and for the purpose specified.

5. The rotary cutter A, composed of the longitudinally-grooved cylinder or body A′ and the detachable rods or blocks *a*, each provided with a series of detachable teeth, a^1, substantially as described.

6. The combination of the grooved cylinder or body A′, the rods or blocks *a*, having teeth a^1, and means, substantially as described, for securing the blocks in the cylinder.

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

SAMUEL R. THOMPSON.

Witnesses:

C. F. BROWN,

GEORGE W. PIERCE.