

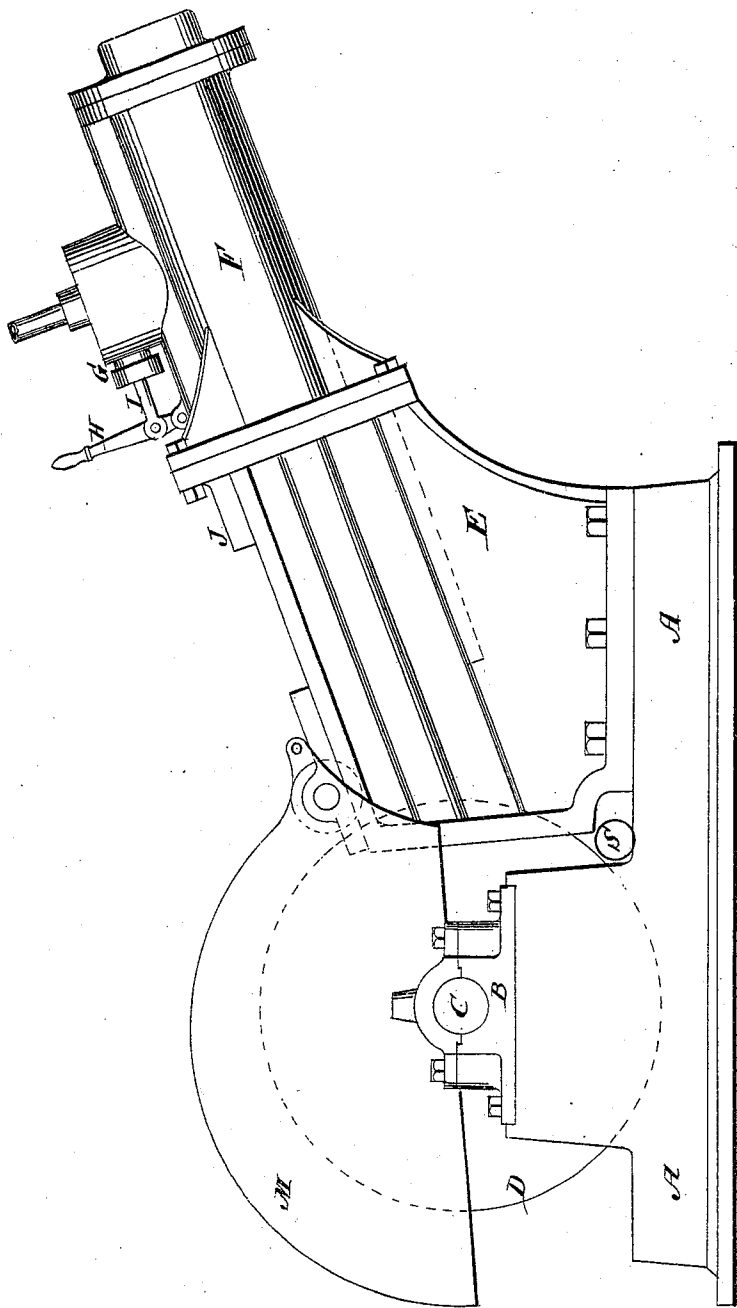
G. AMES.

Machines for Removing Bark from Logs of Wood.

No. 148,161.

Patented March 3, 1874.

Fig. 1.



Witnesses:

E. Wolf

Jacob Fellner

Inventor:

Gustavus Ames

By atty.

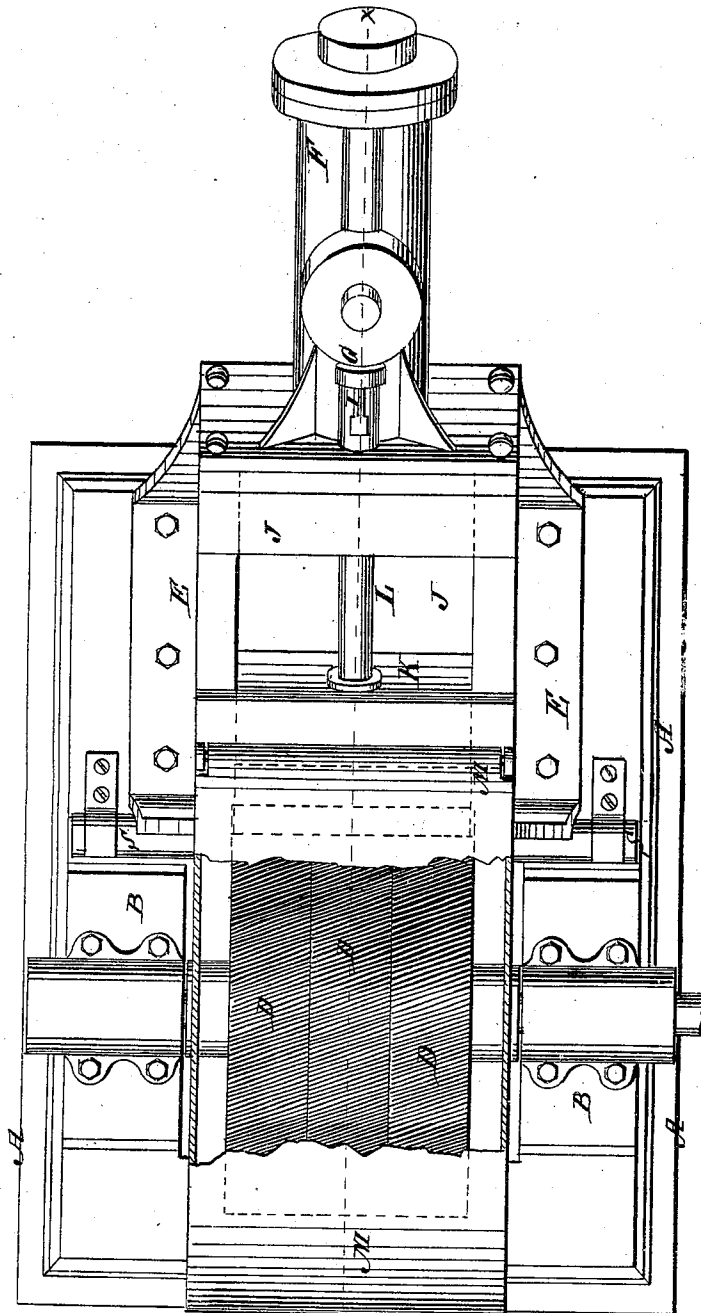
J. A. Mc Intire.

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Fig. 2.



Witnesses:

E. Wolf

Jacob F. Schell

Inventor:

Gustavus Ames

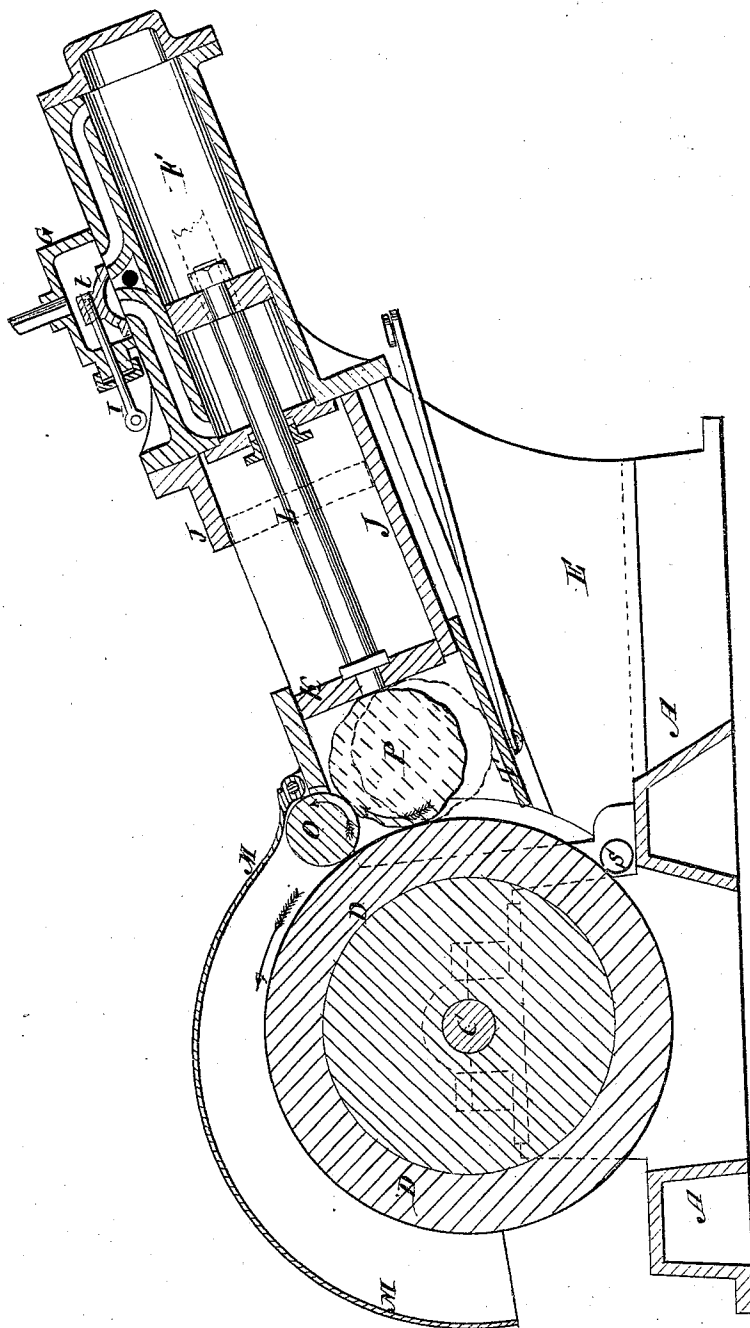
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Fig. 3.



Witnesses:
E. Wolf
Jacob Felbel

Inventor:
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UNITED STATES PATENT OFFICE.

GUSTAVUS AMES, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN MACHINES FOR REMOVING BARK FROM LOGS OF WOOD.

Specification forming part of Letters Patent No. **148,161**, dated March 3, 1874; application filed October 31, 1873.

To all whom it may concern:

Be it known that I, GUSTAVUS AMES, of Rochester, of Monroe county, in the State of New York, have invented a Machine for Removing the Bark from Logs of Wood; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to a new and useful machine for removing the bark from logs of wood from which paper-stock is to be manufactured, or for other purposes.

Previous to my invention it has been customary, in the manufacture of that kind of paper-stock which is made by reducing logs or blocks of wood to the condition of fibrous pulp, to perform by hand-labor the preliminary work of removing the bark from the wood. This mode of doing the work is slow and expensive, it requiring a number of men to strip or remove the bark from the logs, which one machine can reduce to pulp or grind up in a day.

It has been suggested to remove the bark by the same machines which are employed to reduce the blocks (after the removal of the bark) to fibrous pulp, but this has been found utterly impracticable; and some other devices for removing the bark by machinery have been suggested, but none that I know of have succeeded in accomplishing the desired result. Why the machinery employed in grinding the wood to pulp will not answer for removing the bark, is obvious when it is remembered that, in the first place, such a process is not adapted at all to the last-named object, which is to simply strip off the bark, and that, even if, by such a process, all the bark, and the bark only, could be removed, the grinding off of it would involve an amount of labor vastly in excess of that actually necessary for its mere removal; and that, in the second place, it is perfectly impracticable to effect, by such machine, the grinding off, automatically, of bark from the surface of sticks or logs of all sorts of irregular shapes and various sizes, and having the bark thicker in some places than in others, without also grinding off much of the wood or stock valuable in the manufacture (by the subsequent operation to which the log is subjected) of the paper-stock.

My invention consists in subjecting the log to the action of a grinding wheel or cylinder, or its equivalent, under pressure of a yielding feed, in such a manner that the log will be subjected to a rattling motion within the confining case or chamber, and thereby have the bark completely severed and removed from the other portion of the wood, substantially as will be hereinafter more fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to more fully describe the construction and operation of my new machine, referring by letters to the accompanying drawings, in which—

Figure 1 is a side elevation, Fig. 2 a top view, and Fig. 3 a vertical longitudinal section, (at the line *xx*, Fig. 2,) of the same.

In the several figures I have designated the same part by the same letter.

A is a main frame or bed of cast-iron, on which is mounted, in suitable bearing-boxes B, a shaft, C, on which is secured the grinder or stripper cylinder D, and which is rotated in any suitable manner at the proper velocity.

In a machine with the cylinder D twenty-four inches diameter and fourteen inches face, I have driven the shaft about six hundred revolutions per minute, and found the machine to work satisfactorily.

I prefer to make the cylinder D with its face composed of metal rings, cut and hardened about the same as the faces of grinders used for reducing wooden blocks to pulp, but some other cylinder, having a properly roughened or naturally rough surface, may be employed. E is an auxiliary frame, securely bolted on the bed-plate A, and carrying the box or log-chamber J, in which the log P to be treated is placed, and within which works the platen or presser-plate K. The box or chamber J is formed with an opening in its upper side, through which the log is inserted by the operative, and with an opening in its bottom, (provided with a sliding door, T,) through which the wood is permitted to escape or drop out, as will be presently explained. The box J is placed in a slightly-oblique position, or inclined to a horizontal plane, as shown, and the presser-plate K is made fast to the outer end of a piston-rod, L, of a steam-cylinder, F, which is arranged at one end of said box J, as shown. This cylinder is provided, in the usual

manner, with a slide-valve, *t*, by the operation of which steam is admitted from the steam-chest *G* to the cylinder, and this valve is controlled by the operative through the medium of the valve-rod *I* and hand-lever *H*, so that he can admit steam to either end of the cylinder to move the piston, and, consequently, the platen *K*, in either direction. *S* is a pipe arranged near the cylinder *D*, and through the perforations of which jets of water are thrown onto the face of said cylinder, in the same manner as common to wood pulping or grinding machines. *M* is a cover or shield, arranged over the cylinder *D*, to prevent the water from flying about, and *O* is a simple loose roll or small cylinder, mounted to turn freely on its axis, and serving as a stop for the log *P* to strike or rest against, when in the position shown at Fig. 3.

The operation or mode of working the machine may be thus explained: The sliding door *T* of the log-chamber being closed, and the platen *K* drawn back to the position shown in dotted lines at Fig. 3, the log to be treated is placed in the box *J*, and rolls down toward and into contact with the face of the stripper-cylinder *D*. The operative now lets the steam into cylinder *F*, so as to force out its piston and the platen or presser-plate *K* against the log, when, by the rotatory motion of the stripper-cylinder *D*, or by its centrifugal force, between which and the presser-plate *K* the log is now held, the latter is carried up into the position shown in full lines at Fig. 3, and as the cylinder rotates the log *P*, which, of course, is not perfectly cylindrical, but of generally very irregular form, is tumbled or rattled about between the presser-plate *K* and the cylinder *D* in a rotatory manner, and the bark is stripped or torn off. The face of the plate *K* being hard and smooth, the face of the log cannot embed itself therein, and thus clog or impede its rattling rotatory motions, while at the same time, the plate *K* being free to yield bodily, by virtue of the steam-cushion or yielding pressure by which it is held up to its work, the log is permitted to turn round freely, no matter what its contour, and thus have all parts of its surface presented to the action of the stripper-cylinder *D*. The water-supply keeps the wood wet and the cylinder cool and lubricated, and the presence of the rotatory stop *O* rather augments or facilitates the free gyrations of the log.

Sometimes, when a log is put in, and the presser-plate brought to bear on it, the stick will ascend to the position shown and described, and stick fast, or refuse to rotate or tumble, so that the tendency of the machine would be to grind the bark or surface of the log at one place. The moment this occurs the operative, who can instantly detect the fact by the absence of the jar consequent to the proper operation, simply withdraws the presser-plate

K by the steam-cylinder, thereby permitting the log to drop into the position shown in dotted lines at Fig. 3, and then brings it to bear again, when a fresh hold on the log will be obtained, and it will then immediately (generally) be properly tumbled and stripped clean of its bark.

I have found in the practical application of my invention that the machine will perfectly strip or tear off all the bark from logs of different sizes and shapes without taking off any of the hard portion or wood proper of the log. It merely separates perfectly the bark from the other parts of the log, the bark coming away in long and large pieces and slivers.

I have found the metal-faced cylinders with a mere grinding-surface to perform this operation, and I therefore conclude that it is not necessary or advisable to have a stripper-cylinder with such teeth or projections as would be liable to enter into the solid part of the wood, and that the stripping off or complete severance of the bark results from a sort of concussive action, which occurs during the gyrations of the log, and that, therefore, any suitable grinder-cylinder would answer, perhaps, as a substitute for the metal stripper-cylinder *D*.

It will be seen that, in the operation of the machine, the log has a constant tendency to drop or fall by gravity, and is kept up by the action of the rotating cylinder *D*, while at the same time it is held up to the cylinder to receive this action by a highly-elastic or freely-yielding, but sufficiently strong, pressure, to insure the described operations and results.

It is obvious that the described mode of operation and the results attained might be gained in a machine having the parts differently constructed and combined, but in which the log-chamber would be so arranged relatively to the moving stripper-surface, whether the face or end of a cylinder, and the log would be so held up to the action of the grinder or stripper, by a yielding presser-plate or feed, as to permit the rotatory and concussive action described. I therefore do not wish to be understood as limiting my claim of invention to a machine made precisely as that shown and described; but

Having fully shown and described my invention, as I have successfully practiced it, what I claim is—

The machine, constructed substantially as set forth, in which the log is held up between the surface of the stripper and a yielding presser-plate, and arranged so as to induce to the tumbling and stripping action described.

In testimony whereof I have hereunto set my hand and seal this 29th day of October, 1873.

GUSTAVUS AMES. [L. S.]

In presence of—

A. M. HARTING,

CHAS. SEYMOUR.