

S. M. ALLEN.
 Wood-Grinder for Making Paper-Pulp.
 No. 224,623. Patented Feb. 17, 1880.

Fig. 1.

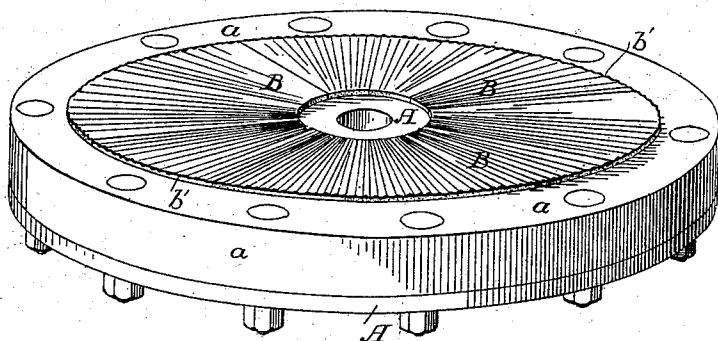
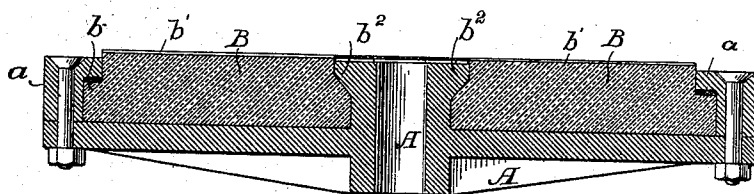


Fig. 2.



Witnesses:

Clarence Poole
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UNITED STATES PATENT OFFICE.

STEPHEN M. ALLEN, OF DUXBURY, MASSACHUSETTS.

WOOD-GRINDER FOR MAKING PAPER-PULP.

SPECIFICATION forming part of Letters Patent No. 224,623, dated February 17, 1880.

Application filed January 21, 1880.

To all whom it may concern:

Be it known that I, STEPHEN M. ALLEN, of Duxbury, Massachusetts, United States of America, have invented a new and useful
5 Wood-Grinder for Making Paper-Pulp, which invention is fully set forth in the following specification.

In the reduction of wood and other fiber to pulp, for the manufacture of paper or for other
10 purpose, emery or artificial stone is found to possess advantages over stone or metal, on account of the facility for changing the grade of the pulp from coarse to fine, and of the greater rapidity and efficiency of disintegration.
15 tion.

This invention relates to the manufacture of emery or artificial-stone grinders, and specially to those in the form of flat or bevel disks, whether running stones or bed-plates.

20 It consists in covering a frame or support with plates of artificial stone compacted and formed before application to the frame or support. These plates are secured by bolts, dovetails, or other ordinary or suitable means—
25 like, for example, the plates of an iron-clad ship. Heretofore grinders of this class have been made by plastering the face of a wheel or disk with a coat of plastic emery paste and then letting it solidify; but great difficulty
30 has been experienced, and in that form the material cannot be tamped sufficiently. It is not hard enough to stand well, and soon wears out by use.

In this invention the plates are formed by
35 hard tamping, pressing, and drying before they are fastened upon the frame or support, and will stand long use and practical wear.

In my patents of November 25, 1879, No. 221,993, and January 6, 1880, which relate to
40 the manufacture of wood-grinders of artificial stone or emery, the formation of the grinders in sections which are separately compacted and then united is described; but these patents have reference more particularly to grinding-cylinders, and the sections, instead of being in the form of panels or plates, are shown
45 in the first-named patent as thin disks, which are secured upon an axle, and in the second are logs or staves, which are secured in position lengthwise of the grinder, and thus form
50 the grinding-surface.

This invention also consists in grooving, corrugating, or furrowing the panels or plates, so that in grinding the wood or other material the fiber separated can be carried off in channels without being ground over and over and
55 formed into flour, instead of filaments suited for paper-pulp.

The accompanying drawings, which form a part of this specification, represent a disk-
60 grinder constructed in accordance with this invention, Figure 1 being a perspective, and Fig. 2 a sectional view.

The same letters indicate like parts on both the figures.
65

A represents the disk-frame which supports the plates or panels B, of emery or artificial stone. The manner of securing the panels will be readily understood. A flanged ring, *a*,
70 formed in one piece or made in sections, fits in a receiver or over a shoulder, *b*, on the panels. The inner edges of the panels fit under a projection, *b*², which is inclined on the under side to form a close joint, a packing being inserted, as shown, if required. These panels are grooved,
75 corrugated, or furrowed, as indicated by *b*¹. These plates are, preferably, from one to three inches in thickness, and they may be of any desired length, or according to the size of the disk to be covered.
80

In order to manufacture the plates the following method is or may be adopted: Crushed and granulated emery, corundum, quartz, flint, or other suitable stone is formed into a paste or mortar of the proper consistency for molding
85 and tamping by the use of a cementing liquid or paste, which may be of any ordinary or suitable composition, such as are well known to makers of artificial stone or emery. The paste or mortar is cast or compressed in a
90 mold of a size suited to the size of the panel to be made. It is consolidated under great pressure. The panels thus formed are partially dried and usually soaked in some water-proofing liquid. They are then fully dried
95 and seasoned.

The grooves or furrows in the panels are formed at the time of molding. They should extend radially from the center.

In operation, the wood may be pressed
100 against the disk sidewise, endwise, obliquely, or in any desired position. The fiber as it is

torn off is, by means of the furrows, carried off to a greater or less extent in channels, without being ground over and over, which repeated action has the effect of making flour
5 of the fiber and not filaments suited for pulp.

Instead of revolving the disk against the wood, the former may be held stationary and the latter moved in contact with its surface. The disk may be covered on either or both
10 sides with panels in the manner described.

The means for securing the plates to the support may be varied almost indefinitely. For example, bolts may be employed, a piece may be let into the rear side of the panels, or
15 attaching-pieces may be united with the panels in the mold in which the paste or mortar is compressed. The means shown, however, answer a good purpose.

The invention is applicable to bevel disks or
20 grinders, or to bed-plates having a conical or cylindrical as well as a flat surface, and to grinding-surfaces which act in connection with each other, the wood passing between them.

The bed-plate, and also the lining of the casing, shown in my Patent No. 221,992, November 25, 1879, and the sides and top of the runner or conical grinder as well, could be covered with plates to form the grinding-surfaces,
25 in the manner as indicated.

I have described the plates as being preferably of from one to three inches in thickness; but these limits may be passed without departing from the spirit of this invention.
30

I do not intend to limit myself to grooved panels, as the first part of my invention is applicable as well to panels with plane or uniform surfaces, nor to any particular form or disposition of the grooves or furrows, as these, in themselves, do not form part of this invention.
35 40

Having thus fully described my said invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. A stationary or fixed grinder consisting of a frame or support and compressed and solid plates or panels of artificial stone or emery, secured in position upon said frame or support to form a grinding-surface, substantially as described.
45 50

2. The combination, with a frame or support, of plates or panels of artificial stone or emery with grooved, corrugated, or furrowed surfaces, and means, as indicated, for securing said plates in position upon said support
55 or frame to form a grinding-surface, substantially as described.

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

STEPHEN M. ALLEN.

Witnesses:

THOMAS M. GRIDLEY,
GEO. A. SAVAGE.