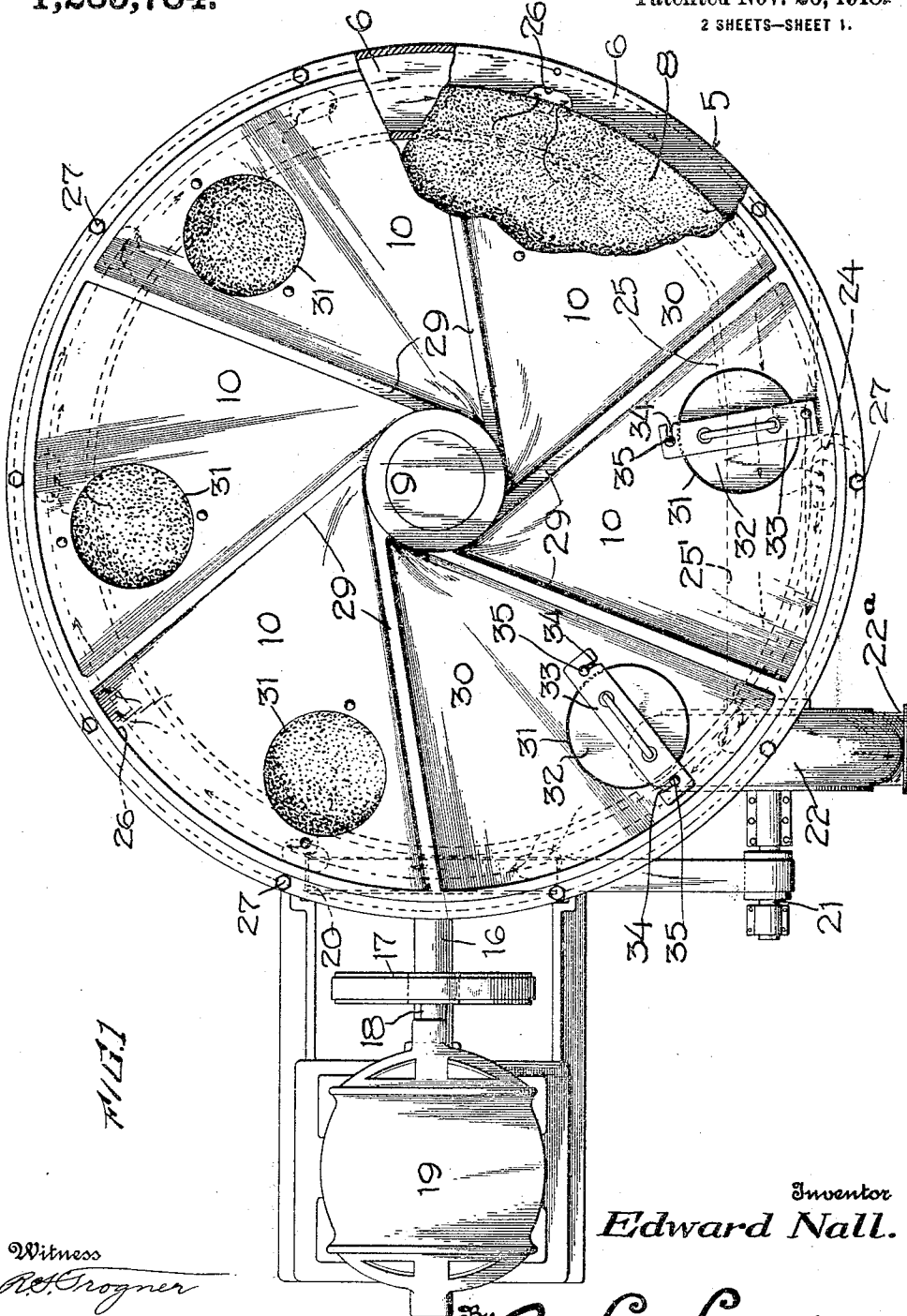


E. NALL.
 ABRADING MACHINE.
 APPLICATION FILED SEPT. 22, 1916.

1,285,784.

Patented Nov. 26, 1918.
 2 SHEETS—SHEET 1.



Witness
R. H. Croger

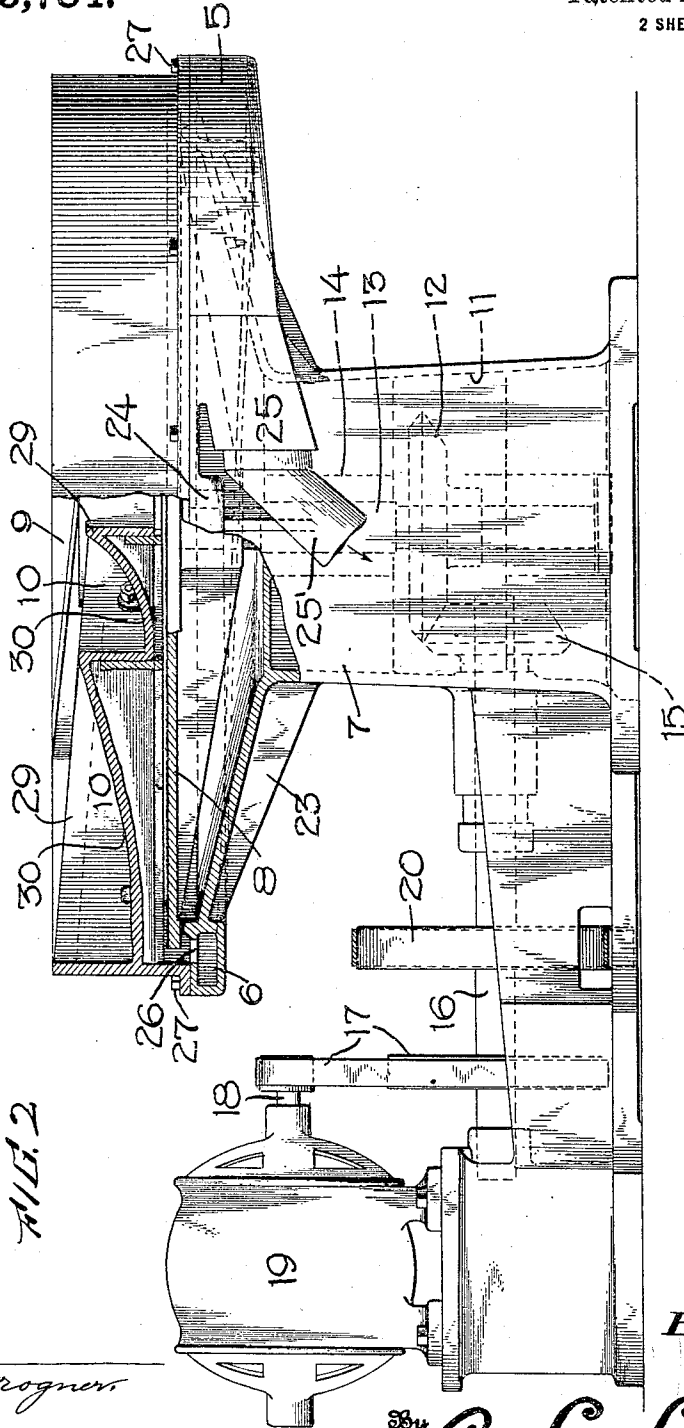
Inventor
Edward Nall.

C. L. Landon
 Attorney

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Witness
Ret. Croguier

Inventor
**Edward
 Nall.**

By *C. L. Landon*
 Attorney

UNITED STATES PATENT OFFICE.

EDWARD NALL, OF AKRON, OHIO, ASSIGNOR TO THE GOODYEAR TIRE & RUBBER COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

ABRADING-MACHINE.

1,285,784.

Specification of Letters Patent.

Patented Nov. 26, 1918.

Application filed September 22, 1916. Serial No. 121,616.

To all whom it may concern:

Be it known that I, EDWARD NALL, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Abrading-Machines, of which the following is a specification.

My present invention relates to abrading machines and more particularly relates to that class of such machines which employ a single grinding disk.

As a principal object I contemplate the provision of a machine consisting of a rotatable disk with an exposed abrasive surface and of stationary feeding means which feed the material to be ground gradually to the abrasive disk and simultaneously over all portions of its surface.

An object of equal importance with the foregoing is to provide an exhaust channel in connection with a stationary feeding means for the disk such that the pulverized material may be readily drawn off the surface of the abrading disk as fast as it accumulates without, however, being accompanied by unground or only partially ground material.

The above and additional objects of a similar nature, which will be hereinafter more specifically treated, may be accomplished by such means as are illustrated in the accompanying drawings, described in the following specification and then more particularly pointed out in the claims which are appended hereto and form a part of this application.

With reference to the drawings, wherein there has been illustrated a preferred embodiment of the invention as it is reduced to practice, and throughout the several views of which, similar reference numbers designate corresponding parts;

Figure 1 is a view in side elevation of the abrading machine comprehended by this present invention, parts being sectionalized; and

Fig. 2 is a plan view of the machine shown in Fig. 1.

The rubber reclamation industry is based primarily upon pulverization of the rubber which it is desired to reclaim. In many allied arts and industries, grinding of the material to be employed is a pre-requisite to its use. The simplest form of grinder

is that which employs but a single abrasive disk, yet machines of this character are wastefully slow unless the material to be ground is simultaneously fed to all portions of its surface. It is to the stationary means for gradually feeding masses of rubber or "chunks" of other materials to the single rotatable disk that the present invention pertains. My invention is also concerned with a means for withdrawing the pulverized material without scattering, and without also withdrawing from the machine quantities of the material in a partially powdered state.

As shown, the abrading machine comprises a table 5 provided with a rim channel 6 for the exhaust of the powdered material; a center pedestal 7 supporting the table; a rotatable abrasive disk 8 mounted for movement upon the pedestal 7 and having its peripheral edge extending over the exhaust channel 6; and a compartment cover plate 9 which is supported upon the rim channel of the table and entirely incloses the grinding disk. The compartments 10 of this cover 9 may be of any desired number to provide a number of stations for feeding portions of the material to be ground to all parts of the abrading disk simultaneously, yet independently.

The base of the pedestal 7 is formed hollow, as indicated by the numeral 11, in order that an operating gear 12 may be mounted upon the dependent stem 13 of the disk 8, the stem 13 being inclosed in suitable bearings 14. Meshing with the operating gear 12 is the beveled gear 15 which is carried at the extremity of a shaft 16 having suitable belt and pulley drive connections 17 with the drive shaft 18 of an electric motor 19, or other prime mover. Also mounted upon the shaft 16 and adapted to be driven by the motor 19 is a pulley 20 which operates, through a belt or other connection, the shaft 21 of a suitable exhaust blower indicated generally by the numeral 22.

The rim channel 6 of the table is entirely inclosed and is supported by angular arms 23 which radiate from the pedestal 7. Starting at the point indicated by the numeral 24, this rim channel proceeds in a horizontal plane entirely around the table, increasing in its sectional dimensions in pro-

portion to the distance from the starting point 24. The end of this channel is formed into a flaring mouth 25 where it laps the starting point 24, and such mouth is
 5 connected by the downwardly jointed pipe 25 with the axis of the blower 22. A constant suction is thus provided completely around the rim channel 6, while the increasing dimensions of the channel take care of
 10 the increasing amount of pulverized material drawn from the grinding disk 8 as the draft progresses from the starting point 24 of the rim channel to the blower. A suitable exhaust 22^a from the blower to a
 15 storing receptacle is, of course, provided, although not specifically illustrated in this connection. Suitable apertures 26 are formed at regular intervals along the top wall of the exhaust channel 6 to permit the exhaust
 20 draft to act upon pulverized particles of the material carried by the edge of the revolving disk 8 whose path of travel is above the openings 26.

The compartment cover 9 has a circular
 25 vertical rim portion which is secured by suitable means 27, of a removable nature, upon the rim of the table 5 in such manner as to define an inclosing chamber for the grinder 8, which chamber is in direct communication
 30 with the channel 6 through the exhaust apertures 26. Extending from the center of the table to the circular rim portion of the cover 9 are a plurality of tangential vertical vane walls 29 the lower ends of which are adjacent
 35 to the abrasive disk 8, and from each of these walls there slopes a surface 30 downwardly toward the lower end of the next vane, in the direction of rotation of the grinding disk 8. Each of these surfaces 30
 40 approaches, at its lowermost end, to within a short distance of the surface of the abrading disk and is formed with a feeding aperture 31. Cover plates or disks 32 are secured to handle bars 33 to form closures for the
 45 feeding aperture, each of the handle bars being formed with a pair of oppositely directed arcuate slots 34 in its opposite extremities for a removable engagement with pins 35 projecting upwardly from the surface 30 and situated on a diameter of the
 50 respective feeding hole 31. The turning of the cover plates through a small arc is sufficient to either lock them in their position over the feeding holes or to unlock them
 55 when it is desired to feed additional material into the grinding compartment.

In addition to the vane walls 29, I have provided a number of separate partitions 36, one of which may be removably secured to
 60 each vane wall through the medium of fastening means 37, for the purpose of preventing passage of any of the ground material between adjacent compartments.

In operation, the abrading disk is rotated
 65 by the motor 19 in a clockwise direction

(Fig. 2) and the operator feeds "chunks" of the rubber which is to be reclaimed, or other material to be ground, into each of the compartments defined by the vanes 29. The cover disks 32 are then locked over the
 70 feeding holes and the entire surface of the revolving disk is thus employed. As the initially large masses of rubber are held against rotation by the stationary curved surface 30 of each of the compartments 10, 75 they are abraded by the disk 8 and worn smaller and so advanced along the downward curve of the compartment surface until they become sufficiently small to pass under the vanes 29 and reach the edge of 80 the disk 8. A comparatively gentle exhaust current is meanwhile circulating through the channel 6 and also in a clockwise direction. A draft from the edges of the disk 8 is therefore instituted through the several 85 exhaust apertures 26 and the accumulating abraded material gathered by the exhaust current is swept around the rim channel of the table and exhausted through the pipe 25' connected to the blower and the blower 90 exhaust 22^a. Larger scraps or pieces of the ground material which reach the edge of the disk are not affected by the draft and are, therefore, not carried away through the exhaust, the apertures 26 being small 95 enough to prevent large pieces of the material from being emptied into the exhaust channel by the centrifugal action of the abrading disk.

It is by use of the compartment disk cover 100 with its feeding surfaces 30 operating in conjunction with the centrifugal motion of the machine that I have been able to employ the entire surface of a single disk at once, in attainment of the objects previously set 105 forth as pertaining to this invention.

What I claim is:

1. In a grinding machine, a revoluble abrading disk, and a closed compartment cover formed with a plurality of surfaces 110 entirely covering the disk and curving downwardly to approach the disk in direction of the revolution thereof.

2. In an abrading machine, a grinding disk; and a cover providing an inclosing 115 chamber for said disk; said cover having a plurality of sloping surfaces approaching the disk in the direction of rotation of the latter, the lower portions of the surfaces being connected to the upper portions of adjacent 120 surfaces.

3. In a grinding machine, a revoluble abrading disk; and a cover for the disk; said cover provided with vane walls defining feeding compartments and having sloping 125 surfaces extending between the vane walls.

4. In a grinding machine, a revoluble abrading disk; a table; and a cover mounted on said table to provide an inclosing chamber for the disk; said cover having vane 130

walls and sloping surfaces between said vane walls to provide feeding compartments over the whole surface of the disk.

5 5. In an abrading machine, a revoluble grinding disk; a table, an exhaust channel carried by said table and arranged circumferentially below said disk; and a stationary cover providing an inclosing chamber for said disk and supported upon said channel, 10 said cover having sloping surfaces which have the lower surfaces thereof disposed in proximity to the disk and have said lower portions connected to the upper portions of adjacent surfaces.

15 6. In an abrading machine, a revoluble grinding disk; an exhaust channel provided with exhaust apertures and arranged circumferentially below said disk; a cover inclosing said disk and having sloping surfaces disposed adjacent to said exhaust aper- 20 tures and gradually approaching the disk in the direction of rotation thereof for gradually feeding a material to be ground to the disk.

25 7. In an abrading machine, a revoluble grinding disk, and a closed inclosing cover for said disk made up of a number of compartments radiating from the central portion of the cover to completely cover the whole 30 surface of the disk, each of said compartments being formed with a curved wall gradually approaching the surface of the grinding disk in order that material to be ground may be fed by the curved surfaces 35 to all portions of the grinding disk surface simultaneously.

8. In an abrading machine, a revoluble grinding disk; a cover inclosing said disk; 40 vane walls radiating from the central portion of the cover to define compartments over the entire surface of the disk, each of

said compartments being formed with a curved feeding wall extending between adjacent vane walls and gradually approaching the disk surface in the direction of rotation 45 of the disk and being formed with a closable feeding aperture.

9. In an abrading machine, a revoluble grinding disk and cover inclosing said disk; 50 vane walls radiating from the central portion of the cover to define compartments over the entire surface of the disk, each of said compartments being formed with a curved feeding wall gradually approaching the disk 55 surface in the direction of rotation of the disk and being formed with a closable feeding aperture; and partitions adjustable on the vane walls to prevent passage between adjacent compartments of the material fed into 60 any compartment.

10. In an abrading machine, a revoluble grinding disk; an exhaust channel circumferentially arranged below said disk; an inclosing cover arranged over said disk; 65 vane walls radiated from the central portion of said cover to define compartments therein; and a feeding wall for each compartment formed to gradually slope into proximity with the surface of the disk from the 70 top of one vane wall to the bottom of the next vane wall in the direction of rotation of the disk; and a blower adapted to provide an exhaust current through said channel to carry off the material ground by said 75 disk.

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

EDWARD NALL.

Witnesses:

ANNA B. NALL,
H. J. GINTHER.