J. OGDEN.

APPARATUS FOR CUTTING, GRINDING, MINCING, OR PULVERIZING RUBBER, LEATHER, CEREALS, OR OTHER SUITABLE SUBSTANCES.

APPLICATION FILED MAY 20, 1912.

1,102,789. Patented July 7, 1914.

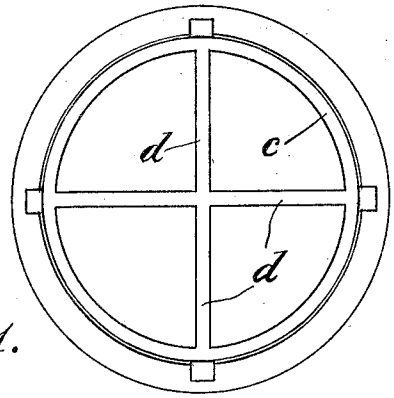


Fig. 1.

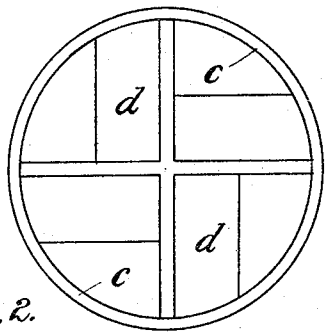


Fig. 2.

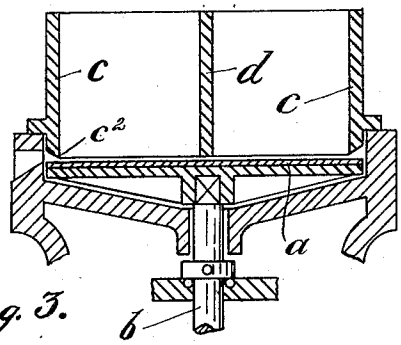


Fig. 3.

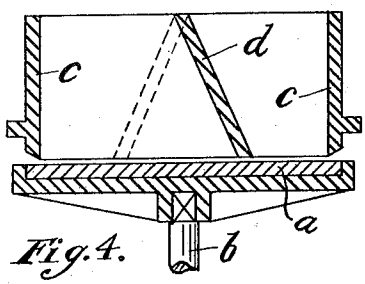


Fig. 4.

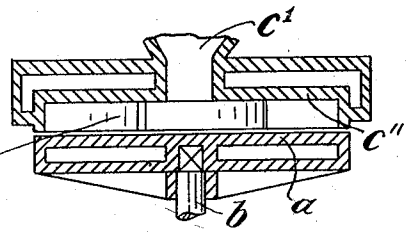


Fig. 6.

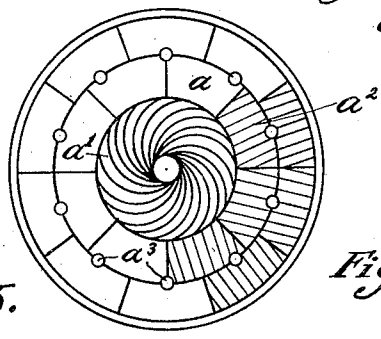


Fig. 5.

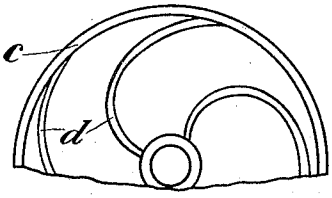


Fig. 7.

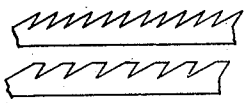


Fig. 8.

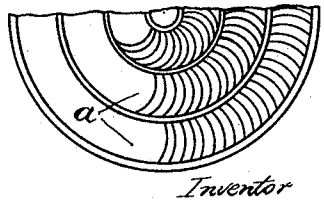


Fig. 9.

Witnesses.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH OGDEN, OF MANCHESTER, ENGLAND, ASSIGNOR TO ARTHUR DENTON, OF INGLESIDE, MARPLE, COUNTY OF CHESTER, ENGLAND.

APPARATUS FOR CUTTING, GRINDING, MINCING, OR PULVERIZING RUBBER, LEATHER, CEREALS, OR OTHER SUITABLE SUBSTANCES.

1,102,789. Specification of Letters Patent. Patented July 7, 1914.

Application filed May 20, 1912. Serial No. 698,379.

To all whom it may concern:

Be it known that I, JOSEPH OGDEN, a subject of the King of Great Britain, residing at Manchester, in the county of Lancaster, England, have invented a new and useful Apparatus for Cutting, Grinding, Mincing, or Pulverizing Rubber, Leather, Cereals, or other Suitable Substances, of which the following is a specification.

The invention relates to apparatus for cutting, grinding, mincing, or pulverizing rubber, leather, cereals, or other suitable substances, and has for object to provide simple means for the purpose whereby undue heating of the material is prevented and the said material is effectively operated upon.

In carrying out the invention I provide an apparatus which consists of the combination of a certain form of container or shell with an abrasive surface, or surfaces of certain kinds. This disk or surface is mounted upon a central shaft so as to be capable of being rotated rapidly thereby in any suitable manner and adjacent to such abrasive disk, I mount a shell or hollow cylinder having its lower open end, or what may be termed its operative end adjacent to said disk, and its edge very close thereto. This shell is provided with an abutment or abutments therein so situated relatively to the abrasive surface as to prevent the major portion of the material in the neighborhood of the said surface partaking of the motion of the latter, when the surface is rapidly moved for acting upon the said material.

With reference to the drawings, in which the figures represent certain forms of my invention, Figure 1 is a plan view of a bottomless container for the material to be operated upon, the abrasive surface or disk below the same not being indicated, and Fig. 2 shows another form of said container. Fig. 3 is a sectional elevation of Fig. 1, and in which an abrasive disk or member is shown situated below the container aforesaid. Fig. 4 is a similar view of Fig. 2. Fig. 5 is a face view of a suitable form of abrasive disk, the cutting edges thereof being only partly indicated thereon. Fig. 6 is a sectional elevation of another form of container and disk, about which are provided cooling spaces; and Fig. 7 is, in part, an under plan view of said container. In Fig. 8 two forms of cutting edges are shown. Fig. 9 is a part face view of another suitable form of abrasive disk, the curved cutting edges thereon being only partly indicated.

According to the few forms of the invention indicated, an abrasive surface in the form of a plate or disk a is provided upon a central shaft b, and so as to be capable of being rotated thereby, and adjacent to such disk a is mounted a shell or hollow or bottomless cylinder or container c, the lower edge c^2 of which is only a very small distance (in some cases about 1/64th of an inch) from the surface of the disk aforesaid. This shell c or the like form a receptacle or hopper to be supplied with material to be operated upon, or it may form part of a hopper such as in the case of Fig. 6 in which the remainder is partly indicated at c^1. The shell c aforesaid is provided with a partition, or partitions, d of suitable depth extending across the same, and also reaching to a very short distance from the abrasive surface, which partition or partitions shown may be considered to be certain forms of the abutment or abutments already referred to. It is obvious, however, that the said partitions might be arranged only to extend across those parts of the shell or container where the material has the greater tendency to be rapidly moved, such as indicated at d^1 in Fig. 1. It will thus be seen that when the said partition or partitions is or are kept stationary, or provided with a different motion relatively to that of the abrasive surface, undue movement will be prevented of the major portion of the material, or all but that portion which is being directly operated upon, and which is able to pass between the edge or extremity of a partition or the periphery of the shell c and the said abrasive surface, such aperture being the only outlet for the finished material.

Partitions or abutments may be provided in the form of spirals or other curves, such as indicated in Fig. 7, upon a plate or cover c'' opposed to the disk a, when the material may be fed to the same through an aperture such as c^1 (Fig. 6) at the central part thereof, and it is obvious that an abutment need

not be parallel at its lower edge with the plate *a* but may, if desired, be nearer the outer part of the surface than elsewhere.

In Figs. 1 and 3 the partitions or abutments *d* are shown at right angles with the abrasive surface *a*, and in Figs. 2 and 4 they are otherwise inclined thereto, in which latter case the tendency will be, when the angulation is such as to cause the partition to incline toward the direction of motion, to keep the material in closer contact with the operating surface named. Suitable kinds of abrasive surfaces consist of plates with cutting edges or the like thereon. The cutting edges may take the form of spirals, such as indicated at a^1 of the central portion of Fig. 5. In some cases the abrasive surface may be provided in the form of a set or sets of cutting edges, which cutting edges, in each set, are parallel or thereabouts one to another, such as indicated at a^2 in Fig. 5, and may be independently removable by being attached as block pieces a^2 by the withdrawal of set screws a^3. As shown, the members of one set of parallel edges may be followed by or alternated with the members of another set, or may thus be capable of intersecting an opposing radial edge where used of an abutment at varying angles both in degree and direction. Additional cooling means, such as water jackets for the different parts of the apparatus may be provided, forms of spaces for which are indicated in Fig. 6.

I claim:—

1. An apparatus for cutting, grinding, mincing and pulverizing rubber, leather and other similar substances, comprising an open-ended container, abutments in said container, a cutting disk situated below the lower end of the container so as to leave a small clearance space between the same and the walls of the container, said cutting disk being formed with sharp cutting edges leaving grooves between the same which do not extend as slots through the disk, and said cutting disk being adapted to be rotated at a high speed in order to cut the material in the container into very fine pieces and to discharge these fine pieces by centrifugal action through the clearance space.

2. An apparatus for cutting, grinding, mincing and pulverizing rubber, leather and other similar substances, comprising an open-ended container, vertical abutments in said container, said abutments extending approximately to the bottom of the container, an imperforate cutting disk below the lower end of the container, leaving a small clearance space between the same and the walls of the container, said cutting disk being formed of a support and a plurality of separate removable blocks carried thereby, on which blocks sharp parallel cutting edges are formed, said cutting disk being adapted to exert a cutting action on the material in the container when it is rotated at a high speed, and to discharge the finely cut up material by centrifugal action through the clearance space.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOSEPH OGDEN.

Witnesses:

ARTHUR GADD,

GEORGE FREDERICK GADD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."