Dec. 29, 1925. 1,567,246

L. J. COSTA

GRINDING MILL

Filed Feb. 19, 1925

Fig. 1.

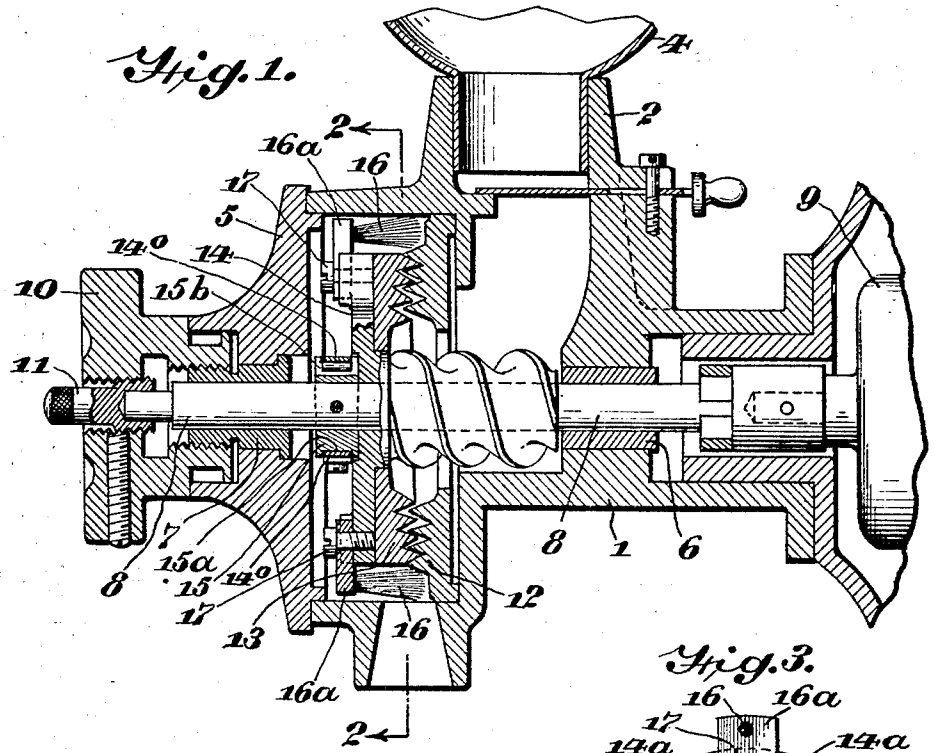


Fig. 2.

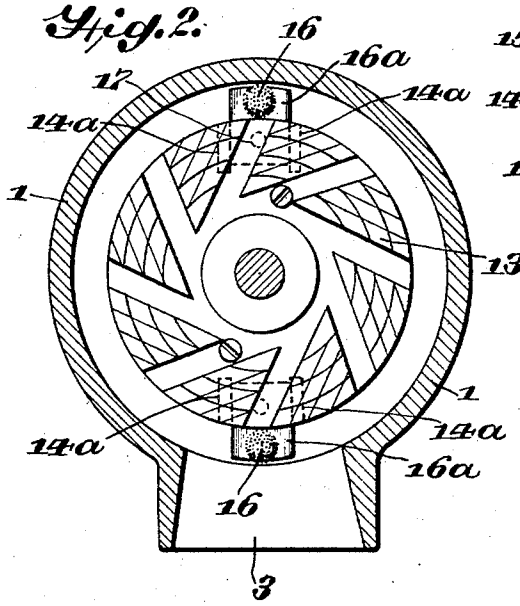


Fig. 3.

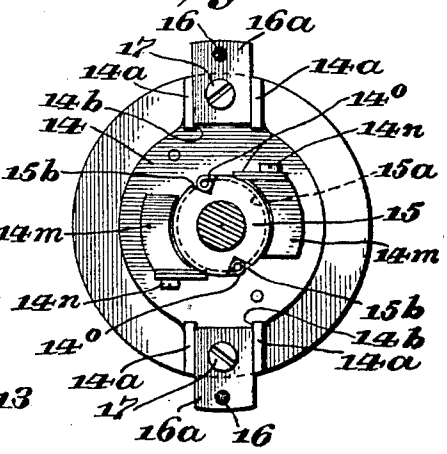
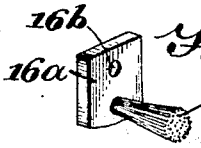


Fig. 4.



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UNITED STATES PATENT OFFICE.

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GRINDING MILL.

Application filed February 19, 1925. Serial No. 10,199.

To all whom it may concern:

Be it known that I, LOUIS J. COSTA, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Grinding Mills, of which the following is a specification.

My invention relates to mills of the type used in grinding material such as coffee, and consists in the novel arrangement hereinafter described and particularly pointed out in the appended claims.

An object of my invention is the provision of suitable mechanism for removing ground material from the vicinity of a grinding member and allowing the same to pass out of the mill, and contemplates the use of yielding, flexible, and preferably resilient brush-like members for performing the above noted operation, brushes of this type affording maximum safety to an operator, or any person tampering with the machine.

A further object relates to the provision of a clutch-like device between a driving and a driven part, the arrangement being such that the driven part is positively locked to the driving part at the conclusion of a cycle during which said parts do not rotate together.

A still further object deals with an arrangement for preventing endwise movement of the rotatable grinding member.

For an illustration of one form which my invention may take reference is to be had to the accompanying drawing, in which:

Fig. 1 is a vertical sectional view of the mill showing the different parts in the grinding position.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a view showing the brush supporting member and associated parts of the clutch.

Fig. 4 is a perspective view of the brush.

Referring to Fig. 1, 1 represents a base or supporting member which is provided with outwardly directed extensions 2 and 3. The extension 2 is provided with a funnel-like member 4 to aid in the reception of whole coffee or other like material, while the extension 3 constitutes a port for the discharge of ground or shredded material.

A head 5 is attached to the supporting member 1 in any suitable manner, and these parts are provided with bearings 6 and 7. Rotatably mounted in said bearings is a longitudinally extending shaft 8, said shaft being rotated by any suitable mechanism such as motor 9. The shaft 8 also has a worm loosely mounted thereon for feeding the coffee into engagement with the grinding mechanism per se. A member 10 is in screw threaded arrangement with one bearing 7, said member 10 supporting the end thrust member 11, all as shown in Fig. 1.

A fixed grinding disc 12 is mounted in the base 1, and associated therewith is a rotatable grinding disc 13. The last mentioned member is fixed to a supporting member 14, and together with the worm are loosely mounted on the shaft 8. A collar 15 is rotatable with the shaft 8 and has a circumferential groove 15^a and longitudinally extending V-shaped openings 15^b.

One face of the supporting member 14 is shaped to provide shoulders 14^m. Attached to opposite sides respectively of said shoulders by screws or other fastenings means 14^a, are the outwardly movable spring detents 14^o. During the normal operation of the machine the enlarged ends of the spring detents are releasably locked in the openings 15^b, and the disc 13 and supporting member 14 rotate together. At other times, the rotatable disc 13 may encounter an abnormal resistance to turning action, such as occurs when a pebble or nail enters the machine. When this occurs, the spring action of the detents is insufficient to hold the enlarged ends in the openings 15^b and, accordingly, the member 14 will no longer be locked to the collar 15. Thereupon, the movable grinding disc, the supporting member 14 and the worm will assume a stationary position and, as the collar 15 continues to rotate, the enlarged ends of the detents will travel in groove 15^a. The outer wall of this groove during such action, presents end-wise movement of the rotatable grinding disc.

As soon as the pebble or nail leaves the machine, abnormal resistance to turning movement of the rotatable member is removed and the enlarged ends of the spring detents drop into the openings 15^b. In this manner, the parts are positively locked together for continued operation without attention on the part of the operator.

The brush supporting member 16^a is per-

forated at 16[b] and is equipped with a yielding, flexible brush element 16, extending preferably parallel to the axis of rotation of shaft 8. Supporting members 16[a] are fitted into the channels 14[b] and are held in place by screw 17.

Brush 16 may comprise bristles or fine resilient wires, a mass of felt, or equivalent yielding material.

Coffee, or like material, after descending through the funnel 4 will be fed by the worm in such manner as to enter between and be ground by the grinding discs 12 and 13. The brushes 16 move with the rotatable grinding disc and will, therefore, sweep the channel exteriorly of the grinding discs and cause any material found there to escape by way of port 3.

As has been noted, the brush element 16 is yieldable and, accordingly, should an operator or any other person inadvertently insert a finger into the port 3, an injury will not result.

It is to be understood that although two brushes are shown in Fig. 1, a smaller or greater number may be used. It is likewise to be understood that the brushes could be mounted otherwise than on the movable grinding disc, for instance, one or more, could be placed on the fixed grinding disc.

What I claim is:

1. In a grinding mill, a casing, co-acting fixed and rotatable grinding members in said casing, a brush supporting member movable with said rotatable grinding member, said last mentioned member having a channel, a brush-holder in said channel, and a flexible brush element secured to said brush-holder.

2. In a grinding mill, driving and driven members, one of said members having a V-shaped opening, and a spring member on said other member, a portion of said spring member being enlarged and resting at times in said opening and at other times engaging the surface of said one of said members.

3. In a grinding mill, a driving member, a member to be driven including a grinding disc, said driving member having a circumferentially extending groove and an opening transverse to said groove, and means on said driven member extending into the opening for locking said members together, said means extending into the groove during another phase of operation and preventing end-wise movement of said driven member.

4. In a grinding mill, a driven member including a grinding disk, a driving member, means comprising a flexible spring releasably locking said members together, and means comprising said flexible spring preventing endwise movement of said driven member during a phase of operation when said locking means is inoperative.

5. In a grinding mill, a driving member, a member to be driven including a grinding disk, one of said members having an opening, and an unrestrained flexible spring having an enlarged portion for clutching engagement with said opening.

6. In a grinding mill, a casing, co-acting fixed and rotatable grinding members in said casing, a brush supporting member movable with said rotatable grinding member, parallel ribs on said supporting member disposed substantially at right angles to its axis of rotation, a brush-holder disposed between said ribs, and a flexible brush element secured to said brush-holder.

7. In a grinding mill, co-acting fixed and rotatable grinding members, a casing enclosing said members and forming a channel for the reception of ground material, a discharge port communicating with said channel of a length permitting insertion of a human finger into said channel, and flexible brush structure rotatable with one of said grinding members and yielding when in contact with and passing a finger inserted through said port into said channel.

LOUIS J. COSTA.