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W. RABUS

APPARATUS FOR FEEDING CONTINUOUS WORKING WOOD GRINDERS AND METHOD THEREOF

Filed June 14, 1924

Fig:1.

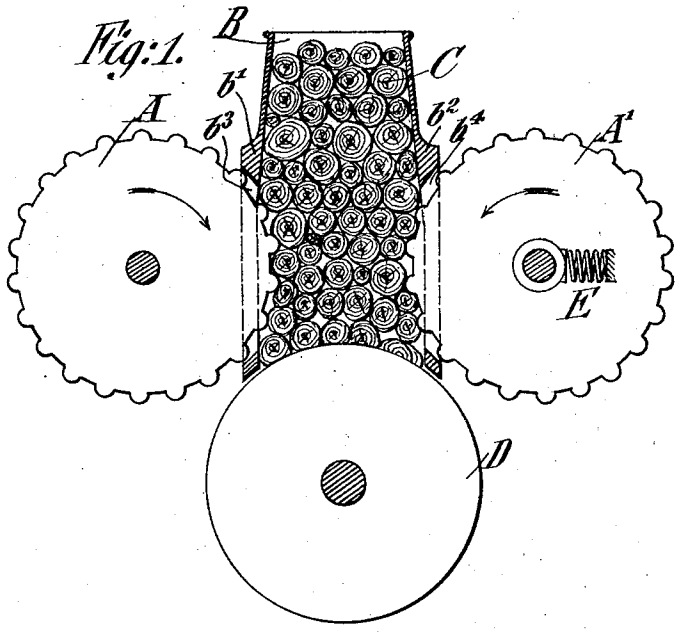
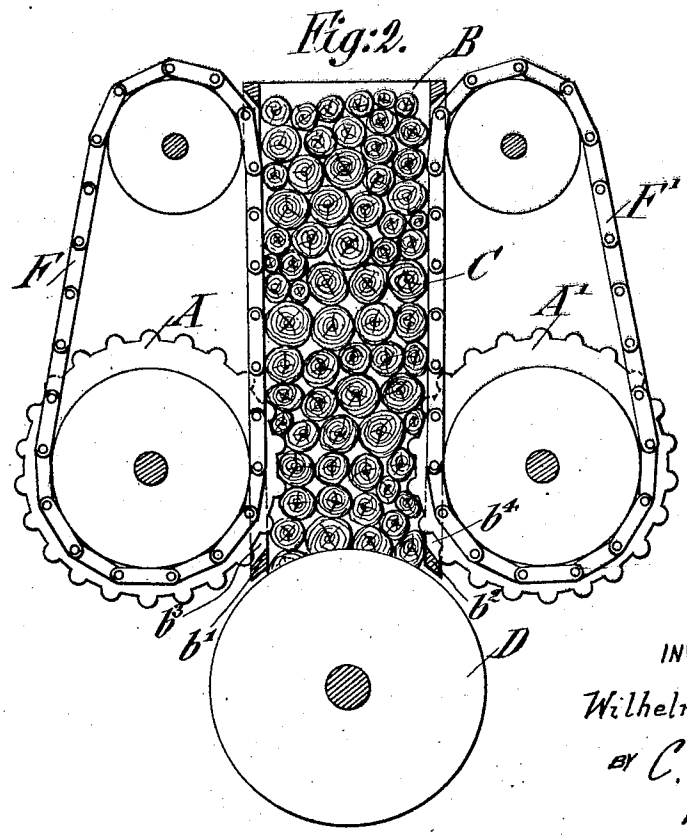


Fig:2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FEEDING CONTINUOUS-WORKING WOOD GRINDERS AND METHOD THEREOF.

Application filed June 14, 1924. Serial No. 720,422.

To all whom it may concern:

Be it known that I, WILHELM RABUS, a resident of town of Heidenheim-on-the-Brenz, Wurtemberg, Germany, have invented certain new and useful Improvements in Apparatus for Feeding Continuous-Working Wood Grinders and Methods Thereof, of which the following is a specification.

This invention relates to apparatus for feeding continuous working wood grinders of the type generally known as magazine grinders, and has for its object to provide an improved apparatus in which the charge is subjected to pressure in the immediate proximity of the grindstone and at the same time that portion of the charge is caused to be compressed to a greater degree, than in the remaining portions of the magazine or hopper, in which the charge is moved stoneward.

The invention also relates to an improved method which in general consists in subjecting the charge of a magazine grinder to a feeding pressure and in addition thereto to an additional compression immediately in proximity to the grindstone.

Heretofore it has been known to provide magazine grinders with endless feeding chains along opposite sides of the magazine or hopper, which oppositely disposed feeding chains would move the charge from its entrance portion of the magazine or hopper downwardly in the direction of the grindstone so as to enable the charge to be acted upon by the grindstone. These feeding chains or rolls were arranged either in the form of two oppositely disposed endless chains or in the form of a series of oppositely disposed endless chains extending along the length of the magazine or hopper. It has been found that while such feeding chains or rolls serve to guide the charge toward the grindstone, there was a considerable laxity in the charge immediately adjacent to the grindstone, whereby the separate pieces of wood or the like would be relatively spaced from each other and as the grindstone acted upon certain of these pieces of wood a shifting of the respective pieces would take place instead of providing an actual resistance to the grinding surface. This wiggling of the pieces of wood in respect to each other through the spaces there between prevented an efficient grinding action since a requisite to such action is that the grindstone acts upon a member which has a suitable resistance to movement.

In order to provide advantageous means to compact the charge closely together, by pressing the separate wood-pieces together and filling up as much as possible the spaces there between, there is provided in accordance with the present invention, a special means for compacting and compressing together the charge in the immediate proximity of the grindstone.

The invention includes also the novel process, which consists in subjecting a charge in a magazine grinder to a special compacting action in the immediate proximity of the grindstone.

The invention will be hereafter described, will be shown in the accompanying drawings and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view in section of one form of the invention and Figure 2 is a vertical side view in section of the invention as shown in Figure 1, provided also with the feed chains.

Similar characters of reference indicate corresponding parts throughout the various views.

Referring to the drawings and more particularly to Figure 1, the hopper B is provided at its upper end with an opening for receiving the charge C to be ground. Below this hopper, which is also open at its lower end, is arranged a grindstone D movable on an axle, which may be suitably driven, as is well known in the art. The side walls b^1 and b^2 of the hopper B are provided with poenings b^3 and b^4, which are oppositely disposed in respect to the hopper B. Within these openings b^3 and b^4 extend portions of movable members A and A^1. These members in the embodiment shown consist of toothed wheels, the teeth being rather blunt and rounded and a segment of each of these wheels A and A^1 enter into the openings b^3 and b^4, as indicated in Figure 1.

The wheels A and A^1 are supported on shafts, which are suitably driven if desired

and the driving means, if any, are so arranged as to cause the wheels A and A^1 to move in the direction of the arrows shown in Figure 1. The wheels A or A^1, or both, may be laterally adjusted in respect to the hopper B or its openings by suitable means E, preferably spring actuated, so as to adjust such wheels to any unexpected jamming of the charge or to take up any wear that may take place. The spring actuated member E instead of being used as an adjusting member may only be a resilient bearing so as to slightly give in case of any clogging of the hopper, but such spring action is preferably controlled so as to maintain the wheels A and A^1 within the chute so as to bring about the desired effect. The wheels A and A^1 may freely rotate if desired and in this case no special driving means are provided.

The operation of the embodiment shown in Figure 1 is as follows:

A charge of wood to be ground is fed into the upper end of the hopper B and by gravity moved downwardly therein and as it moves downwardly it is engaged by the toothed wheels A and A^1, moving in the direction of the arrows, namely—both wheels moving so as to exert their force inwardly and downwardly of the charge in the hopper. Thus, by the pressure exerted by these wheels against the charge in the hopper, the wood-pieces therein are immediately compressed together and with this compression obtained in the proximity of the grindstone bring about a resistance so that the grindstone will positively act upon the wood pieces to be ground.

The embodiment shown in Figure 2, the hopper B is provided at oppositely adjacent sides with feed chains F and F^1, which are arranged in the embodiment in the form of endless chains. These feed chains serve to feed the charge from the upper portion of the hopper or magazine downwardly toward the grindstone or, as is usually stated, stoneward. The magazine or hopper is again provided with openings so as to permit the blunt and rounded teeth of the wheels A and A^1 to enter into the openings of the hopper, in the same manner as described in connection with Figure 1.

It will be seen in the operation of this embodiment that the endless chains F and F^1 serve to feed the charge downward toward the hopper, and that the wheels A and A^1 subject the lower end of the charge in the proximity of the grindstone to compressing action that cannot be obtained by the feed chains themselves.

It will be noted that the lower end of the hopper, of which the oppositely disposed sides are indicated by b^1 and b^2, act to hold the pieces of the charge there between while the same are under the grinding action.

Instead of the endless feed chains F and F^1, which are shown in Figure 2, being provided, these may be substituted by suitably arranged series of rolls which would decrease the friction on the walls of the hopper B of the charge. These rolls, however, are not part of the invention and are well known in the art.

It will be seen that the improved process consists in feeding a charge to a hopper and there through toward the grindstone and that while such charge is being fed to grindstone it is subjected to a compressing action in the immediate proximity of the grindstone and during the grinding action.

I have hereinbefore described several embodiments of my invention but I do not wish to be limited to the details thereof since changes may be made therein without departing from the spirit of the invention as defined in the appended claims.

I claim as new—

1. An apparatus for feeding continuous working wood-grinders, comprising a magazine or hopper, rotary means having spaced projections entering laterally into and between the sides of separate portions of the charge of the magazine in the proximity of the grindstone, for constricting the charge by pressing the same laterally inwardly and simultaneously downwardly against the grindstone.

2. An apparatus for feeding continuous working wood-grinders, which consists of a hopper or magazine having openings through the opposite side walls thereof, and oppositely disposed wheels having teeth entering within the interior of the magazine or hopper through said openings of the hopper or magazine and acting upon by projecting into the charge and between the lateral portions of the charge therein.

3. An apparatus for feeding continuous working wood-grinders, which consists of a hopper or magazine having openings through the opposite side walls thereof and oppositely disposed wheels having teeth entering laterally inwardly of the walls of the magazine or hopper through said openings of the hopper or magazine and acting upon the lateral portions of the charge therein, said wheels having log-receiving spaces between the teeth.

4. An apparatus for feeding continuous working wood-grinders, which consists of a hopper or magazine, having openings in the side walls thereof and oppositely disposed wheels having teeth entering the openings of the hopper or magazine and acting upon the charge therein, said teeth being blunt and rounded, and log-receiving gaps between the teeth.

5. An apparatus for feeding continuous working wood-grinders, which consists of a hopper or magazine, having openings in

the side walls thereof and opposite disposed wheels having teeth entering within the interior of the magazine or hopper through the openings of the hopper or magazine and acting upon the lateral portions of the charge therein, said wheels having log-receiving spaces between the teeth on the wheels, and spring actuated bearings for said wheels.

6. An apparatus for feeding continuous working wood-grinders, which consists of a hopper or magazine, having openings in the side walls thereof, endless feed chains arranged along the sides of the hopper oppositely disposed in said openings for feeding the logs toward the grinder, and additional means consisting of oppositely disposed wheels entering within the interior of the magazine or hopper through said openings of the hopper or magazine and extending inwardly of said chains for compressing the charge in addition to the stoneward movement obtained by the feeding chains.

7. An apparatus for feeding continuous working wood-grinders, which consists of a hopper or magazine, having openings in the side walls thereof, endless feed chains arranged along the sides of the hopper oppositely disposed in said openings for feeding the logs towards the grinder, additional means consisting of oppositely disposed wheels entering within the interior of the magazine or hopper through said openings of the hopper or magazine and extending inwardly of said chains for compressing the lateral portions of the charge in addition to the stoneward movement obtained by the feeding chains, and teeth on said wheels adapted to project laterally into the charge and between the lateral portions thereof.

8. The method of feeding a charge to a grindstone under continued constant action and pressure, and then subjecting the charge to a lateral compressing action in the immediate proximity of the grindstone only, said lateral compressing action exerting a downward pressure against the grindstone, the charge above the compression action remaining free from lateral compressing action.

9. The method of feeding a charge to a grindstone under continued constant action and pressure, then in subjecting the charge to laterally oppositely disposed constricting actions only in the proximity of the grindstone, and expanding the charge between said constriction and the grindstone in immediate proximity of the grindstone, and simultaneously while constricting the charge, subjecting it to a positive downward pressure against the grindstone.

10. In an apparatus for feeding continuous working wood-grinders, a magazine or hopper having an opening in one of its sides, a grindstone below the magazine or hopper, and a wheel having peripheral projections and log-receiving spaces therebetween, disposed laterally of the magazine or hopper, at a distance to have its projections and spaces therebetween pass through the openings of the magazine or hopper and enter into and between the lateral portions of the charge within the magazine or hopper, said projections terminating within the median line of the charge.

11. An apparatus for feeding continuous working wood-grinders, which consists of a hopper or magazine, having openings in the side walls thereof and oppositely disposed wheels having teeth entering the openings of the hopper or magazine and acting upon the charge therein, said teeth being blunt and rounded.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

WILHELM RABUS.