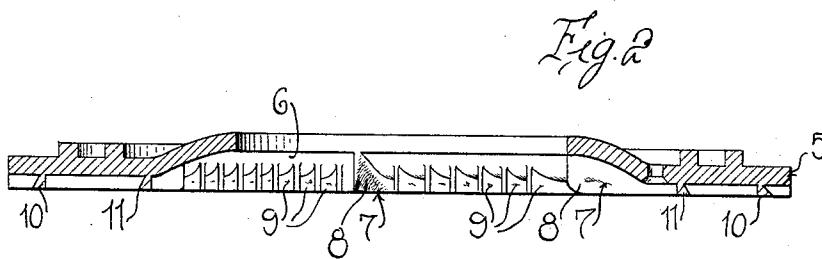
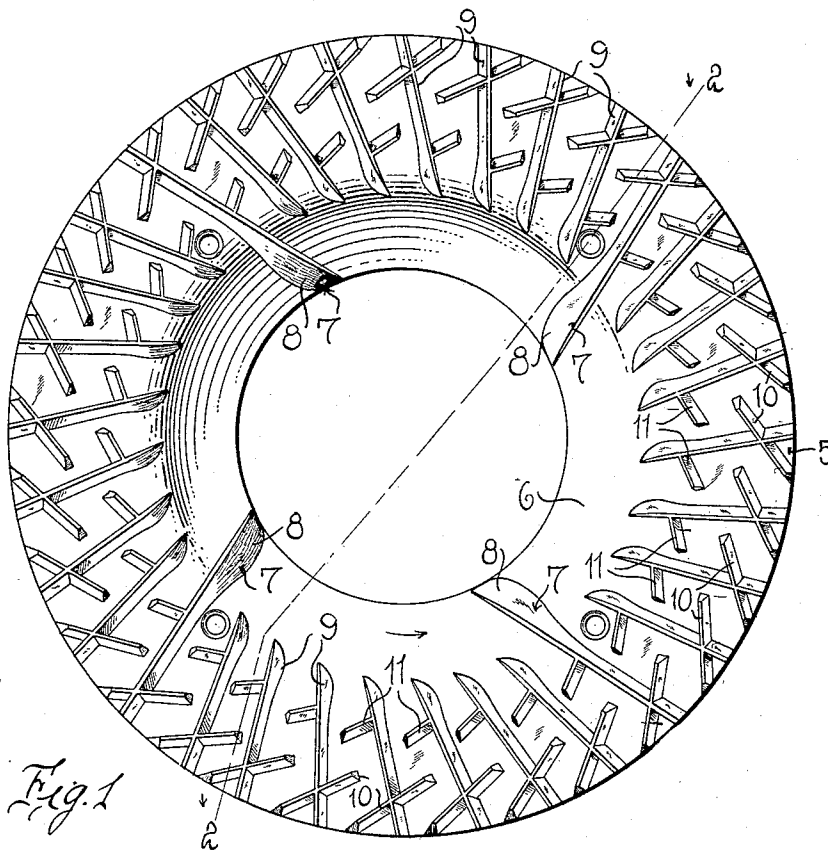


S. J. McVEY.
GRINDING PLATE FOR FEED MILLS.
APPLICATION FILED JUNE 5, 1916.

1,205,366.

Patented Nov. 21, 1916.



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GRINDING-PLATE FOR FEED-MILLS.

1,205,366.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL J. McVEY, a citizen of the United States, residing at Belleville, in the county of Wood and State of West Virginia, have invented certain new and useful Improvements in Grinding-Plates for Feed-Mills, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved grinding plate or disk for feed mills and has for its primary object to provide a grinding plate which will thoroughly grind either wet or dry grain in a minimum length of time and with the consumption of a relatively small amount of power.

It is another object of the invention to provide a grinding plate for grain provided upon its working or grinding face with spaced, inwardly converging grinding ribs or teeth and a plurality of directing ribs to direct the grain outwardly between said teeth, and means formed on the face of the plate between the grinding teeth to retard the outward movement of the grain.

It is an additional object of the invention to provide a feed grinding plate of simple and durable construction which will be shelf-sharpening in operation and will quickly grind the grain into a finely comminuted state.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which,

Figure 1 is a face view of my improved grinding plate or disk; and Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Referring in detail to the drawing, 5 designates the annular steel plate or disk, the inner edge portion of which is dished or projected at an obtuse angle with respect to the remaining body portion of the disk, as shown at 6. Upon the working face of the plate 5, the directing teeth or ribs 7 are formed, said ribs being arranged so that the longitudinal side face of one rib is in line with and at right angles to the inner end of the next adjacent rib, as clearly indicated by the dotted lines in Fig. 1. The inner ends of the ribs 7 gradually increase in thickness on one side of the longitudinal central line of the rib and is provided with a convex face, as at 8, which is opposed to the flat

side face of the adjacent directing rib 7. These enlarged or thickened ends of the ribs extend upon the concave surface of the dished inner edge portion 6 of the grinding plate.

Between the ribs 7, a series of spaced cutting or grinding teeth 9 are formed on the plate. These teeth extend from the outer edge of the plate inwardly to the outer edge of the dished portion 6 and have their inner ends terminating on a line concentric with the inner edge of the annular plate. The teeth 9 also converge slightly with respect to each other from their outer to their inner ends. Adjacent the outer end of each of the cutting teeth 9, an obliquely disposed rib 10 is formed extending upon opposite sides of said tooth, and adjacent to the inner end of the grinding teeth 9 a single relatively short rib 11 is formed on one side of said tooth and disposed in parallel relation to the rib 10. The ribs 10 and 11 are inclined outwardly from one side of the several teeth 9 and the single rib 10 projecting in the opposite direction from the adjacent tooth is disposed approximately midway between the spaced ribs 10 and 11 which are inclined outwardly toward the edge of the plate. The ends of these obliquely disposed ribs, between the grinding teeth, are out of alignment and act to retard the outward passage of the grain between the teeth 9 so that the grain will be thoroughly and finely ground before it finally passes outwardly beyond the edge of the rotating plate.

12 indicates the usual bolt holes provided at spaced points in the grinding plate to fasten the same to a rotary head, and it will be understood that the rotating plate is used in conjunction with a stationary plate, the opposed face of which may also be constructed with the directing ribs and grinding teeth as above referred to.

It will be understood that the grain is fed in the operation of the mill to the center of the annular grinding plate, and in the rotation of this plate in the direction indicated by the arrow in Fig. 1, the grain is directed outwardly by the convex faces 8 on the inner ends of the ribs 7 between the spaced inner ends of the converging grinding teeth 9. The grain being caught between these teeth and the teeth on the opposed stationary plate, is cut or ground, and the centrifugal force causes the particles of grain to move outwardly between the teeth 9. This out-

ward movement of the grain particles is retarded by the ribs 10 and 11 so that they are reground into still finer particles. This regrounding will be repeated many times and the fineness of the ground grain may be regulated and varied by the proper adjustment of the stationary plate with respect to the rotating plate or vice versa, as will be readily understood. The flat side faces of the inner ends of the ribs 7 act as stops and prevent the continued circumferential movement of the grain between the inner edge of the annular plate and the inner ends of the grinding teeth 9 so that there will be a substantially equal and uniform distribution of the grain to the grinding teeth.

From the foregoing description, taken in connection with the accompanying drawing, the construction, manner of operation and several advantages of my invention will be clearly and fully understood.

My improved grinding plate, while of exceedingly simple construction, will be found to be very satisfactory and serviceable in practical use, as it enables the operator to grind the grain to a desired degree of fineness with the consumption of a relatively small amount of power and in a comparatively short time.

The grinding plates may, of course, be constructed in various sizes and provided with any desired number of grain directing ribs and the grinding teeth.

It will, therefore, be understood that while I have shown and described the preferred form and construction of the several features of the device, the same are nevertheless susceptible of considerable modification and I, therefore, reserve the privilege of adopting all such legitimate changes as may be

fairly embodied within the spirit and scope of the invention as claimed.

Having thus fully described my invention, what I desire to claim and secure by Letters Patent is:—

1. An annular grinding plate provided upon its grinding face with a plurality of teeth converging inwardly from the outer edge of said plate, and a plurality of retarding ribs angularly disposed with respect to said teeth and extending from the adjacent teeth in staggered relation and in substantially parallel lines with respect to each other.

2. An annular grinding plate having a dished inner edge portion and a plurality of spaced directing ribs extending entirely across the grinding face of the plate having a convex face on one side extending over the dished portion of the plate, each of said ribs extending in a line at right angles to the inner end of an adjacent rib, a plurality of grinding teeth extending inwardly from the outer edge of the plate in convergent relation to each other and terminating at their inner ends at the outer edge of the dished portion of the plate and on a line concentric with the inner edge of said plate, and obliquely disposed retarding ribs arranged in staggered relation between the grinding teeth and the directing ribs, said ribs projecting from adjacent grinding teeth toward each other and in substantially parallel relation.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

SAMUEL J. McVEY.

Witnesses:

V. M. EATON,

A. E. McVEY.

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