F. W. JOHNSON.

FEED GRINDER.

APPLICATION FILED MAR. 29, 1917.

1,312,446. Patented Aug. 5, 1919.

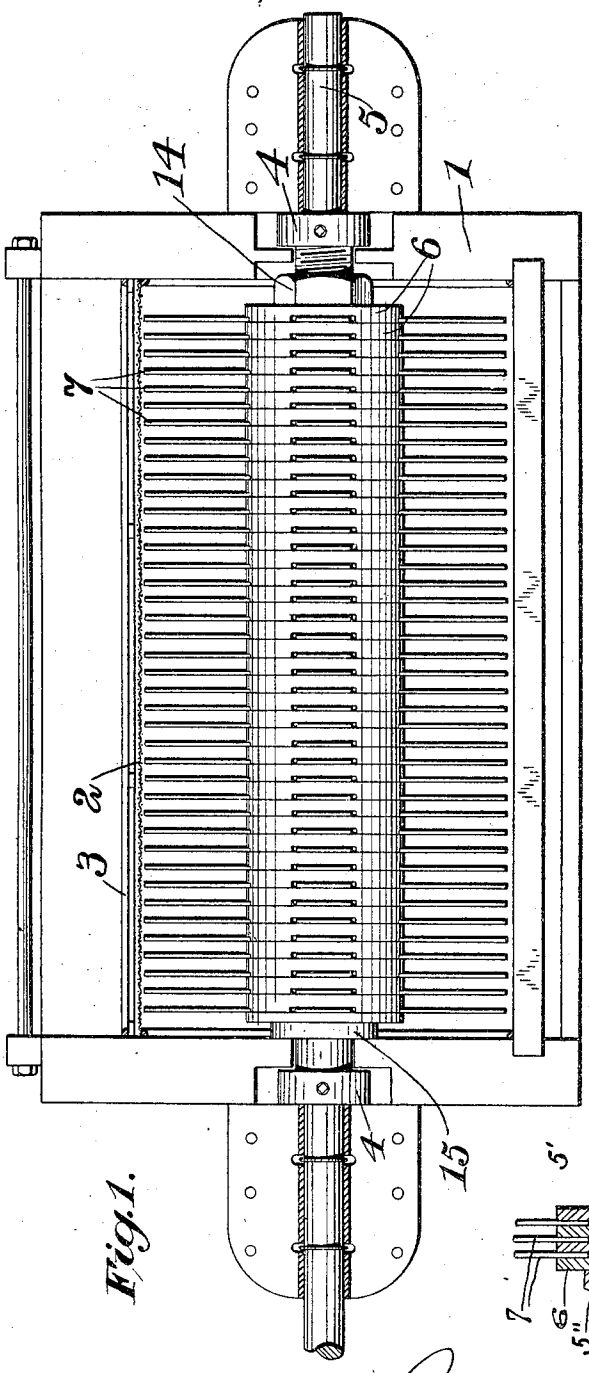


Fig. 1.

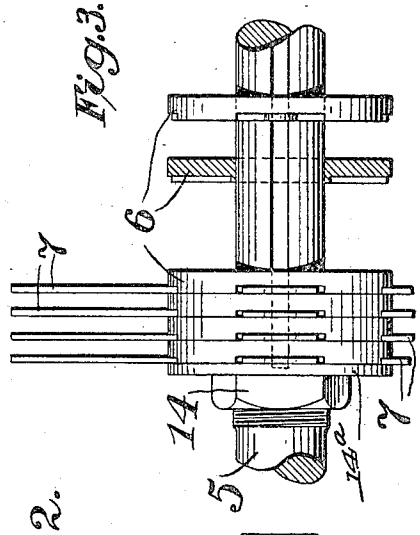


Fig. 3.

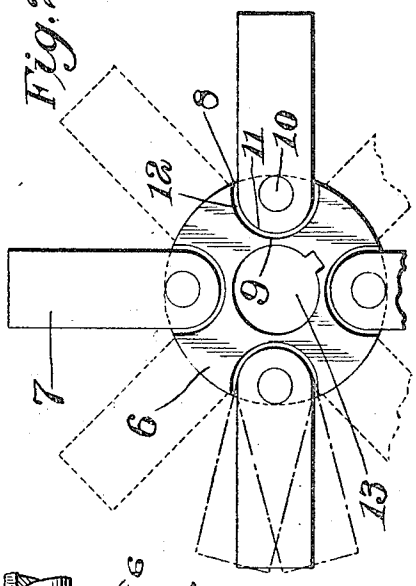


Fig. 2.

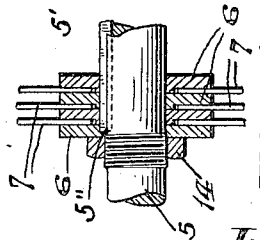


Fig. 4.

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FORREST W. JOHNSON, OF HARTMAN, COLORADO, ASSIGNOR OF ONE-HALF TO FLOYD M. WILSON, OF HARTMAN, COLORADO.

FEED-GRINDER.

1,312,446. Specification of Letters Patent. Patented Aug. 5, 1919.

Application filed March 29, 1917. Serial No. 158,407.

To all whom it may concern:

Be it known that I, FORREST W. JOHNSON, of Hartman, county of Prowers, Colorado, have invented certain new and useful Improvements in Feed-Grinders, of which the following is a specification.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claim.

In the drawings—

Figure 1 shows the lower half of the grinder;

Fig. 2 is a view of one of the disks in elevation with the grinder bars in place thereon;

Fig. 3 is an enlarged view of a pair of disks with the grinder bars in place;

Fig. 4 is a detail sectional view of part of the apparatus.

In these drawings, 1 indicates the frame work of the grinder which is provided with a screen 2, a screen frame 3, and bearings 4 for a shaft 5. On this shaft are mounted the grinder means which is made up of a series of disks 6, carrying radiating arms 7.

In order to provide a simple and inexpensive way of attaching the arms to the disks, I turn out on one side of the disks pockets or recesses 8, these pockets having their bottom walls at 9 on the arc of a circle concentric with the studs 10, which in the cutting out operation are left of the full thickness of the disks and are therefore integral parts of said disks. The recesses are slightly larger than the curved ends 11, of the arms 7, and these ends are formed on the arc of a circle concentric with the cylindrical studs 10. The recesses 8 extend only far enough in toward the center of the disk to receive the curved ends of the arms with a slight clearance space 12 between the wall of the recess and the curved end of the arm, and the central portion of the disk surrounding the opening 13 for the shaft 5 is left uncut. These disks are held on the shaft by a key and turn with the shaft so that the grinding arms are carried around with the shaft and act upon the material to perform their grinding operation thereon. The arms are reversible, each edge being formed like the opposite edge so that when any arm becomes worn on one edge it may be turned over and its other edge utilized. The arms fit the pivot studs 10 closely so that there is no lost motion or play of the arm in its socket or upon its pivot and thus wear of the pivot and of the arm unduly is prevented. By providing the slight clearance between the side edges of the arms and the sides of the pockets receiving them the arms can have slight oscillating movement about their pivots so that in case of striking a hard substance as metal or stone the arms will yield and will not be strained, bent or broken. It will be noticed that it is only necessary to slip the arms on to their pivots and place the carrying disks on the shaft up against the previously placed disks which will thus act as a cover for the disk last placed in position to retain its pivoted arms in their recesses and on their pivot studs. The disks are held on the shaft by a compression nut 14, bearing on the outer face of the end disk and this disk is key seated on the shaft to turn therewith but the disk can have no axial movement or slip on the shaft.

It will be noted that the recesses for receiving the arms are turned out or cut out of only one face of the disk leaving the other face smooth and uncut. This together with the fact that the recesses conform closely to the curved ends of the arms and do not extend all the way to the central shaft opening and therefore do not extend across the entire face of the disk provides a construction of maximum strength.

The disks are held on the shaft with the end disk resting on a collar 15 welded or otherwise secured to the shaft, the compression nut 14 bearing upon the disk at the opposite end of the series from that at which the collar is located.

It will be noted from Fig. 3 that the nut 14 bears against the disk 14^a at the extreme left and that this disk is held from movement both circumferentially and axially because the key which holds the various disks from rotation on the shaft extends only part way through this end disk and provides a shoulder which holds the disks against axial displacement and thus any tendency of the nut 14 to turn and apply additional pressure to the disks will be resisted and thus tendency to springing the shaft is avoided. The key is indicated at 5′ and the shoulder which forms an abutment for the end disk is shown at 5″.

I claim as my invention:—

In combination in apparatus of the class

described, a shaft, a series of disks, each having a series of radial arms, said disks resting against each other, face to face, whereby they are positioned on the shaft, a key extending longitudinally of the shaft, each of the disks having a key-way to receive said key, excepting the end disk which has a key-way extending only part way through the same, leaving a shoulder to prevent the movement of said disk in the direction to press against the adjacent disk and through it to press the other disks together and a nut screw threaded on the shaft and pressing against the end disk, substantially as described.

In testimony whereof I affix my signature.

FORREST W. JOHNSON.

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