No. 891,471. PATENTED JUNE 23, 1908.

E. A. EVANS & D. TILLEY.

PULVERIZER.

APPLICATION FILED AUG. 14, 1906.

Fig. 1.

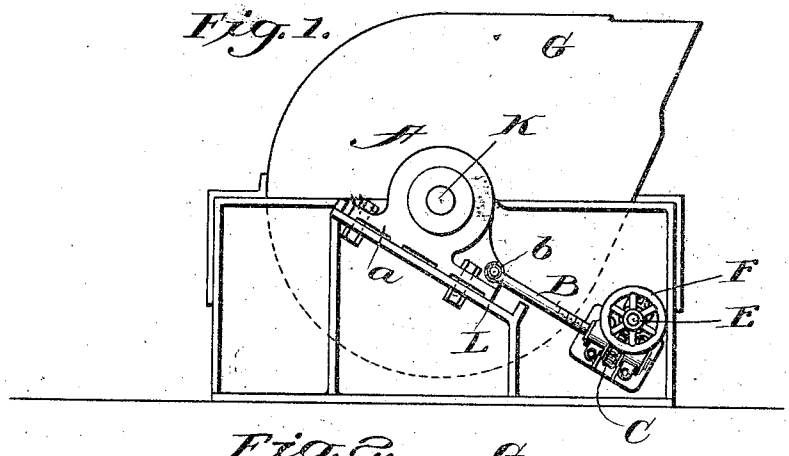
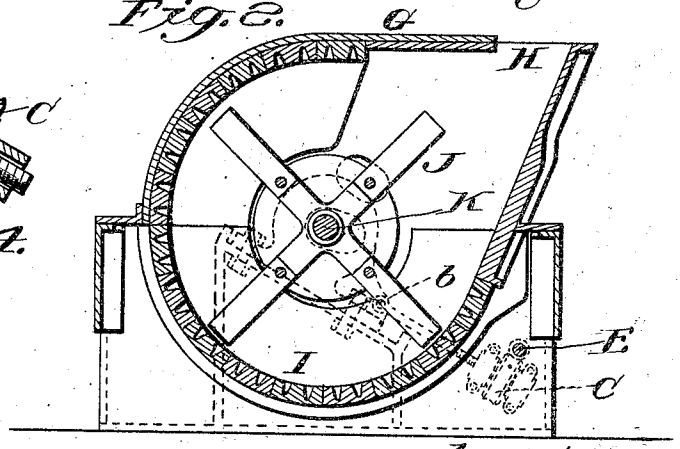


Fig. 2.



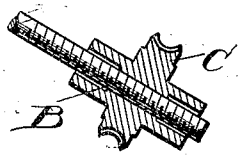
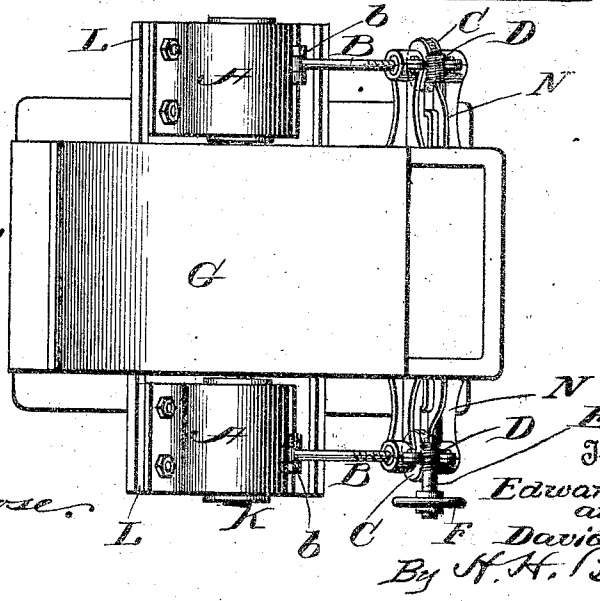


Fig. 4.

Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD A. EVANS AND DAVID TILLEY, OF COLUMBUS, OHIO, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE JEFFREY MANUFACTURING COMPANY, A CORPORATION OF OHIO.

PULVERIZER.

No. 891,473 Specification of Letters Patent. Patented June 23, 1908.

Application filed August 14, 1906. Serial No. 330,614.

To all whom it may concern:

Be it known that we, EDWARD A. EVANS and DAVID TILLEY, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Pulverizers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in pulverizers; machines of the class in which material of any of numerous sorts is reduced more or less finely by means of rapidly rotating hammer bars which are caused to repeatedly impinge upon the material as it passes through the machine.

The present invention relates more particularly to improved devices for effecting the adjustment of the hammer bars and the shaft which carries them. These hammers frequently require adjustment of the sort contemplated, sometimes because of wear and sometimes because of variations in the materials subjected to their action.

The object is to maintain for the hammers and their shaft a strong support, and at the same time provide for them powerful means for moving, holding and locking them in one position or another, and which shall, in accomplishing the adjustment, act uniformly upon both ends of the shaft and hammer system.

Figure 1 is a side elevation of a pulverizing apparatus embodying our improvements. Fig. 2 is a cross section on the line x, x of Fig. 3. Fig. 3 is a plan view. Fig. 4 is a detailed sectional view of parts of the adjusting mechanism.

In the drawings a pulverizer is shown, but with respect to many of the details it can be of any of several well known forms. As illustrated, it comprises a casing or box G having a feed-way and hopper at H, a set of grate bars I, and a system of hammers J. The latter are secured to and rotated by the shaft K, which extends through the casing or housing G from side to side. This shaft is mounted in strong boxes or bearings A, one at each end. Each bearing box is formed with a base plate a which rests upon a table L. There is one of these supporting tables at each side of the machine, each being situated on lines inclined to the horizon as shown. The shaft K and the hammers of the system secured thereto, together with the boxes, are held vertically with sufficient firmness by these inclined tables L.

As above stated, it is frequently desirable to vary the paths through which the outer ends of the hammers J travel in relation to the horizontal planes of the grate bars I; in some cases it being advantageous to have the hammers travel relatively close to the bars, and in others to have them travel at a greater distance therefrom.

To effect the adjustment of the rotary parts various plans have been heretofore followed or proposed. Experience with the earlier devices has led us to designing the mechanism illustrated in the drawings, in order that several disadvantages incident to the earlier apparatus may be overcome.

E indicates a horizontal shaft mounted transversely across the housing. It is supported by brackets or standards M secured to the outer faces of the housing walls.

B, B indicate rods situated at right angles to the shaft E, there being one of these rods on each side of the machine. Each rod B is formed with ears at its forward end, which are connected by a pivot b to one of the bearing boxes A. Each rod is screw threaded for a greater or less part of its length, and to it is fitted an internally threaded worm wheel C. The lower or rear end of each rod B is supported in a bearing bracket N projecting outward from the side face of the housing.

The worm wheel C lies under the shaft E, and they are connected by means of a worm D keyed to the shaft E and fitting the wheel. There being one of these worms and its companion worm wheel on each side of the machine, connected to one of the rods B, it will be seen that powerful forces can be exerted simultaneously upon the bearing boxes A, A, and the latter can be uniformly moved upward or downward along their supporting tables L.

F is a hand wheel secured to the adjusting shaft E. By means of it, together with the devices above described, the operator can at any moment instantly adjust the hammers, even when they are in rapid rotation, to any position desired.

The worms and worm wheels serve not only to effect the adjustment of the bearing boxes from one position to another, but also act as locks to hold the shaft and hammers in any position to which they may be moved.

A duplex adjustment and self-locking mechanism of this sort acting simultaneously and uniformly upon both sides of the machine, is greatly superior to the devices that have been heretofore used, by which provision was made for the adjusting of each end of the hammer shaft independently of the other, requiring two adjusting operations, and not giving assurance of absolute uniformity in the positions of the two boxes at the ends of the hammer shaft, respectively.

What we claim is:—

In a pulverizing mechanism of the class described, the combination of the housing, the bottom grate or support for the material, the shaft, the hammers secured to the shaft, the bearing boxes for the hammer shaft, the inclined supports for the boxes, the adjusting shaft mounted transversely of the housing, the worms on the adjusting shaft one at either side of the housing, the worm wheels meshing with said worms, and the links secured at one end to the bearing boxes and screw-threaded at the opposite end to engage corresponding screw-threads carried by the worm wheels, substantially as set forth.

In testimony whereof we affix our signatures, in presence of two witnesses.

EDWARD A. EVANS.
DAVID TILLEY.

Witnesses:
H. S. RANSOM,
F. H. CHURCH.