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LA MONT A. McDOWELL

1,909,623

HAMMER MILL CYLINDER

Filed Sept. 23, 1931

Fig. 1.

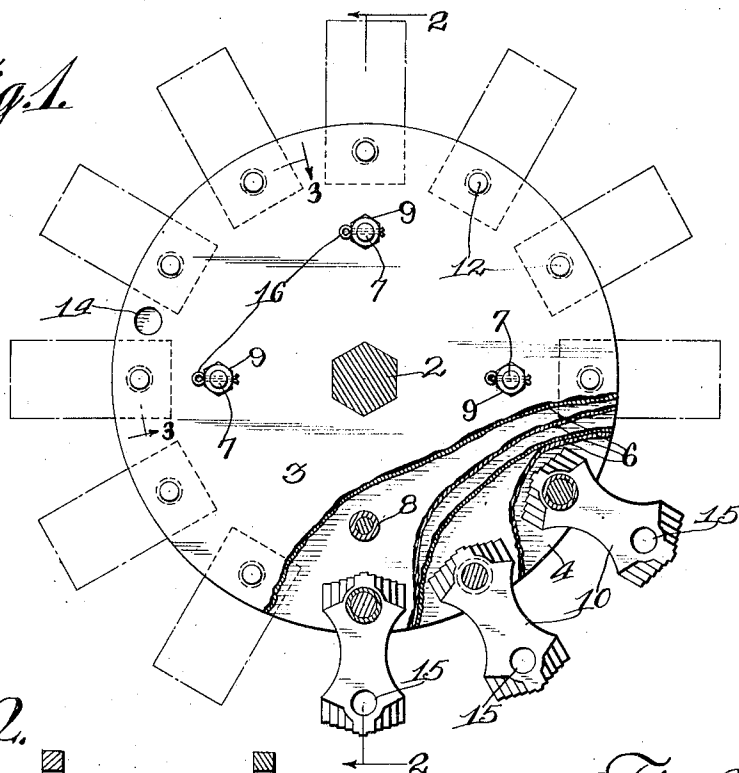


Fig. 2.

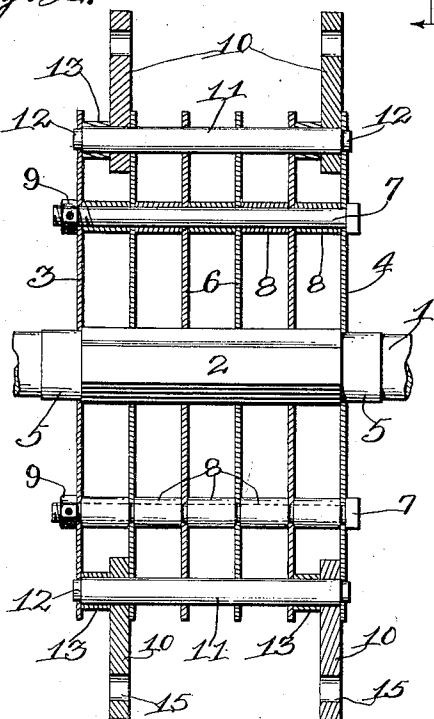
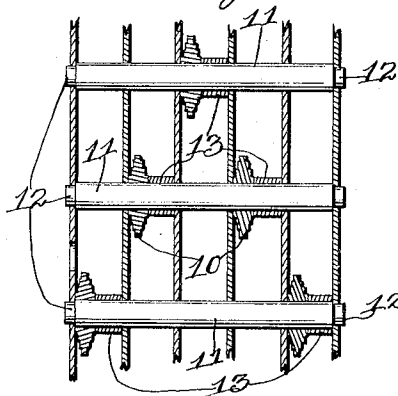


Fig. 3.



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UNITED STATES PATENT OFFICE

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HAMMER MILL CYLINDER

Application filed September 23, 1931. Serial No. 564,535.

This invention relates to improvements in hammer mill cylinders.

One of the objects of the present invention is the provision of an improved hammer mill cylinder assembly preferably of that type wherein the hammers are of the reversible type and the construction of the cylinder is such as to permit these hammers to be readily reversed without taking the entire cylinder construction apart.

Another object of the present invention is the provision of a hammer mill cylinder which includes a plurality of discs, securely bolted together with spacing sleeves mounted upon the connecting bolts to retain the discs in equal spaced relation and includes hammer pins removably positioned in the intermediate discs for supporting hammers thereon, together with means whereby the retaining bolts can be loosened and one of the outside discs rotated to present each one of the hammer pins in alignment in the opening in this disc whereby the hammer pins can be removed from the discs in reversing the position of the hammers thereon.

A further object of the present invention is the provision of an improved type of hammer mill cylinder which includes a plurality of discs arranged in equal spaced relation with the outermost discs rotatably mounted upon a shaft, while the intermediate discs are engaged with a polygonal portion on the shaft for rotation therewith, whereby when the securing pins or bolts are removed from the discs, the said disc will be retained in their proper relative positions.

With the above and other objects in view, the invention consists in the novel features of construction, the combination and arrangement of parts hereinafter more fully set forth, pointed out in the claims and shown in the accompanying drawing wherein:

Figure 1 is a side elevation of a hammer mill cylinder constructed in accordance with my invention with parts broken away and illustrated in cross section;

Figure 2 is a sectional view on the line 2—2 of Figure 1; and,

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Referring more particularly to the drawing, 1 indicates the drive shaft provided with a polygonal portion 2. In the construction of the hammer mill cylinder, I provide two outside discs 3 and 4 which are mounted upon bearing portions 5 on the shaft 1, while the intermediate discs indicated at 6 are provided with polygonal central openings to receive the polygonal portion 2 of the drive shaft, so that the entire cylinder assembly will rotate with the drive shaft.

All of the discs 3, 4, and 6 are connected by means of clamping bolts 7 which are arranged in circumferential spaced relation around the shaft 1 and which are passed through suitable openings in the discs with spacing sleeves 8 mounted on the bolts between the discs, while a nut 9 is threaded on one end of each of the bolts for retaining them in operative position.

The hammers 10 are mounted upon suitable pins 11 which pass through openings in the intermediate discs 6 and have reduced trunnions 12 which fit within suitable openings in the outside discs 3 and 4. If the hammers 10 are not of a width equal to the space between the discs, suitable collars 13 can be mounted on the pins 11 and positioned between the hammers and the adjacent disc for securely retaining the hammers in their respective positions when the bolts 7 are clamped onto the outside discs 3 and 4, as shown in Figure 2.

The disc 3 is provided adjacent its periphery with an opening 14 which is preferably of circumferential alignment with the openings through which the trunnions 12 project.

The hammers 10, as illustrated in Figures 1 and 2, are of the four-face type, with an opening 15 arranged adjacent each end thereof to be engaged by any one of the pins 11 for retaining the unused end of the hammer clamped between the discs 3, 4 and 6. When it is desired to remove any one or any set of hammers mounted on each individual pin 11, the nuts 9 are removed from the bolts 7 and the bolts have their threaded ends with-

drawn from the disc 3 to permit rotation of this disc. The disc 3 is then moved laterally from the adjacent disc 6 until the trunnions at one end of the pins 11 are withdrawn from the disc 3. The disc 3 is then rotated until the opening 14 aligns with the first one of the pins 11. The pin 11 can then be removed, releasing the hammers 10 which may be mounted thereon, the relative positions of the hammers can then be reversed and the pin 11 replaced to secure the hammers in place between the discs in their reversed positions.

In testimony that I claim the foregoing I have hereunto set my hand at Racine, in the county of Racine and State of Wisconsin.

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The above operation can be carried out with all of the pins 11 and the respective hammers mounted thereon until all of the hammers of the cylinder have been reversed in position. The bolts 7 can then have their threaded ends replaced in their respective openings in the disc 3 and the nuts again threaded onto the bolts. In order to retain the nuts 9 in position on the bolts, suitable cotter pins 16 are passed through the nuts and through the bolts, as shown in Figure 1.

It will be apparent from the foregoing that I have provided an improved hammer mill cylinder assembly, wherein hammers of the reversible type are securely held in position in the cylinder and the hammers may be quickly and easily reversed through the movement of the bolts 7 and the removing and replacing of the pins 11. In view of the fact that the majority of the discs are mounted on the polygonal section of the drive shaft 1, it is believed that applicant has provided novel means for providing a hammer mill cylinder, as well as assembling a cylinder of this type wherein the hammers can be quickly and readily reversed as to their position relative to the cylinders.

While I have shown and described the preferred embodiment of my invention, it will be apparent from the foregoing that slight changes may be made in the construction when putting the invention into practice without departing from the spirit of the same or the scope of the appended claims.

I claim:

1. A device of the class described including a driven shaft, a plurality of spaced supporting plates carried thereby, said plates having circumferentially arranged openings adjacent their peripheries with the openings in the outer plates of smaller diameter than the other openings, pins arranged in the larger openings having reduced trunnions to be fitted in the smaller openings, one of said outer plates having an opening adjacent its periphery adapted to be aligned with any of the openings in the other plates, whereby the pins may be removed, and bolts for binding the plates together in spaced relation.

2. A hammer cylinder comprising a shaft, a gang of discs secured thereto having sets of aligned apertures, a pin removing aperture

in one of the outer discs, the outer disc aperture of the set being restricted relative to the others of said set, pins extending through the aforesaid set of apertures having shouldered ends seated in the outer disc apertures, reversible hammer heads mounted upon the pins, and bolts for securing the gang of discs together whereby the hammer head pins are confined.

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