

No. 646,278.

Patented Mar. 27, 1900.

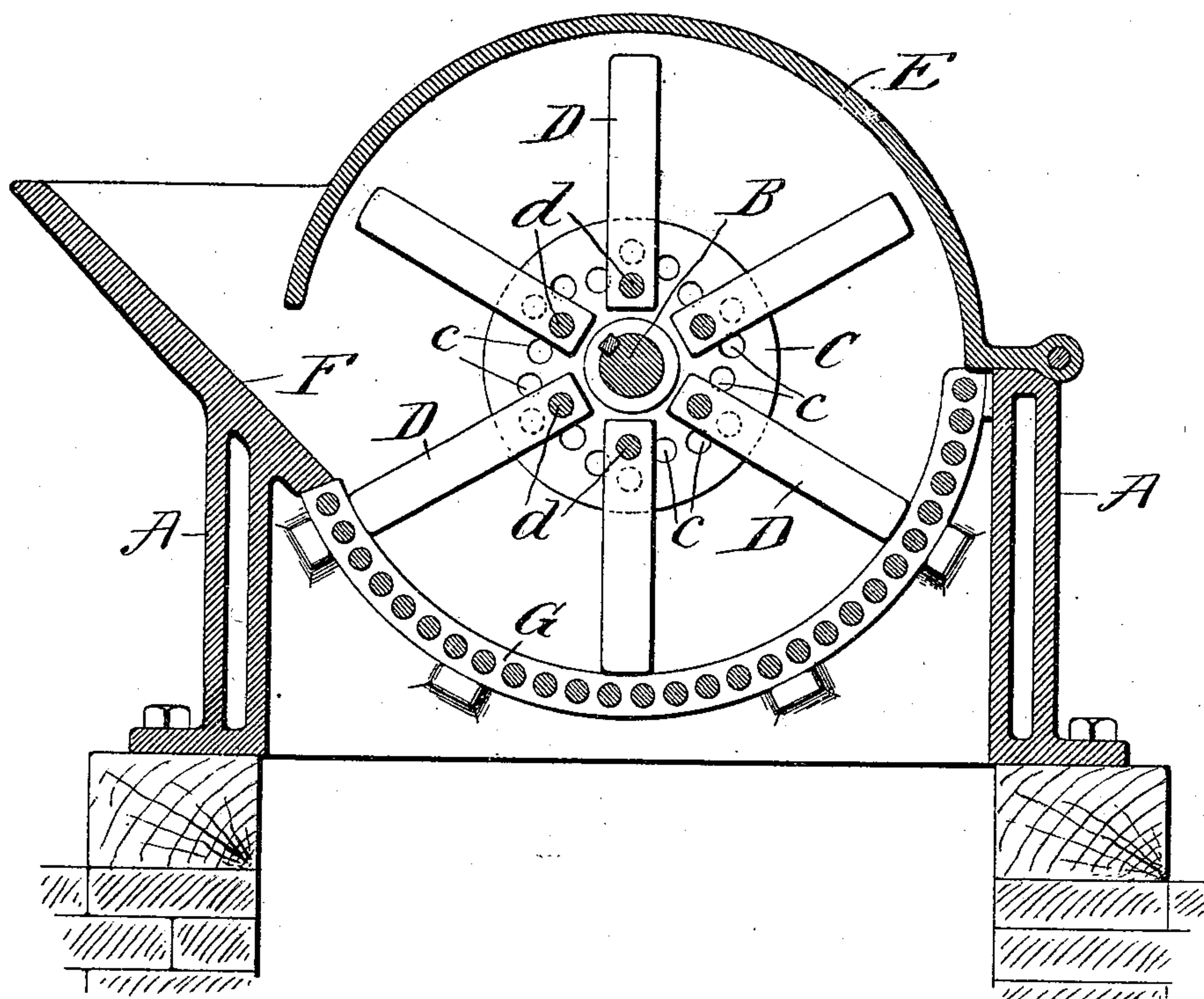
E. H. FRICKEY.

HAMMER SUPPORT FOR CRUSHERS AND PULVERIZERS.

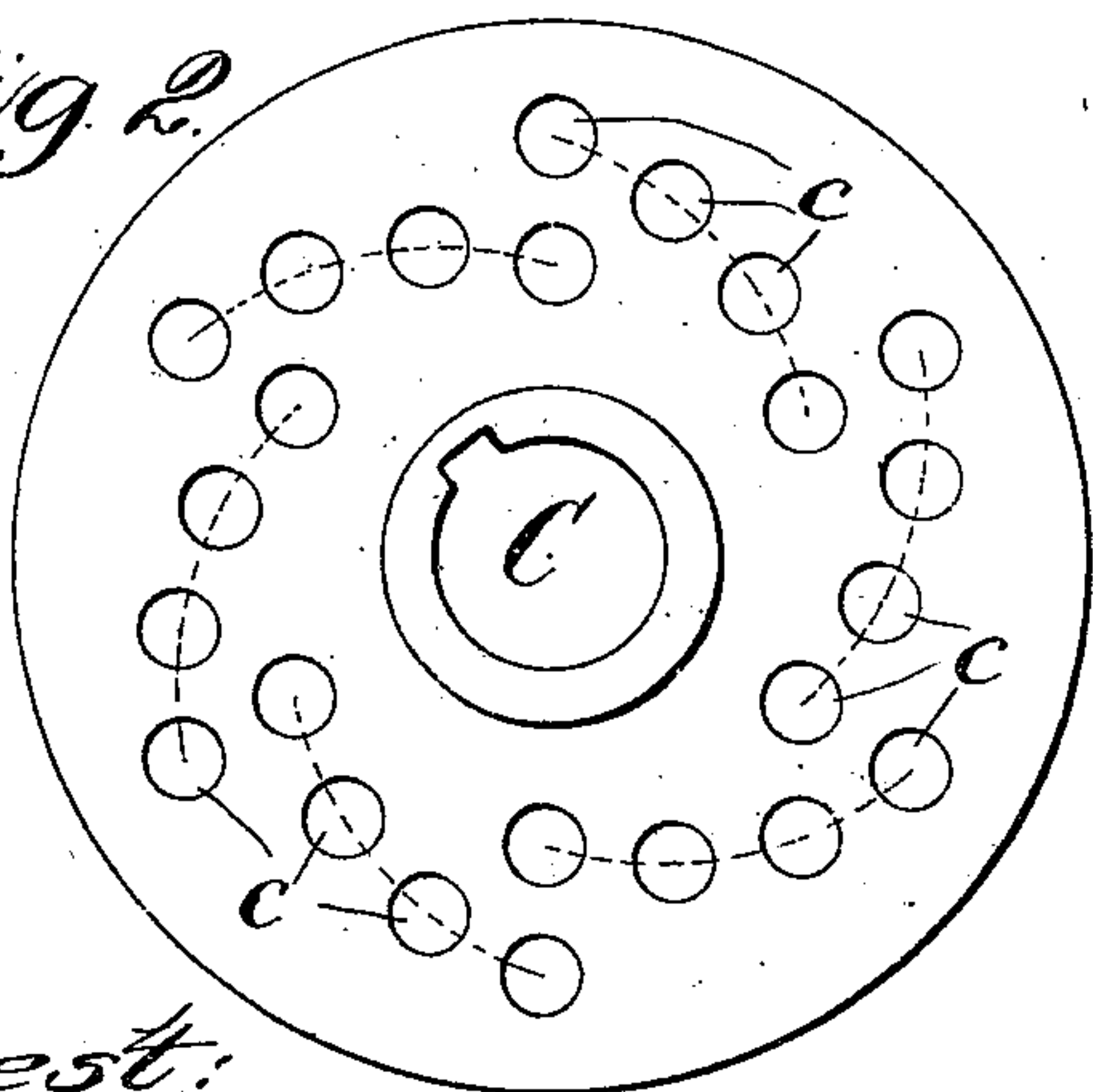
(Application filed Sept. 2, 1898.)

(No Model.)

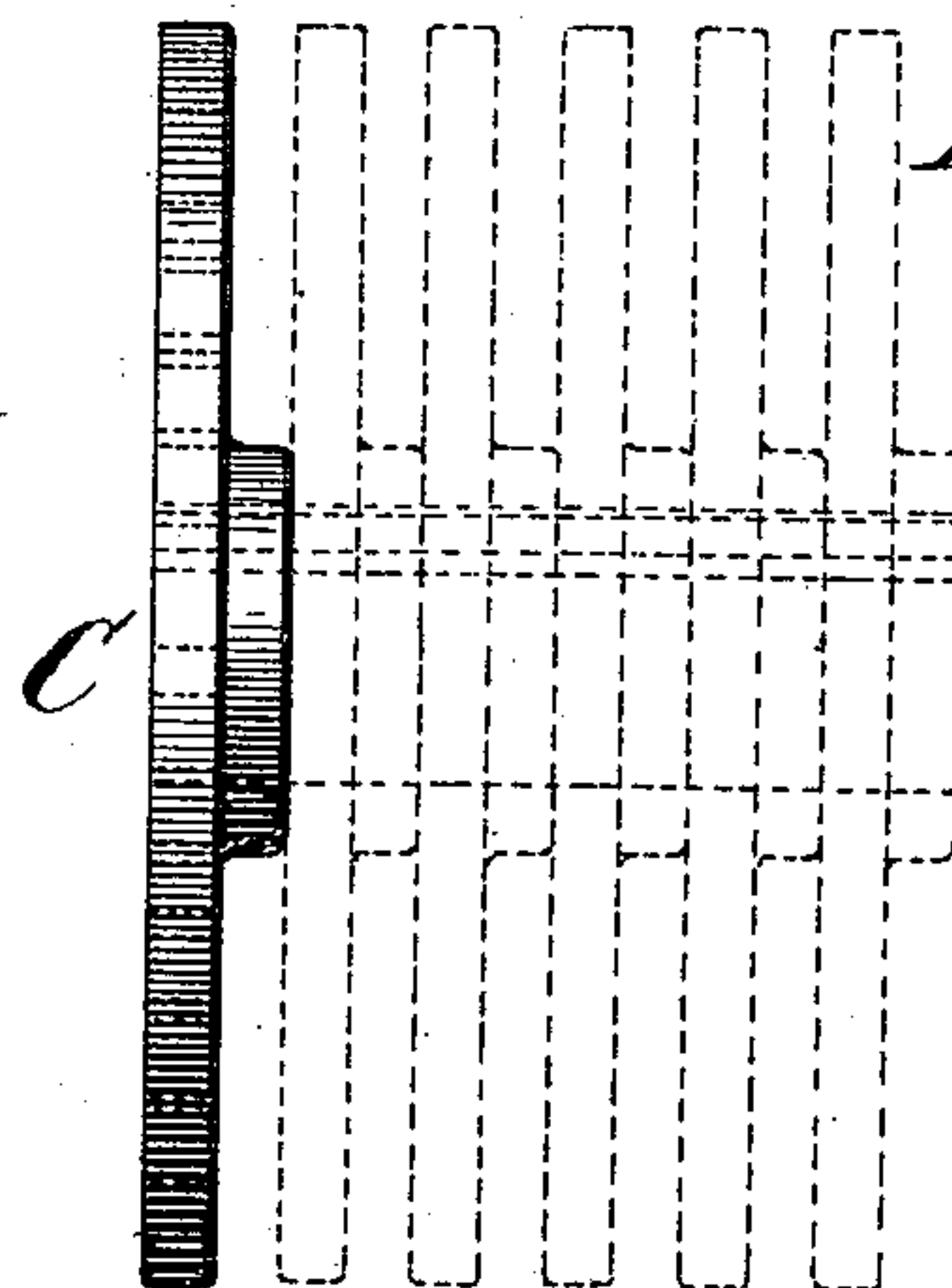
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Attest:

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# UNITED STATES PATENT OFFICE.

EDWARD H. FRICKEY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE WILLIAMS PATENT CRUSHER AND PULVERIZER COMPANY, OF SAME PLACE.

## HAMMER-SUPPORT-FOR CRUSHERS AND PULVERIZERS.

SPECIFICATION forming part of Letters Patent No. 646,278, dated March 27, 1900.

Application filed September 2, 1898. Serial No. 690,068. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD H. FRICKEY, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Hammer-Supports for Crushers and Pulverizers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view through a machine transversely to the shaft. Fig. 2 is a detailed face view of the hammer-disk, and Fig. 3 is a side elevational view of the same.

This invention relates to a new and useful improvement in hammer-supports for crushers and pulverizers of that type in which the hammers are pivotally mounted on disks which revolve in unison, causing the hammers to assume a radial position in motion, due to centrifugal force. The material to be operated upon is fed into the machine and is primarily crushed by the hammers on a dead-plate, after which the hammers carry it rearwardly over a grinding-surface (shown in this instance as a concentric cage) composed of a series of parallel transversely-arranged bars, and when the material is reduced sufficiently fine it falls between the bars through the bottom of the machine, whence it may be carried to any desirable point.

In operating on hard substances the outer ends of the hammer's wear—that is, the hammers become short from constant usage—and it is necessary under such conditions to introduce new hammers or provide means to extend the worn shortened ones to make them efficient.

This present invention consists in the provision of such means, its distinguishing feature being series of openings in the disk plates of gradually-increasing radii, whereby when the hammer is worn and is no longer efficient in its shortened condition its pivot is removed and inserted in an opening located at a greater distance from the axis of

revolution. These openings may be so arranged as to accomplish adjustments of the striking-points of the hammers to any degree of fineness.

In the drawings, A indicates the framing of the machine; B, the shaft; C, the disks or hammer-supports; D, the hammers; *d*, the pivots, preferably in the form of through-bolts, upon which the hammers are mounted; E, the cover of the machine; F, the dead-plate, and G the grinding-surface, in the form of a concentric cage, although with respect to this grinding-surface other forms could be employed.

Disks C are keyed or otherwise secured to shaft B and are provided with series of openings *c*, which gradually increase in distance from the center of the shaft in eccentric lines. This is the preferred arrangement of openings *c*, as it provides sufficient metal for strength around them, yet increasing the radial distance by small degrees as the pivots are adjusted successively in the holes. Other arrangements of the openings may be employed, however.

When the machine is first assembled, the hammers are pivoted in the set of holes nearest the shaft, and as their points wear their pivot-point is changed to the next opening, and so on as the wear increases, each adjustment of the pivot-points acting, in effect, to outwardly extend the striking-points of said hammers. The proper distance between the striking-points of the hammers and the dead-plate and cage productive of the best results is thus maintained.

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

1. The combination with a rotary shaft, of hammer-supports arranged thereon, said supports having series of openings of gradually-increasing distances from the axis, hammers, and pivots for said hammers, which pivots coöperate with, or are adapted to fit in different openings in a series in said supports, to adjust the striking-points of said hammers, substantially as described.

2. In a crusher, the combination with a ro-



tary shaft, a set of pivoted hammers and a dead-plate, of a hammer-support mounted on the shaft, consisting of a disk-plate having a series of holes arranged in a line of gradually-increasing distances from the axis, whereby the pivot-points of said hammers are adjustably located, substantially as described.

3. The combination with the casing, of a shaft, supports having series of openings of gradually-increasing radii, pivoted hammers whose pivot-points are adjustable in said series of openings, a grinding-surface, and an inclined dead-plate upon which the material is primarily crushed by the hammers, said hammers carrying the material back and reducing it on the grinding-surface, substantially as described.

4. A crusher, comprising a casing, a rotary shaft, a hammer-support on said shaft having separate fixed points of attachment for the hammers, which points of attachment are located at varying distances from the axis of rotation of said support, and hammers removably pivoted to said support, whereby the point of attachment of each hammer to said

support is adjustable toward or from the axis of rotation of said support; substantially as described.

5. The combination with a hammer-support C, having two or more fixed points of attachment located at varying distances from the axis of rotation of said support, and a hammer removably pivoted to said support at one of said points of attachment; substantially as described.

6. A crusher comprising a casing, a rotary shaft, a hammer-support on said shaft, having separate points of attachment for the hammers and hammers adjustably pivoted separately and independently to said hammer-support to vary the reach of said hammers, substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 30th day of August, 1898.

EDWARD H. FRICKEY.

Witnesses:

F. R. CORNWALL,  
HUGH K. WAGNER.