

# WHELPLEY & STORER.

Ore Mill.

No. 49,187.

Patented Aug. 1, 1865.

Fig. 6.

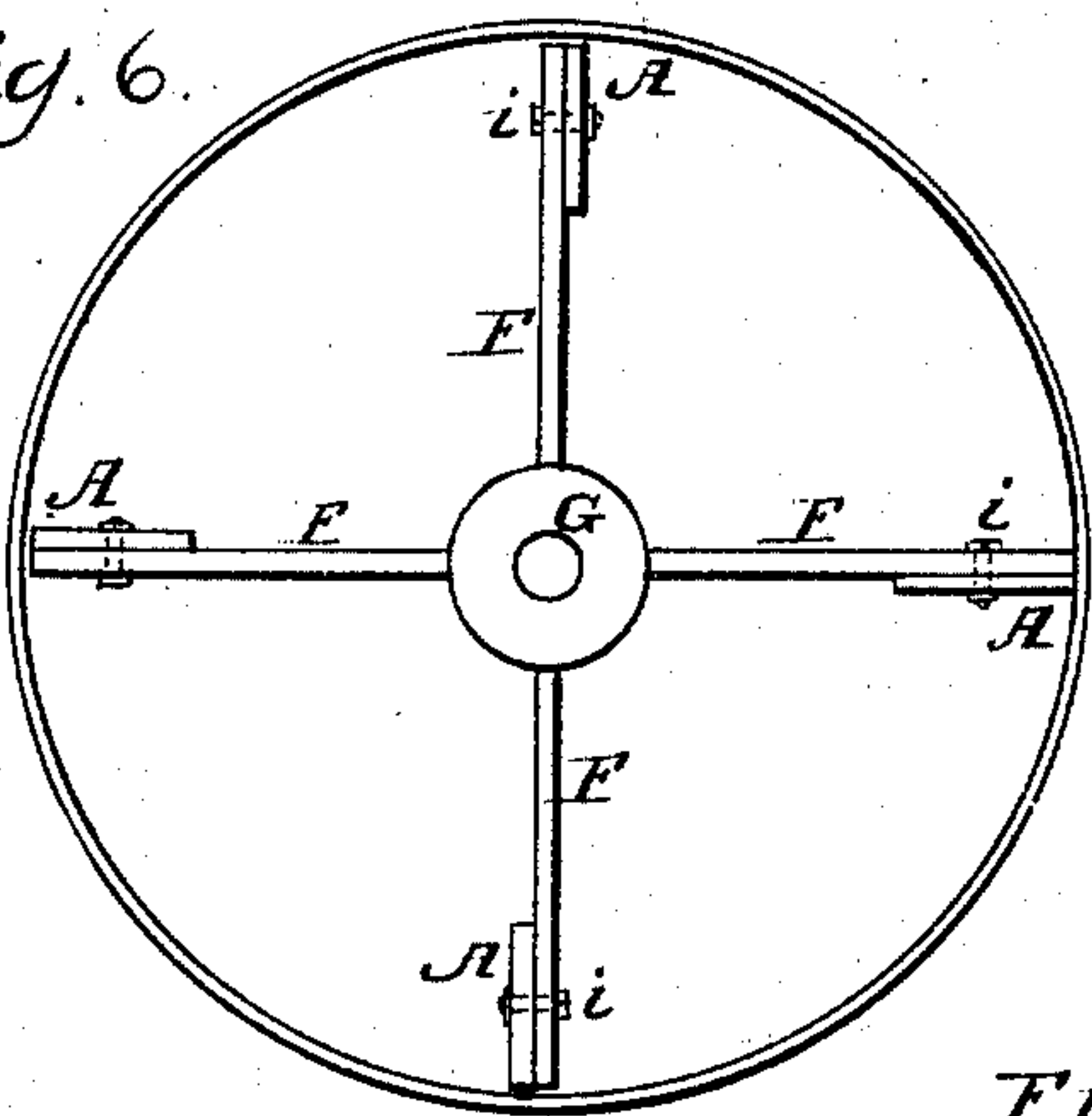


Fig. 7.

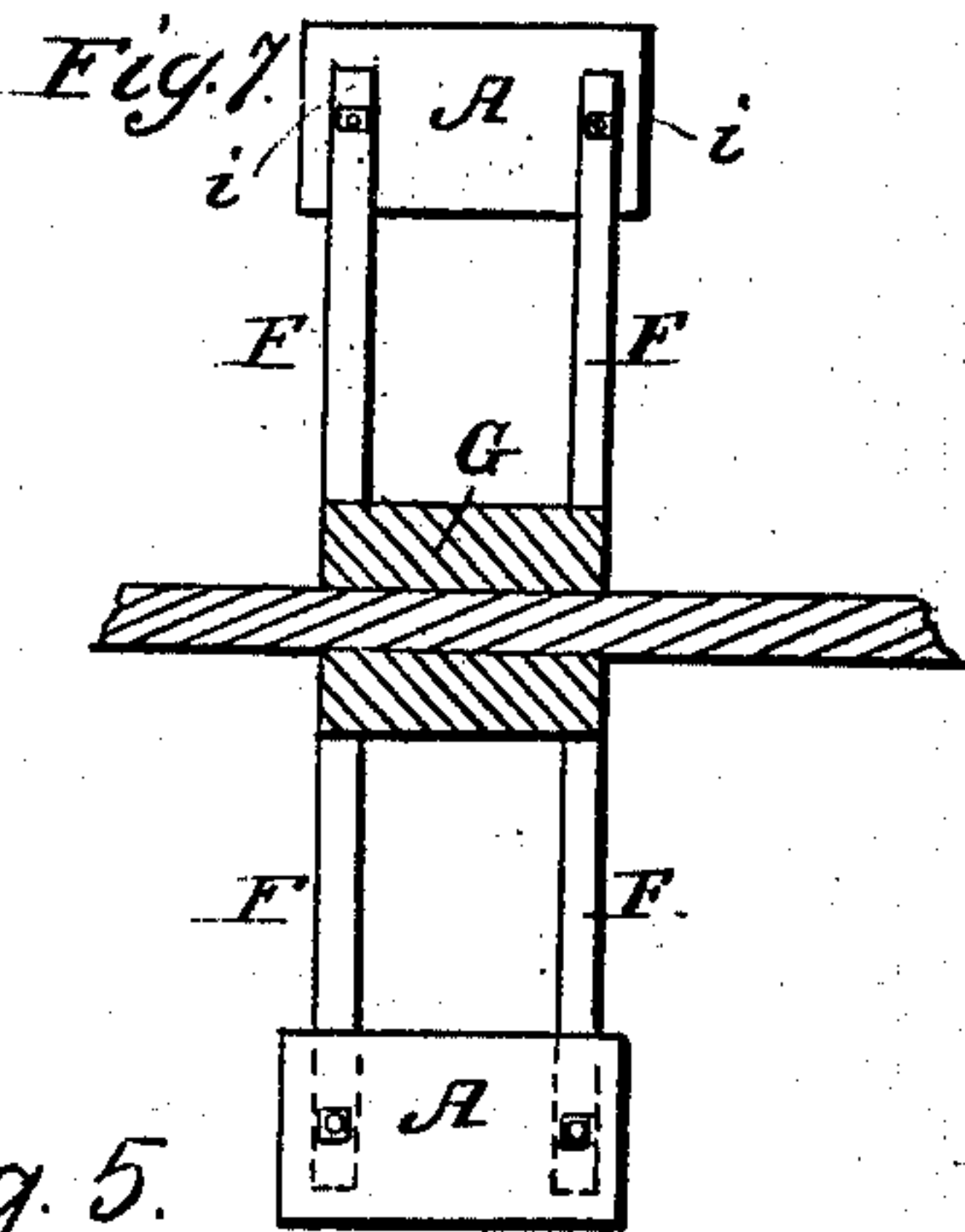


Fig. 5.

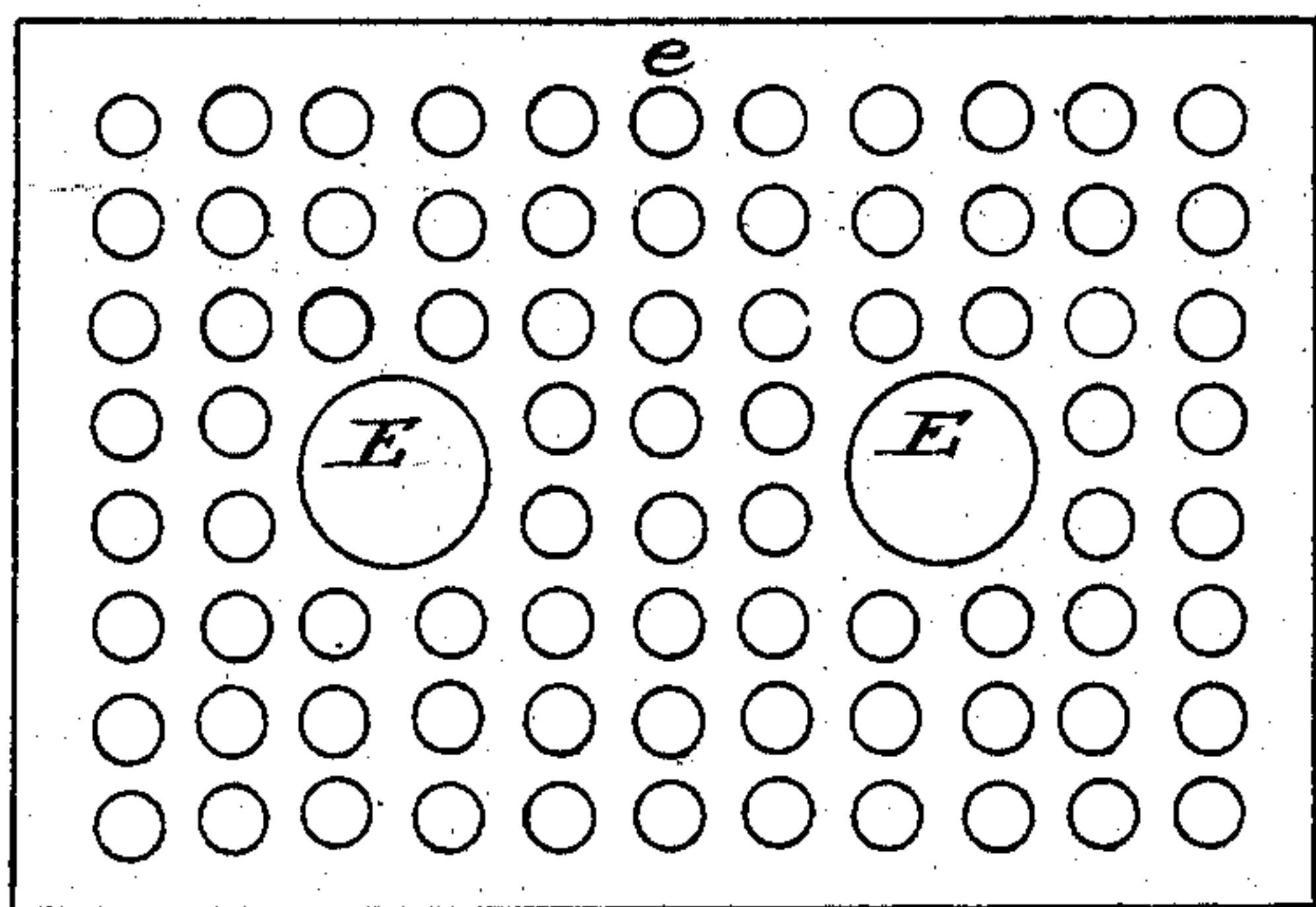
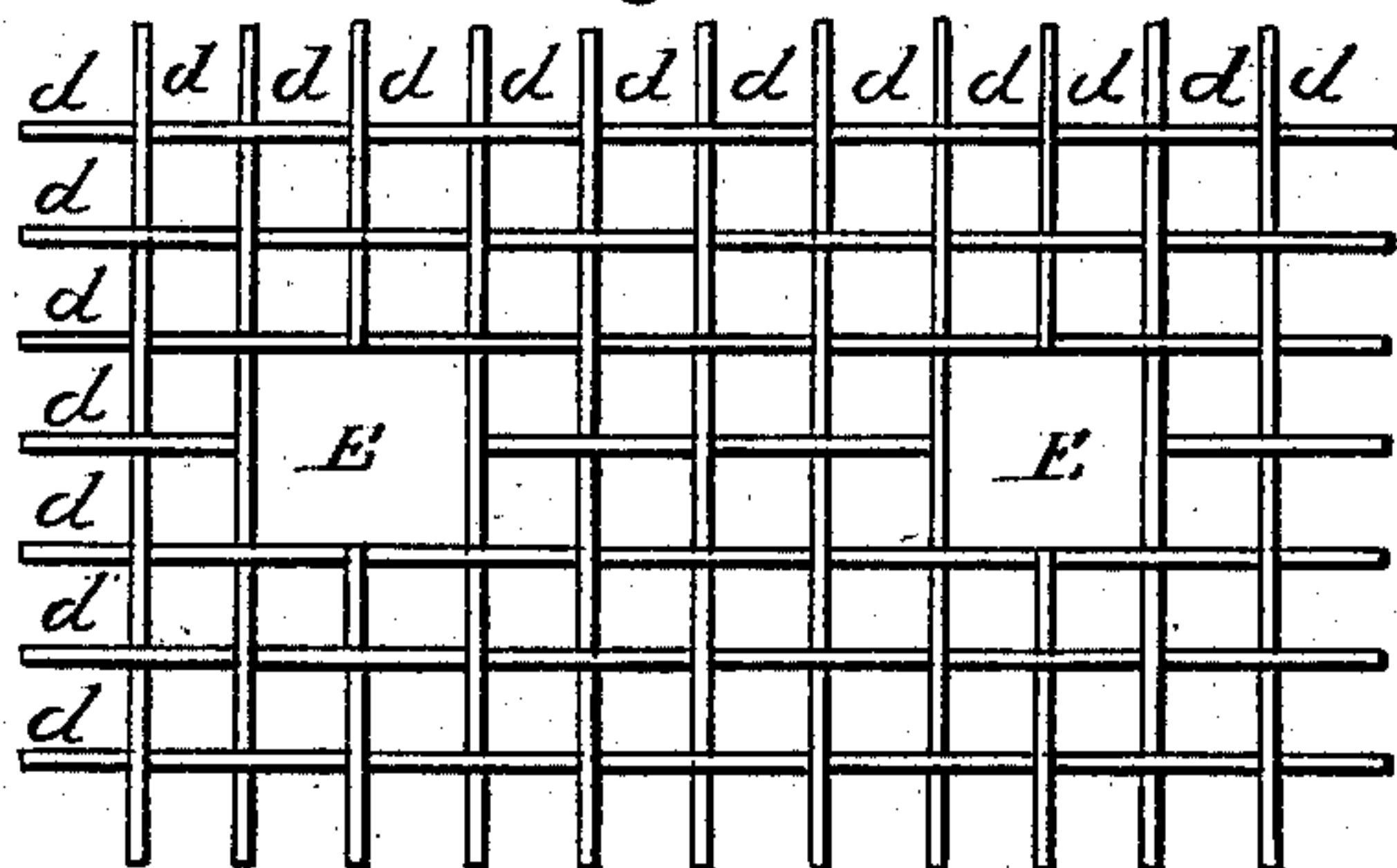


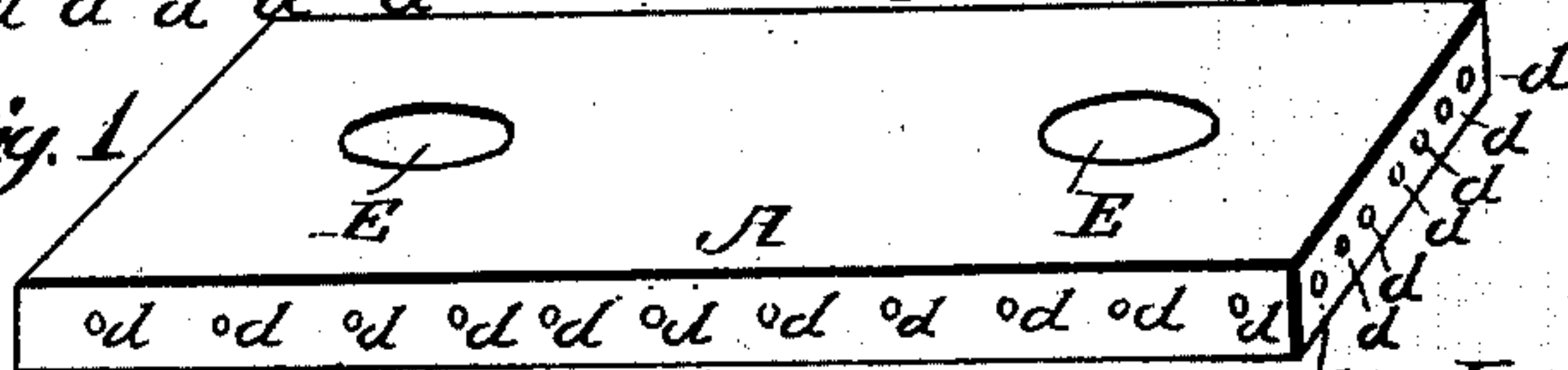
Fig. 3.



Fig. 2.



Fig. 1.



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# UNITED STATES PATENT OFFICE.

J. D. WHELPLEY AND J. J. STORER, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN STAMPING AND CRUSHING MILLS.

Specification forming part of Letters Patent No. 49,187, dated August 1, 1865.

*To all whom it may concern:*

Be it known that we, J. D. WHELPLEY and J. J. STORER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Friction-Surfaces of Grinding and Crushing Mills; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of one of our grinding or crushing mill beaters or paddles enlarged, and Figs. 2 and 3 are transverse sections of the same. Fig. 4 is a plan of a perforated wrought-iron plate; and Fig. 5 is a similar view of a piece of interlaced wires or rods, to be embedded in the chilled cast-iron. Fig. 6 is a side elevation (the end being removed) of a pulverizing, grinding, or crushing mill with our beaters or paddles A attached to radial arms or disks F F, revolving on an axle, G; and Fig. 7 is a front elevation representing two of our beaters or paddles attached, as shown in Fig. 6, to said arms or disks.

Like parts are indicated by the same letters in all the drawings.

Our present invention relates to that class of grinding, crushing, or pulverizing mills in which the comminution is performed by means of rotating beaters or paddles attached to or between radial arms or disks revolving within a suitable case, H, as in the patent granted to us November 8, 1865. These beaters or paddles have hitherto been constructed either of hardened steel or common or chilled cast-iron, the practical objection to which beaters or paddles has been, when made of hardened steel, their great expense; when made of common cast-iron, their softness and frangibility; and when made of chilled cast-iron alone, their excessive brittleness and liability to fly to pieces, thereby badly injuring, rupturing, or spoiling the mill.

The nature of our improvement therefore consists in the application to a mill of the above description of beaters or paddles of chilled cast-iron, with which, while in a molten state, is incorporated wrought-iron or other suitable malleable metal, consisting either of perforated plates or interlaced rods or wires,

as hereinafter described, whereby the said beaters or paddles are rendered sufficiently tough and hard to resist the required concussion and attrition to which they are exposed.

To enable others skilled in the art to make and use our improvement, we will now proceed to describe the construction of the beater or paddle and the method of attaching the same to the radial arms.

In an ordinary mold of the requisite form, of damp sand or metal, such as is commonly used for making chilled cast-iron, we place a plate of perforated wrought-iron, *e*, or interlaced rods or wires *d*, suspending it or them centrally in the mold, by causing its or their ends or sides to enter recesses in the same, or in any other obvious manner. The wrought-iron being thus suspended or fixed in the mold or "chill-box," the molten cast-iron is poured in in the usual manner, completely surrounding the wrought-iron and becoming incorporated with it, as represented in Figs. 1, 2, and 3. By this means it is obvious that the surface of the cast-iron and that portion which comes in contact with the wrought-iron *d* or *e* will be chilled to the requisite hardness, while at the same time the perforated or interlaced wrought-iron, firmly embedded in the cast-iron, will give the latter the requisite toughness to withstand concussion.

The plate A, Fig. 1, is intended for one of the beaters or paddles of the above-described mill, and is attached to the radial arms or disks F F by means of bolts *i* passed through the holes E E formed in the casting by means of cores corresponding to holes E E, being previously made in the wrought-iron, as represented in Figs. 4 and 5.

We do not confine ourselves to perforations of any particular size or shape, nor to any particular arrangement of wrought metallic wires, rods, or bars, as these may be obviously varied at pleasure, as circumstances may require.

Beaters or paddles thus constructed possess, together with the requisite toughness, the usual hardness of common chilled cast-iron without its brittleness and liability to fly to pieces, and they are for many purposes equal to hardened steel, or even superior to it, while the actual cost of producing them is comparatively small.



Having thus described the nature and operation of our improvement, what we claim as new, and desire to secure by Letters Patent, is—

In combination with the radial arms or disks of a grinding, crushing, or pulverizing mill, the employment of a plate, paddle, or beater, A, constructed of chilled cast-iron incorpo-

rated in casting with wrought-iron or other suitable malleable metal, substantially as set forth, and for the purpose described.

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