(No Model.) 2 Sheets—Sheet 1.

W. L. DAWSON.

CENTRIFUGAL ORE CRUSHER AND PULVERIZER.

247,749. Patented Oct. 4, 1881.

Fig. 1.

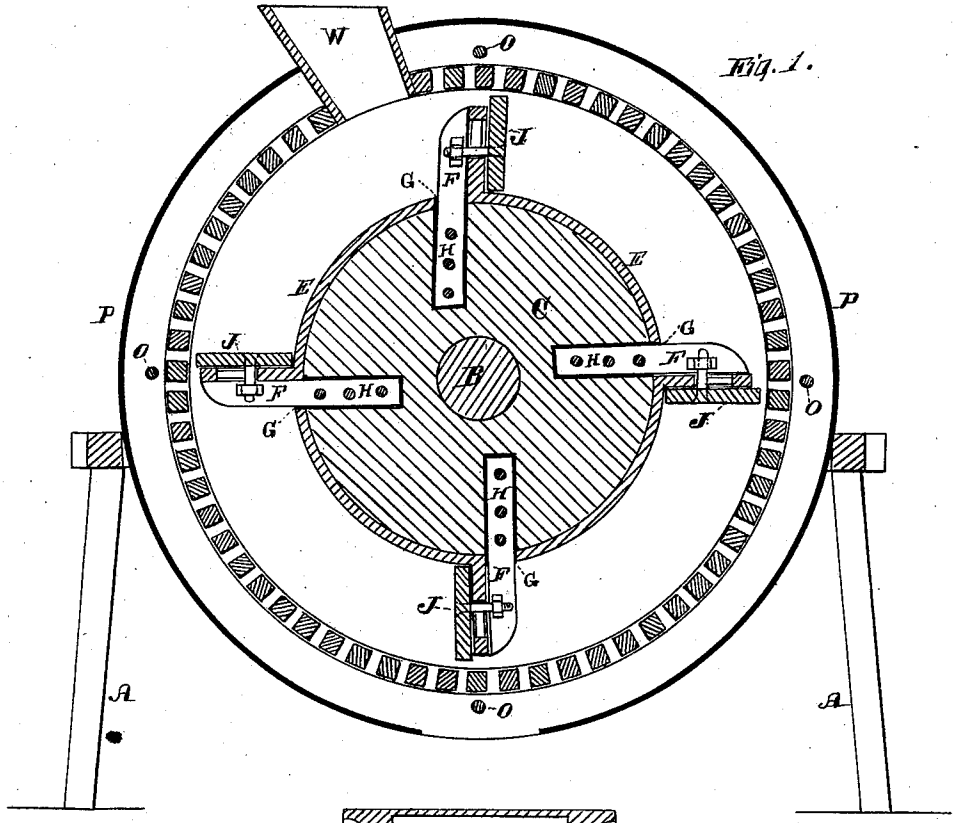
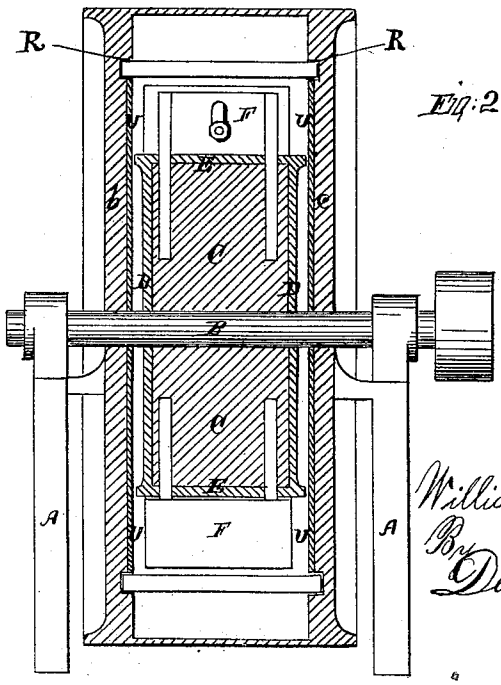


Fig. 2



Witnesses

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Frank A. Brooks

Inventor

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By Dewey & Co.

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N. PETERS. Photo-Lithographer, Washington, D. C.

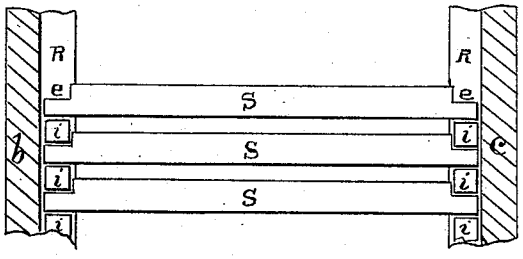
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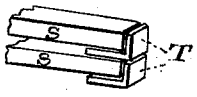
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Fig. 3.





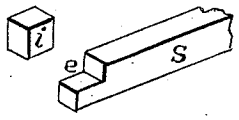


Fig. 4.

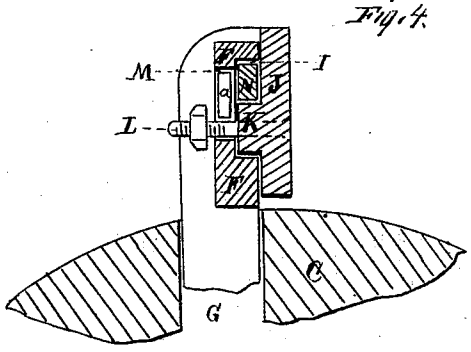


Fig. 5.

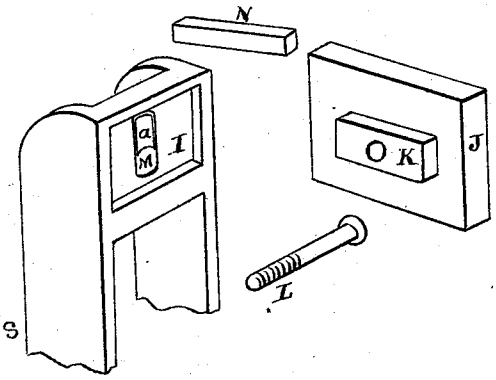
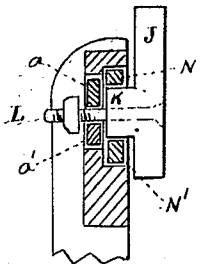


Fig. 6



Witnesses

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Frank A. Brooks

Inventor

William L. Dawson

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Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM L. DAWSON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO ISAAC STEAD, OF SAME PLACE.

CENTRIFUGAL ORE CRUSHER AND PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 247,749, dated October 4, 1881.

Application filed November 29, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. DAWSON, of the city and county of San Francisco, State of California, have invented a Rotary Pulverizer; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in that class of crushers or pulverizers in which a series of beaters are secured to a central revolving shaft, and are inclosed within a stationary case provided with an opening or hopper, into which the ore or other material to be pulverized is fed, so that it will be crushed by the rapidly-revolving beaters and allowed to escape through suitable screens.

My invention consists in certain details of construction, as hereinafter described, and specifically pointed out in the claims.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a longitudinal section of my ore-crusher. Fig. 2 is a transverse section. Figs. 3, 4, 5, and 6 are details of construction.

Let A represent the stand of my crusher; B, the axle or central shaft, journaled upon the stand, as shown, and revolved in any appropriate manner. Fitting around and attached to the central shaft is the drum C. This drum has its body made of wood, the sides of which are protected by sheet-iron plates D, and the circumference being provided with an iron band, E, shrunk on, so as to fit tightly. By this construction I obtain strength with lightness, and am enabled to fasten the beaters to it in a durable manner.

The beaters are represented by F. They require to be fastened strongly to the drum, because in their rapid revolution there is immense centrifugal force generated, which would tend to force them from their fastenings. The beaters F are here let through the iron band E and driven into the drum in slots G, made for their reception. By making them deep, as shown, I am enabled to bolt them to the drum with several bolts, H, and thus secure them strongly.

The beaters F are made of iron, and have their forward sides provided with a depression or socket, I, and the shoes J are made with a projecting lug, K, to rest within the socket I. The bolt L passes through the shoe and through the beater in an extended slot, M. In order to regulate the position of the shoe with reference to the beater, I insert the bar or block N in the socket I, between the lug K and outer wall of the socket; and in the slot M, I insert the piece *a*, leaving a sufficient hole for the bolt L to pass through. (See Figs. 4 and 5.) When the shoe becomes worn I can set it out farther by inserting a narrower block N between the lug K and the outer wall of the socket I and a shorter piece *a* in the sleeve M; while, to fill up the space left behind the bolt and lug, I insert another block, N′, between the lug and the inner wall of the socket, and another piece, *a′*, behind the bolt in the slot M, as shown in Fig. 6. Thus the width of the blocks N and N′ and the length of the pieces *a* and *a′* determine the position of the shoe. By making the upper bar or block, N, still narrower and the piece *a* shorter, and widening the lower bar or block, N′, and inserting a longer piece, *a′*, in the slot M, the sleeve J is forced still farther toward the outer end of the beater. The blocks or keys N and N′ and the pieces *a* and *a′* will be of various sizes to fit when needed in each case. By this construction I am enabled to extend the shoes as they become worn and use them as long as possible, and when too much worn to easily detach and reverse them, so as to make the opposite ends do the work. This construction further gives a stronger hold for the shoe, because the strain is brought both upon the lug K fitting into the socket I and the bolt L. Without this relief from the lug K no ordinary bolt would stand the strain.

About the central shaft, B, and drum C is a casing formed in whatever sections may be found convenient to have access to the drum and beaters. The casing has the two sides *b* and *c* supported by the frame-stand A, and secured together by the bracing-rods O, as shown. On the inside of the sides *b* and *c*, near their outer edges, I form the grooves R. Within these grooves I place the transverse bars S, having their ends provided with the notch *e*. Within the grooves R and in these notches *e*, I place blocks *i*, having their upper surfaces a little higher than the bars S, as shown in Fig. 3. On these blocks, placed in the

notches of one bar, rests the next bar, flat side down and notches up, in which other blocks are placed, and the next bar laid upon it. The bars thus have openings between them, and when continued all around the grooves R they form together a circular screen within the casing P, and surrounding the drum C, and within which the beaters F revolve, crushing the ore and allowing it to pass off through the screen thus formed.

The size of the blocks *i* determine the width of the spaces between the bars S and regulate the size of the screen. The bars S being easily removable, I can, when they become worn on one edge, reverse them end for end and present the other edge to the wearing work. I can construct the screen also by dispensing with the notches in the ends of the bars S and the blocks *i*, separating them, and have plain bars separated by the metal plates T, fitting within the grooves R and turned up, as shown, over the ends of the bars and pinned thereto. The thickness of said plates T would determine the character of the screen. Through the top of the casing P, I insert the hopper W, passing through the screen and opening into the space in which the beaters revolve. When the ore is placed in the hopper W it falls within the screen, and, being caught by the rapidly-revolving beaters F, is crushed between them and the screen, and thence falls through the screen into receptacles below. I construct a band of metal, U, to fit in the sides *b* and *c* of the casing where the grating passes around, so as to protect the sides from wear. By constructing the band in segments they are easily removable when worn to make way for others. Between the sides *b* and *c*, a short distance outside of the grating, is the metal or other band P, forming the periphery of the casing of the whole apparatus. This serves to receive the pulverized ore as it passes through the grating, and prevents it from being thrown off by its great velocity, and conducts it to a discharging-point at or near the bottom.

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

1. In a rotary crushing and pulverizing apparatus, the drum C, consisting of the wooden or other light center, having the sheet-metal ends D and the periphery formed of a band, E, shrunk upon the center, said band and center being slotted, as shown, to receive and secure the beater-arm F, in combination with the arms F and shoes J, substantially as described.

2. The shoes J, having their projections or lugs K, which fit into the chamber or depression I in the beater-arms F, in combination with the transverse holding-keys N N′, the elongated pieces or blocks *a a′*, whereby the shoes may be moved outward, held in place, or reversed, to compensate for wear, substantially as described.

It witness whereof I have hereunto set my hand.

WM. L. DAWSON.

Witnesses:
S. H. NOURSE,
FRANK A. BROOKS.