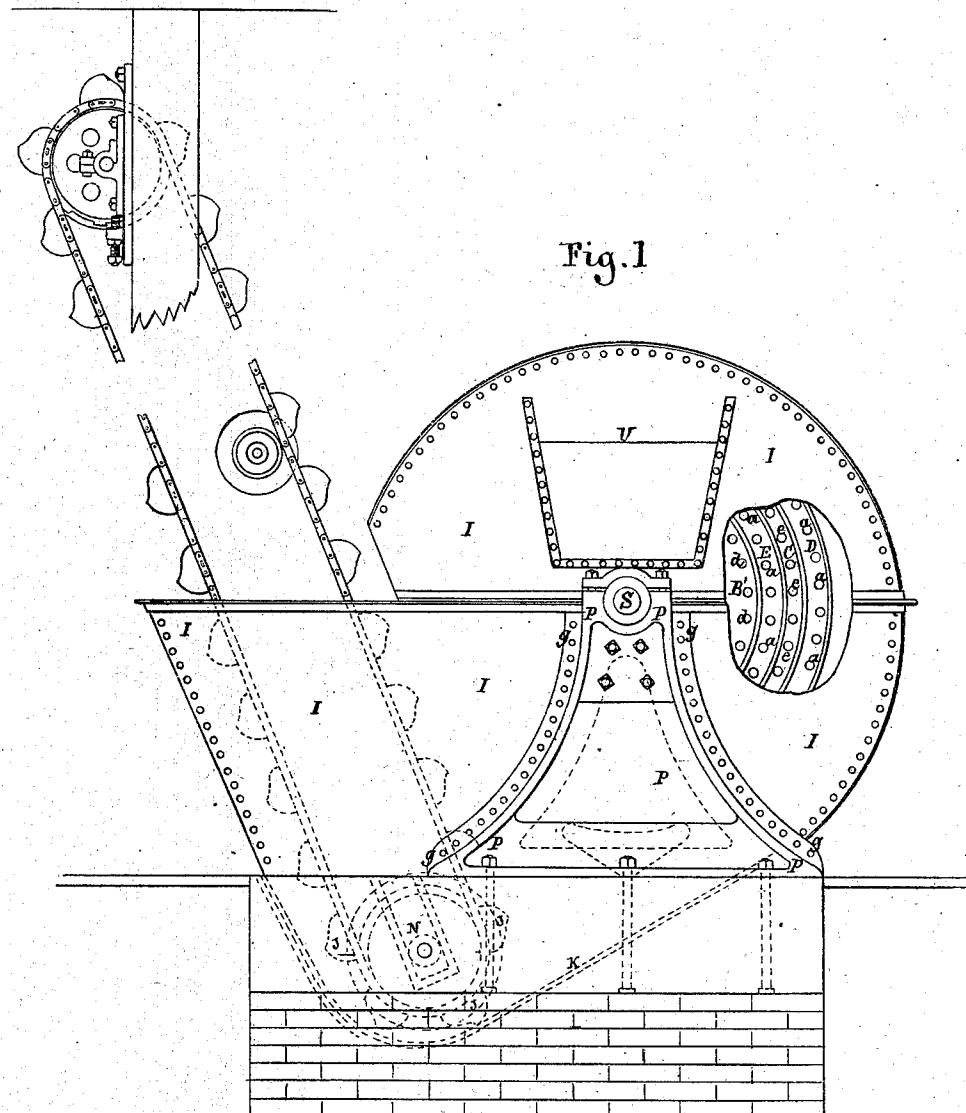


G. B. DAVIDS.
Disintegrating Mill.

No. 97,890.

Patented Dec. 14, 1869.



Witnesses
A. S. Miller
Edmund Masson } G. B. Davids.
By Atty A. B. Stoughton.

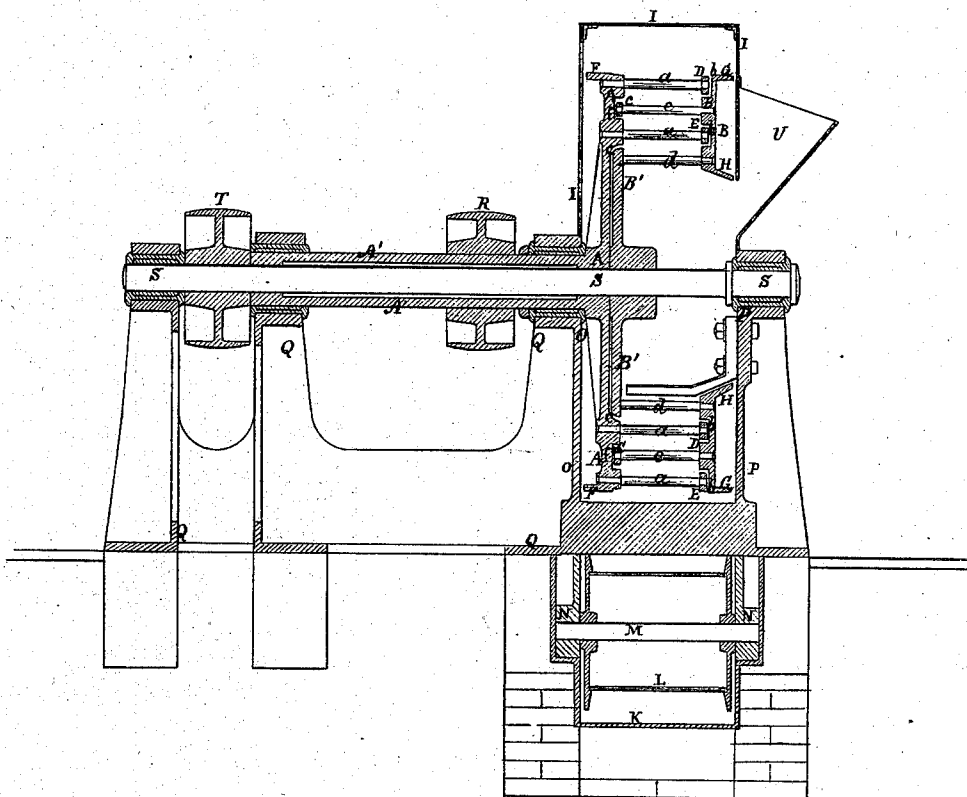
G. B. DAVIDS.
Disintegrating Mill.

2 Sheets—Sheet 2.

No. 97,890.

Patented Dec. 14, 1869.

Fig. 2.



Witnesses.
H. S. Miller }
Edmund Masson } G. B. Davids.
By atty A. B. Staughton.

UNITED STATES PATENT OFFICE.

GARRET B. DAVIDS, OF BALTIMORE, MARYLAND, ASSIGNOR TO HIMSELF
AND TALBOTT DENMEAD, OF SAME PLACE.

IMPROVEMENT IN DISINTEGRATING-MILLS.

Specification forming part of Letters Patent No. 97,890, dated December 14, 1869.

To all whom it may concern:

Be it known that I, GARRET B. DAVIDS, of the city of Baltimore, county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Disintegrating-Mills; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a side elevation of the mill, and Fig. 2 represents a vertical transverse section through the same.

Similar letters of reference where they occur in the separate figures denote like parts of the mill in both of the drawings.

Disintegrating-mills have heretofore been made in which the substances to be operated upon have been reduced by percussion, and by making the weight of the material an active agent in its own disintegration; and these mills, moreover, have been made of a series of cages, which have been constructed substantially of certain rings or plates united by cross-bars, and which cages have been run in contrary directions. None of these things, broadly considered, are claimed by me.

My invention relates to certain construction and arrangement of parts for making a disintegrating-mill, having the principles involved as hereinabove stated, efficient, and economical; and my invention consists, first, in so constructing and arranging the plates and rings of the inner and outer cages as to prevent any particles of the material being reduced from passing out between them, and confining it to the cages, and forcing it to pass only through or between the bars of the cages.

My invention further consists in forming the joint between the plate or ring and the case, so that while the plate or ring may run freely in or against the case, there shall neither be escape of material at such joint, or clogging of the moving parts by the material getting therein.

My invention further consists in making the stands on which the shafts of the cages rest and turn a part of the casing of the mill, said stands having flanges upon them to which the

casing is attached, and by means of which the casing of the mill and elevator may be reversed, and thus admit of running the mill in either direction.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A disk or plate, A, is cast or secured upon the end of a hollow shaft, A', which shaft is suitably supported in a substantial frame, Q, and is revolved by a belt passing around its pulley, R, and driven by any first-moving power. In the disk or plate is cast or otherwise properly secured a series of pins or bars, *a a a*, of wrought-iron or steel, and arranged in two or more concentric tiers, near the perimeter of said disk or plate. The opposite ends of the pins or bars *a a* are secured in two concentric rings, D E, that run in annular grooves *b b* in the plate or ring B. Through the hollow shaft A' passes a shaft, S, which may be driven by a belt passing around its pulley T, and in a direction the reverse of that of said hollow shaft. Upon the shaft S, which extends through the cages, and is supported upon the frame or stands O P, is secured a circular plate or disk, B', which fits and runs in a recess, *c*, in the plate or disk A. In the ring or plate B is cast or otherwise secured the pins or bars *d e*, of wrought-iron or steel, and arranged in two concentric tiers that alternate with the bars *a* in the plate A. One set or tier of these bars or pins—viz, those at *d*—extend from the ring B to and are fastened in the plate or disk B'. The other set or tier *e* extend to and are fastened in a ring, *c*, that runs in a groove, *f*, in the plate A. These plates, disks, rings, and bars form the cages, into the interior of the inner one of which the material to be disintegrated is fed through the hopper U, and through the bars of which cages, running in contrary directions, the material must pass, and in small particles, to escape from the cages, while it is rapidly thrown, turned, and disintegrated in the cages by percussion and attrition therein.

The recesses in the plates in which the rings run prevent the ground, reduced, or disintegrated material from working through the

joints and clogging or escaping out of the cages, except through their bars or pins, and the flanges F, G, and H on the plates cause the cages to neatly and closely fit the casing or frame, and prevent the material from getting between them.

The stands or pillar blocks O P form a part of the casing I, which incloses the cages, as also the receiving-chamber K, into which the material passes after it has left the cages, and these stands O P have flanges *g g*, to which the casings I of sheet or plate iron are fastened, preferably by rivets, as shown. In the chamber K, into which the material passes from the cages, there is placed a drum or pulley, L, arranged upon a shaft, M, and the bearings of which shaft are arranged in the boxes N N. The object and purpose of this drum or pulley M are to receive and direct an endless belt or band of elevators that may take the disintegrated material from the chamber K, and deposit it out of the machine or mill in any convenient or designated place.

The advantage of making the stands O P a part of the casing is, that the mill may be reversed—that is to say, the chamber and elevator, instead of being to the left of the cages, as shown in Fig. 1, may be put upon the right, and the direction of the rotation of the cages changed accordingly. This makes the mill applicable to special locations in a building, where otherwise it might be very inconvenient

to locate it. The flanges on the stands, and the stands forming a part of the case, admit of arranging the other parts of the casing I, as above described, so as to change the direction of the running of the mill.

Having thus fully described my invention, what I claim therein is—

1. Recessing the revolving plates or disks of one cage so as to receive the rings of the other, and thus make a connection between the cages that will admit of their free motion without allowing the material to escape at the joints, as described.

2. In combination with two or more cages placed one within the other, and revolving in contrary directions, the alternating annular rims and recesses on and in the flanges F G H on the cages, for preventing the disintegrated material from passing between the cages and the casing, substantially as described.

3. The stands O P, when so made and flanged as to form a part of the casing of the mill, and to admit of the other part of the casing being reversed thereon, so as to change and adapt the run of the mill to any special locality, substantially as described, and for the purpose set forth.

GARRET B. DAVIDS.

Witnesses:

J. B. WILSON,

GEO. W. WALKER.