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PATENTED JUL 26 1870

**D. C. EBAUGH'S**

IMPROVED SCREW CRUSHER

FOR

**PHOSPHATIC ORLE &c.**

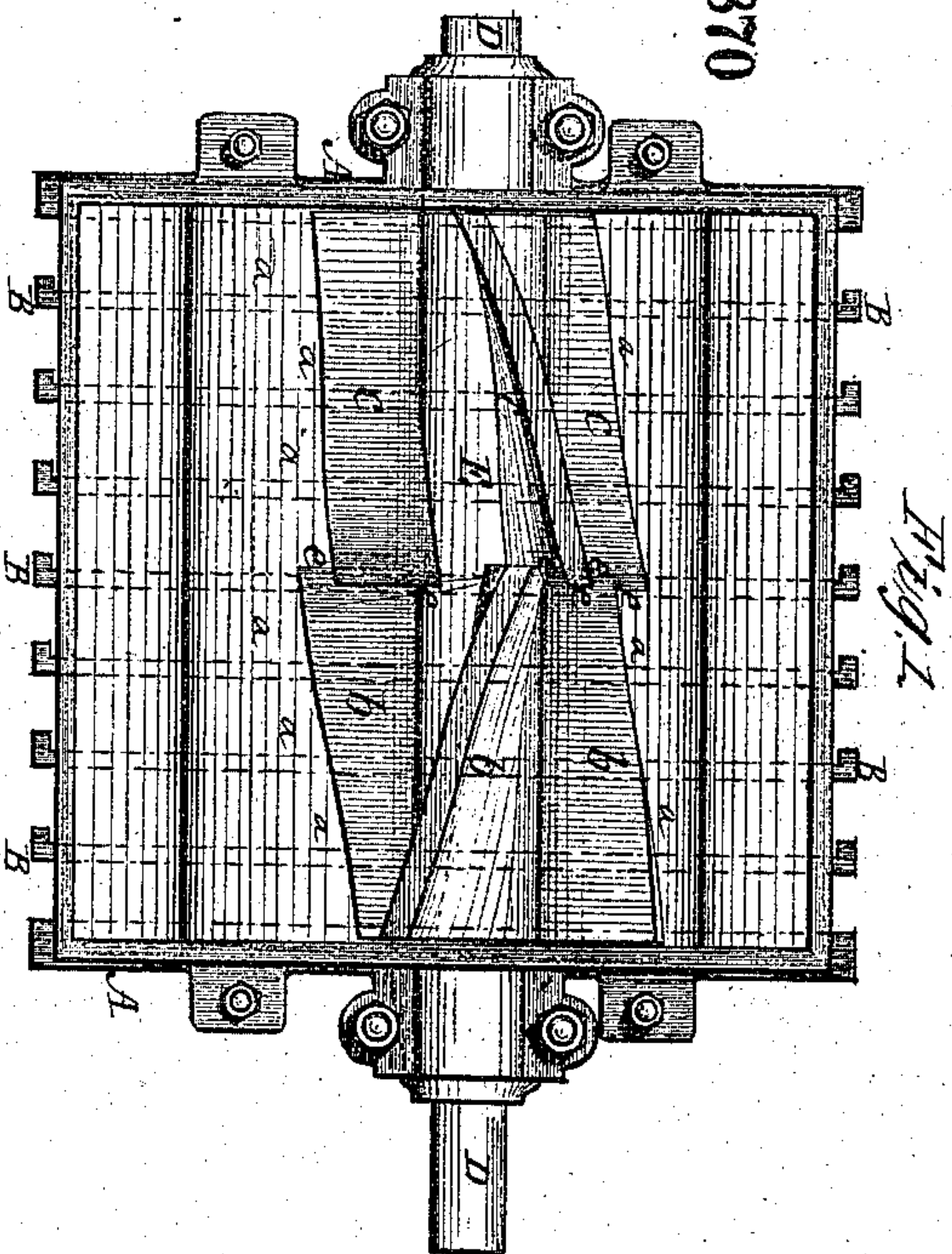


Fig. 1.

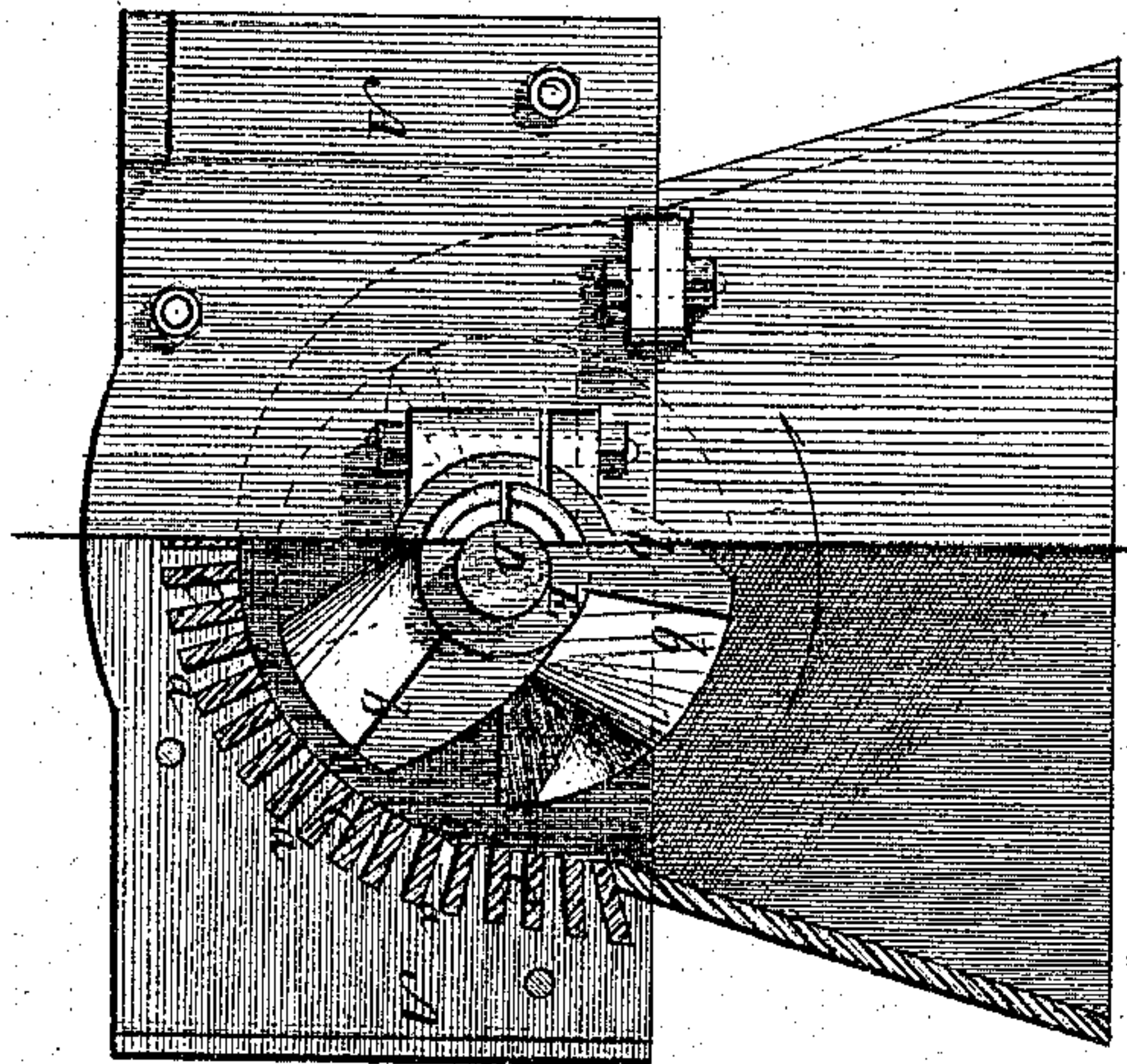
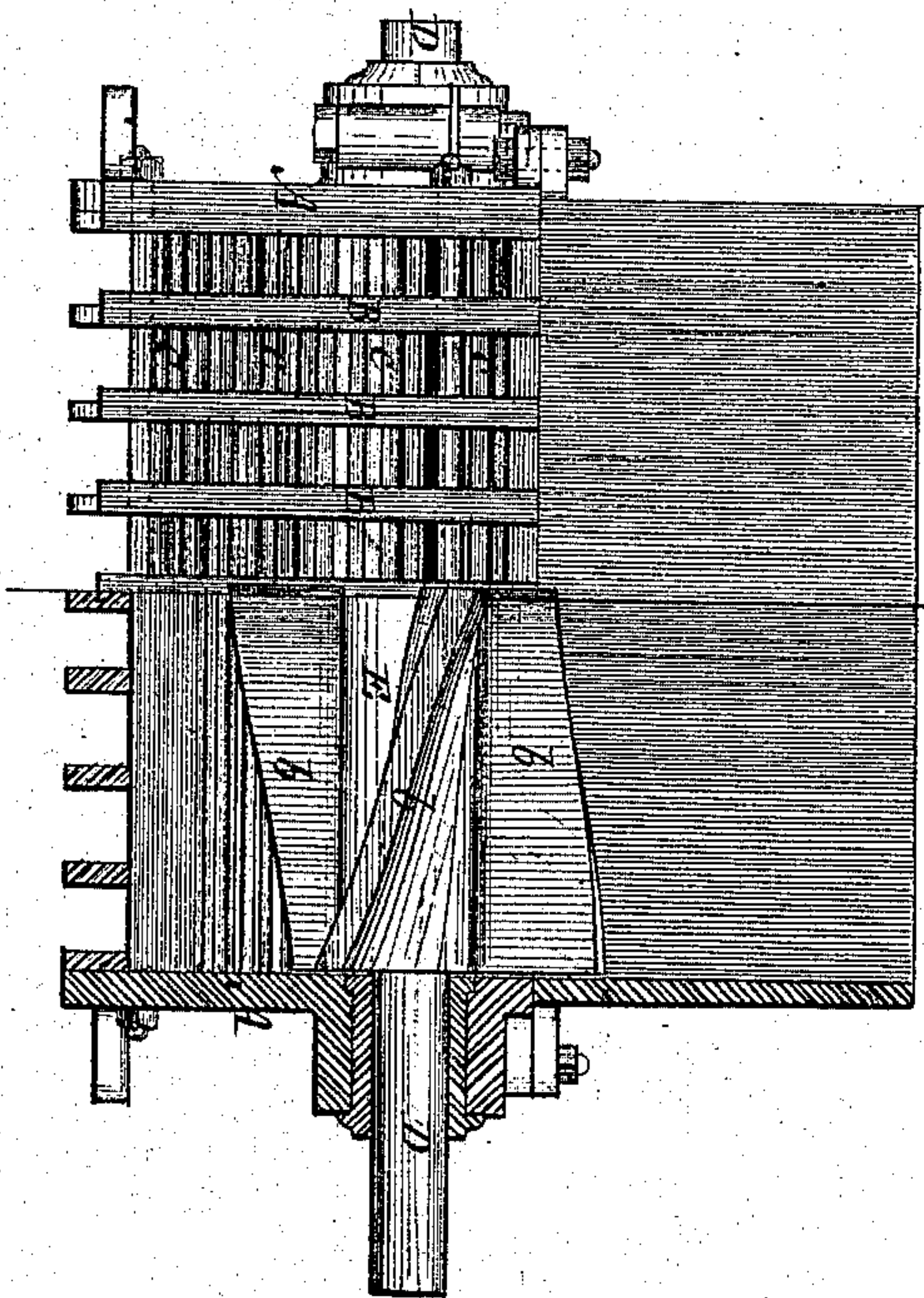


Fig. 2.



Witnesses.

Chas. C. Wilson  
Edmund Masson.

David C. Ebaugh.  
By atty A. B. Stoughton



# United States Patent Office.

DAVID C. EBAUGH, OF CHARLESTON, SOUTH CAROLINA.

Letters Patent No. 105,659, dated July 26, 1870.

## IMPROVEMENT IN MACHINES FOR CRUSHING MINERAL AND OTHER HARD SUBSTANCES

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DAVID C. EBAUGH, of Charleston, in the State of South Carolina, have invented certain new and useful Improvements in Machines for Crushing Mineral and other Hard Substances; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 represents a top plan of the machine.

Figure 2 represents an end elevation, partly in section.

Figure 3 represents a side elevation, partly in section.

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

The object and purpose of my invention are not to crush the material between the moving and the stationary metallic surfaces directly, as this cuts and wears out the parts, and clogs the delivery of the crushed material, but to make the substance itself, by being forced one piece or part against another piece or part, crush, so as to pass through the openings in the bed or concave; and

My invention consists in a revolving screw-cylinder, the arms of which are divided, overlap, and run in contrary directions, from the center toward the ends thereof, and turning in a perforated concave, so that the material, as it is crushed, shall drop through said perforations.

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

In a frame, A, is made a concave, composed of a series of ribs, B, into which is let a series of transverse slats, C, so as to be flush with the concave edges of the ribs, and thus form a series of oblong flaring openings, *a*, in said concave, the whole being formed of iron, or of iron and steel, or other suitable metal, and over the frame and concave is made a hopper, into which the material to be crushed is thrown.

In suitable bearings in the ends of the frame or concave are supported the journals D of a revolving screw-cylinder, E, which may be driven by any first moving power, by belt or gearing on one of the jour-

nals, or the shaft of said cylinder, so as to turn over the slotted or perforated bottom of the concave, but not close to it, leaving space enough between the cylinder and concave for the material to be crushed to work or be drawn into.

The cylinder E has two sets of spiral or sectional screw-threads, *b b b* and *c c c*, running in opposite directions, and breaking joint with each other at the center in length of the cylinder; also, overlapping each other at the center, as at *e*. The object of the two sets of spirals or sectional threads is to prevent the material being crushed from crowding toward the center of the concave, and the object of overlapping the spirals at the center, as at *e*, is that any material passing from one set of arms or screws to another, will be broken or crushed by passing or being forced through this contracted space. The working-edges of the spirals or screw-threads may be faced with steel; and the slats C, when worn, may be reversed in their bearing-ribs, so as to present new and true edges.

The cylinder need not be concentric with the concave, but, as shown in fig. 2, set a little to one side, so as to allow the material to be crushed to pass in and down under the cylinder, which, as there shown, revolves sufficiently far from the concave to allow enough material in the space, to cause one piece or part to be crushed against or by another piece or part, and fine enough to drop through the openings *a* of the concave, which are of less cross area than that of the space in which the crushing is done, and thus save much of the wear of the metal, by making the material act so as to crush itself, one piece against another.

What I claim as my invention in a crushing-machine is—

In combination with a slatted open-bottomed concave, a revolving cylinder, having two sets of spiral threads or flanges running in opposite directions, breaking joint and overlapping at the center of the cylinder, and turning slightly above the bottom of the concave, in the manner and for the purpose described and represented.

D. C. EBAUGH.

Witnesses:

A. B. STOUGHTON,  
ROBT. POOLE.