

(No Model.)

J. C. ANDERSON.

CLAY REDUCER AND DISINTEGRATOR.

No. 271,588.

Patented Feb. 6, 1883.

Fig. 1.

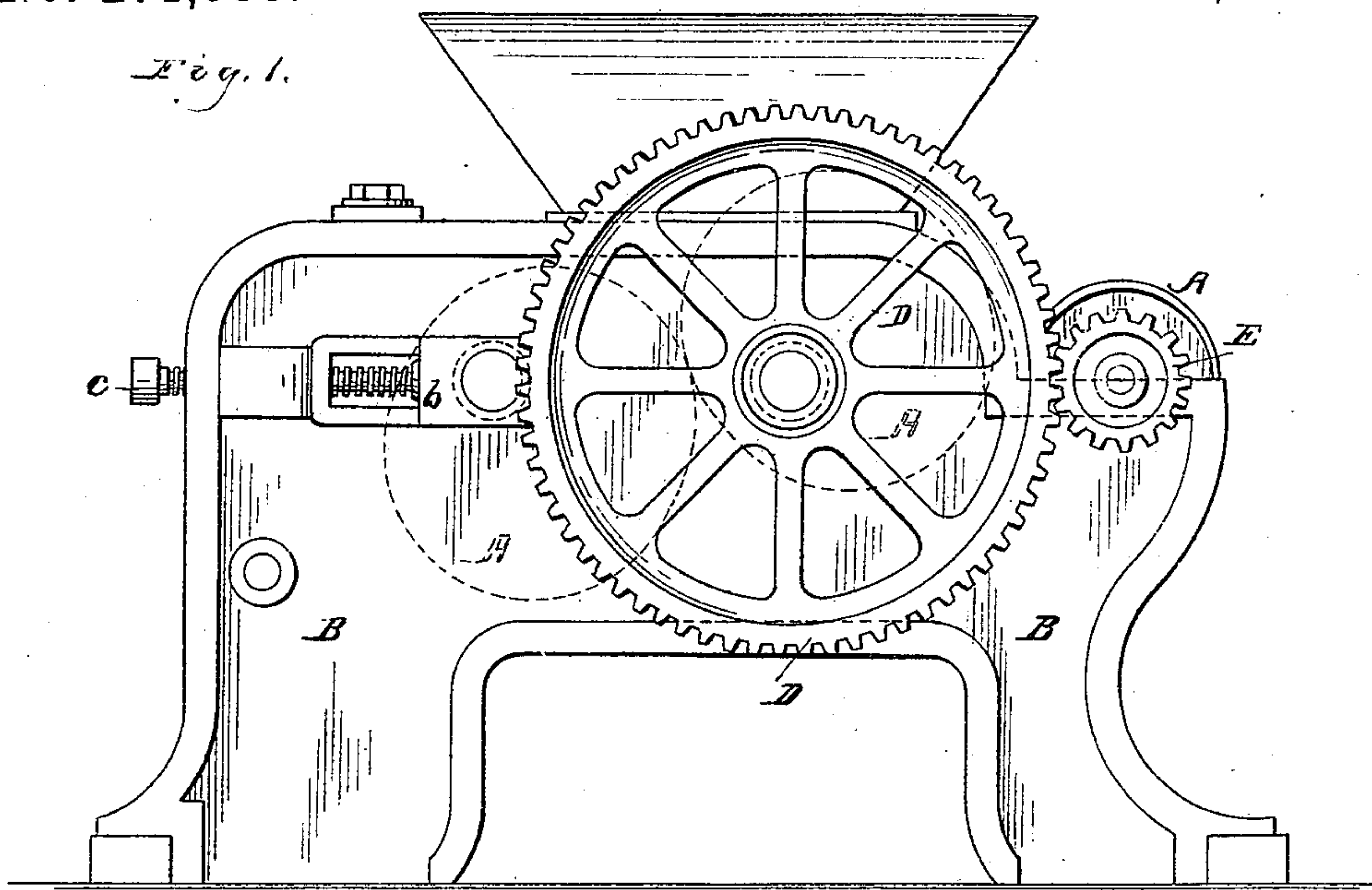


Fig. 2.

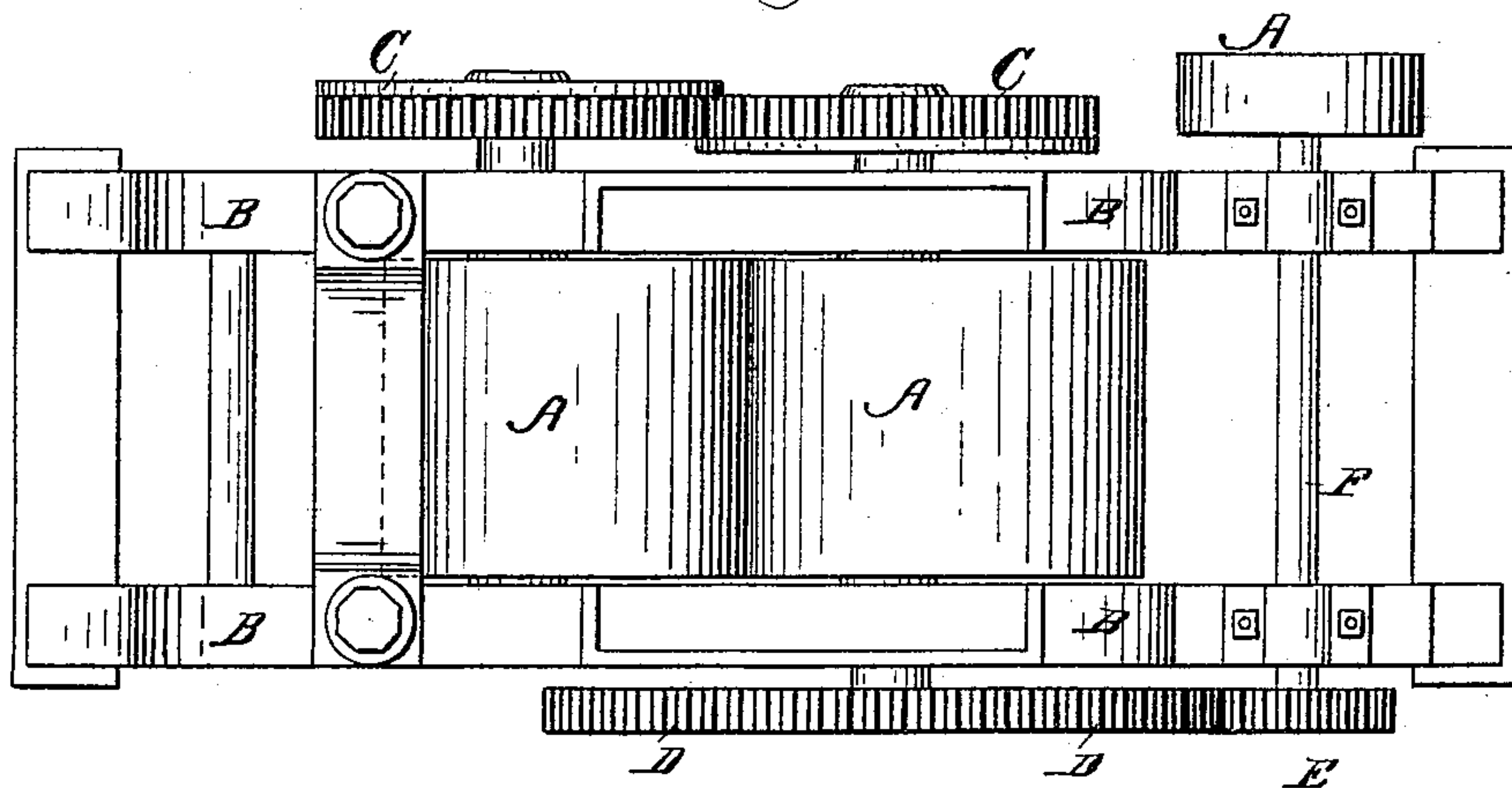
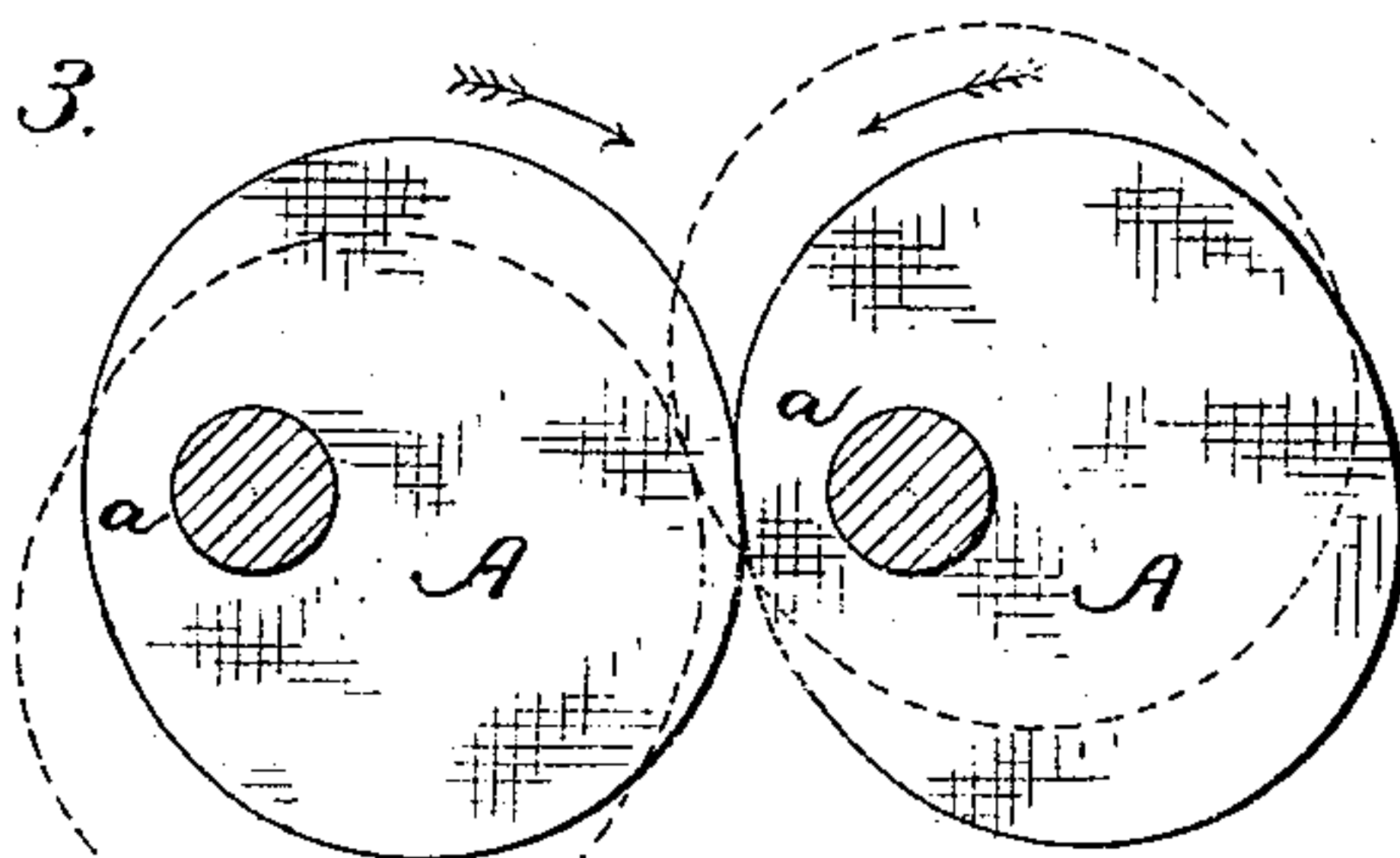


Fig. 3.



Witnesses.
Henry Frankfurter.
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UNITED STATES PATENT OFFICE.

JAMES C. ANDERSON, OF HIGHLAND PARK, ILLINOIS.

CLAY REDUCER AND DISINTEGRATOR.

SPECIFICATION forming part of Letters Patent No. 271,588, dated February 6, 1883.

Application filed October 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. ANDERSON, a citizen of the United States, residing at Highland Park, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Clay Reducers and Disintegrators; and I do declare the following to be a full, clear, and exact description of the invention, 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, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to machines for reducing clay and other materials; and my invention consists of a pair of rollers hung in bearings eccentrically to their axes, so that in their rotation the periphery of one roll which is the greatest distance from the supporting-spindle will impinge on the opposite roll at a point nearest to the supporting-spindle, whereby the material to be operated upon is subjected to a rubbing and crushing action.

Figure 1 is a side elevation of my machine. Fig. 2 is a top view. Fig. 3 is a detached view of the crushing or reducing rolls.

Referring to the drawings, A A designate the reducing-rolls, mounted in a suitable framework, B. The reducing-rolls A A are made elliptical in peripheral outline when mounted to rotate in opposite directions, as indicated by the arrows in Fig. 3, such elliptical form being to compensate for the convergence incident to the changing or alternating positions of the rolls when rotated in this direction, and are hung in proper bearings at a point eccentric to their axes, and so timed that when they rotate at the same velocity the faces or peripheries of each of the rolls will constantly touch or impinge against each other during their respective rotations, so that a rapidly-changing peripheral speed is given the rollers at their points of contact, and the material to be acted upon is subjected to a rubbing, abrading, and crushing action, which reduces or pulverizes the same. I prefer to make the rolls elliptical and rotate them in opposite directions, as shown; but they may be perfectly round and hung eccentrically to their axes and rotated in the same direction, or the peripheral outline

changed to produce the desired result and the rolls hung on their axes. The periphery of a roll or other revolving body travels faster or has a greater velocity than the axis. Consequently when the clay or other material to operated upon is caught between the rolls it is subjected to the action of the periphery of the roll which is the greatest distance from the supporting-spindle, coming in contact with the opposite roll at a point nearest to its supporting-spindle, as at *a*, and as one surface is traveling faster than the other the material is subjected to the rubbing, abrading, and crushing action heretofore referred to, and will be thoroughly disintegrated and not crushed or compressed, as is the result when the ordinary rolls are used.

It is well known that it is practically impossible to reduce or disintegrate clays or the harder clay shales by impingement alone. Pressure exerted in two directions, as in the case of two impinging rolls rotated at the same speed, only flattens or flakes the clays without disintegrating them. Even the hardest rock or quartz resists to a greater or less degree disintegration by such means, while by the action of my machine the clay or other material is subjected to a rubbing action between the impinging surfaces of the rolls, which disintegrates and reduces the material to a powdered or semi-powdered condition.

The rolls A A are provided with pinion or gear wheels C C, of the same size, so that the rolls will be driven with a regular and uniform velocity. One of the rolls A is also provided with a pinion or gear wheel, D, which meshes with and is driven by a pinion-wheel, E, on the main driving-shaft F, driven by a belt passing over the pulley G and connecting with any suitable source of power. One of the rolls A is also mounted in movable bearings *b*, which are operated by set-screws, so as to regulate the distance between the rolls to suit the material to be operated upon and regulate the degree of pulverization to which the material is to be brought.

While I have described my invention as particularly applicable to the reduction of clay, clay shales, &c., I do not wish it to be understood that I limit myself to this particular use, as it is obvious that my machine is equally

well adapted for the reduction of ores and minerals of all kinds, grain, and other vegetable matters capable of being ground or reduced to a powder.

In a former application, filed August 31, 1882, Serial No. 70,738, I have shown and described hollow perforated rolls whose peripheral outlines are in the shape of a figure 8. The invention herein described is designed as a continuation of this line of invention.

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

1. In a mill for reducing clay, clay shale, or other material to a pulverized or powdered condition, the reducing-rolls, of whatever peripheral outline, mounted or hung in bearings eccentrically to their axes, and adapted to work together, so that the rapid peripheral action of

one roll will operate on the material against the less rapidly moving periphery which is nearer the axle of the adjacent roll. 20

2. In a mill for reducing clay, clay shale, or other material to a pulverized or powdered condition, the rolls A, of elliptical form in peripheral outline hung in bearings eccentrically to their axes, and adapted to work together in such a manner that the rapid peripheral action of one roll will operate on the material against the less rapidly moving periphery which is near the axle of the adjacent roll, as set forth. 25 30

In testimony whereof I affix my signature in presence of two witnesses.

J. C. ANDERSON.

Witnesses:

LILLIE E. ANDERSON,
FANNIE G. PAULL.