(No Model.) 2 Sheets—Sheet 1.

J. FITZGERALD, Dec'd.

A. M. FITZGERALD, executrix.

GRINDING MILL.

No. 285,777. Patented Sept. 25, 1883.

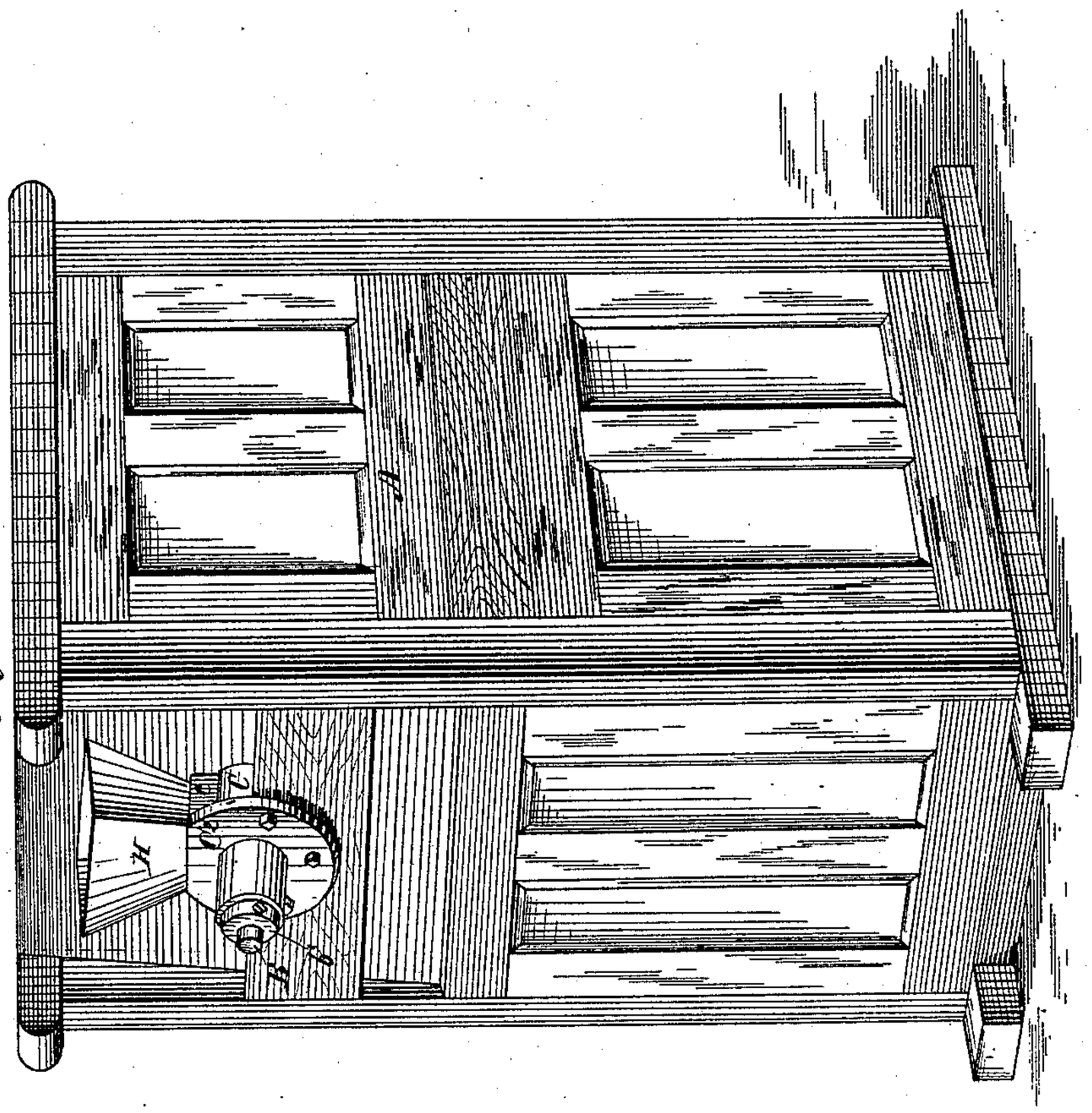

Fig. 1.

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(No Model.)

2 Sheets—Sheet 2.

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GRINDING MILL.

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fig. 3.

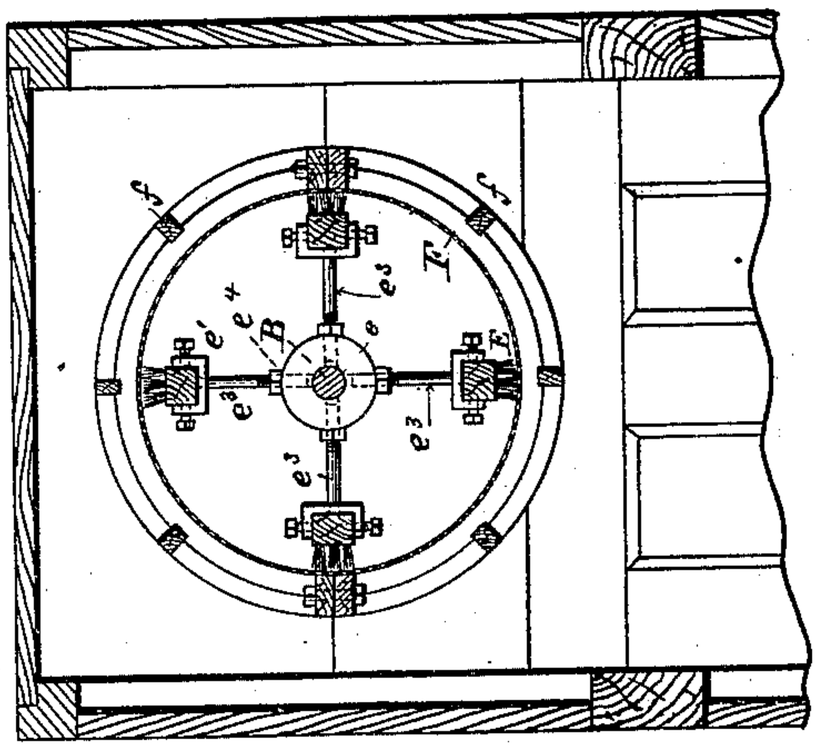


fig. 4.

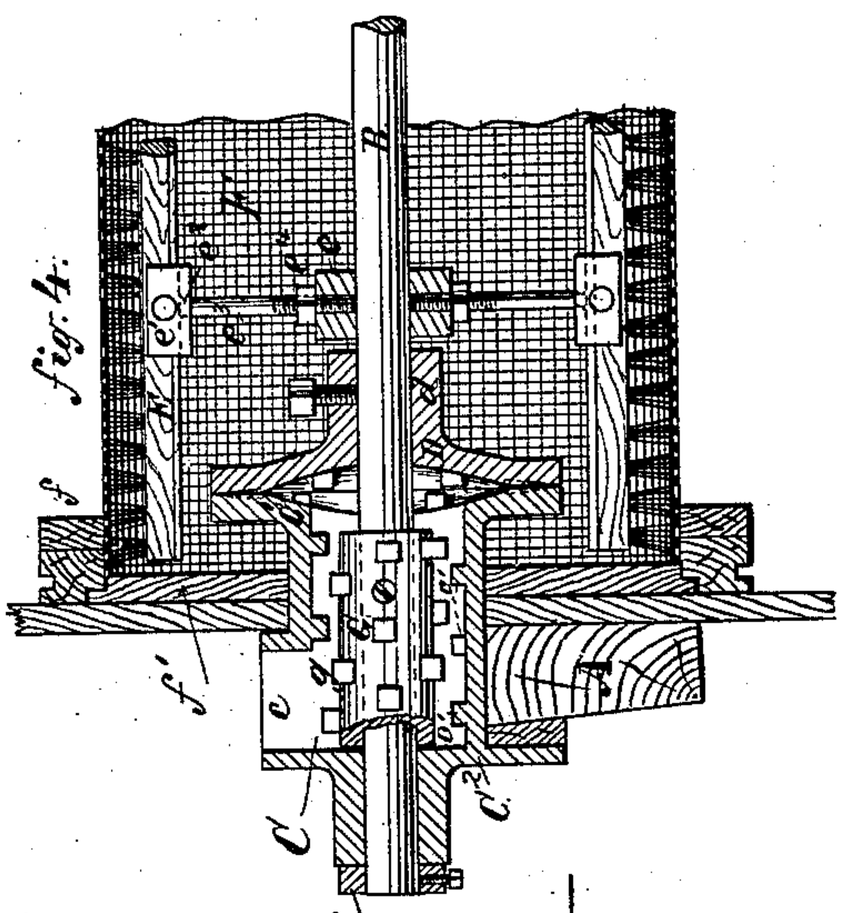
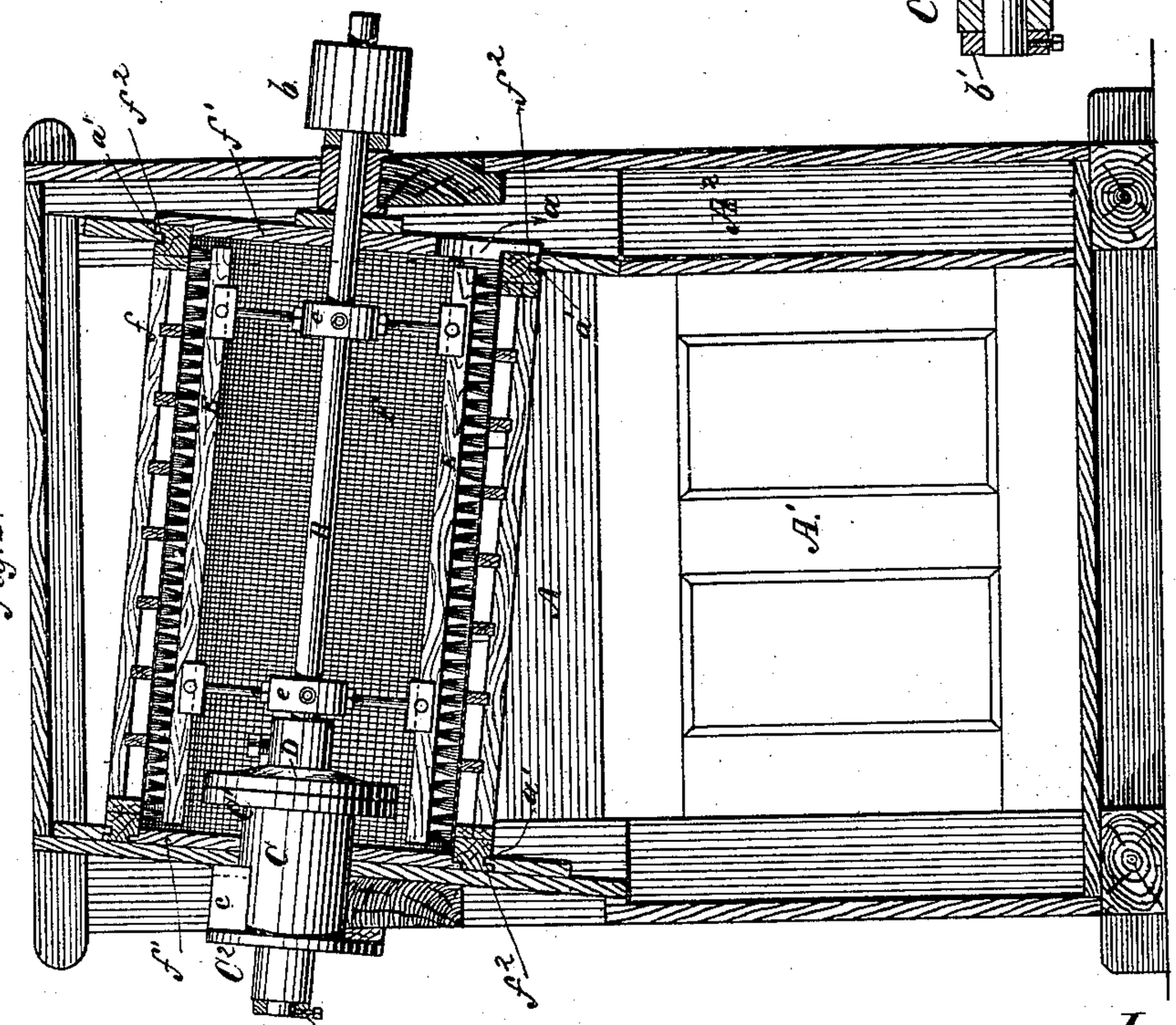


fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN FITZGERALD, OF BROOKLYN, NEW YORK; ANNA M. FITZGERALD EXECUTRIX OF SAID FITZGERALD, DECEASED.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 285,777, dated September 25, 1883.

Application filed October 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN FITZGERALD, of Brooklyn, Kings county, State of New York, and a citizen of the United States, have invented an Improved Grinding-Mill, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a grinding-mill, and more particularly to a mill for grinding paints; and it consists of a mill composed of the parts and devices hereinafter particularly set forth and described, and recited in the claim.

Figure 1 is an elevation in perspective of a mill embodying my invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a similar cross-section; and Fig. 4 is a longitudinal sectional view of the crusher, grinder, and bolting-cylinder in detail.

At A is shown the mill-frame, which is composed of substantial timbers and braces to support the machinery, and of casing or panel-work, and a suitable flooring and roof, so as to constitute a closed case for the entire machine.

B is the single driving-shaft of the apparatus, upon which the moving parts of the crusher, grinder, and bolter are mounted. This shaft has a bearing at the rearward end in a box set in the frame, and on its rear extremity, outside of the case, carries the pulley *b*. The shaft is set at an incline downwardly from the front to the rear end of the machine, and at its forward end it has bearing in a box or hub on or forming part of the case of the crusher C, and it is held in position by a collar, *b'*, beyond said hub, as shown.

The crusher C is a cylindrical casting, having wide flanges C' and C^2 at its ends, and it is mounted rigidly on the mill-frame, with shaft B passing through it longitudinally and concentric to said shaft. At its upper side, outside the mill-frame, is the hopper-opening *c*, into which the hopper H may sit. On its interior face it has the ribs or projections *c'*, while interiorly of C is the long sleeve G, keyed to shaft B, and provided with the ribs or projections *g*. The rearward end of the crusher C extends within the casing or frame A, and its flange C' constitutes a part of the grinding device, the exposed rearward face thereof being in contact, or nearly so, with the similar face of a disk, D, which is keyed at its hub *d* to the shaft B. The flange C' is thus the stationary grinder and the disk D the moving grinder.

F is the bolting-cylinder, the sides of which are formed of gauze or other suitable bolting material stretched upon a frame-work, *f*, and having the closed ends *f'*. This cylinder is mounted in the mill-frame, and is arranged concentric with the shaft B, so that it is inclined downwardly from front to rear end. The ends *f'* have circumferential grooves f^2, fitting upon corresponding ways, *a'*, on the mill-frame, by which means the cylinder may be rotated more or less in the mill-frame, so that if the gauze or bolting-cloth becomes worn or clogged along the bottom of the cylinder the worn or clogged portion may be thrown upward to one side or the other, and another part of the gauze become the bottom. The bolting-cylinder incloses the grinders C' D at the forward end, so that the material coming from the crusher and the grinder falls directly into the bolting-cylinder, while in the head *f'*, at the rear end of the cylinder, is an opening, *a*, through which the "tailings" fall into a suitable chamber, A^2, in the mill-case.

E are scrapers or brushes, which extend longitudinally of the interior of the bolting-cylinder, and are clamped into seats *e'*, which are mounted by swivel-joints e^2 on the outward ends of radial arms e^3, which are screwed into hubs *e*, keyed to the shaft B. The arms have the jam-nuts e^4. Any wear upon the brushes may be compensated by lengthening the arms e^3 by means of their screw-seats in hubs *e*, the jam-nuts keeping the arms in desired position.

A mill is thus constructed in which all the moving parts are mounted directly upon and driven by the single shaft B, and in which the material to be ground and bolted, being introduced into the crusher at *c*, will pass thence to the grinders, and thence will fall directly into the bolting-cylinder, and the bolted stuff will be thrown through the cylinder F into the chamber A' in the mill-case A, while the tailings will escape at *a* into the separate chamber A^2, and the entire apparatus being entirely inclosed by the casing A, all dust from the operative parts will be confined within the

casing and prevented from escaping into the room in which the machine is employed. In grinding and bolting the dry materials for use in the manufacture of paints this is a result greatly to be desired, as some of these materials evolve a large quantity of dust in the grinding and handling, which is very injurious to the operatives.

I do not claim as new in a grinding-mill a pair of grinding disks or stones, vertically arranged, located within a bolting-cylinder and on the same shaft therewith, the whole being surrounded by an inclosing-casing; nor a pair of vertical grinding-disks with a crusher attachment, as I am aware that such devices, broadly, are now in use. I desire and intend to limit my claim hereunder to a grinding-mill composed of the specific devices hereinbefore described, and as recited in the claims, constructed and arranged relatively to each other, as herein particularly set forth.

What I claim as my invention, and desire to secure by Letters Patent, is—

A mill composed of the inclosing-casing and frame A, forming chambers A′ and A², the inclined driving-shaft B, the stationary crusher-cylinder C, carrying flange C′, constituting the stationary grinder, the revolving crusher-sleeve G, the movable grinder D, the bolting-cylinder F, with its closed ends *f′*, and inclosing the grinders, and the revolving brushes E, as described, said crusher-cylinder and its flange and the bolting-cylinder being mounted on the mill-frame, and said crusher-sleeve, movable grinder, and bolting-brushes being keyed to the single driving-shaft, all as and for the purpose specified.

JOHN FITZGERALD.

Witnesses:
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