

No. 732,735.

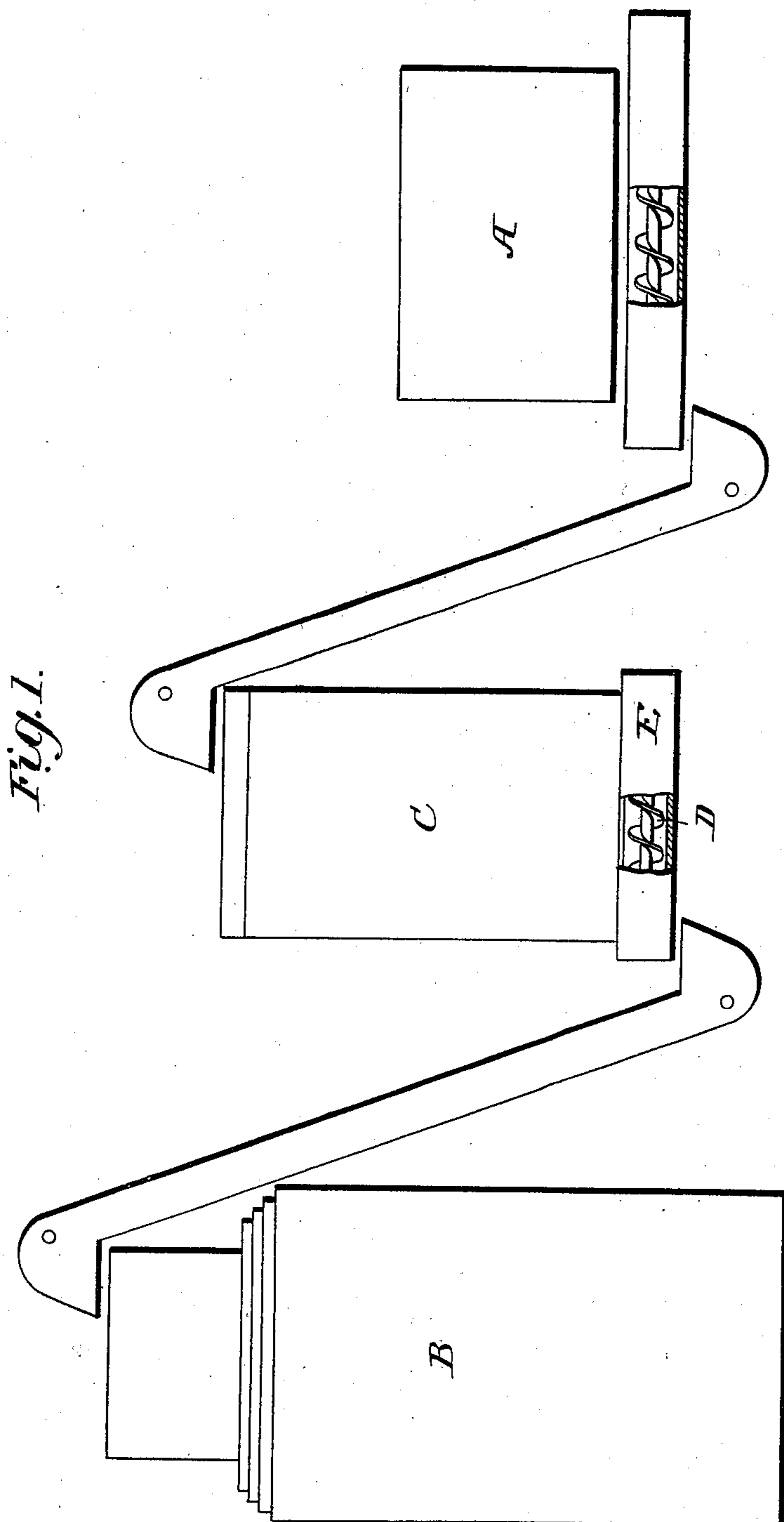
PATENTED JULY 7, 1903.

M. M. GRAVES.
FEEDING APPARATUS FOR DRIERS.

APPLICATION FILED MAR. 25, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Inventor

Witnesses

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2 SHEETS—SHEET 2

Fig. 2.

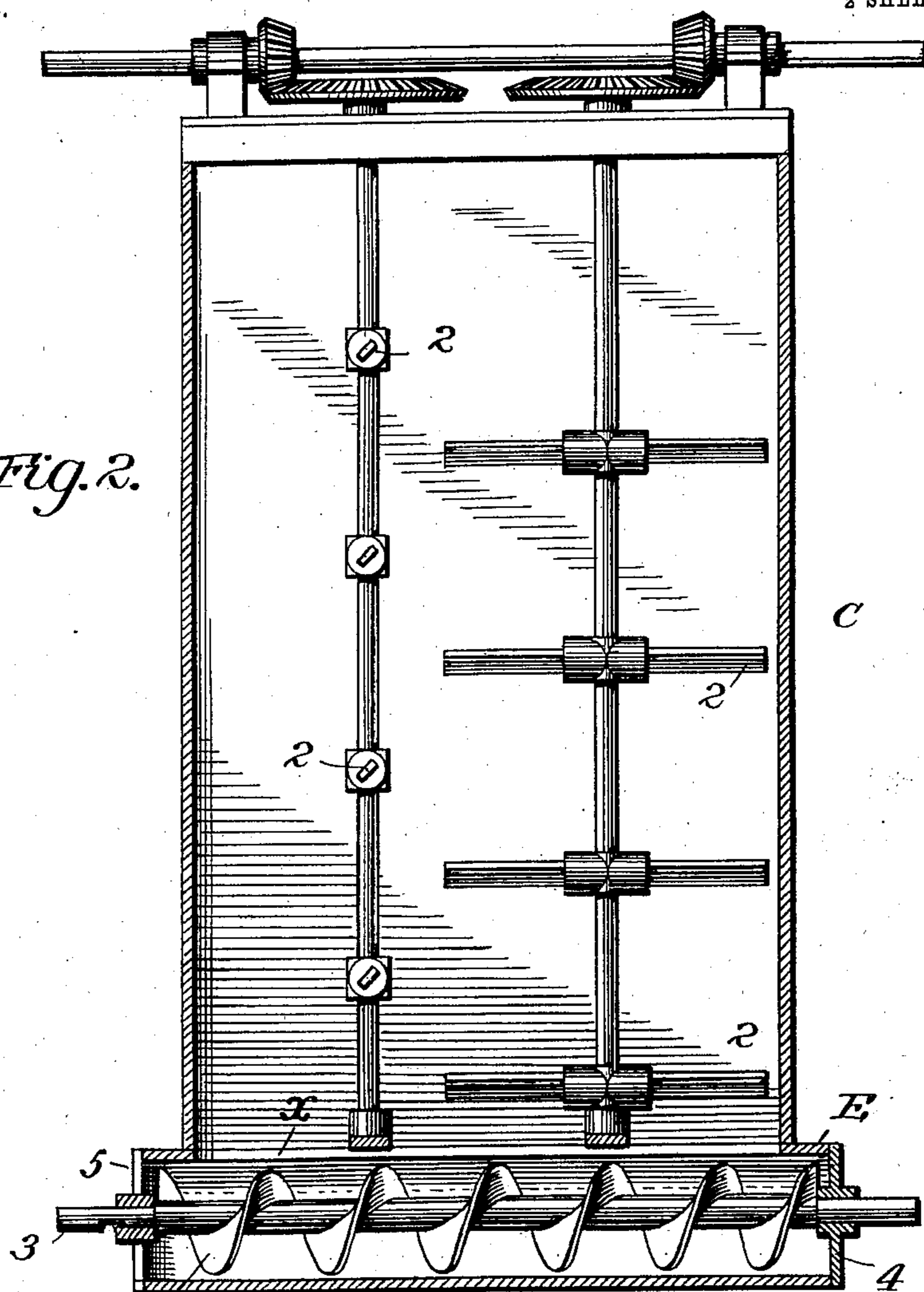
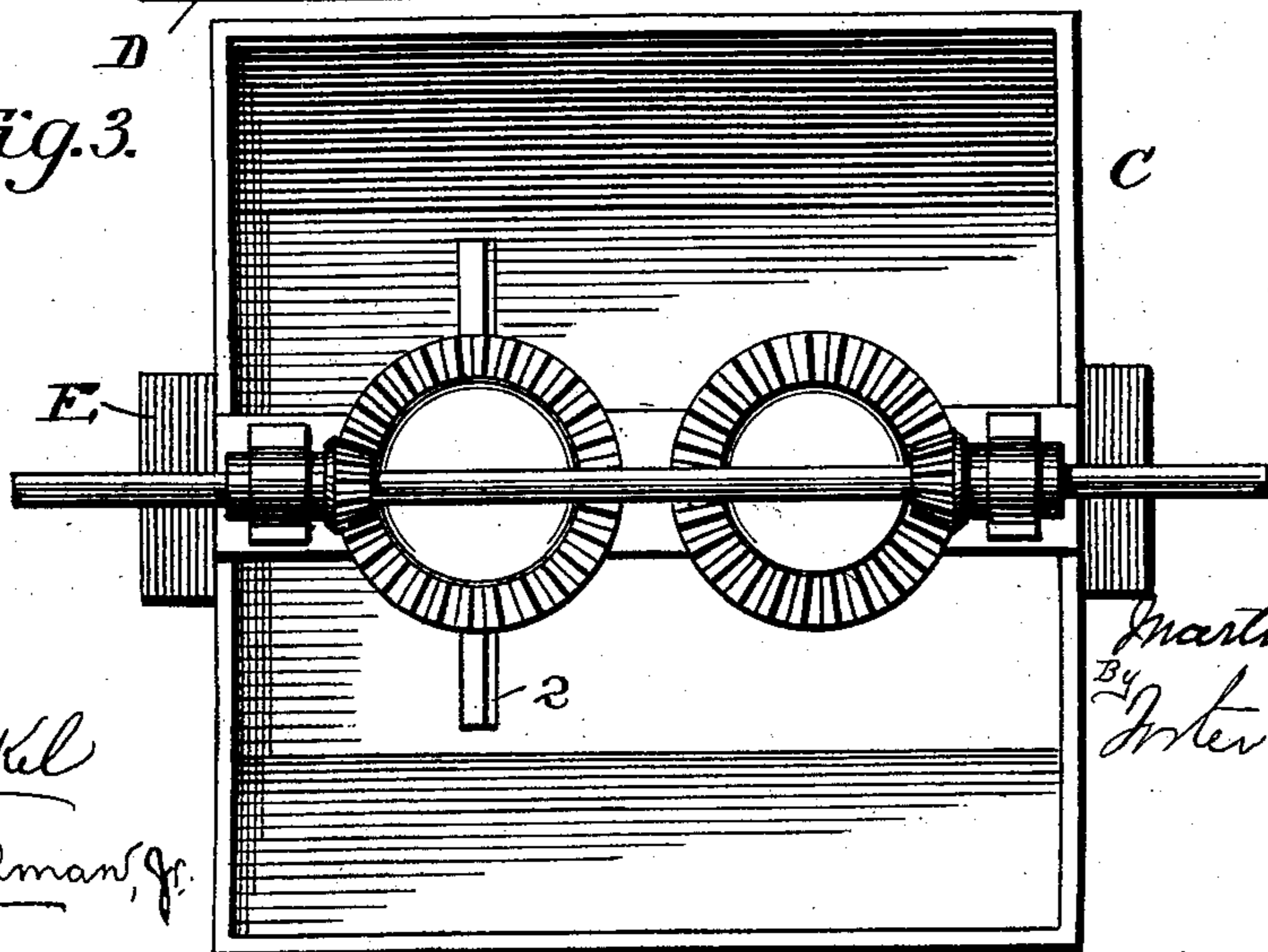


Fig. 3.



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UNITED STATES PATENT OFFICE.

MARTIN M. GRAVES, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO KENTUCKY DISTILLERIES & WAREHOUSE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

FEEDING APPARATUS FOR DRIERS.

SPECIFICATION forming part of Letters Patent No. 732,735, dated July 7, 1903.

Application filed March 25, 1902. Serial No. 99,945. (No model.)

To all whom it may concern:

Be it known that I, MARTIN M. GRAVES, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Feeding Apparatus for Driers, of which the following is a specification.

The solid material which passes from the filter-press which filters the slop of a distillery will generally contain from fifty to sixty per cent. of water and must in this condition pass to the drying apparatus. It has been found necessary to deliver the feed into the drier with regularity, as if it is delivered too fast it is not perfectly dried. If fed too slowly it is liable to be scorched or become ignited, while both effects may result if the feed is irregular. The regular feed of the material, however, is complicated by the fact that the delivery from the press is in large quantities at a time delivered rapidly but intermittently. Efforts have been made from time to time to secure the desired uniform delivery to the drier by means of a casing intermediate the press and the drier provided with horizontal rotating shafts and arms; but it has been found that the material tends to adhere to the sides of the casing beyond the ends of the arms and to become caked in that position, so that the feed is extremely irregular. I have found that the material can be maintained in effective agitation throughout the entire mass, caking prevented, and a uniform speed of delivery secured by placing a casing intermediate the press and drier and providing it with agitators vertically arranged above a conveyer, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation showing the arrangement of the agitator and conveyer between the press and the drier. Fig. 2 is an enlarged sectional elevation showing the agitator and conveyer. Fig. 3 is a plan view of the agitator, Fig. 2.

The filter-press A and the drier B are of any suitable construction and are represented in Fig. 1 only in outline to illustrate the intermediate relation of the agitator and conveyer.

The agitator is provided with a casing C, in which are arranged vertically two shafts, each provided with cross-arms 2 2, the cross-arms of one shaft intermediate those of the other and extended so that each will project between arms of the other shaft—that is, the arms of one shaft will overlap the arms of the other if all the arms are in the same vertical plane. Preferably, however, the arms of one shaft are in a vertical plane, which is at right angles to the plane of the arms of the other shaft, as shown in Figs. 2 and 3, and the ends of the arms pass in as close proximity to the casing C as possible. In the bottom of the casing C is an opening *x*, affording a communication between the casing C and the horizontal conveyer-casing E, in which is arranged a longitudinal shaft 3, turning in a head 4 of the casing E and in a cross-bar 5, and on the shaft 3 is a feed-screw D of usual construction. The tank C is of such a size as to contain all of the solid material of one charge which may be discharged from the filter-press at any one time, as well as subsequent discharges, that may accumulate faster than can be conveyed away by the feed-screw D, so that the casing E can never be overstocked with material at any one time, the feed-screw D being operated continuously at such a speed as to convey regularly to the drier the material passing downward from the casing C.

By the vertical arrangement of the agitator-shafts with the discharge-opening *x* at the bottom of the casing C, I utilize the gravity of the material as it is agitated by the rotating arms to feed downward without adhesion to the sides of the casing, and by arranging the arms alternately, as described, there is a more effective agitation and breaking up of the material than would otherwise result, so that no portion of the same is permitted to remain quiescent. It will be evident that if any portion of the material remained for even a short time without being agitated the liquor would tend to drain therefrom, so as to cause it to cake, become lumpy, and feed unequally, even if it did not adhere to the sides of the casing.

While I have described the agitator as provided with two shafts with arms, it will be

evident that a single shaft might be employed—as, for instance, a central shaft with radiating arms—or that other forms of agitators might be employed, so as to feed the material vertically downward; but in any case the agitator should be of such construction as to maintain the agitation of the entire mass whether the casing E is wholly or only partially full.

Without limiting myself to the precise construction and arrangement of parts shown, I claim as my invention—

1. In an apparatus for drying the solid material of filtered distillery-slop, the combination with a press from which the discharge is intermittent, and a drier, of an intermediate feeder consisting of a tank of a capacity to contain more than one charge from the press, means for delivering the solid material discharged from the press to the tank, an agitator within the tank to feed the material vertically downward, and means for uniformly conveying the material from the bottom of the tank to the drier, substantially as set forth.

2. In an apparatus for drying the solid material of filtered distillery-slop, the combination with a press from which the discharge is intermittent, and a drier, of an intermediate feeder consisting of a tank of a capacity to contain more than one charge from the press and having an opening in its bottom,

means for delivering the solid material discharged from the press to the tank, an agitator arranged vertically within the tank, a casing below the opening in the bottom of the tank, a conveyer in the casing and means for uniformly delivering the material discharged from the casing to the drier, substantially as set forth.

3. In an apparatus for drying the solid material of filtered distillery-slop, the combination with a press from which the discharge is intermittent, and a drier, of an intermediate feeder consisting of a tank of a capacity to contain more than one charge from the press, and having a discharge-opening in its bottom, means for delivering the material discharged from the press to the tank, a pair of vertical shafts journaled to rotate within the tank, radial arms on the shafts alternating with each other and the arms of one shaft being in vertical planes substantially at right angles to those of the other shaft, and means for uniformly delivering the material discharged from the tank to the drier, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN M. GRAVES.

Witnesses:

W. E. BRADLEY,
J. P. NUNLEY.