

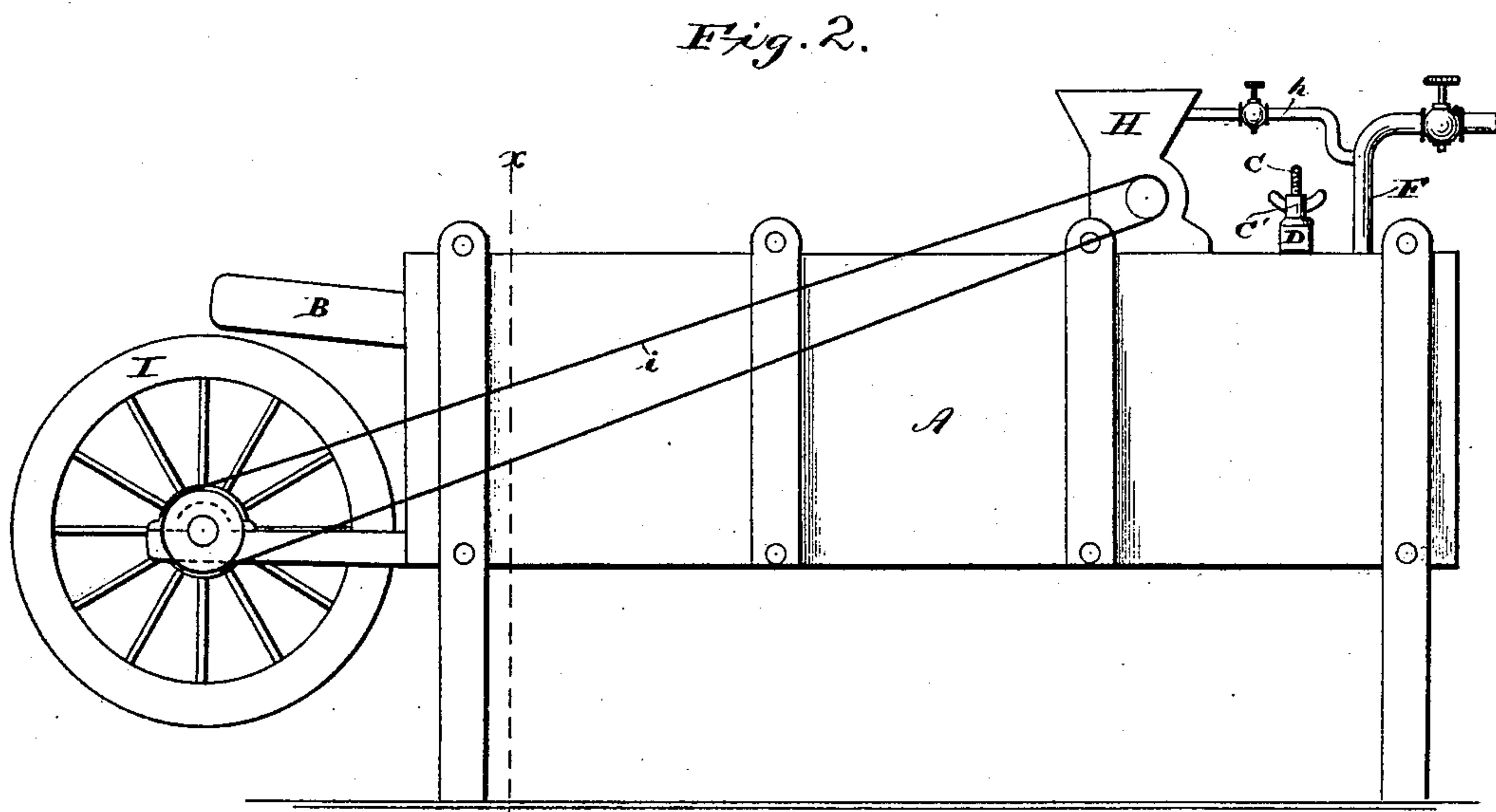
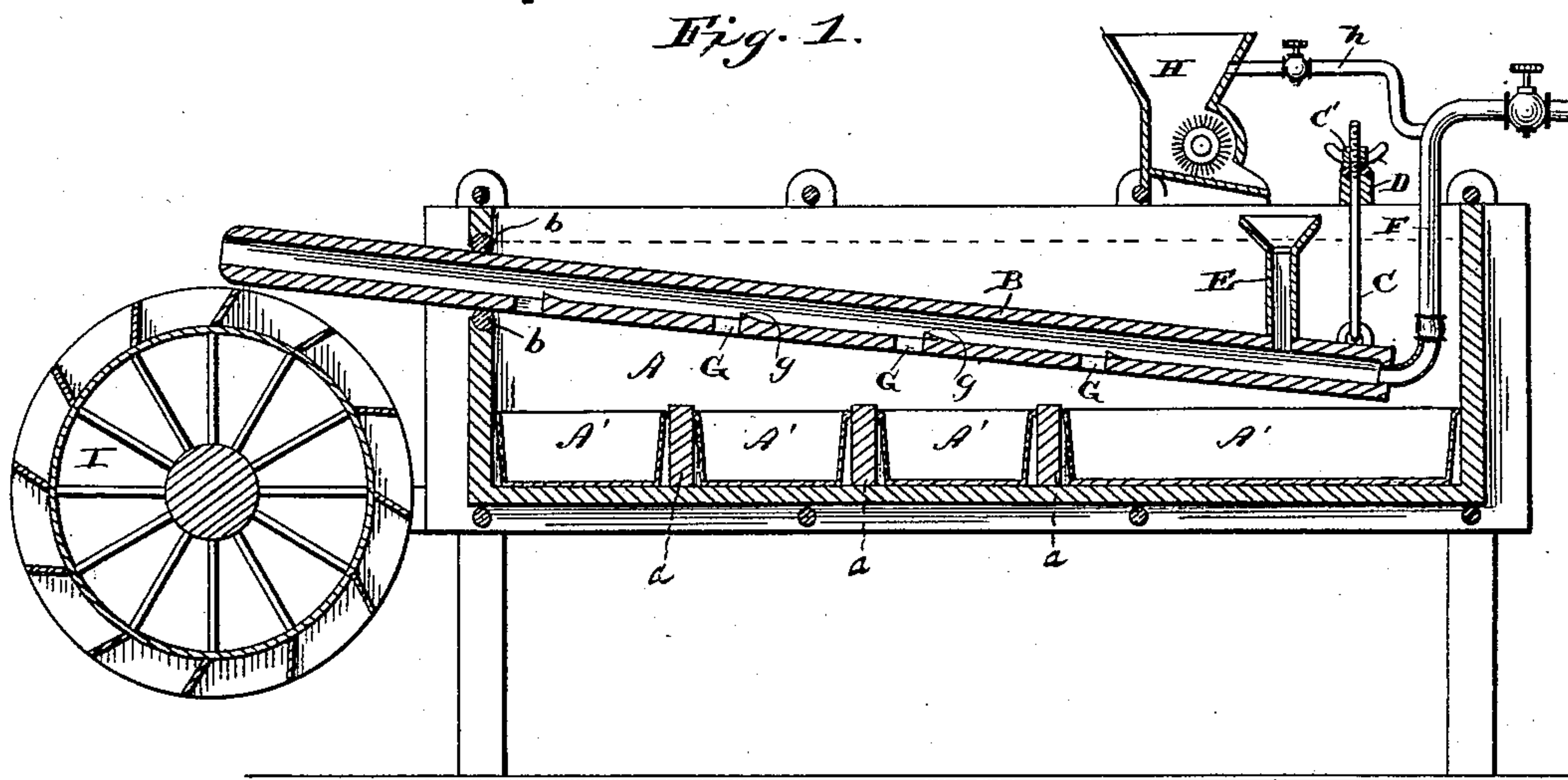
(No Model.)

2 Sheets—Sheet 1.

J. JENKINS.  
ORE SEPARATOR.

No. 407,531.

Patented July 23, 1889.



Witnesses.  
Chas. R. Burr.  
Thomas Durant

Inventor:  
James Jenkins  
by *Church & Church*  
his Attorneys.

(No Model.)

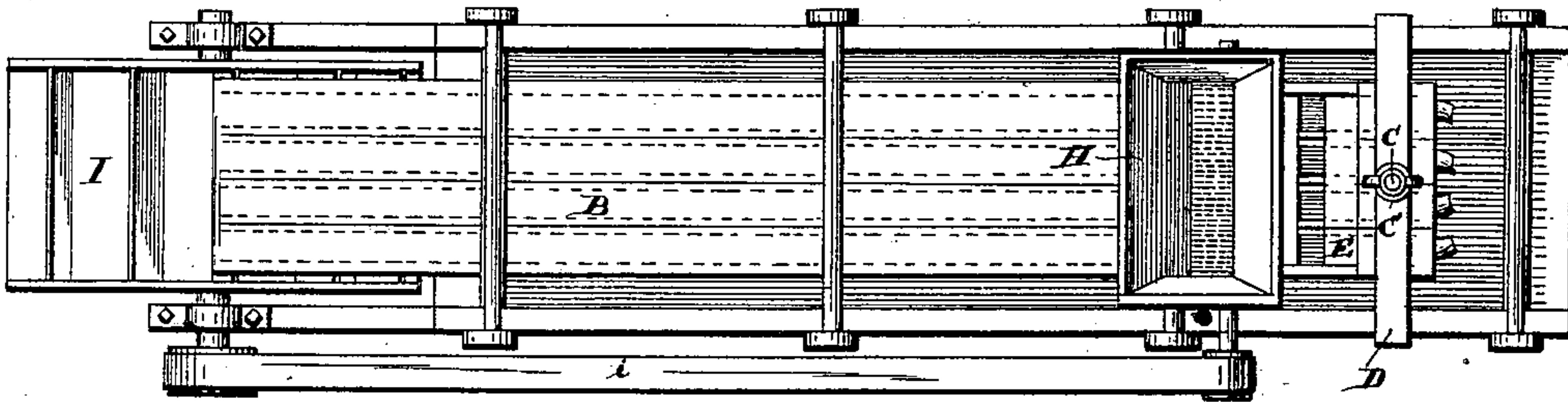
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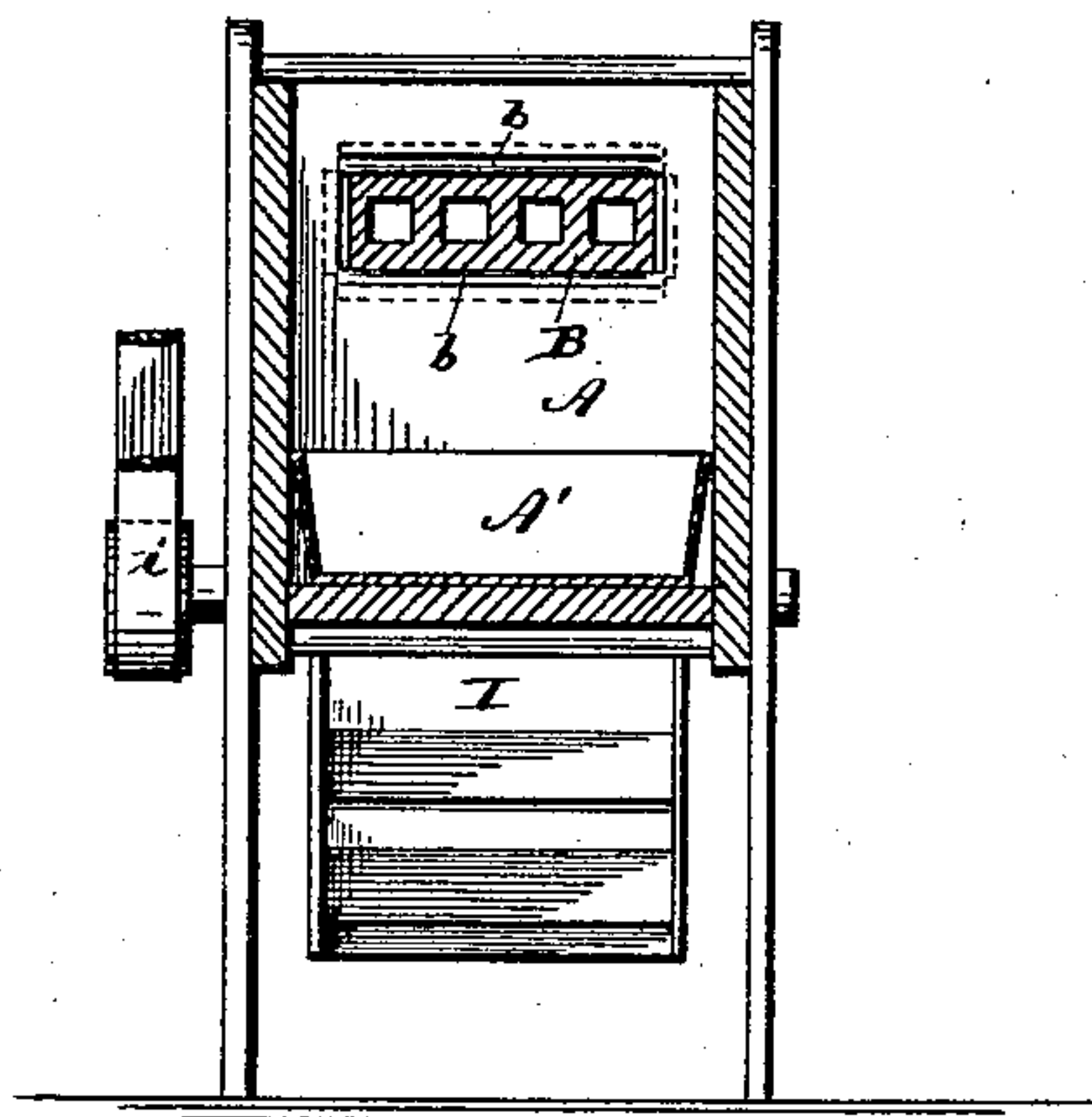
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*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

JAMES JENKINS, OF HARRISBURG, PENNSYLVANIA.

## ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 407,531, dated July 23, 1889.

Application filed June 2, 1888. Serial No. 275,864. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES JENKINS, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Ore-Separators; 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, forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to certain improvements in separators for ore and other substances in which the specific gravity of the elements is different, and particularly to that class of separators in which the material to be separated is carried through a conduit having apertures in its bottom at varying distances from the end, through which the elements drop—such, for instance, as is described in my prior patent, No. 115,737, dated June 6, 1871—the object of the invention being to produce a separator of great simplicity, easily manipulated by any one, the elements being at all times accessible, and at the same time greatly reduce the cost of manufacture and increase the efficiency of the apparatus, while the amount of water used is greatly economized; to which ends the invention consists in certain novel features of construction and combinations and arrangements of parts to be hereinafter described, and pointed out particularly in the claims at the end of this specification.

In the accompanying drawings, Figure 1 represents a vertical horizontal sectional view of a separator constructed in accordance with my invention; Fig. 2 a side elevation of the same. Fig. 3 represents a top plan view; Fig. 4, a section on the line *x x*, Fig. 2.

Similar letters of reference in the several figures indicate the same parts.

The settling-tank A is rectangular and of a sufficient length to contain the desired number of compartments for the various elements or different qualities of the same element, as the case may be. These compartments in the present instance are formed by simply erecting division-plates *a*, extending upward from the bottom of the tank and locating within these compartments thus formed suit-

able removable trays or pans A', preferably of sheet metal.

Hung within the tank are the conduits B, preferably four or more in number, of such size as is suitable for the material to be operated upon, the open ends of which extend out at one end of the tank, a water-tight joint being formed around them to prevent the escape of the water in the tank. Such water-tight joint I preferably form by inserting suitable rubber or other flexible rollers *b* in grooves formed in the tank-wall around the aperture through which the conduits pass, which will bear firmly upon the conduits and prevent the escape of water, at the same time permitting the conduits to be readily adjusted, as will be now explained.

The inner ends of the conduits are supported by the screw-threaded rod C, passing through an eye or other connection thereon and extending up through the cross-timber D, passing from side to side of the tank, a nut C' being screwed down on the end of the rod to hold it in position and permit of the vertical adjustment of the conduits.

A hopper or hoppers E—such as described in my aforesaid patent—guide the material to be separated into passages leading into the conduits a short distance from the lower ends, while the flexible supply-pipes F, entering conduits at the end, furnish the water for sweeping the material off up the conduits, the latter being preferably inclined, as in my former patent.

In the bottoms of the conduits are apertures G, corresponding in number to the compartments in the bottom of the tank, each one being preferably located over a separate compartment. One side of each aperture—that on the side in the direction from which the current flows—is made slightly higher than the other, or is provided with an incline *g* to slightly elevate the material in passing over the apertures, thus reducing the liability of two elements of different specific gravities both striking the opposite side or passing through the apertures, as would be the case were both sides of the aperture of the same height, the chances in the latter case being that two elements of different specific gravities passing along the bottom will both



fall somewhat, although the heavier will fall much more rapidly.

The material to be operated upon before being delivered to the hopper E is, in order to secure the best results, mixed with water in the mixing-tank H, located over the top of the settling-tank and receiving its water-supply from the pipe h, the mixing and feeding mechanism being driven by power derived from the utilization of the waste water through the medium of the water-wheel I or other motor, located beneath the discharge ends of the conduits, and communicating its motion to said mixing and feeding mechanism by belt i, as shown clearly in Fig. 2. The bearings for the water-wheel are preferably formed in an extension of the frame of the settling-tank, in order that the wheel may at all times occupy the proper position relative to the discharge-orifice of the conduits.

The operation will now be readily understood. The settling-tank is filled with water to the height indicated—that is to say, to the level of the discharge-orifices of the conduits—before the material to be separated is allowed to enter the conduits, the result being that as the material ascends the conduits with the water entering through pipes F there is no current in either direction through the openings in the bottom of the conduits, and the elements are allowed to settle, by reason of their own specific gravities, down through said openings into the compartments at the bottom of the tank.

When it is necessary to change the elevation of the conduits for operating on different materials, it may be accomplished by screwing or unscrewing the thumb-nut C', as will be readily understood.

From the above it will be seen that I have produced a separator of simple and practicable design, not liable to get out of order, and one from which the elements separated may be readily removed without the necessity of drawing off all the water, and, by reason of the entire submersion of the conduits, doing away with the necessity of employing inclosed water-tight compartments and conduits leading thereto, as heretofore.

Having thus described my invention, what I claim as new is—

1. In a separator, the combination, with the open-top settling-tank having the compartments therein, of the substantially-straight conduit for conveying the material to be separated, located within the tank above the compartments and below the water-level, with the apertures therein corresponding to the compartments, substantially as described.

2. In a separator, the combination, with the settling-tank having the compartments therein, of the conduit for conveying the material to be separated, having apertures in the bottom corresponding to the compartments in the tank, the sides of the said apertures in the direction from which the material flows being provided with inclines, substantially as and for the purpose specified.

3. In a separator, the combination, with the settling-tank having the compartments therein, of the substantially-straight inclined conduit for conveying the material, located within the tank above the compartments and below the water-level, with its discharge end above the opposite end, and having the apertures therein corresponding to the compartments, and means for supplying water under pressure to the lower end, substantially as described.

4. In a separator, the combination, with the settling-tank, of the conduit located in the same below the water-level, having apertures in its bottom, through which the separated material passes, and a discharge-orifice outside the tank, and a flexible water-tight joint between the conduit and walls of the orifice in the tank, through which it passes, whereby the end of the conduit is permitted a vertical movement, substantially as described.

5. In a separator, the combination, with the settling-tank, of the adjustable conduit located in the same below the water-level, having apertures in its bottom, through which the separated material passes, and the discharge-orifice outside the tank, with a water-tight connection between the tank and conduit, and a flexible pipe for supplying water to said conduit, whereby it may be adjusted to different levels, substantially as described.

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Witnesses:

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