(No Model.)

A. CUSTER.

ORE SEPARATING AND AMALGAMATING MACHINE.

No. 414,685. Patented Nov. 12, 1889.

Fig. 1

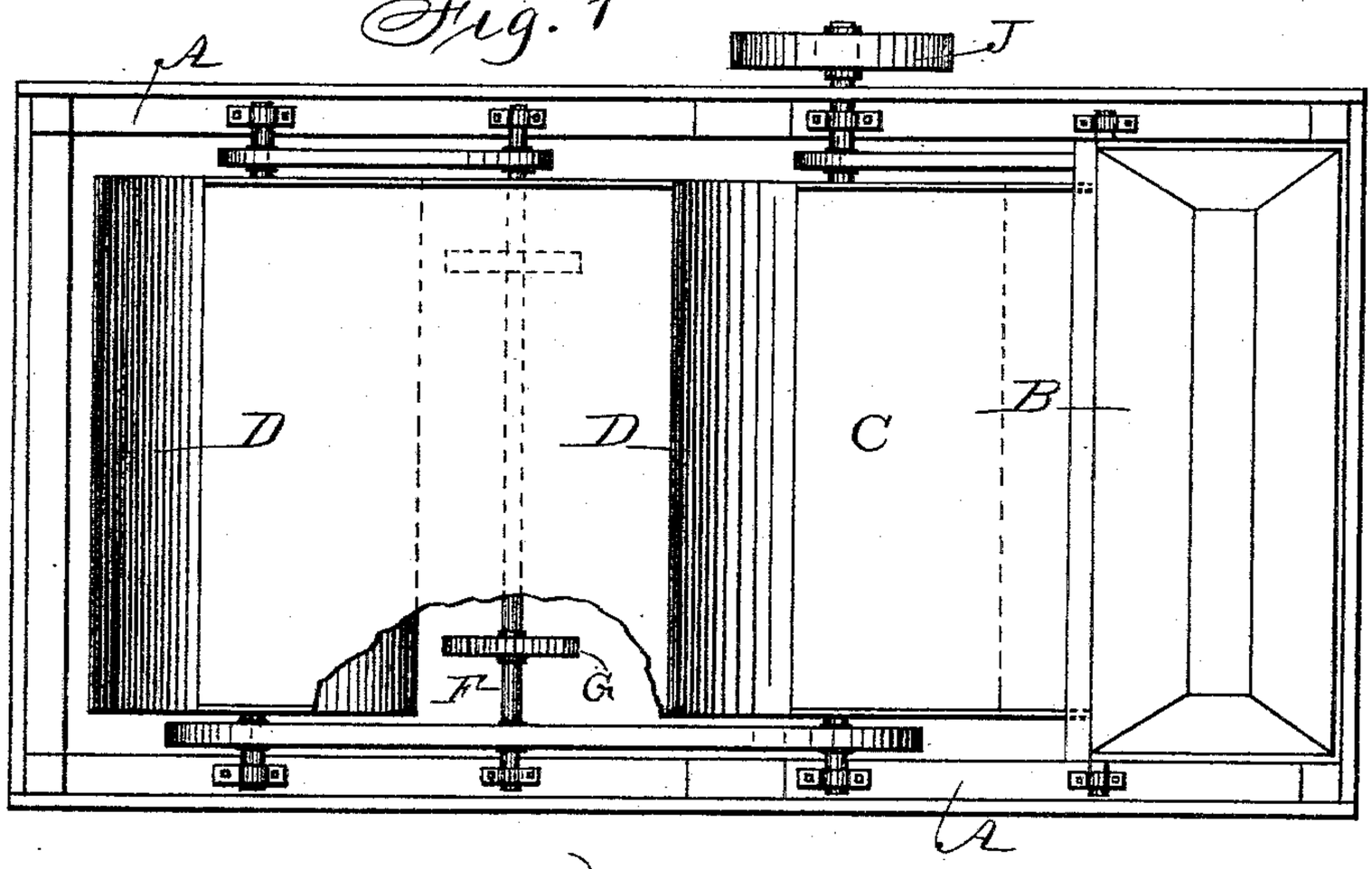
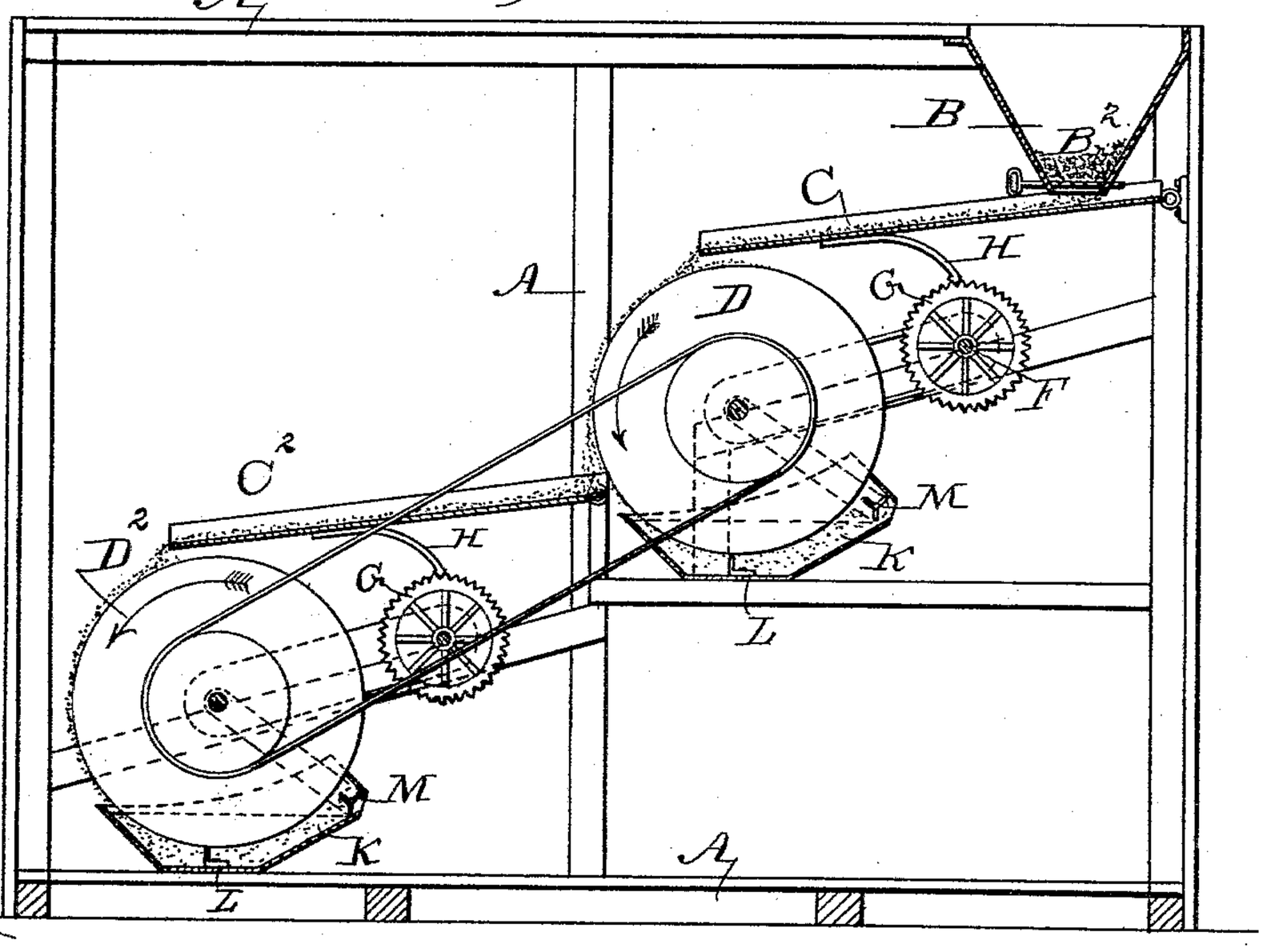


Fig. 2



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UNITED STATES PATENT OFFICE.

AARON CUSTER, OF MONROE, IOWA.

ORE SEPARATING AND AMALGAMATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 414,685, dated November 12, 1889.

Application filed April 5, 1889. Serial No. 306,126. (No model.)

To all whom it may concern:

Be it known that I, AARON CUSTER, a citizen of the United States of America, and a resident of Monroe, in the county of Jasper and State of Iowa, have invented a new and useful Ore Separating and Amalgamating Machine, of which the following is a specification.

My invention consists in the construction and combination of a hopper, inclined planes, amalgamated cylinders, pans, scrapers, and mechanism for vibrating the inclined planes and rotating the cylinders, with a frame, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a top view, and Fig. 2 a vertical sectional view, of the machine.

A represents a frame adapted to support the different operative elements.

B is a hopper at the end and top of the frame.

B^2 represents a feed-slide in the bottom of the hopper.

C is an inclined plane hinged to the frame and under the hopper to convey ore away from the hopper and distribute it over the surface of a rotating amalgamated cylinder D, located under the lower end of the plane.

F is a rotating shaft parallel to the cylinder D.

G are toothed wheels on the shaft F.

H are bars fixed to the under side of the inclined plane in such a manner that their free ends will rest upon the wheels G, to be actuated by the rotary motions of the wheels as required to vibrate the hinged inclined plane. The shaft F is connected with the axle of the cylinder D by means of a belt and pulleys, or in any suitable way, so that motion will be transmitted from the cylinder to the said shaft.

J is a drive-wheel on the end of the axle of the cylinder, that can be connected with a suitable motor in any suitable way.

k is a vat or amalgamating-pan adapted to be placed upon a suitable support under the cylinder in such a manner that when it contains mercury the periphery of the cylinder will be immersed in the mercury as the cylinder rotates.

M is a rotating shaft provided with radial fins adapted to brush waste matter on the surface of the mercury out through an opening in the pan. This rotating brush is connected with the axle of the cylinder by means of a belt and pulleys, as indicated by dotted lines in Fig. 2.

A duplicate set of the foregoing operative devices—an inclined plane C^2 and a cylinder D^2—are located in a lower plane, as clearly shown in Fig. 2, and connected with the upper set by means of belts and pulleys, or in any suitable way, to be simultaneously operated with the upper set.

In the practical use of my machine I place crushed ore or placer-ore in the hopper and allow it to discharge gradually to fall upon the upper inclined plane when the machine is in motion, so that it will by the vibrations of the plane be distributed and gradually shaken downward to drop upon the amalgamated surface of the upper rotating cylinder which revolves through the mercury in the pan under the cylinder. The valuable particles that adhere to the cylinder will be thereby carried into the pan, and the matter that does not adhere will fall upon the second or lower inclined plane and be subjected to the operation of the second cylinder. Any number of planes and cylinders and pans may be thus combined and operated to separate and amalgamate the valuable comminuted parts of the ore and gather it into pans, from whence it can be removed at pleasure. The pans are so shaped and located that any mercury or valuable ore that may drop from the cylinders will fall into the pans.

I claim as my invention—

1. In an ore separator and amalgamator, a frame supporting a hopper, an inclined plane extending under the hopper, mechanism for vibrating the inclined plane, an amalgamated cylinder extending horizontally across the lower end of the inclined plane, mechanism for rotating the cylinder, and an amalgamat-

ing-pan extended under the cylinder and parallel therewith, to operate in the manner set forth.

2. The hopper B, the vibrating inclined planes C and C^2, the rotating cylinders D and D^2, the pans K, and the shaft F, having toothed wheels G fixed thereon, arranged and combined with a frame substantially as shown and described, to operate in the manner set forth, for the purposes stated.

3. The rotating-brush devices M, in combination with a pan K and a rotating cylinder, to operate in the manner set forth, for the purposes stated.

AARON CUSTER.

Witnesses:
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