

(No Model.)

W. HOOPER.
Ore Separator.

No. 235,241.

Patented Dec. 7, 1880.

FIG. 1.

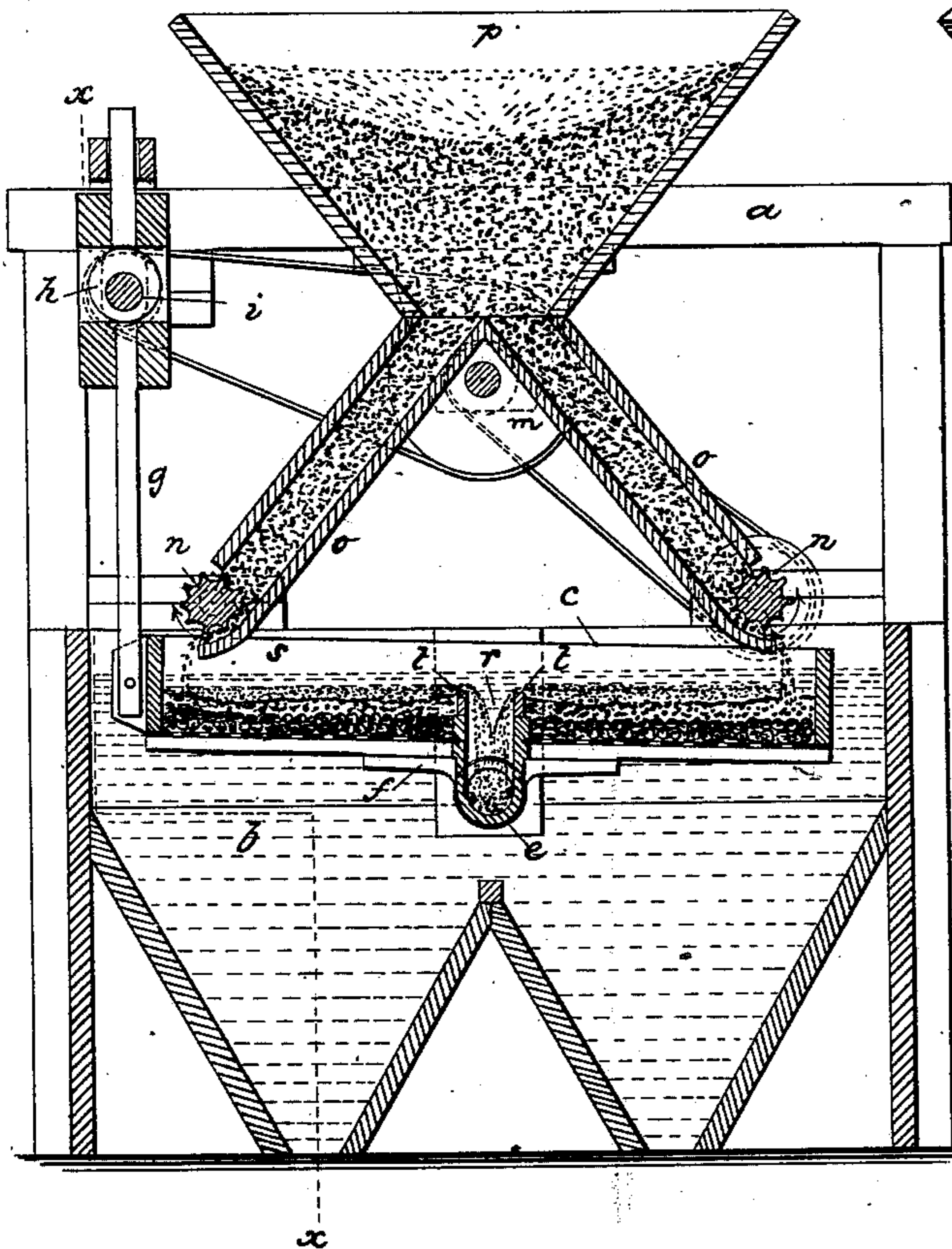


FIG. 2.

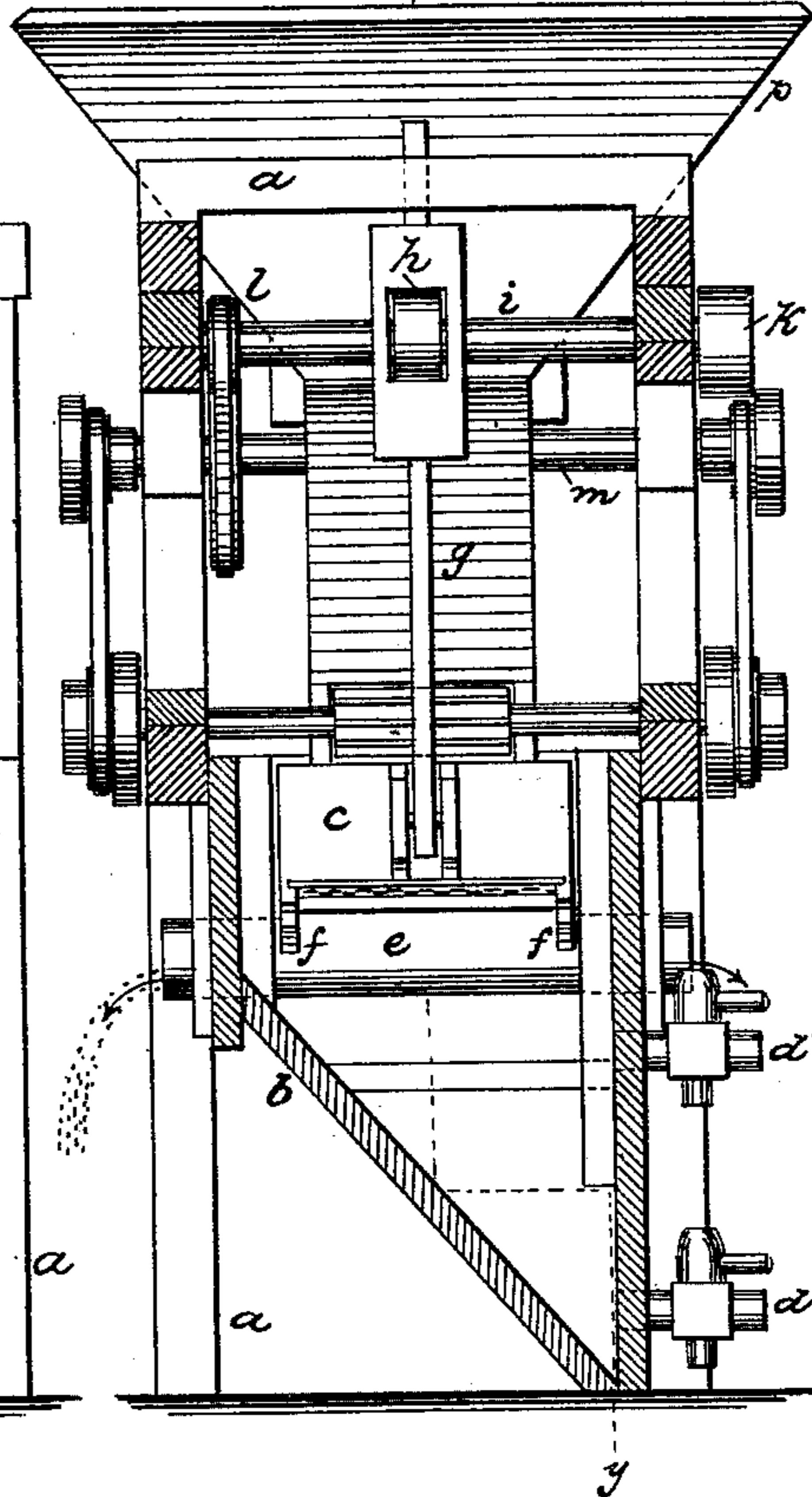
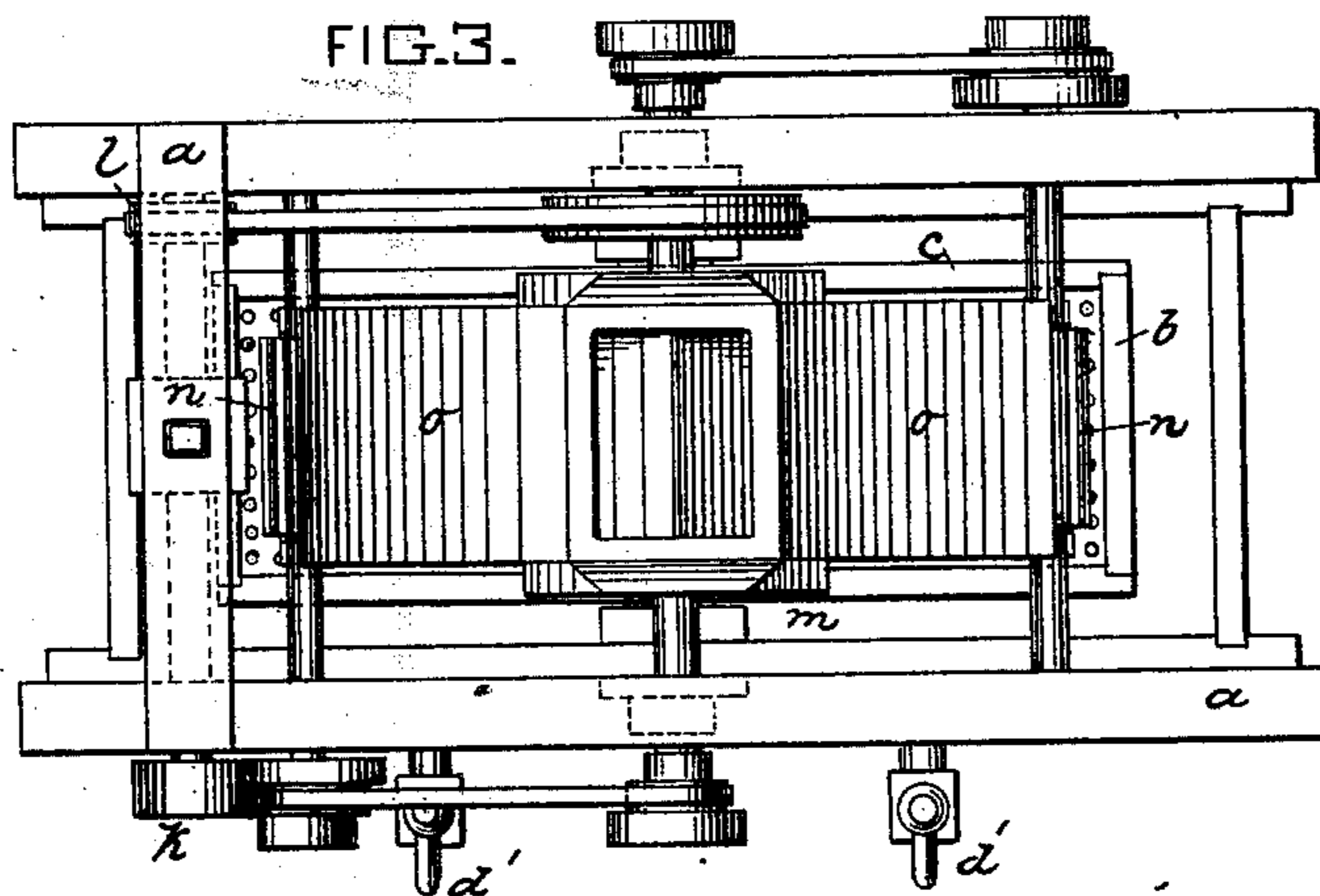


FIG. 3.



WITNESSES=

Chas M. Higgins.
Geo. O. Gavin

INVENTOR=

William Hooper
by S. H. Walcott
attys.

UNITED STATES PATENT OFFICE.

WILLIAM HOOPER, OF TICONDEROGA, NEW YORK.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 235,241, dated December 7, 1880.

Application filed July 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HOOPER, of Ticonderoga, Essex county, New York, have invented certain new and useful Improvements in Ore-Separators, of which the following is a specification.

This invention relates to those ore-separating machines of the "jig" type; and my invention aims to provide a machine of this class which, while involving a simple construction and operation, will be capable of acting upon a greater mass of ore in a more effective and continuous manner and in shorter time than those heretofore produced, yet without requiring more attention, and in which, also, the jig-sieve shall be so formed and vibrated as to more effectually separate the ore, discharge the waste, and preserve the bedding even.

The main features of my invention may therefore be stated to consist in a rocking jig-sieve mounted on a rocking axis at or about its middle, with a waste-outlet, also at the middle, whereby two jigs and two masses or streams of ore are operated at the same time and by the same device.

It also consists in arranging the rocking axis below the bottom of the sieves, and in forming this axis hollow, to constitute in itself the waste-outlet, whereby important advantages are secured; and the invention further consists in the arrangement of feeding-hopper, chutes, and rollers relatively to the duplex rocking jig, together with other details, as hereinafter fully set forth.

Figure 1 of the drawings annexed is a front sectional elevation of my improved ore-separating machine, and Fig. 2 a cross-section thereof, the lines *x x* and *y y* showing the planes on which the respective sections are taken. Fig. 3 is a plan view with the feeding-hopper removed.

In the drawings, *a a* indicate the frame of the machine, and *b* the water-tank in the lower part thereof. This tank is open at the top, and in the top is mounted the jig *c*, which has the form of a shallow tray, its bottom being covered with a sieve of suitable mesh, as shown. The lower part of the jig is submerged in the water of the tank, as shown, and it is mounted at its middle on a rocking shaft, *e*,

which is placed below the bottom of the sieves, and is formed with arms *f*, by which the jig is fastened thereto, as shown. The jig is rocked up and down in the water of the tank by the eccentric-rod *g*, which connects to one end of the jig, and is driven by the eccentric *h* on the driving-shaft *i*. This shaft has a driving-pulley, *k*, on the outside of the frame, to which the power is applied, and has another pulley, *l*, inside the frame, from which a belt extends to drive a central shaft, *m*, from which, in turn, belts extend to revolve corrugated feeding-rollers *n n* in the discharging ends of feed-chutes *o o*, which extend from the feeding-hopper *p*, and thus insure a positive and regulated feed of the crushed ore from said hopper into each end of the jig.

Now, the jig is divided at the middle into two sections or sieves by cross-partitions, (shown,) leaving a space, *r*, between them, which forms the outlet for the waste, this outlet being placed directly over the rock-shaft *e*, which is itself formed hollow and open at each end, which ends extend through each side of the water-tank in a water-tight manner, thus forming the waste-outlet from the jigs at their center of oscillation, which is obviously advantageous.

The jig-sieves are covered by a bedding, *s*, of some heavy and coarsely-granulated material, as usual, and the depth of this bedding is regulated by the removable strips *t* at the edges of the waste-outlet, which strips may be removed to substitute others of greater or less depth.

The water-line of the tank is a little above the edges of the waste-outlet, as shown, and while the machine is in action a constant inflow of water is provided, to make up for the outflow through the waste-outlet.

When the jigs are vibrated and the ore fed into the same the heavy or metallic particles work through the bedding and sieves of the jigs and fall through the water into the bottom of the tank in the usual manner, while the lighter earthy particles rise and flow out with the water at the waste-outlet.

It may now be observed that as the center of motion of the jigs is below the sieves and at the waste-outlet, a slight longitudinal

nal motion is imparted to the sieves as they move up and down in the waste, which tends to keep the bedding in the sieves even, and the slight centrifugal action entirely prevents the bedding traveling with the flow of water toward the waste-outlet, which evenness of bedding is an important advantage not generally secured in former machines of this class. Furthermore, as by this means the motion is greatest at the outer ends, where the greatest amount of ore is received, and least where the waste is delivered, the separating action of the jig is thus disposed to the best advantage, the separation of the ore and the outfeed of the waste being rendered more sure, rapid, and complete.

It may be also seen that by the construction shown the two jigs are mounted on the same axis, and vibrated by the same means, and have a common outlet, two masses or streams of ore being treated at the same time; hence the machine has great capacity, a more continuous action, and one attendant can manage the action of both jigs with ease, thus rendering the operation of the machine simple and effective.

The bottom of the tank, as shown in Figs. 1 and 2, is formed with two inclined pockets, (one under each jig,) into which the ore accumulates, and the side of the tank is provided with an upper and lower cock, d d' , at each pocket, through the lower one of which the ore may be drawn off.

I prefer that the driving-eccentric be made adjustable, like that shown in my pending application for a duplex adjustable eccentric, so that the stroke of the jig may be adjusted as required. On ordinary fine ore the stroke of eccentric will be one-half inch, and on coarser ores the stroke will be slightly increased. For fine ores the speed will be about one hundred and eighty revolutions a minute, and for other ores the speed may vary between this and two hundred revolutions a minute.

When it is desired to separate the waste-discharge of each jig, this may be done by placing a diagonal partition in the space r between them and in the hollow shaft, so that the discharge from one jig will flow from one

end of the shaft, and that from the other jig from the opposite end of the shaft.

The pulleys on the shafts of the feed-rollers and on the central shaft, as seen in Figs. 2 and 3, are stepped cone-pulleys, which admit of changing the speed of revolution of the feed-rollers so as to regulate the rate of feed of the ore as may be required, and the pulleys of the feed-rollers are preferably friction-pulleys, so that the feed may be quickly stopped or started at any time.

The machine may, of course, be made single—that is, with one jig-sieve projecting from one side of the hollow rock-shaft, and one feed-chute discharging therein, in lieu of the double arrangement shown, without departing from some of the leading features of my invention.

What I claim as my invention is—

1. An ore-separating machine of substantially the described kind, constructed with a double rocking jig mounted on an axis at the junction of each jig, with a waste-outlet between said jigs and at or near said axis, substantially as and for the purpose herein set forth.

2. An ore-separating machine, substantially such as described, constructed with a rocking jig having its axis hollow and acting as the waste-outlet therefrom, substantially as and for the purpose set forth.

3. An ore-separating machine constructed with a double rocking jig having its axis and waste-outlet at the middle thereof or thereabout, in combination with two feeding-chutes, discharging the ore into the outer or vibrating ends of said jig or jigs, substantially as herein shown and described.

4. The combination, in an ore-separating machine, of a water-tank, a rocking jig submerged, or partly submerged, therein, with a feeding-hopper, p , discharge-chute extending therefrom, and corrugated roller, rotating in the discharge end thereof over the jig, substantially as herein shown and described.

WILLIAM HOOPER.

Witnesses:

EDWARD HORN,
H. H. ELLIS.