

# W. O. Bourne. Separating Ores.

Patented Jun. 14, 1859

N<sup>o</sup> 24367

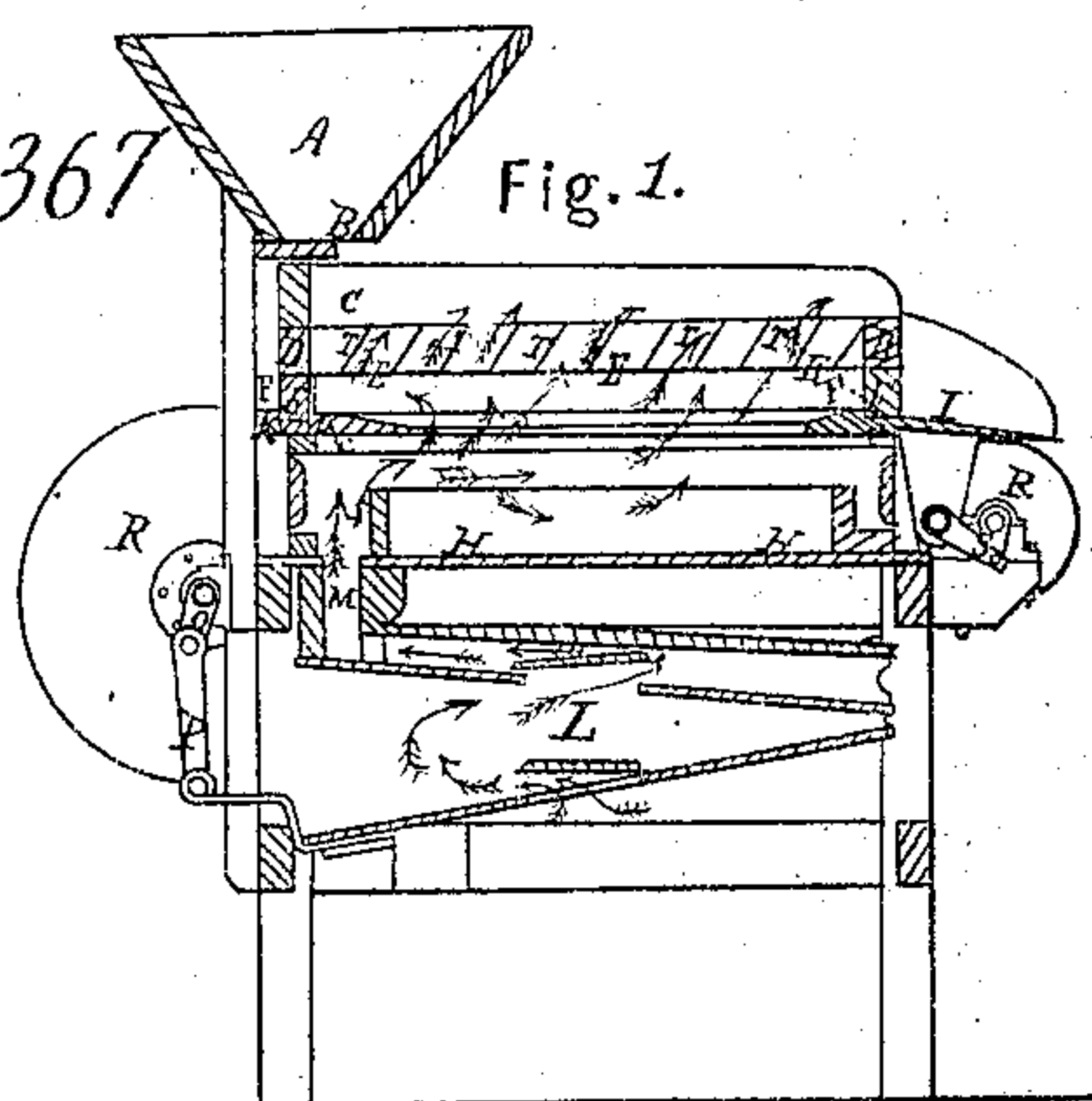


Fig. 1.

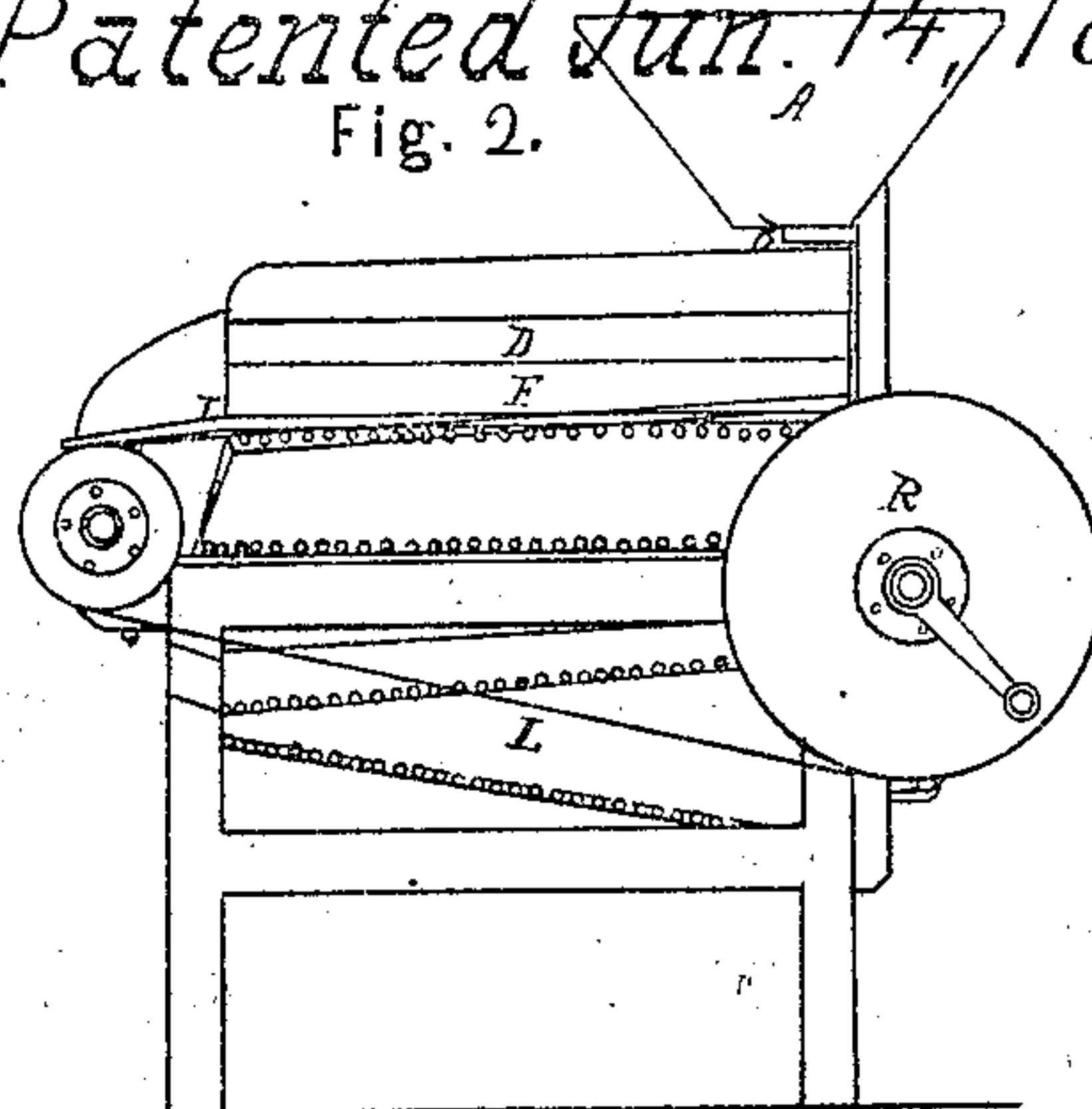


Fig. 2.

Fig. 3.

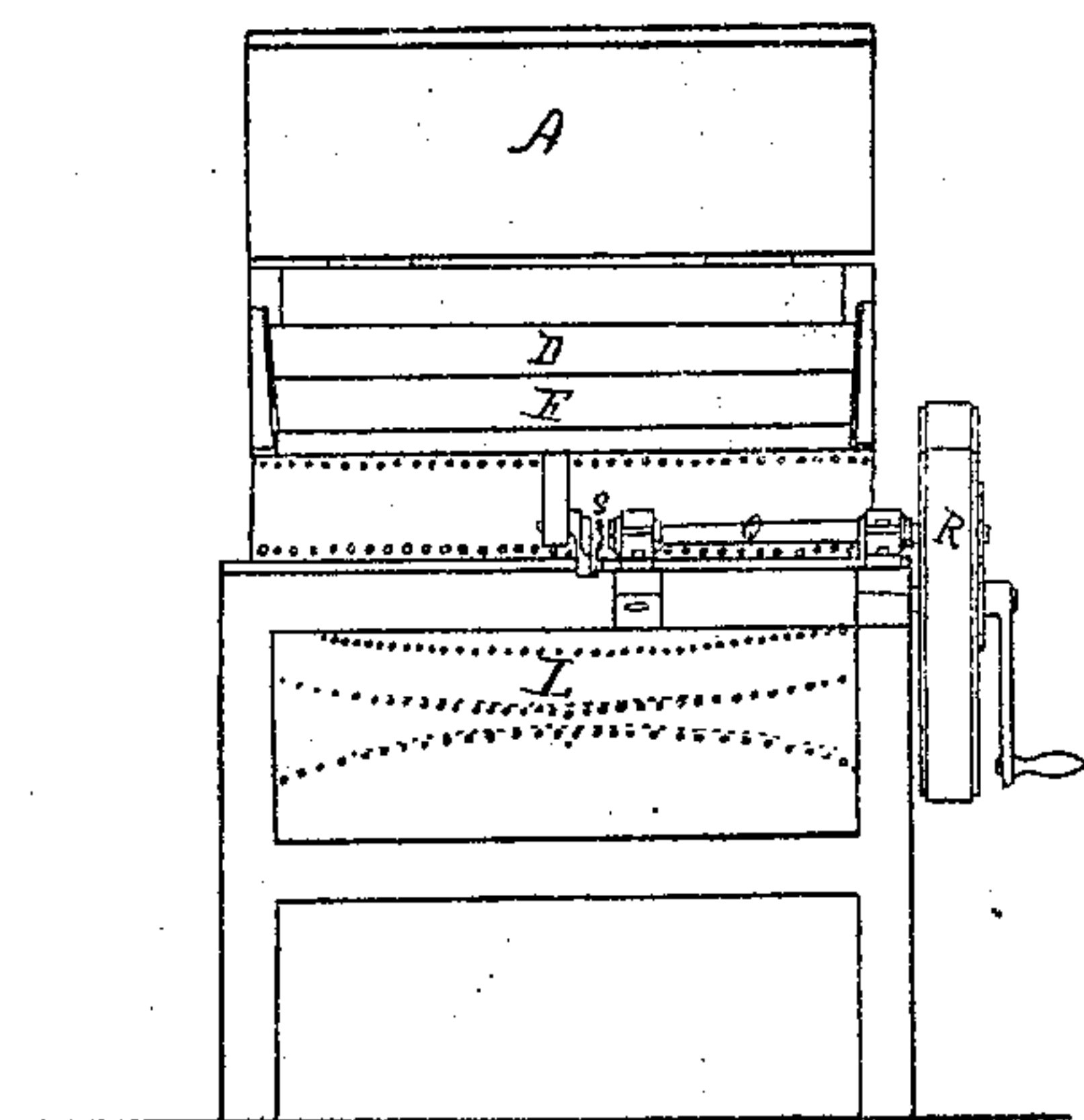


Fig. 4.

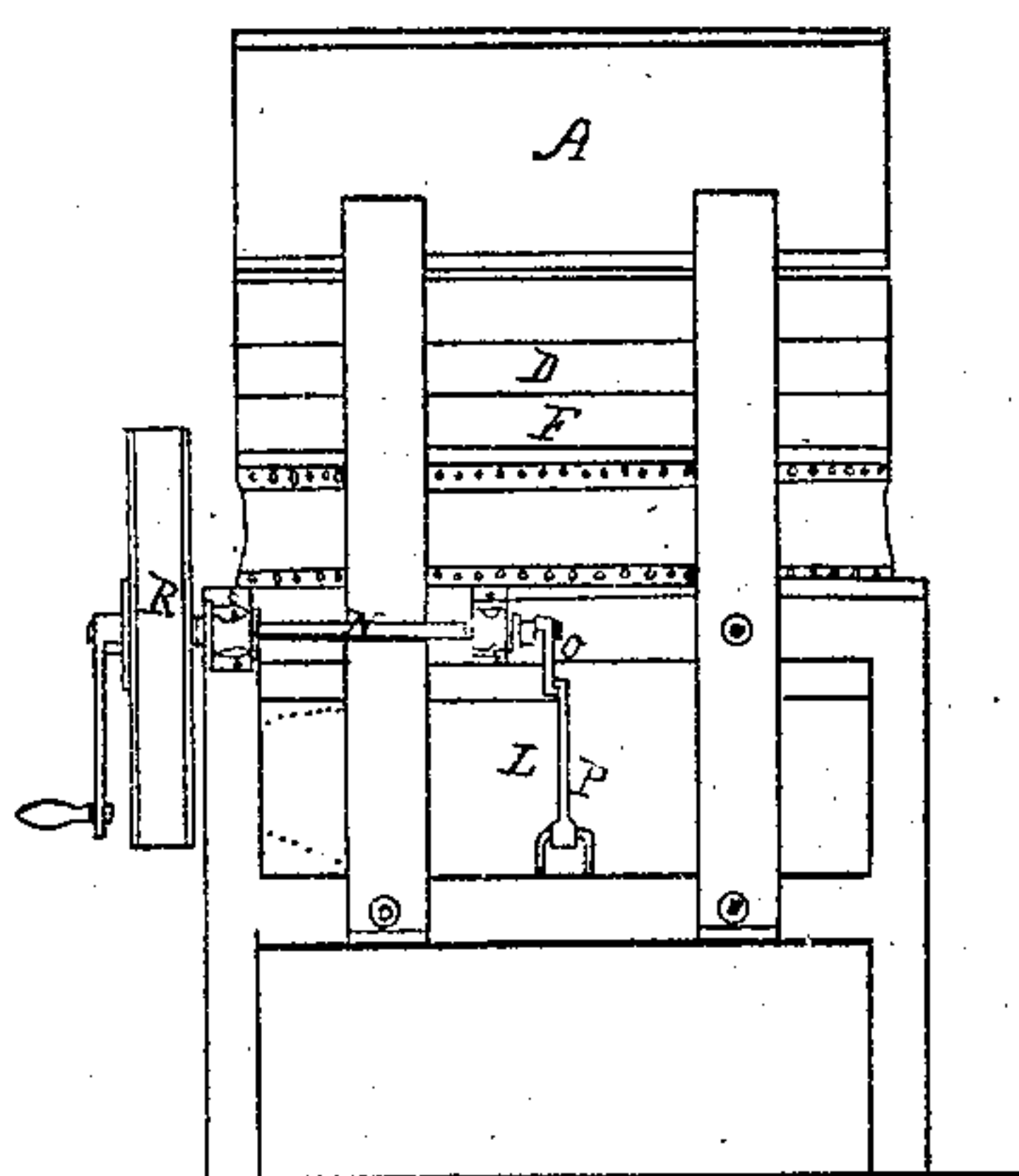


Fig. 5.

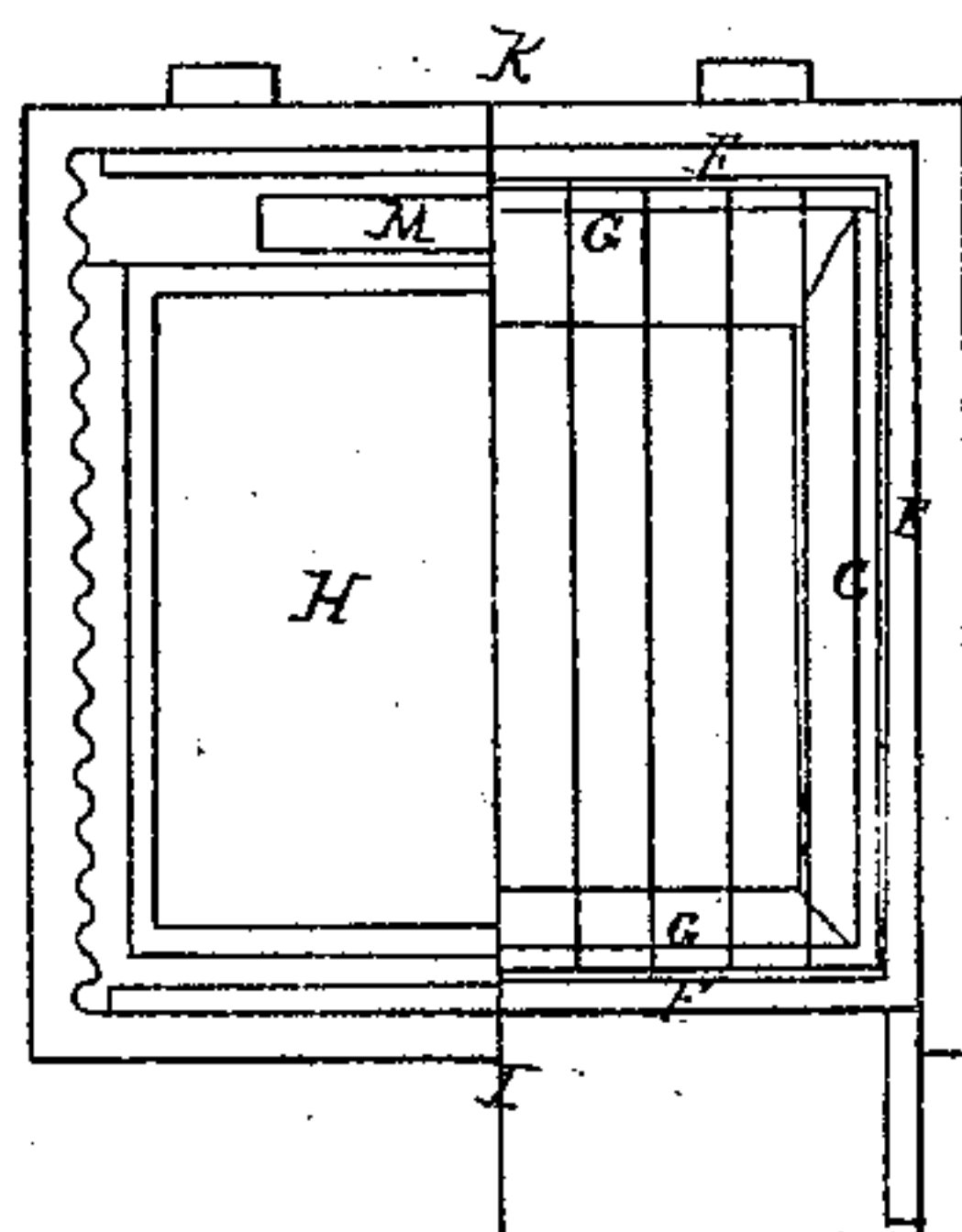
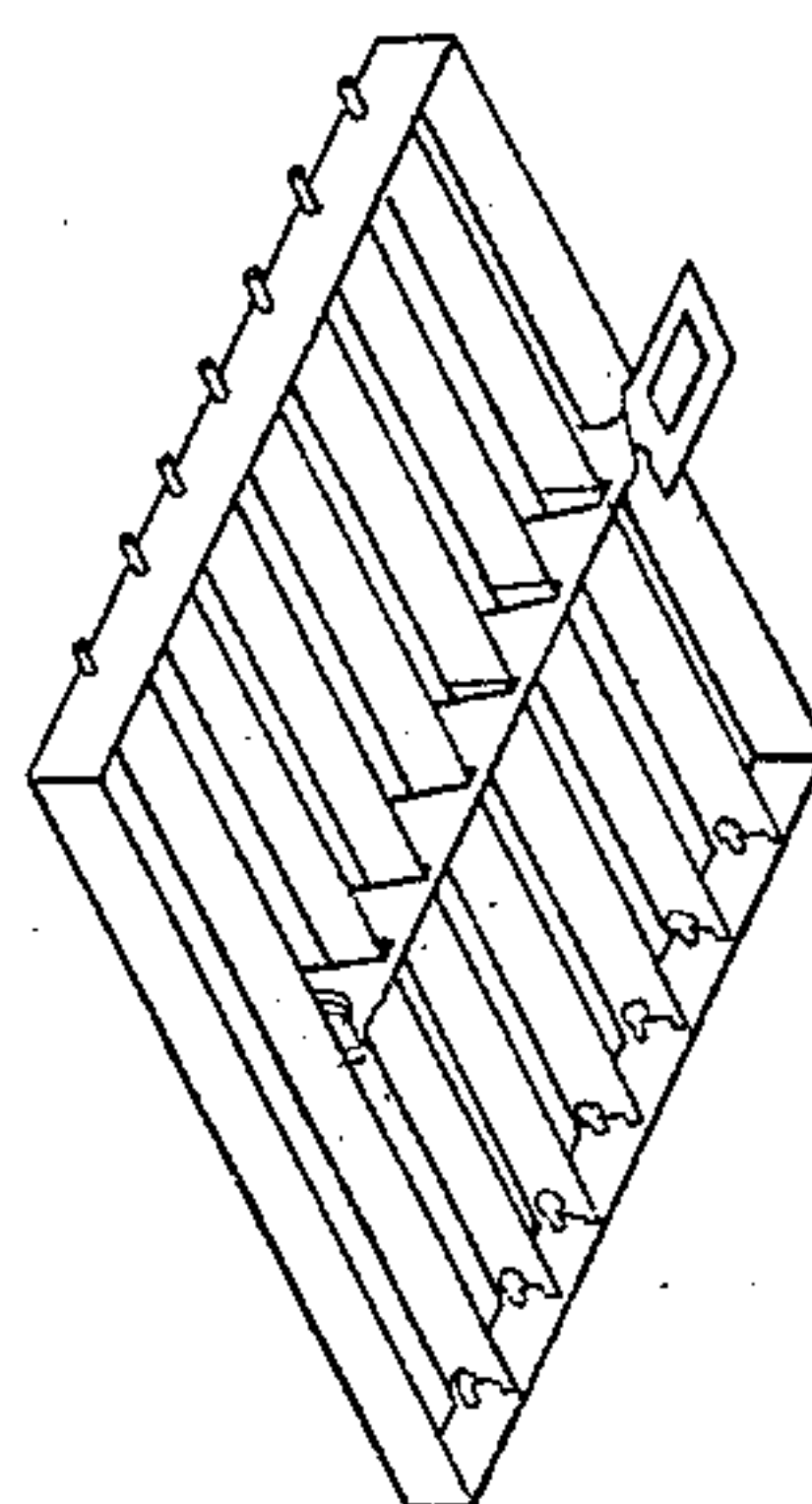


Fig. 6.



Witnesses

P. B. Nigh

Arthur Knight Jr

Inventor

Wm Oland Bourne



# UNITED STATES PATENT OFFICE.

WILLIAM OLAND BOURNE, OF NEW YORK, N. Y.

## IMPROVED ORE-SEPARATOR.

Specification forming part of Letters Patent No. 24,367, dated June 14, 1859.

*To all whom it may concern:*

Be it known that I, WILLIAM OLAND BOURNE, of the city, county, and State of New York, have invented a new and Improved Mode or Machine for Separating Ores, Metals, and other Substances of Different Specific Gravities, which I name and designate "The Eureka Ore-Separator;" and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and the letters of reference marked thereon.

Figure 1 is a vertical section through the whole machine. Fig. 2 is a side elevation looking in the opposite direction to Fig. 1. Fig. 3 is a front elevation. Fig. 4 is a rear elevation. Fig. 5 is a plan of the box and shaking table. Fig. 6 is a view of the blades in their frame, showing how they may be adjusted by a rod to which each blade is attached, with a flattened and slotted end for an adjusting-screw.

A is a hopper, into which the material is placed which it is desired to separate. B is its outlet, the material being fed on at the rear edge of the machine at C.

D is a sieve-frame with a sieve-cloth attached to its bottom edge at E, the said sieve-cloth forming the bed on which the material rests which is to be operated upon.

F is a platform-frame with cross-bars to support the sieve-bed and its burden.

G is a support-frame on which rests the platform-frame and its burden, and is connected to the top of the table H by an air-tight flexible substance, such as leather or its equivalent, and may be supported by connecting-rods or their equivalent, the object of construction being to make an air-tight compartment between the sieve-bed E and the top of the table H, and yet allow flexibility to the support-frame G and its burden.

L is a bellows with an outlet communicating with the air-tight chamber between the sieve-bed and the top of the table, as shown at M.

N is a shaft with a crank at one end at O, connected by a rod to the bellows at P.

Q is a shaft, which is driven by the belt and pulleys R, connecting it to the shaft N. On one end of the shaft Q is a crank S, connected by a rod to the front edge I of the support-frame G, by which a vibrating and shak-

ing motion is conveyed to the support-frame G and its burden.

T T are blades, either fixed or adjustable, arranged parallel to the waste or front edge of the machine, or when used on a circular sieve-bed in concentric circles, with their lower edges resting upon the sieve-bed and their upper edges deflecting toward the waste or front edge of the machine, the blades forming a vertical and horizontal angle, as shown in the end view.

The sieve-bed upon which the material rests which is to be operated upon, and through which the air passes to operate upon it, may be made of perforated sheet metal or textile material or their equivalent, which has been used heretofore; but the area of perforations or openings in the sieve-bed for the passage of the air must be sufficiently small to enforce an equal action of the air throughout the entire sieve-bed surface, and should be graduated according to the fineness or coarseness of the material to be acted upon.

The operation of the machine is as follows: The material being fed upon the back edge of the sieve-bed, which has a vibrating or shaking motion, combined with a blast of air through the sieve-bed and the blades on the sieve-surface, keeps the material loose and in continuous agitation, by which means the heavier substances are allowed to settle on the sieve-bed surface, and by deflecting the blades, as above set forth, or by raising the rear end of the machine higher than its waste or front edge, the refuse materials or substances are discharged over the waste or front edge, either with or without the above-mentioned vibrating or jarring motion; or a circular sieve-bed may be used, with its center raised above the periphery and its upper surfaces having a slightly conical form, when by feeding the material upon its center it will by action of the current of air gravitate toward and over the periphery or waste edge.

A current of water may be substituted for the above-described current of air.

I claim as my invention and as not before known or used—

1. A sieve-bed in which the openings or perforations for the passage of the air or water through it are so contracted as to enforce a uniform action of the air or water through the entire surface of the sieve-bed, which

may be made of sheet metal or of any textile material, either separately or in combination, or of their equivalent, as above set forth.

2. The application of a vibrating and shaking motion to a sieve-bed, in combination with a blast or current of air or water, in the manner and for the purpose above described.

3. The above-described adjustable blades for agitating the substance on the sieve-bed and for regulating the discharge of the refuse substances over the front edge of the table, as above described.

4. The separation of metals or other heavy substances from ores or other materials when fed upon a sieve-bed by the gravitation of the lighter substances toward and over the front or waste edge when acted upon by a current of air or water through a sieve-bed, in the manner and for the purpose above set forth.

WM. OLAND BOURNE.

Witnesses:

SAMUEL CLARK,

JNO. A. DELANEY, Jr.