

(No Model.)

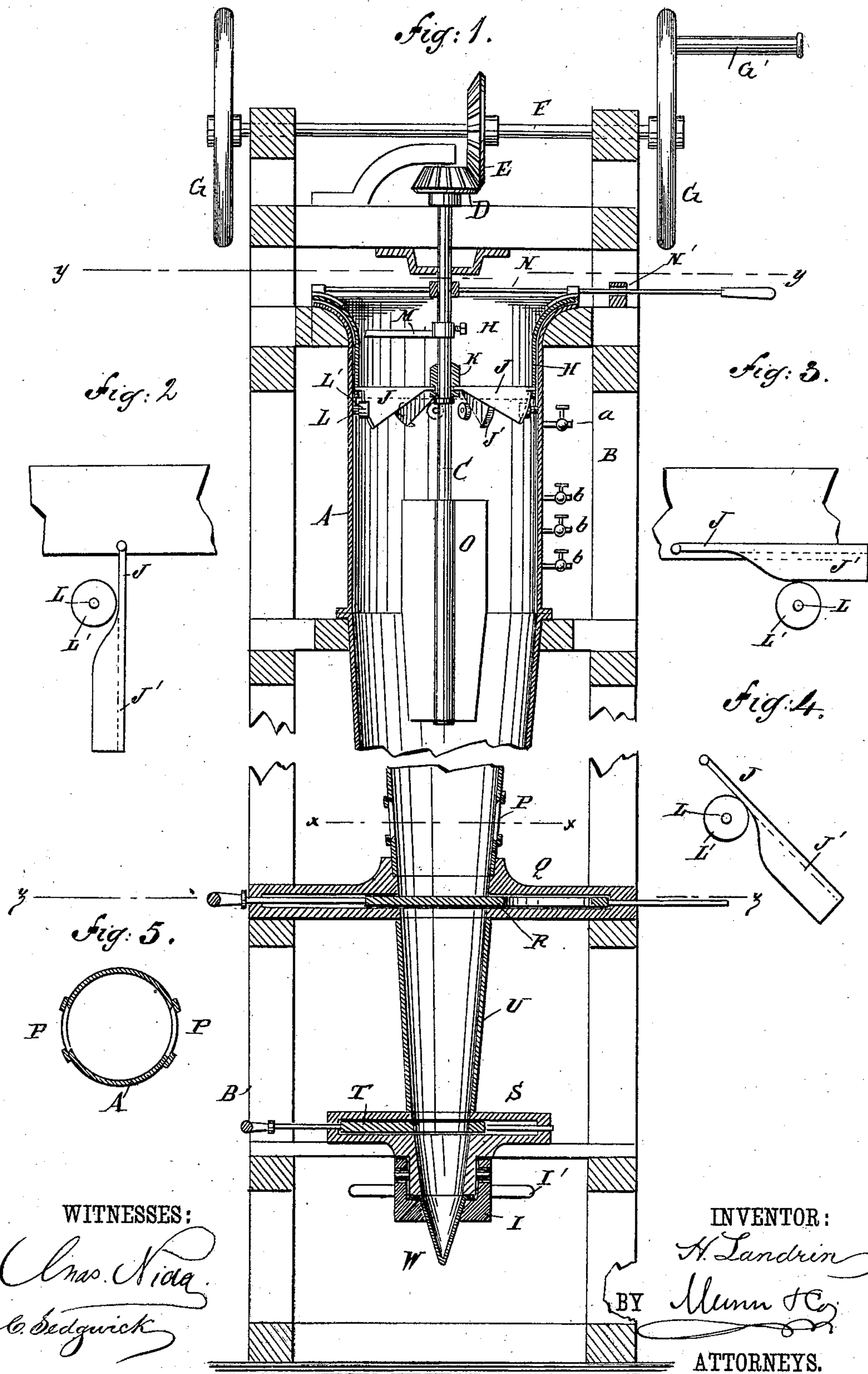
2 Sheets—Sheet 1.

H. LANDRIN.

ORE SEPARATING AND CONCENTRATING MACHINE.

No. 321,118.

Patented June 30, 1885.



WITNESSES:

Chas. Nida
C. Sedgwick

INVENTOR:

H. Landrin
Munn & Co.

BY

ATTORNEYS.

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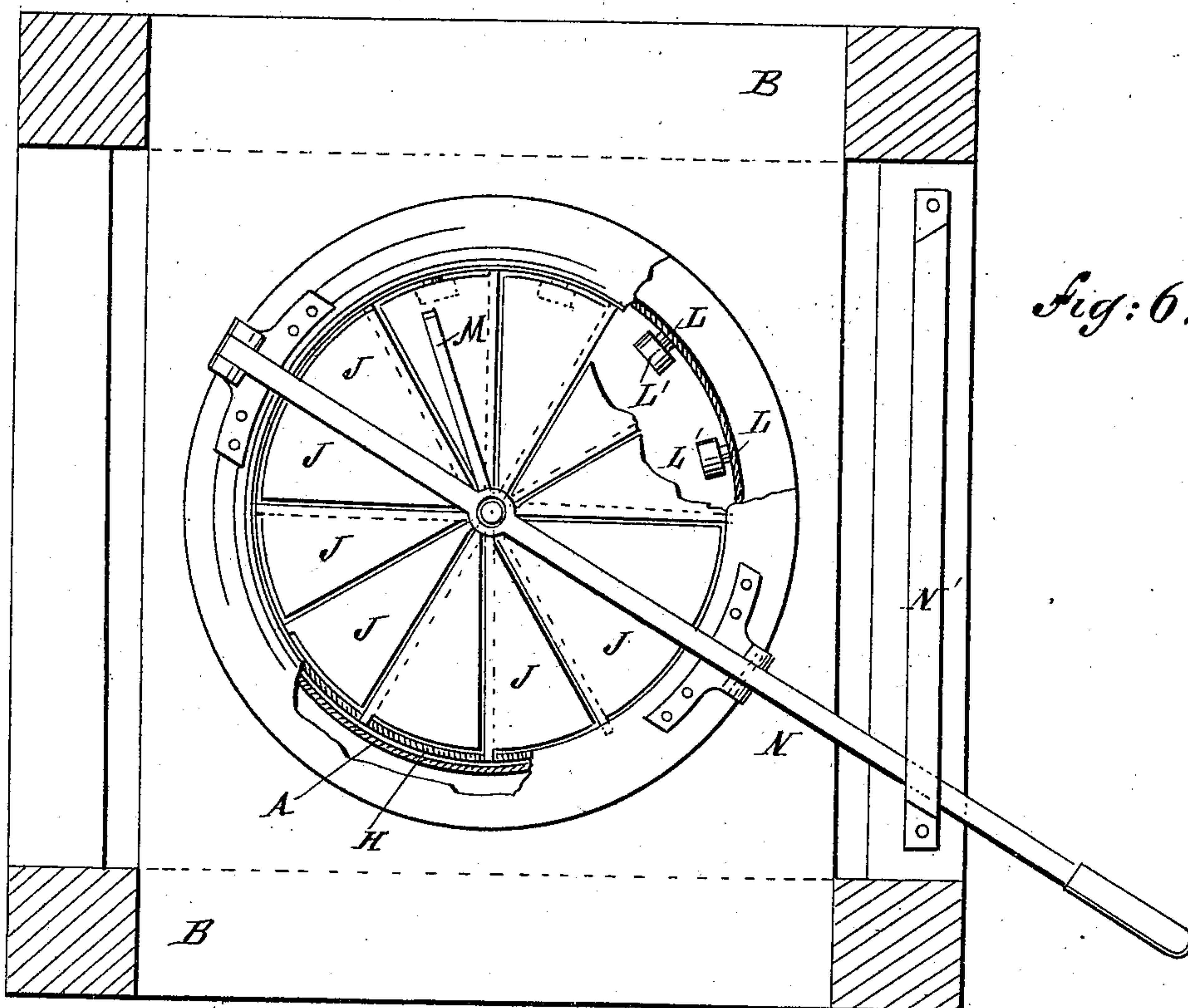


Fig. 6.

Fig. 7.

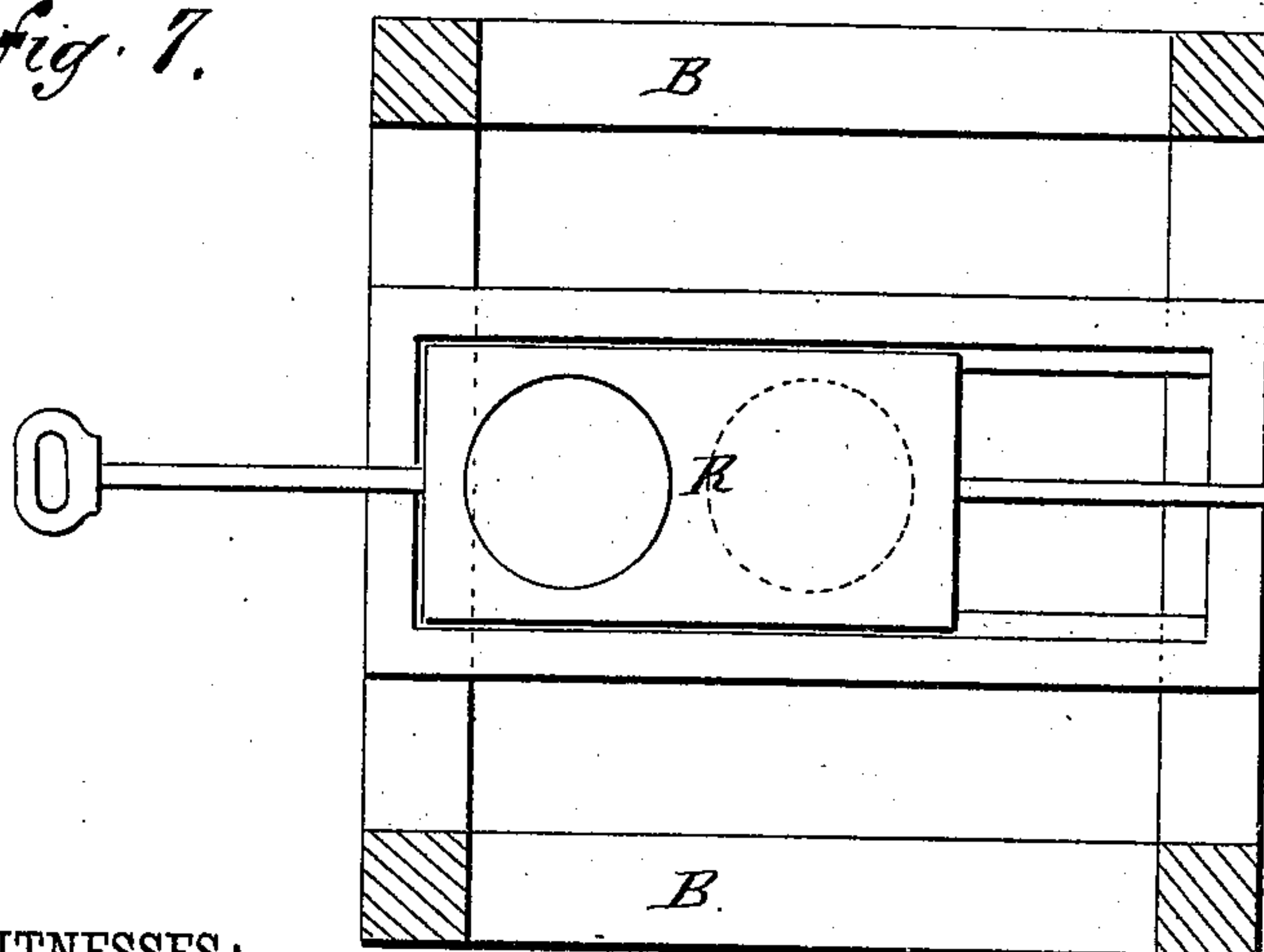
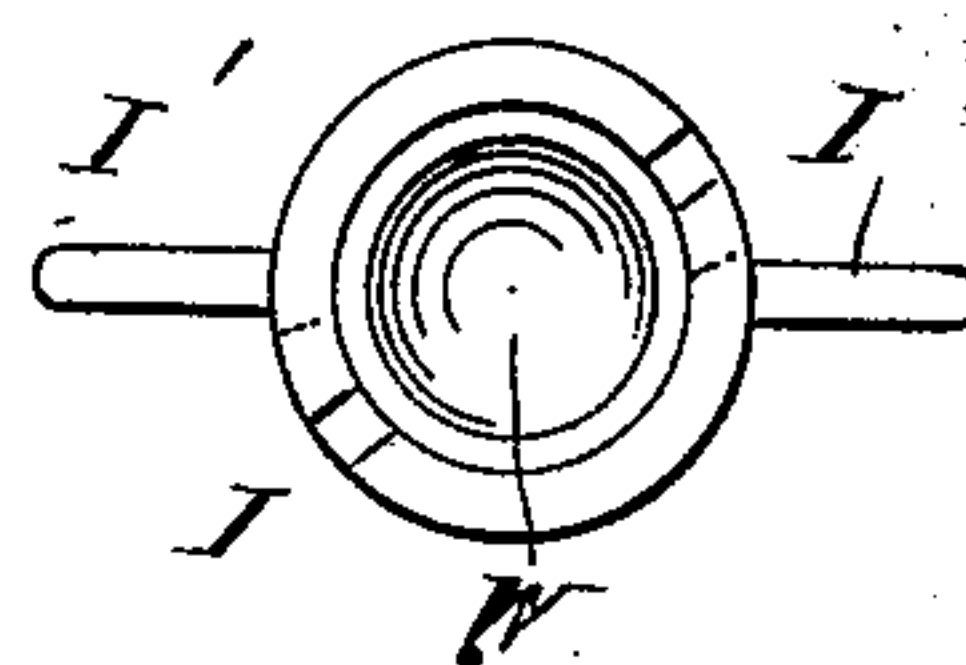


Fig. 8.



WITNESSES:

C. W. Nida
C. Sedgwick

INVENTOR:

H. Landrin

BY

Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HENRY LANDRIN, OF ANGLET, BASSES-PYRÉNÉES, FRANCE, ASSIGNOR TO
DAVID BLOCK, OF SAN FRANCISCO, CALIFORNIA.

ORE SEPARATING AND CONCENTRATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 321,118, dated June 30, 1885.

Application filed October 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY LANDRIN, of Anglet, Basses-Pyrénées, and Republic of France, have invented a new and Improved Ore Separating and Concentrating Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved machine for separating and concentrating ore by gravity.

The invention consists in various parts and combinations of the same, as will be fully described and claimed hereinafter.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of my improved ore separating and concentrating machine. Fig. 2 is an end view of one of the hinged wings of the hopper-bottom, the same being lowered. Fig. 3 is an end view of the same showing it raised. Fig. 4 is an end view of the same showing it partly raised. Fig. 5 is a sectional plan view of the machine on the line *xx*, Fig. 1. Fig. 6 is a sectional plan view of the machine on the line *yy*, Fig. 1. Fig. 7 is a sectional plan view on the line *zz*, Fig. 1. Fig. 8 is a plan view of the bottom cap.

A hollow vessel, A, is held in an upright position in a frame, B, the upper third of the said vessel being made cylindrical, and the lower two-thirds being tapered toward the bottom. In the middle of the top of the said vessel a vertical shaft, C, is arranged, which is suitably journaled in the frame B, and on the upper end of the shaft C a bevel-pinion, D, is mounted, which engages with a bevel cog-wheel, E, on a transverse shaft, F, journaled in the frame B, and provided at each end with a fly-wheel, G, of which one has a handle, G', for turning it.

In the upper end of the cylindrical part of the vessel A, which is made slightly flaring, a hopper, H, of the same shape fits, the floor or bottom of which is formed of a series of triangular or sector shaped wings, J, having pivots on the opposite ends of corresponding sides, the inner pivots being held in a hub, K, loosely mounted on the vertical shaft C,

and the outer pivots being held in the hopper H at the bottom edge. Each wing J is provided along its outer or curved edge with a downwardly-projecting flange, J', extending from that end of the curved edge opposite the one at which the pivot is arranged to within about one-third of the length of the said curved edge from the pivot, the inner end or edge of the flange being rounded, as shown. From the inner surface of the vessel A a series of pivots, L, project, on the ends of which rollers L' are pivoted directly below the flanges of the wings J, so that the said flanges can run on the said rollers. A collar is provided on the shaft C, to prevent the hub K from sliding down. Above the floor of the hopper an arm or rake, M, is held by a set-screw or other device on the shaft C. A handle-lever, N, held to turn on the shaft C above the hopper, is secured to the top edge of the hopper, and is held below a guide, N', on one of the cross-pieces of the frame B, by means of which handle the hopper can be turned around the shaft C. Vertical blades O are secured to the lower part of the shaft C. Near the bottom of the conical part of the vessel A two opposite windows, P, are arranged, through which the operation in the vessel can be observed. The lower end of the vessel A rests upon a transverse partition or floor, Q, in which a horizontal slide, R, is arranged, which is adapted to close the lower end of the vessel A, and is provided with a suitable handle for moving it.

Below the partition Q, and on a horizontal partition or box, S, in which a valve, T, is held to slide, a tapering vessel, U, is held, which forms a continuation of the taper of the vessel A. The partition S is provided on its under side with a neck, on which a nut, I, having suitable handles, I', is held by a bayonet-joint, which nut holds a funnel-shaped or inverted conical glass cap, W, to the under side of the neck. A short distance below the bottom of the hopper a cock, *a*, projects from the vessel A, and below the same a series of gage-cocks, *b*, are arranged. The cock *a* is coupled with a pipe for conducting water into the vessel A.

The operation is as follows: The slides or valves R and T are opened, and water is admitted into the above-described vessel A. The wings J of the hopper are all in the position

shown in Fig. 3, and the finely-pulverized ore is poured into the hopper. The hopper is then turned so as to permit the wings J to swing down more or less, thereby forming
 5 openings of greater or less size in the floor of the hopper, through which openings the ore can drop. At the same time the shaft C is turned by turning the shaft F, thus causing the paddles or wings O to agitate the water.
 10 The rake or arm M scrapes or forces the pulverized ore through the openings in the hopper-bottom into the space below. The heavy particles of gold and other metals drop very rapidly and collect in the glass cup W, as they
 15 are heavier than the gangue, which remains suspended in the water. The valve or slide T is then closed. The nut I, and the cup W, containing the precious metal, are removed. The valve or slide R is then opened, thus permit-
 20 ting the gangue to drop from the vessel A into the vessel U and rest on the slide T. Then the slide or valve R is closed to prevent the water in the vessel A from running off through the bottom opening, and then the slide or valve
 25 T is opened to permit the gangue to drop out through the bottom of the vessel U. As the contents of the vessel A can be watched and observed through the windows P, the time for closing the slide R—that is, the time when the
 30 gangue begins to settle—can easily be determined.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

35 1. In an ore separator and concentrator, the combination, with the vessel with an outwardly-flared upper end of the hopper with an outwardly-flared upper end, resting upon the said upper flared end of the vessel, and having an
 40 operating or shifting lever, said hopper having its bottom or floor comprising a series of pivoted wings, and the roller supported by the cylinder and acting upon said wings, substantially as and for the purpose set forth.

45 2. In an ore separator and concentrator, the combination, with the cylinder or vessel and

its shaft having blades and a rake, of the hopper having a floor comprising a series of movable wings arranged intermediately of the said rake and blades, substantially as and for the
 50 purpose set forth.

3. In an ore separating and concentrating machine, the combination, with the vessel A, of the hopper H in the top of the same, which hopper has its floor formed of a central hub,
 55 and wings pivoted in said hub and in the bottom of the hopper, substantially as herein shown and described.

4. In an ore separating and concentrating machine, the combination, with the vessel A, of the hopper H, having hinged floor-wings J, and the rollers L', held on the sides of the vessel A, below the floor-wings, and means for shifting the hopper, substantially as herein
 65 shown and described.

5. In an ore separating and concentrating machine, the combination, with the vessel A, of the hopper H, the hinged floor-wings J, having flanges J', provided with inner beveled ends, and the rollers L', held on the sides
 70 of the vessel below the said wings, and means for shifting the hopper, substantially as herein shown and described.

6. In an ore separator and concentrator, the combination, with the vessel having the lower
 75 tapering part, of the cut-offs and the inverted conical chamber detachably connected to said tapering part of vessel, said cut-offs being arranged intermediately of the upper end of said tapering part and the conical chamber,
 80 substantially as and for the purpose set forth.

7. In an ore separating and concentrating machine, the combination, with the vessel A, of the hopper H, having the hinged floor-wings J, the handle-lever N, connected with
 85 the hopper, and the rollers connected to the vessel and acting upon said wings, substantially as herein shown and described.

HENRY LANDRIN.

Witnesses:

E. BERVAIN,

V. CARDAVUS, Jr.