

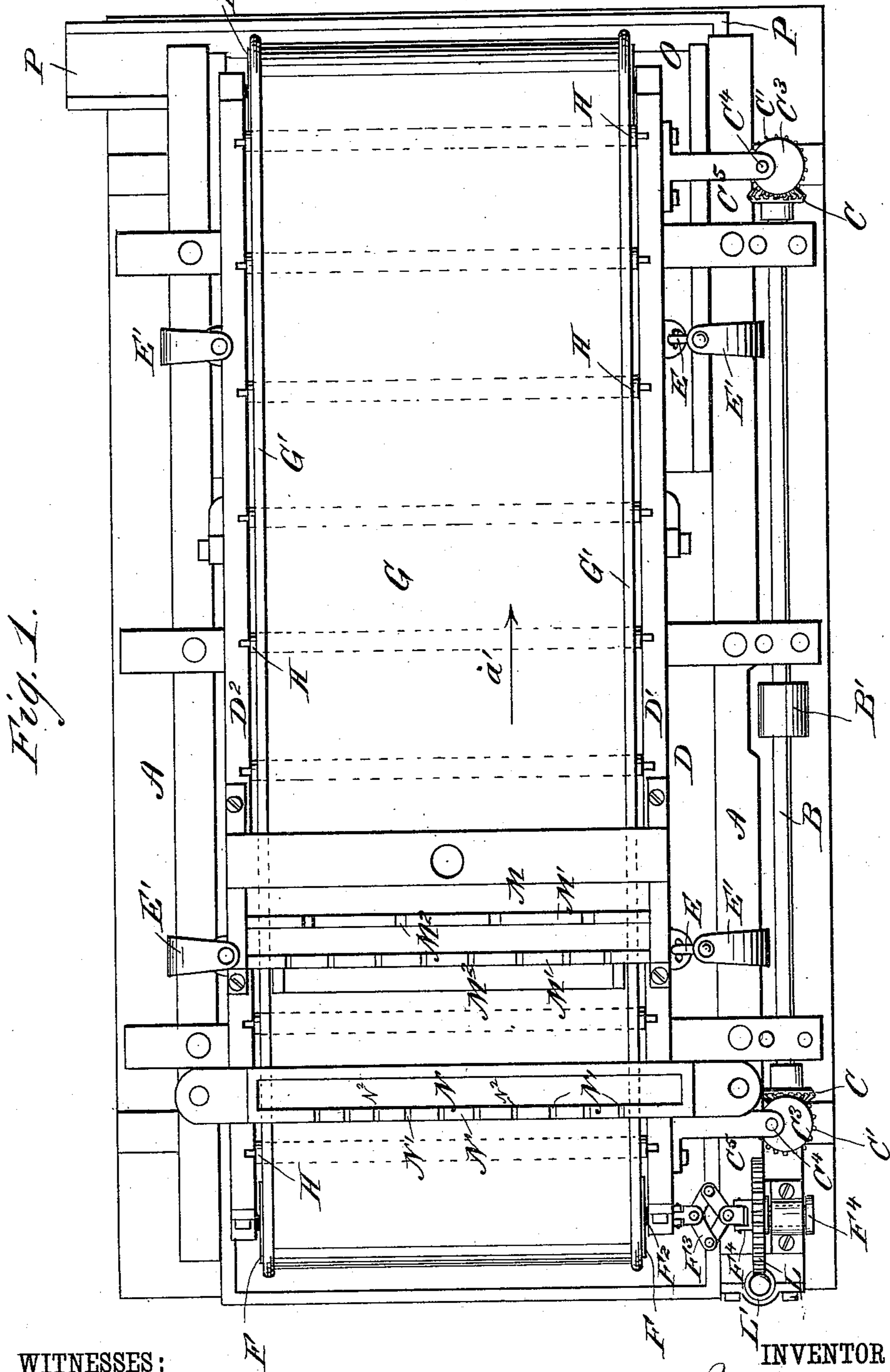
(No Model.)

2 Sheets—Sheet 1.

J. D. CHANNELL.
ORE CONCENTRATOR.

No. 347,993.

Patented Aug. 24, 1886.



WITNESSES:

Donn Twitchell
C. Sedgwick

INVENTOR:

J. D. Channell
BY *Munn & Co.*
ATTORNEYS.

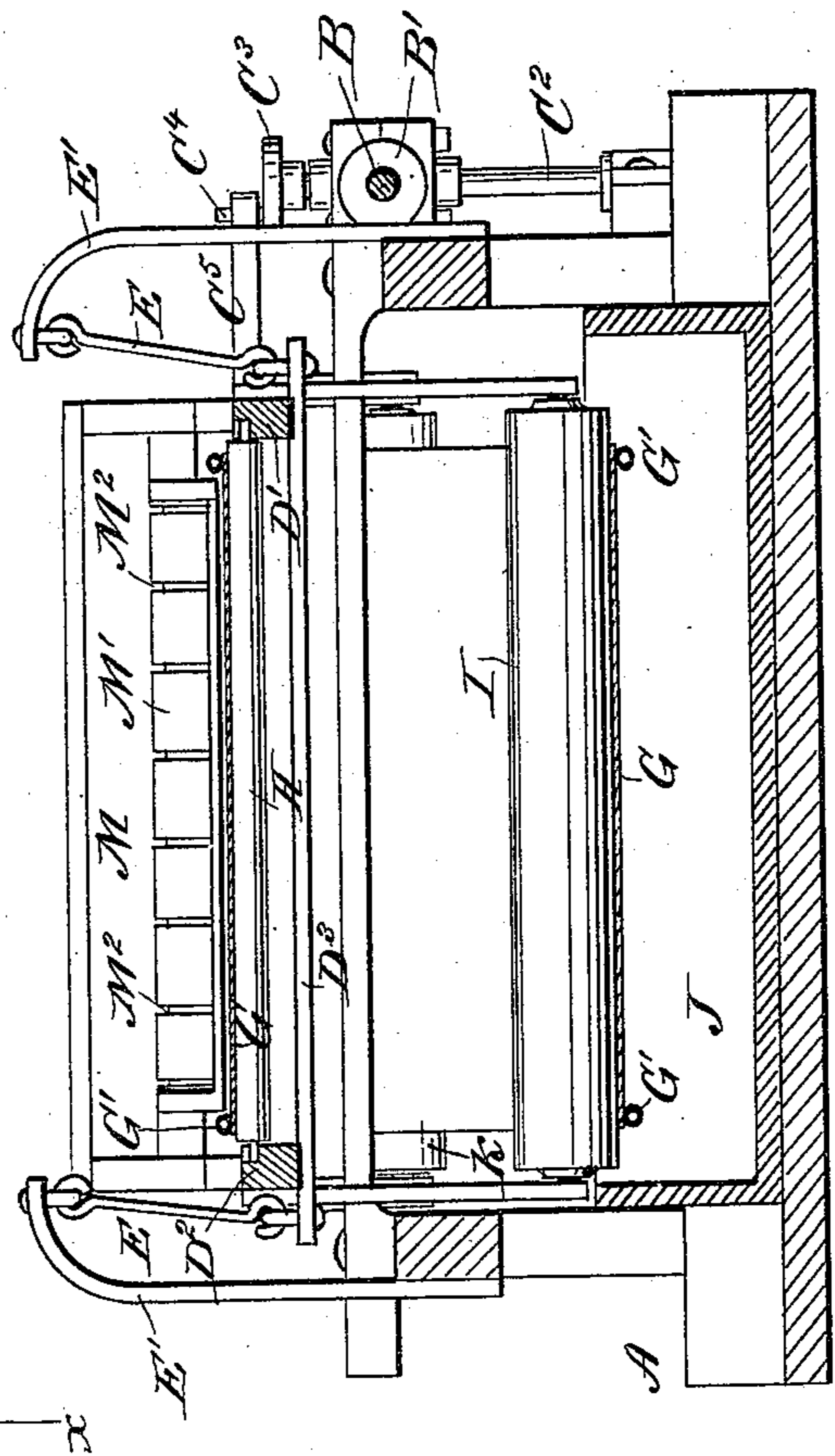
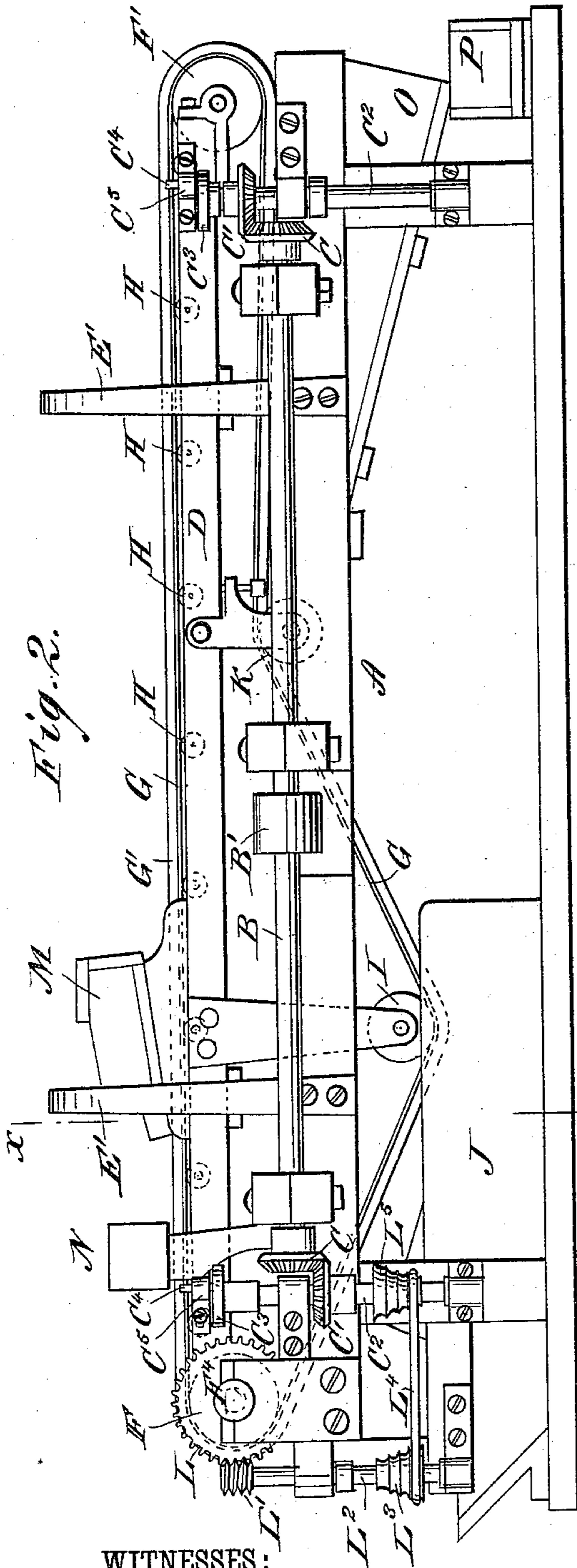
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Dom Twitchell
Bedgwick

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UNITED STATES PATENT OFFICE.

JOHN D. CHANNELL, OF NEVADA CITY, CALIFORNIA.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No 347,993, dated August 24, 1886.

Application filed November 2, 1885. Serial No. 181,608. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. CHANNELL, of Nevada City, in the county of Nevada and State of California, have invented a new and Improved Ore-Concentrator, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved ore-concentrator which is simple in construction and will effectively concentrate the heavy and light particles of the precious metals.

The invention consists in certain construction and combination of parts, as hereinafter fully described, and pointed out in the claims.

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 plan view of my improved concentrator. Fig. 2 is a side elevation of the same, and Fig. 3 is a vertical cross-section of the same on the lines $x x$ of Fig. 2.

The frame A, on which my improved ore-concentrator is mounted, is of any suitable construction, and is provided on one side with the main driving-shaft B, which receives its rotary motion by means of a belt passing over the pulley B'.

Each end of the shaft B is provided with a beveled gear-wheel, C, which meshes into the beveled gear-wheel C', mounted on the vertical shaft C², which revolves in suitable bearings attached to the main frame A.

To the upper end of each shaft C² is secured a crank-wheel, C³, having a crank-pin, C⁴, on which is placed one end of the arm C⁵, the other end being securely bolted to the belt-frame D.

The belt-frame D consists of the side rails, D' and D², which are connected with each other by cross-bars D³ at suitable intervals.

The belt-frame D is hung on four swinging rods, E, which are pivotally attached at their upper ends to the bent arms E', securely fastened to the sides of the main frame A.

On the front and rear ends of the belt-frame D are mounted in any suitable manner the rolls F and F', over which passes the endless belt G, provided with side flanges, G'. The upper part of this belt G is supported by friction-rollers H, mounted in the top edges of the side rails, D' and D², of the belt-frame D, at suitable

intervals. The lower part of the belt G passes under the roll I and through the depositing-box J and over the belt-tightening roll K to the rear roll, F'.

The front belt roll, F, is mounted on a shaft, F², having its bearings in the belt-frame D, and provided on one end with a toggle-joint, F³, which connects with a short shaft, F⁴, having its bearing on the main frame A. The short shaft F⁴ is provided with a worm-wheel, L, which is driven by the worm L', secured to the upright shaft L², mounted in suitable bearings attached to the main frame A, and provided with a cone-pulley, L³, over which passes an endless belt, L⁴, which also runs around the cone-pulley L⁵, fastened to the upright shaft C².

Attached to the side rails, D' and D², and suspended above the belt G, is the pulp-distributor M, provided with cross-bars M', having vertical slots M², through which the pulp passes and is evenly distributed onto the belt G. A short distance from the pulp-distributor M, toward the front end of the machine, is placed the water-distributor N, attached to the main frame A, and also provided with a cross-bar, N', having vertical slots N², through which passes the water to the belt G, to assist in washing out the sand from the pulp.

The rear end of the frame A is provided with a box, P, into which passes the sand and water, and is provided with a chute, O, which conveys the water and sand from the machine.

The operation is as follows: The endless belt G is set in motion in the direction of the arrow a' from the main shaft B by means of the beveled gear-wheels C and C', imparting motion to the upright shafts C², one of which transmits its motion, by means of the cone-pulleys L³ and L⁵ and the belt L⁴, to the upright shaft L², which rotates the worm L', meshing into the worm-wheel L, which transmits its motion to the roll F, by means of the toggle-joint F³ and the shaft F². At the same time that the belt receives a forward motion from the main shaft B the latter also imparts a shaking motion to the belt G, through the belt-frame D, by means of the crank-wheels C³ on the tops of the shafts C², and crank-arms C⁵, attached to the side rail, D', of the belt-frame D. It will thus be seen that the pulp in the pulp-distributor M is constantly agitated, and that it

is also agitated as soon as it passes onto the belt G, thereby very effectually separating the precious ores from the sand and water. The sand and water being carried over the rear roll, 5 F', are deposited in the box P, while the ore adheres to the belt G and is carried to the wash-box J, and there washed from the belt and deposited in the said box J.

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

1. In an ore-concentrator, the combination, with the belt-frame D, the rolls F F', and the belt G, of the shaft B, the gear-wheels C C', the shafts C², the crank-wheels C³, the crank-arms C⁵, and means, substantially as described, for imparting motion to one of the said rolls from one of the said shafts C², substantially as herein shown and described.

2. In an ore-concentrator, the endless belt G, the swinging belt-frame D, the rolls F, F', I, and K, and the belt G, in combination with the toggle-joint F³, the shaft F⁴, the worm-wheel L, the worm L', the shaft L², the cone-pulleys L³ and L⁵, the belt L⁴, the shafts C², the beveled gear-wheels C and C', and the shaft B, substantially as shown and described.

3. In an ore-concentrator, the combination, with the suspended belt-frame D, the rolls F F', the belt G, and means for imparting a shaking motion to the said belt-frame, of the shaft L², the pulleys L³ L⁵, the worm-wheel L, worm L', shaft F⁴, and a toggle-connection between the said shaft and the shaft of one of

the said rolls, substantially as herein shown and described.

4. In an ore-concentrator, the combination, with the belt-frame D, the rolls F F', and the belt G, of the arms E', the rods E, connected to said arms and to the belt-frame, the shaft B, the shafts C², the crank-wheels C³, the crank-arms C⁵, and intermediate mechanism for rotating one of the said rolls from one of the shafts C², substantially as herein shown and described.

5. In an ore-concentrator, the combination, with the suspended belt-frame D, the rolls F F', and belt G, of the shaft B, the shafts C², gear-wheels C C', crank-wheels C³, crank-arms C⁵, shaft L², cone-pulleys L³ L⁵, worm L', shaft F⁴, worm-wheel L, and a toggle-connection between the shaft F⁴ and the shaft of the roll F, substantially as herein shown and described.

6. In an ore-concentrator, the frame D, the rolls F, F', I, and K, the friction-rollers H, and the belt G, in combination with the main shaft B, the gear-wheels C and C', the shafts C², crank-wheels C³, pins C⁴, crank-arms C⁵, the cone-pulleys L³ and L⁵, the belt L⁴, the shaft L², the worm L', the worm-wheel L, the shaft F⁴, the toggle-joint F³, and the shaft F² of the roll F, substantially as shown and described.

JOHN D. CHANNELL.

Witnesses:

GEORGE G. ALLAN,
CHARLES GRIMES.