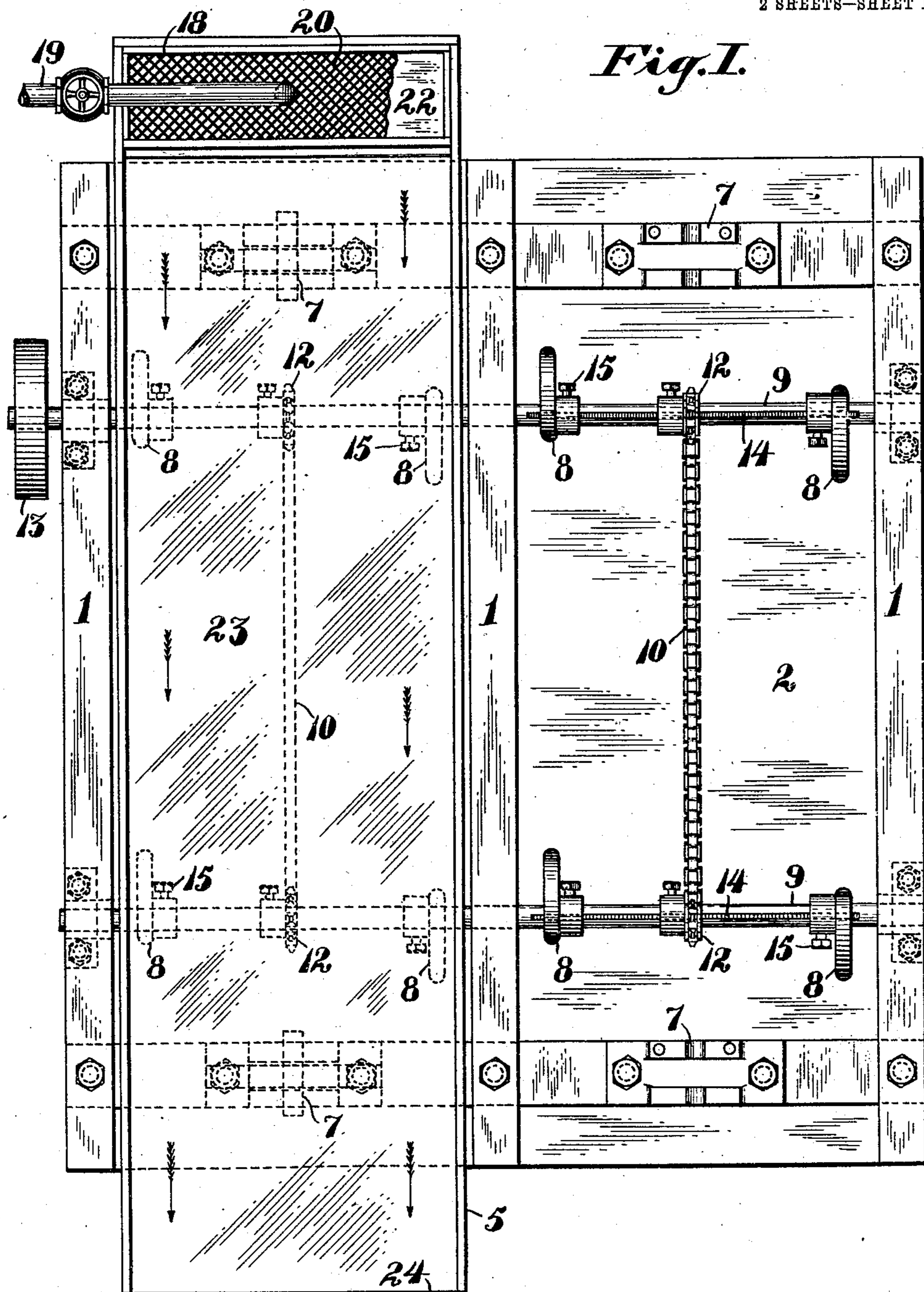


No. 842,333.

PATENTED JAN. 29, 1907.

A. B. PAUL.
MINERAL CONCENTRATOR.
APPLICATION FILED APR. 23, 1906.

2 SHEETS—SHEET 1.



Witnesses:

F. C. Fiedner
George Manuel

Inventor,

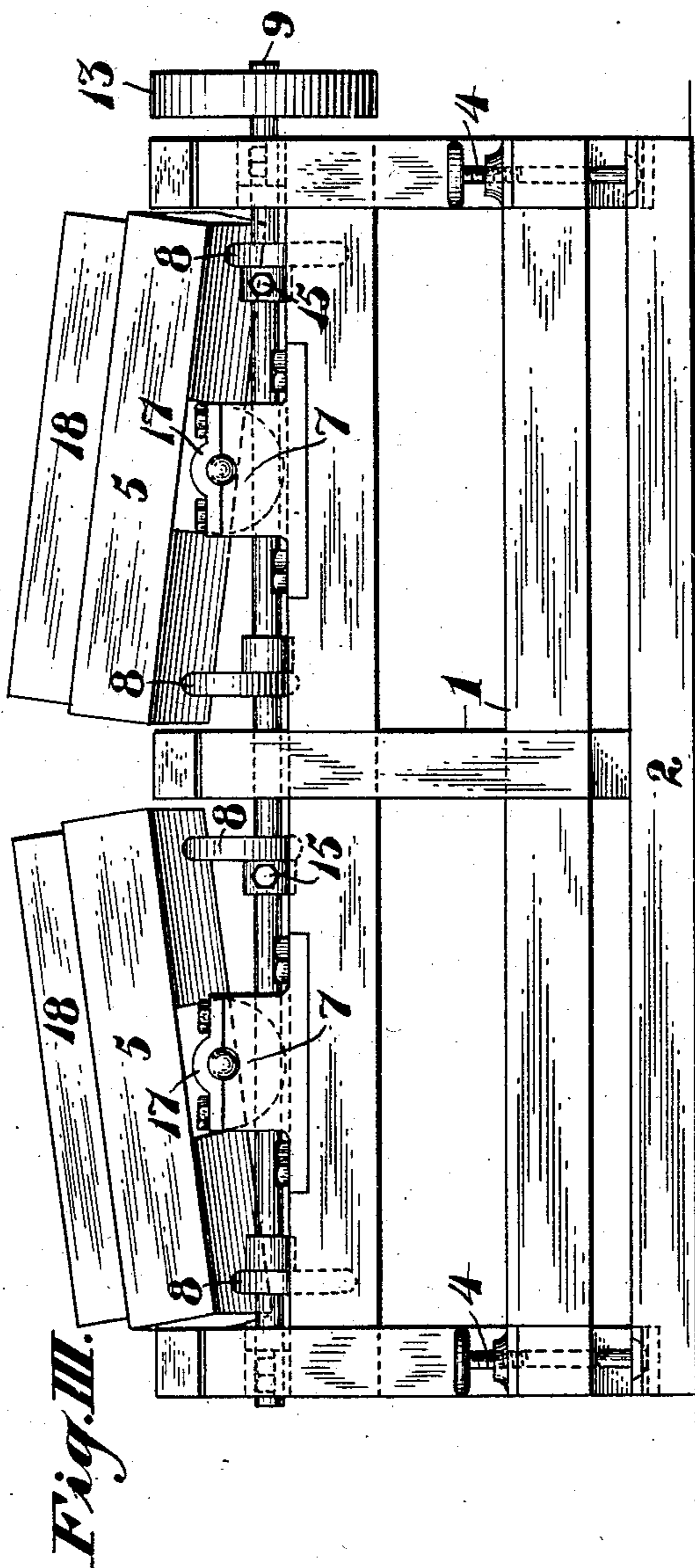
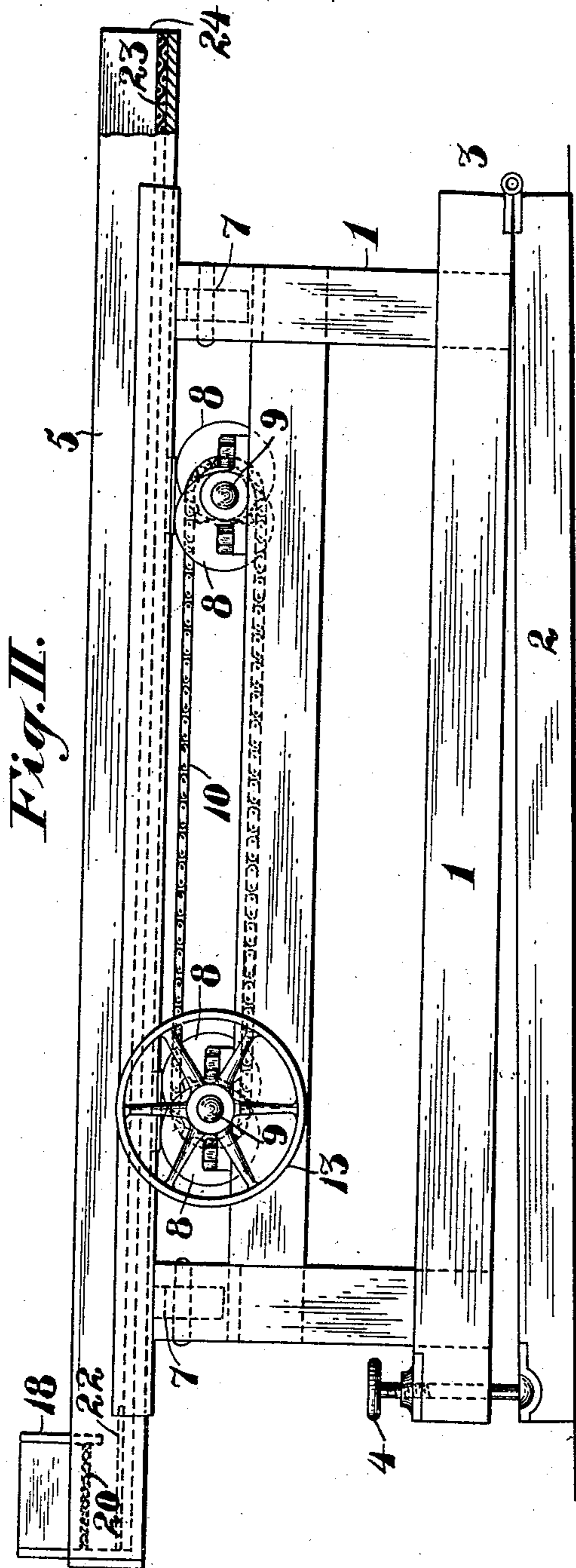
Almain B. Paul,
by J. Richards & Co.
Attys.

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2 SHEETS—SHEET 2.



Witnesses:
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Inventor;
Alman B. Paul,
by J. Richards & Co.

UNITED STATES PATENT OFFICE.

ALMARIN B. PAUL, OF SAN FRANCISCO, CALIFORNIA.

MINERAL-CONCENTRATOR.

No. 842,333.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed April 23, 1906. Serial No. 313,227.

To all whom it may concern:

Be it known that I, ALMARIN B. PAUL, a citizen of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Mineral-Concentrators; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to certain useful improvements in machines or apparatus for the collection or concentration of auriferous or other valuable metals from comminuted ore, as hereinafter fully described, and illustrated by a drawing that forms a part of this specification.

My improvement consists in one or a series of oscillating tables or launders operated in an adjustable degree by eccentric cams or like devices covered on their bottom or operating faces with a textile fabric having a piled surface, such as carpet or other reticulated webs of fabric, by which the mineral particles are selected from the gangue and lodge, the process corresponding to what is commonly called "blanket" catchment or concentration, but in which the blankets or catchment-surfaces are given motion.

My invention includes means of mounting, oscillating, and adjusting the tables and in various features of a constructive and operative nature, as hereinafter particularly described.

The objects of my invention are to enable a more extended and effectual application of what is called the "blanket" process of concentration or catchment of minerals by means of an organized machine and by a motion of the catchment-surfaces that greatly extends and prolongs contact of the pulp or ore with the catchment-surfaces by flowing it transversely and alternately across the same and reducing the structure and space occupied accordingly. To carry out these objects, I employ machinery and apparatus, as shown in the drawings, in which—

Figure I is a plan view of a blanket concentrating-machine constructed according to my invention, one of the oscillating tables being removed to show the gearing beneath; Fig. II, a side elevation of the same machine, and Fig. III an end view of the device shown in Figs. I and II.

Similar reference-numerals are applied to

corresponding parts in the several figures of the drawings.

In the mechanical extracting processes for gold and silver ores or "concentration," as it is commonly called, the blanket method of catching and collecting the mineral particles is well known. To secure the best retention of the metallic particles as they are carried over the blanket-surface, I provide devices as shown in the drawings now to be referred to, 1 being the main frame constructed in the usual manner, provided with vertical, cross, and longitudinal members to secure stability and support the operative parts.

2 is a sole or bottom frame to which the main frame 1 is pivoted at 3, and vertically adjustable at the other end by means of the screws 4, so the slope of the main frame, and consequently of the tables 5, can be adjusted at will and to produce the required rate of flow through these tables, as indicated in Fig. I. These tables 5 are of box form, open at the top, and are pivoted on the main frame by trunnion-bearings 7, that permit oscillation, as indicated in Fig. III, produced by the eccentric cams 8, that act alternately on each side beneath the tables. These cams 8 are movably held on the connected cross-shafts 9 and may be adjusted outward or inward to regulate the throw or range of oscillation given to the tables 5. The shafts 9 are given a positively-coincident motion by means of a pitch-chain 10 and sprocket-wheels 12, the whole being driven by a pulley 13 on one of the shafts 9. The cams 8 are held from turning by keys that fit into the grooves 14 and are fastened by screws 15, as shown in Fig. I. The pivot-bearings 7 are, when the motion is rapid enough to lift the tables 5, provided with caps 17 or other means to prevent the tables from rising.

At the highest ends of the tables 5 are placed supply-boxes 18, into which is conducted from the battery or other reducing machinery the finely-crushed ore and water conveying the same, commonly called "pulp," which first passes through a screen 20 to catch any obstructing solid, then falls on an amalgamating-plate 22, from where it is distributed laterally by the oscillating motion of the tables 5. Additional water required for cleaning the tables or other purpose is supplied from a pipe 19. (Shown in Fig. I.) The bottom surfaces of the tables are covered with carpet or other suitable fabric 23 for selecting and catching gold or other metallic

particles that settle in and are retained by this fibrous surface.

By the oscillatory motion of the tables 5 the pulp or ore and water flow from side to side across the fabric 23, slowly approaching the discharge end at 24, where the sand or gangue and water are discharged and conveyed away in spouts in the usual manner. By this zigzag movement of the material over 10 the catchment-surfaces 23 the length of contact and time of treatment is greatly extended over what can be attained in blanket-flumes even of great length; besides, the reversal of flow caused at each oscillation facilitates the settling and lodgment of the mineral 15 particles. When the flow of the pulp or crushed ore has continued long enough for the catchment-surfaces 23 to become loaded with mineral particles, the supply can be turned 20 off or directed to another table while either of the tables is being cleaned, so the process is nearly continuous.

Cleaning the surfaces 23 is done in place by applying clear water from the pipe 19 or 25 other source and by means of brushes that will remove the collected mineral particles or concentrates to the lower or discharge end of the tables 5, to be caught there in a suitable

receptacle without stopping the machine. When a table is thus cleaned, the supply of 30 material is again turned on, requiring but little labor or skill or time in attendance.

Having thus described the nature and objects of my invention, what I claim as novel, and desire to secure by Letters Patent, is— 35

In a concentrator, a main frame, a flat-bottomed table mounted on an incline to oscillate transversely, said table having a bottom lining of fibrous material, a screen-bottomed supply-box at the upper end of said table, a 40 pair of transverse rotatory shafts beneath said table, positively connected to rotate together, adjustable cams on said shafts alternately placed to lift each side of the table in succession, a driving-pulley for rotating the 45 shafting, and means to adjust the longitudinal slope of said table, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of 50 two subscribing witnesses.

ALMARIN B. PAUL.

Witnesses:

JAMES MASON,
ELMER WICKES.