

(No Model.)

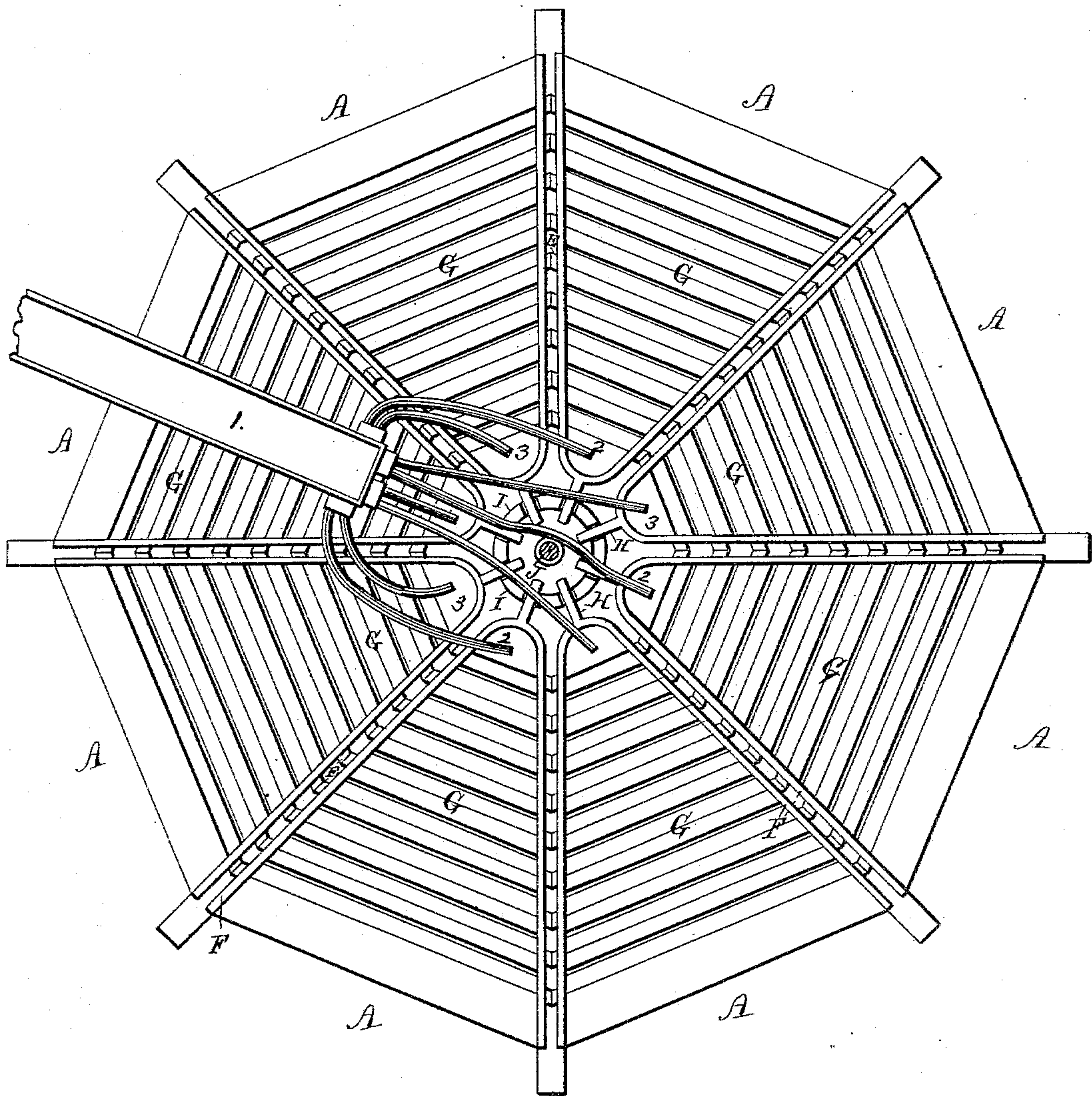
2 Sheets—Sheet 1.

E. KOCH.  
CONCENTRATOR.

No. 300,484.

Patented June 17, 1884.

*Fig: 1.*



Witnesses,  
*Geo. H. Strong.*  
*J. H. House*

Inventor,  
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*By Dewey & Co.*  
*attorneys*

(No Model.)

2 Sheets—Sheet 2.

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Fig: 2.

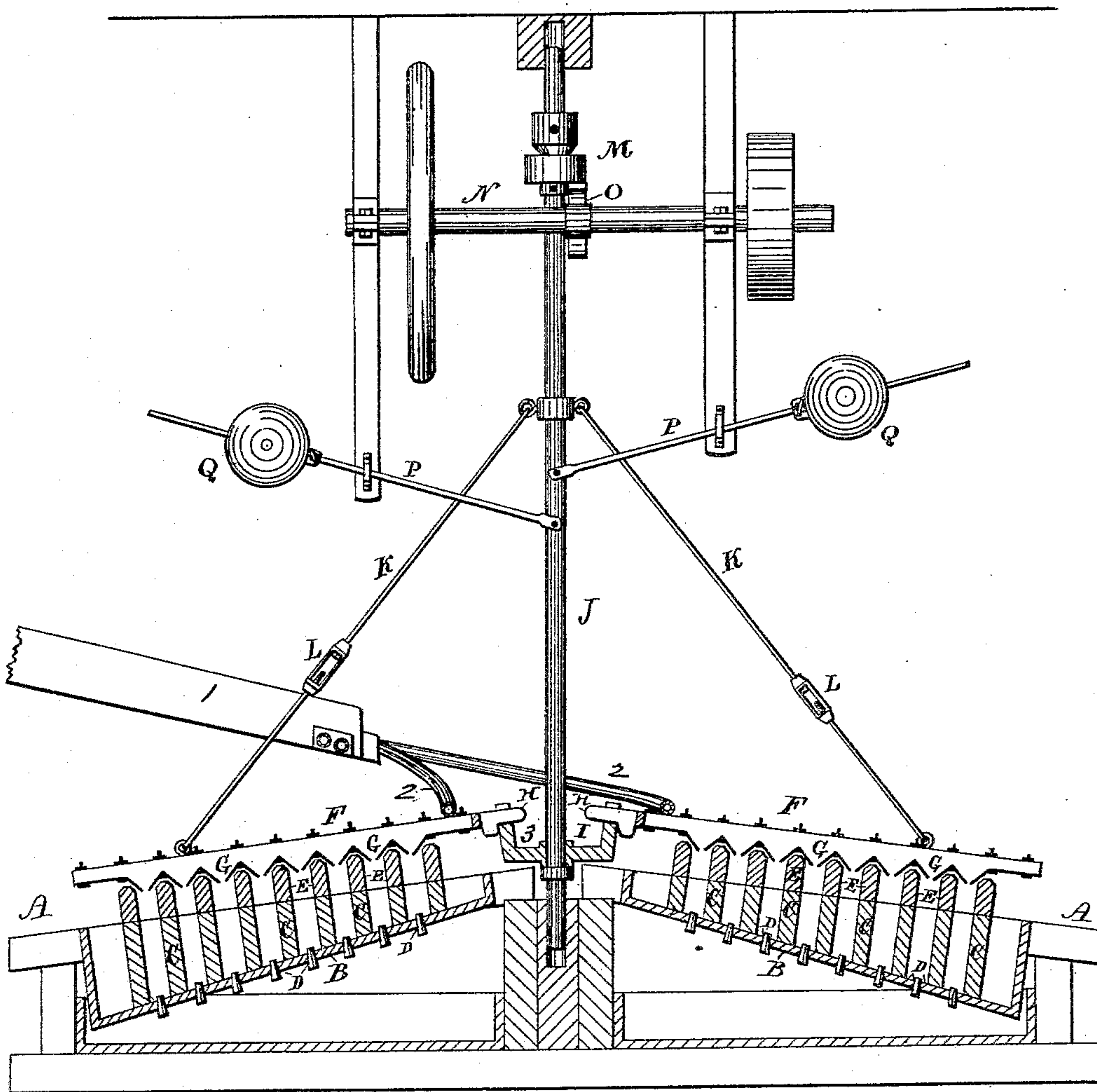
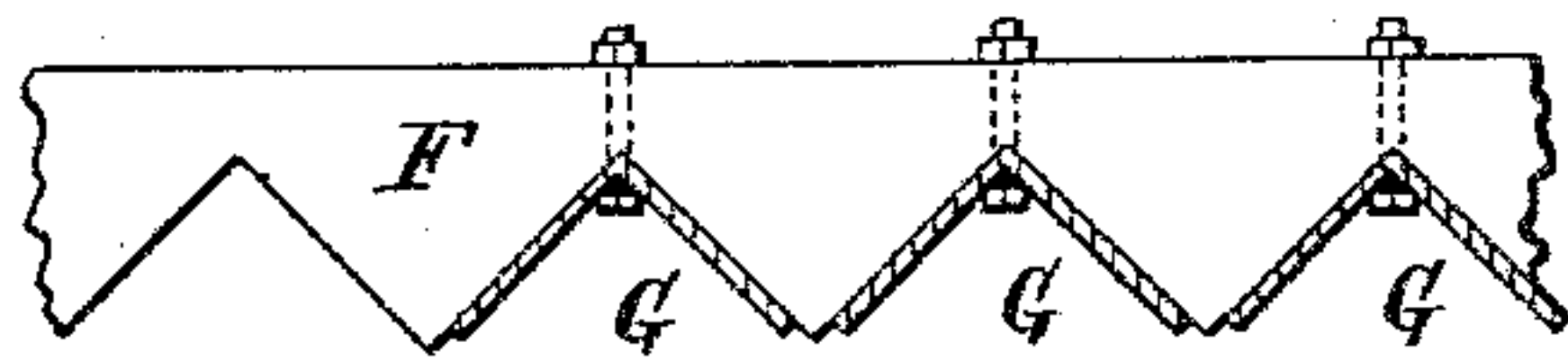


Fig: 3.

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# UNITED STATES PATENT OFFICE.

ERNEST KOCH, OF SAN FRANCISCO, CALIFORNIA.

## CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 300,484, dated June 17, 1884.

Application filed December 28, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST KOCH, of the city and county of San Francisco, and State of California, have invented Improvements in Concentrators; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in apparatus for concentrating gold, silver, sulphurets, amalgam, and other valuable heavy substances by means of a circular sectional table having chambers parallel with the outer sides of the sections, and extending inwardly toward the center, with discharge-openings in the center of the bottom of each chamber. Above these chamber-sections are corresponding frames or sections, having V-shaped bottoms slotted for the escape of the concentrations into the lower chambers, and suspended so that they may be raised and allowed to fall upon the bars below, thus producing a jarring blow, which will assist to separate the heavier from the lighter particles.

My invention consists of certain details of construction and combinations of parts, all of which will be more fully described, claimed, and explained by reference to the accompanying drawings, in which—

Figure 1 is a plan of part of my apparatus. Fig. 2 is a vertical central section in elevation. Fig. 3 is a detail sectional view of the troughs G.

A A are chamber-sections arranged around a center, and forming a circular or polygonal table which declines outward from the center. Each chamber-section of this table has a trough-shaped floor, B, the lowest angle extending centrally outward and downward, and has bars C extending transversely across the floors, as shown. These bars, which are at right angles or transverse to the line of inclination of the sections, extend upward so as to make deep channels or transverse chambers between them, and holes D are made in the center of the bottom of each of these chambers, which are provided with plugs by which the discharge of the contents is controlled.

Upon the tops of the bars C are iron bars E, the upper edges of which are beveled toward

the center, and have small flat spaces along their upper edges.

Above the chamber-sections A are the table-sections F, each of which is formed of a V-shaped iron frame, arranged with the apex toward the center of the machine, and with the diverging end extending outward and downward, corresponding with the divisions of the chamber-sections A.

Between the sides of the table-sections F V-shaped troughs G extend parallel with and above the iron bars E, being so arranged that their lowest angles fall between these bars and the highest angles just above the bars, and where they fall they rest upon the inclined or beveled top edges of the bars E. The troughs G each have a slot in the lowest angle, to allow the sulphurets or valuable metals to fall through into the troughs below, and all the frames of the table-sections F are placed so as to form a complete circular or polygonal table above the chamber-sections A, but independent thereof. The inner ends of the frames F have projections H, which enter holes in a central ring, I, and are thus kept in place. Through the center of this ring a vertical shaft, J, extends upward, being supported by suitable boxes or guides, and it has a collar below the ring, so that when it is raised it will also raise the ring and the inner ends of the table-sections. The outer ends of said table-sections are connected with the upper part of the shaft by rods K, provided with turn-buckles L, by which they may be adjusted at will, so that when the central shaft is raised the whole of the table-sections are raised with it, and may then be allowed to drop upon the bars E, as before described.

In order to raise the shaft, it has a tappet, M, fixed near its upper end, and a horizontal shaft, N, has a cam, O, fixed to it, so that when the latter shaft is rotated the cam will raise the tappet and vertical shaft, and when the latter is released it and the suspended table-sections will drop. Arms or levers P have their fulcrums near the shaft J, and their inner ends are connected with the shaft, while their outer ends have adjustable sliding weights Q, to act as counter-balances and regulate the force of the drop. The sand or tail



ings to be concentrated are led through a trough, 1, and are discharged through pipes 2, or otherwise, into the space 3 around the central shaft, and they flow thence outward over the riffles formed by the V-shaped troughs G. These troughs are constantly raised and let fall by the action of the cam on the tappet of the central shaft, by which the frame-sections F and their troughs are independently suspended by means of the rods K, and the shock of the fall causes the heavier particles to gradually settle to the bottoms of said troughs G, and finally to pass through the slots into the chambers below, and thence they may be discharged at will through the openings D in the bottom. Water flows over the troughs with the material, and by its action keeps it loosened up, so as to separate the light and heavy particles more thoroughly.

The tappet may be moved up or down upon the shaft to change the height of the lift and drop, and the rods K may be lengthened or shortened by means of the turn-buckles L, so as to change the grade of the tables. If the holes D in the lower chambers be closed, the water will rise, so that each time the upper table-sections are dropped the water will be forced up through the slots in the bottoms of the V-shaped troughs G and produce what is termed a "jigging action."

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

1. An inclined sectional concentrating-table having transverse V-shaped troughs with discharge-openings at their bottoms, in combination with suitable stationary chambers and mechanism by which an upward knocking action is produced upon the bottoms of said troughs, substantially as herein set forth.

2. In a concentrator, an inclined sectional table having transverse V-shaped troughs with discharge-openings at their bottoms, in combination with a series of stationary chambers formed with iron bars, upon which the concave or highest parts of the troughs rest, and mechanism by which the sections of the table are raised and let fall upon the bars, substantially as herein described.

3. In a concentrator, a series of table-sections having slotted V-shaped troughs extending transversely thereof, and a series of inclined stationary chambers having holes in their bottoms and means for closing the same, in com-

bination with mechanism by which the table-sections are raised and let fall upon the upper edges of the chambers, substantially as and for the purpose set forth.

4. A series of stationary chambers, a series of inclined diverging table-sections, F, arranged around a center, and having transverse slotted V-shaped troughs and a projection at the apex of each, and the central ring, in combination with a vertical shaft having a collar beneath the ring, rods extending from the vertical shaft to the outer ends of the table-sections, a tappet upon said shaft and a horizontal shaft, and a cam by which the vertical shaft and table-sections are raised and let fall, substantially as herein described.

5. A series of stationary chambers, and the inclined diverging table-sections having slotted troughs, in combination with the central vertical shaft, tappet, horizontal shaft, cam, and the diverging supporting-rods K, having turn-buckles, by which the grade of the tables may be adjusted, substantially as herein described.

6. The stationary chambers, the diverging table-sections having slotted troughs, a vertical central shaft, a horizontal shaft, a cam, a tappet, and rods K, having turn-buckles, by which one side may be shortened to give a side shaking motion, all combined to operate substantially as herein described.

7. The stationary chambers, the diverging table-sections having slotted troughs, means whereby their center and outer ends are suspended, the shafts and tappet, and cam by which they may be raised and let fall, in combination with the counterbalance weights and levers, substantially as and for the purpose set forth.

8. A means for producing a jigging action upon material to be concentrated, consisting of the combination of a series of chambers into which water is admitted, a superposed table having troughs with openings in their bottoms, and mechanism by which the table is raised and let fall upon the edges of the chambers, to provide an abrupt shock while the lower portions of the troughs dip into the water, substantially as herein described.

In witness whereof I have hereunto set my hand.

ERNEST KOCH.

Witnesses:

GEO. H. STRONG,  
S. H. NOURSE.