

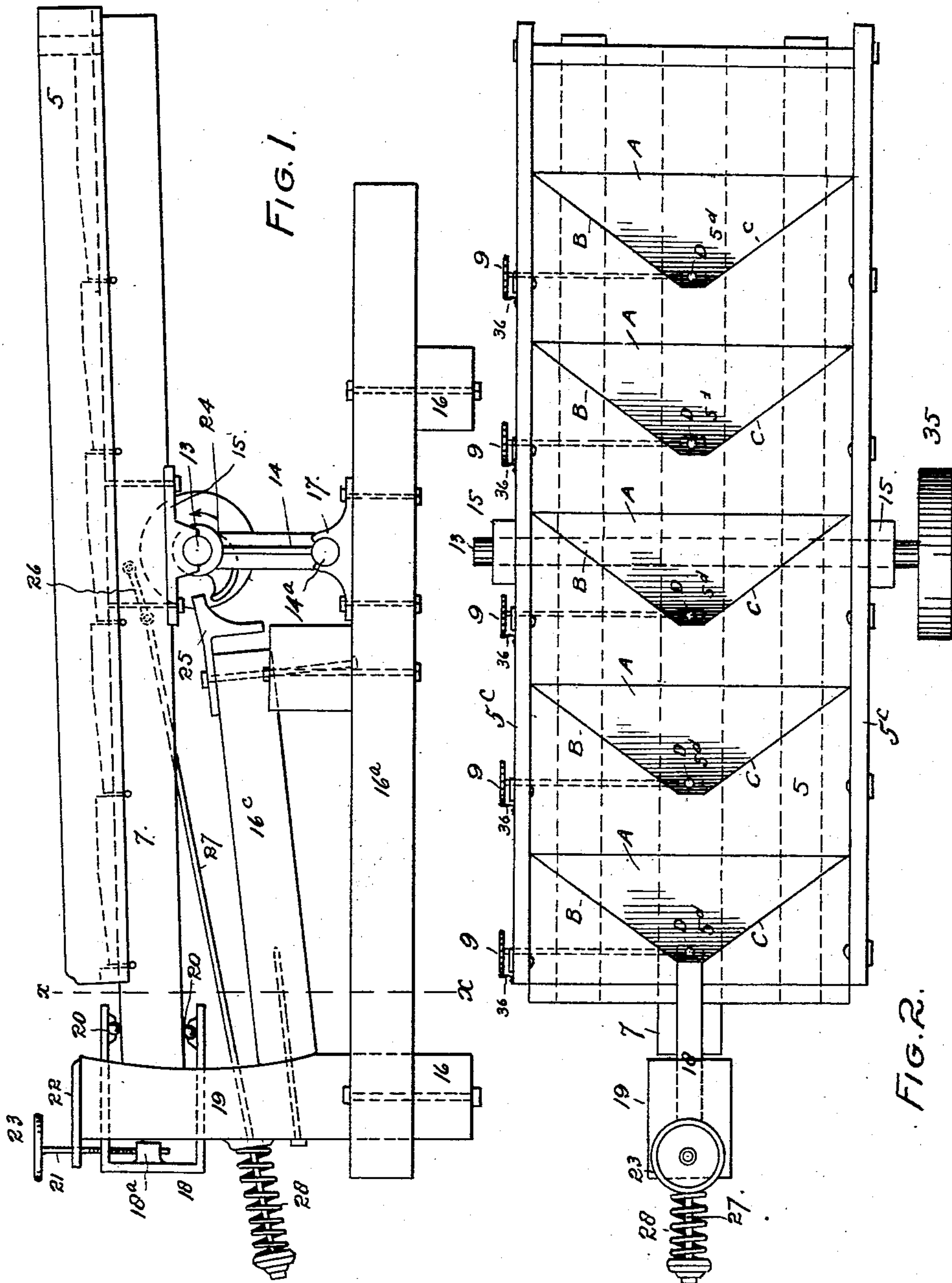
(No Model.)

2 Sheets—Sheet 1.

W. E. WILD.
ORE CONCENTRATOR.

No. 568,888.

Patented Oct. 6, 1896.



Witnesses
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Inventor
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(No Model.)

2 Sheets—Sheet 2.

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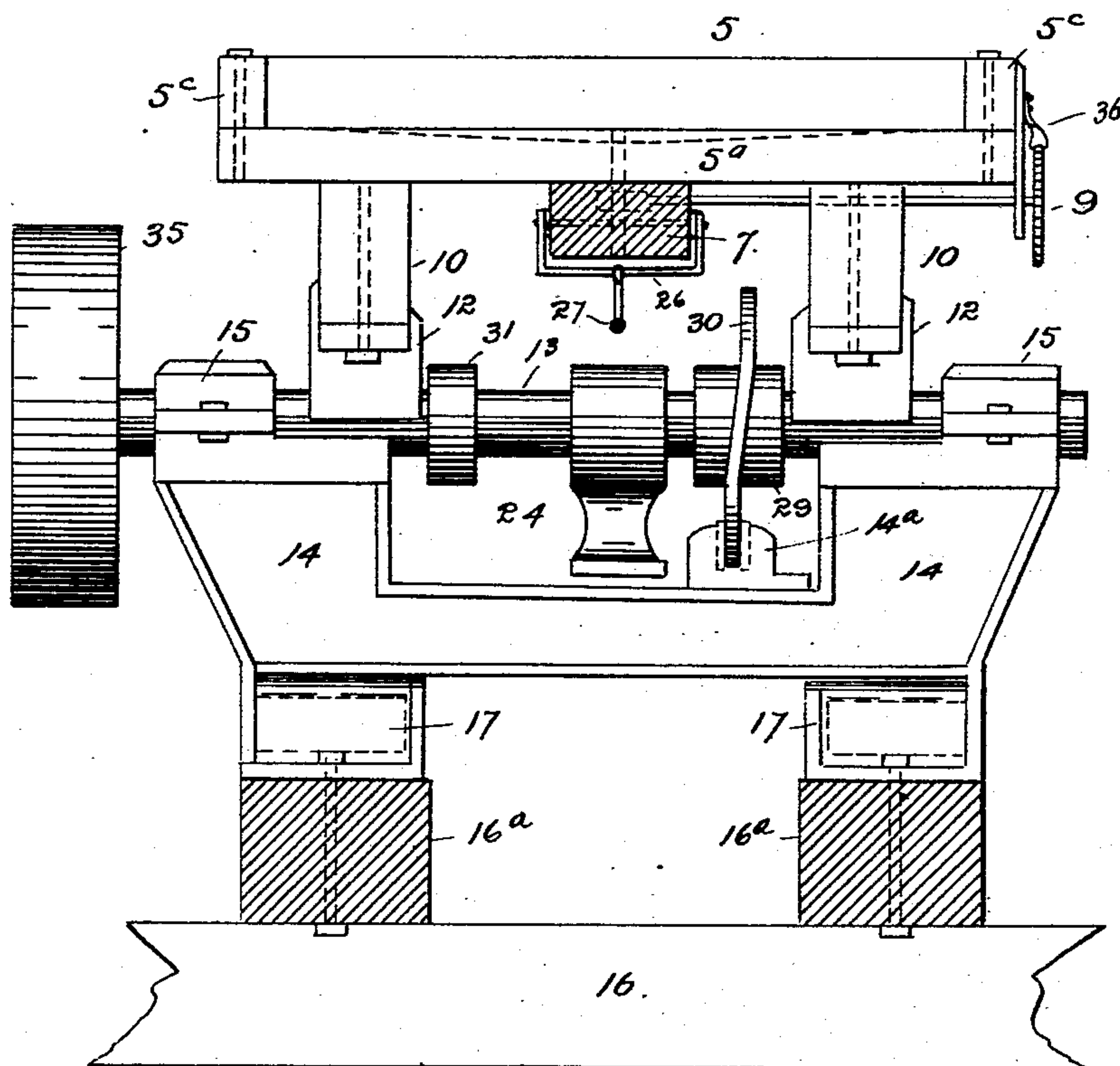


FIG. 3

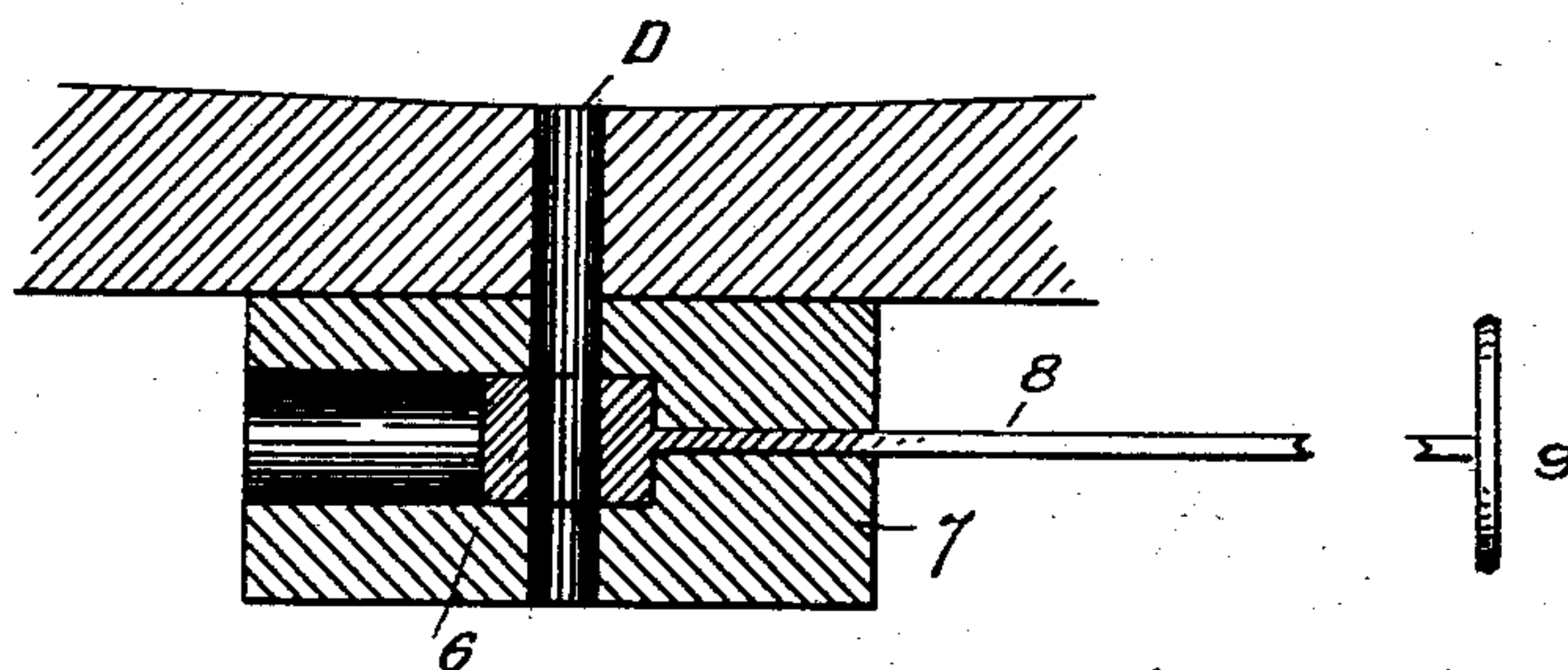


FIG. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM E. WILD, OF DENVER, COLORADO.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 568,888, dated October 6, 1896.

Application filed January 13, 1896. Serial No. 575,407. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. WILD, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Ore-Concentrators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in ore-concentrators; and my object is to provide a machine of this class which shall be simple in construction, economical in cost, reliable, durable, and efficient in use; and to these ends the invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of my improved concentrator. Fig. 2 is a top or plan view of the same. Fig. 3 is a section taken on the line $x x$, Fig. 1, looking toward the right. In this view the tappet and the portion of stationary frame to which it is attached are removed. Fig. 4 is a section taken through one of the outlet-ports of the concentrating-table, showing its controlling-valve, the parts being shown on a larger scale.

Similar reference-characters indicating corresponding parts in these views, let the numeral 5 designate the concentrating-table, comprising the bottom 5^a and the sides 5^c. The sides are fastened to the bottom in any suitable manner, as by means of bolts. In the bottom of the table is formed a number of shallow pockets 5^d, having the general shape of an isosceles triangle, bounded by the lines A, B, and C. The side A of this triangle consists of a straight line drawn across the table between the sides. The length of this side equals the width of the table. The sides B and C of the triangle are equal, but, as shown in the drawings, do not quite intersect. If these sides were slightly

prolonged, they would intersect in the center of the table. Assuming that the side A is the base of the triangle and supposing that the sides B and C intersect, the triangular pocket gradually increases in depth from the base toward the vertex, where the pocket is deepest. At the deepest portion of each triangular pocket an outlet-port D is formed in the bottom of the table. This port is controlled by a valve 6, mounted in the longitudinal center beam 7, upon which the table rests. The valve 6 is provided with a stem 8, having a hand-wheel 9 on its outer extremity. The discharge of concentrates via the port D is controlled at pleasure by adjusting the valve 6. The beam 7 has an aperture registering with the port D of each pocket.

Referring to Figs. 1 and 2, the table is slightly inclined, and its tail end, which is lowest, is located toward the left. This table may contain any desired number of pockets 5^d. The vertex or deepest portion of each pocket is nearest the tail of the table. From what has been said it will be observed that the ore under treatment travels downward from the head of the table, which is highest, toward the tail, which is lowest. In addition to the central beam 7 the table rests upon two side beams 10, one being located on each side of the central beam. To these beams 10 are attached journal boxes or bearings 12, which engage a horizontal shaft 13, journaled in an oscillating yoke 14, as shown at 15. This yoke is trunnioned on the stationary frame 16 by means of boxes 17, attached to the beams 16^a of the frame 16. The yoke is provided with trunnions or journals 14^a, which engage the boxes 17. The shaft 13 is located about midway between the extremities of the table. The table is further supported by a bracket 18, vertically adjustable on the bumper 19 and engaging the extremity of the center beam 7, which projects beyond the tail of the table. The bracket is provided with ball-bearings 20, set into its top and bottom and adapted to facilitate the lateral movement of the table. The bracket 18 is adjusted vertically by means of a screw 21 engaging threaded apertures formed in a stationary plate 22, attached to the top of the bumper and projecting therefrom. This screw

also engages a threaded aperture formed in a projection 18^a of the bracket 18. A hand-wheel 23 is attached to the top of the screw 21. The inclination of the table is regulated by means of the screw 21 and the bracket 18, since as the latter is raised and lowered the tail of the table is correspondingly adjusted.

To the central part of the shaft 13 is made fast a cam 24, adapted to engage a tappet 25, fast on a beam 16^c of the stationary frame 16.

During the operation of the machine the shaft 13 rotates in the direction indicated by the arrow. (See Fig. 1.)

To the central part of the center beam 7, and secured to the table, is attached a link 26, which is connected with one extremity of a rod 27, which passes through the upright bumper 19 and projects a suitable distance to the left of said bumper. (See Figs. 1 and 2.) Surrounding this protruding portion of the rod is a coil-spring 28, one extremity of which bears against the bumper, while the other extremity engages a washer held in place by a nut on the rod.

To a collar 29, which is made fast on the shaft 13, is secured a spiral cam 30, which engages a groove formed in a lug 14^a, fast on the yoke 14. The collar 29 is located between one of the boxes 12 and the cam 24, while another fast collar 31 is located on the shaft between the cam 24 and the other box 12. The function of the spiral cam is to impart a lateral reciprocation to the table, through the medium of the collars 29 and 31, as the shaft rotates.

From the foregoing description the operation of the machine will be readily understood. The material to be treated is fed to the table near its head or right-hand extremity, (see Figs. 1 and 2,) together with the necessary quantity of water. Power is applied to the machine through the instrumentality of any suitable motor connected with a pulley 35, fast on the shaft 13, by means of a belt. As the shaft is rotated a longitudinal oscillation and a lateral reciprocation are imparted to the table through the medium of the mechanism heretofore described. As the cam 24 engages the stationary tappet 25 the shaft, together with the table and its attachments, is forced toward the right (see Figs. 1 and 2) until the cam is disengaged from the tappet, when the table is suddenly thrown in the opposite direction and the extremity of the center beam brought into forcible contact with the upright bumper through the medium of the spring 28 and the rod 27, attached to the center beam, as before described. Again, as the shaft rotates the spiral cam 30 imparts movement to the table by alternately forcing the collars 29 and 31 against the contiguous boxes 12, attached to the beams 10 of the table, as aforesaid. The boxes 12 are thus made to slide on the shaft as the latter rotates. These movements of the table effect the separation of the mineral from the gangue, the latter being discharged over the tail of

the table, while the former is collected in the lowest part of the pockets 5^d and drawn off at pleasure through the ports D, controlled by the valves 6, as aforesaid. The hand-wheels 9 on the valve-stems 8 are engaged by leaf-springs 36, attached to the table. The function of these springs is to bear against the said wheels and prevent them from being turned accidentally during the operation of the machine. These springs are not of sufficient strength to interfere with the manipulation of the wheels by hand when it is desired to adjust the valves.

It is evident that by the lining of the pockets with amalgamated plates the machine may be converted into an amalgamator. This change may be effected without departing from the spirit of the invention.

Having thus described my invention, what I claim is—

1. In a concentrator, the combination with a suitable stationary frame, of the oscillatory yoke mounted thereon, the shaft journaled in the yoke, a cam fast on the shaft, a stationary tappet which the said cam engages, the concentrating-table movably mounted on the shaft, a spring-held rod connecting the table with the stationary frame, and a suitable bumper lying in the path of the table, substantially as described.

2. In a concentrating-table, the combination with a suitable stationary frame, of an oscillatory yoke trunnioned thereon, a rotatable shaft journaled on the yoke and longitudinally movable thereon, a spiral cam fast on the shaft and engaging a groove formed in the yoke, means attached to the shaft and engaging the framework of the table for imparting a lateral reciprocation to the table in conjunction with the spiral cam, the concentrating-table movably mounted on the shaft, a stationary tappet, a cam 24 fast on the shaft and adapted to engage the tappet as the shaft rotates, a spring-held rod connecting the table with the stationary frame, and a bumper lying in the path of the table, substantially as described.

3. In a concentrator, the combination with the stationary frame, of the oscillatory yoke trunnioned thereon, the rotatable shaft journaled in the yoke and movable endwise therein, a cam attached to the shaft, a stationary tappet which said cam engages, the table movably mounted on the shaft, a spring-held rod connecting the table with the stationary frame, and means connected with the shaft and engaging the yoke for imparting an endwise movement to the shaft, and means attached to the shaft and engaging the table for imparting a lateral reciprocation to the latter, substantially as described.

4. In a concentrator, the combination with a suitable stationary frame, of the oscillating yoke mounted thereon, the shaft journaled in the yoke, and movable endwise thereon, the table movably mounted on the shaft, and means attached to the shaft and engag-

ing the table for imparting a lateral reciprocation to the latter, substantially as described.

5 In a concentrator, the combination with a suitable stationary frame, of the oscillatory yoke mounted thereon, the shaft journaled in the yoke and movable endwise thereon, the table movably mounted on the shaft which engages its central portion transversely, the table having one or more pockets, 10 each having the general outline of an isosceles triangle, said pocket being deepest at the vertex, which is turned toward the tail of the table, and suitable means attached to the shaft for simultaneously imparting 15 to the table a longitudinal oscillation, and a transverse reciprocation, substantially as described.

6. In a concentrator, the combination with the stationary frame, of the oscillatory yoke 20 trunnioned on the frame, the shaft journaled in the yoke, the table movably mounted on the shaft, a stationary tappet, a cam made fast on the shaft and engaging the tappet, a spring-held rod connecting the table 25 with the frame, a bumper lying in the path of the table, and means attached to the frame

for adjusting the inclination of the table, substantially as described.

7. In a concentrator, the combination with a suitable frame, of the oscillatory yoke 30 mounted thereon, a shaft journaled in the yoke, the table mounted on the shaft, and means attached to the shaft and engaging the frame for actuating the yoke and the table, substantially as described. 35

8. In a concentrator, the combination with a suitable stationary frame, of the oscillatory yoke mounted on the frame, the shaft journaled in the yoke and movable endwise thereon, a table movably mounted on the shaft, 40 means attached to the shaft and engaging the yoke for imparting a transverse reciprocation to the table, and means attached to the shaft and engaging the frame for imparting a longitudinal oscillation to the table and 45 yoke, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM E. WILD.

Witnesses:

G. J. ROLLANDET,
ALFRED J. O'BRIEN.