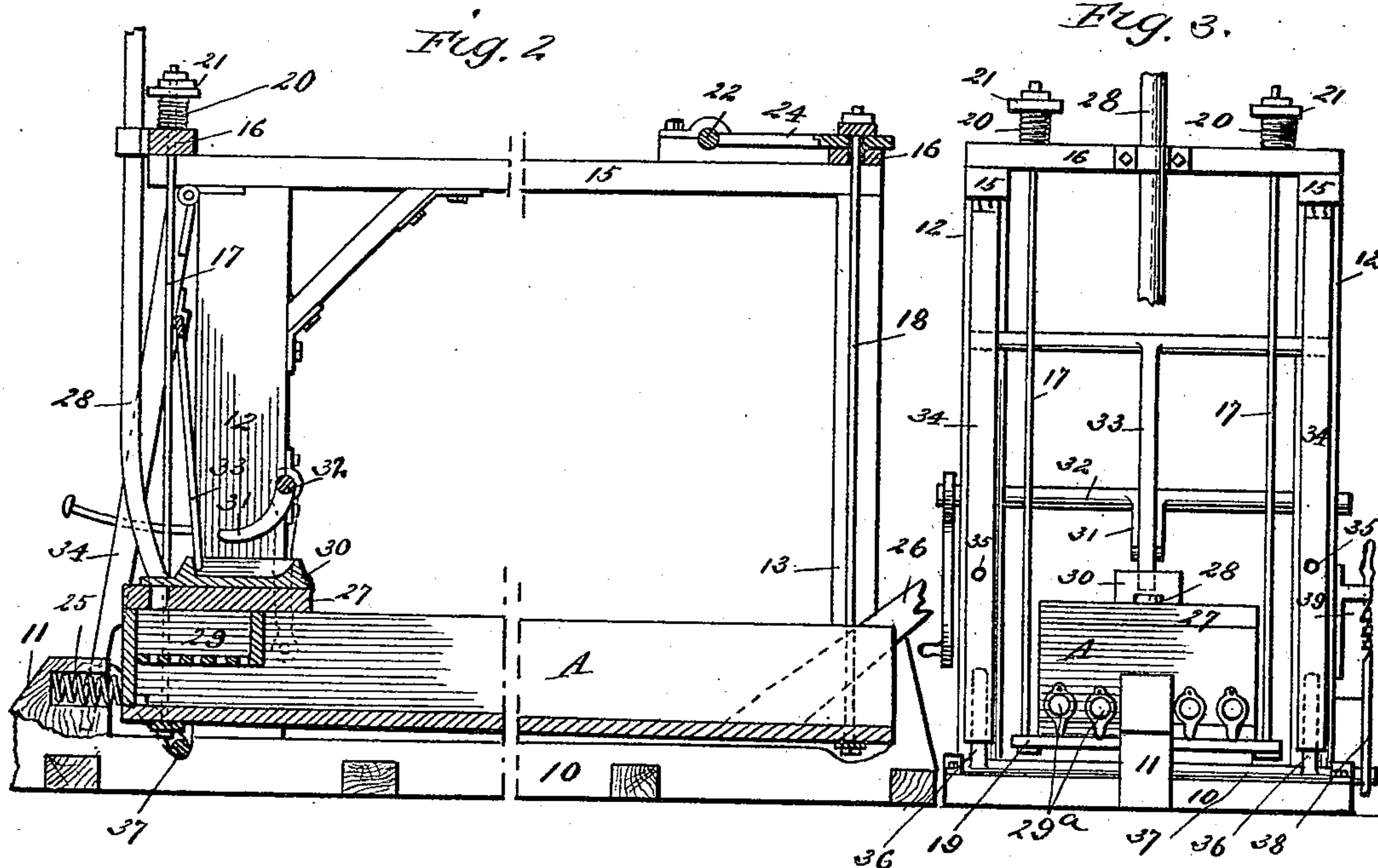
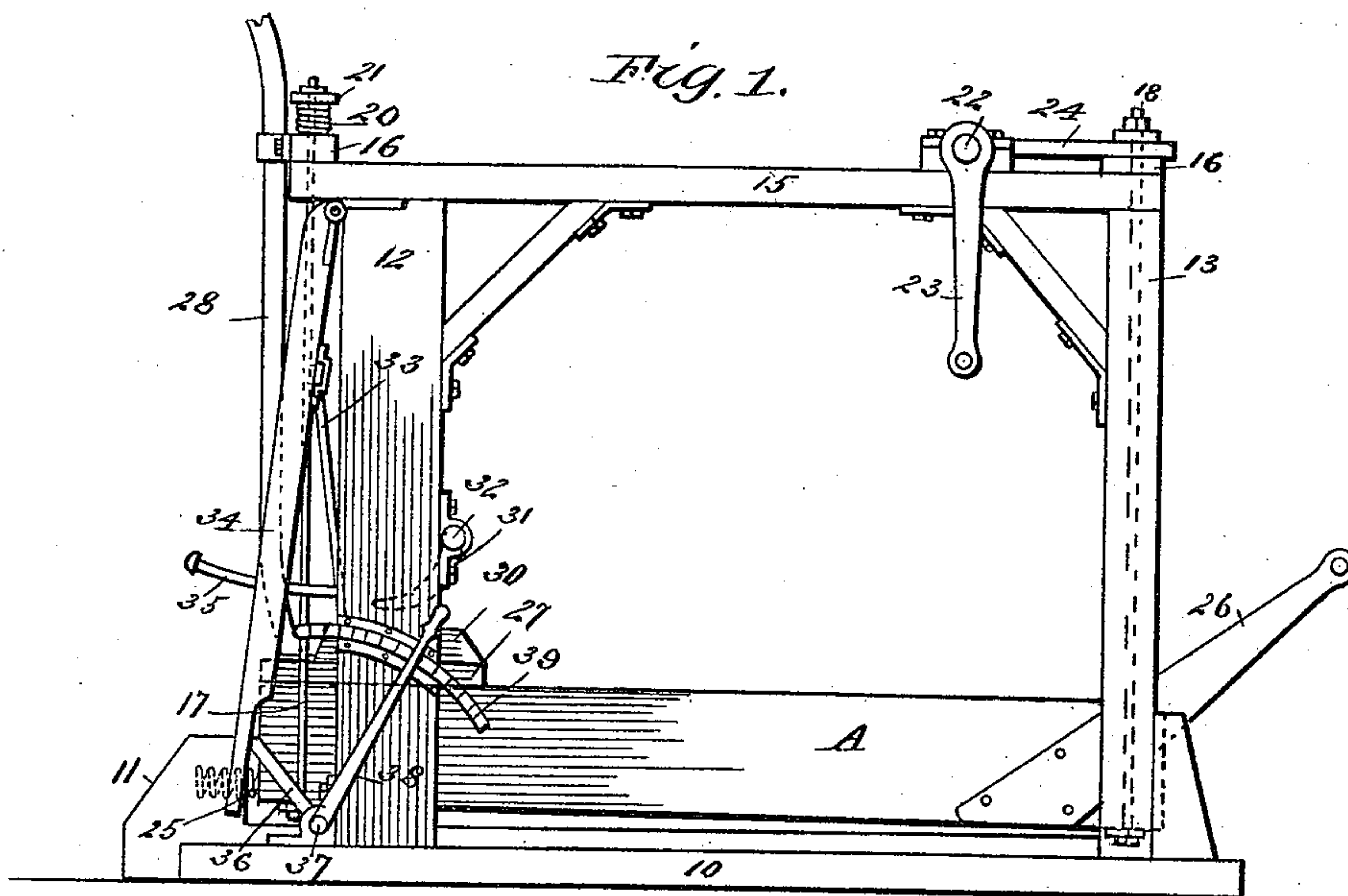


(No Model.)

F. C. MILLER.
ORE WASHER.

No. 451,289.

Patented Apr. 28, 1891.



WITNESSES:

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FREDERICK C. MILLER, OF LEADVILLE, COLORADO.

ORE-WASHER.

SPECIFICATION forming part of Letters Patent No. 451,289, dated April 28, 1891.

Application filed November 7, 1890. Serial No. 370,626. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK CHARLES MILLER, of Leadville, in the county of Lake and State of Colorado, have invented a new and useful Improvement in Ore-Washers, of which the following is full, clear, and exact description.

My invention relates to an improvement in ore-washers, and has for its object to provide a machine of simple, durable, and economic construction, and to provide a means whereby the ore fed to the machine may be expeditiously and effectually cleansed and delivered therefrom, the ore adapted for treatment being delivered from one end of the machine and the refuse and water from the other.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a side elevation of the machine. Fig. 2 is a central vertical section, and Fig. 3 is a rear elevation, of the machine.

The frame of the machine consists of a base 10, provided centrally at one end with an attached buffer-block 11, and with standards 12 and 13 projected upward from the sides of the base at each end, the said side standards being connected by longitudinal beams 15, each pair of end standards being connected by transverse beams 16, which transverse beams are ordinarily secured to the longitudinal upper beams.

Within the frame, between the standards thereof, a box-like washing-table A is suspended. The preferred means by which the table is suspended consists of two pairs of perpendicular rods 17 and 18, one pair being located at each end of the frame. The upper ends of the rods extend through the cross-beams 16 of the frame, and the lower ends of the rods are passed through the ends of the cross-bars 19, extending beyond the sides of the table, the lower ends of the rods below the cross-bars being enlarged or bent upon themselves to prevent them from being withdrawn from connection with the table. The upper or forward suspension-rods 17 of the

table are surrounded at their upper extremities by coil or spiral springs 20, which springs have a bearing upon the upper face of the forward cross-beam 16 and at their upper ends against washers 21, which washers are controlled by suitable jam-nuts, as illustrated in Figs. 2 and 3.

The box-like table may be given any desired inclination required by the ore to be treated by regulating the height of its lower or outer end, which is accomplished through the medium of a rock-shaft 22, which rock-shaft is journaled upon the upper portion of the frame, and is provided at one end with an attached crank 23 and between its journals with outwardly-extending arms 24, which arms are attached in any approved manner to the upper ends of the suspension-rods 18 at the lower end of the frame. The end of the table suspended by the rods 18 is called the "lower end" or "tail end" because said end is normally from two to two and one-half inches lower than the opposite end and the tailings pass thereover, and the opposite end is called the "head" or "higher end."

It will of course be understood that I provide suitable means—such as a rack, for instance—to hold the lever or crank 23 in its adjusted position.

The box-like table is preferably made of a length to essentially correspond to the length of the base, the upper or forward end of the table being adapted to engage with a spring 25, located in a recess of the buffer-block 11. The lower end of the table is open and is provided with an outwardly-extending handle 26, by means of which the table may be longitudinally rocked or reciprocated.

The upper or forward end of the table is provided with a cover-plate 27, and below the cover-plate a water-box 29 is formed in the table having a perforated or reticulated bottom as is best shown in Fig. 2, with which water-box the lower end of a water-supply tube 28 is connected, the upper portion of the tube being connected with the frame in any suitable or approved manner. The forward or upper extremity of the table has produced therein a series of valved openings 29^a, which extend, preferably, from side to side, as shown in Fig. 3. These openings may be closed by means of plugs or any other approved mech-

anism. Upon the cover-plate 27 of the table a rectangular recess, or preferably a rectangular coping 30, is produced, and the lower end of the coping or lower end wall of the recess is adapted to be engaged by a curved arm 31, integral with a drive-shaft 32, journaled in suitable bearings upon the uprights 12, which shaft 32 may be driven by hand or other power. As the shaft revolves, the arm 31 thereof, engaging with the lower end wall of the recess or end of the coping, imparts to the table a lateral movement in the direction of the lower end of the frame, and the table is returned, when released by the arm 31, through the medium of a spring 33, which spring engages with the forward or upper wall of the recess or the forward or upper end of the coping. The spring 33 is preferably of T shape, the shank portion whereof enters the recess or the space between the walls of the coping 30, and the extremities of the head of the T are securely attached to levers 34, which are hinged at their upper extremities one to each side of the frame at its forward or upper end, as shown in Fig. 3. The levers are unattached at their lower ends and are guided in their lateral movement by means of pins 35, passed through them and into the uprights 12 of the frame. The lower ends of the levers are engaged by crank-arms 36, integral with a crank-shaft 37, which shaft is journaled in the base of the frame, and one end thereof is made to terminate in an upwardly-extending arm 38, adapted to engage with a rack 39, or its equivalent, located at one side of the frame. The tension of the spring 33 upon the box-table may be increased or diminished by manipulating the crank-shaft 37 to force the lower ends of the levers 34 outward more or less.

In the operation of the machine the ore to be washed is delivered to the table at a point near its center, and the table is longitudinally reciprocated either through the medium of its handle 26 or the "cam-shaft" 32, so called, as the arm 31 thereof serves as a cam. The lower or outer end of the table may be elevated or depressed to retain the water for a greater or less period upon the table, as the character of the ore to be treated may demand. The oscillation of the table and the reaction of the spring 25 at its upper end will throw the heavy particles of ore in the direction of the upper end, and the light or waste particles, together with the water, will find an exit at the lower open end. When the ore has been sufficiently washed, the valves covering the openings 29^a are removed to uncover the openings and the ore is permitted to pass outward at the upper end of the table beneath the spray of water delivered from the water-box 29. The spring 25 of the buffer acts as a cushion and serves

to prevent too great a jar to the table in its forward movement, and the springs 20, located at the upper end of the forward suspension-rods, impart to the table in its forward movement practically a quivering motion, materially assisting in imparting to the ore a sifting action in its forward throw.

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

1. An ore-washer comprising a frame, a longitudinally-extending table suspended therein with its tail end normally lower than its head, said head having an outlet for the heavier ore and means for closing said outlet, a rock-shaft mounted on the frame over the tail end of the table and provided with arms 24 and an operating lever or arm, and rods extended from the lower or tail end of the table and connected with the arms 24, substantially as set forth.

2. In an ore-washer, the table A, open at its tail end and closed at its head, valved outlets 29^a in said head, and a water-box 29 in the head end of the table above said outlets and having a perforated or reticulated bottom, substantially as set forth.

3. The combination, with the frame and the longitudinally-movable table suspended therein, of the two vertically-extending levers mounted at their upper ends on the rear end of the frame, a spring intermediate of and carried by the said levers, with its lower end engaging the said table, a transverse shaft mounted on the frame and having two cranks to engage the lower ends of the levers and press them outward to strain the spring, an operating arm or lever on said shaft, and means for securing the arm or lever in its adjusted position, substantially as set forth.

4. The combination, with the frame having a buffer, the longitudinally-movable table suspended within the frame with its higher or head end adjacent to the buffer and provided in said head with outlets for the heavier ore, a water-supply above the outlets, and a longitudinally-extending socket or box on the upper side of the head end of the table, of a transverse operating-shaft having a crank-arm or cam operating against the lower end wall of the said socket or box, and a spring the lower end of which engages the upper wall of the said socket or box to throw the box suddenly against the buffer when released by said crank-arm or cam, substantially as set forth.

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Witnesses:

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