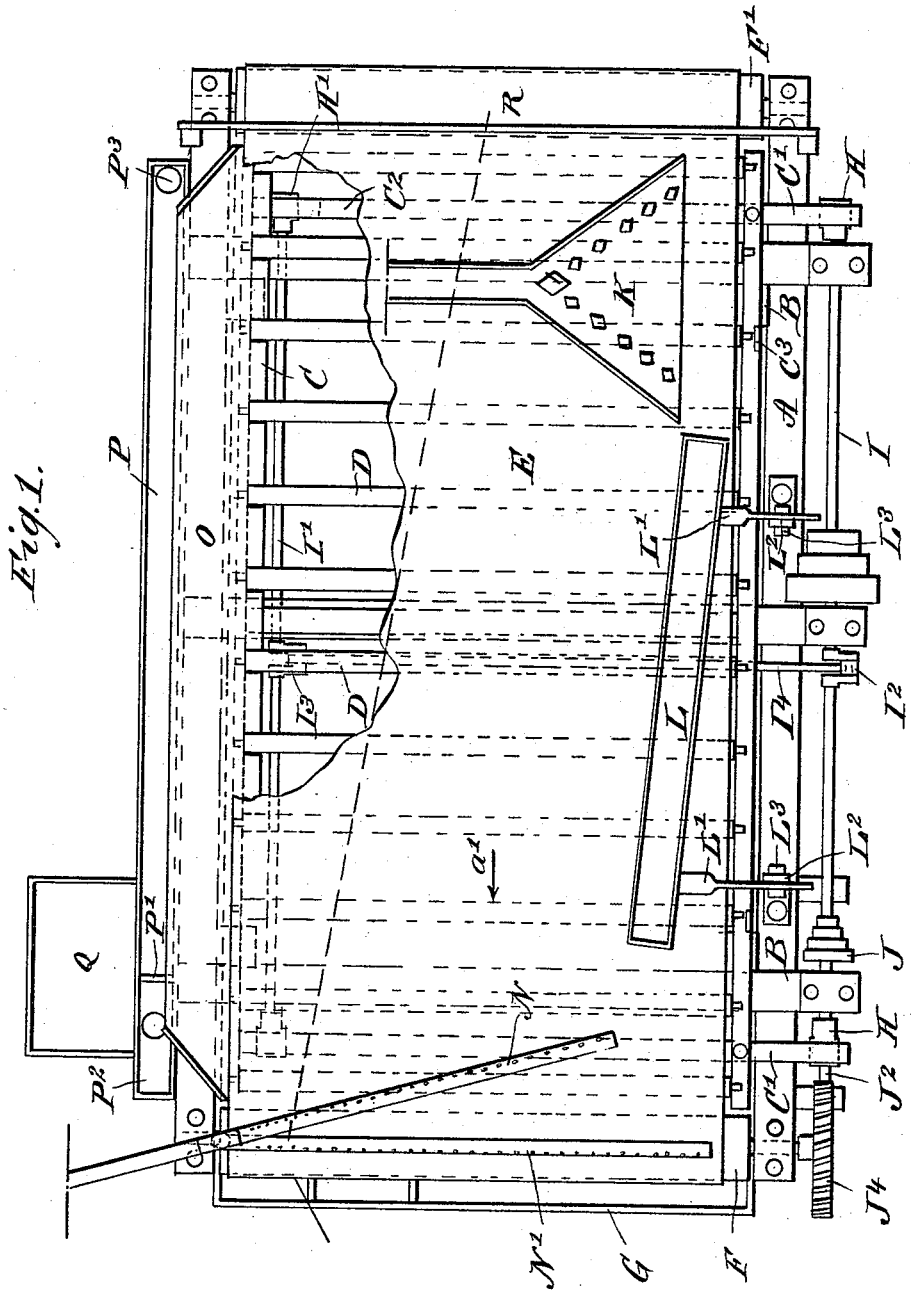
(No Model.) 2 Sheets—Sheet 1.

T. ROWE.

JIGGER.

No. 458,069. Patented Aug. 18, 1891.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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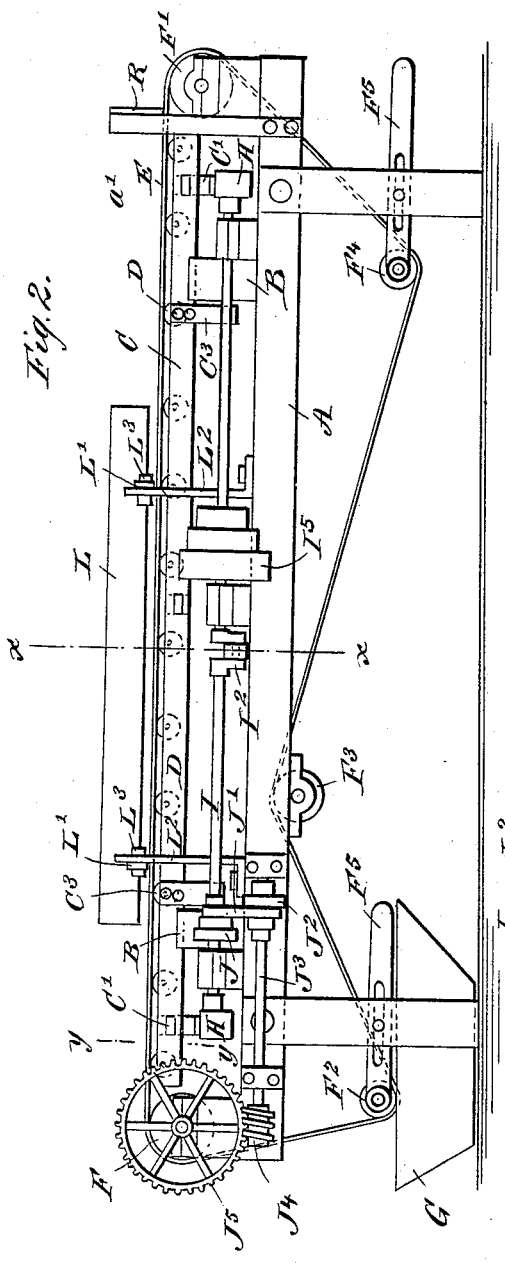

Fig. 2.

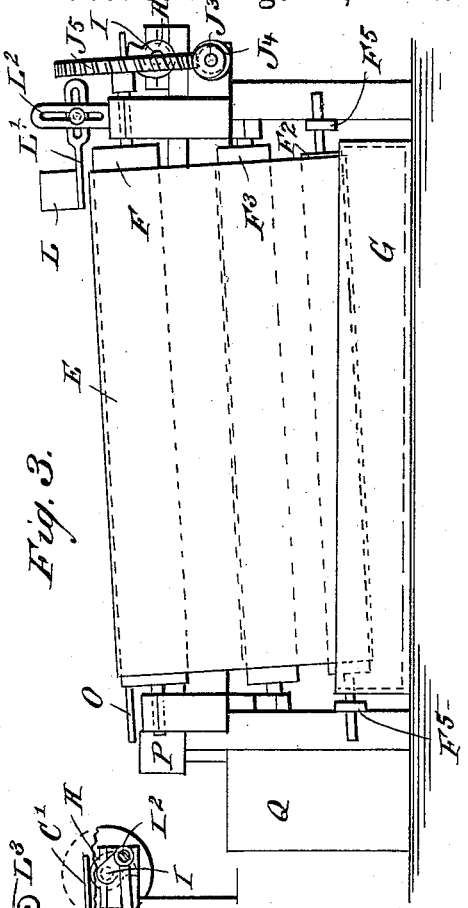

Fig. 3.

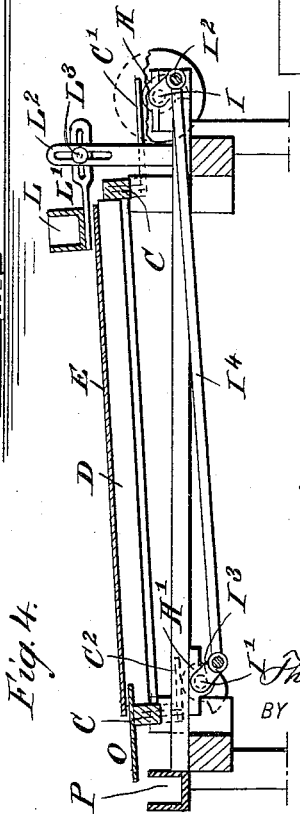

Fig. 4.

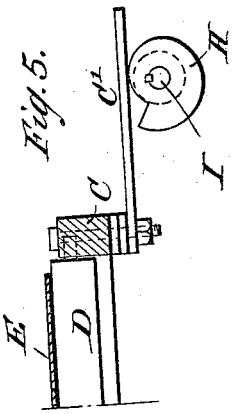

Fig. 5.

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UNITED STATES PATENT OFFICE.

THOMAS ROWE, OF KETCHUM, IDAHO.

JIGGER.

SPECIFICATION forming part of Letters Patent No. 458,069, dated August 18, 1891.

Application filed September 24, 1890. Serial No. 365,965. (No model.)

To all whom it may concern:

Be it known that I, THOMAS ROWE, of Ketchum, in the county of Alturas and State of Idaho, have invented a new and Improved Ore-Washer, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved jigger which is simple and durable in construction, very effective in operation, and completely separates the ore from the tailings.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

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

Figure 1 is a plan view of the improvement with the parts broken out. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a transverse section of the same on the line $x\ x$ of Fig. 2, and Fig. 5 is an enlarged transverse section of part of the improvement on the line $y\ y$ of Fig. 2.

The improved ore-washer is mounted on a suitably-constructed frame A, carrying upwardly-extending blocks B, on which is adapted to rest a jigging-frame C, supporting on its top a number of transversely-extending rollers D, over which passes a carrier-belt E, also passing over rollers F and F′, journaled at the ends of the main frame A. The roller F receives a rotary motion, so as to impart motion to the endless carrier-belt E. The jigging-frame C is slightly inclined longitudinally, and is also inclined transversely, as is plainly shown in Figs. 2 and 3, the belt E being consequently inclined in the same two directions. After the belt E leaves the roller F at the high end of the table it passes under a roller F^2, which extends into the depositing-trough G, adapted to receive the precious metals separated from the tailings and carried into the said trough by the belt E. The trough is filled with water or other suitable liquid for washing off the precious metal from the belt. The latter, after leaving the roller F^2, passes over a roller F^3, journaled on the underside of the main frame A, and then the belt passes under a roller F^4, previously to passing to the roller F′ before mentioned. The rollers F^2 and F^4 are journaled in frames F^5, held adjustably on the legs of the main frame A, so as to give the necessary tension to the belt and pass the latter a greater or less distance into the trough G.

On the sides of the jigging-frame C are secured sets of transversely-extending strips C′ and C^2, resting on top of cams H and H′, respectively, secured on longitudinally-extending shafts I and I′, respectively, mounted to turn in suitable bearings on the main frame A. The shaft I is provided with a cone-pulley I^5, connected by belt with suitable machinery for imparting a rotary motion to the said shaft. The shafts I and I′ are also provided with crank-arms I^2 and I^3, respectively, connected with each other by a link I^4, so that when the shaft I is rotated a similar motion is imparted to the shaft I′, whereby the cams H and H′, acting on the strips or bars C′ and C^2, respectively, lift the jigging-frame C off of the blocks B, and then suddenly drop the same back onto the blocks, thus imparting a jigging motion to the frame. The latter is provided with downwardly-extending arms C^3, arranged next to the blocks B, so as to guide the jigging-frame in its up-and-down motion.

On the main shaft I is secured a cone-pulley J, connected by a belt J′ with a second cone-pulley J^2, secured on a short shaft J^3, mounted to turn in suitable bearings on one side of the main frame A. On the outer end of the shaft J^3 is secured a worm J^4, in mesh with a worm-wheel J^5, secured on one end of the shaft carrying the roller F, so that when the main shaft I is rotated a traveling motion is imparted to the carrier-belt E by the mechanism just described.

At the high side of the jigging-frame C and near its low end is arranged directly over the belt E an inlet-chute K, through which the ore to be treated is passed onto the belt. Next to the chute K, also on the high side of the jigging-frame C, is arranged a trough L, connected with a suitable source of fresh-water supply to furnish the necessary amount of water for the washing process. The trough L is supported on transversely-extending slotted arms L′, connected with vertical slotted

posts L^2, secured on the main frame A. The slotted arms L′ are connected by bolts L^3 with the said slotted posts, so as to permit of conveniently adjusting the said arms L′ in order to change the position of the trough L—that is, raising or lowering it or placing it in an inclined position or diagonally on the belt, as described.

At or near the high end of the jigging-frame C are held, over the belt E, one or more perforated water-pipes N and N′, connected with a suitable source of water-supply, the water from pipe N′ serving to wash the pulp, so as to produce perfectly clean ore, and that from the pipe N to assist in clearing the ore from the belt. At the low side of the jigging-frame C is secured an inclined board O, extending throughout the length of the frame and discharging the tailings into a longitudinally-extending trough P, having near its high end a partition P′, forming a second compartment P^2, discharging into a receptacle Q, into which some of the heavier tailings are washed to be treated over again, so as to save the precious metals. The trough P is provided with a discharge-opening P^3 at its low end.

At the low end of the jigging-frame C is arranged a transverse board R, which serves to prevent the material from flowing off that end of the belt.

The operation is as follows: When the main shaft I is rotated, as previously described, the jigging-frame C, with its belt E, is lifted upward, then dropped, and at the same time a traveling motion is imparted to the belt in the direction of the arrow a'. The pulp is passed over the chute K onto the high side of the belt, and by the jigging motion imparted to the belt the heavier particles are gradually separated from the tailings or the lighter particles, which latter pass over the board O into the trough P at the low side of the jigging-frame. As the belt E advances in the direction of the arrow a' the pulp is treated with water from the trough L, so that all the lighter particles are caused to flow to the low side of the belt over the said board O to the trough P, while the heavier particles are carried along to be again treated to jets of water from the perforated pipes N and N′. The heavier particles, still adhering to the belt when the latter passes over the rollers F, are deposited in the settling-tank G, as previously described.

By placing the endless carrier-belt into an inclined position both longitudinally and transversely, and with the feed end lowermost and discharge end at the highest point, I derive advantages over machines which are only inclined in one direction—for instance, laterally, as shown in Patent No. 214,140, granted to W. Hooper, April 8, 1879. In such cases the ore settles diagonally, and is discharged into the tailing-chute before the belt travels its length. The ore in my machine settles in the space indicated by dotted lines on the belt in Fig. 1, so that the ore is all on the belt at the time it passes over the roller F, and is consequently all saved. This is principally due to the fact that the pulp is fed onto the carrier-belt against the pitch, so that its forward momentum, caused by the jigging motion of the frame and the traveling of the belt, is checked and it more readily mixes with the water from trough L and then quickly settles. The ore thus does not settle diagonally on the belt to be finally run into the tailing-trough before the belt has traveled its length; but, on the contrary, the ore settles in the space indicated by the dotted lines and is carried over roller F to the trough G. By the double inclination the clear water more evenly spreads on the belt, so that the lighter ore is not carried into the tailing-trough. After the ore has settled more water is passed over it through pipe N′ to wash the tailings toward and into the tailing-trough. By the sudden drop of the jigging-frame the heavier part of the waste material is forced to the top of the ore and by the water is carried away from the ore and diagonally across the belt, owing to the latter's lateral inclination and its forward and upward movement. The ore, however, settling and adhering to the belt, is carried forward in almost a straight line in the space previously mentioned.

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

1. An ore-washer comprising a main frame, a vertically-reciprocating jigging-frame, cams for raising and suddenly dropping said jigging-frame, an endless belt passing over said jigging-frame, and a water and ore supply, the said belt and jigging-frame being highest at the discharge end and also inclined laterally, substantially as set forth.

2. An ore-washer comprising a main frame, a vertically-reciprocating jigging-frame mounted on top thereof and inclined longitudinally and laterally and having transverse arms at its opposite sides, a correspondingly-inclined endless belt passing over said jigging-frame, and a series of cams acting on said arms to raise the frame and belt and drop them suddenly, the lowermost end of the belt being the feed end and the opposite end being the discharge end, substantially as set forth.

3. The combination, with the vertically-reciprocating jigger-frame having a longitudinal and lateral incline and the endless carrier-belt passing thereover to be raised and suddenly dropped therewith, of the pulp-feed K at the higher side of the lower end of the belt, the water-trough L, the perforated pipes N N′ at the higher or discharge end of the belt, the pipe N′ being at an angle to the pipe N, the trough P along the lower side of the belt and provided with an outlet P^3 at the lower end of the belt, and a compartment P^2 at its opposite end discharging into a receptacle Q, substantially as set forth.

4. In a jigger, the combination, with blocks, of a jigging-frame inclined longitudinally and transversely and adapted to be seated on the said blocks, rollers journaled in the said jigging-frame, an endless carrier-belt passing over the said rollers, guide-arms held on the said frame near the said blocks, and means, substantially as described, for lifting the said frame and suddenly dropping the same, substantially as described.

THOMAS ROWE.

Witnesses:
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F. K. GILLETTE.