

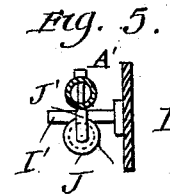
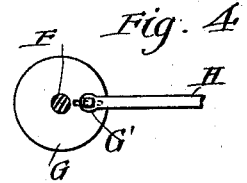
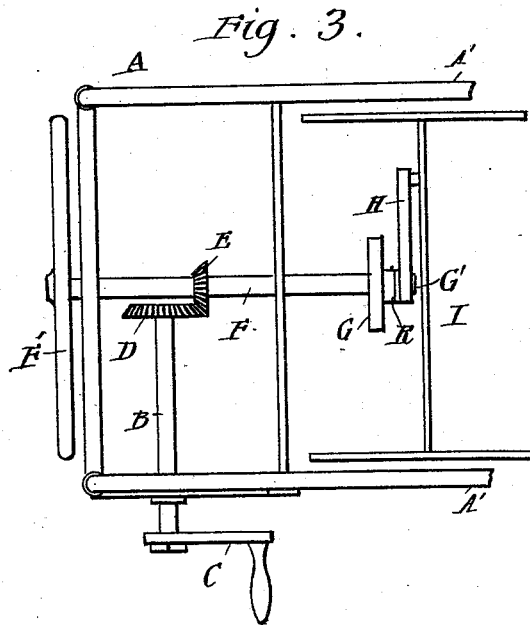
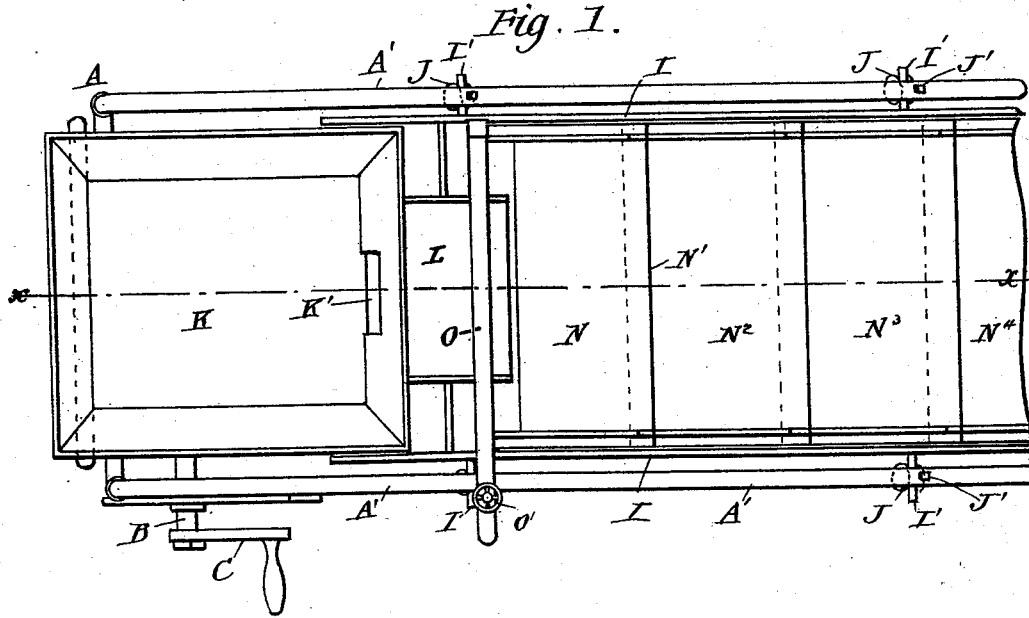
(No Model.)

2 Sheets—Sheet 1.

J. O. CAMPBELL.
ORE WASHER.

No. 455,654.

Patented July 7, 1891.



WITNESSES:
J. O. Campbell
C. Sedgwick

INVENTOR:
J. O. Campbell
BY *Munn & Co*
ATTORNEYS

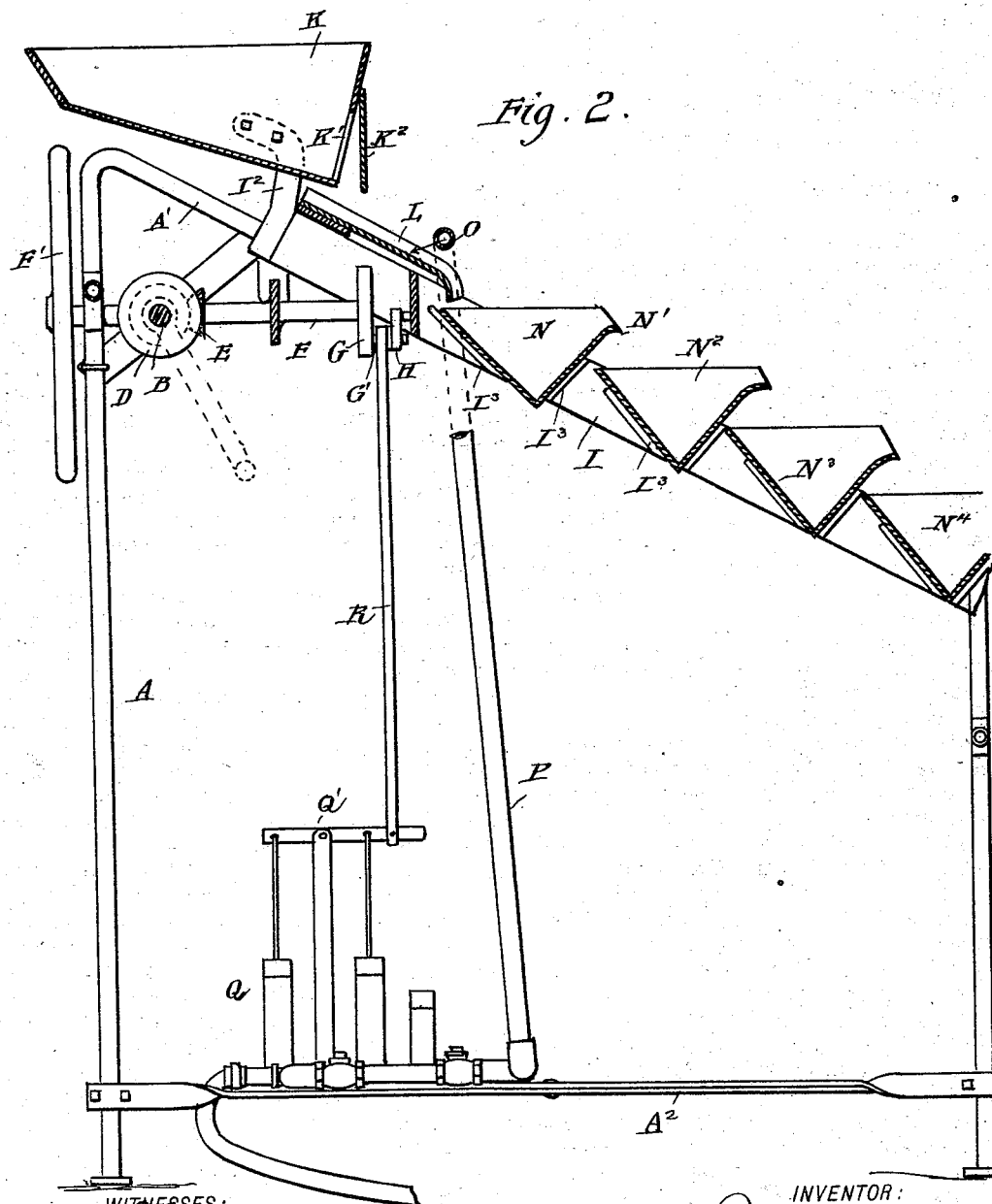
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2 Sheets—Sheet 2.

J. O. CAMPBELL.
ORE WASHER.

No. 455,654.

Patented July 7, 1891.



WITNESSES:
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INVENTOR:
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UNITED STATES PATENT OFFICE.

JAMES O. CAMPBELL, OF COLTON, UTAH TERRITORY.

ORE-WASHER.

SPECIFICATION forming part of Letters Patent No. 455,654, dated July 7, 1891.

Application filed March 10, 1891. Serial No. 384,411. (No model.)

To all whom it may concern:

Be it known that I, JAMES O. CAMPBELL, of Colton, in the county of Utah and Territory of Utah, 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 ore-washer which is simple and durable in construction, very effective in operation, and more especially designed for washing gold-sand to obtain all the precious metal contained in the sand without a great expenditure of water or labor.

The invention consists of an inclined frame mounted to slide laterally and supporting a series of buckets arranged one in front of the other and one above the other, the higher one discharging into the next lower one.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, 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. Fig. 2 is a sectional side elevation of the same on the line *xx* of Fig. 1. Fig. 3 is a plan view of the driving mechanism. Fig. 4 is a face view of the adjustable crank-arm, and Fig. 5 is a transverse section of the support for the inclined frame.

The improved ore-washer is provided with a suitably-constructed main frame A, in one end of which is mounted in suitable bearings the main driving-shaft B, arranged transversely and carrying on its outer end a handle C for conveniently turning the said shaft B. For larger machines a suitable connection is made between the shaft B and the driving machinery, so as to rotate the shaft B by power.

On the inner end of the main driving-shaft B is secured a bevel gear-wheel D, meshing into a bevel-pinion E, secured on the shaft F, arranged longitudinally and mounted to turn in suitable bearings in the main frame A.

On the outer end of the shaft F is secured a fly-wheel F', and on the inner end of the said

shaft is secured a crank-disk G, having a radial slot in which is held adjustably the wrist-pin G', pivotally connected with a pitman H, extending transversely and pivoted to the under side of the auxiliary frame I, held in an inclined position between the upper inclined arms A' of the main frame A.

The auxiliary frame I is provided on its sides with outwardly-extending pins I', each engaging a grooved pulley J, mounted to turn loosely in a suitable hanger J', secured to the top arms A' of the main frame A. (See Fig. 5.) The auxiliary frame I is thus supported in the main frame A and is free to slide transversely, the pins I' traveling on the grooved pulleys J.

On the upper end of the auxiliary frame I are secured brackets I², supporting a hopper K, having an inclined bottom leading to a discharge-opening K', adapted to be closed by a hinged gate K². The discharge-opening K' opens onto an inclined plate L, secured on the auxiliary frame I near the upper end, as is plainly shown in Fig. 2, the lower end of the said inclined plate discharging into a bucket N, supported on cleats I³, fastened to the sides of the auxiliary frame I.

The bucket N is preferably V-shaped, as is plainly shown in Fig. 2, the lower side being formed with a curved discharge-lip N', adapted to discharge into a bucket N², similar in construction to the bucket N, and likewise supported on cleats I³ in the auxiliary frame I. The bucket N² is arranged in front of the bucket N and somewhat below the same, as is plainly indicated in Fig. 2. The said bucket N² discharges into a bucket N³, of a similar construction, arranged in front of and below the bucket N². A similar bucket N⁴ is arranged in front of and below the bucket N³. Any desired number of such buckets may be arranged in the inclined frame I, one in front of the other and below, as is plainly shown in Fig. 2 and described above. By supporting the buckets N, N², N³, and N⁴ on cleats I³, as described, the said buckets can be conveniently removed independently of each other without disturbing the working of the machine.

Above the lower end of the plate L is arranged transversely a pipe O, provided with

a series of apertures through which water is discharged onto the plate L to wet the gold-sand coming upon the said plate and to spread the same on the plate previous to entering the upper bucket N. One end of the pipe O is closed and the other end is provided with a valve O' and connected by a suitable hose P with the discharge end of the double-acting pump Q, the working-lever Q' of which is pivotally connected by a crank R with the wrist-pin G', previously mentioned. The pump Q is supported on cross bars or braces A² of the main frame A. (See Fig. 2.)

The operation is as follows: The gold-bearing sand is passed into the hopper K in any suitable manner, and when the machine is actuated by rotating the main driving-shaft B, then a lateral sliding motion is imparted to the auxiliary frame I, and consequently to the hopper K, so that the gold-bearing sand therein is agitated and readily passes through the discharge-opening K' onto the plate L, on which it spreads, and is directed by the action of the water discharged through the apertures or perforations in the pipe O. The motion of the main shaft is transmitted simultaneously to the inclined frame I, as well as the pump Q, so that water is forced onto the plate L as soon as the machine is set in motion. The gold-bearing sand flows from the plate L into the upper bucket N, in which the heavier particles of the precious metal settle, while the sand and the water finally flow over the lip N' into the next bucket N², in which the remaining heavier particles of the precious metal settle, while the lighter particles, sand and water, flow to the next bucket, and so on until the sand is free from precious metal, the sand and water then flowing over the lip N' of the lowermost bucket. The buckets N, N², N³, and N⁴ can at any time be removed from the inclined auxiliary frame I to be emptied and then replaced without stopping the operating of the machine.

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

1. In an ore-washer, the combination, with an inclined frame mounted to slide trans-

versely and having a series of V-shaped supports, of a series of buckets V-shaped in cross-section and mounted removably in said supports, one in front of and above the other, the higher buckets discharging into the next lower ones, substantially as shown and described. 55

2. In an ore-washer, the combination, with an inclined frame mounted to slide laterally and having a series of supports on the inner faces of its sides in step-like order, of a hopper supported on the upper end of the said inclined frame, movable therewith, and provided with an inclined bottom and a discharge-opening at the lowermost end of the said bottom, a transverse plate secured on the said inclined frame under the said discharge-opening, a perforated water-pipe crossing the plate, and a series of buckets inserted downward into the frame and resting removably at their ends in the said supports, the uppermost bucket receiving the gold and sand from the said plate, the higher bucket discharging into the next lower one, substantially as shown and described. 60 65 70

3. In an ore-washer, the combination, with an inclined frame mounted to slide laterally, of a hopper supported on the upper end of the said inclined frame and provided with an inclined bottom and a discharge-opening at the lowermost end of the said bottom, a transverse plate secured on the said inclined frame under the said discharge-opening, a series of buckets held in the said inclined frame, one in front of the other, the uppermost bucket receiving the gold and sand from the said plate, the higher bucket discharging into the next lower one, a perforated pipe connected with a suitable water-supply arranged across the lower end of said plate, and means, substantially as described, for simultaneously imparting a transverse motion to the said inclined frame and operating a pump connected with the said perforated pipe, as set forth. 75 80 85 90

JAMES O. CAMPBELL.

Witnesses:

A. B. TOMSON,
THOMAS DALLIN.