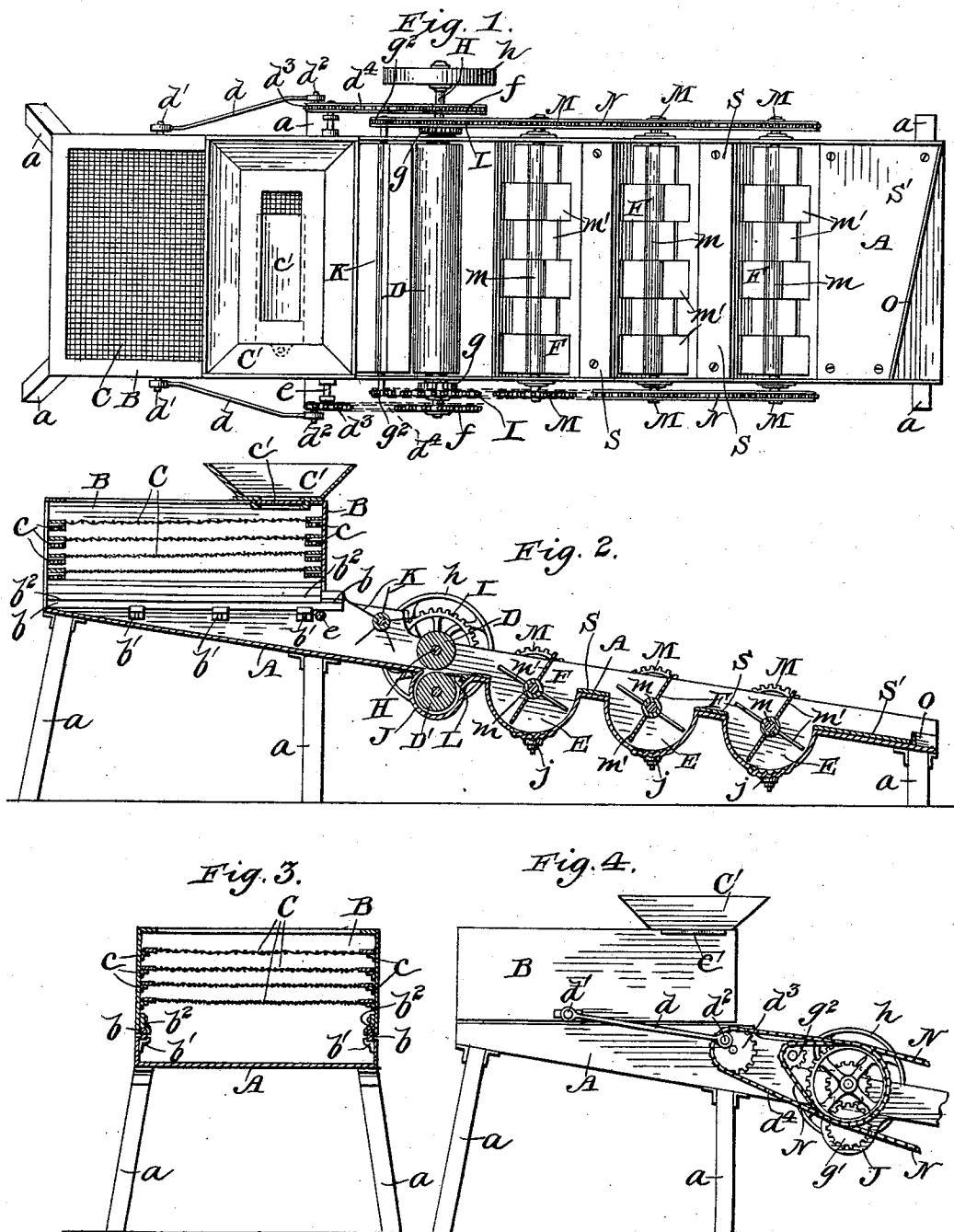


(No Model.)

R. BLANCHARD.
GOLD SEPARATOR.

No. 532,943.

Patented Jan. 22, 1895.



Witnesses

Geverance

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Inventor

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UNITED STATES PATENT OFFICE.

REUBEN BLANCHARD, OF DULUTH, MINNESOTA.

GOLD-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 532,943, dated January 22, 1895.

Application filed November 5, 1894. Serial No. 527,969. (No model.)

To all whom it may concern:

Be it known that I, REUBEN BLANCHARD, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Gold-Separators; and I do hereby 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.

My invention relates to improvements in gold separators, and it consists in certain novel constructions, combinations, and arrangements of parts as will be hereinafter described and claimed.

In the accompanying drawings: Figure 1. is a top plan view of the mechanism embodying my invention. Fig. 2. is a central, vertical, longitudinal section of the same. Fig. 3. is a transverse section through the sieve casing and sieves contained therein, and Fig. 4. is a side elevation of the sieve casing and hopper and the actuating mechanism for the same.

A in the drawings, is the frame or inclined trough; B, the reciprocating sieve casing mounted upon one end of the same; C, the sieves mounted in the casing; D, D', crushing rolls; E, E, the amalgamating troughs or valleys and F the agitators mounted in the same.

The trough A is supported in its inclined position by legs *a* which are secured thereto by any suitable cleats or brackets. The side walls of the forward or highest end of this trough are each provided with a knife edge guide rail *b* which is supported in a horizontal position by brackets *b'* which are attached to the inner sides of said side walls.

The casing B is preferably rectangular in form and is open at the back, top and bottom and is provided upon its lower side edges with grooved projections *b''* which are adapted to fit over and slide upon the guide rails *b* when the casing is reciprocated back and forth. The screens or sieves C are mounted in the said casing by means of brackets *c* and are all inclined downward toward the rear or open side of the casing. The sieves are each of different size mesh, commencing at the top with the largest and ending at the bottom with the smallest.

A feed hopper C' provided with a regulat-

ing slide *c'* is mounted on the top of the casing B so as to discharge its contents on the forward end of the top sieve. By means of the inclination of the sieves a better sieving action is produced when the sieves are agitated and at the same time means are provided for removing the coarser particles of ore, as the same work down the inclines and are discharged at the rear of the casing where they may be caught, if so desired, by a conveyer and returned to a crushing mill to be broken into smaller pieces.

The casing B is reciprocated by means of pitmen *d, d'*, which each have one end journaled on a stud *d'* of said casing and the other attached to the crank pin *d''* of sprocket wheels *d''* respectively. These wheels are mounted on the respective ends of a shaft *e* which is mounted in the trough A and they are connected by sprocket chains *d''* with sprocket wheels *f, f'* mounted on the power shaft H which in turn is mounted in the trough A. This shaft H carries a belt wheel *h* at one end and sprocket wheels I, I, one at each end. Gear wheels *g* are also mounted on each end and the crushing roll D upon the center of this shaft. The lower crushing roll D' is mounted in a trough J transversely arranged in the trough A so that its circumference just comes on a level with the bottom of the trough.

The shaft of the roller D is provided at each end with a gear wheel *g'* which meshes with the gear *g* and thus both rolls are revolved at the same time and with the same speed.

A fan K is mounted in the trough A just in front of the crushing rolls and its shaft is provided at each end with a gear wheel *g''*. This fan removes, by blowing, all the small particles of dirt and dust from the ore after it has passed through the sieves.

A scraper L is mounted in the trough A and bears against the lower roll D' so as to prevent the pulverized ore which is leaving said rolls from settling into the trough J.

Other troughs E, E, for containing the mercury or amalgamator are formed transversely in the bottom of the trough A and have longitudinally ruffled or corrugated bottoms, the object of said ruffles being to allow the mercury a safer resting place where the agitators

or blades F cannot strike it and sweep it from the troughs. Each trough is provided with a tap *j* by which the mercury and the gold can be drawn from the same.

5 The agitators F consist of fan like blades *m'* arranged at intervals upon shafts *m* so as to revolve therewith and each of these shafts is provided at each end with a sprocket wheel M. An endless sprocket chain N passes over
10 these wheels, and wheels I and *g*² on each side of the trough and said agitators and fan K are thus operated simultaneously by the power from the sprocket wheels I which are mounted on the power shaft H.

15 O is an obliquely arranged riffle secured to the bottom of the trough A so as to catch any mercury or gold that escapes from the troughs E, E and conduct it to one side.

When the ore is introduced through the
20 hopper it drops upon the upper sieve C and then upon each successive sieve as it descends and at last discharges into the trough A where the blast from the fan removes all the dirt and dust and the remaining ore is crushed between
25 the pulverizing rolls D, D' and then passes into each successive trough E where the agitators thoroughly commingle it with the mercury and the gold is thereby caught and retained by the same and can be drawn off
30 with the mercury through the taps *j* when a sufficient quantity has accumulated. By means of the pitmen *d* the sieve casing is rapidly reciprocated thus causing the ore to readily pass through the successive sieves and at
35 last descend into the trough A.

The flat surfaces S, S, S', being spaces between the troughs E, E, and the broad space at the end of the frame A, are to be faced with copper plates screwed thereon, covered
40 with mercury so as to assist in amalgamating any gold which may be brought in contact with such surfaces.

What I claim as my invention, and desire to secure by Letters Patent, is—

45 1. In a gold separator, the combination of a series of shaking sieves mounted in a sliding frame, an inclined trough adapted to receive the ore that passes through said sieves, amalgamating troughs arranged in said
50 inclined trough and provided with ruffled mercury retaining bottoms, agitators mounted in said amalgamating troughs, and means for operating said sliding frame, substantially as described.

55 2. In a gold separator, the combination of

a series of shaking sieves mounted in a sliding frame, an inclined trough adapted to receive the ore that passes through said sieves, a revolving fan mounted in the trough for removing the dust from the ore in said trough
60 by blowing it therefrom, crushing rolls for pulverizing the ore in said trough, amalgamating troughs in said inclined trough, agitators in said amalgamating troughs, and means for operating the sieves, fan, rolls and
65 agitators, substantially as described.

3. In a gold separator the combination of a series of shaking sieves, an inclined trough adapted to receive the ore that passes through the same, a dust removing fan and crushing
70 rolls mounted in said inclined trough, amalgamating troughs in said inclined trough and having ruffled bottoms with taps therein, agitators adapted to revolve in said amalgamating troughs, a riffle at the end of said
75 inclined trough and means for operating the sieves, fan, rolls and agitators, substantially as described.

4. In a gold separator, the combination of an open ended casing containing inclined
80 sieves of different mesh and provided with a feed hopper adapted to discharge upon the same, an inclined trough adapted to receive the ore that passes through the sieves, a shaft provided with sprocket wheels and mounted
85 in said trough, pitmen connecting said wheels to said casing whereby the casing, hopper and sieves are vibrated, a dust removing fan and crushing rolls mounted in said trough, a series of amalgamating troughs, bladed agitators arranged in the amalgamating troughs, ruffles
90 and taps in the bottoms of said troughs, a riffle at the discharge end of the inclined trough and means for operating the casing fan, crushing rolls and agitators, substantially as described; and the facing of all
95 such exposed surfaces between the several troughs and at the end of the frame with copper plates covered with mercury for the purpose of catching and amalgamating any loose
100 gold which may be brought in contact with said surfaces during the passage of the pulverized ore from one trough to another, and its discharge at the end of the frame.

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

REUBEN BLANCHARD.

Witnesses:

W. E. WRIGHT,
EDWARD A. MATTIX.