

(No Model.)

J. ALVES.

# APPARATUS FOR AMALGAMATING AND CONCENTRATING ORES.

No. 273,662.

Patented Mar. 6, 1883.

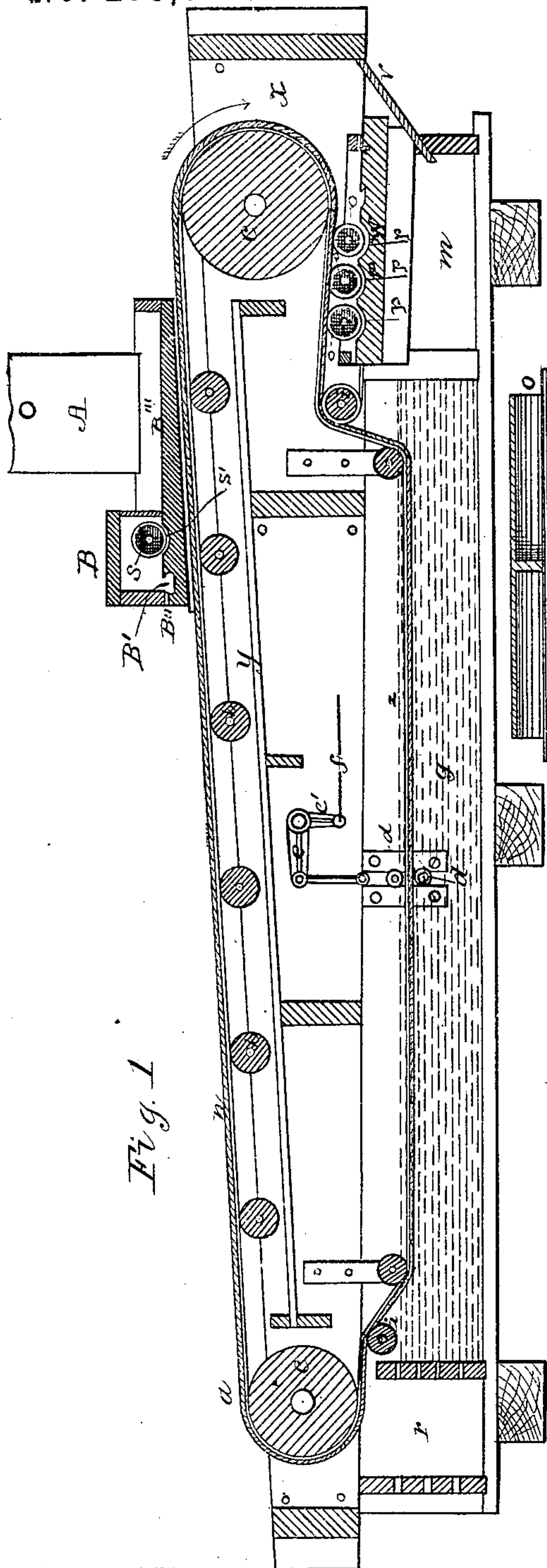


Fig. 1

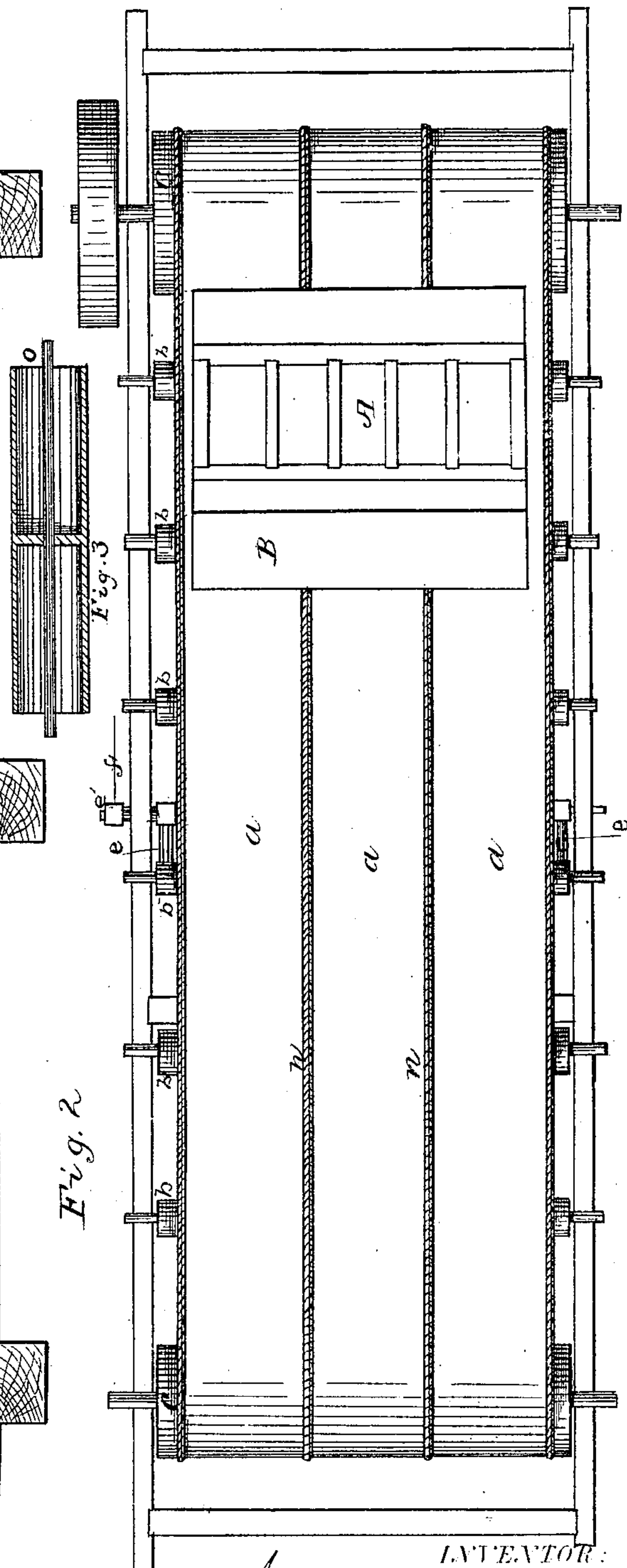


Fig. 2

WITNESSES:

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J. A. Fouts.

INVENTOR:

INVENTOR  
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By his atty  
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# UNITED STATES PATENT OFFICE.

JOHN ALVES, OF DUNEDIN, NEW ZEALAND.

## APPARATUS FOR AMALGAMATING AND CONCENTRATING ORES.

SPECIFICATION forming part of Letters Patent No. 273,662, dated March 6, 1883.

Application filed October 28, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ALVES, of George Street, Dunedin, in the Colony of New Zealand, have invented new and useful Improvements in Apparatus for Amalgamating and Concentrating Ores, of which the following is a specification.

The apparatus which I use for amalgamating and concentrating ores consists of a washer or concentrator, part of which also acts as an amalgamator. My washer or concentrator is in part of novel construction and in part a novel arrangement of well-known contrivances. It consists of an oblong casing, in which there travels an endless blanket table, the upper portion of which travels up an incline out of the water and in an opposite direction to the flow from the batteries, and the lower portion of which travels under the surface of the water and in the same direction as the flow from the batteries. A series of amalgamator-cylinders, open at each end, are placed under the lower sides of the blanket, at the head of the machine. These cylinders lie and revolve in grooves or pockets. These pockets are adapted to receive mercury, whereby the inside and outside surfaces of said cylinders are exposed to the action of the mercury and the extraction of gold facilitated. I also employ means actuated through the medium of a bell-crank, whereby the blanket may be shaken while passing through the water.

In order, however, that my invention may be clearly understood, I will now proceed to describe the drawings attached hereto, in which—

Figures 1 and 2 show plan and longitudinal sections of my separator and concentrator. Fig. 3 is a longitudinal section of one of the amalgamator-cylinders.

A is a conductor to receive the pulverized ores from the stamps.

B is an amalgamator-box mounted above the blanket, and B' is a mercury-trough therein.

B'' is an opening in the lower side of box B, and B''' is the bed.

a is an endless baize or blanket table, laid on canvas or other suitable material, divided into longitudinal sections by ropes n, sewed onto the baize.

b are the upper bearing-rollers.

c are the driving-rollers.

d are washing-rollers.

e and e' are inside and outside cranks.

f is a connecting-rod extending from the crank e' to a driving-crank on one of the rotating shafts. (Not shown.)

g is a water-tank, through which the blanket-table is caused to pass.

i are under guide-rollers.

m is a tank under the mercury-trough, in which the amalgam-cylinders o revolve.

n are the ropes on the table a.

o are cylindrical amalgamators, open at each end, so as to amalgamate on both inside and outside. These cylindrical amalgamators are revolved by contact with the traveling apron a or by other familiar means.

p are quicksilver pockets, in which the plates o dip.

r is a tailing-chute.

s is also a cylindrical amalgamator, open at each end; and s' is a mercury-trough, in which s works. The material, after passing through the conductor A, moves onto the bed B''', and then it is brought in contact with the amalgamator s and mercury in the troughs s' and B'. The material which is not arrested by the mercury in box B passes through the opening B' onto the traveling blanket.

v is a movable chute to tank m.

The amalgam-pockets p draw out for cleaning up.

x is the frame to support the traveling table. It is made to lift up to allow the tank g to be emptied.

y is a lining under the upper half of the table a, to catch the sand from the same.

z is the water-level in tank g.

The mode of operation is as follows: The material to be treated, carried in a running stream of water, is fed onto the surface of endless fabric table a in an opposite direction to the travel of such table. The lighter portions are carried by the water to the trailing chute r, the heavier parts are carried by the table, and the coarser parts are discharged down chute V into receptacle m, while the rest is carried to the amalgamators, which dip into mercury recesses or grooves p, and that which is still left adhering to the table a is carried into the lower part of and underneath the water in the washer or separator g. Here the table is conducted between two rollers, d d,

which give to it a shaking or up-and-down motion, so as to facilitate the separation and deposit of any material it may yet have on its face. When the washer *g* is sufficiently charged, it must be cleaned out, and if the cylindrical amalgamators are dirty they must be renewed and cleaned or resilvered, as the case may be, the gold in the form of amalgam being found mostly on the cylindrical amalgamators, while the pyrites and other valuable material will be found deposited in the bottoms of the mercury-troughs.

Having described my invention, what I claim is—

15 1. The open end cylindrical amalgamators *o* and the traveling apron *a*, in combination with mercury-grooves *p*, adapted to receive said amalgamators in a manner and for the purpose specified.

2. The traveling apron *a* and tank *g*, in combination with the bell-crank *e e'*, rollers *d d*, and crank-rod *f*, whereby the apron *a* may be given a shaking, substantially as indicated.

3. The open-end cylindrical amalgamators *o* and the mercury-troughs *p*, combined with mechanism whereby said amalgamators are caused to rotate in said troughs and become amalgamated both inside and out.

4. The amalgamator-box *A*, primary amalgamator *s*, traveling fabric table *a*, cylindrical amalgamators *o*, water-trough *g*, and shaker *d e e'*, combined and arranged substantially as set forth.

JOHN ALVES.

Witnesses:

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ERNEST ALFRED ROSS.