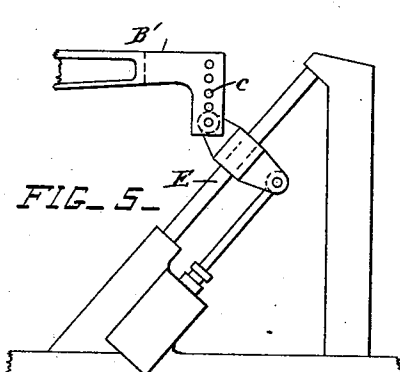
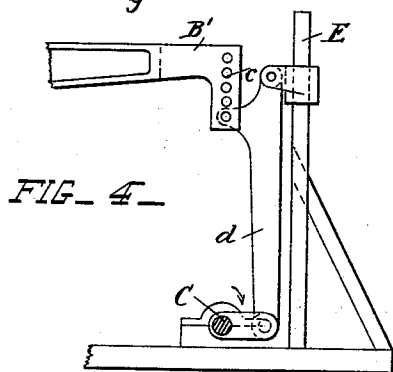
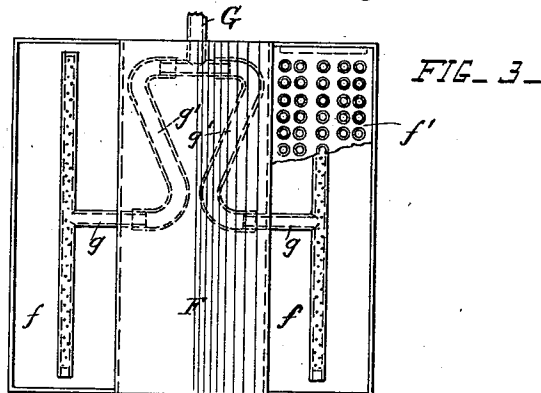
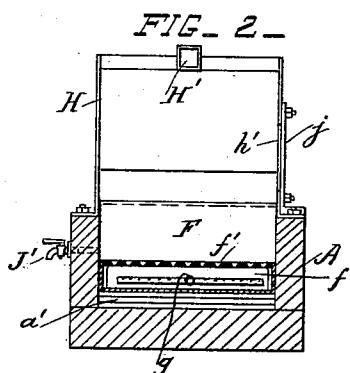
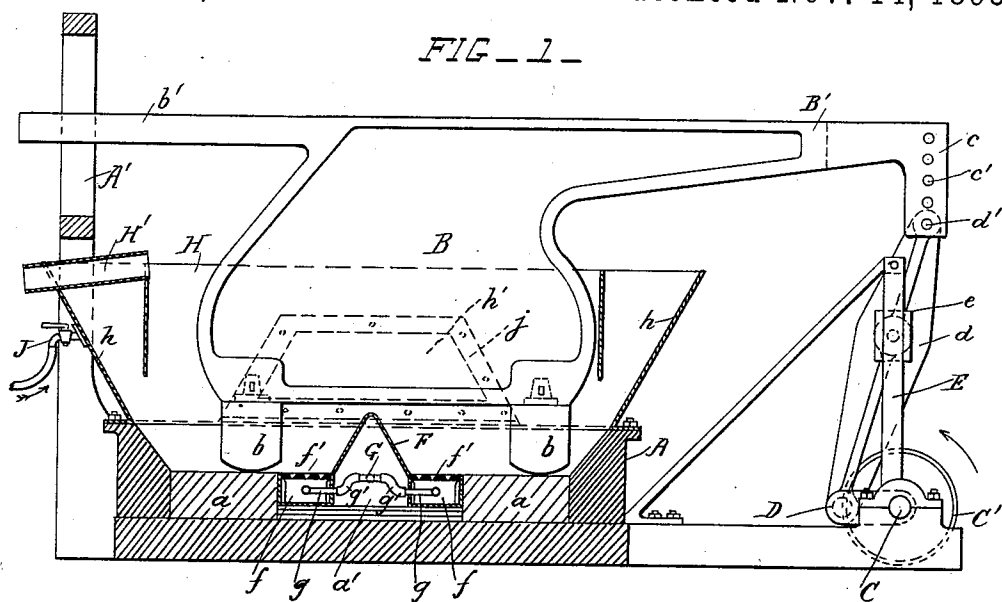


(No Model.)

C. CARTER & A. H. BELL.
STAMP MILL AND AMALGAMATOR.

No. 508,679.

Patented Nov. 14, 1893.



WITNESSES:

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CHARLES CARTER AND ALFRED HENRY BELL, OF IBAPAH, UTAH TERRITORY.

STAMP-MILL AND AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 508,679, dated November 14, 1893.

Application filed March 25, 1893. Serial No. 467,529. (No model.)

To all whom it may concern:

Be it known that we, CHARLES CARTER and ALFRED HENRY BELL, residing at Ibapah, in the county of Tooele, Utah Territory, have invented certain new and useful Improvements in Stamp-Mills and Amalgamators; and we 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.

This invention relates to stamp mills and amalgamators which are more particularly adapted for gold ore; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings: Figure 1 is a side view of the machine showing the mortar box and tank in section. Fig. 2 is a cross-section through the mortar box and tank. Fig. 3 is a plan view of the mercury boxes removed from the mortar box. Figs. 4 and 5 are two side views showing two modifications of the device for operating the stamp.

A is the mortar box provided with a die *a* at each end, and having a space *a'* between the two dies.

B is the stamp provided with a shoe *b* at each end. The shoes have convex surfaces which bear on the dies *a*.

B' is a horizontal arm at the top of the stamp for operating it; and *b'* is also a horizontal arm which engages with the vertical guide *A'* and keeps the stamp from twisting around. The end *c* of the arm B' is forked and is provided with a series of holes *c'*.

C is the driving shaft which is driven by the pulley C' or by any other approved driving device.

D is a crank on the shaft C, and *d* is a pitman connected to the crank, and provided with a pin *d'* for connecting its upper end with either of the holes *c'*. A series of holes is provided so that the connection of the pitman may be changed to compensate for the wear of the stamp shoes and dies. The pitman *d* has a guide shoe *e* pivoted to it which works on the vertical guide E which is suitably secured and braced to the base of the machine. Two similar guides may be used, one on each side of the pitman.

When motion is imparted to the crank, in the direction of the arrow in Fig. 1, the stamp

shoes are raised alternately. The shoe in contact with one of the dies is pushed along while the other shoe is being raised and lowered, and the descending shoe comes down upon the outer end of its dies and is adapted to be moved across its face when the other shoe is being lifted and lowered.

Fig. 4 shows a modified form of the pitman in which the arm of the stamp is pivoted to the pitman between the crank and the guide shoe.

In Fig. 5 the guide is inclined and the piston rod of a motor cylinder is connected to the guide shoe.

In each case the stamp has a longitudinally reciprocating motion imparted to it, and the stamp shoes are raised and lowered alternately.

F is a bent plate having its surface covered with copper amalgamated with mercury. This plate is bent across its center and has its ends inclined in opposite directions like the sides of a wedge or cone, the apex being at about the middle of the mortar box. Two mercury boxes *f'* are arranged at the lower ends of the plate F, and these boxes and plate are supported on packing pieces in the space *a'* so that the top edges of the mercury boxes come level with the tops of the dies.

The mercury boxes in the space *a'* are lowered as the dies wear away. Each mercury box is provided with a removable perforated cover *f'*, and the perforations are preferably conical and arranged with their larger ends uppermost. The perforations are small and numerous, and they have been shown of proportionately larger size in the drawings for clearness only.

G is a water supply pipe which passes through the side of the mortar box below the plate F. This pipe G is connected to the pipes *g* which enter the mercury boxes, by means of the flexible india rubber pipes *g'* to admit the position of the mercury boxes to be adjusted. The pipes *g* have perforated branches inside the mercury boxes, and are arranged between the surface of the mercury and the covers. The perforations in the pipes *g* are in their upper sides so as to drive the water upward through the perforated cover plates.

H is a tank secured to the top of the mor-

tar box. This tank has chutes *h* formed at its ends through which the ore is fed onto the dies.

- H' is an overflow conduit for discharging the water from the top of the tank. A hole *h'* is formed in the side of the tank and is covered by a plate *j*. When desired, this plate may be removed and a wire screen can be bolted to the side of the tank in place of it.
- 10 J is a faucet for letting the water into the tank, and J' is a faucet for letting the water out of the mortar box.

- The ore is crushed and ground between the stamp shoes and the dies, and is pushed onto the cover plates of the mercury boxes. The water coming from the boxes washes up the light particles of earth. The heavy particles of gold fall into the mercury, and the very small particles of gold become attached to the plate F, from which they can be removed by scraping. The finely pulverized tailings are carried off by the water which flows out of the conduit H'.

- Only one stamp has been shown, but it is obvious that by increasing the width of the mortar box two or more stamps may be arranged side by side. When two stamps are used they are preferably arranged to work in opposite directions.

- 30 What we claim is—

1. The combination, with a mortar box having two dies, and an amalgamator between the dies; of a stamp provided with two shoes and a substantially horizontal arm, and driving mechanism connected to the end of the said arm and operating to raise and lower one shoe and move the other shoe horizontally on its die toward the amalgamator, the said shoes being operated simultaneously and alternately, substantially as set forth.

2. The combination, with a mortar box having two dies, of a stamp provided with two shoes and two substantially horizontal arms, a vertical guide engaging with one of the said arms, and driving mechanism connected to the other said arm and operating to raise and

lower one shoe and slide the other shoe across its die, substantially as set forth.

3. The combination, with the mortar box having two dies, and the stamp provided with two shoes; of a water tank secured to the top of the mortar box and having its ends inclined outwardly and upwardly thereby forming chutes for conducting the ore onto the opposite ends of the dies, substantially as set forth.

4. The combination, with the mortar box and the two dies, of the stamp provided with two shoes and a horizontally projecting arm having a series of holes in it, a driving shaft provided with a crank, a pitman connecting the said crank with the said arm, a guide shoe pivoted to the pitman, and a stationary guide for the guide shoe to slide on, whereby a longitudinally reciprocating and a rocking motion is imparted to the stamp, substantially as set forth.

5. The combination, with the mortar box provided with two dies, and the stamp provided with two shoes, of the two mercury boxes and the central bent plate F supported between the dies, the perforated cover plates, and pipes for admitting water between the mercury and the cover plates, substantially as set forth.

6. The combination, with the mortar box provided with two dies, and the stamp provided with two shoes, of the two vertically adjustable mercury boxes and the central bent plate F supported between the said dies, the perforated cover plates, the branch pipes admitting the water between the mercury and the cover plates, the stationary supply pipe, and the flexible pipes connecting the said supply pipe with the said branch pipes, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES CARTER.
ALFRED HENRY BELL.

Witnesses:

CHAS. FELT,
FRED SNIVELY.