

(No Model.)

2 Sheets—Sheet 1.

R. T. BISHOP.
AMALGAMATOR.

No. 267,396.

Patented Nov. 14, 1882.

Fig. 1.

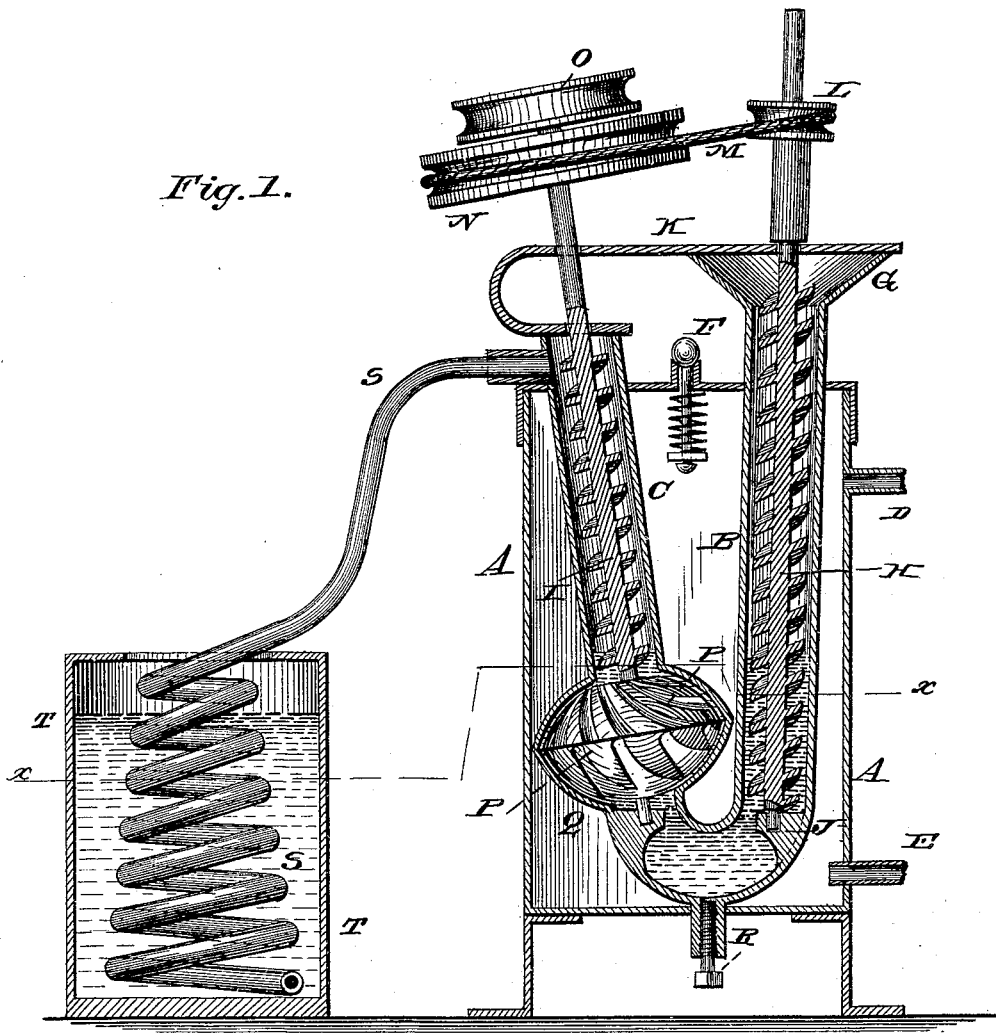
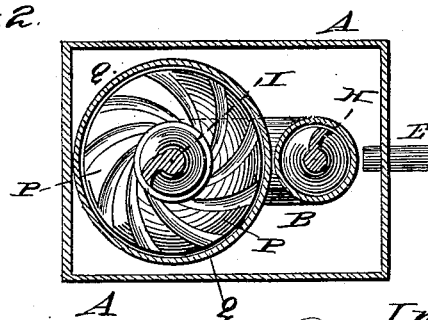
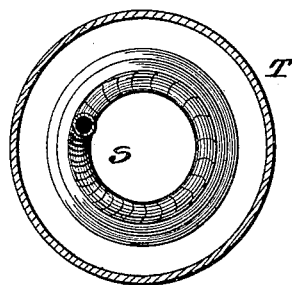


Fig. 2.



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(No Model.)

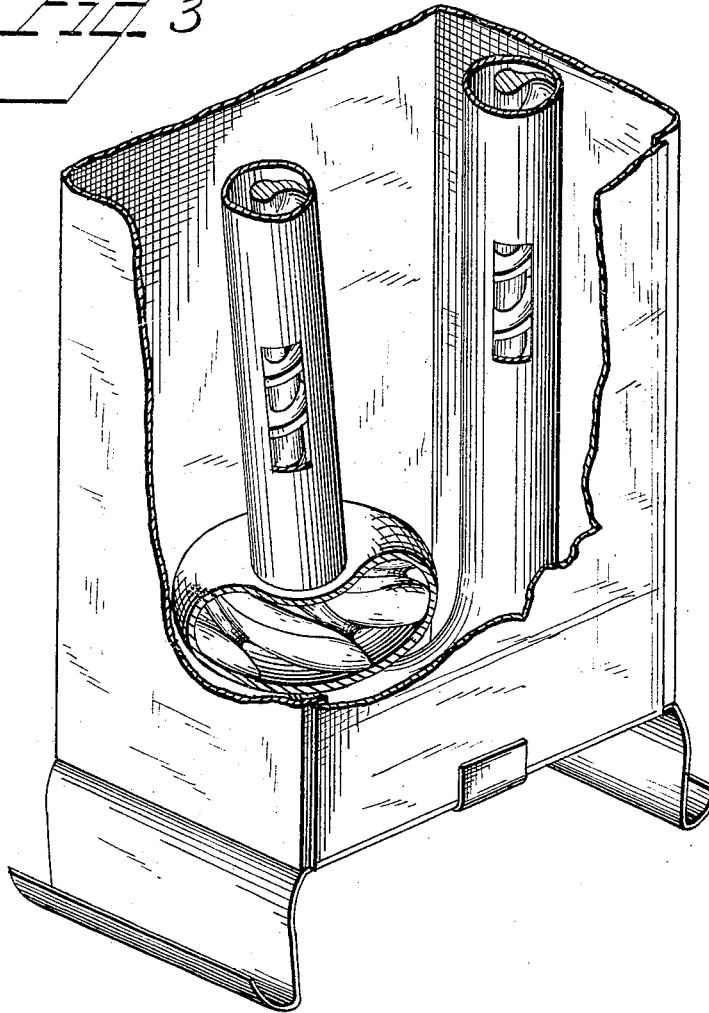
2 Sheets—Sheet 2

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Fig 3



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UNITED STATES PATENT OFFICE.

RICHARD T. BISHOP, OF ST. LOUIS, MISSOURI.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 267,396, dated November 14, 1882.

Application filed July 12, 1882. (No model.)

To all whom it may concern:

Be it known that I, RICHARD T. BISHOP, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Amalgamators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a vertical sectional view. Fig. 2 is a horizontal sectional view on the line *xx*, Fig. 1; and Fig. 3 is a detail view of the friction-cone, its casing, and adjoining parts.

Like letters refer to like parts in all the figures.

This invention relates to that class of amalgamators in which the ore or pulp is forced, under pressure, through a column of mercury; and it consists in certain improvements in the construction of the same, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, A represents a closed box or vessel, through the top of which pass the ends or arms B C of a U-shaped tube confined in said box. The latter should be made steam-tight and provided with suitable pipes, D E, for admitting or exhausting steam and hot water. It is also provided with a suitably-constructed safety-valve, F.

The pipe or tube B terminates at its upper end in a funnel or hopper, G. The upper end of tube C is closed, as shown.

H I are screws or shafts, with continuous spiral threads, arranged in the tubes B C, in which they are fitted nicely, as shown. The shafts of said screws are journaled in brackets J, near the lower ends of tubes B C, and in a suitable cross-piece or brace, K, above the same.

The shaft of screw H in tube B has a small pulley, L, connected by a belt, M, or other suitable driving-gear with a larger pulley, N, upon the shaft of screw I, which shaft may also be provided with a band-wheel, O, to receive power from suitable driving machinery.

At the lower end of screw I is attached a grinding-disk or friction-cone, P, spirally grooved, as shown, and revolving within a

stout casing, Q, fitted upon the tube C. The said grinding-disk P coacts with its shell or casing Q to grind or desiccate the pulp passing between said disk and shell into the smallest particles possible, in order that every atom of gold shall be exposed to the action of the mercury with which the U-shaped tube B C is to be partly filled when the device is in operation.

The lower curved end or shoe of the U-shaped tube B C is fitted with a plug, R, to enable the mercury to be removed after amalgamation.

Connected to the upper end of tube C is the exit-tube S, which is coiled spirally through the condensing-tank T, which contains a suitable quantity of cold water.

The operation of the machine is as follows: A suitable quantity of mercury is poured through the hopper G into the U-shaped tube, and steam or hot water admitted into box A, so as to heat the mercury to about 212° Fahrenheit. The ore or pulp may now be fed into the hopper G and power applied to the spiral screws. The screw H, which revolves very rapidly, forces the pulp into and through the bent portion or shoe, and through the mercury contained in the same, until it reaches the friction-cone at the lower end of screw I, which serves to grind and polish the ore, causing the amalgamation of every particle of precious metal. As the ore or pulp passes upward through tube C the resistance of screw I, which revolves slowly in said tube, causes a very thorough and complete amalgamation to take place. The pulp finally escapes through the exit-tube and into the condensing-tank.

When desired, the heating of the mercury, as herein stated, may be omitted; but I have found that better results are attained when it is done.

When the ore is passed through the machine in its dry state it may be found necessary to admit a jet of water into the exit-pipe to carry the ore dust or powder easily through the latter.

I am aware that a screw-feed has been employed heretofore to force ore pulp or pulverized quartz through a bath of mercury or molten lead; and I am also aware that the mercury bath has, in such case, been heated by a

surrounding steam-jacket. This, therefore, I do not claim.

I claim—

1. In an amalgamator, the U-shaped pipe B C, the latter provided with enlargement Q, the screws H I, the latter being provided with the grinding disk on the lower end of the same, and means for rotating the screws, as described, whereby the screw I is rotated at a lower rate of speed than the screw H, the whole combined and operating substantially as set forth.
2. The combination of the steam-tight cas-

ing A, having pipes D E, the U-shaped pipe B C, the spiral screws H I, and means for operating the same, the hopper G, grinding-disk P, casing Q, plug R, and exit-pipe S, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

RICHARD THOMAS BISHOP.

Witnesses:

THEODORE HUNT,
J. T. WATSON.