

No. 679,355.

Patented July 30, 1901.

J. H. BARR.  
AMALGAMATOR.

(Application filed May 8, 1900.)

(No Model.)

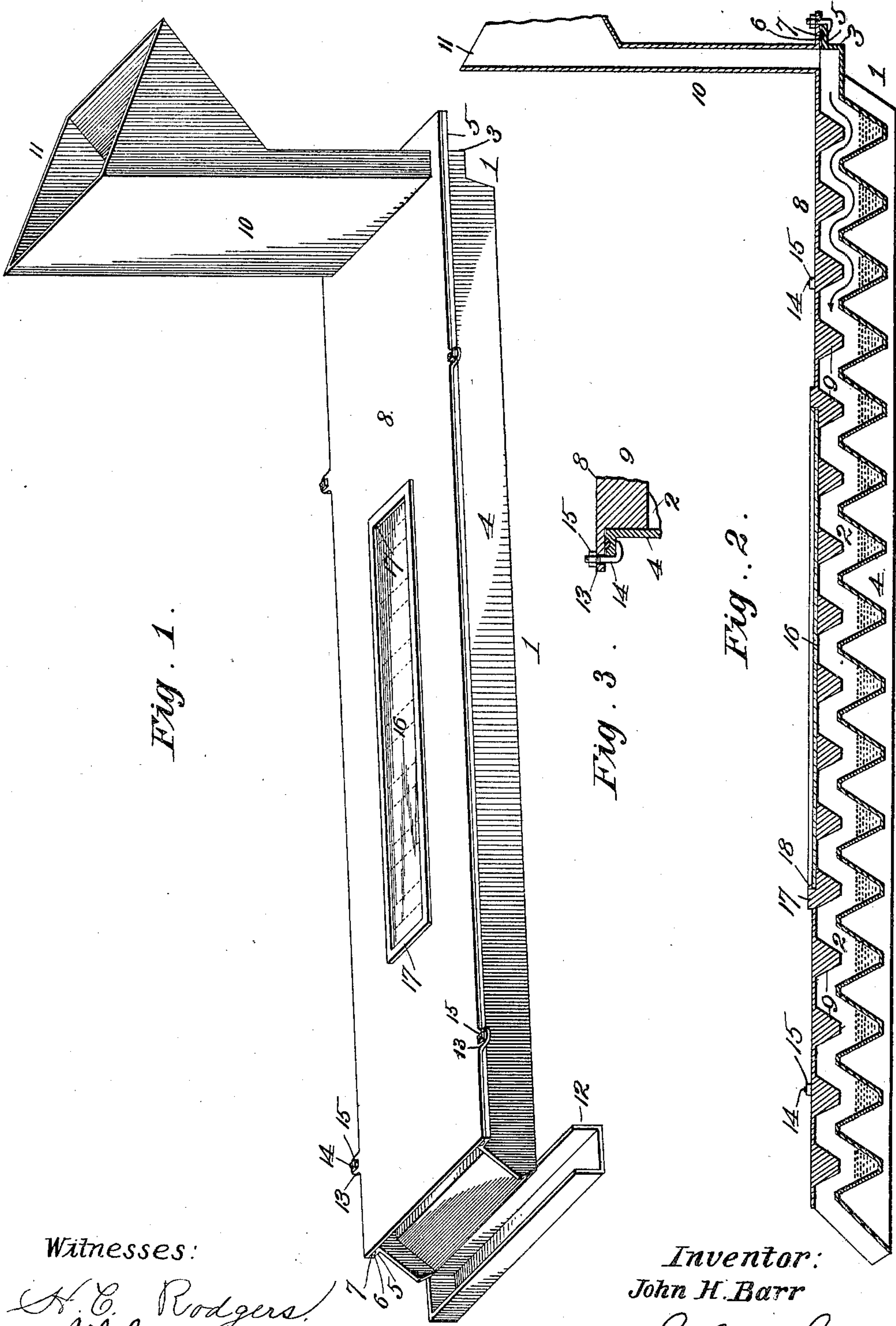


Fig. 1.

Fig. 3.

Fig. 2.

Witnesses:

H. C. Rodgers.  
A. Cooper

Inventor:

John H. Barr

By Fischer & Sharpe  
attys.



# UNITED STATES PATENT OFFICE.

JOHN H. BARR, OF KANSAS CITY, KANSAS.

## AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 679,355, dated July 30, 1901.

Application filed May 3, 1900. Serial No. 15,314. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. BARR, a citizen of the United States, and a resident of Kansas City, in the county of Wyandotte and State of Kansas, have invented a new and useful Amalgamator, of which the following is a specification.

My invention relates to amalgamators; and my object is to produce a machine of this character which saves all free gold and possesses the practical advantages of simplicity, durability, and cheapness, which can be operated by an unskilled person, has no working parts to get out of order, requires no power to operate it, and is of light and compact construction for ease and convenience of transportation.

The invention relates to that class of amalgamators having an amalgam-pan formed with a series of pockets partially filled with mercury and a water-tight cover having a series of baffle-plates overhanging the pockets and adapted to deflect what passes through the pan into and against the mercury contained in said pockets; and it consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a perspective view of an amalgamator embodying my invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is an enlarged cross-section showing the means for making the connection between the pan and cover water-tight.

Referring now to the drawings in detail, 1 designates the amalgam-pan, having its bottom of tortuous or zigzag form to provide a series of V-shaped pockets 2, adapted to be partially filled with mercury, as shown in Fig. 2. At its front end it is provided with a wall 3, raised above the plane of the pockets, like its side walls 4, and extending outwardly from the said end and side walls is a flange 5, having a groove 6 in its upper side, in which is fitted a rope or packing 7.

The cover 8 corresponds in form and configuration to the pan and rests thereon and upon the interposed packing hereinbefore referred to and is provided with baffle-plates or deflectors 9 of V shape, which centrally overhang the pockets 2, depending from the cover down to about the plane of the top of

the pockets and of such relative proportions and size as to provide a vertically-tortuous passage of about equal cross-sectional area throughout its entire length, the mercury forming the bottom of the depressed portions of the passage and the parallel inclined walls of the pockets and baffle-plates insuring the passage of the auriferous sand through the machine, compelling all substances foreign to the water and the sand and of greater specific gravity than the same to come in contact with the mercury, which results, of course, in the retention by the latter of the gold and platinum, the former by reason of its greater specific weight and affinity for the mercury and the platinum by reason of its greater specific gravity than either. A vertically-tortuous passage having the front and rear walls formed by the pockets extending vertically is objectionable, because a dead space, out of direct flow of sand and water, is provided wherein sand and foreign matter accumulate gradually and eventually cover the entire surface of and render the mercury functionless for the time. The same objection in a less degree applies to a passage having the pocket-walls properly inclined and the baffle-plate walls vertical, as in this case the cross-sectional area of the passage, at the upper corners thereof, is larger than between the lower ends of the baffle-plates and the bottom of the passage—viz., the surface of the mercury—and the result is imperfect separation, because the charge is really greater than the capacity of the machine.

The cover is formed at its front end with a stand-pipe 10, terminating at its upper end in a hopper 11, a tailings-sluice 12 being arranged at the rear end of the machine as a conveyer for the water and sand and other particles of less weight than the mercury.

In order to make the joint between the amalgam-pan and the cover water-tight and at the same time provide for the quick removal and replacement of the cover, the latter is provided with laterally-projecting ears 13, through which extend clamping-hooks 14, engaged at their upper or threaded ends by taps 15, the lower ends of said hooks extending forward and bearing against the under side of the pan-flanges 5. The taps being loosened, the hooks may be turned and the cover removed.

In order that the operator in charge may ob-



serve the workings of the machine, and therefore maintain the relative proportions of sand and water supplied to the hopper, which will insure its most efficient operation, the cover  
5 is provided with a window or transparent portion 16, this transparent or glass portion being fitted in the annular bead or flange 17, cast with the cover and secured therein with putty or its equivalent.

10 This machine, while designed originally for the purpose of extracting fine or flour gold from black or magnetic sand, has been found to be specially-well adapted for the treatment and handling in a rapid manner of the gold-  
15 bearing sands of the Cape Nome and other mining districts, the principle of operation involved residing in the fact that silver and all base metals, as well as water, rock, clay, earth, &c., being lighter than mercury will float  
20 upon it and with sufficient pressure will be caused to pass successively through the pockets over the quicksilver and be discharged from the rear end of the machine, while gold, aside from the natural affinity between it and  
25 mercury, possesses, like platinum, greater specific gravity than mercury and will sink in the same.

In practice the stand-pipe will be of sufficient height to provide a head-pressure suffi-  
30 cient to force the auriferous sand through the tortuous or zigzag amalgam-chamber with enough velocity to retain the sand and other particles of less specific gravity than mercury in suspension during the process of separa-  
35 tion, this sand and other particles being flushed freely across the mercury and over the succession of partitions or walls between the pockets to the tailing-sluice. In such progress to insure that every particle shall  
40 follow the tortuous course the baffle-plates are provided and cause a series of downward deflections, gentle, but of sufficient force to throw every particle in contact with the mer-  
cury.

45 The machine by preference will be of capacity to hold several thousand dollars worth of gold, which is removed by arranging the discharge end over a suitable receptacle and tilting it in the proper direction. When prac-  
50 tically all of the mercury is poured out in this manner, the cover is removed, and the remaining mercury and gold and platinum also, if any, is scraped or flushed out of the pan into suitable receptacles.

55 With this machine and by this process there is practically no loss of mercury. In fact, it requires close observation through the window to discover the slightest vibration of the mercury when the water and sand is flowing  
60 through the machine.

From the above description it will be apparent that I have produced an amalgamator which possesses the features of advantage enumerated as desirable in the statement of  
65 invention, and while I have illustrated and described the preferred embodiment of the

invention it is to be understood that various changes in the form, proportion, detail construction, and arrangement of the parts may be made without departing from the spirit  
70 and scope or sacrificing any of the advantages as recited in the appended claims.

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

75 1. An amalgamator, having a vertically-tortuous passage in the form of a series of connected pockets adapted to contain liquid mercury, the surfaces of said liquid mercury forming the bottom walls of said pockets, the  
80 cross-sectional area of the passage being greater in vertical planes intersecting the pockets whereby the passage for the pulp may be made of uniform cross-section by the provision of liquid mercury in said pockets, 85 substantially as described.

2. An amalgamator, having a vertically-tortuous passage in the form of a series of connected pockets adapted to contain liquid mercury, the surfaces of said liquid mercury  
90 forming the bottom walls of said pockets, said passage having its walls, including the mercury walls, substantially parallel throughout, the cross-sectional area of the passage being greater in vertical planes intersecting  
95 the pockets whereby the passage for the pulp may be made of uniform cross-section by the provision of liquid mercury in such pockets, substantially as described.

3. An amalgamator, having a vertically-  
100 tortuous passage in the form of a series of V-shaped pockets connected together at their upper ends and adapted to contain liquid mercury, the surfaces of said mercury forming the bottom walls of said pockets, said  
105 passage having its walls, including the mercury walls, substantially parallel throughout, the cross-sectional area of the passage being greater in vertical planes intersecting the pockets whereby the passage for the pulp may  
110 be made of uniform cross-section by the provision of liquid mercury in said pockets, substantially as described.

4. An amalgamator, comprising a pan having a series of V-shaped pockets adapted to  
115 contain liquid mercury, and a cover for said pan provided with V-shaped baffle-plates adapted to depend centrally over said pockets, the two forming a vertically-tortuous passage whose cross-area is greater in vertical  
120 planes intercepting said baffle-plates whereby the said passage may be made of uniform cross-section by the provision of liquid mercury in such pockets, substantially as described.  
125

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

JOHN H. BARR.

Witnesses:

S. P. ALLEN,  
J. C. WILLIAMS.