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J. F. LATIMER.

APPARATUS FOR EXTRACTING PRECIOUS METALS FROM ROCK, SAND, &c.

(Application filed Nov. 10, 1898.)

(No Model.)

Fig. 1.

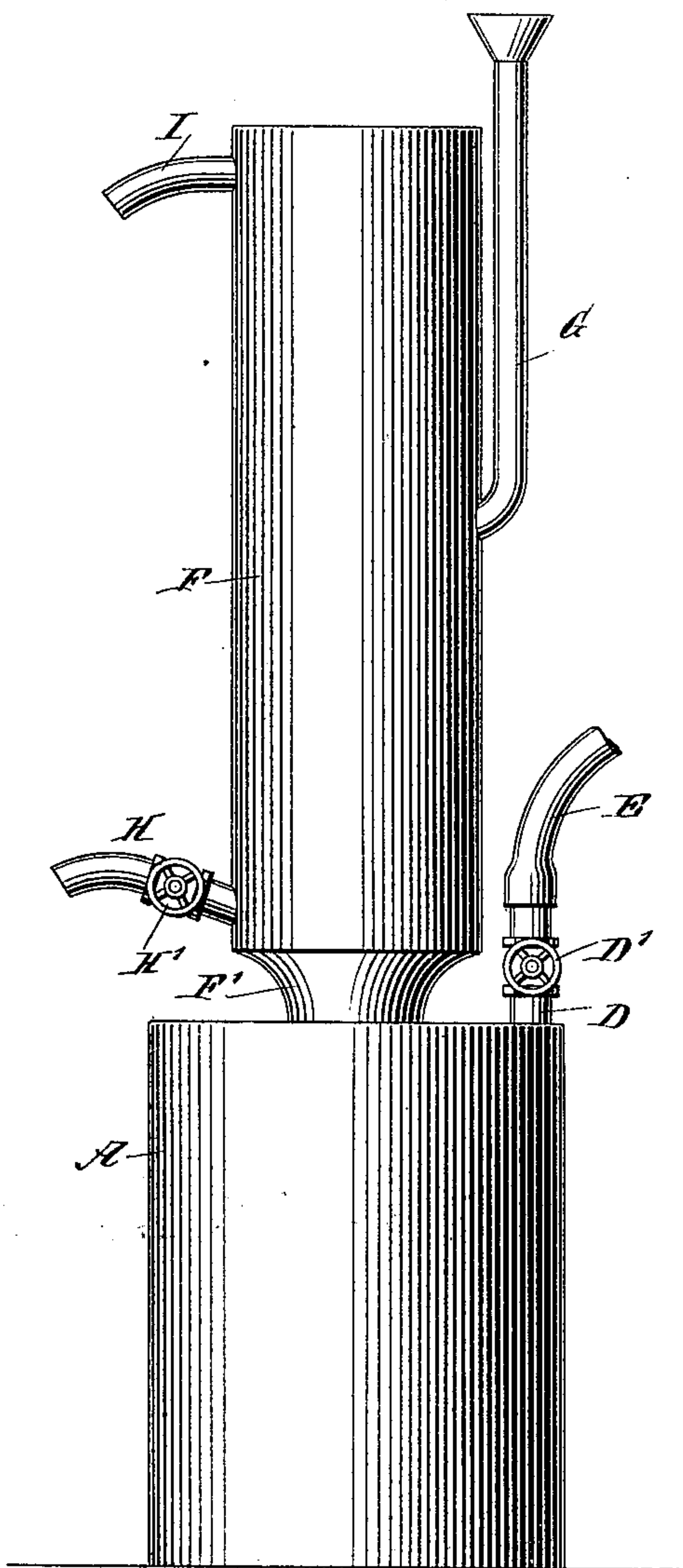
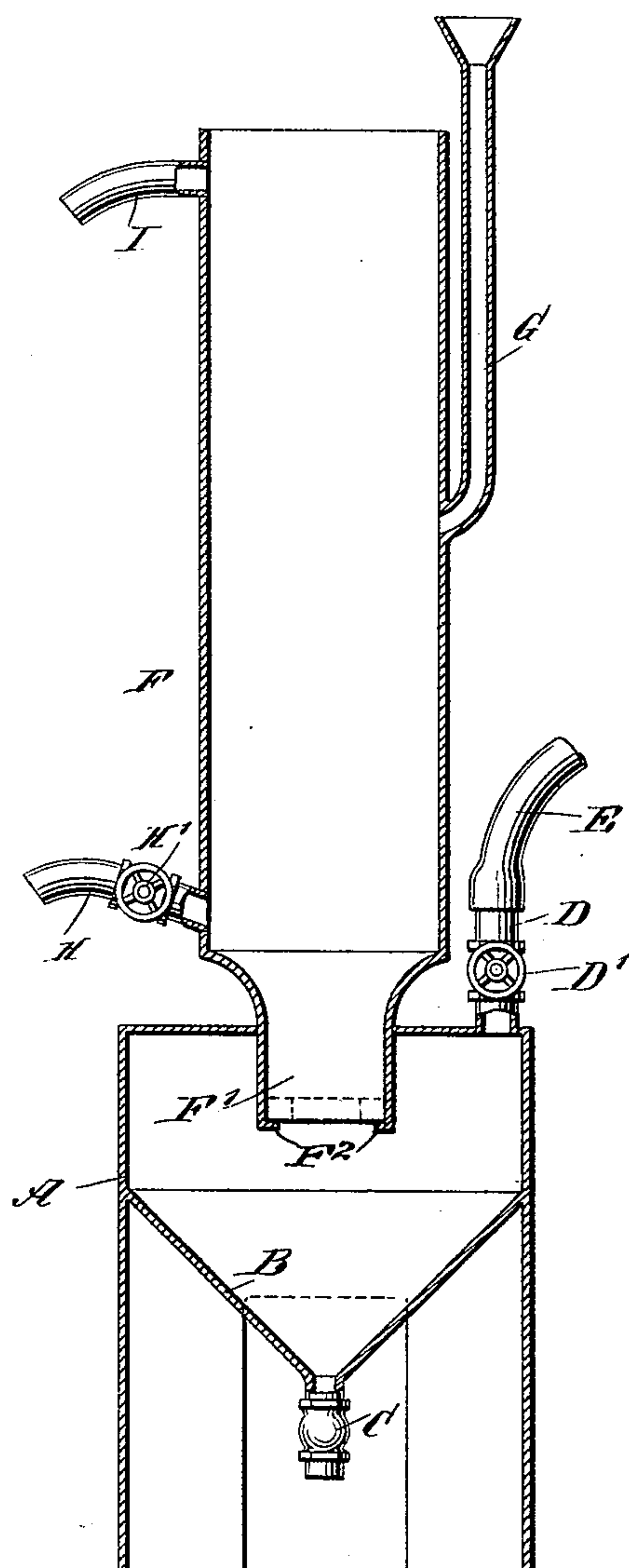


Fig. 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JAMES FRANCIS LATIMER, OF TORONTO, CANADA, ASSIGNOR OF ONE-HALF  
TO FERGUS DONOVAN, GEORGE STEVENSON, AND JAMES SCOTT FULLERTON, OF SAME PLACE.

APPARATUS FOR EXTRACTING PRECIOUS METALS FROM ROCK, SAND, &c.

SPECIFICATION forming part of Letters Patent No. 636,675, dated November 7, 1899.

Application filed November 10, 1898. Serial No. 696,043. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES FRANCIS LATIMER, a subject of the Queen of Great Britain, residing in Toronto, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Apparatus for the Extraction of Precious Metals from Rock, Sand, &c., of which the following is a full, clear, and exact description.

10 The object of the invention is to provide certain new and useful improvements in apparatus for the extraction of precious metals from pulverized, rock, sand, &c., whereby a complete separation takes place, with an economical use of water.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

20 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

25 Figure 1 is a side elevation of the improvement, and Fig. 2 is a sectional side elevation of the same.

In carrying out my invention I prefer to use an apparatus such as illustrated in the drawings and provided with a receiver A, 30 having a hopper-bottom B, the apex of which is provided with a valved outlet C, as is plainly indicated in Fig. 2. The closed receiver A is provided on top with an inlet-pipe D, having a valve D' and connected by a hose, pipe, or the like, E, with a water-supply to permit water to pass under pressure into the said receiver A. Into the upper end of the latter extends the lower contracted end F' of a cylinder or other receptacle F, 35 open at both ends, a pipe G opening into said cylinder between two outlets H and I, of which the outlet H is provided with a valve H' and is arranged near the lower end of the cylinder, while the outlet I forms an overflow and is arranged at the upper end of the cylinder. The inlet-pipe G is preferably on the opposite side of the cylinder from that on which the outlet-pipes H and I are located, 45 and the upper end of said pipe G is preferably

ably in the form of a funnel to permit of introducing the material to be treated. 50

The apparatus is used as follows: The material to be treated is fed by the pipe G into the cylinder F, about midway between the outlets H and I at the side opposite thereto, 55 and the current of water from the pipe D passes through the receiver A and the contracted end F' in an upward direction in the cylinder F to meet the incoming material. Now it is evident that the heavy particles 60 of material—such as gold, platinum, and the like—readily pass downward through the upwardly-flowing current, as the force of the latter is somewhat less than the specific gravity of the heavy particles, and consequently the 65 particles pass through the contracted end F' into the receiver A and settle in the hopper-bottom B thereof. The precious metal thus collected in the receiver A can be removed from time to time by opening the valved outlet C. 70

It is understood that during the operation the valves D' and H' are opened to such an extent as to regulate the force of the upwardly-flowing current in the cylinder F, according to the material under treatment, to insure a complete separation of the precious metals from the tailings. When the valve H' is open, then only a light current is in the upper part of the cylinder F, and much of the 80 slimes are carried off through the outlet I (as experience shows can be done) without loss of the precious metals.

The pulp fed by the pipe G into the cylinder F becomes thoroughly moistened before 85 entering, so that the coarser heavier particles readily sink at the side of the cylinder F in which the inlet of the tube G is located, and as the said particles come in contact with the strong upwardly-moving current any light 90 material adhering to said particles is readily washed off and carried upward by the current, while the heavier particles (the precious metal) sink through the current and through the end F' into the receiver A to accumulate 95 on the bottom B.

By adjusting the valves D' and H' the current can be so regulated as to concentrate to



any degree of fineness and to cause practically a deposit of little else than coarse gold and platinum in the receiver A.

By running the material passing out through either of the outlets H or I through othersimilar apparatus any number of grades can be obtained.

The opening in the reduced end F' of the receptacle can be readily diminished in size by placing rings of suitable diameter in said end, as indicated by dotted lines at K in Fig. 2, the rings being held in position by any suitable means—for instance, by resting upon lugs F<sup>2</sup>, projected inward at the lower edge of the reduced end F'.

The pulp after passing through the outlet H is conducted into an amalgamator or into any receptacle for treatment by cyanid or other processes.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. An apparatus for extracting precious metals from rock, sand, and the like, comprising an upright receptacle having an open contracted bottom or throat, an overflow-outlet

near the top, a valved pulp-outlet near the bottom, a material-inlet between the two outlets, a ring set in the said contracted bottom or throat, to reduce the size thereof, and a receiver through the top of which extends the contracted lower end of the receptacle, said receiver having a valved liquid-inlet at its top, and a valved concentrates-outlet at the bottom, substantially as described.

2. An apparatus for extracting precious metals from rock, sand, and the like, comprising a receptacle having an open contracted bottom or throat, an overflow-outlet near the top, a valved pulp-outlet near the bottom, a material-inlet between said two outlets, means for varying the size of the aperture at the contracted bottom, and a receiver through the top of which extends the contracted lower end of the receptacle, said receiver having a valved liquid-inlet at its top, and a valved concentrates-outlet at the bottom, substantially as described.

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Witnesses:

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