

(No Model.)

W. H. HYATT.  
APPARATUS FOR EXTRACTING GOLD.

No. 576,580.

Patented Feb. 9, 1897.

Fig. 1.

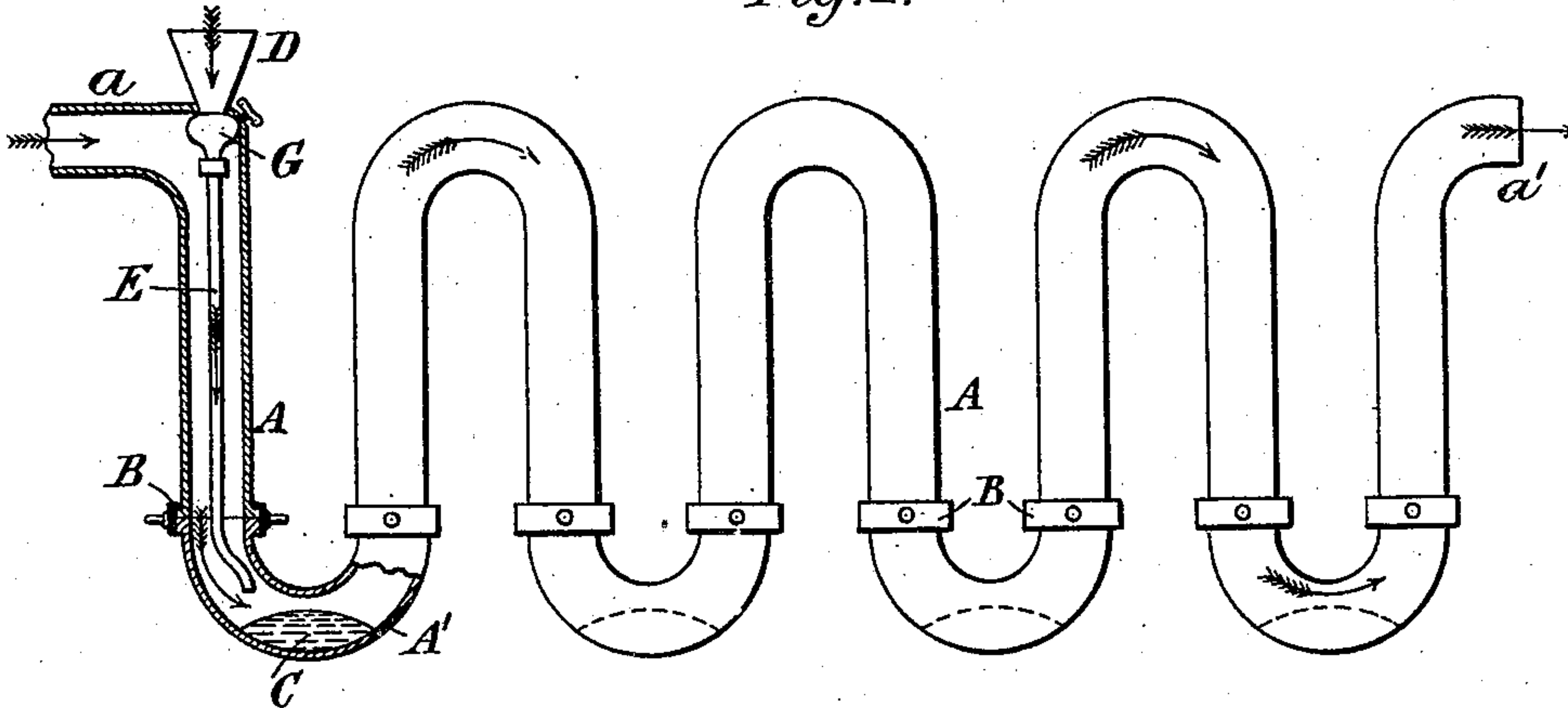


Fig. 2.

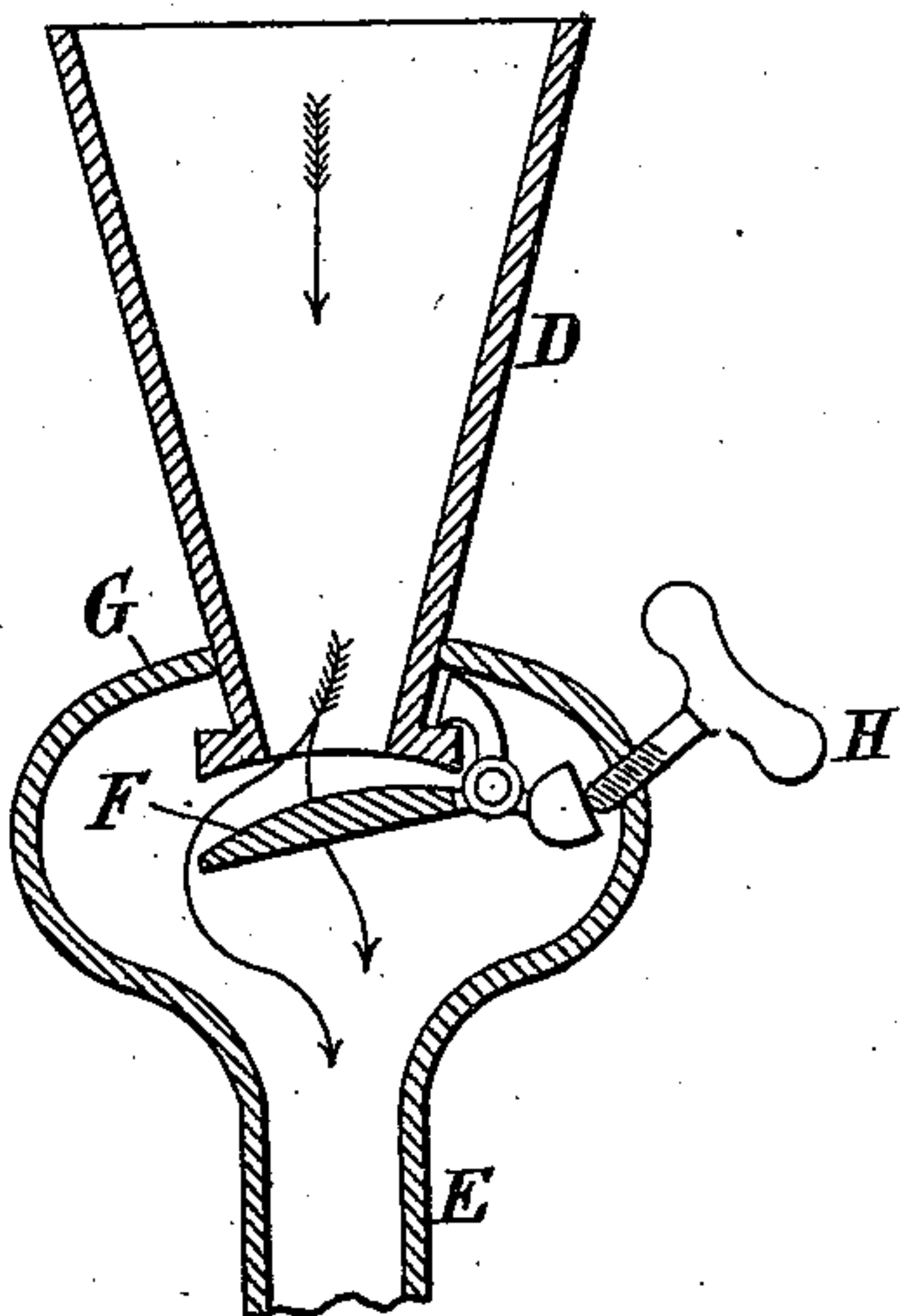


Fig. 3.

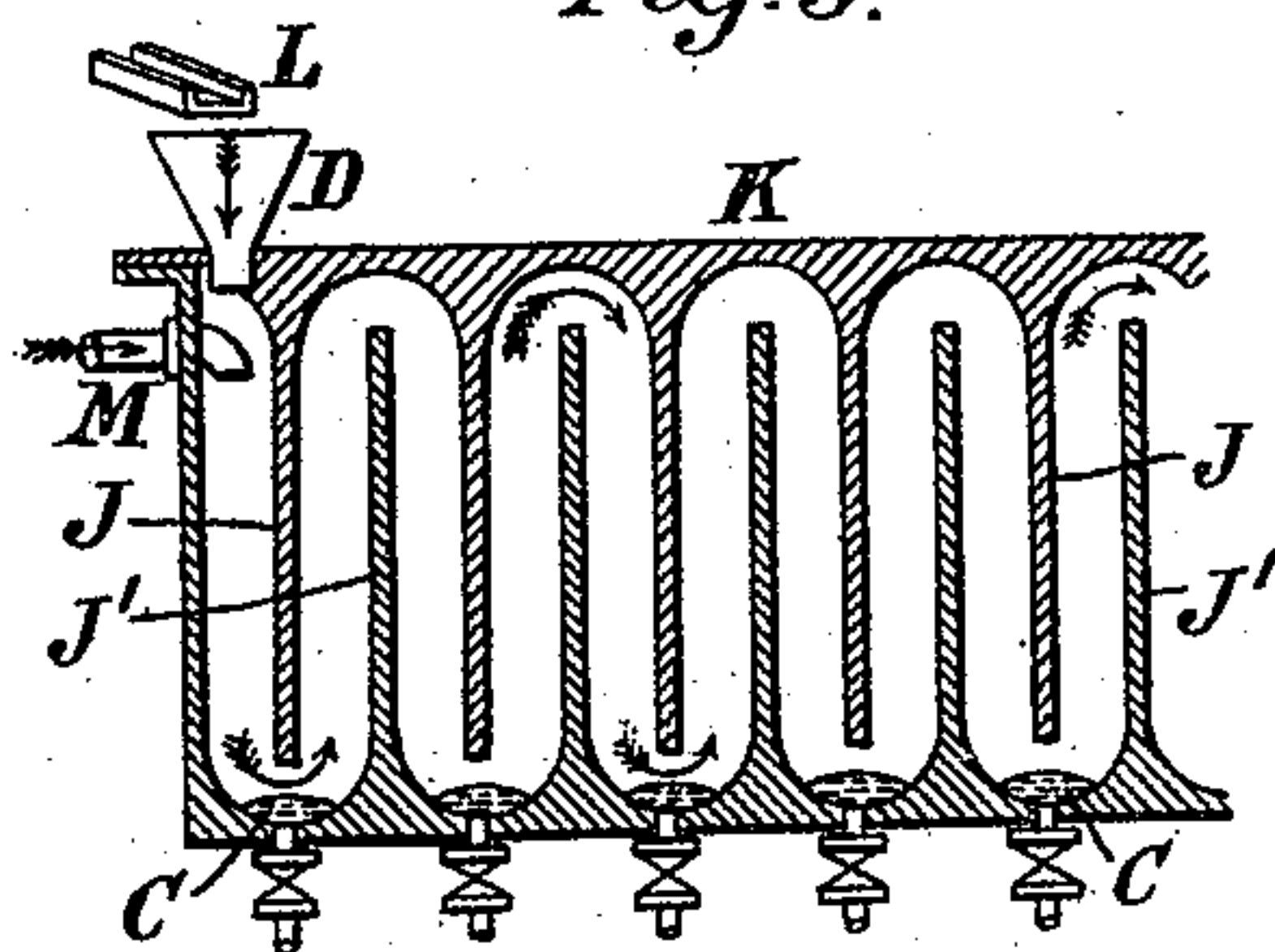
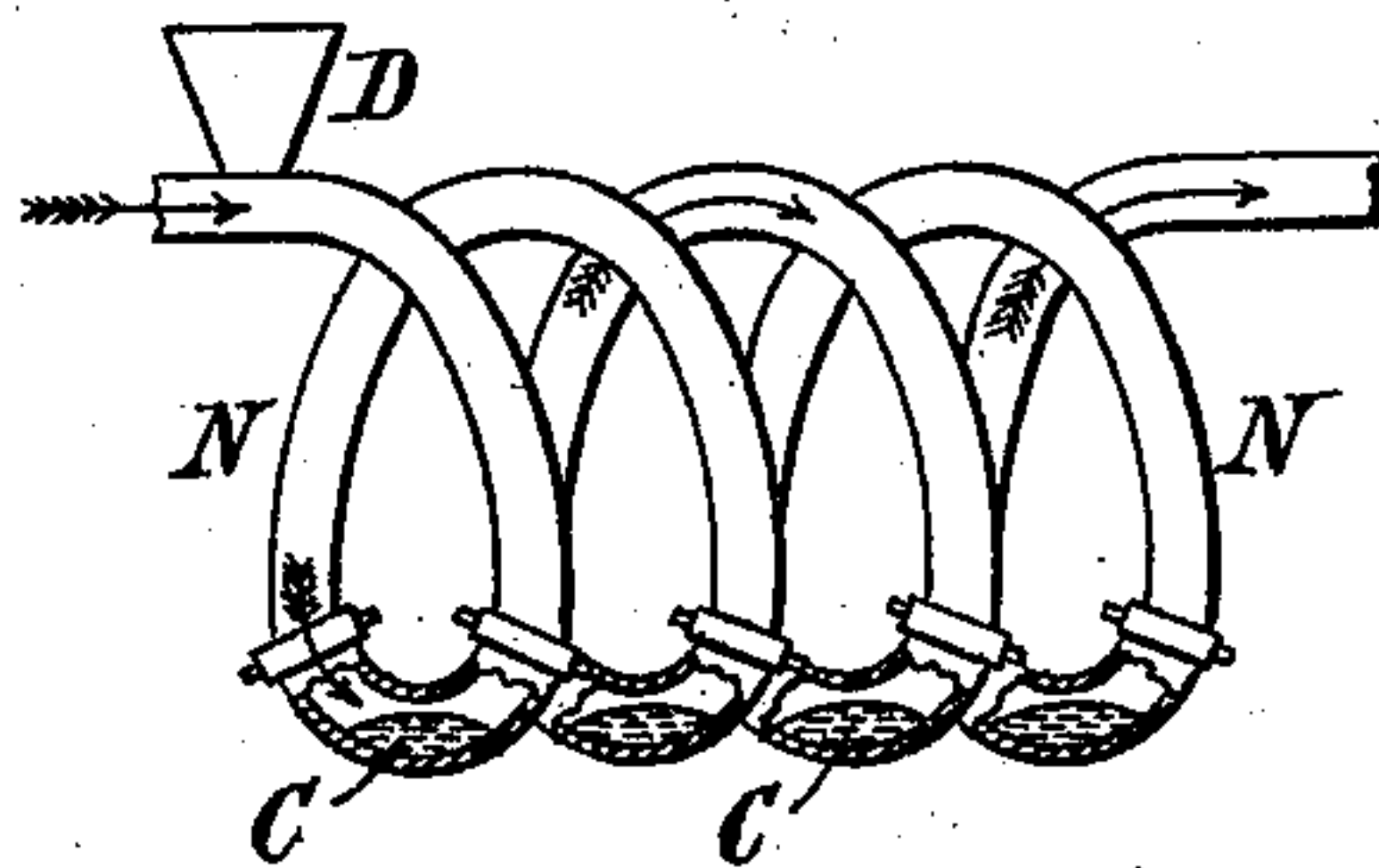


Fig. 4.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM HERBERT HYATT, OF LONDON, ENGLAND.

## APPARATUS FOR EXTRACTING GOLD.

SPECIFICATION forming part of Letters Patent No. 576,580, dated February 9, 1897.

Application filed June 8, 1896. Serial No. 594,747. (No model.) Patented in England December 20, 1894, No. 24,782.

*To all whom it may concern:*

Be it known that I, WILLIAM HERBERT HYATT, a subject of the Queen of Great Britain, residing at No. 1 Milton Road, Herne Hill, London, in the county of Surrey, England, have invented certain new and useful Improvements in Apparatus for Extracting Gold, (for which I have obtained Letters Patent in Great Britain, No. 24,782, dated December 20, 1894,) of which the following is a specification.

I cause rapidly-moving blasts or currents of air, into which the gold-bearing material in a suitable state for treatment is to be projected against mercury, the mercury in every case being held in receptacles where there is ample space between the mercury and the remaining parts of the inner walls of the receptacles or vessels used to allow of the free circulation of the air blasts or currents containing the material, in order that the passages or receptacles may not become blocked with material or encounter unnecessary obstruction, but that they may be allowed to pass from inlet to outlet and the air and material after treatment escape with perfect freedom, the velocity of the air blasts or currents having been maintained throughout the length of the passages used. I find that a free air-space is essential for the efficient working of this process, for should there be any substantial interruption of the free current or should there be obstacles in the form of partitions dipping under the surface of the mercury, through which mercury the air and material have to force their way, it would either cause a check to the necessary velocity of the blast, and thus too much weaken its forward movement, so that the material would become deposited in the apparatus and block it, or else, in order to maintain the working of the apparatus, such a pressure and velocity would have to be used as would cause the mercury to flow and also to be carried over in considerable quantities.

In carrying out my invention I always use air and never use water. Air is light and compressible. The gold-bearing material may freely pass with the air in a divided and scattered condition and can be projected with great force downward on the surface of the mercury, and can thus be projected some dis-

tance into the mercury, where a part of the gold will amalgamate, while the rest rebounds with the air, is caught readily by the current, and passes on through the passages and again into contact with the mercury.

If water were used in my apparatus, the gold-bearing material would simply be floated over the mercury and the gold would not be amalgamated with any great efficiency.

The substances to be treated containing gold, where they are not already in a sufficiently-divided condition, should be reduced to such a state of division that the largest particles can be carried through the apparatus by the air-current employed.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a suitable apparatus for applying my process. Fig. 2 is a vertical section, on a larger scale, of the feeding-hopper. Figs. 3 and 4 show modifications of the apparatus.

The apparatus consists of a serpentine tube A, the lower bends A' A' of which are made detachable by means of a screw or other joint at B, each of which contains a quantity of mercury C. At the top of the first limb of the tube is a feed-hopper D, into which the granular or pulverulent gold-bearing material to be treated is introduced and from which it descends through a pipe E onto the mercury.

The hopper D is provided with a regulating-valve, which may be arranged as shown on an enlarged scale in Fig. 2. The lower end of the hopper is provided with a balance-valve F, situated in an enlargement G of the pipe E, the greatest extent of opening of the valve being regulated by a screw H, so that the material will only flow downward at a determined rate. The end *a* of the tube is connected to any suitable source of air-supply, which, passing down the limb of the serpentine tube A, meeting the material issuing from the pipe E, propels it against the mercury C in the lower bend A', so as to bring the particles of gold into intimate contact therewith, causing it, in great measure, to be taken up thereby, while the material, together with the remaining gold, is carried on by the blast up the next limb of the tube A and down the following one, at the bottom of which it again impinges upon the mercury C, and so on until the gold has been entirely exhausted



from the material, which is eventually expelled by the air-blast at the end *a'* of the tube. When by this means the mercury C has become sufficiently amalgamated with  
5 gold, the bends A' are removed and emptied and a fresh supply of mercury is introduced.

The passage of air through the tubes not only serves to carry the gold-bearing material against the mercury, but also serves to agitate the mercury, so that it comes into contact with the smallest particles of ore and  
10 gold in the air-current.

Fig. 3 shows a longitudinal section of a modification in which the serpentine passage is  
15 formed by means of partitions J J', projecting alternately from top and from the bottom of the rectangular casing K, the mercury C being introduced into the bottoms of the compartments thus formed. The gold-bearing  
20 material is supplied to the hopper D through a short chute L and falls thence through a regulating-valve down the first passage, where

it is caught by the blast issuing from the pipe M and propelled down onto the mercury, as before described. In this arrangement the  
25 partition and sides of the casing may have copper plates coated with amalgam for taking up a portion of the gold.

Fig. 4 shows a construction in which the passage is formed as a helically-coiled tube  
30 N, in the lower bends of which mercury C is placed.

I claim as my invention—

The combination of a sinuous passage in a vertical plane, and of substantially the same  
35 area throughout, mercury placed in but not blocking the lower bends of the passage, means for causing a blast of air to traverse the passage, and means for introducing gold-bearing material into the passage.

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Witnesses:

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