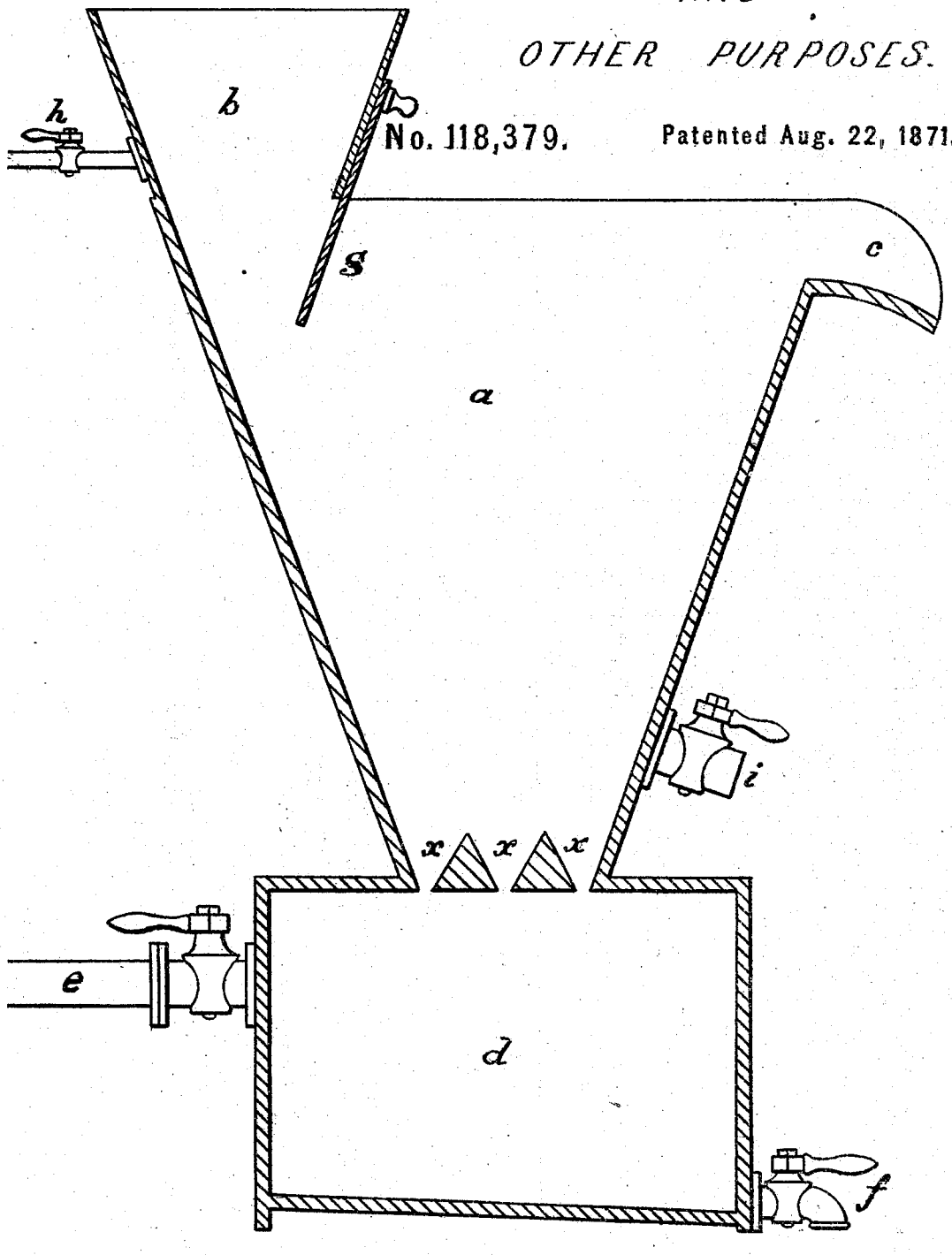
HELEM MERRILL.

SEPARATOR FOR COLD ORES AND OTHER PURPOSES.

No. 118,379. Patented Aug. 22, 1871.



WITNESSES.
M. K. Hall.
Nathan Lewis

INVENTOR.
Helem Merrill

UNITED STATES PATENT OFFICE.

HELEM MERRILL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SEPARATORS FOR GOLD ORES.

Specification forming part of Letters Patent No. 118,379, dated August 22, 1871; antedated August 16, 1871.

To all whom it may concern:

Be it known that I, HELEM MERRILL, of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Separators for Gold Ores and other purposes, of which the following is a specification:

The object of the invention is to separate amalgam from gangue in working gold ore, or to separate any other mixture composed of matter of different specific gravities; and it consists of a taper vessel to which water or other fluid or gas is admitted, under pressure, by holes in the bottom, in such a manner that the current passing through the vessel and leaving it at the top carries with it the gangue or lighter portions of the mixture, and the mercury or heavier portions fall through the holes in the bottom to a receptacle upon which the vessel stands. The vessel being taper, the upward force of the current is varied in inverse proportion to its sectional area, and matter of different gravities may be drawn from it at appropriate heights, as may be required; for while the heavy portions fall entirely through the current, and the light portions pass away with it, the particles of an intermediate gravity are held in suspense at those points where the conflicting forces are equal and balanced. The vessel is, therefore, furnished at one or more points with a chamber or an opening and valve, by which the sulphates or other similar matter heavier than slime and lighter than gold may be drawn off into a receptacle provided for that purpose. Other fluids than water may be used, or a vertical blast of air, to accomplish the same end without material departure from the principle of the invention.

To enable others skilled in the arts to which it appertains to make and use my invention, I will proceed to describe its construction and operation with reference to the drawing, which represents an elevation of the machine in section.

The vessel *a* is provided with a hopper, *b*, and an overflow-spout, *c*, at the top, and stands upon the amalgam-receptacle *d*, which is provided with a water-pipe, *e*, and cock *f*, for drawing off the mercury. The hopper *b* has a slide, *g*, that may be pushed below the level of the spout *c*, so that the floating gold or other similar matter must necessarily be delivered under the surface of the water when it is released from the hopper; and it has also a water-pipe, *h*, by which a current of water may be used to carry the material into the separator and keep free the mouth of the hopper. The cock *i* closes the opening, which is made at the height appropriate for drawing off material of an intermediate weight which does not fall with the gold or rise to the overflow. There may be as many of these openings as may be considered desirable.

When the machine is in operation the current of water through the pipe *e* passes into *a* through the openings *x*, and fills it to the level of the overflow *c*. The material placed in the hopper *b* passes below the lower edge of the slide and the level of the water in the vessel *a*, and that portion of it in which the gravitation preponderates over the upward force of the current passes down through the openings *x* into the receptacle *d*, whence it may be drawn through the cock *f*, and the lighter portions are carried off with the water through the spout *c*. The force of the current may be regulated in such a manner that the sulphates and other heavy matters that are not sufficiently heavy to fall with the amalgam may be suspended midway in the vessel and drawn off by the cock *i* provided for that purpose; and to enable the current to be regulated properly the chambers should be provided with glass openings, through which the inside operations may be conveniently observed.

I claim as my invention—

The combination of a taper separating-vessel with a receptacle and a flow-pipe and overflow, sustantially as described.

HELEM MERRILL.

Witnesses:
W. K. HALL,
NATHAN LEWIS.