

(No Model.)

2 Sheets—Sheet 1.

A. F. PERKS.  
GOLD SEPARATING MACHINE.

No. 603,794.

Patented May 10, 1898.

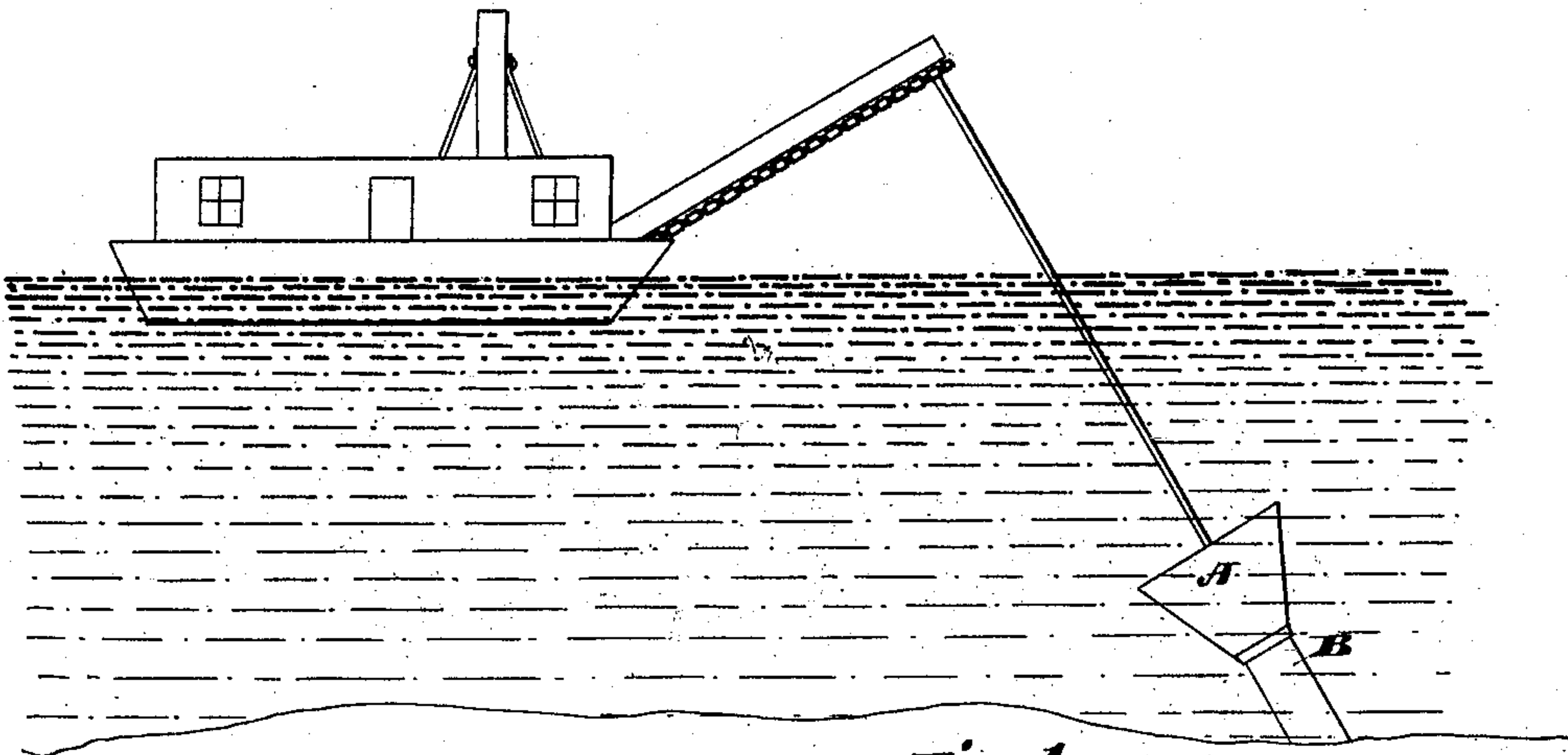


Fig. 1.

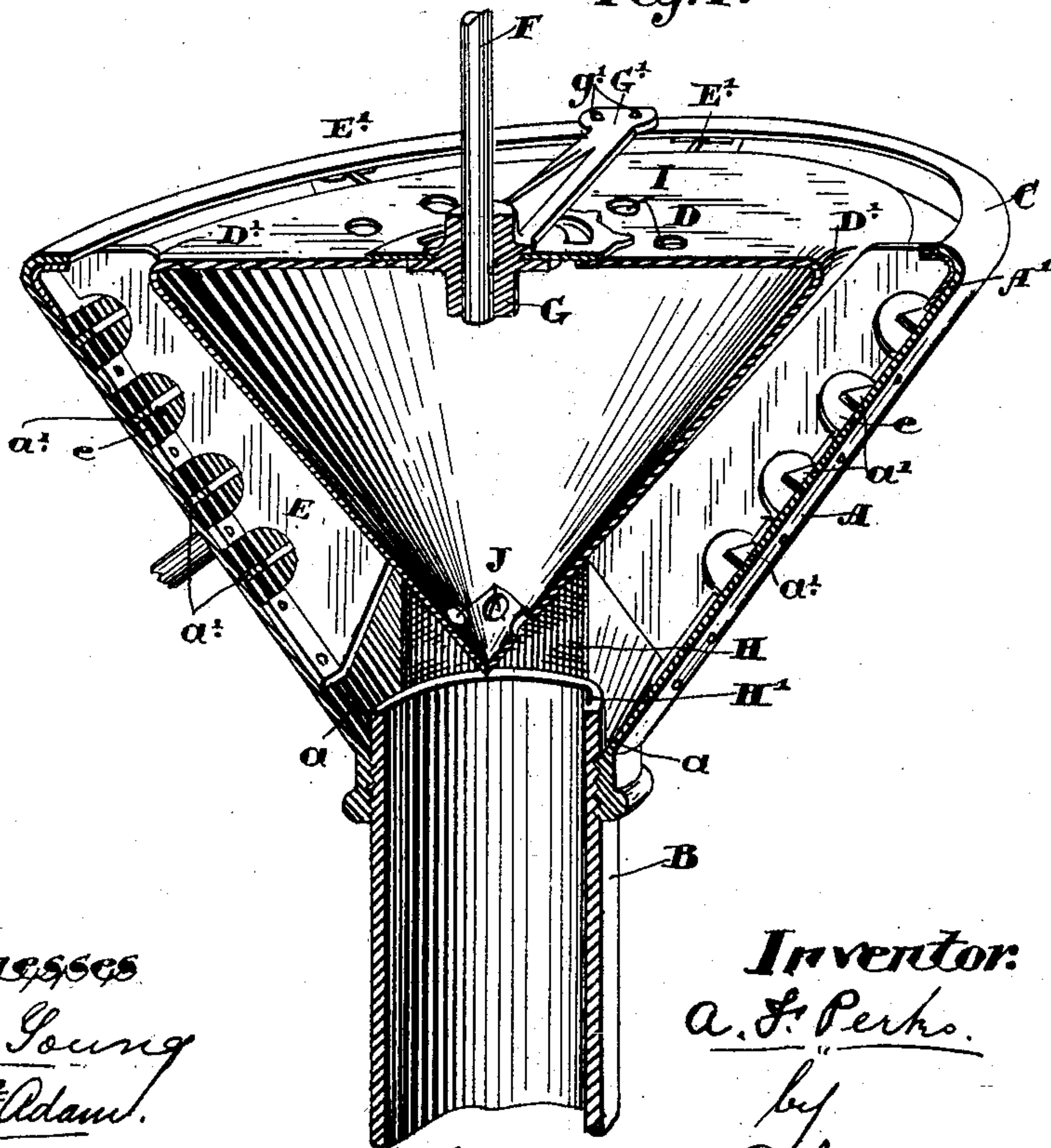


Fig. 2.

Witnesses  
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Attys

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2 Sheets—Sheet 2.

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Fig. 3.

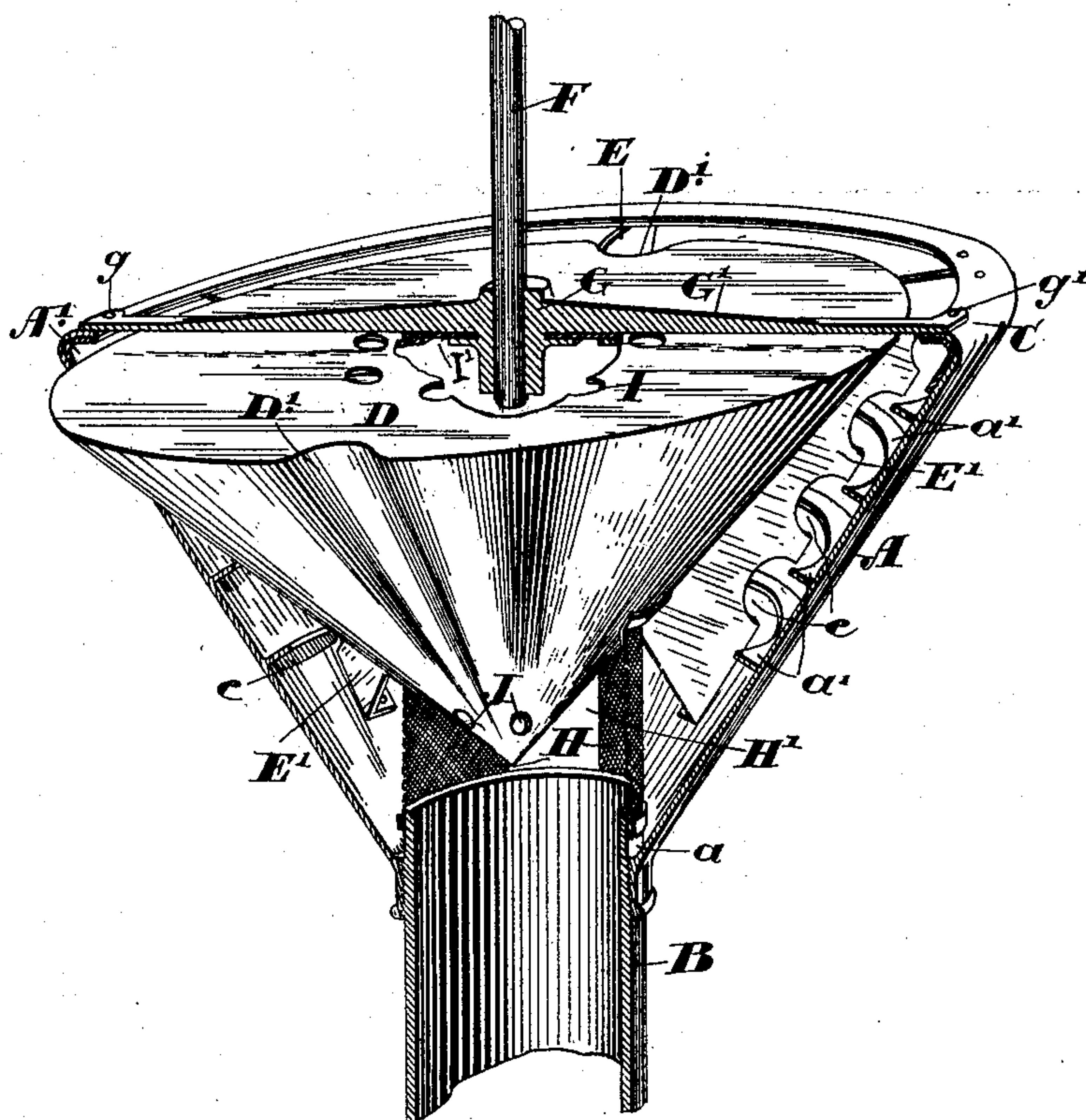
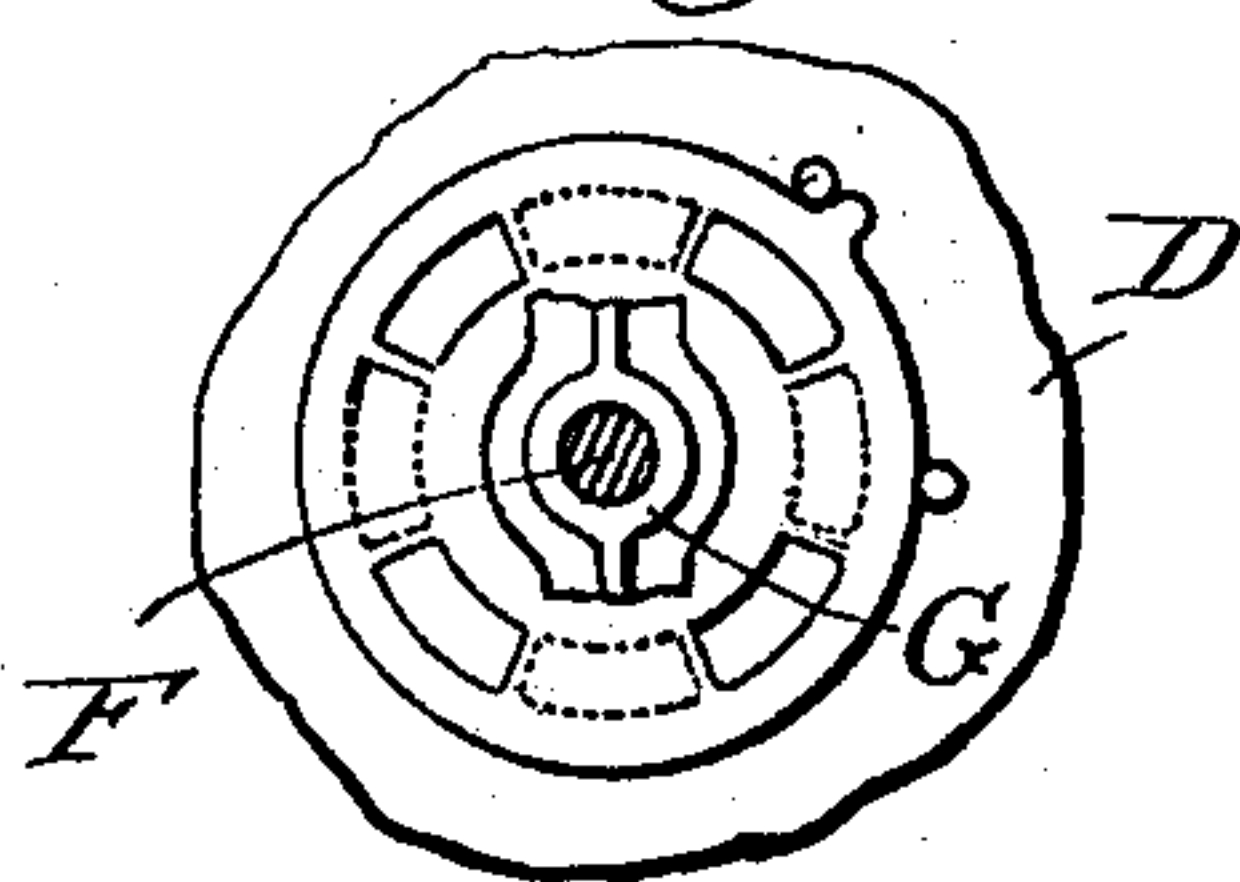


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ARCHIBALD FRANCIS PERKS, OF PORT HOPE, CANADA, ASSIGNOR OF ONE-HALF TO WARREN R. SULLIVAN, OF ALMA, MICHIGAN.

## GOLD-SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,794, dated May 10, 1898.

Application filed May 10, 1897. Serial No. 635,928. (No model.)

*To all whom it may concern:*

Be it known that I, ARCHIBALD FRANCIS PERKS, electrician, of the town of Port Hope, in the county of Durham, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Gold-Separating Machines, of which the following is a specification.

My invention relates to improvements in gold-separating machines in what is more particularly known as the "placer" method; and the object of the invention is to design a machine which may be sunk into the sand at the bottom of the river or stream, whereby the gold and sand may be drawn up into the machine and the gold deposited and held in the machine and the sand discharged; and it consists, essentially, preferably of a funnel-shaped casing provided with inwardly-extending wings, to which is connected a preferably conical deflecting-casing, the bottom of the casing being provided with a tubular inlet-pipe and the top with an annular opening formed between the base of the cone and the inwardly-projecting flange at the top of the casing, the machine being designed to be supported on a central shaft extending up above the level of the water to a suitable source of power, whereby the whole casing is rotated, so as to cause a suction and draw the sand up into the machine and discharge it through the upper end thereof, as hereinafter more particularly explained.

Figure 1 is an elevation showing my machine in a river-bed and the shaft extending up to the arm of a stream-dredge from which the machine derives its rotary movement. Fig. 2 is an enlarged sectional perspective view showing the preferred construction of my gold-separating machine. Fig. 3 is a similar view to Fig. 1, taken at right angles thereto. Fig. 4 is a detail bottom plan view of the valve.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the funnel-shaped casing, which is provided with a cylindrical inlet or intake pipe B, which extends above the bottom of the casing A, so as to form a receptacle *a* beneath the level of the top of the pipe B.

C is an inwardly-extending flange formed at the top of the casing A, and D is a conical hollow casing provided with two or more grooved passage-ways D', extending from the apex to the base of the cone.

E and E' are a series of wings which are securely bolted to the casing A and provided with openings *e*. The wings E are partially located within the grooved passage-ways D', and the wings E' abut the outside surface of the cone.

*a'* are a series of riffles which may or may not be coated with mercury. Such riffles extend circumferentially around the interior of the casing A, within the openings *e*.

F is a shaft which is secured in a suitable sleeve G, attached to or forming part of the upper plate of the cone D. The cone D is supported in position in any suitable manner, so that the conical portion rests close to the wings and is held in the casing A by a series of arms G', attached to or forming part of the sleeve G and bolted or otherwise secured to the outer rim or flange C of the casing A. There are many other ways in which the cone D may be supported in position; but I find this is as convenient as any, as I am enabled by removing the bolts *g'*, securing the ends of the arms G' to the flange C, to remove the cone in order to get at the interior of the casing when my machine has been withdrawn and brought to the surface.

A' is a substantially L-shaped ring which extends around the inner periphery of the casing A, beneath the flange C. The ring A' is made of copper and serves to arrest any mercury which may overflow out of the upper riffles. The casing would be made of iron or steel; but the whole interior of it might, if preferable, be lined with copper.

The receptacle *a*, hereinbefore referred to, serves to retain any matter collected in the pump when stopped.

H is one screen, the opposite one being the same and so arranged that any gravel will be directed up through the grooved passage-ways D' through the openings H' between the screens.

I are openings in the base of the cone D, and J are openings at the apex of the cone.



Supplemental openings I', substantially rectangular in shape, are located in the base of the cone D, and these openings may be provided with any suitable means of closing, preferably a valve, as shown in Fig. 4, but serve when open to admit of additional water, if required, for washing or to prevent clogging of the sand as it is drawn through the intake-pipe B.

The shaft F is driven from any suitable source of power, and various means may be used to raise and lower the machine to the surface, but I do not show such means and only show a sprocket-drive for the shaft; but I wish it, of course, to be understood that any suitable means might be employed for raising the shaft and machine from its work and for driving such shaft. A valve might be also provided at the bottom of the intake-pipe, so as to close it when it is wished to remove the machine from the bottom of the river, and thus any danger of the contents of the machine being lost would be avoided.

The operation of my machine is briefly as follows: The shaft F is driven so as to rotate at any suitable speed, and the machine consequently driven, the wings E and E' in which serve to create a suction through the intake-pipe B and draw the sand therethrough into the upper portion of the machine and throw the heaviest matters—viz., the gold—by the centrifugal force against the interior of the casing A. The riffles E inside of the case serve to catch and retain the gold thrown outwardly through its weight and also the mercury, if used.

In the cone the grooved passage-ways D' serve, as hereinbefore stated, as a channel for the ejection of the gravel or stones.

At any desired intervals the machine may be moved to the surface of the water and the gold or gold amalgam taken out very readily by removing the inner cone.

It will be seen that my machine may be used under water to any depth and that the power required to drive it will be comparatively small. All the sand entering at the intake-pipe will be necessarily discharged through the opening between the upper flange of the casing and the top or base of the cone.

Although I show my separating-machine with the major portion made conical, cone, or funnel shaped, it will be readily understood that other forms may be adopted; but I find in practice that the best results are produced from a machine constructed as hereinbefore particularly described.

What I claim as my invention is—

1. A gold-separating machine comprising an upper casing, cylindrical intake-pipe at the bottom thereof, a plurality of wings within the casing extending inwardly, a supplemental casing located and supported within the outer casing and forming an inner bounding end for the wings and an annular outlet at the top of the casing, and a shaft in the center of the casing and deriving a rotary move-

ment from any suitable source of power as and for the purpose specified.

2. A gold-separating machine comprising an upper casing, cylindrical intake-pipe at the bottom thereof, a plurality of wings within the casing extending inwardly, a supplemental casing located and supported within the outer casing and forming an inner bounding end for the wings, an annular outlet at the top of the casing, and means for rotating the casing as and for the purpose specified.

3. In a gold-separating machine, in combination the funnel-shaped casing and intake-pipe extending upwardly below the bottom thereof, the receptacle formed in the casing around the top of the intake-pipe, the riffles extending around the interior of the funnel-shaped casing, the wings, the central hollow cone, the annular outlet between the cone and the outer casing and means for securing the cone to the outer casing and means for rotating the casing as and for the purpose specified.

4. In a gold-separating machine, in combination a funnel-shaped casing and intake-pipe extending from the bottom thereof, the riffles extending around the interior of the funnel-shaped casing, the wings, the central hollow cone, the annular outlet between the cone and the outer casing, the inwardly-extending flange at the top of the funnel-shaped casing and means for rotating the casing as and for the purpose specified.

5. In a gold-separating machine, in combination a funnel-shaped casing and intake-pipe extending from the bottom thereof, the riffles extending around the interior of the funnel-shaped casing, the wings, the central hollow cone, the annular outlet between the cone and the outer casing, the grooved passage-way extending from the apex to the base of the cone, the inwardly-extending flange at the top of the funnel-shaped casing and means for securing the cone to the outer casing and means for rotating the casing as and for the purpose specified.

6. In a gold-separating machine, in combination a funnel-shaped casing and intake-pipe extending from the bottom thereof, the riffles extending around the interior of the funnel-shaped casing, the wings, the central hollow cone, the annular outlet between the cone and the outer casing, the grooved passage-ways extending from the apex to the base of the cone, the inwardly-extending flange at the bottom of the funnel-shaped casing, the guiding-screens at the top of the intake-pipe, and means for securing the cone to the outer casing and means for rotating the casing as and for the purpose specified.

7. In a gold-separating machine, in combination a funnel-shaped casing and intake-pipe extending from the bottom thereof, the riffles extending around the interior of the funnel-shaped casing, the wings, the central hollow cone, the annular outlet between the cone and the outer casing, the inwardly-extending flange at the top of the funnel-shaped



casing, the copper ring extending around the top of the casing underneath the flange and means for securing the cone to the outer casing and means for rotating the casing as and  
5 for the purpose specified.

8. In combination the outer casing, the intake-pipe, the riffles extending around the interior of the casing, the wings, the openings at the outer edges of the wings, the conical  
10 central portion of the casing, the annular outlet formed at the top of the casing and means for securing the cone to the outer casing and means for rotating the casing as and for the purpose specified.

15 9. In combination the outer casing, the intake-pipe, the riffles extending around the interior of the casing, the wings, the conical central portion of the casing, the annular outlet formed at the top of the casing, the shaft

secured in a suitable sleeve, the arms extending outwardly therefrom and secured to the outer top edge of the casing and means for rotating such shaft as and for the purpose specified.

10. In combination the outer casing, the intake-pipe, the riffles extending around the interior of the casing, the wings, the conical central portion of the casing, the annular outlet formed at the top of the casing, means for  
25 connecting the central portion of the casing to the outer portion and openings in the apex and base of the central cone as and for the purpose specified.

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Witnesses:

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