

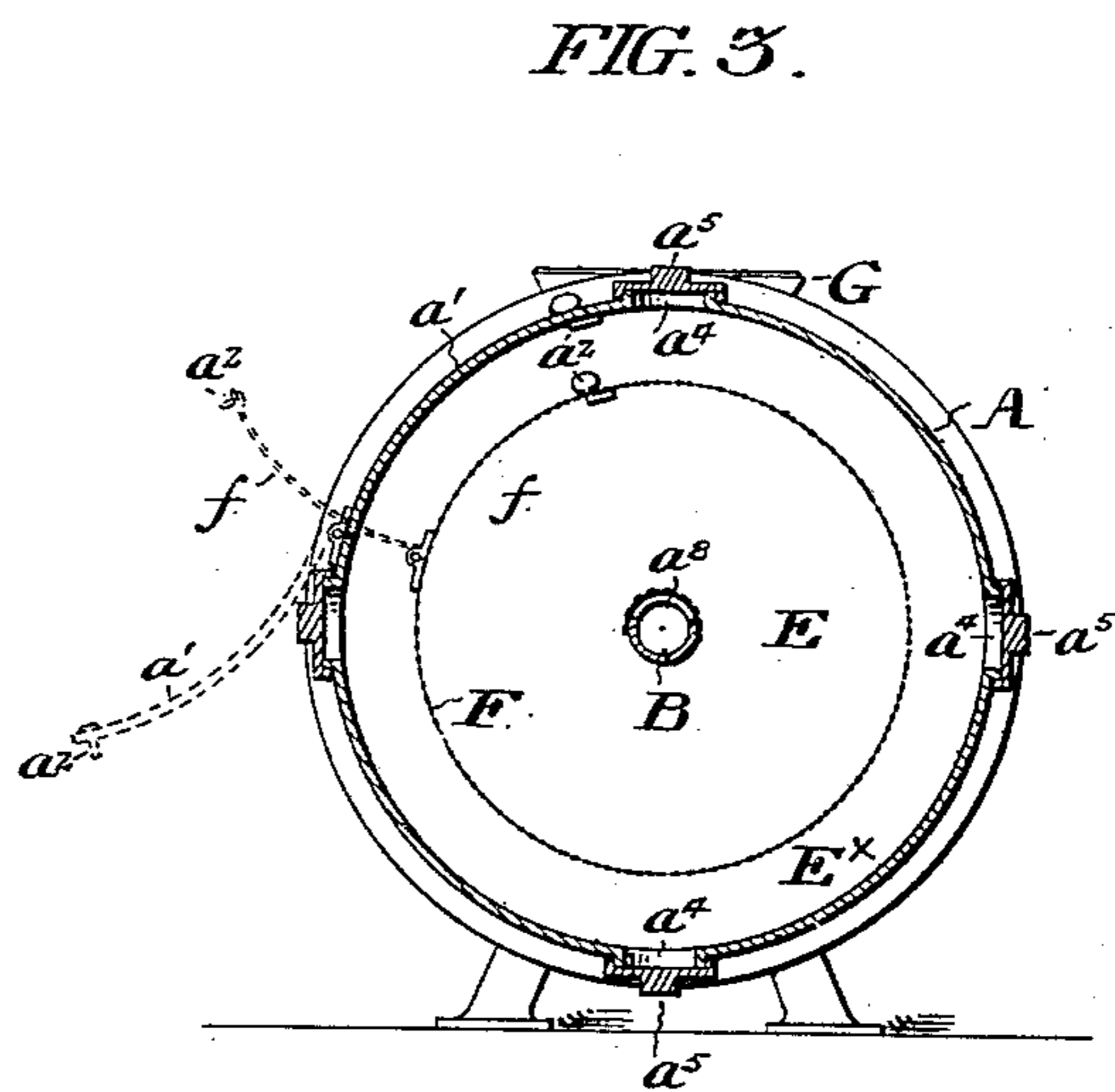
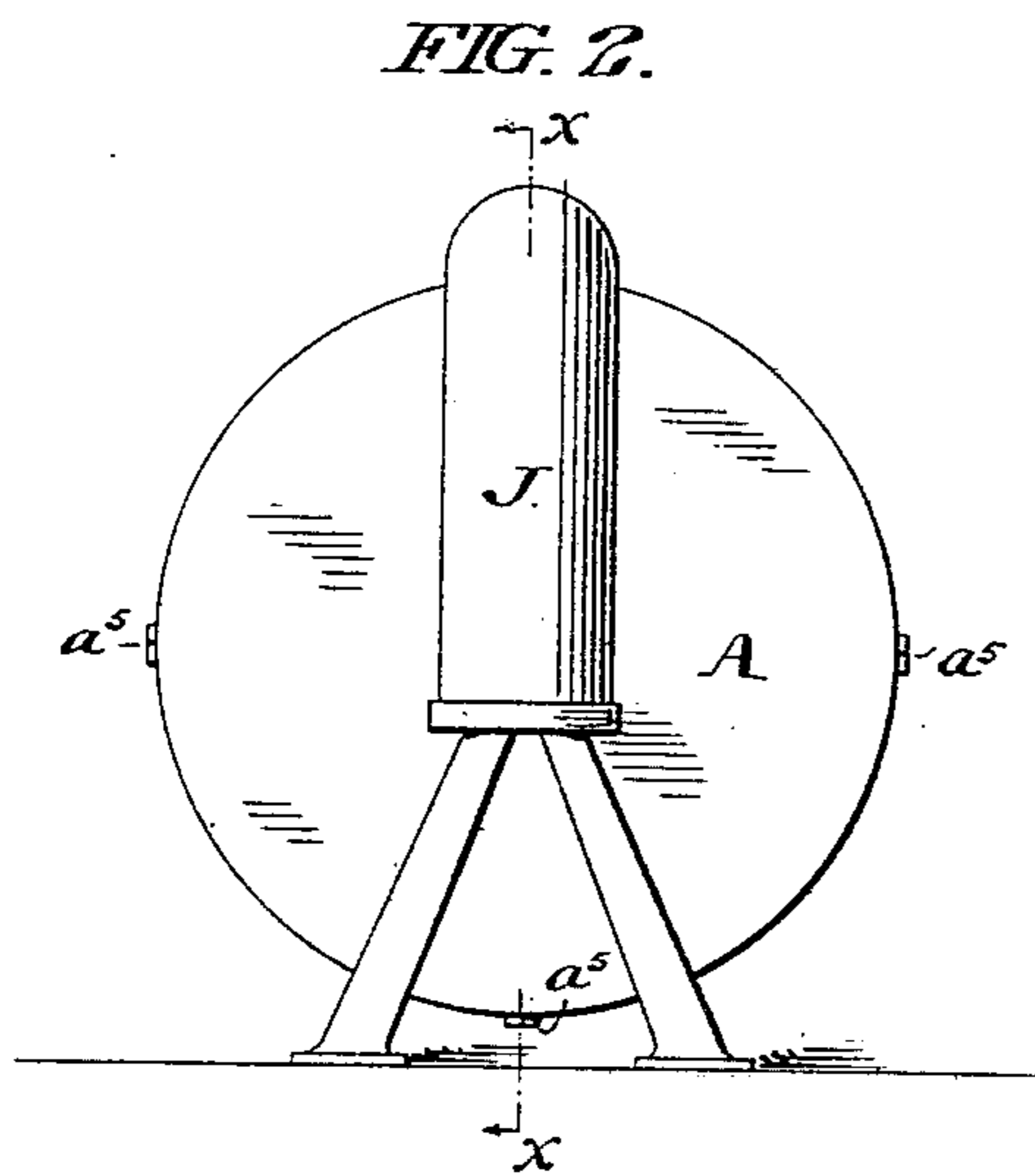
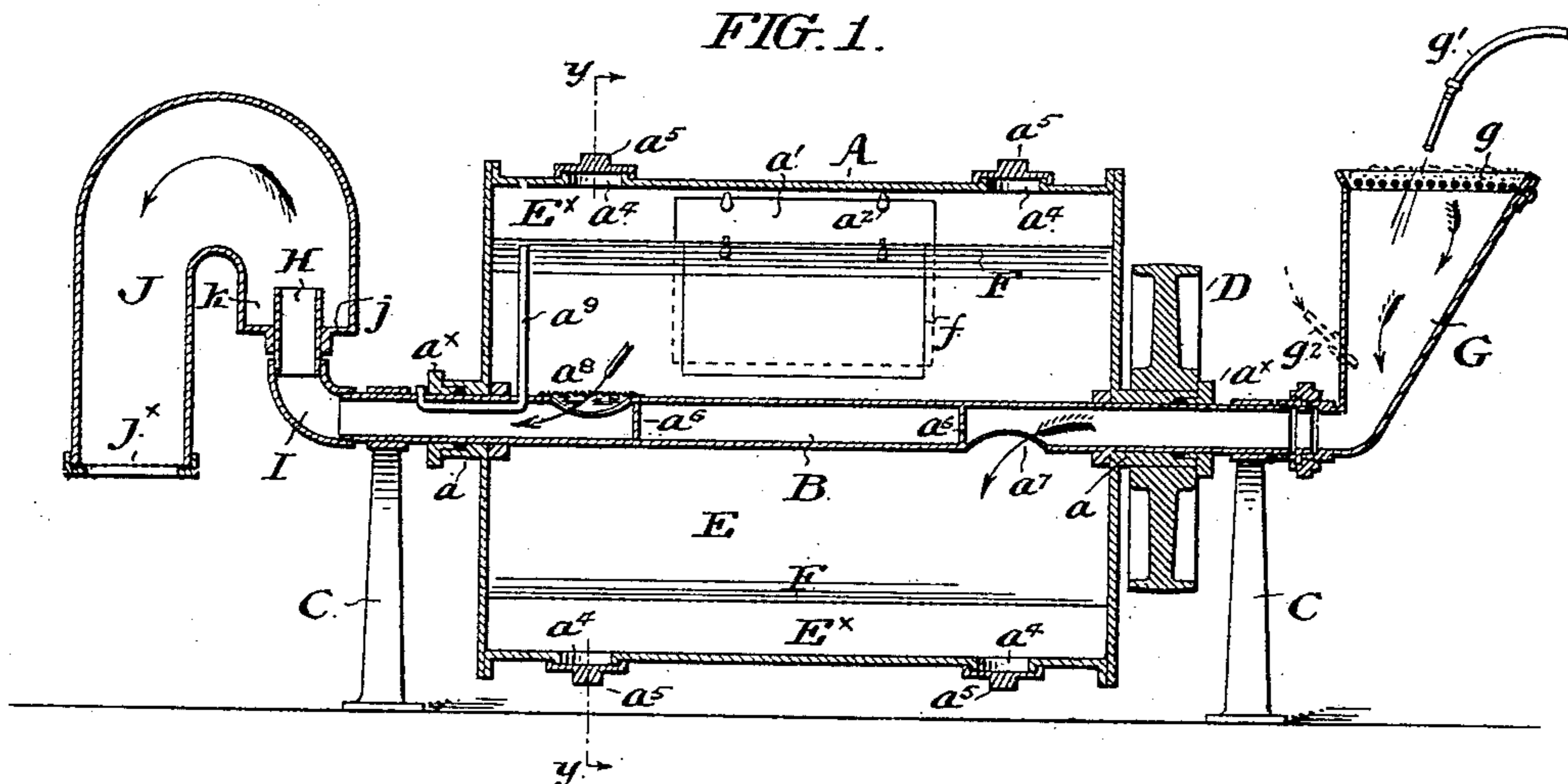
No. 631,020.

Patented Aug. 15, 1899.

S. M. LISSAU.
APPARATUS FOR WASHING PLACER SOIL.

(Application filed Apr. 13, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR WASHING PLACER SOIL.

SPECIFICATION forming part of Letters Patent No. 631,020, dated August 15, 1899.

Application filed April 13, 1898. Serial No. 677,423. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL MARION LISSAU, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Washing Placer Soil, of which the following is a specification.

My invention relates to apparatus employed in connection with the separation of gold or precious stones, from placer or other soil, silt, or comminuted matter, and it is the object of my invention to provide a simple and inexpensive apparatus of the foregoing character, by the use of which the operation of separating the gold and precious stones from the refuse and worthless material, may be more thoroughly effected than has heretofore been possible.

In the accompanying drawings I show, and herein I describe a good form of a convenient embodiment of my invention, the particular subject-matter claimed as novel being hereinafter definitely specified.

In the accompanying drawings,

Figure 1 is a central, vertical, sectional, elevational, view, of an apparatus embodying a good form of my invention, section being supposed on the plane of the dotted line xx on Figure 2, and sight being taken in the direction of the arrows applied to said line.

Figure 2 is a view in end elevation of the apparatus shown in Figure 1, sight being taken toward the left hand end of said apparatus.

Figure 3 is a vertical, transverse, sectional, elevation of the apparatus shown in Figure 1, section being supposed in the plane of the line yy of Figure 1, and sight being taken in the direction of the arrows applied to said line.

In the drawings,

A is a cylindrical metallic drum, the ends of which are centrally provided with hubs a , through axial openings in which extends a tubular axle or fixed axis B, the respective extremities of which are supported in any suitable brackets, such as the standards C shown in Figure 1.

The hubs a are conveniently prolonged axially, their outer ends being countersunk

to receive packing material held in place in said countersinks by caps a^x applied in any convenient manner.

The cylinder or drum is adapted to have rotary motion with respect to said hollow axle, and said rotary motion, which may be imparted to it in any desired manner, may conveniently be imparted by mounting a pulley wheel D upon one of the prolonged hubs a , as shown in Figure 1.

The interior of the drum or cylinder is divided into two concentric chambers which I term the washing chamber E and the collecting chamber E^x , by a cylindric web F of wire cloth, perforated metal, or other suitable apertured material, which constitutes a diaphragm, and is conveniently supported rigidly in position by having its respective ends fixedly secured to the ends of the drum or cylinder, so that it becomes a permanent portion of the structure.

A suitable large opening closed by a trap door a' , is formed in the wall of the cylinder or drum, and a corresponding opening closed by a hinged flap or door f , is formed in the diaphragm. Each of these doors is provided with a latch a^2 by which the doors are normally locked in closed position.

The arrangement of the openings and doors is conveniently that represented in the drawings, the inner door being adapted to open outwardly through the outer opening as indicated in dotted lines in Figure 3.

It will be understood, of course, that these openings may be provided with any suitable and convenient form of closure other than hinged doors, the latter being merely devices which are convenient for the purpose.

In the cylindric wall of the drum or cylinder A, I form a number of cleaning openings a^4 , which are normally closed by removable caps a^5 .

These caps are, in the drawings, shown as provided with depending flanges which take over, and are in threaded engagement with, projecting circular flanges surrounding the margins of said openings.

It will, however, be understood, that any preferred means of closing said openings may be resorted to.

G, Figure 1, is a receiving funnel or bowl, supported upon the right hand end of the

hollow axle, and with its throat or discharge opening in alinement with, and in position to discharge into, the open end of said axle.

The upper end of this funnel is provided with a screen plate *g* which is hingedly connected to the rim of its receiving opening, and may be raised or lowered as desired.

g' is a water supply pipe adapted to discharge within the mouth of said funnel.

*g*² is a second water supply pipe which enters through the wall of the said funnel below said screen, but which, if desired, may be dispensed with.

H, Figure 1, is a vertically disposed pipe section, of approximately the same diameter as the hollow shaft, the lower end of which pipe section is in communication with the discharge end of the shaft through any suitable elbow I.

J, Figures 1 and 2, is a goose-neck or return bend, shown as formed from a length of pipe, the diameter of which, as to its inner end, is very considerably in excess of the diameter of the pipe section H.

The inner end of the goose-neck, which incloses the mouth of the pipe H, extends some distance below the upper end of the latter, and is, as to said lower end, provided with an annular diaphragm *j* which makes contact with the exterior of said pipe H, on all sides, so that the inner end of said goose neck is closed except for the opening through the bore of the pipe H.

The outer end of the goose-neck, which occupies a level somewhat lower than that of the inner end, is closed by a suitable wire or other screen *j*^x.

*a*⁶ are plugs or transverse diaphragms located in the central portion of the hollow axle, and separating the respective end portions of said axle from each other.

I employ two of these plugs or diaphragms located at some little distance from each other, although one of course would serve the purpose.

*a*⁷ is an opening formed in the wall of the hollow axle between one of the aforesaid plugs and the right hand end of the wall of the drum, and *a*⁸ is a screened opening formed in said axle between the other of said plugs and the left hand end of the drum.

*a*⁹ is an air vent pipe,—of any preferred construction and conveniently arranged as shown in the accompanying drawings,—which opens near the upper level of the diaphragm F and within the same, and which discharges through the hollow axis B. This vent serves to vent the air confined within the drum to the outer atmosphere.

The operation of the apparatus will be readily understood:—

The trap doors *a' f* are opened, the charge of placer soil or other material to be operated upon is introduced within the washing chamber, and the doors then closed.

Rotation is thereupon imparted to the drum, and water, and if desired, additional mate-

rial to be operated upon, is introduced within the receiving hopper, and, passing through the hollow axle, emerges through the opening *a*⁷, and becomes admixed with the material in the washing chamber.

In the continued rotation of the drum, a constant agitation of the material, reduced to a semi-fluid form by the water, takes place, and, as the water continues to enter the drum or receptacle, and to rise to its ultimate level determined by the bend of the goose-neck, it begins to pass through the openings *a*⁸ into the discharge end of the hollow axle, and rising through the pipe section H, is discharged to within and fills the inner end of the goose-neck.

The construction of the inner end of the goose-neck, which is of considerably greater diameter than the pipe section H, is such that the water level will rise very slowly, and the entire arrangement is such that the device will form a settling chamber *k*, so to speak, with the result that float gold or kindred precious material carried with the water through said pipe section H, will settle and accumulate in the lower portion of the said settling chamber as a pocket.

In the rotation of the drum, the water, very fine sand, and particles of gold and precious material, will be washed through the openings in the perforated diaphragm and accumulate within the collecting chamber, while the gravel and larger particles of purely refuse matter, will remain within the washing chamber.

After the operation has continued until a satisfactory separation has been accomplished, the water is turned off the supply pipe *g'*, and the drum brought to rest.

One of the openings *a*⁴ in the lower portion of the drum, is then opened and the water permitted to escape. In this escape of the water,—that which is contained in the inner end of the goose-neck below the level of the upper end of the pipe H,—will not of course join.

After the escape of the water, the fine sand and particles of precious material, may be together removed from the collecting chamber and subjected to further process of separation.

The float gold will be found in the bottom portion of the settling chamber.

The material in the inner or washing chamber may be removed through the doors and discarded.

Having thus described my invention, I claim—

1. In an apparatus for washing placer and other soil, in combination, a normally closed drum of imperforate material having end walls and a cylindrical side wall, a cylindrical diaphragm of foraminous material the respective ends of which are secured to the respective end walls of the drum, and a fixed hollow shaft upon which said drum is mounted for rotation and arranged to supply water

to and afford means for its escape from said drum, substantially as set forth.

2. In an apparatus for washing placer and other soil, a rotatable drum, a cylindric diaphragm of foraminous material in said drum, normally closed openings in the drum and in the diaphragm, a hollow shaft upon which said drum is mounted, a plug or stoppage in the central portion of said shaft, two openings in said shaft, one on each side of said plug or stoppage, a screen covering the shaft opening on the discharge side of said stoppage, means for supplying water to one end of said shaft, and a settling tank in communication with the other end of said shaft, said settling tank having both its inlet and its outlet openings at points above its bottom, substantially as set forth.

3. In an apparatus for washing placer and other soil, a rotatable drum, a cylindric diaphragm of foraminous material in said drum, normally closed openings in the drum and in the diaphragm in line with each other, a hollow shaft upon which said drum is mounted, a plug or stoppage in the central portion of said shaft, a lateral screen-provided opening in said shaft on the discharge side of said

stoppage or plug, means for supplying the water to one end of said shaft, a vertical extension in communication with the other end of said shaft, a goose-neck formed of pipe of greater diameter than said vertical extension, and one end of which incloses the upper end of said vertical extension to form a settling chamber, substantially as set forth.

4. In combination, a revoluble drum, a cylindric screen mounted on said drum, a hollow shaft upon which said drum is mounted, a plug or stoppage in the central portion of said shaft, openings in said shaft one on each side of said stoppage, a hopper the discharge end of which leads into said axle, and an air vent pipe one end of which opens within the cylinder, the other end of which opens outside the cylinder and the intermediate portion of which exists within the hollow axle, substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 9th day of April, A. D. 1898.

SAMUEL MARION LISSAU.

In presence of—

F. NORMAN DIXON,
THOS. K. LANCASTER.