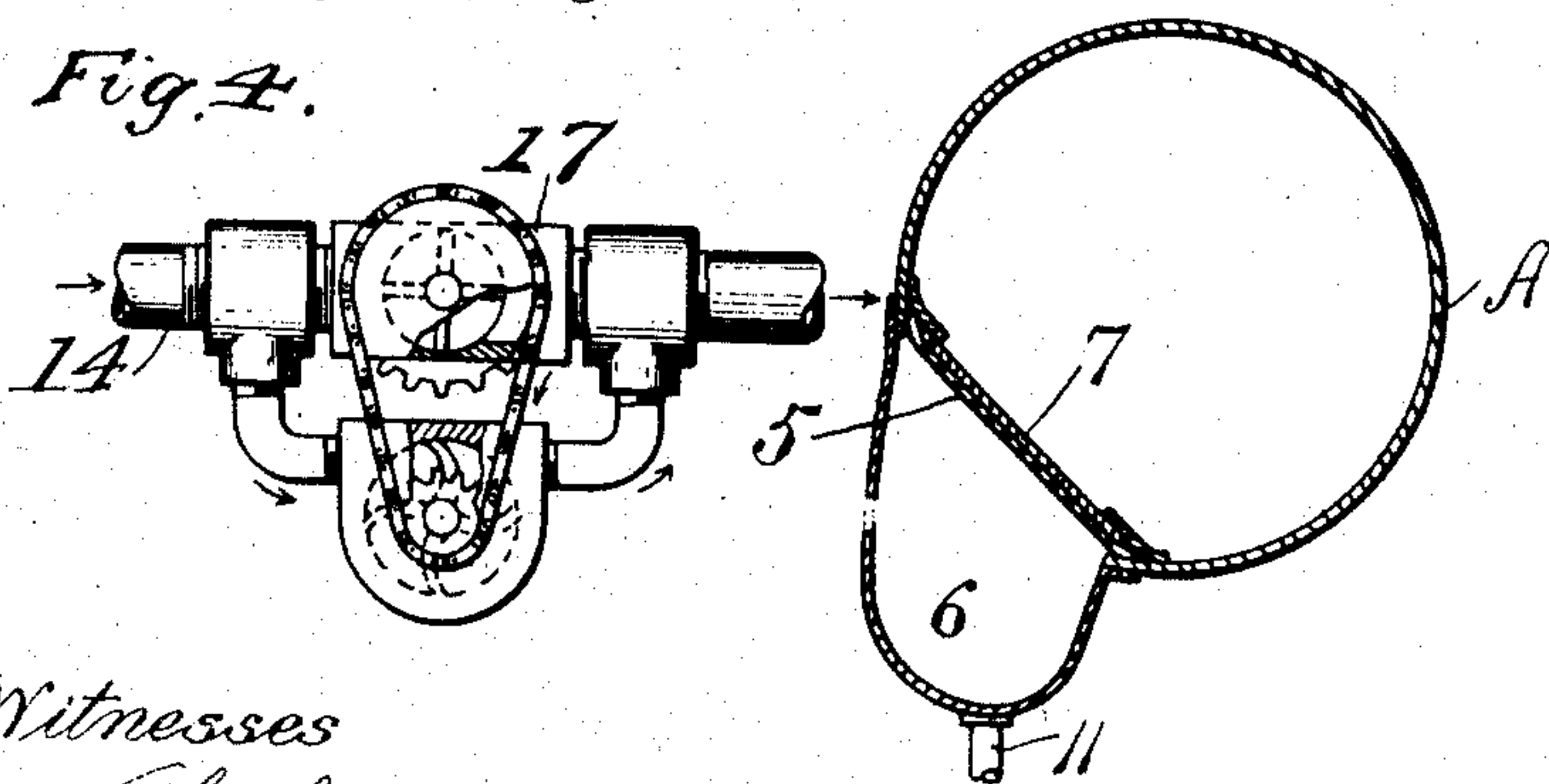
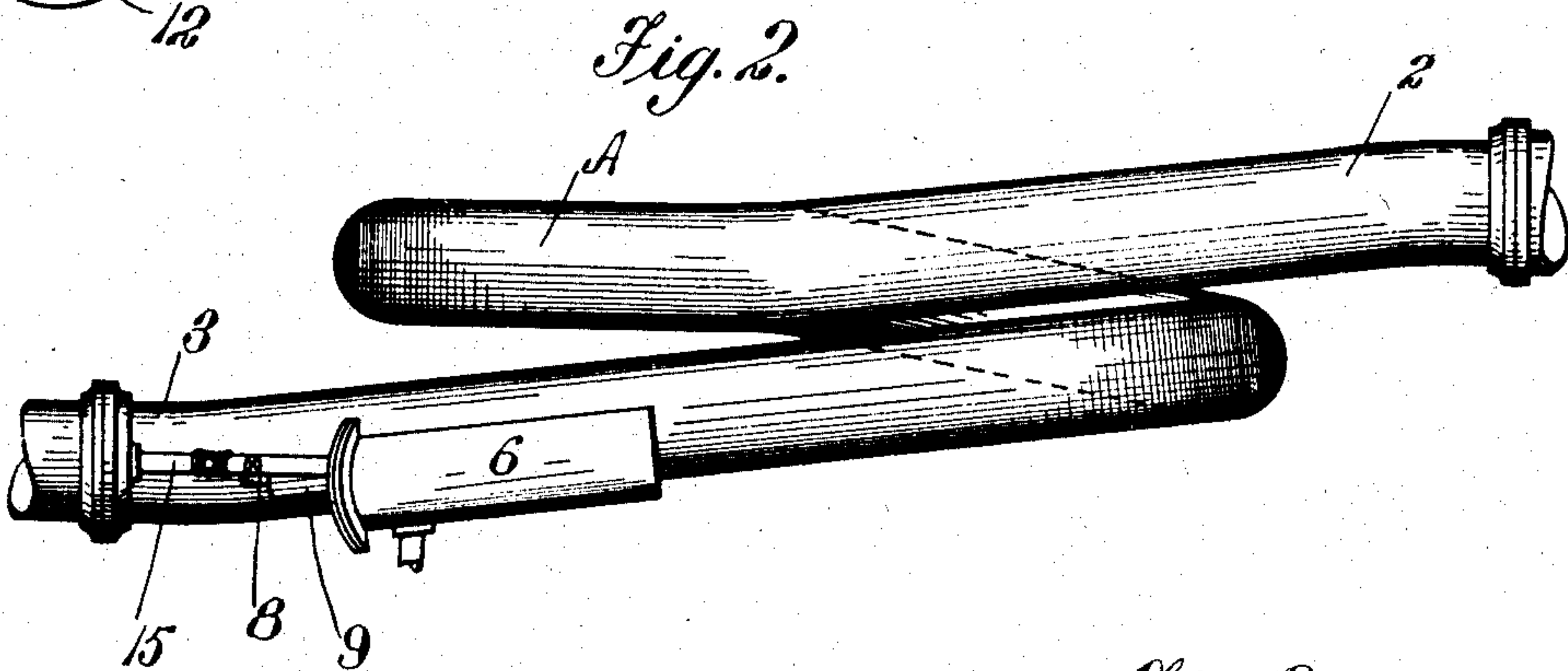
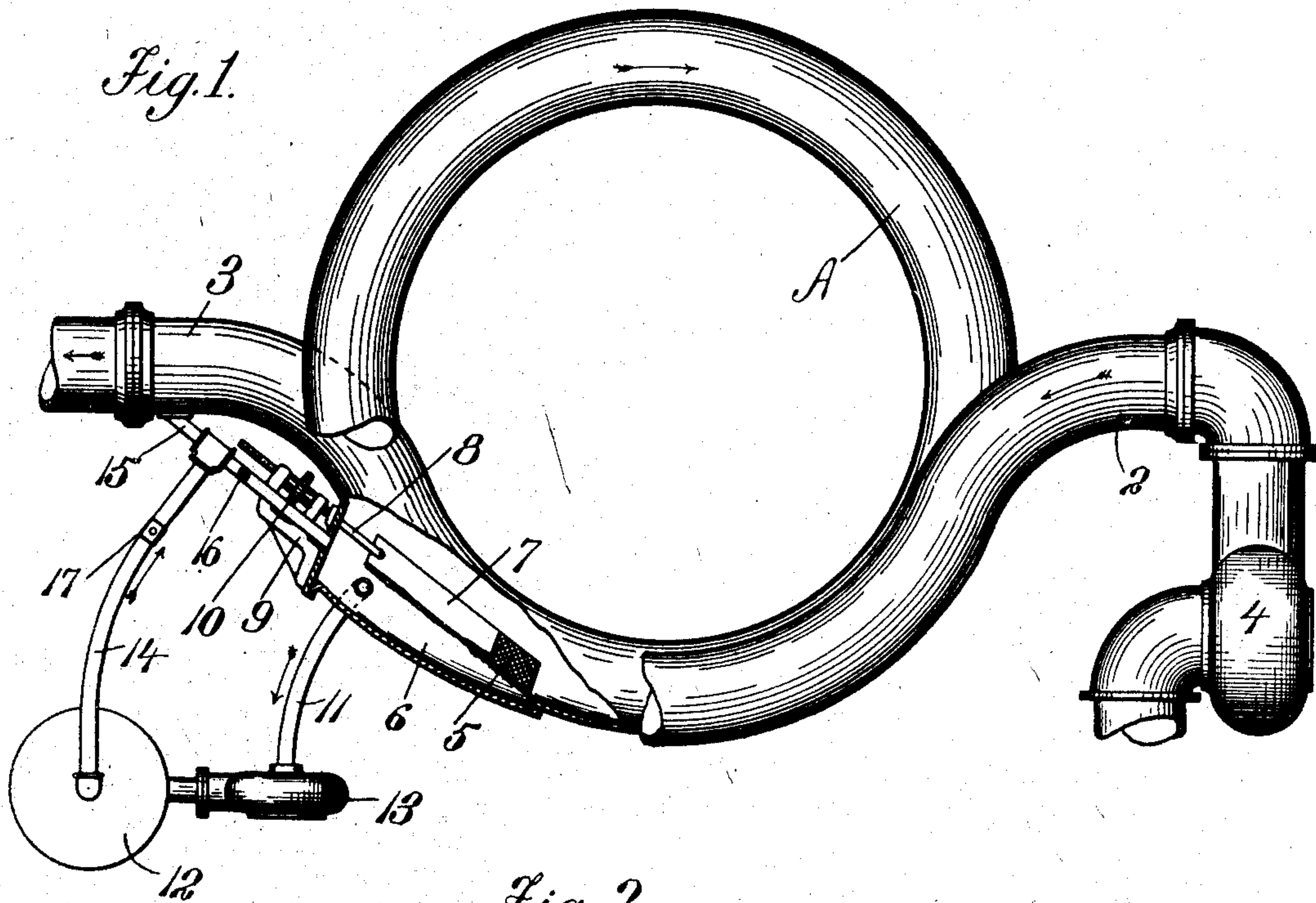


C. E. SEYMOUR.
 APPARATUS FOR SEGREGATING SOLIDS FROM LIQUIDS.
 APPLICATION FILED MAY 26, 1908.

958,942.

Patented May 24, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES E. SEYMOUR, OF PLACERVILLE, CALIFORNIA.

APPARATUS FOR SEGREGATING SOLIDS FROM LIQUIDS.

958,942.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed May 26, 1908. Serial No. 435,033.

To all whom it may concern:

Be it known that I, CHARLES E. SEYMOUR, citizen of the United States, residing at Placerville, in the county of Eldorado and State of California, have invented new and useful Improvements in Apparatus for Segregating Solids from Liquids, of which the following is a specification.

My invention relates to the segregation and separation of solids from the liquid in which they are carried, and pertains especially to the segregation of minerals and metals from the gangue and water with which they are mixed.

The object of the invention is to effect in as simple a manner as possible, a primary concentration or separation of solids, and particularly the heavier and more valuable solids, from the liquids in which they are contained, while the material in fluid or semi-fluid form is flowing through a pipe under continuous pressure; the invention comprehending utilization of centrifugal force; all as will be more particularly understood hereinafter.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a plan view, partly broken away, of the invention. Fig. 2 is a side elevation. Fig. 3 is an enlarged transverse sectional view of the collection chamber and coil. Fig. 4 is an enlarged detail of the rotary valve 17 and its connections.

While I shall describe and show my invention as applicable in the mining industry, it is manifest that its uses may be varied and extensive; and I do not limit myself to any particular use, nor to specific details in the construction of the apparatus here shown as suitable for practicing the invention.

The invention comprehends essentially a loop conduit A of any suitable size, length, or number of coils, having an inlet 2 and an outlet 3. The material to be treated is forced through this conduit in a continuous stream and under pressure, by any suitable means, as the centrifugal pump 4. The coil A is preferably laid flat and the flow of material therethrough sets up a centrifugal action and causes the heavier particles carried by the liquid to approach and hug the outside wall of the conduit. These heavier particles

separated by such initial centrifugal action, are segregated from the rest of the material in the conduit, and withdrawn therefrom by the following means: At any suitable point in the coil, preferably near the discharge end thereof, I arrange a screened opening 5, which screened opening is so disposed to the path of travel of the heavier particles that the latter will travel on to the screen and will pass therethrough into a collection chamber 6 to be subsequently withdrawn and saved. Since the coil is arranged to lie flat, and since the heavier material in the coil will stand at more or less of an angle against the outside wall, the screen opening 5 is also preferably arranged at an angle, rather than perpendicular to a radius of the coil. The screened opening 5 may be covered by a slide-gate 7 which may be opened or closed to uncover more or less of the screen and let a larger or smaller quantity of material into the collection chamber 6, according to circumstances. This slide-gate may be operated from the outside by any suitable means. As here shown, it has a stem 8 extending out through a bushing in the end of the collection chamber 6, and this stem is supported in a pair of brackets 9, between which a hand-wheel 10 operates to move the stem and slide valve in or out. The chamber 6 has a discharge through a pipe 11 to a secondary separating device 12; a suitable force pump, as 13, being interposed in the conduit 11, if desired. This secondary separator and classifier 12 is not here shown in detail, for the same is fully described and claimed in my former Patent No. 896,471, dated Aug. 18, 1908. Such material as is not saved and segregated in the secondary separator 12 is returned to the system through a pipe 14 which connects with a pipe 15. This pipe 15 has one end leading back into the collection chamber 6, and the other end connecting with the discharge end of the coil A. A valve 16 is disposed between the supplemental chamber 6 and the pipe 14 for the purpose of regulating the back flow and back pressure into the chamber 6. Also, if desired, a rotary valve 17 may be interposed in the pipe 14 for the purpose of creating a pulsating action in the chamber 6. By creating an ascending adverse current in chamber 6 in the manner described, and adding thereto a pulsating action, the non-mineral and non-metallic particles are prevented from clogging the screen, at the same time

allowing the particles of greatest specific gravity to pass through into the collection chamber 6, thereafter to be withdrawn and saved.

5 Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A segregating apparatus consisting of a looped conduit having its axis arranged
10 vertical, said conduit having a lateral screen-covered discharge opening in its side, said discharge opening communicating with a supplemental collection chamber, hydraulic means for forcing the material under pressure through the loop, means for withdrawing
15 the material from said collection chamber, means for varying the size of said discharge opening into the collection chamber, said last-named means including a slide-valve, and means for creating a pulsating
20 action in said supplemental chamber, through the medium of the material and water withdrawn from the collection chamber.

2. A segregating apparatus consisting of
25 a looped conduit with its axis arranged vertical, said conduit having a screened lateral

discharge opening in its side, said discharge opening communicating with a supplemental collection chamber, hydraulic means for forcing the material under pressure through
30 the loop, means for withdrawing the material from said collection chamber, and means connected with said last-mentioned withdrawing means for creating a counter current in the collection chamber. 35

3. A segregating apparatus consisting of a looped conduit, said conduit having a lateral discharge opening in its side, said discharge opening communicating with a supplemental collection chamber, means for
40 forcing the material under pressure through the loop, and a pump and suitable connections for withdrawing the material from said collection chamber and for returning a portion thereto. 45

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES E. SEYMOUR.

Witnesses:

C. A. BRANFIELD,
F. E. MAYNARD.