

(No Model.)

P. DANCKWARDT.

APPARATUS FOR EXTRACTING GOLD AND SILVER FROM ORE.

No. 566,894.

Patented Sept. 1, 1896.

FIG. 2.

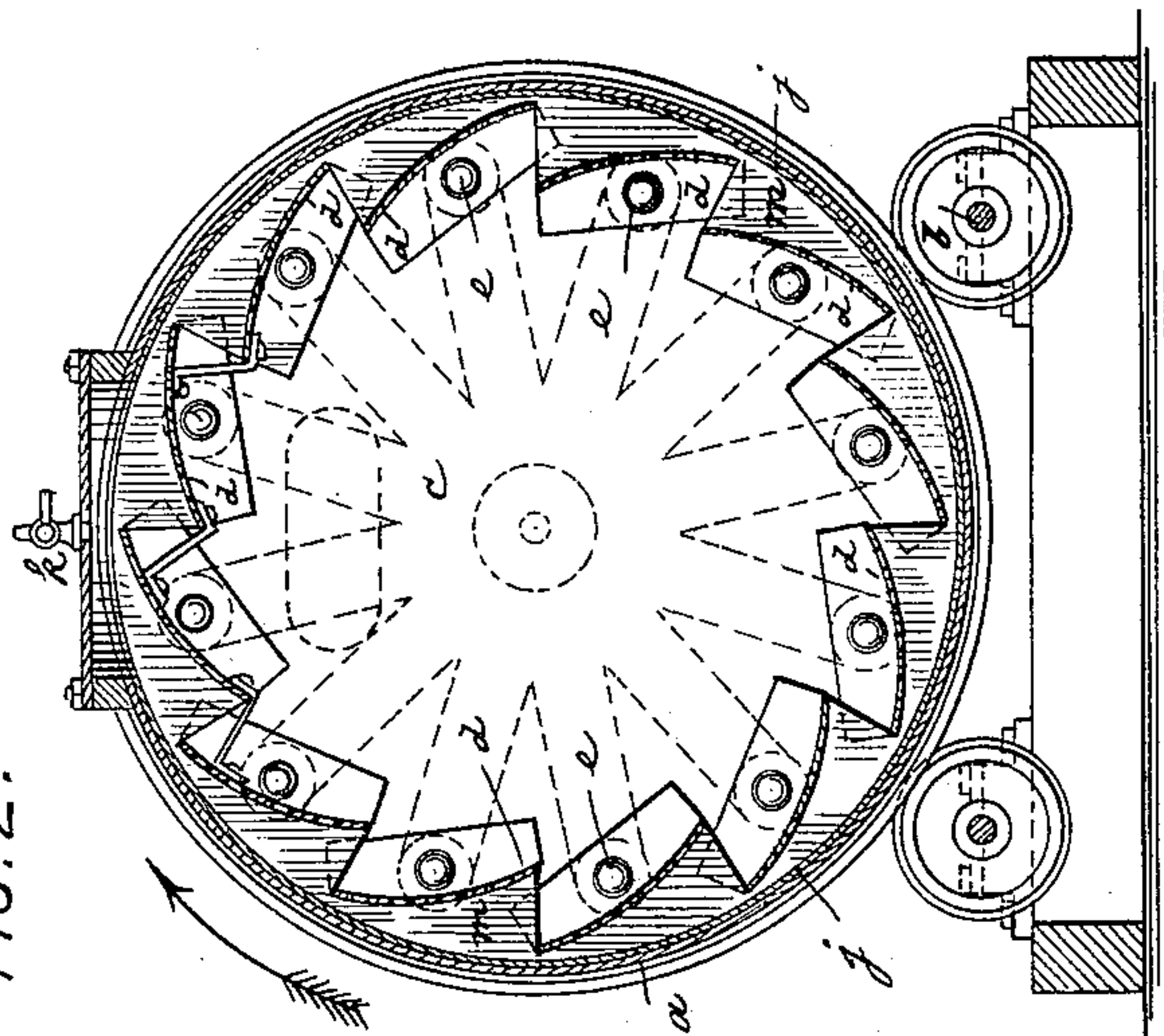


FIG. 4.

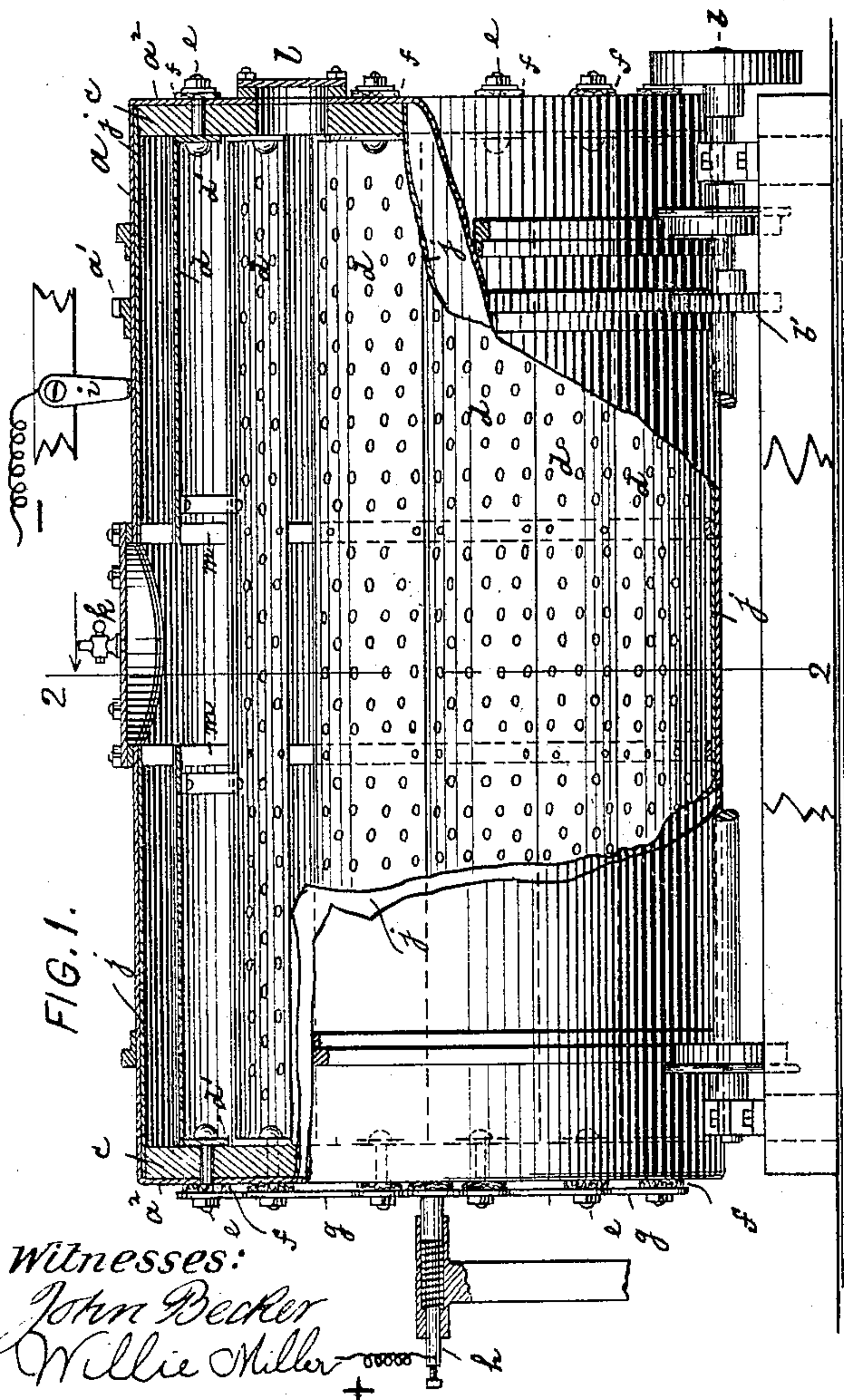
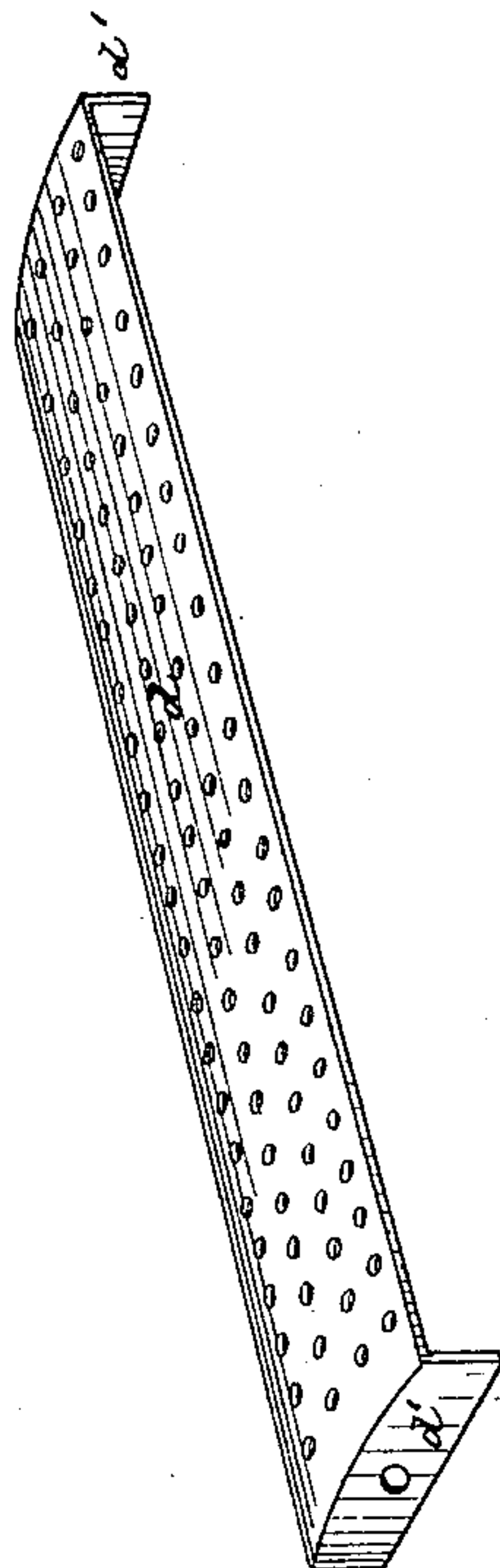
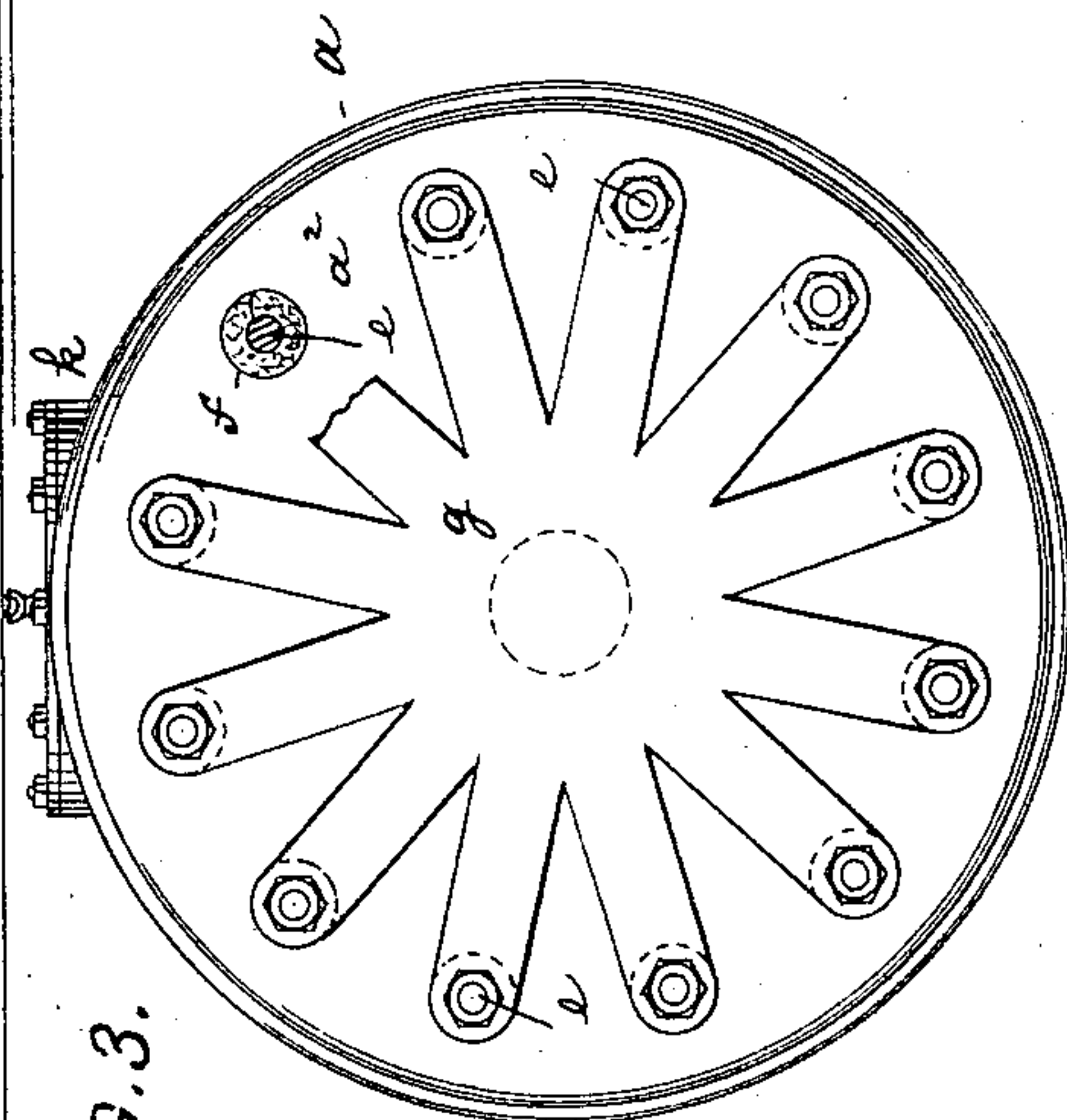


FIG. 3.



Inventor:

Paul Danckwardt  
by his attorneys  
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Witnesses:  
John Becker  
Willie Miller



# UNITED STATES PATENT OFFICE.

PAUL DANCKWARDT, OF NEW YORK, N. Y., ASSIGNOR TO THE ELECTRO-CYANIDE GOLD AND SILVER EXTRACTING COMPANY, OF SAME PLACE.

## APPARATUS FOR EXTRACTING GOLD AND SILVER FROM ORE.

SPECIFICATION forming part of Letters Patent No. 566,894, dated September 1, 1896.

Application filed June 8, 1896. Serial No. 594,633. (No model.)

*To all whom it may concern:*

Be it known that I, PAUL DANCKWARDT, a citizen of Germany, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Extracting Gold and Silver from Ore, of which the following is a specification.

This invention relates to an apparatus designed for extracting gold and silver from ores or like compounds by means of the combined action of a solvent and an electric current. The apparatus is made with a view of obtaining simplicity in construction and manipulation and for effecting a thorough extraction of the precious metal.

In the accompanying drawings, Figure 1 is a longitudinal section, partly in elevation, of my improved apparatus. Fig. 2 is a section on line 2 2, Fig. 1; Fig. 3, an end view of the apparatus, and Fig. 4 a detail perspective view of one of the anodes *d*.

The letter *a* represents a barrel or cylindrical vessel composed, preferably, of iron and adapted to be rotated from power-shaft *b* by wheels *b'* *a'*. The heads *a*<sup>2</sup> of the cylinder, if made of iron, are lined with the wooden or insulating bottom *c*. To these bottoms there are secured by bolts *e* the flanged ends *d'* of a number of longitudinal metal strips or blades *d*, constituting the anodes. These blades are arranged around the entire circumference of the cylinder, but are set at a distance and are insulated therefrom. This insulation is effected, first, by the wooden bottom *c*, and, secondly, by means of asbestos or similar washers *f*, interposed between the head of the bolts *e* and the outer sides of the heads *a*<sup>2</sup>. The blades *d* are placed at an inclination to the inner surface of the cylinder *a*, so that such blades overlap one another at their sides or edges, Fig. 2, and collectively protect the amalgamated surface of the cylinder against scraping contact with the ore, thus greatly prolonging the life of such surface. The blades should be perforated to permit the small heavy particles of the pulp, among which principally is the free gold, to pass by gravity through the blades and to

come directly into contact with the amalgam without using up any cyanid from its solution.

To the outside of one of the heads *a*<sup>2</sup> there is secured, by the bolts *e*, a copper disk *g*, which is insulated from its head *a*<sup>2</sup> by the washers *f* and is engaged by the spring-contact *h*, leading to the plus pole of the battery. The second contact *i*, leading to the minus pole of the battery, engages directly the outer surface of the cylinder *a*. The inner surface of the cylinder *a* is made either smooth or corrugated and is provided with a lining *j* of amalgamated sheet-copper, which constitutes the cathode. A number of serrated wooden or insulating rings *m* serve to support the body of the blades *d* between their ends and to prevent them from being bent outwardly or into contact with the cathode.

In use the pulverized ore or like compound (tailings, residues, scrap metal, &c.) is introduced into the apparatus through the manhole *k*, together with a solution of some cyanid salt or some other solvent for the gold or silver. The manhole-cover is then closed and the cylinder rotated, while a constant current of electricity under low tension is turned on. This current will cause the precious metal to be dissolved at the anodes *d* and to be deposited upon the amalgamated cathode *j*. After the apparatus has been rotated for several hours all or nearly all of the gold or silver will be deposited upon the amalgamated copper lining in the form of amalgam. It is removed from time to time by scraping to be retorted, and the alloy is smelted; but, if desired, working may be continued with a large number of new charges without removing the amalgam, as the large surface of the cathode, especially upon the addition of some fresh mercury, is capable of taking up a very considerable quantity of gold and silver.

For the purpose of cleaning the apparatus the blades *d* are first removed through an opening *l*, the apparatus is washed out, and the amalgam is scraped from the copper lining to be retorted. The copper lining is then reamalgamated and the blades are reinserted,

when the apparatus is again in condition for use.

The discharged ore-pulp and the solution go to some filtering apparatus, and the solution running off from it is used over again.

What I claim is—

1. The combination of a revolving barrel having an amalgamated copper lining to form a negative pole, with a pair of heads, and  
10 with a series of insulated inclined blades secured to such heads and having overlapping edges to form the positive pole, substantially as specified.

2. The combination of a revolving barrel

having an amalgamated copper lining with 15 non-conducting bottoms, a series of inclined perforated metal strips secured to such bottoms, insulating-rings that sustain the bodies of such strips, and with electric connections that communicate with the barrel and the 20 strips, substantially as specified.

Signed at New York, in the county of New York and State of New York, this 4th day of June, A. D. 1896.

PAUL DANCKWARDT.

Witnesses:

F. V. BRIESEN,

WILLIAM SCHULZ.