

No. 759,910.

PATENTED MAY 17, 1904.

A. H. PERRY.
ELECTRIC SEPARATOR.
APPLICATION FILED FEB. 28, 1903.

NO MODEL.

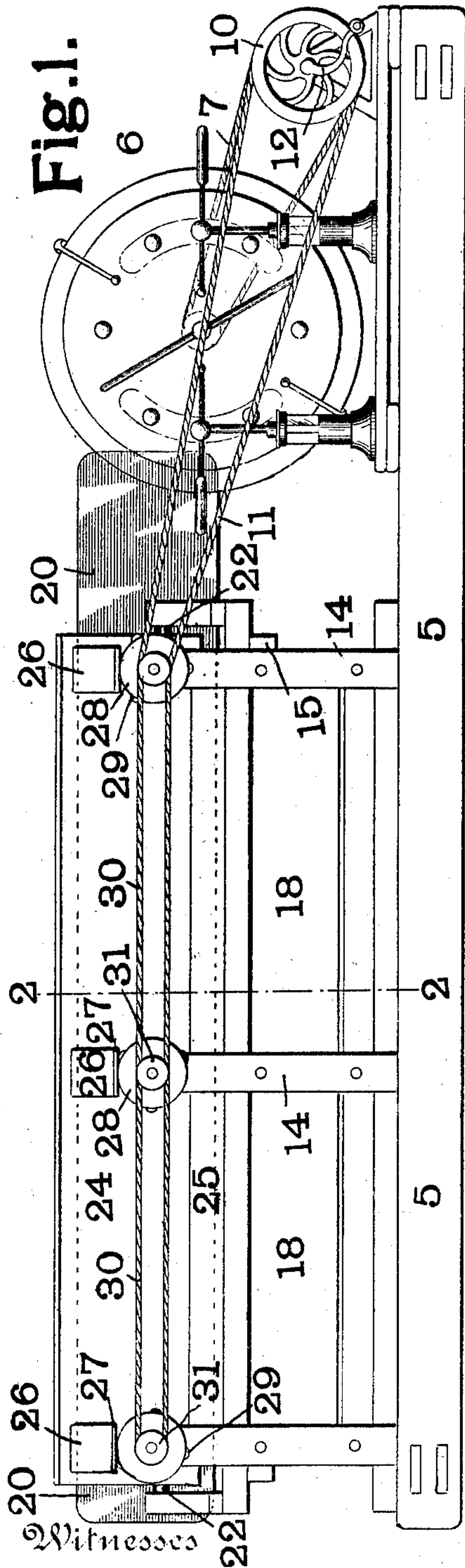


Fig. 1.

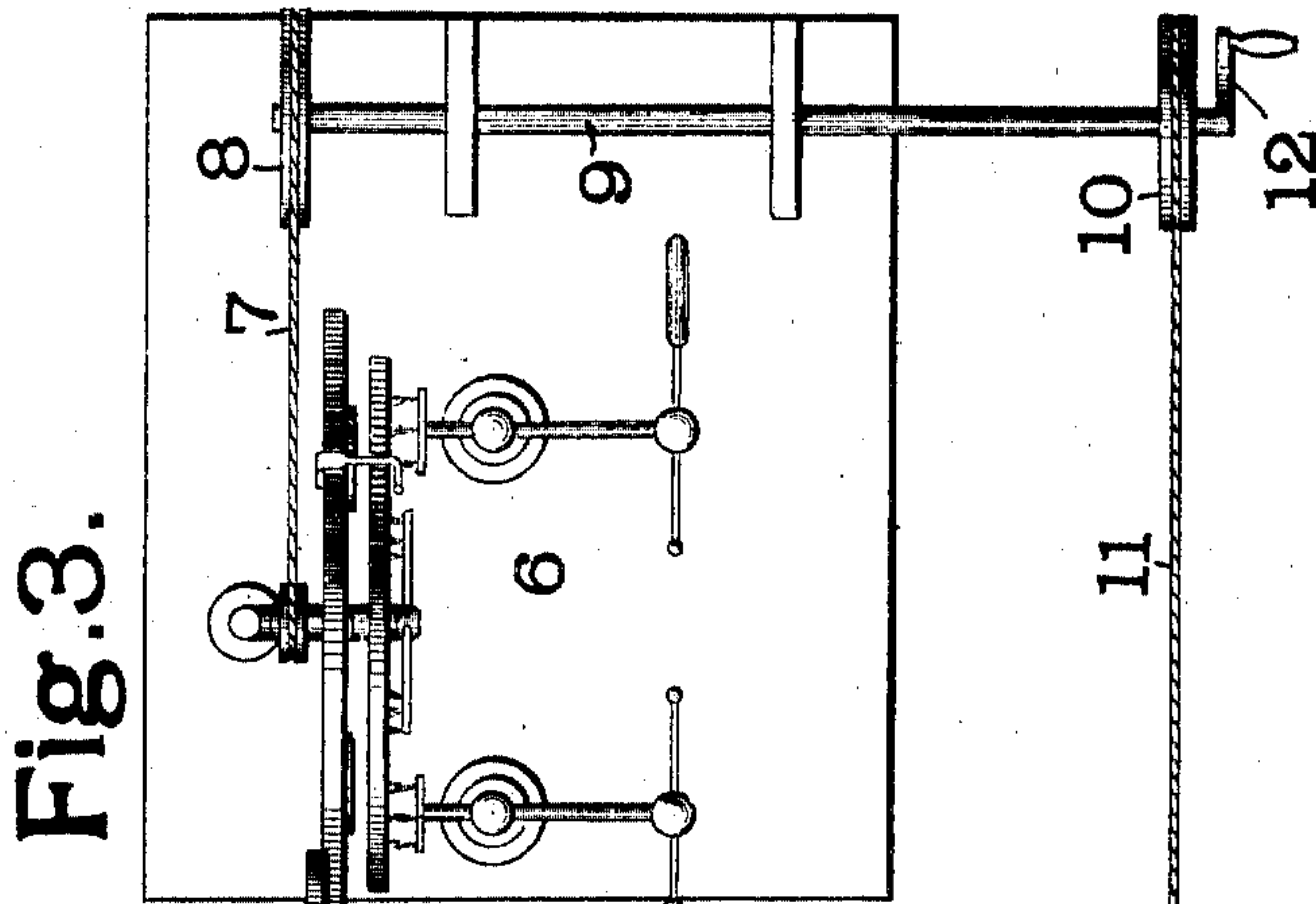


Fig. 3.

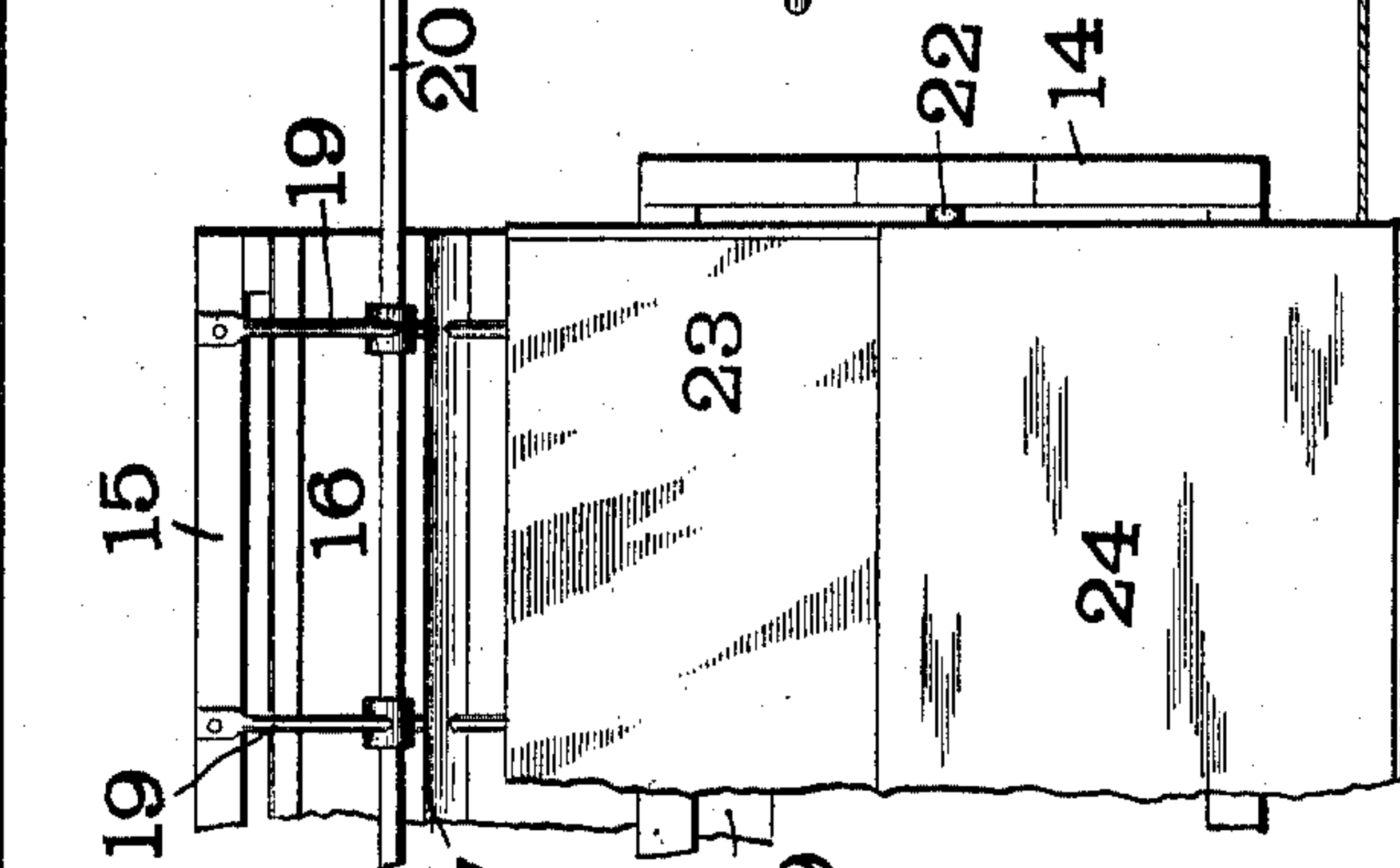


Fig. 4.

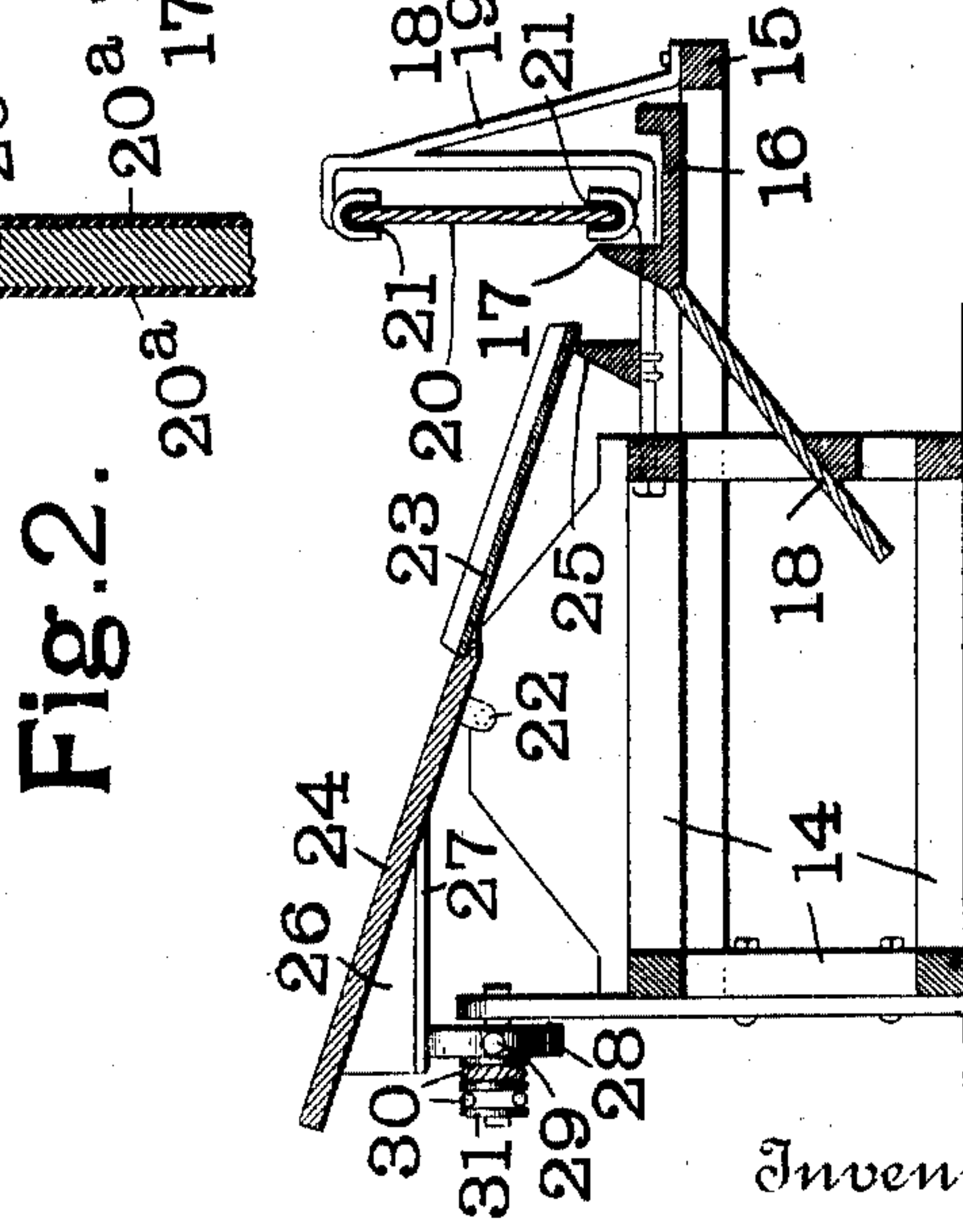


Fig. 2.

Witnesses

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ELECTRIC SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 759,910, dated May 17, 1904.

Application filed February 28, 1903. Serial No. 145,475. (No model.)

To all whom it may concern:

Be it known that I, ALONZO H. PERRY, a citizen of the United States, residing in the county of St. Louis, in the State of Missouri, have invented a certain new and useful Electrical Separator, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an electrical separator, and more particularly to a separator in which particles of gold or other metal in fine state of subdivision are separated from the material containing them by the attraction of a receiving-plate charged with static electricity.

One of the principal objects of my invention is to provide means for preventing the particles of metal from becoming charged with electricity of the same polarity as the receiving-plate, and thus being repelled from the plate and thrown back into the metal-bearing material.

My invention consists in part in the combination with a receiving-plate adapted to receive a charge of static electricity, of a source of electricity for charging said plate, mechanism for presenting the metal-bearing material within the inductive influence of said plate, and a coating for preventing contact of the metal particles with said receiving-plate.

My invention also consists in certain other novel features and details of construction, all of which will be described in the following specification and pointed out in the claims affixed hereto.

In the accompanying drawings, which illustrate one form of separator made in accordance with my invention, Figure 1 is a front elevation. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a top plan view of a portion of the separator, and Fig. 4 is an enlarged cross-section of the receiving-plate.

Like marks of reference refer to similar parts in the several views of the drawings.

5 is a base upon which the separator rests. Upon the base 5 is a static electrical machine 6. The static machine 6 is driven by

means of a belt 7, passing over a pulley 8 upon a shaft 9. The shaft 9 is also provided with a second pulley 10, upon which runs a belt 11 for driving the feeding mechanism of the separator, as will be hereinafter described. 55

The shaft 9 may be provided with a crank-arm 12 for manually operating the same, or it may be operated by any suitable power.

Resting upon the base 5 is the frame 14 of the separator. The frame 14 has a rearwardly-extending portion 15, upon which rests a trough-shaped member 16. The trough-shaped member 16 has an upwardly-extending portion 17 forming a dividing ledge. Extending downwardly from the ledge 17 is an inclined board 18 for carrying away the waste material after the gold or other metal has been separated, as will be hereinafter described. Carried by the main frame 14 and rearward extension 15 are brackets 19, which support the receiving-plate 20, but which are separated from it by means of suitable insulators 21. The receiving-plate 20 is preferably made of copper; but it may be made of any material capable of receiving a charge of static electricity. The plate 20 may either be in actual contact with the static machine 6, as shown in the drawings, or may be brought sufficiently close to it to be charged therefrom by induction. In order to prevent actual contact of the metallic particles with the receiving-plate 20, I coat it with a suitable insulating material 20^a, preferably shellac-varnish. 65 70 75 80

Pivotally mounted in the main frame 14 by means of trunnions 22 is the feed-plate, which consists of the feed-plate proper, 23, which is preferably formed of copper, and a rearwardly-extending portion 24, which may be of wood or any other suitable material. One end of the feed-plate rests upon a knife-edge 25, while the other end is provided with blocks 26, preferably having a wearing-face 27 of metal. This face 27 rests upon rotary members 28, which are provided with rounded projections 29. The rotary member 28 nearest to the static machine 6 is driven by the belt 11, hereinbefore described, and the remaining rotary members 28 are driven from the first-named member by means of belts 30, passing over pulleys 31, secured to the said rotary members. 85 90 95 100

The operation of my separator is as follows: The static machine 6 is operated by the rotation of the shaft 9, and at the same time the rotary members 28 are operated to impart a vibrating motion to the feed-plate. The material containing the particles of gold or other metal is placed upon the extension 24 of the feed-plate. The vibrating motion of the feed-plate causes the material to slide down along the inclined plate and onto the feed-plate proper, 23. The material now comes within the inductive influence of the receiving-plate 20, which is charged by the static machine 6. The particles of metal in the material now become charged with electricity of the opposite polarity to that with which the receiving-plate is charged. The metal feed-plate 23 is also inductively charged with electricity of the opposite polarity to that of the receiving-plate 20. The metal particles are now repelled by the feed-plate 23 and attracted by the receiving-plate 20. Consequently they are impelled across the intervening air-gap and adhere to the receiving-plate 20. As the receiving-plate 20 is covered with an insulating material, the metallic particles are prevented from coming in actual contact with it, and hence do not become charged with electricity of the same polarity as the receiving-plate, so as to be repelled, but continue to adhere to the receiving-plate until removed therefrom or until the vibration of the machine or the accumulation of the particles cause them to slide down the receiving-plate and pass between said plate and the dividing ledge 17 into the trough 16. The material from which the particles have been separated falls down upon the inclined board 18 and is discharged beneath the separator.

I am aware that it has been proposed heretofore to separate metallic particles from material bearing the same by electrical separators acting inductively on the material; but the receiving-plates of such electrical separators have not been provided with an insulating coating or means for preventing electrical contact between the metallic particles and the receiving-plate, and hence in such electrical separators the metallic particles were repelled after being attracted. I am

aware also that magnetic separators have been used to separate metallic particles capable of being magnetized from material bearing the same. In my separator the metallic particles are separated by electrical and not by magnetic action, and hence it is adapted to separate non-magnetic particles, such as gold, from material bearing the same.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an electrical separator, the combination with a receiving-plate adapted to receive a charge of static electricity, of a source of electricity for charging said plate, a pivoted inclined feed-plate within the inductive influence of said receiving-plate, mechanism for vibrating said feed-plate, and means for preventing the contact of the metallic particles with said receiving-plate.

2. In an electrical separator, the combination with a receiving-plate adapted to receive a charge of electricity, of a source of electricity for charging said plate, an inclined feed-plate the working face of which is composed partly of conducting and partly of non-conducting material, the conducting part of said feed-plate being within the inductive influence of said receiving-plate, and means for preventing the contact of the metallic particles with the receiving-plate.

3. In an electrical separator, the combination with a receiving-plate adapted to receive a charge of electricity, of a source of electricity for said plate, an inclined feed-plate the working face of which is formed partly of conducting and partly of non-conducting material, the conducting part of said feed-plate being within the inductive influence of said receiving-plate, mechanism for vibrating said feed-plate, and means for preventing the contact of the metallic particles with the said receiving-plate.

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

ALONZO H. PERRY. [L. s.]

Witnesses:

W. A. ALEXANDER,
JAMES H. BRYSON.