

No. 736,862.

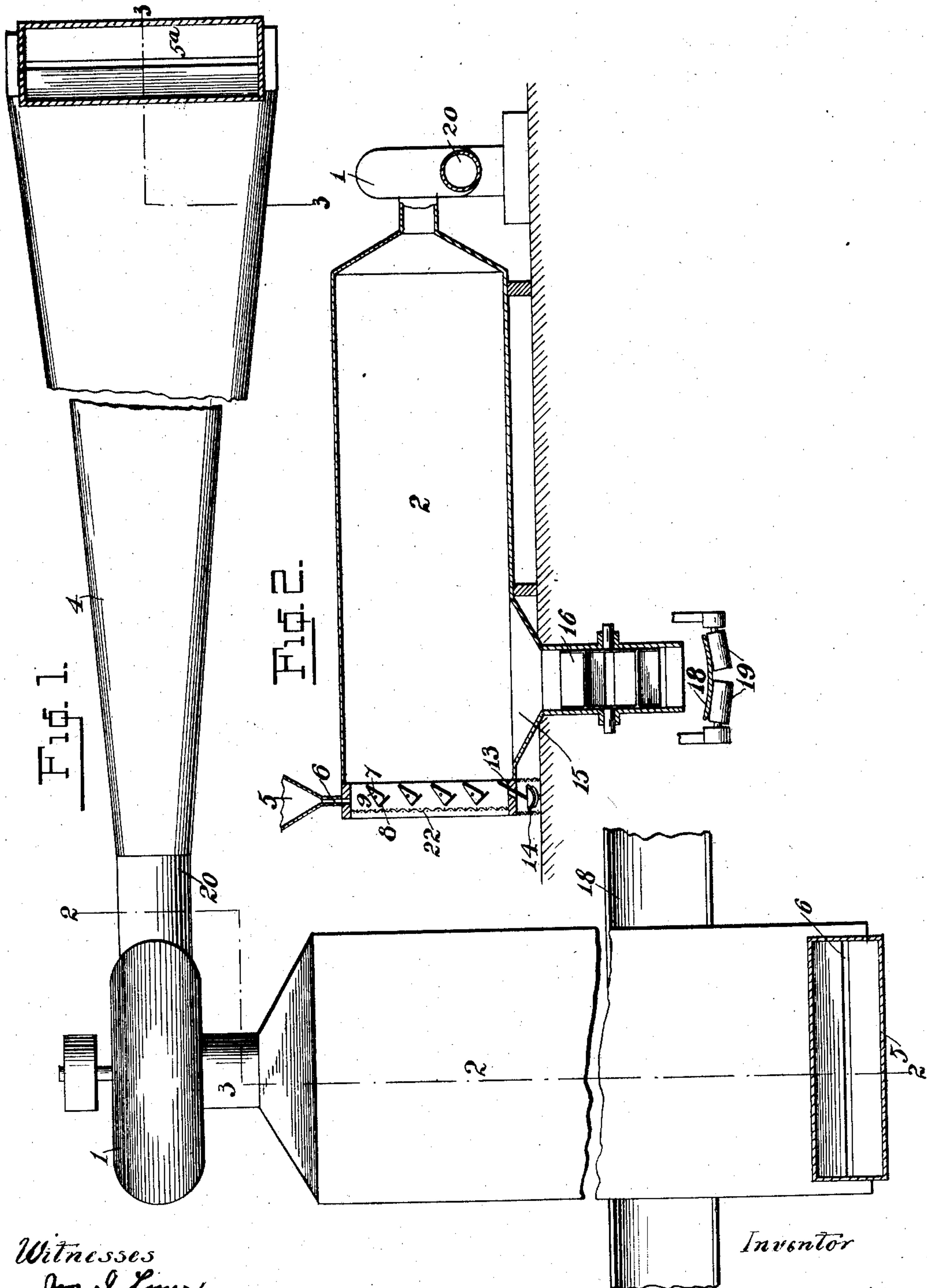
PATENTED AUG. 18, 1903.

T. M. MOE.
DRY SEPARATOR FOR METALS.

APPLICATION FILED JAN. 22, 1902.

2 SHEETS—SHEET 1.

NO MODEL.



Witnesses
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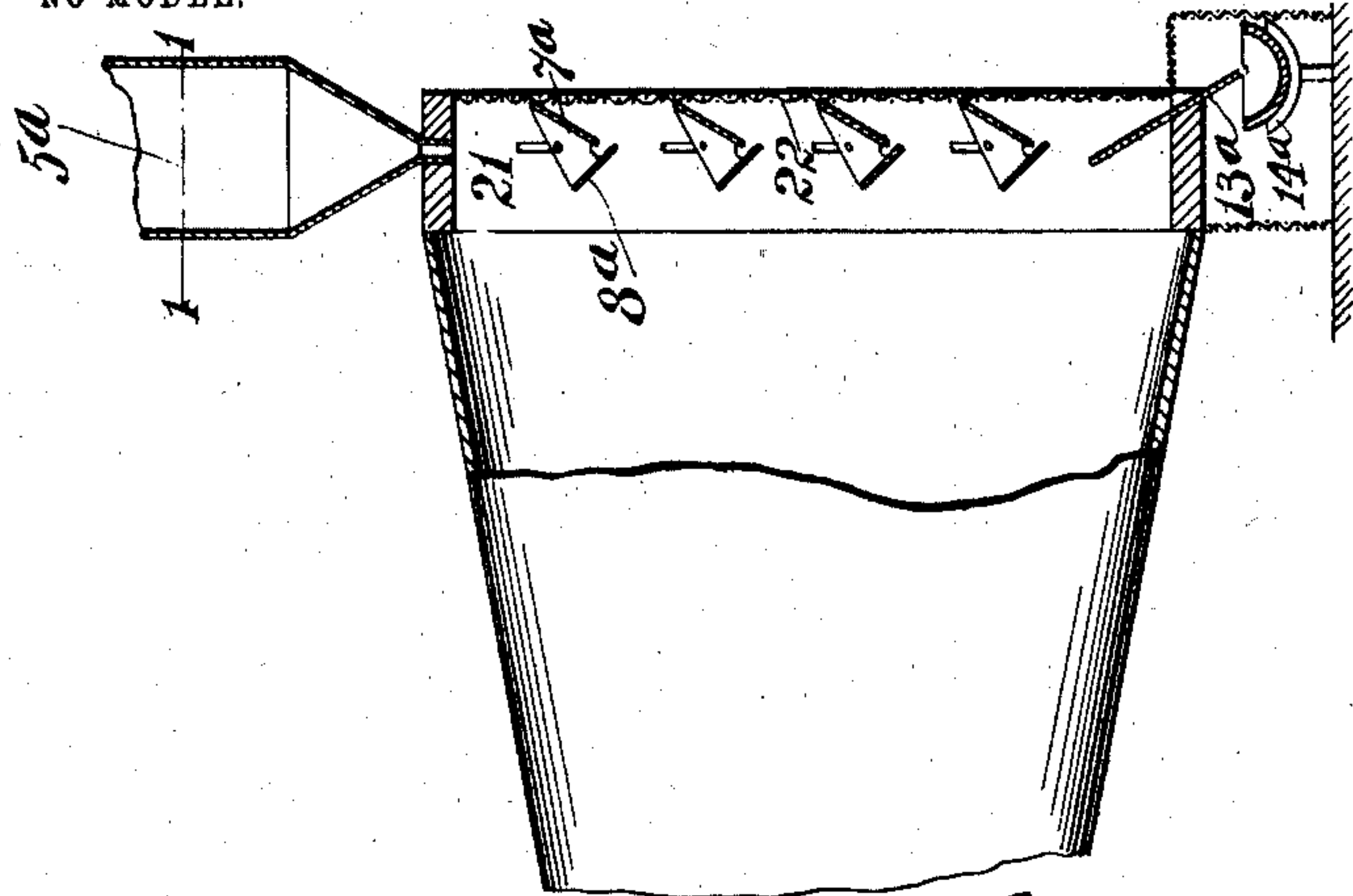


Fig. 3.

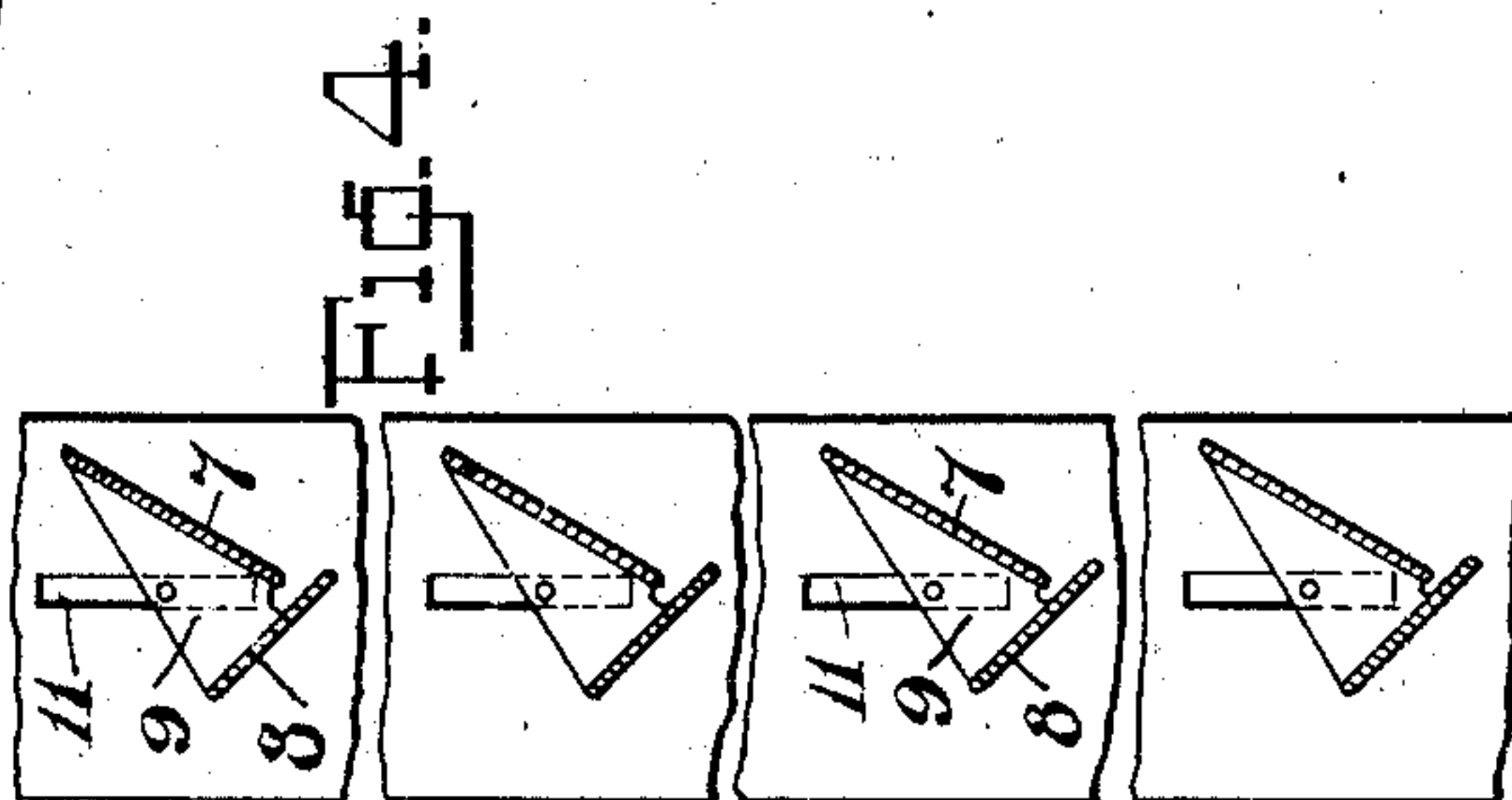
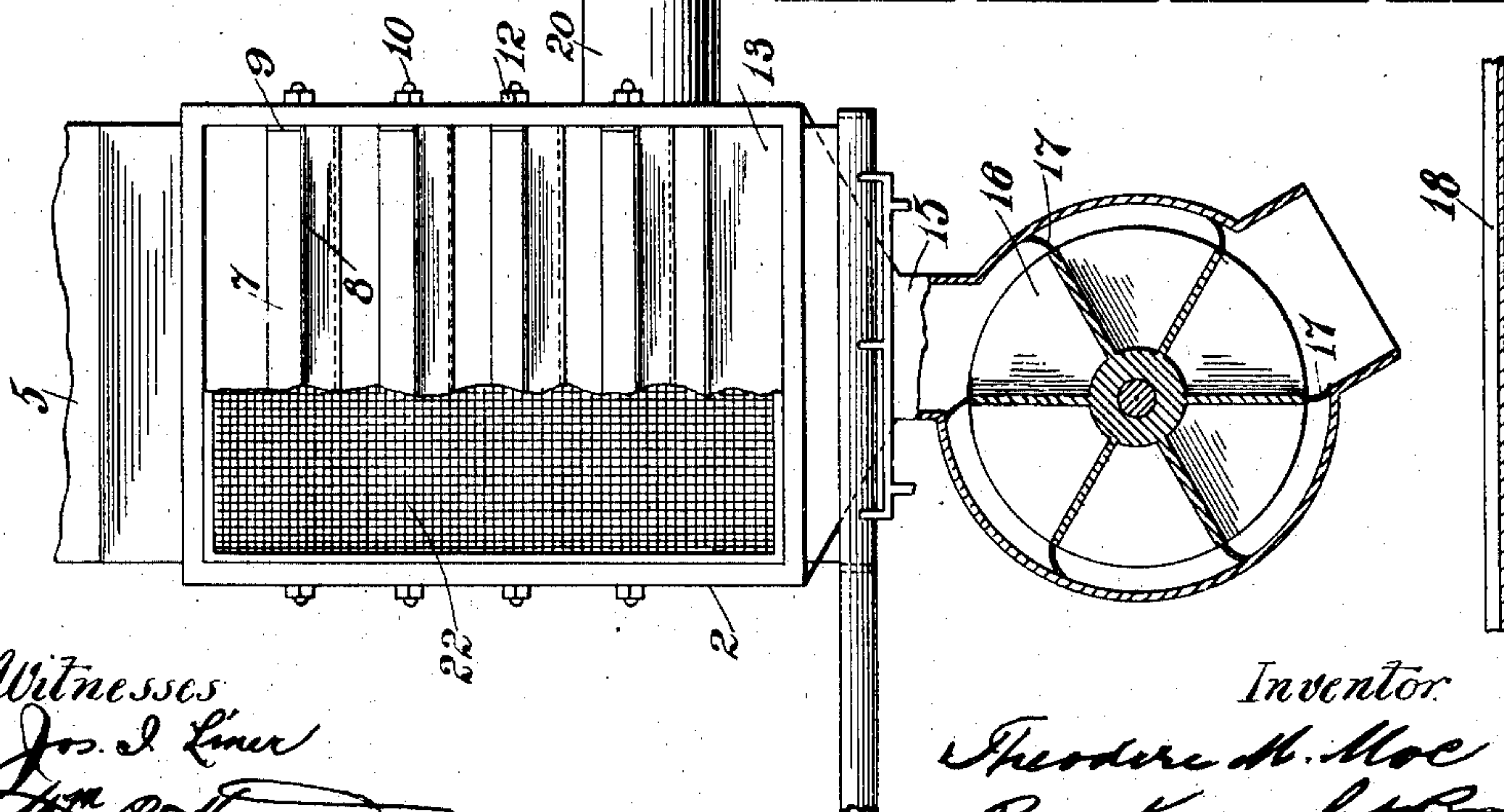


Fig. 4.



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UNITED STATES PATENT OFFICE.

THEODORE M. MOE, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO JAMES WESLEY HUTT AND WILLIAM HENRY SEIDEL, OF BROOKLYN, NEW YORK.

DRY SEPARATOR FOR METALS.

SPECIFICATION forming part of Letters Patent No. 736,862, dated August 18, 1903.

Application filed January 22, 1902. Serial No. 90,806. (No model.)

To all whom it may concern:

Be it known that I, THEODORE MILTON MOE, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented certain new and useful Improvements in Dry Separators for Metals, of which the following is a specification.

My improved separator is constructed with a number of inclined baffle-plates mounted in pairs one above another, with the front member of each pair of plates extending beneath the lower edge of the rear member without contact, so as to form a series of superposed troughs with open bottoms through which material to be separated falls, encountering as it falls from one trough to the next a strong current of air produced either by exhaust or blast, which carries away the lighter earthy matter and refuse from the metallic particles, while the latter fall from one open trough to another and are finally gathered at bottom in a suitable receptacle.

The invention further relates to other details of construction hereinafter described.

In the accompanying drawings, Figure 1 is a plan view of an apparatus illustrating my invention, partly in section on the line 1 1, Fig. 3. Fig. 2 is a vertical section thereof on the line 2 2, Fig. 1. Fig. 3 is a front elevation showing parts of the apparatus in section on the line 3 3, Fig. 1. Fig. 4 is a detail vertical section, on a larger scale, of the superposed pairs of baffle-plates.

For the purpose of illustration I have shown an apparatus provided with my separating devices at each end—one operating by exhaust and the other by an air-blast. In practice either or both of these may be used in carrying my invention into effect.

1 represents a blower, which may be of any known and suitable construction. For the purpose of illustration I have shown a centrifugal fan or blower of common form.

2 represents a horizontal flue connected at 3 with the eye or exhaust end of the fan, so that when the fan is in operation a powerful exhaust-current through the said flue will be produced by atmospheric pressure.

4 represents a second horizontal flue con-

nected with the delivery-mouth of the fan, so that a blast of air will be produced through the said flue.

Above the entrance to the flue 2 is an elongated hopper 5, terminating at bottom in a slot 6, which extends nearly or quite across the open end of the flue. Within the open end of the flue, directly beneath the hopper 5, are the baffle-plates 7 8, mounted in pairs in a vertical range, as shown in Figs. 2, 3, and 4. I have shown each pair of oppositely-inclined plates 7 and 8 fixed at their ends to end plates 9, having on their outer faces rigid gudgeons 10, projecting through vertical slots 11 in the walls of the flue and threaded at their ends to receive clamp-nuts 12, by means of which the respective pairs of baffle-plates may be adjusted in height.

As clearly shown in Figs. 2 and 4, the plates 7 and 8 of each pair converge downward without meeting at bottom, so as to form a trough-like structure with an open bottom, and the rear plate 7 extends upward to a considerably-greater height than the front plate 8, while the front plate 8 projects some distance beyond the lower edge of the plate 7. It will be further seen from the detail view, Fig. 4, that the distance between the lower edge of the plate 7 and the face of the plate 8 is less and less in the successive pairs of plates from top to bottom, or, in other words, the discharging-slot is narrower in the successive troughs from top to bottom, so as to deliver the material from one to another in a more and more attenuated sheet as the material is reduced in bulk and parts with more and more of its lighter earthy particles in its descent. The metal from which the earthy matter has been separated is delivered by a chute 13 into a receptacle of any suitable and preferred form. For illustration I have shown a drawer 14, having two compartments and adapted to be slid out from either side of the flue 2, so that one compartment may receive the separated metal from the chute 13 while the other is being emptied. For convenience of description the trough-like structures superposed one above the other will be hereinafter referred to as the "separating-troughs," while the first chamber, into which the air is

drawn by the suction of the fan, will be termed the "primary" separating-chamber, and the chamber out through which such air is forced by the blast action of the fan will be
 5 termed the "secondary" separating-chamber. The sand, earthy material, and other refuse or tailings are carried over by the strong air-currents passing through the contracted spaces above, between, and below the troughs
 10 and deflected by the inclined baffle-plates 7 8, forming said troughs, and on reaching the unobstructed interior of the flue 2 said tailings fall in a suitable discharging-hopper 15 and thence into the successive buckets of a
 15 discharging-wheel 16, which is rotated by the gravity of the tailings, and has at the outer edge of each of its blades a flexible packing 17 to prevent influx of air through the tailings-discharge to the exhausted interior of the
 20 flue. From the wheel 16 the tailings are dumped on a carrier or conveyer of suitable form. For illustration I have shown a conveyer consisting of a flexible apron 18, carried over inclined pulleys 19, so as to impart
 25 to said apron a concave or trough-like form, as shown in Fig. 2.

In order to increase the capacity of the machine, I connect with the discharge-mouth 20 of the fan a second flue 4, preferably of the
 30 flaring form shown in Figs. 1 and 3, in the outlet end 21 of which are mounted a second series of paired baffle-plates 7^a 8^a, arranged and operating precisely as described with reference to the plates 7 8, forming troughs with
 35 slotted bottoms, receiving material to be separated from a feed-hopper 5^a, and delivering the separated metal to a chute 13^a and thence to a suitable receptacle 14^a.

For use in separating precious metals the
 40 delivery-receptacles are protected by a cage or screen 22 to prevent access of the workmen to separated gold or other valuable matter.

By my improved system of dropping the
 45 gold-bearing sand or other material from one receptacle to another through a strong air-current moving in a horizontal direction, so that the air strikes the falling material at right angles, I have devised a dry separator
 50 which is very rapid and effective in operation and of great capacity in proportion to its size. It will further be recognized as an important practical advantage in my improved separator that the sand is not carried through the

fan, but falls within the flue, from whence it
 55 is readily removed. This method obviates the destructive wear to which the fan is subject in separators which discharge sand through the fan-case.

In practice the final discharge of air may
 60 be within a dust-room having canvas sides through which air gradually escapes, leaving within the room impalpable particles of gold which may pass through the fan in suspension in the air. Such a dust-room being an
 65 expedient familiar in milling and other operations, any representation thereof in the drawings is deemed unnecessary.

Having thus described my invention, the following is what I claim as new therein and
 70 desire to secure by Letters Patent:

1. The combination with a chamber, and means producing a current of air therein, of a plurality of separating-troughs arranged one above another and adjustable bodily,
 75 vertically, relatively to one another.

2. The combination with a chamber, and means for producing an air-current therein, of a plurality of separating-troughs arranged in the chamber one above another, and ad-
 80 justable bodily, vertically, relatively to one another, each trough being provided with a slit of less width than the one next above it.

3. The combination with a chamber, and means producing a current of air therein, of
 85 a plurality of separating-troughs bodily adjustable relatively to one another, and each trough comprising a narrow front baffle-plate, a wider rear baffle-plate in a higher plane than the front baffle-plate toward which it
 90 converges, and end plates securing the front and the rear baffle-plates together.

4. The combination with two chambers communicating with one another, arranged in the same horizontal plane, at right angles
 95 to one another, and open at their other ends; of a blower located at the apex of the angle formed by the chambers and arranged to produce a suction through one, and a blast through the other; separating-troughs near
 100 the open end of each chamber; and an air-tight discharge in the chamber in which the suction is created between the blower and the troughs.

THEODORE M. MOE.

Witnesses:

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