

O. M. MORSE, DEC'D.
S. G. MORSE, SPECIAL ADMINISTRATRIX.
DUST COLLECTOR.
APPLICATION FILED JUNE 9, 1909.

969,074.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 1.

FIG. 1.

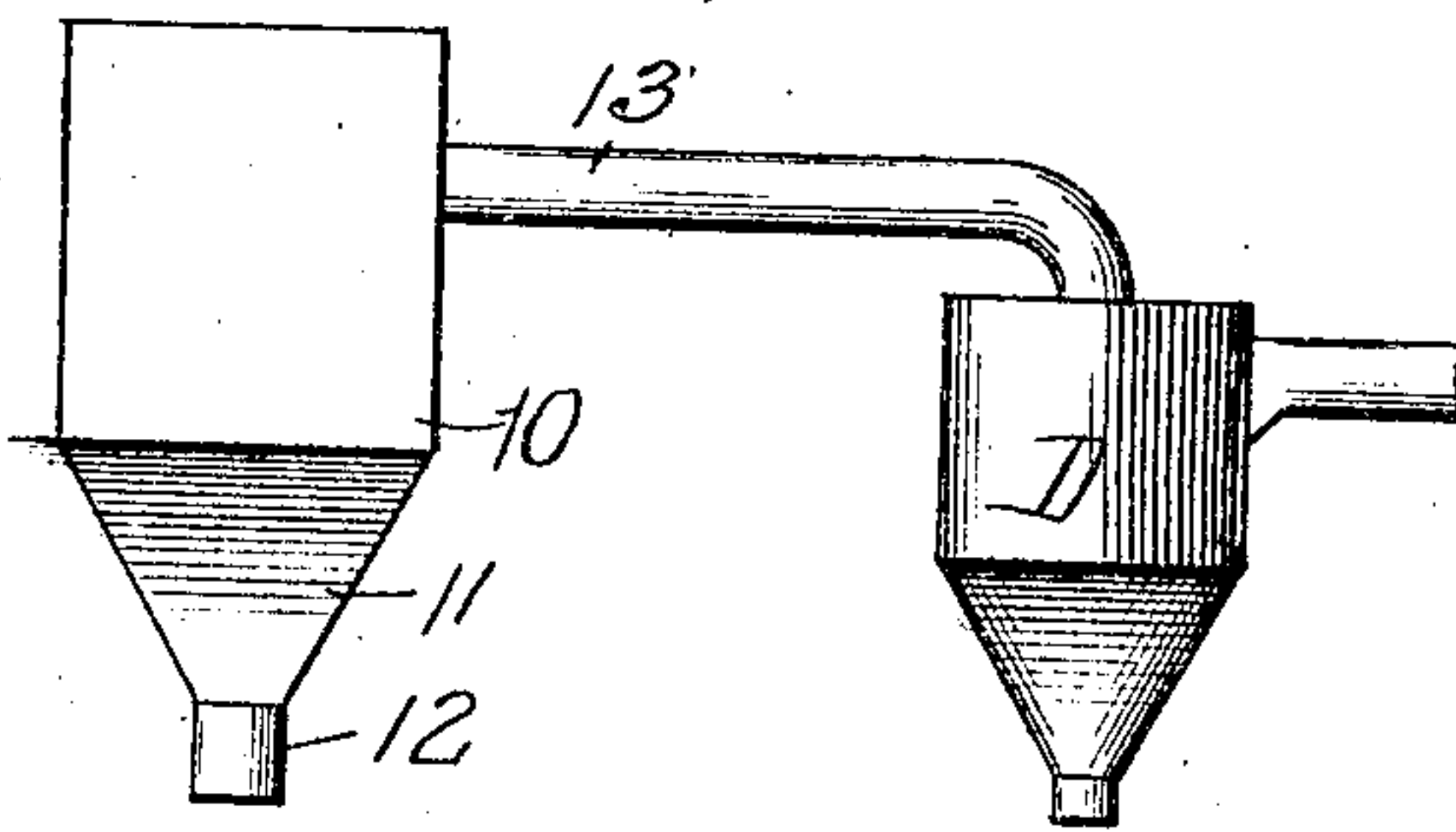


FIG. 2.

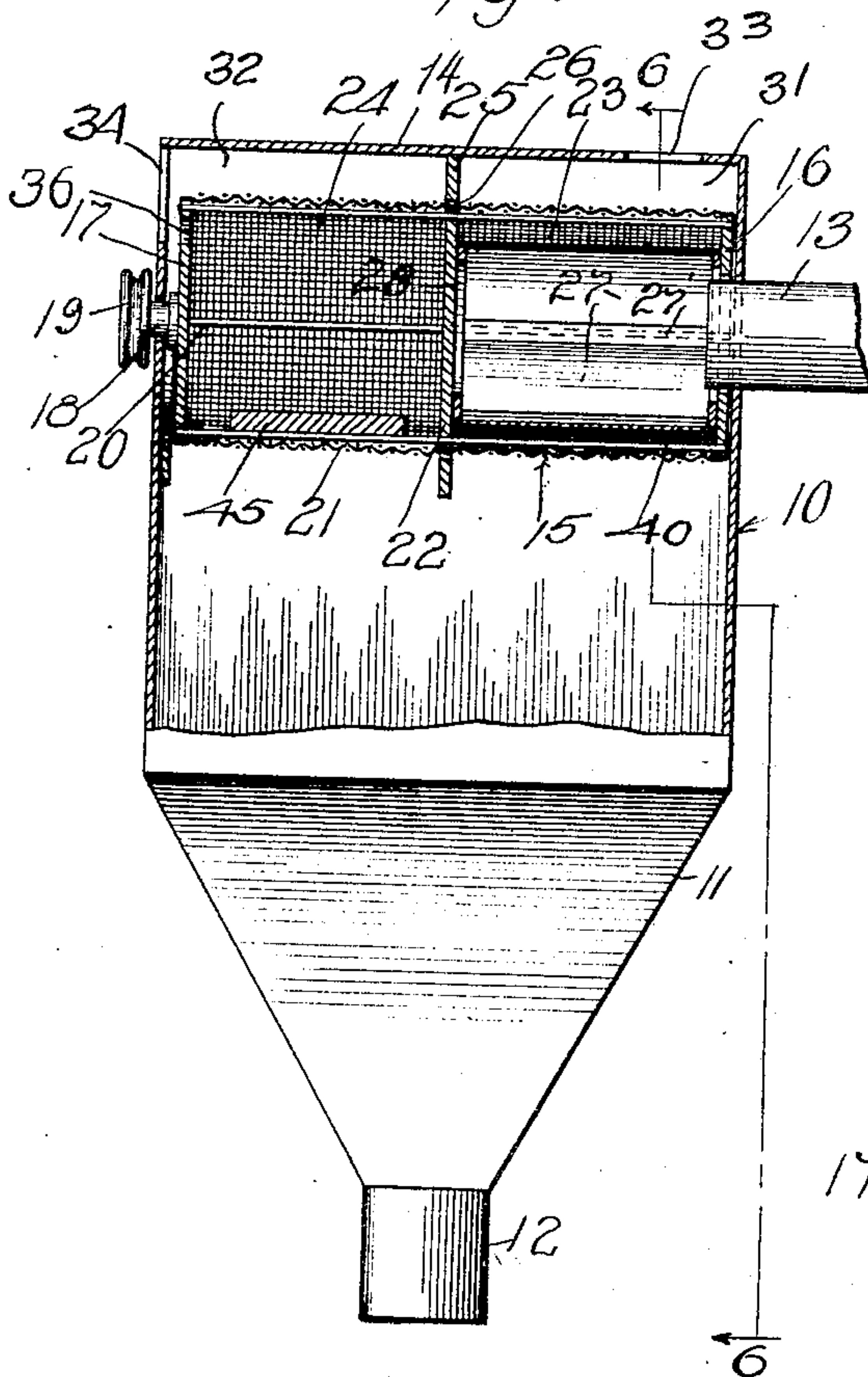


FIG. 3.

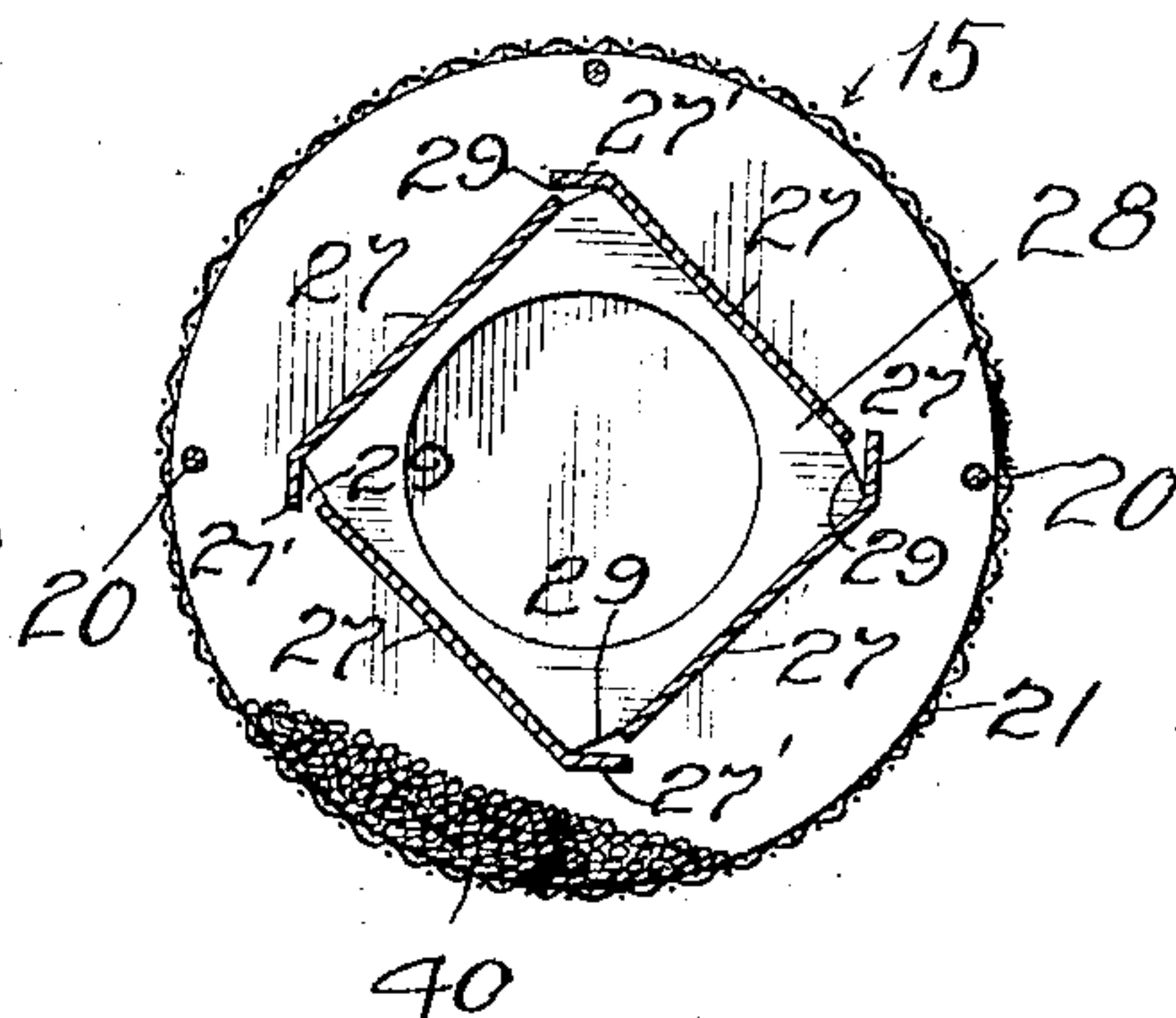
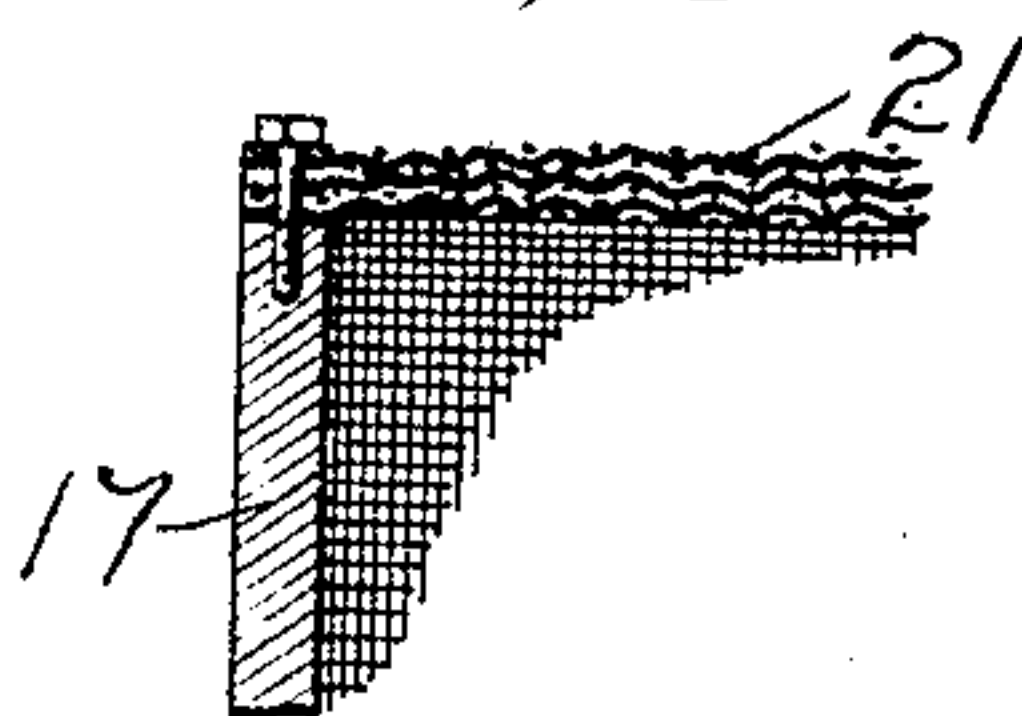


FIG. 4.



Witnesses
R. A. White.
C. P. L. White

Inventor:
O. M. Morse
By *Forrest Bain* and *May*
Attys.

O. M. MORSE, DEC'D.
S. G. MORSE, SPECIAL ADMINISTRATRIX.

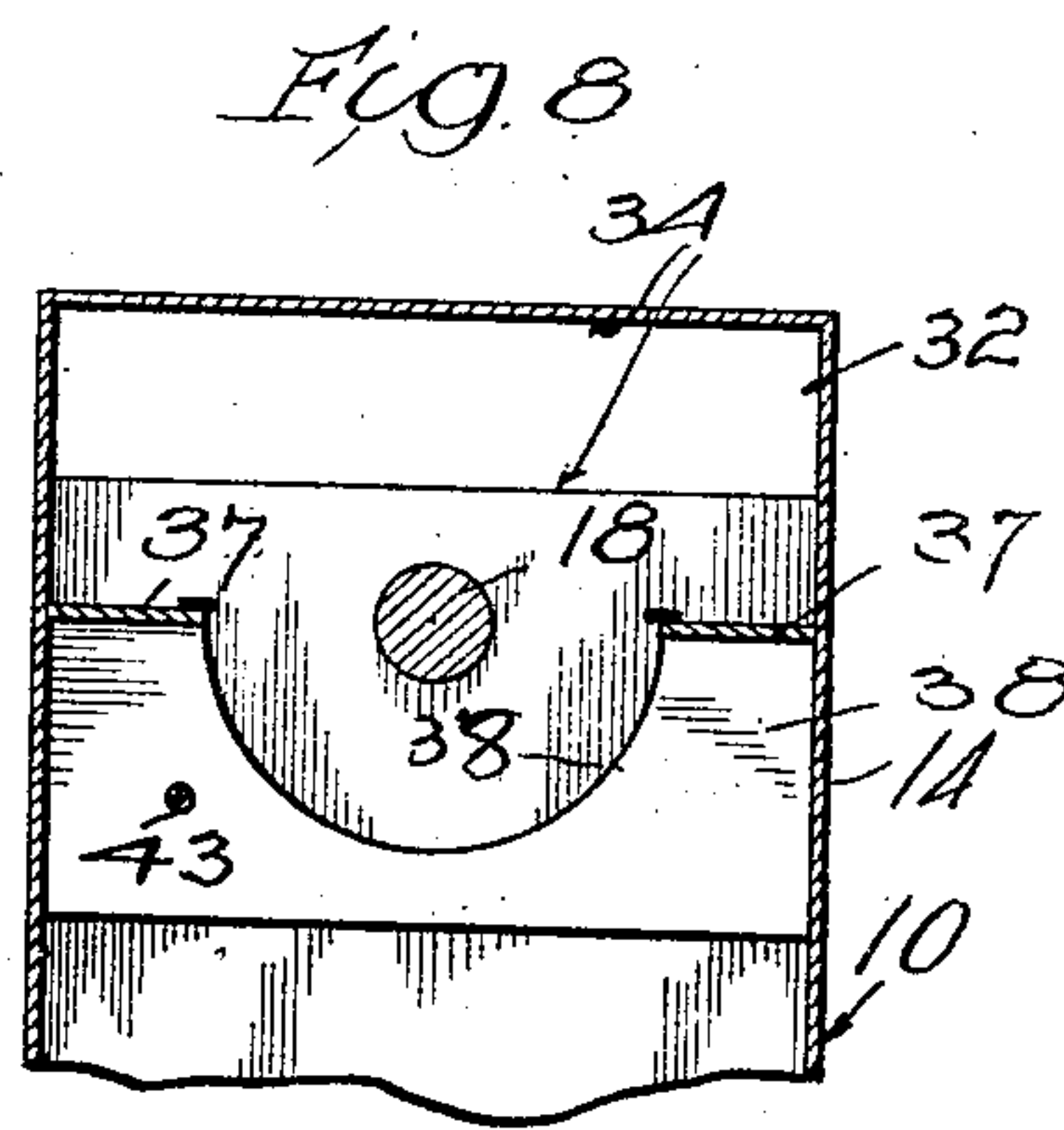
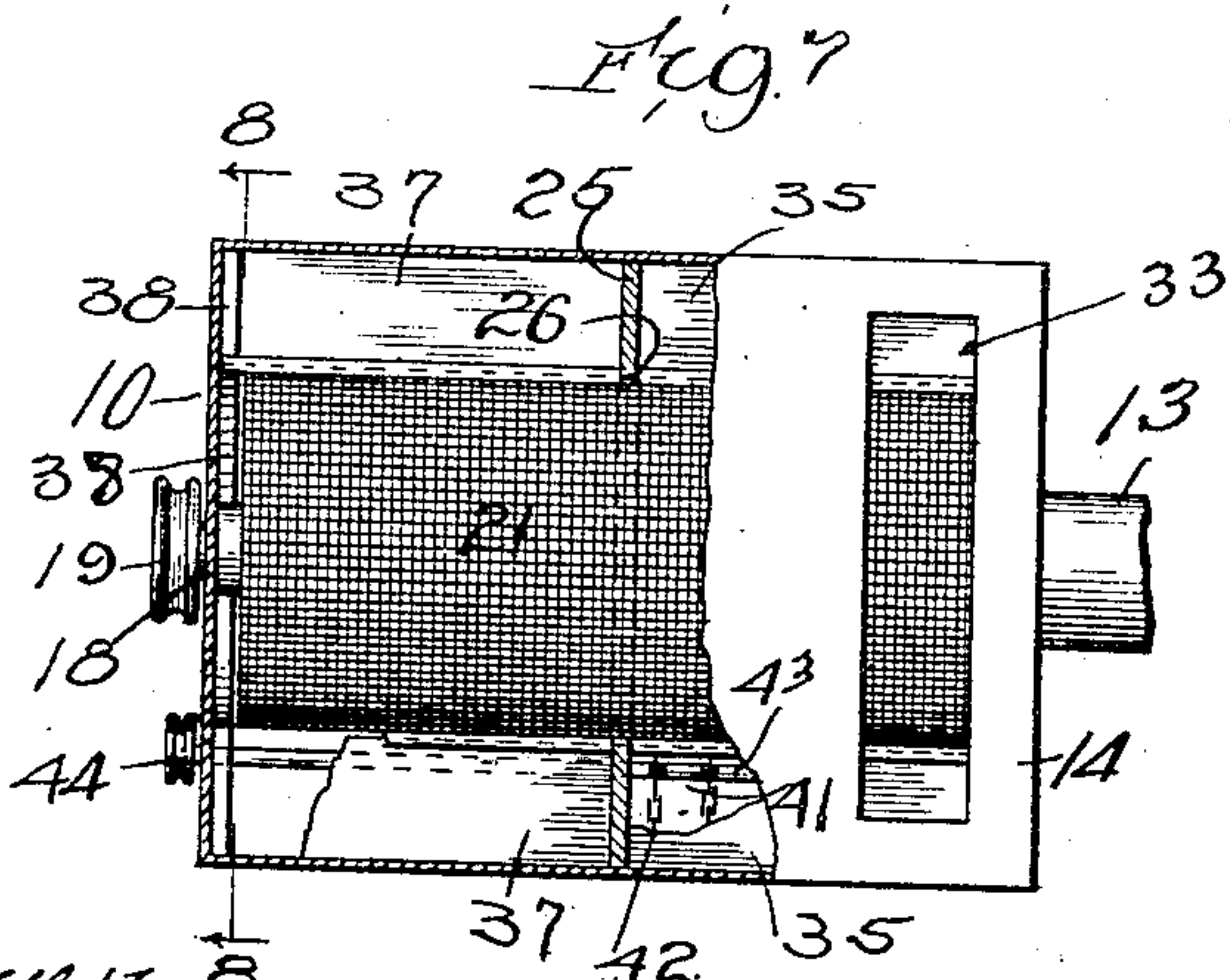
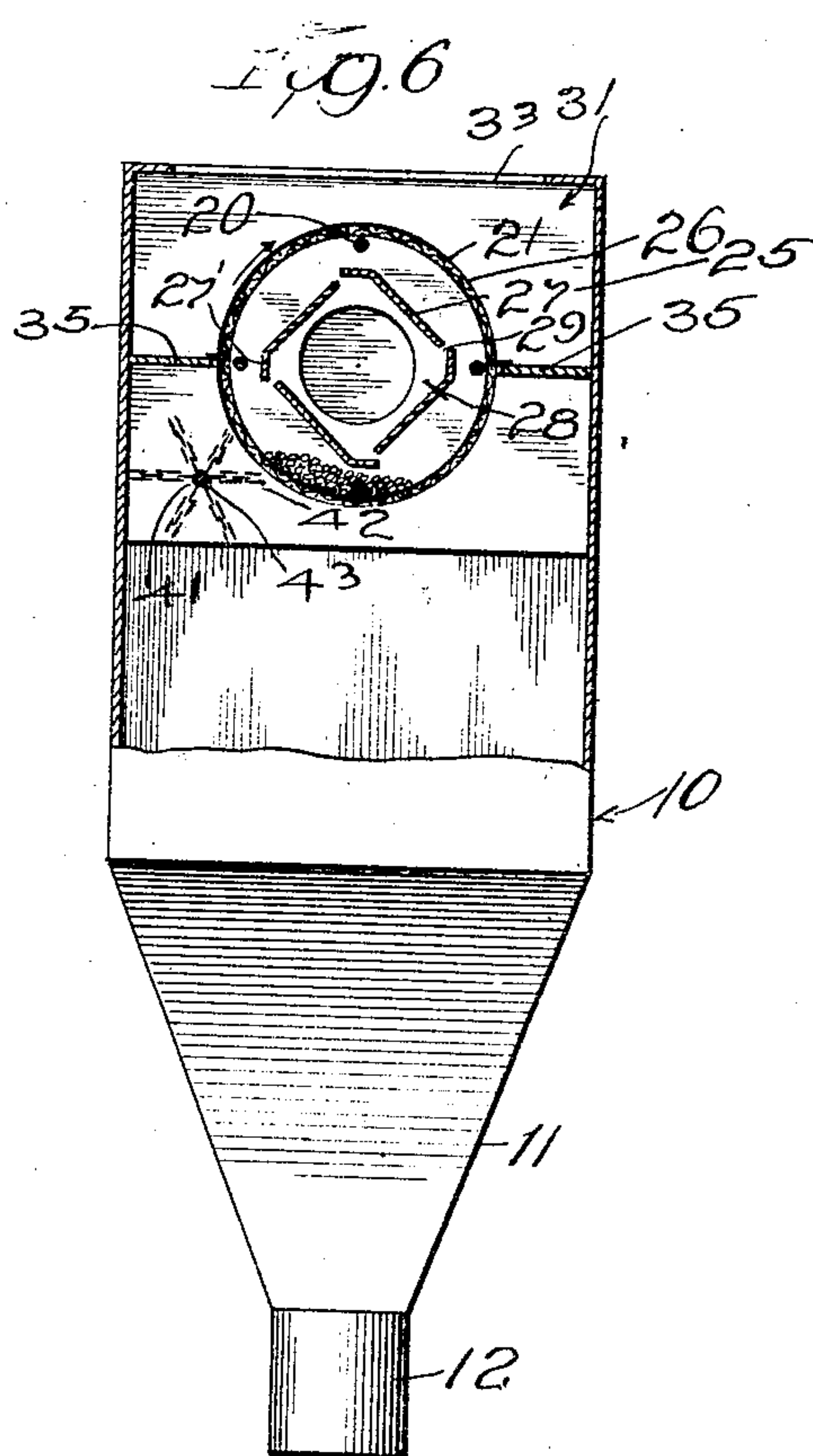
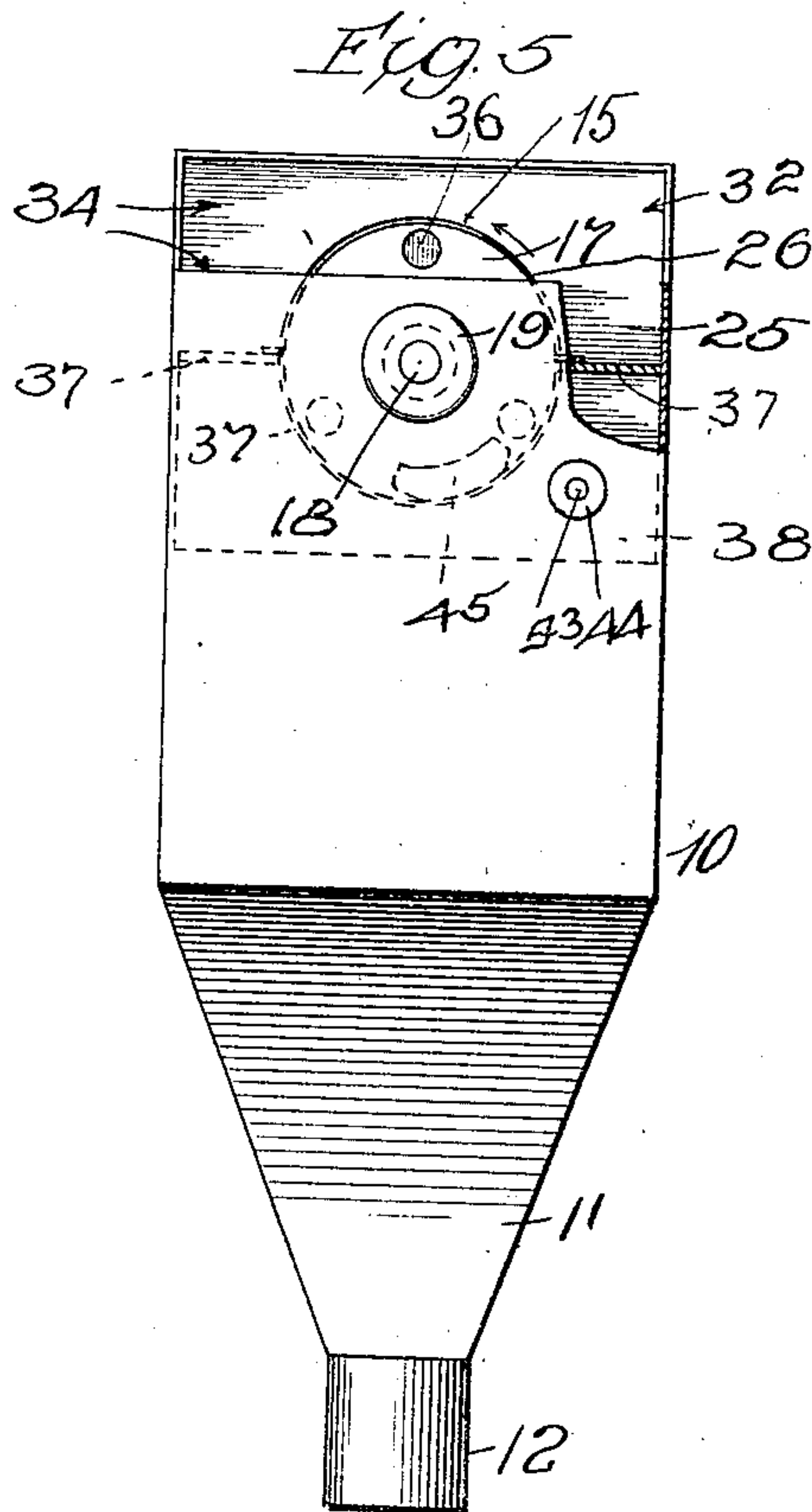
DUST COLLECTOR.

APPLICATION FILED JUNE 9, 1909.

969,074.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 2.



Witnesses:

R. A. White.

H. R. L. White.

Inventor:

Orville M. Morse

By Forster & Dinkley May
Attys

UNITED STATES PATENT OFFICE.

ORVILLE M. MORSE, OF JACKSON, MICHIGAN; SARAH G. MORSE SPECIAL ADMINISTRATRIX OF SAID ORVILLE M. MORSE, DECEASED.

DUST-COLLECTOR.

969,074.

Specification of Letters Patent.

Patented Aug. 30, 1910.

Application filed June 9, 1909. Serial No. 501,052.

To all whom it may concern:

Be it known that I, ORVILLE M. MORSE, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Dust-Collectors, of which the following is a specification.

My invention relates to improvements in dust collectors, and has for its general object to provide a collector which will efficiently gather or separate fine dust, such as that which commonly escapes or leaks from collectors of the cyclone type. I have found that such fine dust of an exceedingly light, impalpable character, may be collected by blowing the air laden therewith into a hood or screen of coarse wire mesh, and one of the salient objects of my invention is to provide a construction of a simple, economical, efficient character to facilitate the use and cleaning of such a screening agent.

In the drawings, wherein I have illustrated an embodiment of my invention; Figure 1 is a diagrammatic outline showing the association of a screening collector embodying my invention with a cyclone dust collector. Fig. 2 is a central vertical section through a dust collector embodying my invention. Fig. 3 is an enlarged section of an air delivering and screening element. Fig. 4 is a enlarged detail of a screen arrangement which I have found convenient; Fig. 5 is an end view of Fig. 2 from the left with parts broken away. Fig. 6 is a vertical section on line 6—6 of Fig. 2. Fig. 7 is a plan view with parts of the collector broken away. Fig. 8 is a sectional detail on line 8—8 of Fig. 7.

In the construction shown, 10 indicates in general a casing, preferably of rectangular form opening downward into a hopper 11 communicating with the delivery spout 12, said casing having at one end thereof an inlet spout 13 projecting slightly therein below the top 14, and which may, in general, be led from the source of dust supply, such as the outlet of a dust collector D of the centrifugal type.

Within the casing 10 I provide a screening agency, preferably in the form of a screening cylinder, generally indicated at 15 and comprising two heads 16 and 17, adjacent the opposite ends of the casing 10, the head 16 being apertured to surround the inwardly

projecting end of the inlet pipe 13 and the head 17 carrying a shaft extension 18, which passes through the opposite end wall of the casing 10; and bears a pulley 19 or other means for communicating motion thereto. The heads 16 and 17 may be spaced apart by longitudinal brace rods 20, which receive and afford support to the wire screening 21, which is preferably relatively coarse wire screening arranged in multiple ply, three layers, as shown in Fig. 4, being practically suited for the practice of my invention, although more or less layers may be employed. Centrally of its length the screening cylinder 15 is divided by a solid partition 22, into two end-abutting chambers 23 and 24, and the upper portion of the casing is preferably also divided in the same vertical line by a partition 25 extending down below the cylinder and apertured as at 26 for the passage therethrough of the screening cylinder. Within the chamber 23 I provide a distributing structure consisting of a series of walls 27 inclosing an inner rectangular air compartment 28, said walls 27 extending longitudinally the full length of the chamber 23 from the head 16 to the partition 22, and being so dispensed as to provide longitudinal slots or outlets 29 opening toward the surrounding screen cylinder in a direction preferably at right angles to radial, or as I will term it in a tangential direction, each wall 27 to this end terminating in an angular lip 27' disposed to direct the air passing thereby in the appropriate direction.

The compartment 31 between the partition 25 and the inlet end of the casing 10, which I will designate the primary compartment as distinguished from the opposite compartment 32, which I will term the secondary compartment, has a top outlet opening 33 therefrom, while the secondary compartment has an end outlet opening 34 near the top of the casing. Division walls 35 are preferably provided in the primary compartment 31, to segregate the dust discharge area below the axis of the cylinder 15 from the outlet area thereabove, such division walls extending the full length of the primary compartment, and from the side walls thereof approximately to the exterior of the screen cylinder. The head 17 of the screen chamber 24 is preferably spaced apart somewhat from the adjacent end wall of the

casing 10, and has apertures 36 provided therein at suitable intervals. Division walls 37, 37 may be provided in the same relation to the cylinder chamber 24 as are the walls 35 with respect to the opposite chamber 33, and in addition the space between the lower half of the periphery of the head 17 and the end wall may be substantially closed by a structure 38 so that throughout the length of the casing the only communication between the upper or outlet portion thereof and the lower or dust delivery portion thereof is through the screened cylinder chambers.

Means are preferably provided for cleansing the cylinder chamber 24 and for this purpose I have found effective a body of movable particles, such as a gravel mass 40 within the cylinder chamber, and the beaters 41, consisting of a series of short chains 42 attached to a longitudinal shaft 43 extending through the casing and driven by a pulley 44. Within the opposite cylinder chamber I may employ, if desired, a scouring block 45, although this may be dispensed with if desired.

In operation, air laden with light dust, from any source such as the outlet of a centrifugal dust collector D, enters the casing through the inlet pipe 13 and is discharged into the air compartment 28 from which it escapes, in lines tangential to the surrounding screening cylinder, through the openings 29. As the air flows tangentially through the wire mesh the dust settles upon the cylinder, probably owing to the eddy action in the current occasioned by passage through the wire mesh. Most of the outgoing air takes the path of least resistance through the upper half of the cylinder and escapes through the outlet 33 in a cleansed condition, but some of it escapes downward through the lower half of the cylinder into the dust delivery portion thereof to pass under the partition wall 25 toward the outlet 34 at the opposite end of the machine. The dust collected by the wire fabric of the initial chamber is constantly removed therefrom by the conjoint action of the gravel mass 40 and the beater chains 42, such dust dropping into the dust discharge area of the machine, through which the air in flow below the partition walls 25 must pass. Therefore, it is advantageous to have the secondary screening chamber in the path of the outgoing air following the direction of dust discharge to prevent escape of dust with such air. In the transit of such escaping air through the cylinder 24 and the end openings 36, such slight amount of dust as may have been carried up by the air is removed therefrom. As a matter of fact, however, very little dust accumulates upon the secondary end of the cylinder, for the great bulk of the incoming air having escaped upwardly from the primary cylinder chamber there is no

blast or decided draft through the dust discharge area, but only a very gentle air movement.

While I have herein described in some detail a particular embodiment of my invention which I have found to be advantageous in practice, it will be understood that wide variations might be made in the particular construction without departure from the spirit and scope of my invention, and I do not desire to be understood as limiting myself to the precise construction herein shown further than as specified in the claims.

Having described my invention, what I claim is;

1. In a dust collector, the combination of a cylinder providing a cylindrical wall of coarse mesh fabric, a chamber within said cylinder having outlets disposed to deliver air tangentially to the inner surfaces of the cylinder, and an inlet to the inner chamber.

2. In a dust collector, the combination of a casing, a rotatable cylinder within said casing, having an inlet in an end thereof, said cylinder providing a cylindrical wall of relatively coarse mesh fabric, means within the casing coacting with the cylinder, to divide the area exterior to the cylinder into upper and lower compartments, there being an air outlet from the upper or air-discharge compartment, a dust outlet opening to the lower compartment; and means for cleaning the bottom portion of the cylinder, which is adjacent the lower compartment.

3. In a dust collector, the combination of a casing, a rotatable cylinder within said casing providing a cylindrical wall of relatively coarse fabric, registering partitions in the cylinder and casing dividing the cylinder and casing into two compartments separated longitudinally of the cylinder, and means within the casing dividing the portion of the casing above the cylinder axis from that below the cylinder axis, said longitudinally separated compartments of the casing each providing an air outlet opening, above the cylinder axis and the lower portion of the casing providing a dust outlet opening, an air inlet to the interior of one longitudinal compartment of the cylinder, and means for cleaning a portion of the cylinder below the axis thereof.

4. In a dust collector, a casing, a cylindrical structure therein, comprising a cylindrical wall, of relatively coarse fabric, said cylinder having an air inlet opening to its interior, means within the casing establishing two paths of air delivery from said cylinder to the atmosphere in different directions, means for removing dust from that portion of the cylinder toward one only of said air paths, and a secondary screening agent in the last said air path.

5. In a dust collector, the combination of a casing, a cylindrical structure mounted for

rotation within the casing, having a cylindrical wall of relatively coarse fabric, registering partitions in the cylinder and casing dividing the casing and cylinder into longitudinally alining compartments communicating below the cylinder, an air inlet to one end of the cylinder, an air distributing structure in the compartment at such end of the cylinder for directing air tangentially to the surrounding fabric wall, means within the casing dividing the casing into upper and lower compartments throughout its length on substantially the axis of the cylinder, the compartment below the axis

of the cylinder providing a dust outlet, and each compartment above the cylinder providing an air outlet, and means for cleansing that portion of the cylinder nearest the inlet at a level below the axis of the cylinder, comprising a rolling body within the cylinder and means for jarring the fabric of the cylinder.

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

ORVILLE M. MORSE.

In the presence of—

JOHN L. BENTLEY,

WILLIAM B. KNICKERBOCKER.