

982,011.

A. W. NOHE.  
VACUUM RENOVATOR.  
APPLICATION FILED JUNE 26, 1909.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.

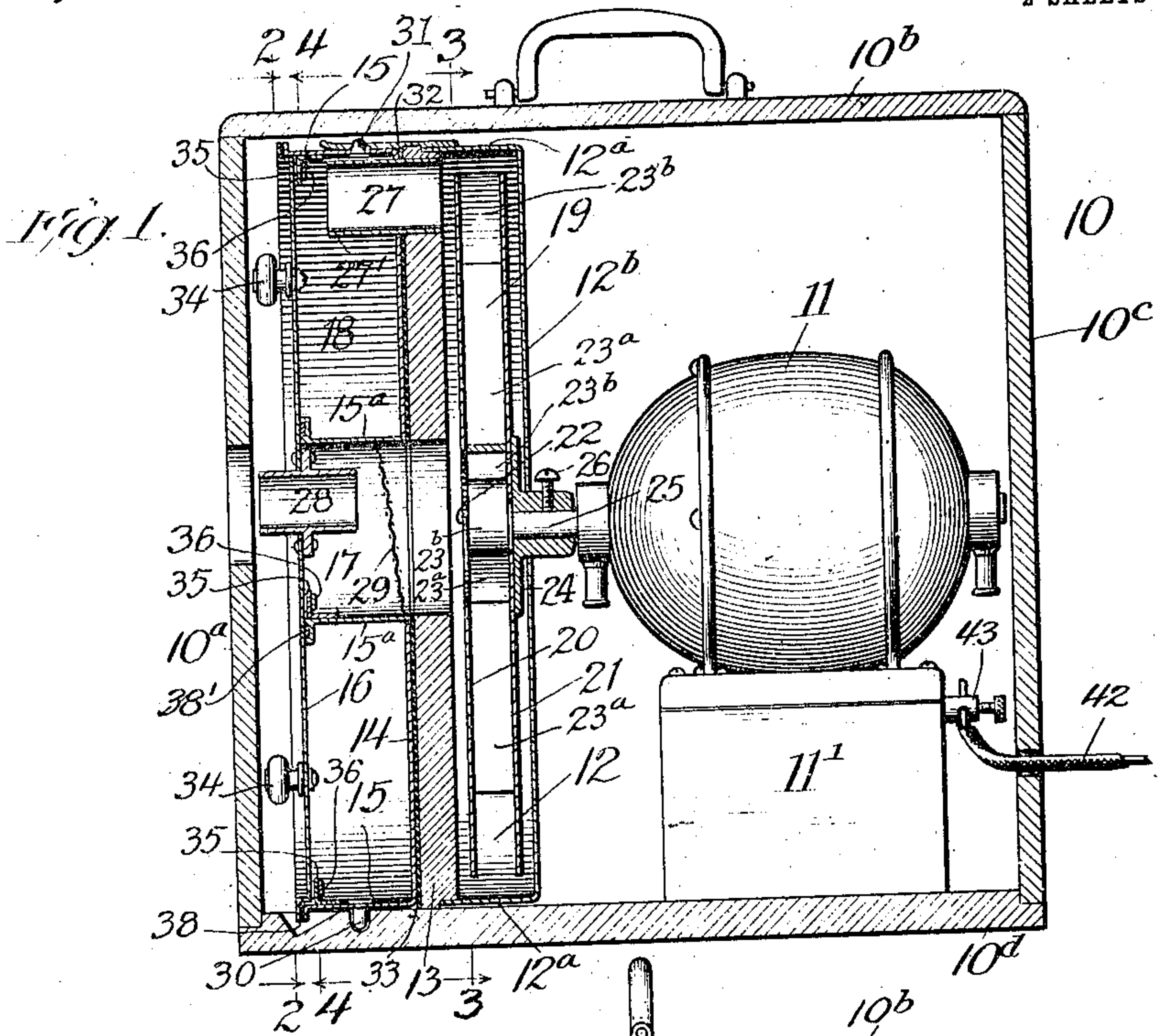
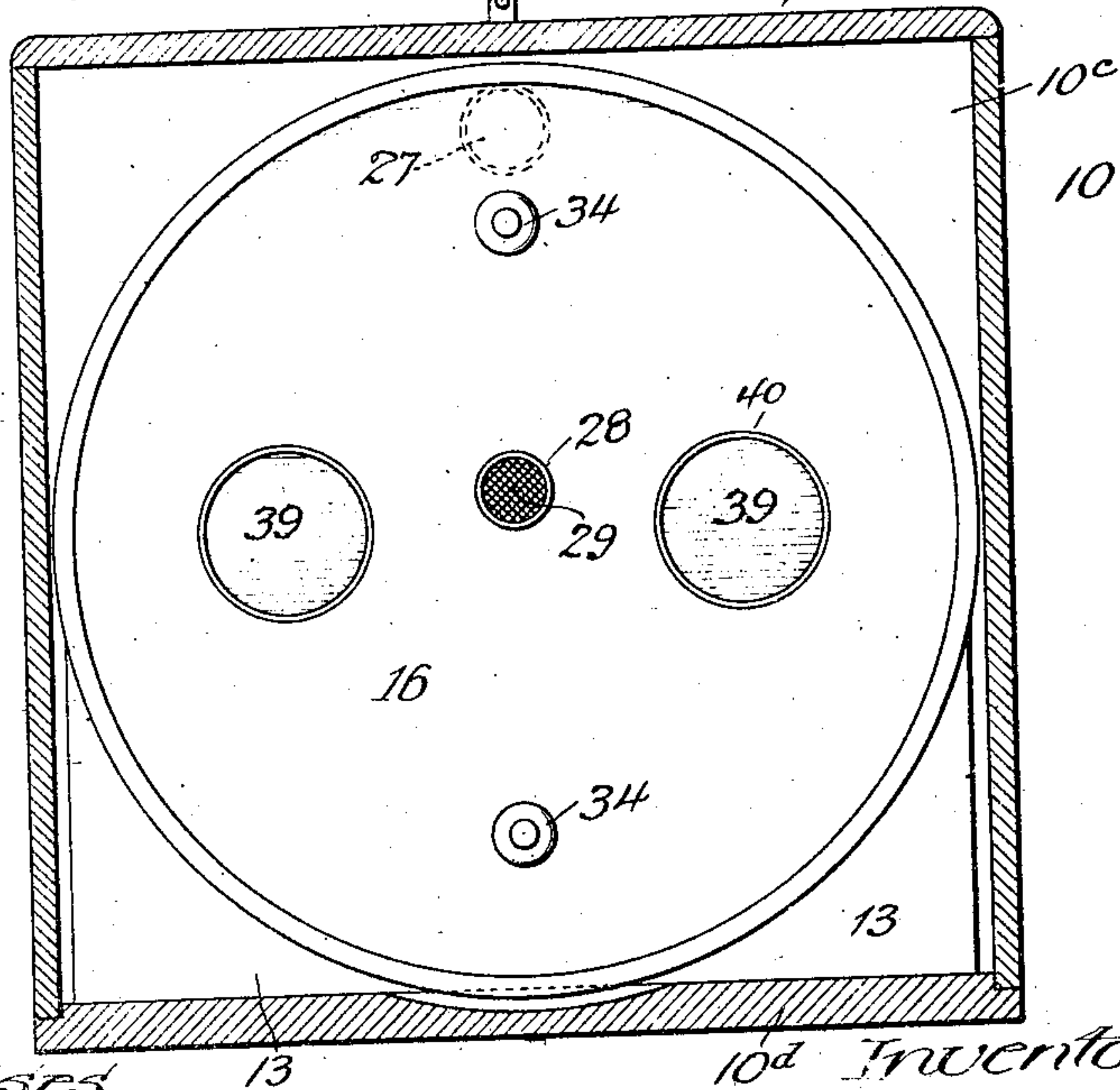


Fig. 2.



Witnesses  
H. R. L. White  
R. A. White.

Inventor  
Augustus W. Nohe.  
By Joseph Bain and Mary May Attys

A. W. NOHE.  
VACUUM RENOVATOR.  
APPLICATION FILED JUNE 26, 1909.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 2.

982,011.

Fig. 3.

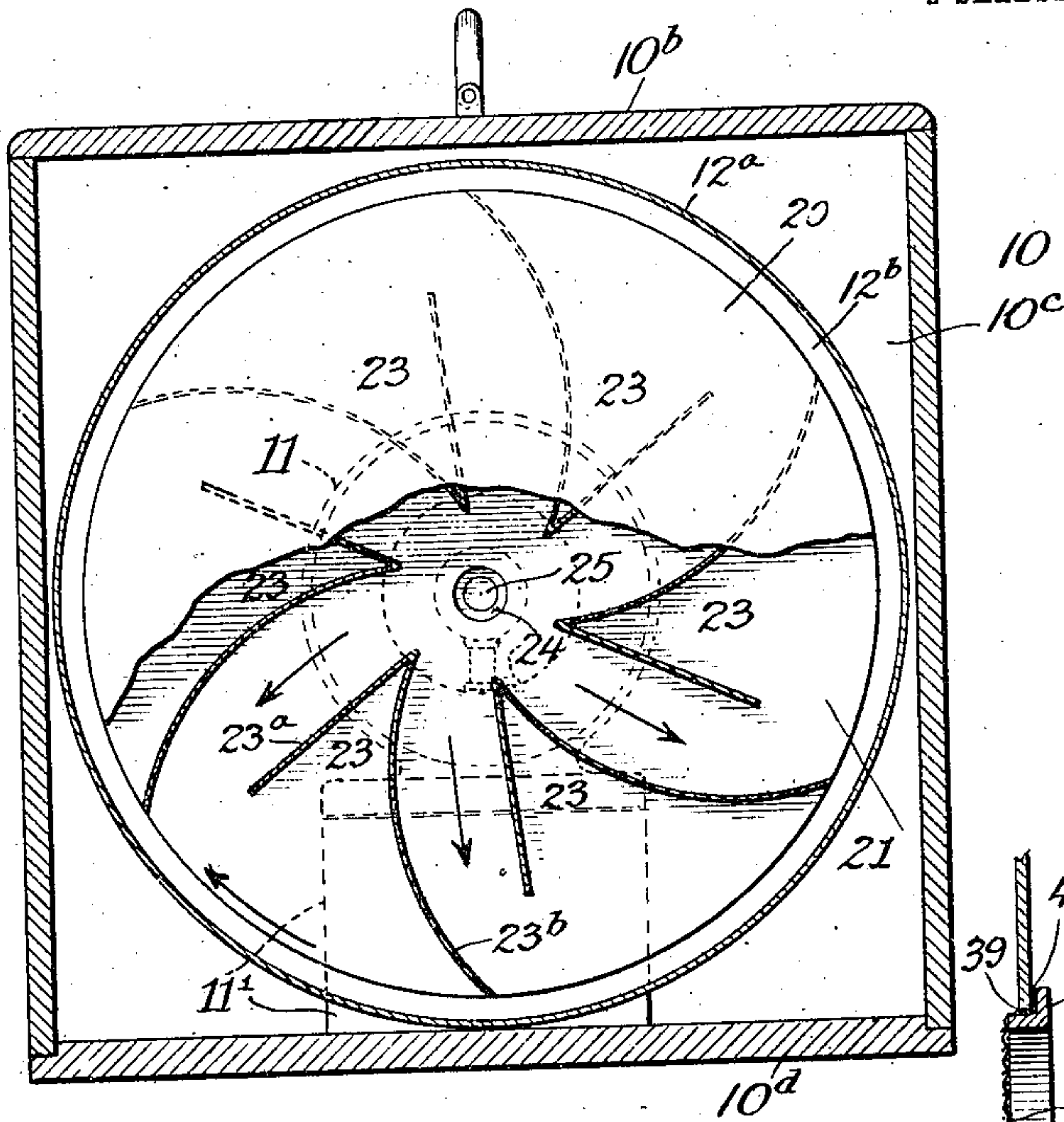
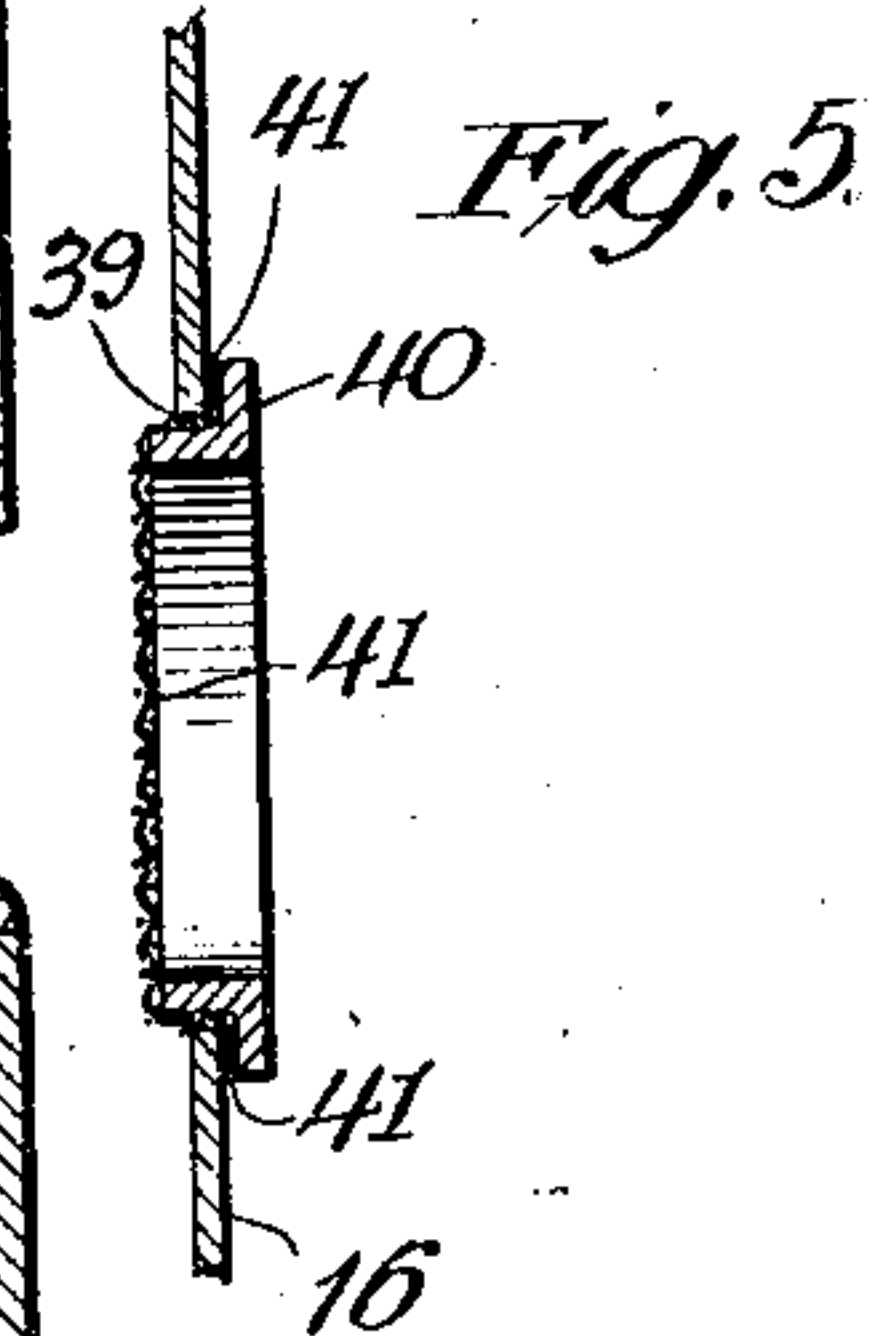
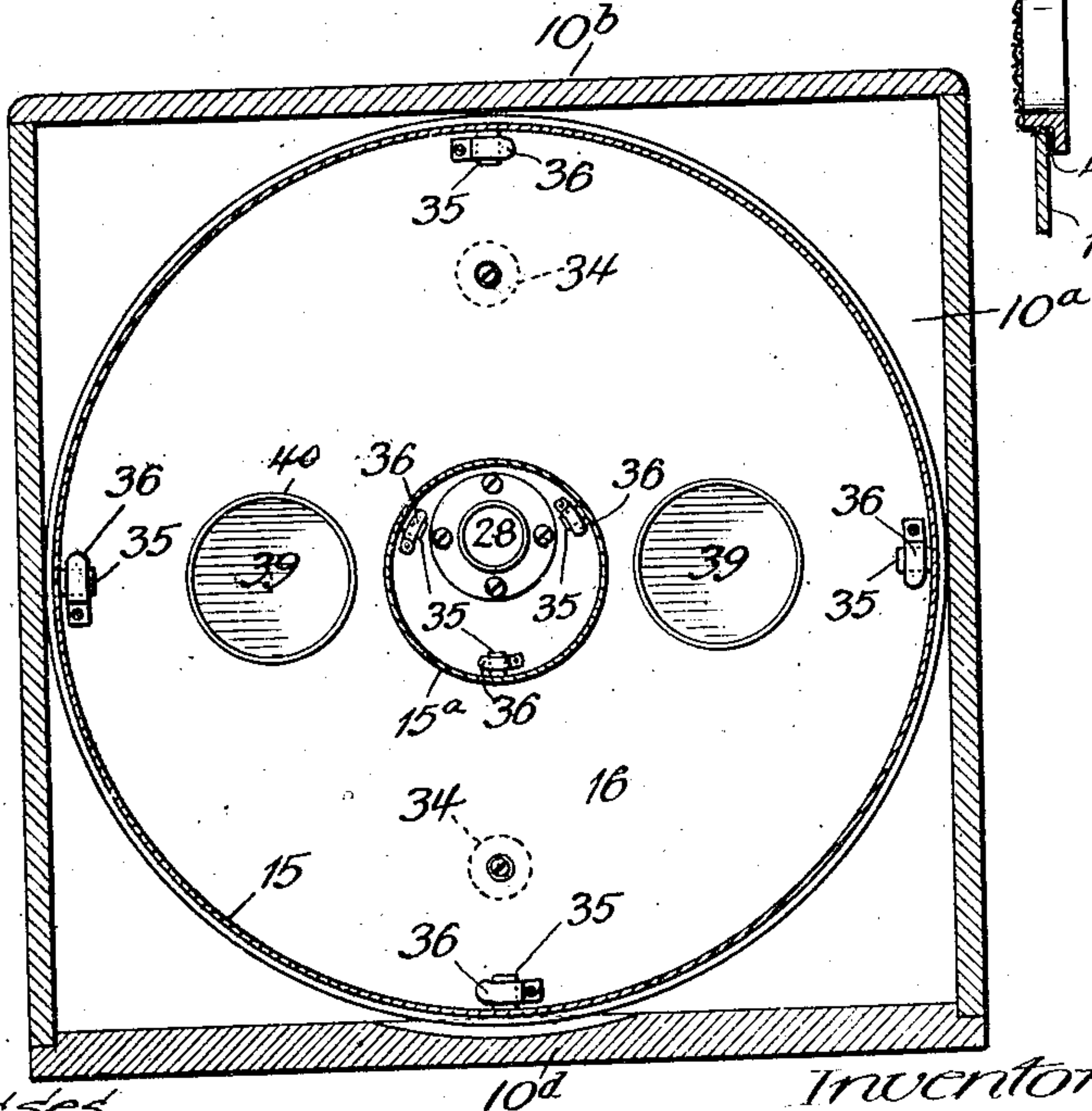


Fig. 4.



Witnesses  
H. R. L. White.  
R. A. White.

Inventor  
Augustus W. Nohe.  
By J. B. Bain and Mary [Signature]



# UNITED STATES PATENT OFFICE.

AUGUSTUS W. NOHE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE NOHE ELECTRIC HOME RENOVATOR CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## VACUUM-RENOVATOR.

982,011.

Specification of Letters Patent.

Patented Jan. 17, 1911.

Application filed June 26, 1909. Serial No. 504,429.

*To all whom it may concern:*

Be it known that I, AUGUSTUS W. NOHE, a citizen of the United States, residing at Chicago in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vacuum-Renovators, of which the following is a specification.

My invention relates to improvements in so-called vacuum cleaning or renovating devices.

One of the objects of my invention is to provide a convenient self-contained dust receptacle comprising two chambers, one of which is designed to catch the larger or coarser particles, the other chamber, the larger of the two, adapted to catch and hold all of the smaller particles of dust, both of which may be contained within the same casing and conveniently removed from association with the fan for cleaning.

Other and further objects of my invention will readily become apparent to those persons skilled in the art from a consideration of the specification and drawings.

In the drawings:—Figure 1 is a vertical central section; Fig. 2 is a section taken on line 2—2 of Fig. 1, looking in the direction of the arrow; Fig. 3 is a section taken on line 3—3 of Fig. 1, looking in the direction of the arrow; Fig. 4 is a section taken on line 4—4 of Fig. 1; and Fig. 5 is an enlarged fragmentary view of a detail.

In all the views the same reference characters indicate corresponding parts.

My invention is especially well adapted for use to remove dust from fabrics such as carpets, rugs, clothing, or the like, by forcibly inducing a current of air of high velocity to pass through or adjacent such fabrics, thereby lifting the dust and conveying it through a suitable conduit to the chambers prepared for it, where it is then deposited and held until it may conveniently be removed.

The device is also adapted to produce and forcibly project currents of air into inaccessible places to dislodge dust therefrom so that when it settles in more accessible places it may subsequently be more conveniently and readily taken up by the vacuum action of the machine.

The part 10 is an outside casing, the wall 10<sup>a</sup>, 10<sup>b</sup>, and 10<sup>c</sup>, forming a housing and being readily removable. Upon the base, 10<sup>d</sup>, thereof the electric motor 11 is secured.

11' is a means for elevating the motor so that its axis is in coaxial relation with the axis of the fan. A fan-casing 12 for containing the fan is composed of the walls 12<sup>a</sup>, 12<sup>b</sup>, preferably of sheet metal, and the wall 13, preferably of wood. A flat cylindrically-shaped dust receptacle is made up of the walls 14, 15, 15<sup>a</sup>, and the removable cover 16. The dust receptacle, preferably, contains two chambers for the reception of dust and particles carried by the stream of dust-laden moving air driven by the operation of the fan. The chamber 17 is designed to catch and retain the large particles, the larger annular chamber 18 being arranged and adapted to receive and retain the smaller particles of dust.

The fan 19 is made of two parallel disks 20 and 21 of sheet metal, preferably of aluminum, in size somewhat smaller than the full interior diameter of the fan casing 12. The disk 20 is perforated, as at 22, near the fan axis, for admission of air between the two fan disks. The disks are held apart, in spaced relation, by the fan blades 23, of which there are six in the illustrated embodiment, each blade, as shown, being composed of a substantially true radial part 23<sup>a</sup> and a backwardly curved part 23<sup>b</sup>. The reason for the angular form of the blades will be more fully hereinafter explained.

The disk 21 of the fan 19 is secured near its axis to a flanged collar 24, which is in turn secured to the motor shaft 25 by means of a set screw 26. By this means, the fan is driven when the motor is energized.

The wall 13 is perforated, as at 27, and provided with a thimble therein secured to the wall 13, to afford communication between the fan casing and the dust chamber 18. There may, if desired, be several such openings, provided they are near the periphery of the fan casing where the air is moving at its greatest velocity.

The front wall or cover 16 of the dust chamber 17 is provided with a flanged nipple 28 for the admission of dust-laden air and as a means by which a suitable nozzle-carrying hose may be conveniently attached. A relatively coarse screen 29 may be placed across the axis of the dust chamber 17 to catch and retain the larger particles carried by the moving air-current within the dust chamber 17 and to permit the smaller particles to pass through the fan and into the



surrounding dust chamber 18. This screen may or may not be used as desired.

The dust receptacle, comprising the chambers 17 and 18, is bodily removable from association with the fan chamber, after which the cover 16 may be conveniently removed, thus leaving both chambers open for the ready removal of the dust from both chambers at the same time. The dust receptacle is provided with a short stud 30 which projects from its periphery and which is adapted to enter a depression in the base. Another short stud 31 projects from the opposite diameter over which a spring latch 32 snaps to secure the dust receptacle in place. 33 is a disk of yielding material, such as soft rubber or felt, to provide a packing between the dust receptacle and the disk 13, so that there may be no air-leak between the dust chambers. The cover 16 is provided with knobs 34—34, by means of which the cover may be slightly rotated in the act of removing it from the receptacle. Fastening means for the cover 16 consist of a plurality of projecting parts 35, secured at intervals to the walls 15—15<sup>a</sup>. Corresponding tongues 36—36 are secured to the cover 16 and bent out therefrom on an angle so that when the cover is placed in position and slightly rotated in a direction toward the projections 35, the cover will be drawn tightly into contact with the face edge of the walls 15—15<sup>a</sup>, as clearly shown in Fig. 1. These walls may be flanged and packing rings 38—38 of some soft yielding material, such as felt or the like, may be placed thereon and secured in any suitable manner to render the joint between the cover and the said walls substantially air tight. Air exit openings 39—39, of which there may be a greater or less number, are preferably made in the cover 16.

Fig. 5 illustrates in detail the preferred means employed for securing the reticulated material over the opening so that the air, freed from dust particles, may readily escape from the dust chamber. 40 is a flanged ring of such size as to be easily forced and retained within the opening 39 when covered with the fabric 41 of relatively fine mesh, such as cheese cloth, unbleached muslin, or the like. The flanged portion of the ring is located on the inside of the cover so that the air pressure within the dust chamber tends to hold it in place. When the cloth becomes clogged with fine dust particles, new screens may be cheaply and quickly supplied simply by substituting a new piece of fabric, holding it in front of the ring and pressing the ring in place.

The electric motor 11 has electric connection with the source of electric supply by means of a flexible duplex conducting cord 42, which passes through the wall 10<sup>c</sup> of the casing and is secured in the motor ter-

minal binding posts 43—43, of which there are two.

The operation of the device is as follows: The fan is rotated in the direction of the arrow shown in Fig. 3. Dust laden air enters the opening 28, passes into the opening 22, into the space between the fan disks 20—21, and passes out of the fan near its periphery, through the opening 27 into the dust chamber 18. The purified air then escapes through the reticulated fabric 41, through the openings 39, leaving the dust in the chamber 18. When the screen 29, which is of much coarser mesh than the screen 41, is used, the coarser particles carried in the stream of air are left in the chamber 17. Of course it is to be assumed that a suitable nozzle and hose is to be attached to the thimble 28, as usual with such devices. When the air enters the throat 22 of the fan, it finds a radial path of substantially uniform area provided between adjacent blades, owing to their peculiar angular shape; as a result, the air is confined to this contracted path and is not permitted to expand into a larger area between the adjacent blades, as usual in such structures, it moves at a much greater velocity than otherwise, and, therefore, a greater tendency is produced by its operation to the production of a vacuum. When it is desirable to empty the dust from the dust chambers, the housing 10<sup>a</sup>, 10<sup>b</sup>, 10<sup>c</sup>, etc., is first lifted from the base 10<sup>d</sup> by means of a handle provided for the purpose. The latch 32 is lifted above the stud 31, the top of the receptacle gently pulled outwardly at the top, when it will move outwardly, being separably hinged on the stud 30 at the bottom, and it may then be lifted from place. A slight turn of the cover 16, by means of the knobs 34 removes the tongues 36 from engagement with the projections 35, when the cover may be removed and both of the dust receptacles 17 and 18 may be emptied of their contents at one and the same time. While the dust receptacle is out of place, the hose, carrying a suitable nozzle, may be placed on the thimble 27, which is permanently fixed in the disk 13, and air may be projected through the hose and nozzle for the purpose of dislodging dust that may be contained in otherwise inaccessible places.

While I have herein described in some detail a particular embodiment of my invention, it will be apparent to those skilled in the art that numerous changes in the details of construction might be made without departure from the spirit of my invention and within the scope of the following claims.

What I claim is:

1. In a device of the character described, a fan, comprising two parallel disks spaced apart, one of which is perforated near its axis, separating blades radially arranged between the disks, a casing surrounding the fan



perforated near its axis and its periphery and a dust receptacle perforated substantially coextensively and coördinately with the fan casing.

5 2. In a device of the character described, the combination with a circular fan casing having a central fan inlet, of two dust receptacles, one of said receptacles arranged and adapted to receive the dust laden air before it enters the fan inlet, the other receptacle adapted and arranged to receive the dust laden air after it passes through the fan casing, said receptacles being included within the radial extent of the fan casing and means in the respective receptacles for collecting and depositing therein the dust from the air.

15 3. In a device of the class described, the combination with a fan, of a dust receptacle, of flat cylindrical form, the central area containing a dust receiving chamber to receive relatively large particles from the dust laden air, the surrounding annulus comprising a chamber for receiving the finer particles from the dust-laden air, and a closure for  
25 both chambers.

4. In a device of the character described, the combination of a dust receptacle containing a chamber for receiving large particles of dust and a chamber surrounding the first chamber for receiving finer particles of dust, 30 means within the first chamber for collecting large particles of dust, means within the second chamber for collecting finer particles of dust, and a fan having a casing providing an air path between said chambers. 35

5. In a device of the character described, a fan, a circular housing therefor having a central inlet and a peripheral outlet, a dust receptacle in alinement and coextensive with the inlet, a dust receptacle connected with the outlet and coextensive with the fan housing, and appropriate dust collecting and depositing means in each said receptacle. 40

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

AUGUSTUS W. NOHE.

In the presence of—  
W. LINN ALLEN,  
MARY F. ALLEN.