W. H. KELLER.

VACUUM CLEANER.

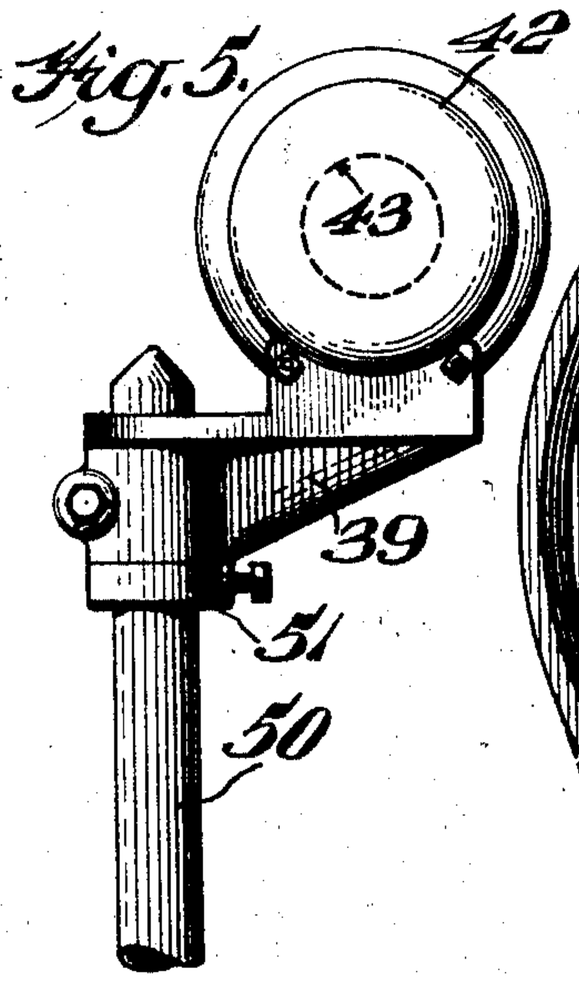
APPLICATION FILED JUNE 15, 1909.

999,371.

Patented Aug. 1, 1911.

3 SHEETS—SHEET 1.

Fig. 5.



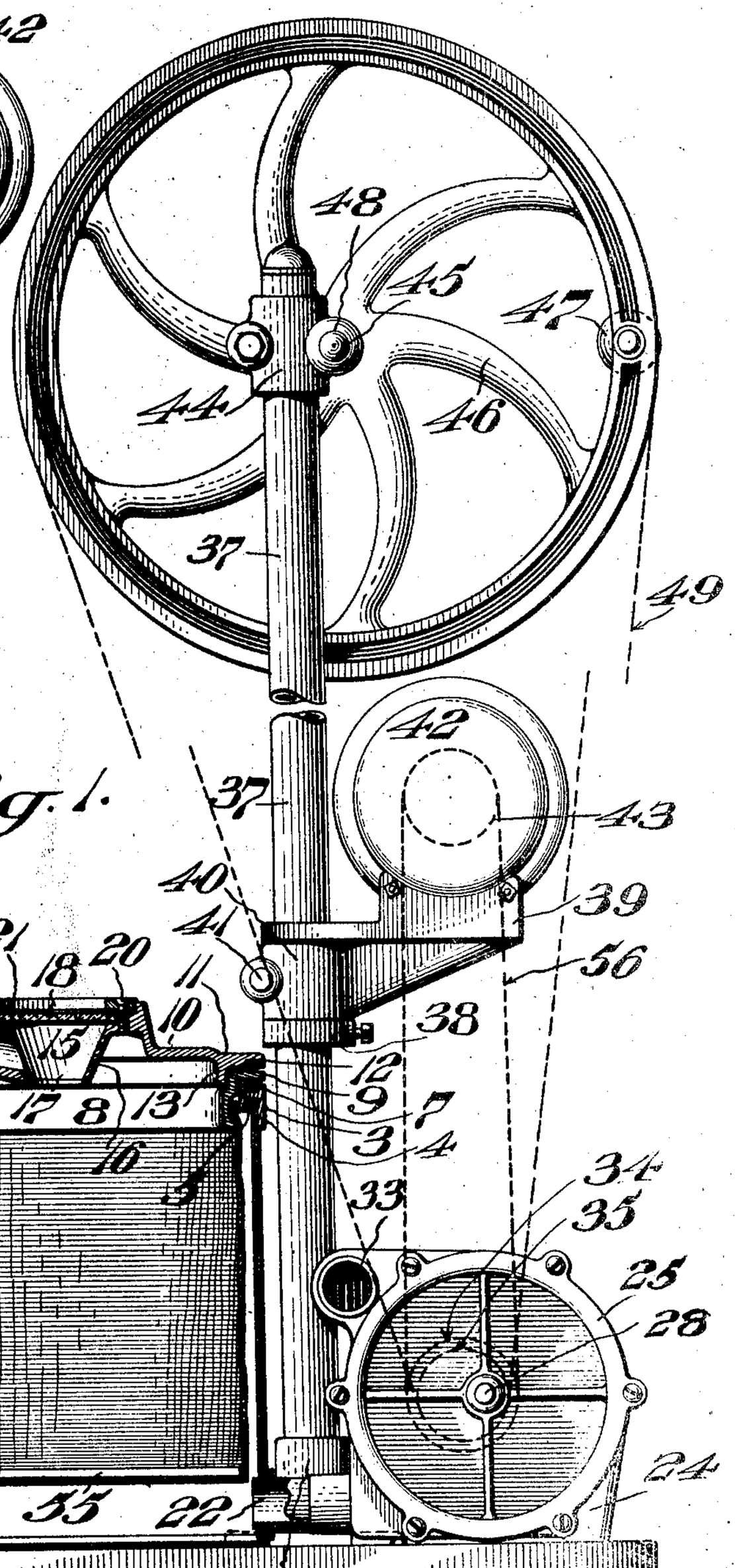


Fig. 1.

WITNESSES

H. G. Dietrich

L. Orville.

INVENTOR

William H. Keller.

BY

Wiedersheim & Fairbanks

ATTORNEYS

W. H. KELLER.

VACUUM CLEANER.

APPLICATION FILED JUNE 15, 1909.

999,371.

Patented Aug. 1, 1911

3 SHEETS—SHEET 2.

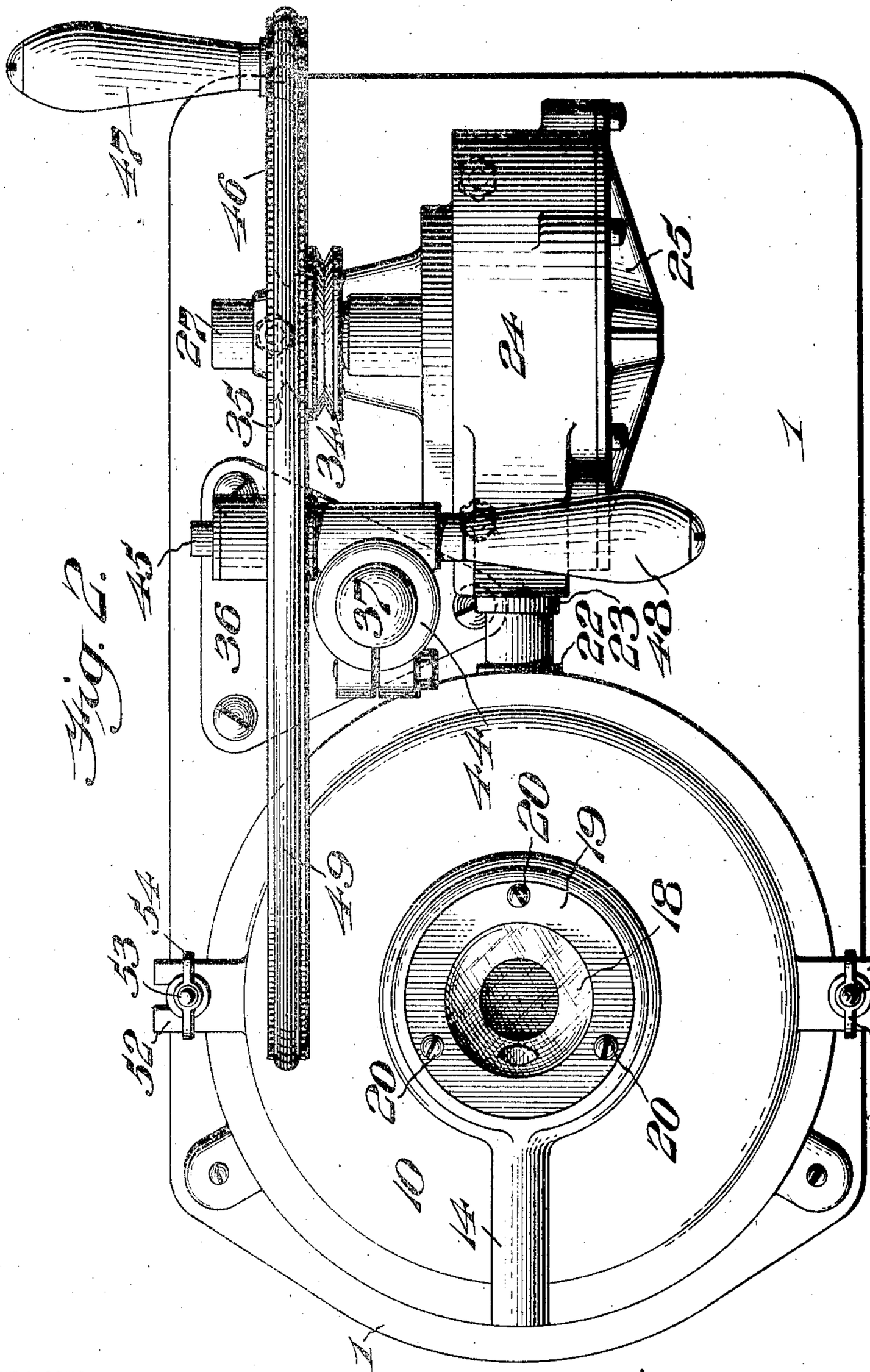


Fig. 2.

WITNESSES

H. G. Dietrich

L. Doville.

INVENTOR

William H. Keller.

BY

Wiedersheim & Trainbanks.

ATTORNEYS

W. H. KELLER.

VACUUM CLEANER.

APPLICATION FILED JUNE 15, 1909.

999,371.

Patented Aug. 1, 1911.

3 SHEETS—SHEET 3.

Fig. 3.

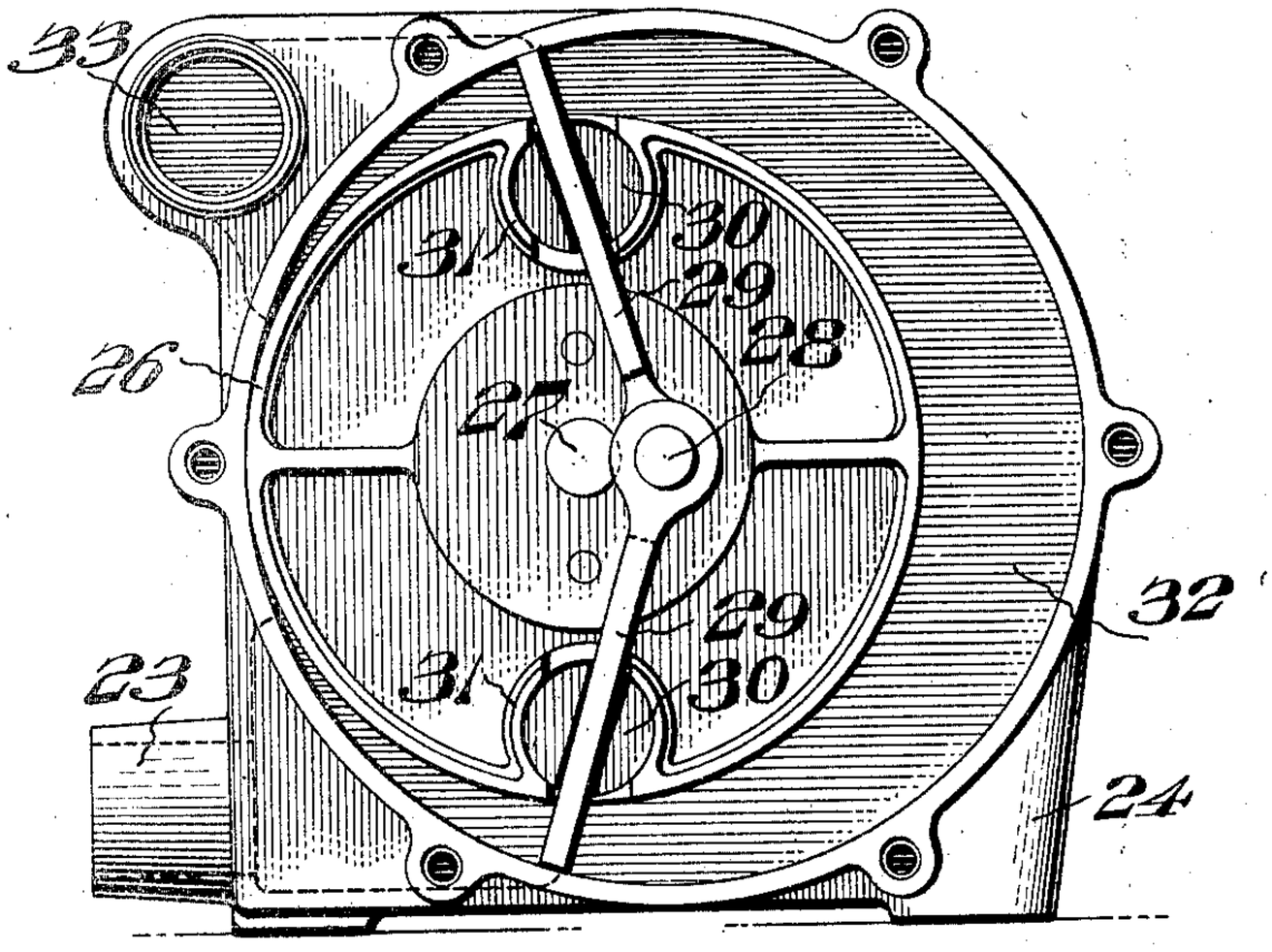
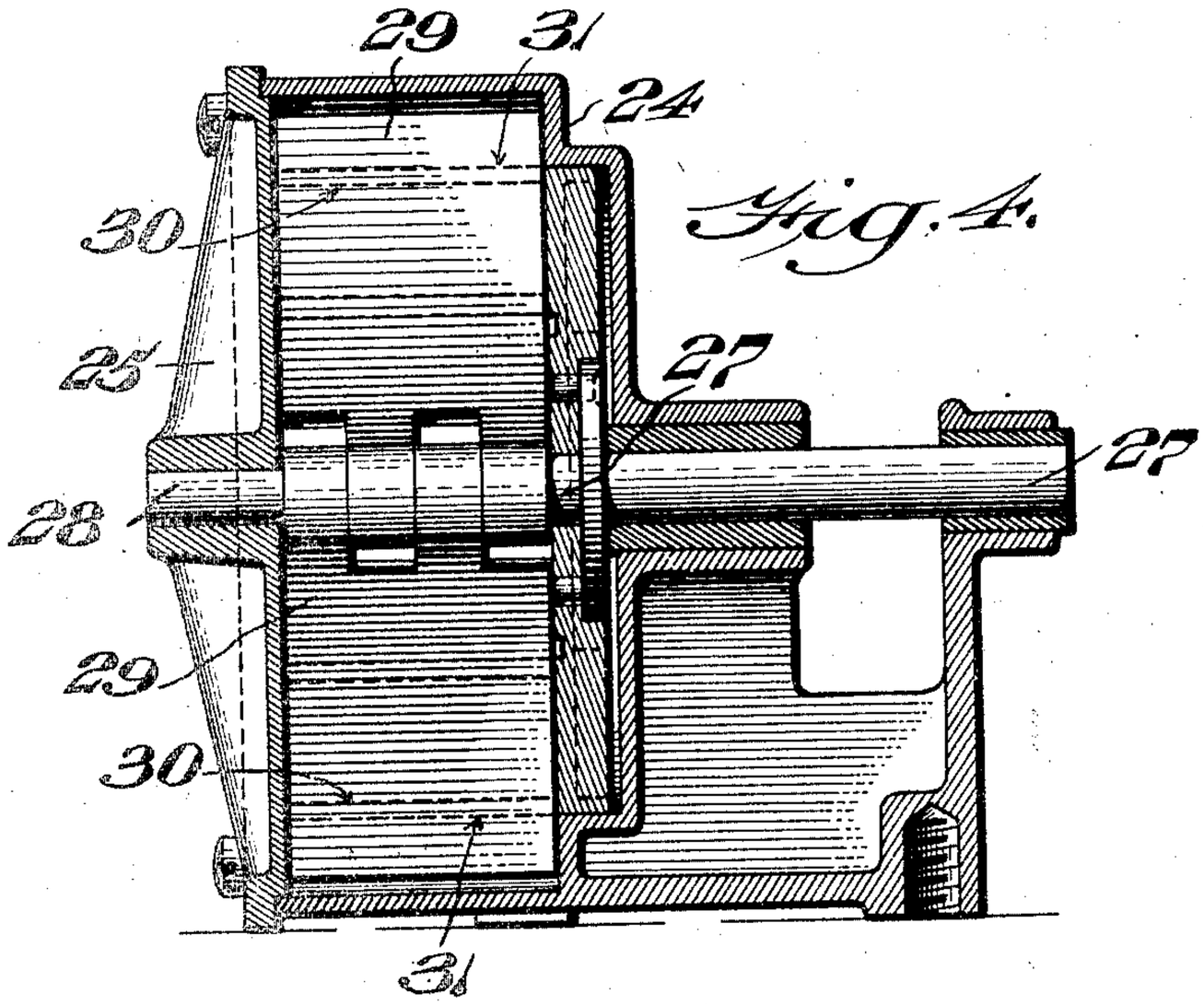


Fig. 4.



WITNESSES

H. C. Dietrich

L. Dowville.

INVENTOR

William H. Keller.

BY

Wiedersheim & Paul Bacon

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM H. KELLER, OF PHILADELPHIA, PENNSYLVANIA.

VACUUM-CLEANER.

999,371. Specification of Letters Patent. Patented Aug. 1, 1911.

Application filed June 15, 1909. Serial No. 502,203.

To all whom it may concern:

Be it known that I, WILLIAM H. KELLER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Vacuum-Cleaner, of which the following is a specification.

My present invention relates to the well known vacuum cleaners which are now in extensive use for cleaning purposes and consists of a novel construction of a vacuum cleaner, wherein means are provided for enabling the same to be driven either by a suitable motor of any desired or conventional type or the same may be driven by manually actuated means and for this purpose I have shown in the drawings a hand wheel, which is adapted to be manually operated.

My invention further consists of a novel construction of a vacuum cleaner, wherein a rotary pump is preferably employed which communicates with a vacuum or filtering compartment, a motor being removably mounted on the framework or base of the device and operatively connected with the rotatable pump, means being also provided for manually driving the pump.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a sectional elevation of a vacuum cleaner embodying my invention. Fig. 2 represents a plan view thereof. Fig. 3 represents a side elevation of the rotary pump, one side thereof having been removed in order to more clearly illustrate the construction thereof. Fig. 4 represents a sectional view of the rotary pump. Fig. 5 represents a side elevation of the motor and a standard therefor, which may be employed in case the manually actuated driving means are dispensed with.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates the base of the machine which is supported in any suitable manner and if desired, may be provided with suitable rollers.

2 designates an air tight casing supported on the base 1 in any suitable manner and the sides of this casing preferably consist of a plurality of layers or thicknesses of material. The upper end of the layers of the casing is closed by a collar 3, the side of which is suitably grooved as is indicated at 4, thereby adapting the same to be seated upon the top of the casing 2, it being seen from Fig. 1 that a suitable packing strip 5 is employed whereby an air tight joint is formed between the collar 3 and the casing 2. The upper surface of the collar 3 is suitably grooved as indicated at 6 thereby adapting the same to receive a packing strip 7, the upper face of which preferably extends above the face of the collar 3.

8 designates a dust bag ring, the upper end of which is provided with a laterally extending flange 9 adapted to be seated on the packing strip 7 when the parts are in assembled position.

10 designates a cover which is provided with the laterally extending flanges 11 which are suitably grooved in order to receive a packing strip 12 whereby an air tight joint is formed between the flanges 12 and the flange 9 on the dust ring 8. The cover 10 is preferably formed with a depending flange 13 which is seated within the dust bag ring 8.

14 designates the air inlet which is adapted to be connected with a suitable hose, to which the suction or blowing nozzle is attached, said inlet leading to a chamber 15 formed within the boss or enlargement 16 of the cover of the casing and communicating

through the port 17 with the vacuum or filtering compartment 18, as will be readily understood by reference to Fig. 1.

In order that the condition of the dust-laden air entering the machine may be readily seen by the operator, I preferably close the upper end of the chamber 15 by means of a transparent plate 18 which is secured in position by any suitable means such as, for example, the washer 19 and fastening devices 20, suitable packing strips 21 being preferably employed in order to form an air tight joint at such parts.

22 designates the outlet port leading from the vacuum compartment 18 and communicating with the inlet port 23 of the pump casing 24 which latter is mounted on or secured to the base 1 in any desired manner. The pump casing 24 is preferably provided with a removable cover 25 whereby the operating parts of the pump are rendered readily accessible. In the present instance, for purposes of illustration, I have shown the type of pump employed as consisting of a rotary pump comprising the casing 24 in which is mounted a drum 26 on a shaft 27.

28 designates a bearing pin or rod eccentrically carried by the drum 26 and provided with a plurality of blades 29 which are adapted to slide within the slotted rollers or bearings 30 mounted in the seats 31 of the drum 26. The blades 29 rotate within the compartment 32 so that the air is drawn through the inlet 23 and is discharged through the exhaust port 33 which communicates with the atmosphere or any other desired point of utilization and which is adapted to be connected with a suitable hose whereby my device may be employed for blowing when desired.

The shaft 27 of the rotor has mounted thereon a plurality of pulleys 34 and 35.

The base 1 is provided with a journal or bearing 36 in which is mounted a standard 37 on which is adjustably secured a set collar 38.

39 designates a bracket mounted on the standard 37 above the collar 38 and removably secured to said standard in the present instance, it being seen that the bracket 39 is provided with a split collar 40 through which passes the bolt 41 whereby the bracket 39 is suitably secured with respect to the standard 37.

42 designates a motor of any desired or conventional type although in practice I prefer to employ an electric motor which may be connected with an ordinary electric light socket. The shaft of the motor 42 has mounted thereon a pulley 43 around which passes a belt 56, which latter also passes around the pulley 34, mounted on the shaft 27 of the pump.

44 designates a bracket removably mounted on the standard 37, said bracket having journaled therein at 45 a hand wheel 46 which is provided with a suitable actuated handle 47.

48 designates a handle loosely mounted on the bearing 45 or secured to the bracket 44 in any suitable manner so that the operator may grasp one end of the handle 48 while rotating the hand wheel 46, which latter is provided with a suitable groove thereby adapting the same to receive a belt 49 which latter passes also around the pulley 35 mounted on the shaft 27 of the pump.

In some cases it is desirable to employ separate standards for supporting the hand wheel 46 and for supporting the bracket 39 and in Fig. 5 I have shown a separate standard 50 which may be employed and which is provided with an adjusting collar 51 on which the bracket 39 is mounted in a similar manner to that already described, it of course being apparent that if desired a single standard such as 37 may be employed and either the bracket 44 carrying the hand wheel or the bracket 39, carrying the motor may be removed as desired according to the conditions arising in practice.

The cover 10 is preferably provided with slotted extensions 52, through which the rods 53, carried by the casing 2, are adapted to pass, said rods being provided with suitable thumb nuts 54 whereby the cover 10 may be readily removed when desired.

The operation of my novel construction of vacuum cleaner will now be readily apparent and is as follows:—When it is desired to operate the device by the motor, the belt 56 is passed around the pulley 43 and around the pulley 34. Upon the rotation of the motor, air will be drawn into the pumping chamber 32 and the dust-laden air will be drawn through the inlet 14 of the cover 10, thence into the chamber 15 and thence through the port 17 into the vacuum chamber or filtering compartment 18, in which is located the dust bag 55 which latter is secured to the dust ring 8 in any desired manner. The air which has now been freed from its impurities passes through the inlet port 22, the inlet chamber 32 and thence to the exhaust port 33 and to the atmosphere or other desired point of utilization.

In case it is desired to manually actuate my device the belt 56 would be disconnected from the pulley 34 and the belt 49 will be connected with the pulley 35 whereby upon the rotation of the hand wheel 46 the pumping or suction creating device will be actuated in a manner similar to that already described, as will be apparent to those skilled in the art to which this invention appertains.

If desired, the hand wheel and its adjuncts, consisting of the bracket 44 and the belt 49,

may be removed and the device driven by the motor on the bracket 39, or the motor 42 and belt 56 may be removed, in which case the device is adapted to be manually actuated. It will be also apparent that if desired, when the motor is running, it is not necessary to disconnect the belt from the hand wheel, although it would be preferable to do so in practice.

It will be apparent that in my present preferred construction wherein I mount or secure the pump casing directly to the base 1, the center of gravity of the apparatus is kept as low as possible, whereby there is little liability of the device being upset or overturned in operation and I am furthermore enabled to also locate the dust separating device at as low a point as practicable, the suction connection 22 from the dust separating device to the pump being also located at the lower portion of the apparatus. By the employment of the bracket 44 having the tightening screw thereon, I am enabled not only to readily remove the hand wheel 46 according to requirements but I can in addition adjust the same upwardly or downwardly in order to regulate the tension of the belt or other transmission device 49, according to requirements.

It will now be apparent that I have devised a novel and useful construction of a vacuum cleaner which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have in the present instance shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In a vacuum cleaner, a base, a plate secured to said base and having a bearing projecting upwardly therefrom, a standard having its lower end seated in said bearing and secured therein, a pumping mechanism secured directly upon said base, a casing forming a vacuum chamber supported directly on the base and communicating with the pumping mechanism, a shaft for said pumping mechanism, a pulley secured to said shaft, a manually operated hand-wheel mounted upon said standard, an auxiliary handle upon said standard and a belt leading from said hand-wheel directly to said pump shaft pulley.

2. In a vacuum cleaner, a base, pumping mechanism secured directly upon said base, a casing forming a vacuum chamber directly supported on the base and communicating with the pumping mechanism, a shaft for said pumping mechanism, a standard extending vertically from said base and secured thereto, a bracket movably mounted upon said standard, means for adjusting said bracket upwardly and downwardly on said standard, means for locking said bracket in its adjusted position, a manually operated wheel rotatably mounted in said bracket, power transmission devices from said wheel to the shaft of said pumping mechanism and an auxiliary handle on said standard.

3. In a vacuum cleaner, the combination of a base, pumping mechanism thereon, a shaft for actuating such mechanism, a standard removably carried by said base, a bracket adjustably carried by said standard, a motor on said bracket and operatively connected with said shaft, and a hand wheel adjustably mounted on said standard and operatively connected with said shaft, whereby the latter may be either motor driven or manually driven.

4. In a vacuum cleaner, a base, pumping mechanism thereon, a shaft for operating such mechanism, a standard removably carried by said base, a bracket having a split collar mounted on such standard, means for securing said bracket in its adjusted position, a motor carried by said bracket and operatively connected with said shaft, and a hand pulley adjustably mounted on said standard and operatively connected with said shaft.

5. In a vacuum cleaner, a base, a pumping mechanism secured directly to said base, a standard vertically mounted upon said base, a manually operated pump driving mechanism mounted on the upper portion of said standard, means for detaching said manually operated mechanism therefrom, a pump driving motor supported upon said standard intermediate of said pumping mechanism and said manually operated device, and means for detaching said motor according to requirements.

6. In a vacuum cleaner, the combination of a base, pumping mechanism, a shaft for operating the pumping mechanism, a plurality of pulleys on said shaft, a standard removably carried by said base, a motor adjustably mounted on said standard, a belt connecting said motor with one of such pulleys, a hand pulley adjustably mounted on said standard, and a belt connecting said hand pulley with the other of the pulleys mounted on the shaft of the pumping mechanism.

7. In a vacuum cleaner, a base, pumping mechanisms thereon, a standard upon said base, a plurality of pump driving mechanisms for said pumping mechanisms adjustably and successively mounted upon said

standard, one of said mechanisms being manually operated and the other of said mechanisms comprising a motor, the latter being located intermediate of said manually operated mechanism and pumping mechanism, and connections between the pump driving mechanisms and the pumping mechanism and effectively engaged by movement of the operating mechanisms.

WILLIAM H. KELLER.

Witnesses:
H. S. FAIRBANKS,
C. D. MCVAY.