L. R. ROBERTS.

VACUUM CLEANING APPARATUS.

APPLICATION FILED APR. 30, 1910.

978,649.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

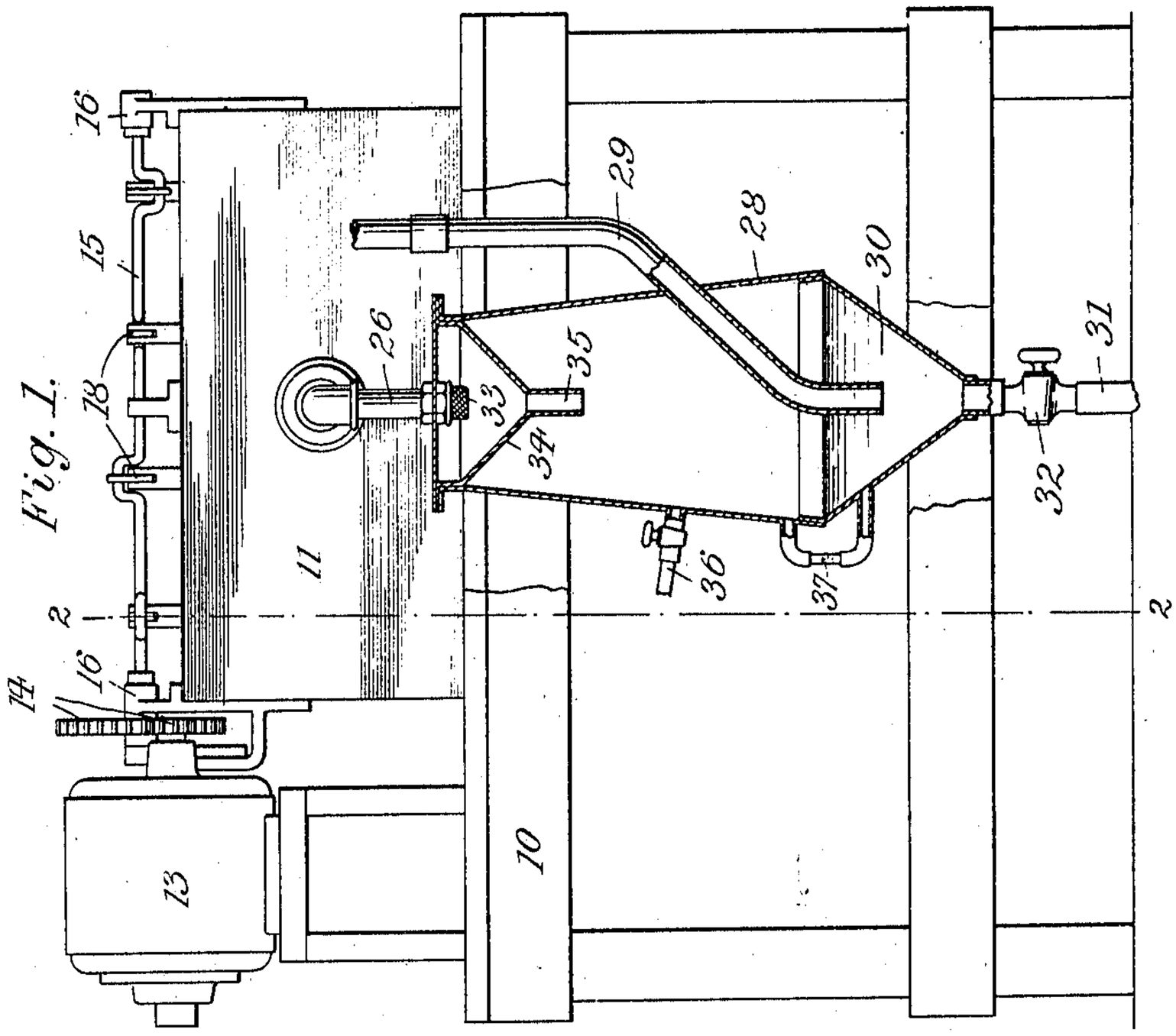
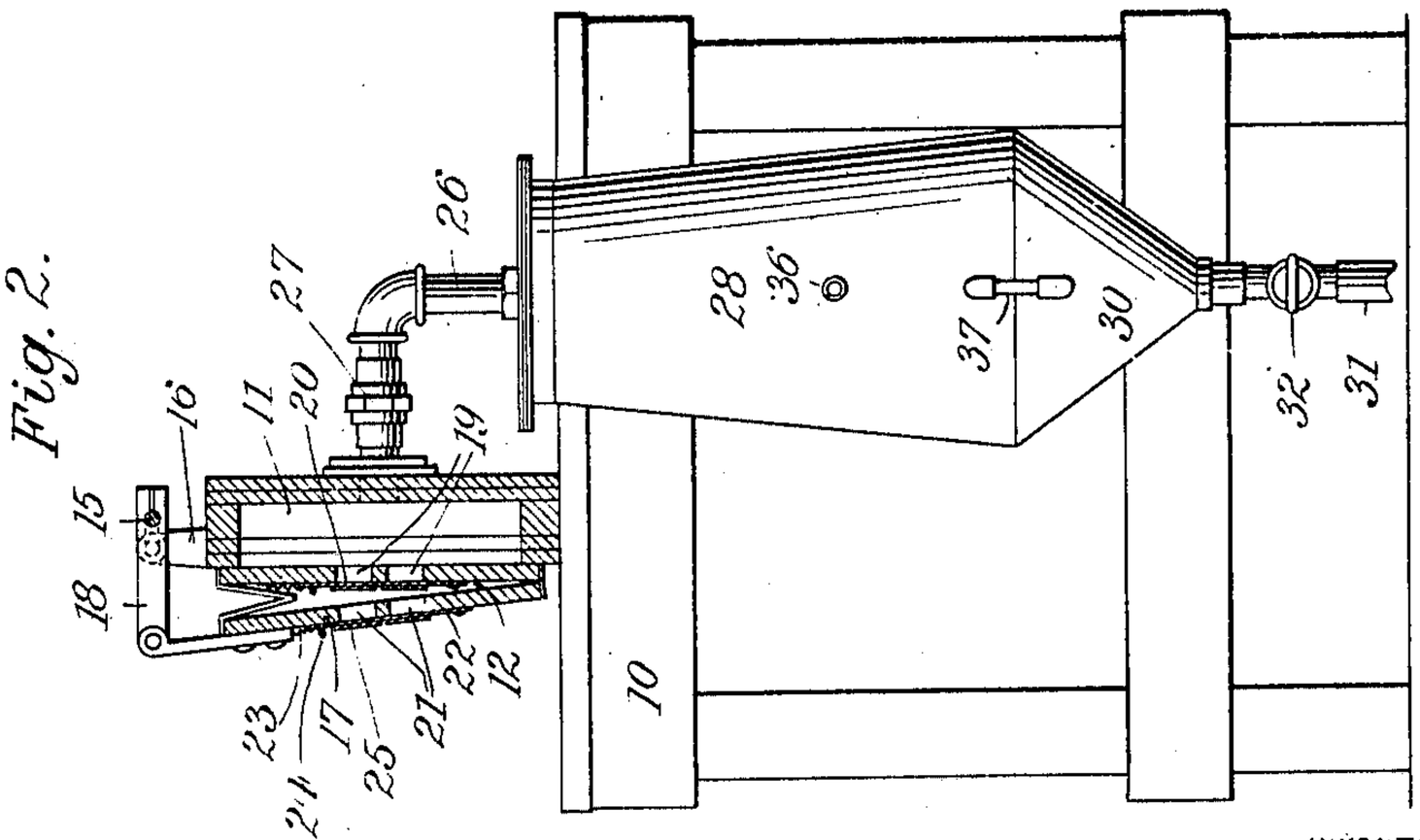


Fig. 2.



WITNESSES

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Fig. 4.

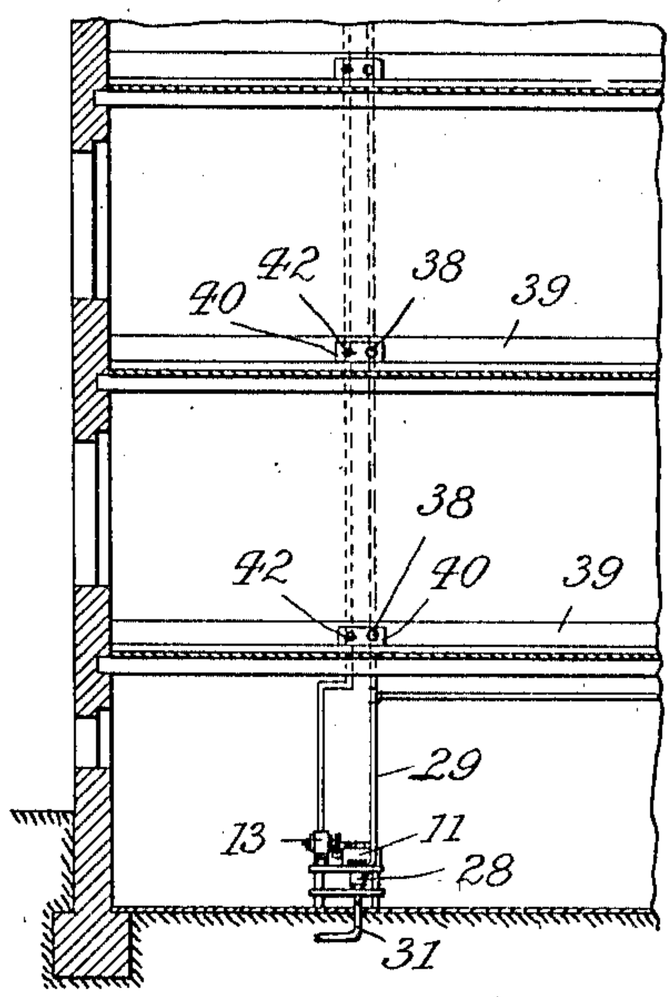


Fig. 5.

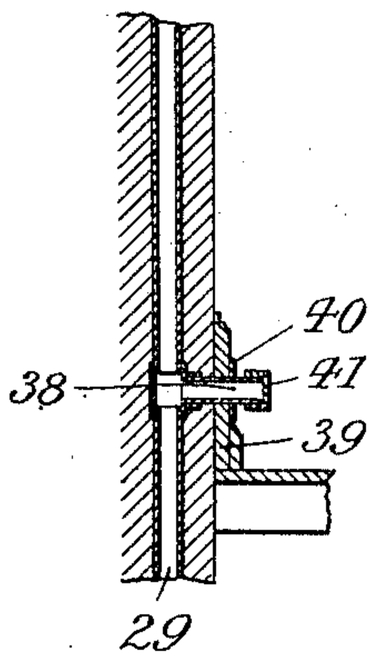


Fig. 6.

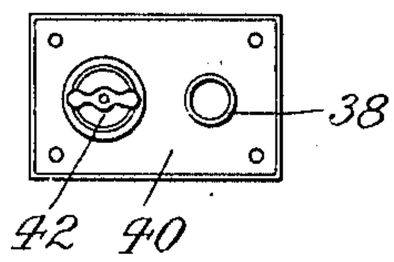
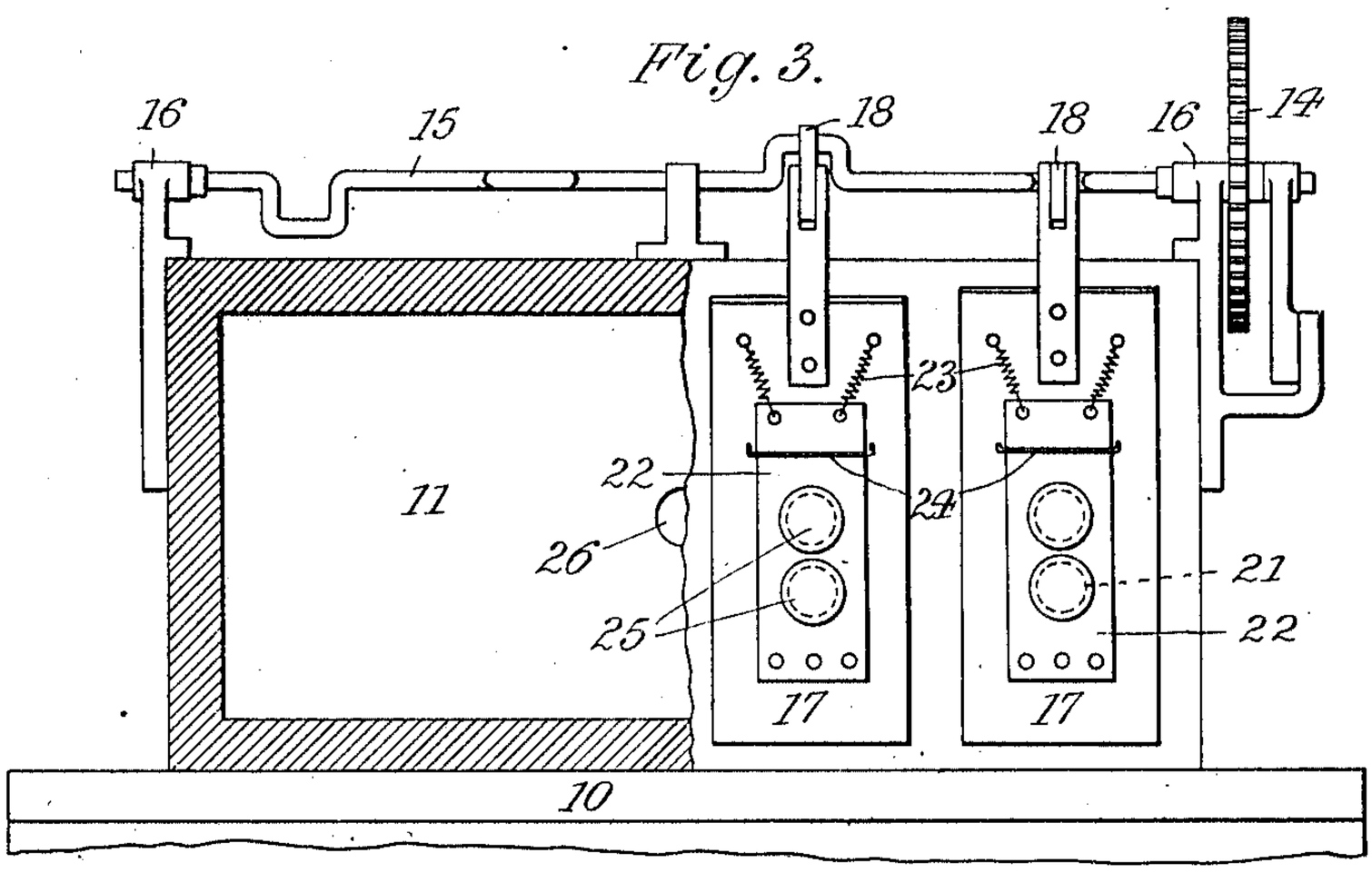


Fig. 3.



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UNITED STATES PATENT OFFICE.

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VACUUM CLEANING APPARATUS.

978,649. Specification of Letters Patent. Patented Dec. 13, 1910.

Application filed April 30, 1910. Serial No. 558,650.

To all whom it may concern:

Be it known that I, LYMAN R. ROBERTS, a citizen of the United States, and residing at Rutherford, county of Bergen, and State of New Jersey, have invented new and useful Improvements in Vacuum Cleaning Apparatus, of which the following is a specification.

This invention relates to a vacuum cleaning apparatus comprising a complete plant adapted to be permanently installed within a building and providing means for effectively cleaning the various rooms and furnishings thereof.

The device is compact in form, may be readily manipulated and is not apt to come out of order by an objectionable accumulation of dust.

In the accompanying drawings: Figure 1 is an elevation partly in section of the principal part of the apparatus, Fig. 2 a vertical cross section on line 2—2, Fig. 1, Fig. 3 a rear view partly in section of the pump, Fig. 4 a diagram of a building showing it provided with my improved cleaning apparatus, Fig. 5 a detail of one of the exhaust nozzles, and Fig. 6 a detail of the face plate.

Upon a frame 10 is supported a vacuum pump which is shown to consist of an exhaust chamber 11 and a plurality of coöperating bellows 12, the latter being actuated by an electro-motor 13. This motor, by gearing 14, turns a crank shaft 15 journaled in bearings 16 and connected to the movable boards 17 of the bellows by links 18. Chamber 11 is adapted to communicate with each of the bellows 12 by exhaust ports 19, controlled by outwardly opening flap valves 20. In like manner, the movable board 17 of each bellows is provided with vents 21 controlled by similar outwardly opening valves 22. These valves are formed of leather or similar flexible material and are permanently secured to boards 17 at their lower ends, while their upper ends are connected to the boards by tension springs 23. Yokes 24 straddling the valves some distance below springs 23 hold the upper movable ends of the valves against boards 17. Opposite each vent or port, valve 22 is reinforced by a fiber disk 25.

The exhaust chamber 11 communicates by pipe 26 having coupling 27 with the top of a dust collecting vessel 28 adapted to contain water or other liquid. Into this liquid dips the lower end of a suction pipe 29 which passes through the wall of the vessel and together with the vacuum pump and dust collector above referred to forms a permanent fixture of the building as indicated in Fig. 4. Vessel 28 is preferably made coniform widening from top to bottom as shown and is provided with a tapering bottom 30 which by pipe 31 having cock 32 is connected to the sewer. The mouth of pipe 26 is screened as at 33 and below said mouth, there is arranged within vessel 28, a funnel-shaped guard 34 having nipple 35. This guard slopes downwardly from the walls of vessel 28 toward the center thereof and communicates at its lowermost point with the nipple 35, so that any dust laden moisture that may be sucked into the guard pipe 26 will flow down along the funnel and be returned to the vessel through the nipple. Water may be introduced into vessel 28 through a pipe 36, while a gage 37 permits the water level to be readily ascertained. Suction pipe 29 communicates by nozzles 38 with the several rooms of the building, said nozzles passing preferably through the base-boards 39 and through face plates 40 secured to said base-boards. Flexible caps 41 normally close the mouths of nozzles 38, against which they are tightly held by the suction within pipe 29. A switch 42 carried by plate 40 serves to control electro-motor 13, so that the same may be started or stopped from any one of the rooms comprised within the system.

In use, cap 41 is removed and a hose provided with an appropriate suction implement is coupled to the nozzle. Upon starting the motor, by switch 42, suction will be created in the hose to pneumatically remove the dust and convey the same through pipe 29 into dust collector 28 below the liquid level thereof. During this operation, the resulting spraying of the water will be checked by the tapering form of the vessel and also by the funnel-shaped guard 34 which protects the mouth of pipe 26. The dust entering vessel 28 will be laid by being carried into the water, the heavier particles being precipitated upon bottom 30 while the lighter particles will float on the water. In this way, the passage of dust and also of the washing liquid into the pump is effectively prevented, so that choking is obviated and the life of the pump is prolonged. The polluted water may be drawn off from vessel 28, whenever required, through pipe 31 and

fresh water may be introduced through pipe 36.

It will be seen that the above described vacuum cleaner is compact in form, and always ready for immediate use. Furthermore the device may be manufactured at small expense and may be introduced into a building without necessitating material additions so that it is well adapted to constitute a fixture for dwelling houses and buildings of modest proportions.

I claim:

1. In a device of the character described, an air exhauster combined with a dust-collecting vessel adapted to contain a liquid, a pipe connecting the exhauster with said vessel, a funnel within the vessel below the mouth of said pipe and sloping downwardly from the walls of said vessel, a nipple communicating with the bottom of the funnel, and a suction pipe entering the vessel and opening into the same beneath the liquid level thereof.

2. A device of the character described, comprising an air exhauster, a coniform downwardly widening dust collecting vessel having a tapering bottom and adapted to contain a liquid, a pipe connecting the exhauster with said vessel, a funnel within the vessel below the mouth of said pipe and sloping downwardly from the walls of said vessel, said funnel being apertured at its lowest point, and a suction pipe opening into the vessel beneath the liquid level thereof.

LYMAN R. ROBERTS.

Witnesses:

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