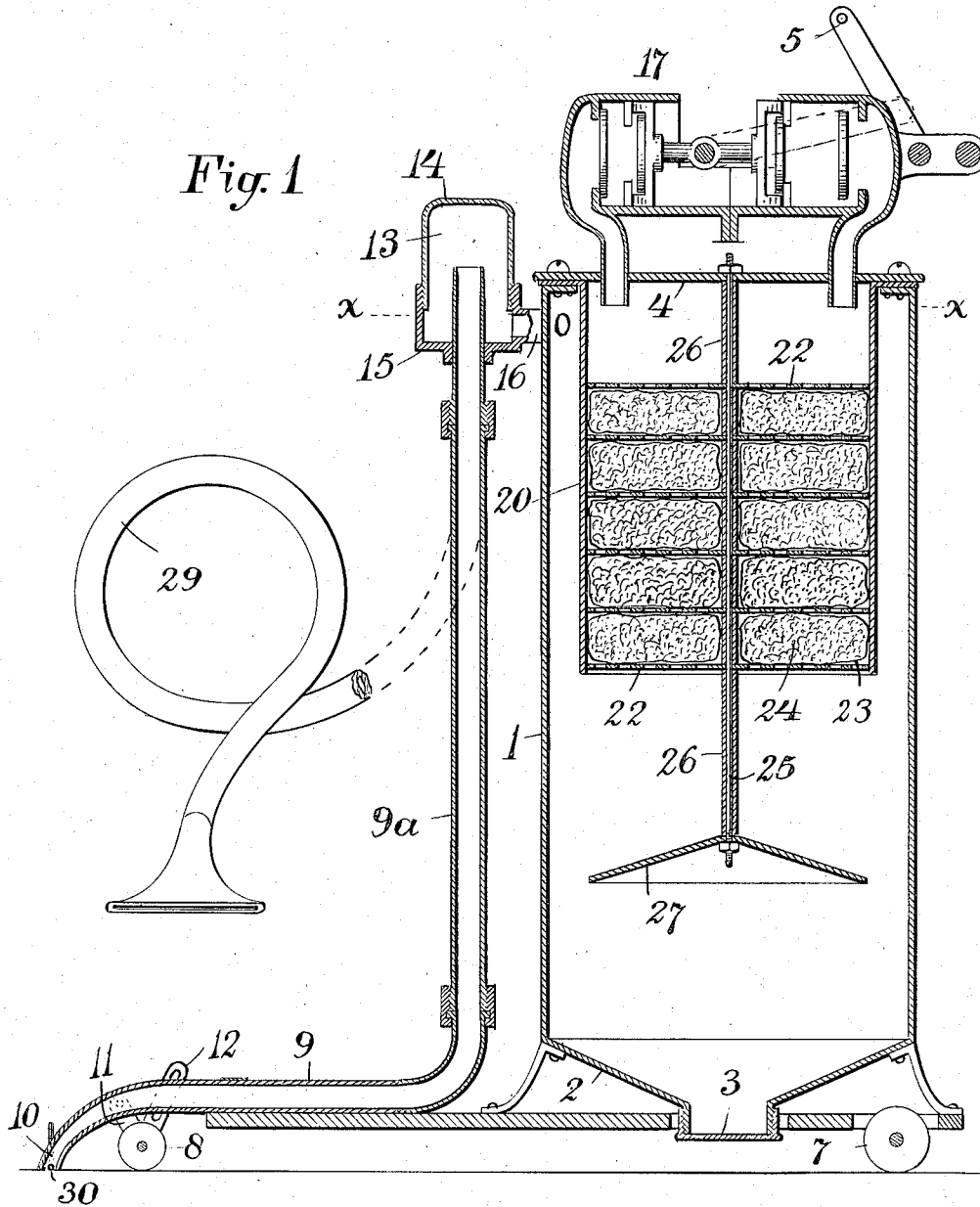


I. L. GREEN.
VACUUM CLEANER.
APPLICATION FILED MAR. 11, 1908.

941,675.

Patented Nov. 30, 1909.
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

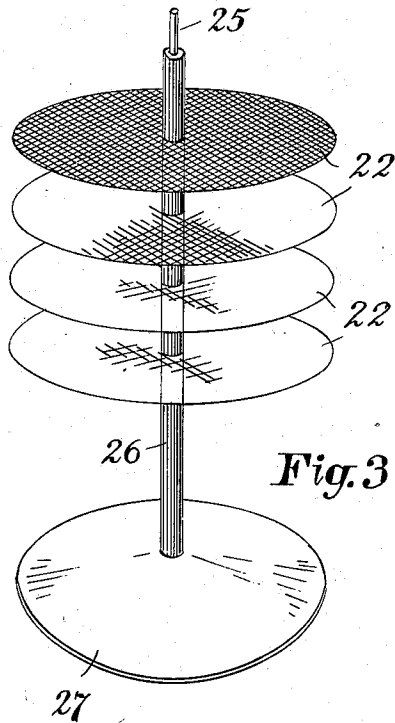


Fig. 3

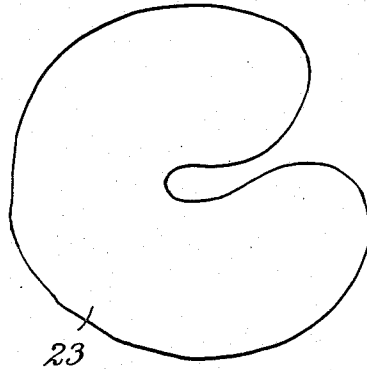


Fig. 4

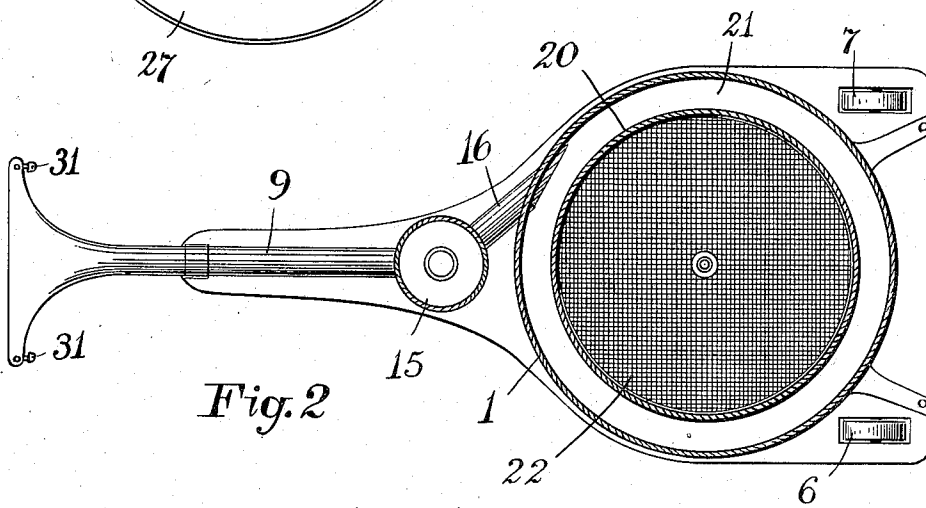


Fig. 2

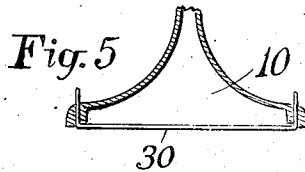


Fig. 5

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UNITED STATES PATENT OFFICE.

IRA L. GREEN, OF LUDLOW, VERMONT.

VACUUM-CLEANER.

941,675.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed March 11, 1908. Serial No. 420,386.

To all whom it may concern.

Be it known that I, IRA L. GREEN, a citizen of the United States, and a resident of the town of Ludlow, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Vacuum-Cleaners, of which the following is a specification.

This invention is in the line of hand-operated devices for cleaning floors, carpets, rugs, and also walls and draperies, by means of suction, and my invention pertains to means for producing the suction or vacuum; to means for storing the dust and dirt so that no dust shall escape into the room; to means for enabling the operator to see that dust is being removed from the carpet or other article, and to other improvements in details of construction hereinafter set forth.

Referring to the drawings forming part of this specification, Figure 1 is a central vertical section of a machine made in accordance with my invention. Fig. 2 is a horizontal section of the same on the line X—X in Fig. 1. Fig. 3 is a perspective view of a portion of the dust-confining means. Fig. 4 is a plan view of one of the filter bags used in connection with said means. Fig. 5 is a longitudinal section of the cleaner-mouth.

In the preferred form of this invention, I strain the dust from the air between the suction-nozzle and the vacuum producing device, so that the latter does not have its operation interfered with by any dirt or grit; thereby permitting a plunger pump to be employed for the purpose. Such pump is secured upon the top of the dirt-receiver, and is actuated by a crank turned by hand, thus doing away with the noisy gearing inseparable from a hand-operated fan-wheel.

Referring to Fig. 1, the numeral 1 designates the dirt-receiver, which is preferably in the form of a vertical cylindrical tank or can having a centrally-depressed floor 2 and a removable closure 3 through which to withdraw the accumulations of dust and dirt. Upon its flat cover 4 is mounted the pumping device operated by the crank 5 as hereinafter set forth, such pump being adapted for creating a more or less perfect vacuum within the receiver 1. Said tank is mounted upon three wheels 6, 7 and 8 arranged to facilitate movement on a straight line; the front wheel 8 being attached to the suction pipe 9 whose extremity is narrowed and transversely elongated to form a suit-

able suction-mouth 10 in contact with the floor upon which the machine is supported. To provide vertical adjustment to this pipe and wheel, and thereby bring such mouth nearer to or farther from such floor, said wheel 8 is mounted at the junction of the links 11, 12, one of which is slotted, and its fastening-screw passed through such slot.

The tube 9 after passing horizontally for a short distance, rises vertically to a height corresponding to that of the tank, and opens within a glass chamber 13. This chamber need not be entirely of transparent material, and is preferably formed with a removable upper section or bell-jar 14 screwing into a metal base 15 from a side of which a tube 16 opens tangentially into the tank 1. Now, when the crank 5 is turned and the pump 17 operated, the air is withdrawn from the tank, and the partial vacuum thus produced is filled by the inrush through the mouth 10, pipe 9, transparent or visual chamber 13, tube 16 into the tank. Whatever dust or dirt is caught by such inrushing air is brought along with it into the tank, making itself visible during its passage through the visual chamber, and so revealing the fact as to whether the machine is or is not cleaning the floor. This forms an index as to the amount of time that should be spent upon any particular section of the floor; inasmuch as when the carpet or rug is very dirty at any spot, it will be evident that the machine must be kept at work at such spot longer than elsewhere on account of the delay before the visual chamber grows clear.

The fatal defect in many machines of this character has been that the fine dust could not be made to stay within the tank, but would escape into the room where the machine was being operated. To provide means for absolutely preventing such escape, I form the tank with an annular partition depending from the top thereof for substantially half the height of the tank. This gives an annular chamber 21 into which the dirt is tangentially directed by the tube 16, and by the spiral current thus given to the dust-laden air, causes the dust to settle gradually to the tank-bottom, and also keeps the deposited dust from being disturbed by any suddenly down-rushing blast.

Within the partition 20 are several horizontal foraminous shelves 22, represented in Fig. 1 as composed of perforated sheet-metal, and in Figs. 2 and 3 as of netting;

and between these shelves are placed bags 23 filled with loose fibrous material 24, such as cotton waste and the like. This loose fibrous material effectually prevents the passage of dust from the tank 1 to the suction pump 17 whose connection is with the space above the upper shelf 22; while the bags keep each quantity of fibrous material from intermixing with the others when they are removed for cleansing. To enable said partitions and bags to be readily removed, I have the partitions separable from the annular partition 20, and suspended from the cover 4, so that when said cover is taken off, said shelves will come up with it and leave no obstruction peripherally to the removal and replacement of said bags. My preferred means for thus suspending said shelves consists of the terminally threaded rod 25 penetrating said top and shelves, and inclosed by the sections of tubing 26. Suitable nuts at the ends of said rod clamp all these parts solidly together. Instead of having said rod terminate immediately below the lower shelf, it is extended to midway between the latter and the tank-bottom 2, and disposed for supporting the conical deflector 27, the function of which is to still further minimize the possibility of the disturbance of the deposited dust by the inflowing air. The conical upper surface of the deflector is so shaped to better subserve the same purpose, and at the same time make it easier for the dirt deposited thereon to be dislodged by the movements of the machine, and to be caused thereby to settle to the tank-bottom.

As shown in Figs. 1 and 2, the cleaner-mouth 10 is located at the extremity of a long horizontal section of pipe 9, and is so arranged as to permit such mouth to be freely passed beneath chairs, and other objects of the kind, desks, book-cases, tables, beds, couches and the like. The length of such horizontal section is ordinarily made sufficient for the cleaner-mouth to reach entirely beneath an ordinary chair. By removing the vertical section of pipe 9^a, a hose 29 can be connected with the machine, and the same used for cleaning walls, draperies and garments. To enable the nap in a carpet or rug to be depressed by the machine for the better and more complete access of the inflowing air to the dust within such nap, I provide the small rod or wire 30 which lies longitudinally within the mouth 10, but has its extremities bent up at right angles through suitable eyes thereat; set screws 31 engaging said up-turned ends

and securing them rigidly in place. For carpets or rugs with extra heavy pile, these set screws are unloosened and the wire or rod 30 adjusted to a slightly lower position relative to said mouth, and then the screws set up again. For carpets with short nap, said wire or rod is fixed more nearly flush with the mouth. Said rod having been adjusted to accommodate the floor covering with which it is to be used, the cleaner is moved back and forth repeatedly, with comparatively short strokes, until all the dust and dirt have been removed from each spot; said rod flexing the nap back and forth while the air-suction removes the dust therefrom.

What I claim as my invention and for which I desire Letters Patent, is as follows, to wit:—

1. A dust collector, comprising an intake, a cylindrical tank connected near its top with said intake, an annular partition depending from the top of said tank, a plurality of foraminous shelves located in said partition, fibrous material packed between said shelves, a conical deflector located immediately of said partition and the bottom of the tank, and means for producing a current of air through said intake into said tank and from the latter through its top.

2. A dust collector, comprising an intake, a cylindrical tank connected near its top with said intake, an annular partition depending from the top of said tank, a plurality of foraminous shelves located within said partition but not attached thereto, means supporting said shelves from the said top, and bags of fibrous material packed between said shelves, and means for producing a current of air through said intake into said tank and from the latter through the said top.

3. In a vacuum cleaner, the combination with a tank having its air inlet through its side wall, and its air outlet through the top, of an inclosing partition depending from the top-edge of said tank, a removable top for the tank, a rod depending from said top, a plurality of foraminous shelves penetrated by said rod, and sections of tubing surrounding said rod and separating said shelves.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 9th day of March, 1908.

IRA L. GREEN.

Witnesses:

H. T. BROWN,
F. L. SMITH.