

A. E. MOORHEAD.
 VACUUM FLOOR CLEANER.
 APPLICATION FILED FEB. 23, 1916.

1,208,351.

Patented Dec. 12, 1916.
 3 SHEETS—SHEET 1.

FIG. 1

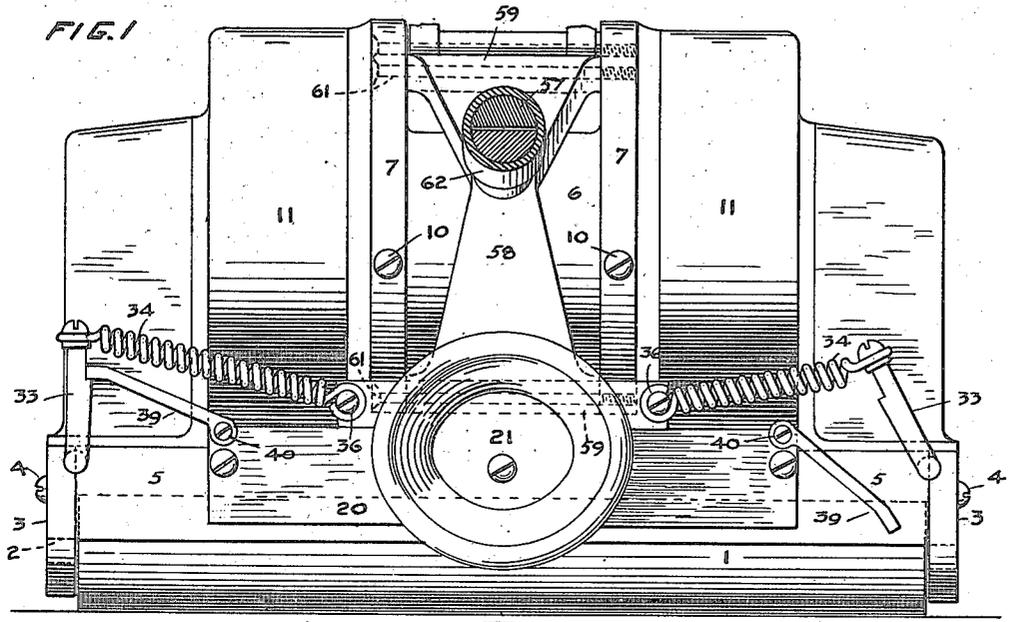
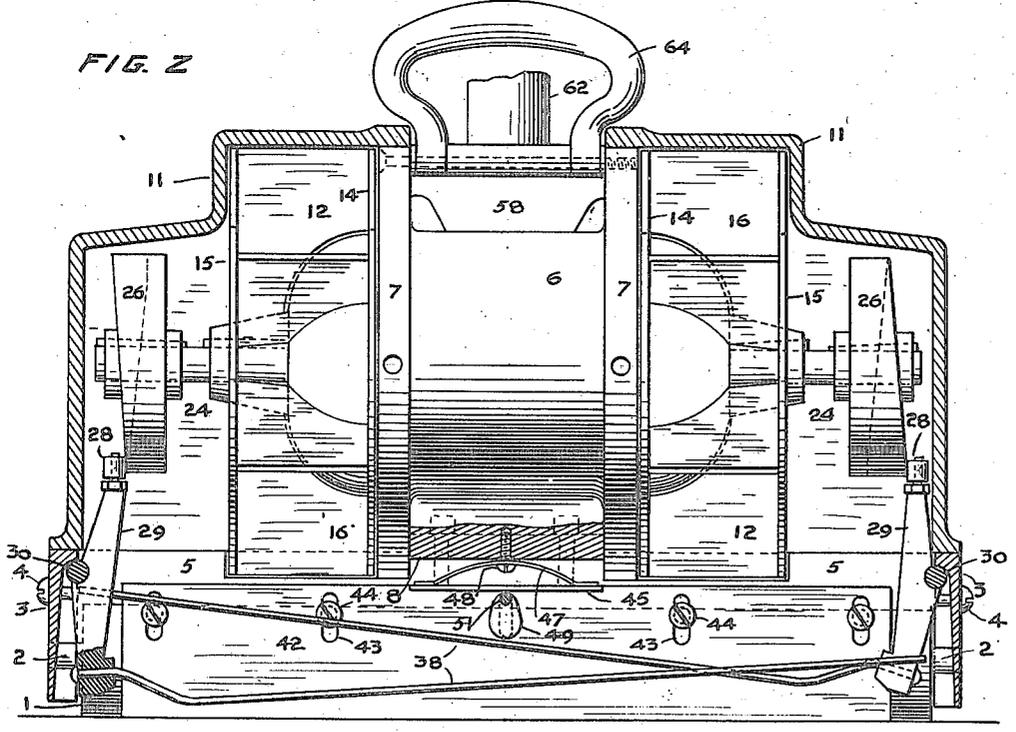


FIG. 2



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FIG. 3

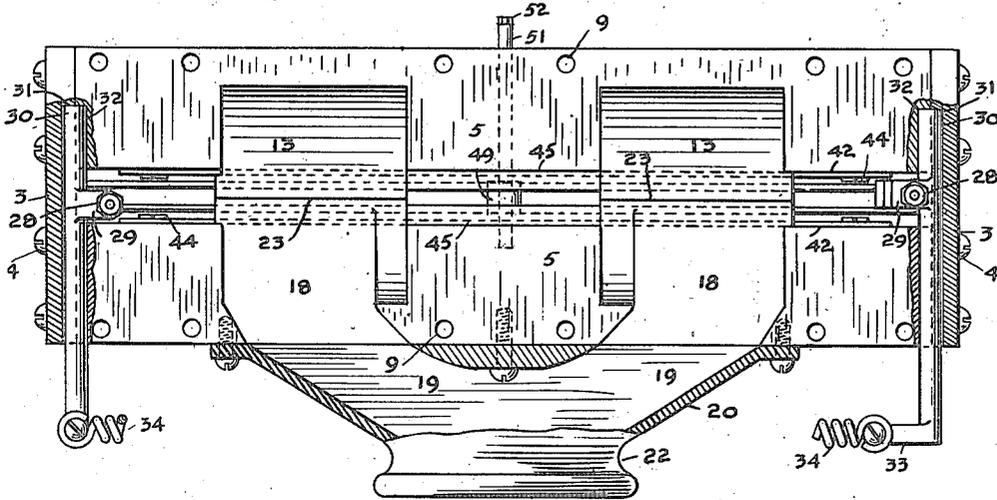
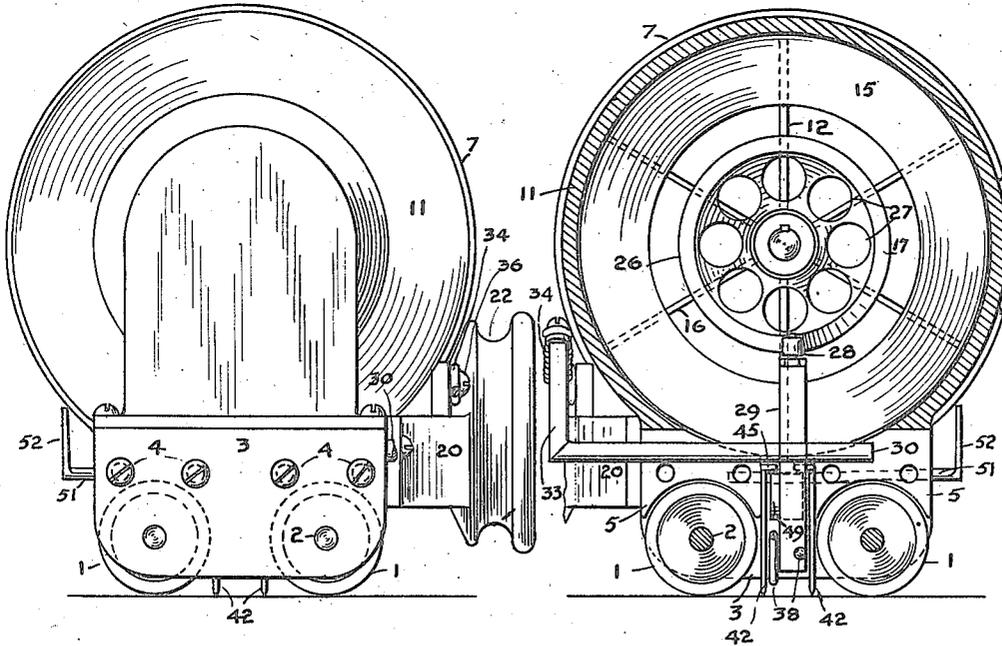


FIG. 4

FIG. 5



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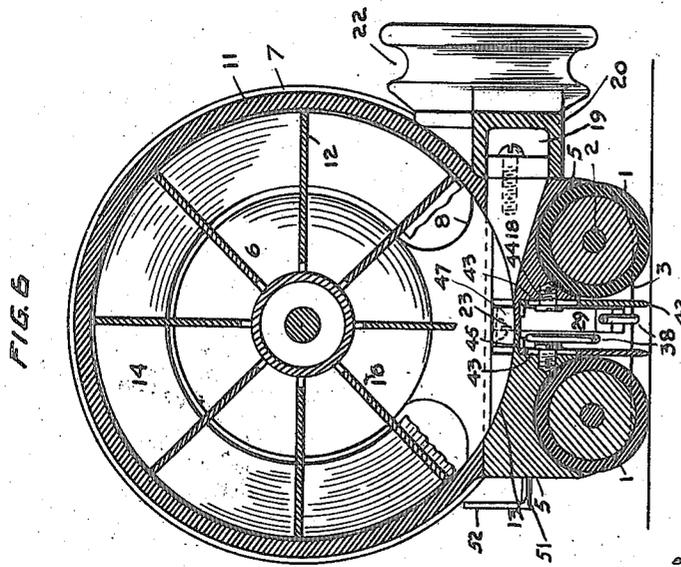
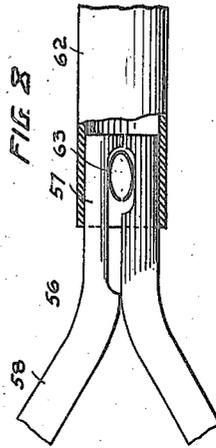
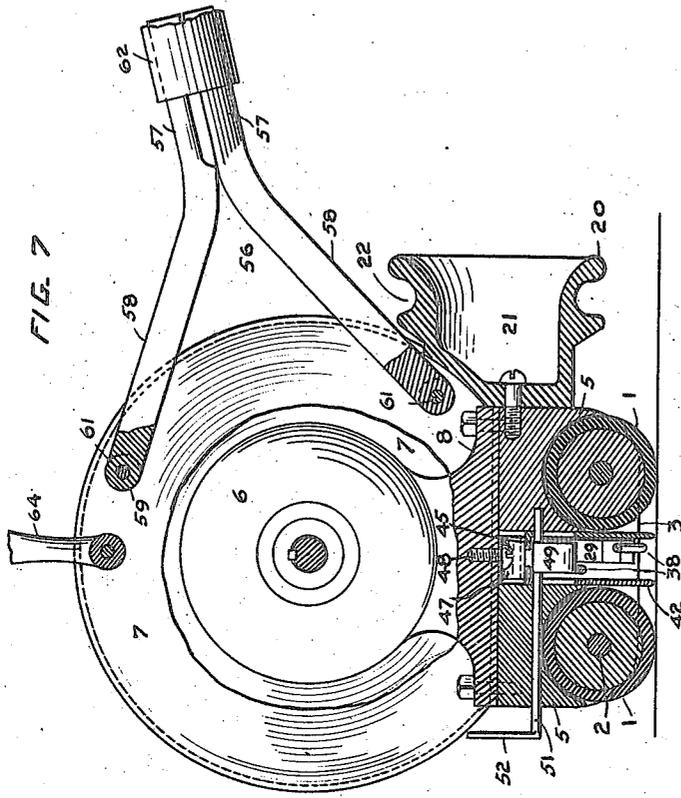
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ALBERT E. MOORHEAD, OF SAN FRANCISCO, CALIFORNIA.

VACUUM FLOOR-CLEANER.

1,208,351.

Specification of Letters Patent. Patented Dec. 12, 1916.

Application filed February 23, 1916. Serial No. 79,808.

To all whom it may concern:

Be it known that I, ALBERT E. MOORHEAD, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Vacuum Floor-Cleaners, of which the following is a specification.

Domestic vacuum cleaners for cleaning carpets on the floor fail to remove the dust thoroughly, because it is practically impossible, with an apparatus of a size sufficiently small to be easily manipulated, to produce suction sufficient to draw dust through a carpet.

One object of the present invention is to provide a domestic vacuum floor cleaner of simple construction and compact in form by which the carpets are thoroughly beaten and the dust loosened therefrom at the same time applying suction to withdraw the dust from the carpet.

A further object is to provide such a vacuum floor sweeper having frictional means for disturbing the dust and thus rendering it easier to be withdrawn by the suction device.

A further object is to provide means whereby the above described device for mechanically disturbing the dust can be put out of action when desired.

In the accompanying drawings, Figure 1 is a broken rear view of my improved vacuum floor cleaner; Fig. 2 is a sectional view thereof; Fig. 3 is a plan view thereof, a motor and fans being removed; Fig. 4 is an end view thereof; Fig. 5 is a vertical section thereof, taken close to one end; Fig. 6 is a section thereof through a fan; Fig. 7 is a section thereof through the middle, a motor being shown in end elevation and a flange being broken; Fig. 8 is a detail sectional view of a handle.

Referring to the drawing, 1 indicates rubber covered rollers upon which the vacuum cleaner can travel, mounted on shafts 2, having bearings in end plates 3, which are secured by screws 4 to the ends of transversely extending base blocks 5, upon which is supported an electric motor 6, having flanges 7 and a base 8, secured by screws in the screw holes 9 of the blocks 5. Secured to said flanges by screws 10 are housing sections 11, for containing centrifugal fans 12 secured on the motor shaft at opposite ends

of the motor, the upper surfaces of the base blocks 5 being concave, as shown at 13, to receive the fans. Each fan has inner and outer side walls 14, 15, and vanes 16 extending radially from the hub of the fan and connected to said side walls. The vanes 16 are cut away on their inner edges to surround the ends of the motor. The outer side walls are formed at the center with inlet openings 17 to admit the dust-laden air to the fan.

The upper surfaces of the blocks are cut away, as shown at 18, to permit the dust-laden air to escape, and, communicating with the passages 18, are conduits 19 in a casting 20, and communicating with a conduit 21, the casting 20 having a circumferential groove 22 adapted to be connected with a dust bag, not shown. The base blocks 5 are extended toward each other at the top, as shown at 23, to form a closure to prevent the downward escape of the air from the fan into the spaces between the lower portions of the blocks 5.

Upon the extended ends of the motor shaft are secured, as shown at 24, crown cams 26, having, for the sake of lightness, holes 27 formed therein, the drops in said cams being at circumferentially opposite points on the two cams. Said cams engage rollers 28 on the upper ends of levers 29 carried by shafts 30 having bearings in recesses 31, 32, in the end pieces and blocks respectively, said shafts projecting rearwardly from said recesses and being formed with arms 33, to which are attached ends of coiled springs 34, the other ends of which are attached to screws 36 screwed in, and extending rearwardly from, the housing. The springs 34 normally draw the upper ends of the arms 33 inwardly. Secured to the lower ends of said levers are light beater rods 38 which extend from said levers transversely across the vacuum cleaner to the opposite ends thereof. The rotating crown cams raise the beater rods from off the floor, and, when the rollers 28 arrive at the drops in the cams, said levers suddenly drop inward, under the action of said coiled springs, and the beater rods are caused to beat the floor. These beater rods are not used when sweeping a hardwood floor and in that case their operation is prevented by means of stops 39 pivoted upon the housing, and the free ends of which engage the inner sides of said arms

33. When in use they beat the carpet twice in each revolution of the motor shaft, and thus beat the dust out of the carpet, which dust is immediately drawn to the center of the centrifugal fans and propelled at the periphery thereof into the passages 18 and thence to the dust bag, where the dust is collected and the air escapes through the interstices of the bag.

42 indicates stirrer plates having vertical slots 43 therein, through which pass screws 44 screwed into the inner sides of the blocks. Said stirrer plates have extending toward each other from their upper edges flanges 45 which are normally depressed by a spring 47 secured to the motor casing by a screw 48. The lower edges of these stirrer plates, being pressed against the carpet by the spring 47, stir up the dust therein, which is drawn off by the centrifugal fans. When, as in passing over a hardwood floor, it is not desired that the stirrer plates should be in use, they are raised by means of a cam-like arm 49 upon a shaft 51 mounted in bearings in the blocks 5 and having a handle 52 by which it can be turned to cause said arm to engage said flanges.

56 indicates a handle connection in two halves, each half comprising a semi-cylindrical portion 57 extended into a flattened portion 58 increasing in width outwardly, said flattened portion terminating in a sleeve 59. Said semi-cylindrical portions fit closely together, while the flattened portions diverge from each other. The sleeves at the ends of the flattened portions receive pivot screws 61, which are passed through one of said flanges 7 and are screwed into the other flange.

62 indicates a tubular handle the lower end of which surrounds the two semi-cylindrical portions of the handle connection, and a spring 63 between the two parts of said connection presses them against the handle and holds it in place, thus permitting the handle to be adjusted relatively to the device, to adapt the sweeper for use by

tall or short persons or to permit it to be moved under a table, bed, or the like.

64 indicates a handle for convenience in carrying the apparatus.

I claim:—

1. In combination, front and rear rollers, a rotating motor and fans carried thereby, one at each end of the motor, cams rotating with the motor, beaters between said rollers, and adapted to strike the surface upon which the rollers roll, and means controlled by said cams for moving said beaters.

2. In combination, front and rear rollers, a rotating motor and fans carried thereby, one at each end of the motor, cams rotating with the motor, a casing surrounding the fans, levers pivotally mounted in said casing and controlled by said cams, and vibrating beaters between said rollers and carried by said levers and adapted to strike the surface upon which the rollers are rolling.

3. In combination, front and rear rollers, a rotating motor and fans carried thereby, one at each end of the motor, cams rotating with the motor, a casing surrounding the fans, levers pivotally mounted in said casing and controlled by said cams, springs actuating said levers, and vibrating beaters between said rollers and carried by said levers and adapted to strike the surface upon which the rollers are rolling.

4. In combination, supports adapted to move along the ground, a motor and a fan carried thereby, a vibrating beater between the supports and adapted in its vibration to strike the surface of the ground, a removable stop for preventing the movement of said beater and means controlled by said motor for vibrating said beater.

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

ALBERT E. MOORHEAD.

Witnesses:

F. M. WRIGHT,
D. B. RICHARDS.