

J. B. KIRBY.
VACUUM CLEANING MACHINE.
APPLICATION FILED APR. 4, 1913.

1,209,719.

Patented Dec. 26, 1916.
2 SHEETS—SHEET 1.

Fig 1

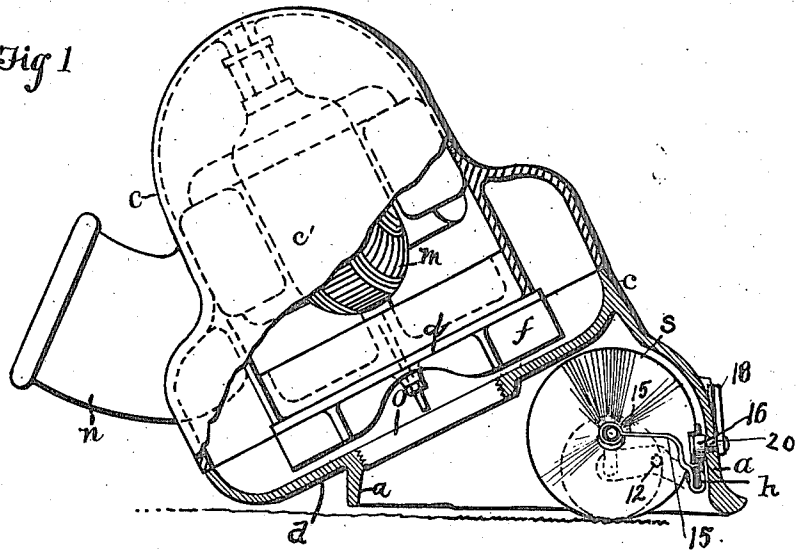


Fig. 2

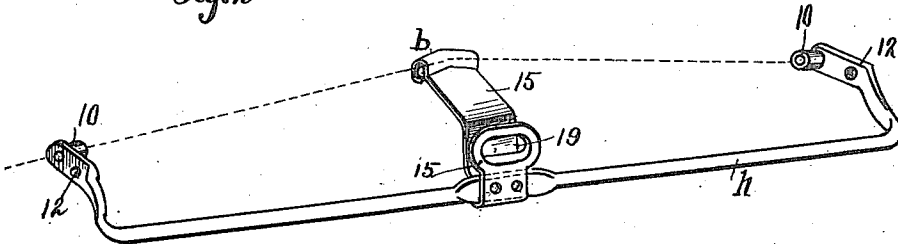
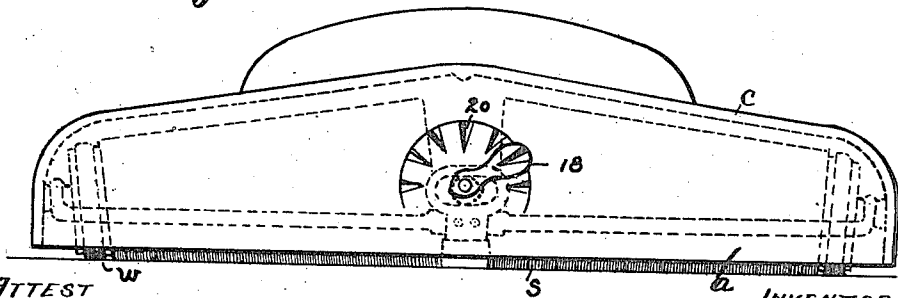


Fig. 3



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Fig. 4

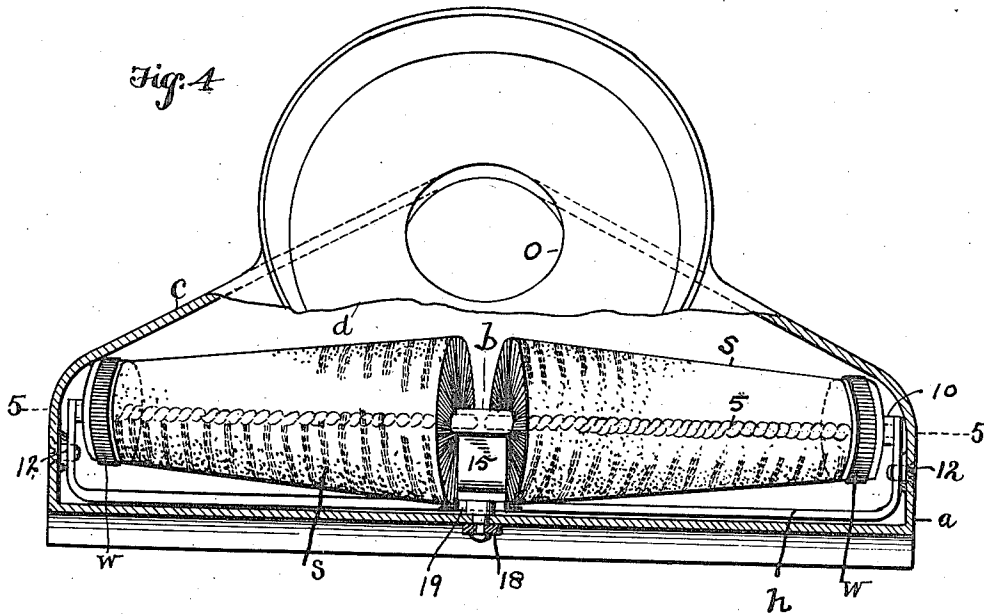


Fig. 5

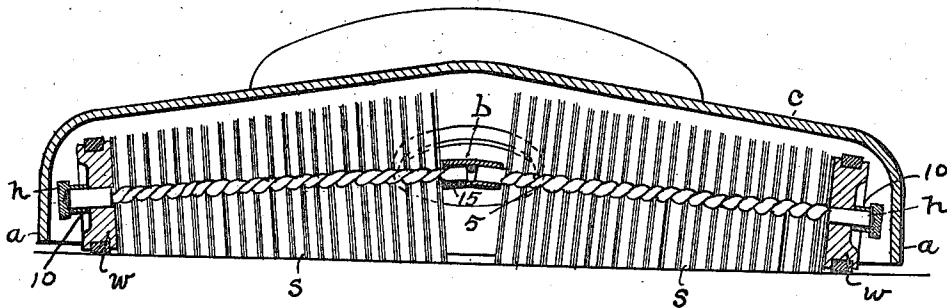
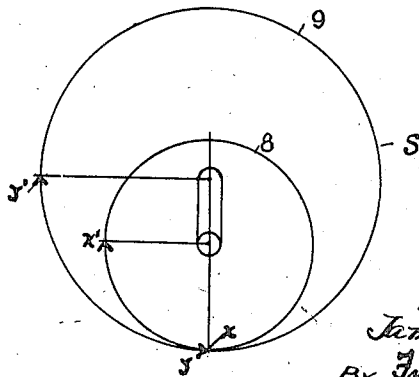


Fig. 6



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UNITED STATES PATENT OFFICE.

JAMES B. KIRBY, OF CLEVELAND, OHIO.

VACUUM CLEANING-MACHINE.

1,209,719.

Specification of Letters Patent.

Patented Dec. 26, 1916.

Application filed April 4, 1913. Serial No. 758,804.

To all whom it may concern:

Be it known that I, JAMES B. KIRBY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vacuum Cleaning-Machines, of which the following is a specification.

This invention has reference to certain improvements in vacuum cleaning machines, all substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a cross sectional elevation of the machine at the middle thereof, and Fig. 2 is a perspective view of the supporting means for the two brushes. Fig. 3 is a front elevation of the machine. Fig. 4 is a plan view of the machine with the immediate front and top portion of the casing broken away and disclosing the brushes therein. Fig. 5 is a front sectional elevation taken on the axis of the brushes on line 5-5, Fig. 4. Fig. 6 is a diagrammatic view as hereinafter fully described.

The objects of the invention are the provision of a compact and low hung type of suction cleaner; the provision of a suction cleaner so arranged as to afford the necessary space for a floor brush while necessitating a minimum lift of the refuse; the provision of a new, simplified and improved type of brushing mechanism; the provision of a new and improved adjustable mounting for such brushing mechanism. In the machine illustrated these objects and other objects which will be made clear as the description proceeds, are attained by the following construction and arrangement.

a represents a collecting nozzle adapted to be applied to the surface to be cleaned, and in this instance is integral with the cleaner casing. Above this nozzle is the casing *c* which comprises a substantially cylindrical fan chamber disposed immediately adjacent to said nozzle and having a bottom wall *d* which forms the top of the nozzle chamber. The opposite wall of the fan chamber carries the motor dome *e*. Exit from said fan chamber is provided by the neck *n* and inlet by means of the axial opening *o* formed in the wall *d*, and communicating with the interior of the nozzle. In order to provide the vertical space within said nozzle necessary for the reception of an agitating device or brush, the fan chamber is inclined as shown in Fig. 1 so as to ele-

vate its forward portion while keeping its rear portion close to the floor, which expedient maintains the inlet opening *o* at the lowest possible point, thus diminishing the height to which refuse must be elevated, and also maintaining the total height of the casing at the lowest possible point, thus facilitating its employment underneath furniture, beds, and the like. Said nozzle is elongated transversely of the machine as illustrated in Figs. 3, 4, and 5, thus affording a wide working mouth, and the top wall of said nozzle is preferably inclined laterally as shown in Fig. 5, the better to distribute the inflowing air stream. The ends of said nozzle project laterally much farther than the fan casing, as clearly illustrated in Figs. 3, 4, and 5. This nozzle is supported above the floor and the weight of the cleaner is carried by means of wheels *w, w* located one at each side of the center line of the cleaner and journaled to a suitable supporting device or frame which is adjustably attached to the casing so that by fixing the same in different positions the nozzle can be raised or lowered as required for different thicknesses or weaves of floor-covering or for use upon a naked floor. In the present embodiment this supporting member consists of a metallic frame or carriage illustrated in Fig. 2 and in the present embodiment pivoted inside of the nozzle, although I do not restrict myself to construction or location except as defined in the claims. In the present embodiment this frame or carriage consists of a front rod $\frac{1}{2}$ running from side to side of the machine and bent rearwardly at each end to form parallel arms which are pivoted at 12, 12 to the nozzle wall. The wheels *w, w* are also journaled to these ends eccentrically of the pivots and means are provided for moving the frame relatively to the casing and securing it in any of its adjusted positions, the same here consisting of a cam 16 journaled to the inner face of the nozzle wall and coöperating with a slotted member 19 secured to the frame or carriage. Rigid with this cam upon the exterior of the nozzle is an operating lever 18 which may be held in adjusted position in any suitable manner as by frictional engagement with spaced integral stop lugs 20 formed on the nozzle exterior.

The agitating mechanism illustrated herein consists of a pair of brushes *s, s* each consisting of comparatively stiff bristles se-

cured in twisted wire shafts 5, 5 although I do not restrict myself either to this construction, shape, arrangement or number of brushes. These brushes are here shown as journaled to the frame or carriage, their inner ends being received in a double bearing *b* carried by an arm 15 secured to the bar *h*, their outer ends being received in the journals 10, 10. The wheels *w*, *w* are operatively connected to these brushes so as to effect the rotation of the same, in the present instance by being mounted upon the same shaft therewith. In using brushes of frusto-conical shape as herein shown I am enabled to secure a straight line contact with the floor while permitting the nozzle to slant from the center toward each end as shown in Fig. 3; also a brush of this nature will sweep automatically when propelled across the floor, without the employment of any special brush-driving mechanism. However I do not confine myself either to this shape, construction, arrangement or number of brushes or to this method of driving and operating the same, or to the particular shape, construction, location or arrangement of the frame or carriage except as the same are specifically recited in the claims hereto annexed.

30 What I claim is:

1. In a suction cleaner, a casing having a collecting nozzle formed with a downwardly facing inlet mouth, a pair of frusto conical brushes located within said nozzle with the larger ends adjacent to each other, and their curved surfaces tangent to the same plane, floor-engaging traction wheels rigidly connected to the smaller ends of said brushes and having a diameter substantially equal to the portion of the brush adjacent thereto, and means journaling said brushes inside said nozzle whereby said casing is supported by said wheels.

2. In a suction cleaner, a collecting nozzle and a movable frame therein, carrying wheels journaled to said frame, agitating devices carried by said frame, and means for raising and lowering said frame relatively to said nozzle so as to support said nozzle at different heights above the working surface.

3. In a suction cleaner, a casing, an elongated nozzle carried thereby and transversely arranged relatively thereto, a frame adjustably pivoted to said nozzle, carrying wheels journaled to said frame, agitating devices located in said nozzle and operatively connected to said carrying wheels, and means for raising and lowering said frame relatively to said nozzle so as to support said nozzle at different heights above the working surface.

4. In a suction cleaner, a casing having

an inlet mouth, a frame inside said inlet mouth, a brushing device journaled in said frame, carrying wheels pivoted to said frame, said frame being pivoted inside said casing eccentrically of said brush and wheels, and means for adjusting said frame about its pivot axis so as to raise and lower said casing.

5. A suction cleaner, comprising a casing, a pair of tapered brushes therein, and floor engaging traction wheels mounted directly on the shafts of said brushes, having substantially the same size as the smaller ends of the brushes.

6. In a suction cleaner, a casing having a collecting nozzle formed with a downwardly facing inlet mouth, a rotatable brush journaled inside said mouth, a supporting device pivoted to said casing upon an axis parallel to the plane of said mouth, carrying wheels journaled to said supporting device one at each side of the midpoint of said nozzle and operatively connected to said brushing means, and means for holding said supporting device in varying adjusted positions whereby said nozzle may be supported at different heights above the floor.

7. In a suction cleaner, a supporting frame, carrying wheels journaled to said frame, a casing mounted on said frame and having a collecting nozzle formed with a downwardly facing inlet mouth, means for holding said casing in varying adjusted positions with reference to said frame whereby said inlet mouth may be supported at different heights above the floor, and brushing devices journaled inside said inlet mouth and operatively connected to said carrying wheels.

8. In a suction cleaner, a casing having an elongated nozzle formed with a downwardly facing inlet mouth, a movable frame carried by said nozzle, brushing mechanism inside said mouth, carrying wheels journaled to said frame one adjacent to each end of said nozzle and operatively connected to said brushing mechanism, and means for holding said frame in any position to which it may be moved whereby said nozzle will be supported at different heights above the working surface, said brushing mechanism also being connected to said frame so that its position relatively to said inlet mouth will vary with the adjustment of said frame.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES B. KIRBY.

Witnesses:

F. C. MUSSUN,
E. M. FISHER.