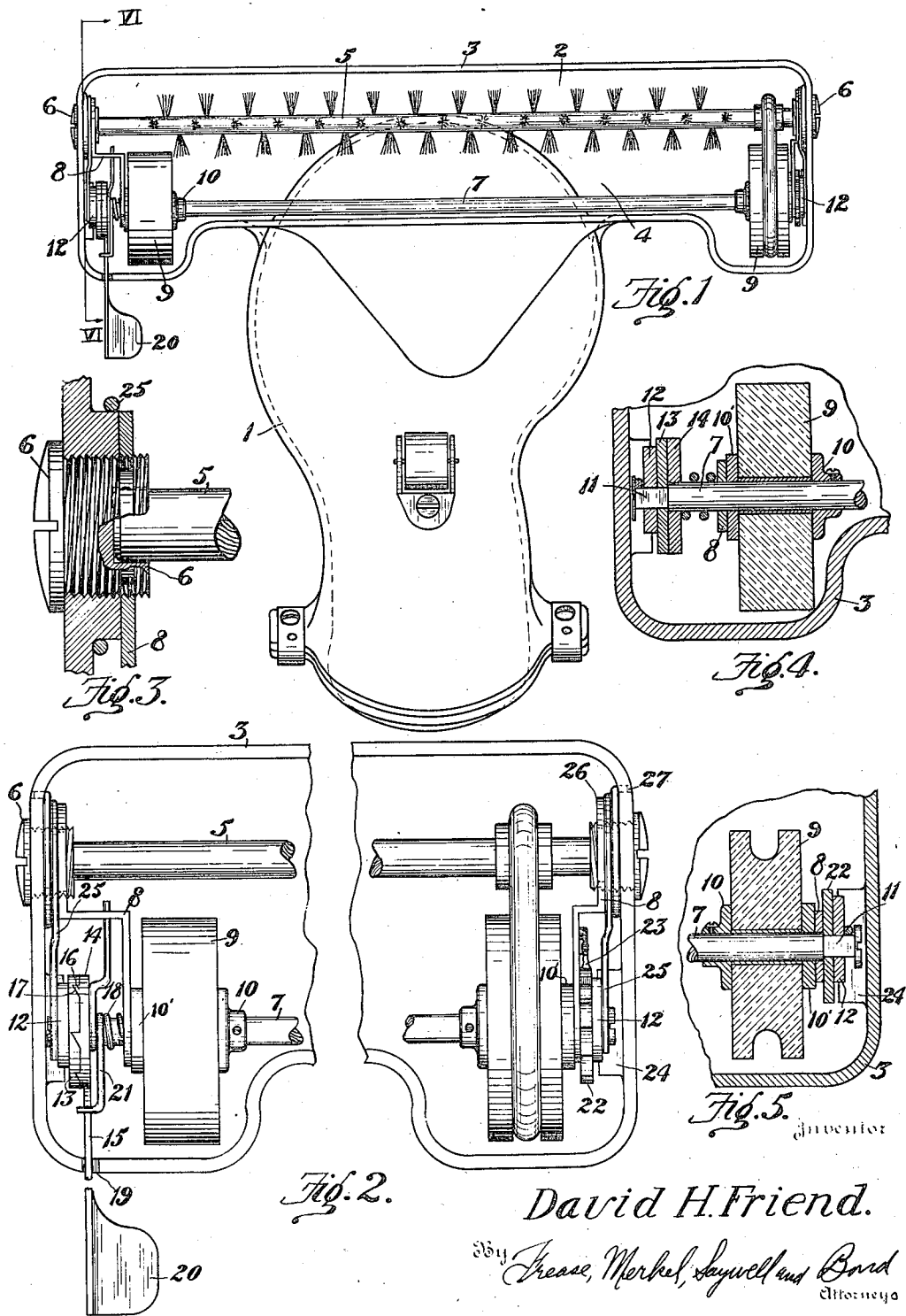


Mar. 13, 1923.

1,448,397.

D. H. FRIEND.
SUCTION CLEANER.
FILED JUNE 6, 1921.

2 SHEETS—SHEET 1.



David H. Friend.

Freese, Merkel, Saywell and Bond
Attorneys

Mar. 13, 1923.

1,448,397.

D. H. FRIEND,
SUCTION CLEANER.
FILED JUNE 6, 1921.

2 SHEETS—SHEET 2.

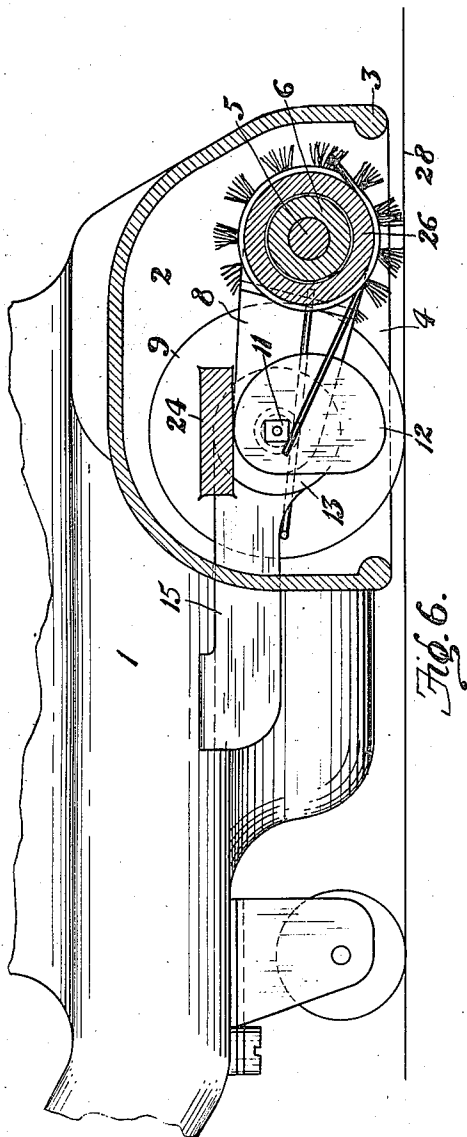


Fig. 6.

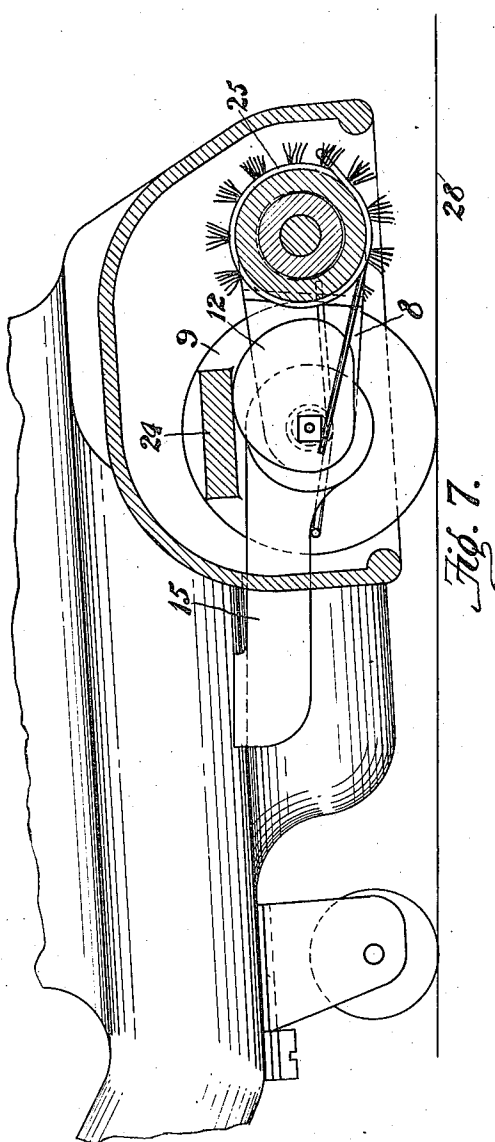


Fig. 7.

Inventor

David H. Friend

By Trease, Merkel, Squelley Bond.

Attorneys

UNITED STATES PATENT OFFICE.

DAVID H. FRIEND, OF NORTH INDUSTRY, OHIO, ASSIGNOR TO THE UNITED ELECTRIC COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

SUCTION CLEANER.

Application filed June 6, 1921. Serial No. 475,364.

To all whom it may concern:

Be it known that I, DAVID H. FRIEND, a citizen of the United States, residing at North Industry, in the county of Stark and State of Ohio, have invented new and useful Improvements in Suction Cleaners, of which the following is a specification.

The invention relates to portable cleaners of the vacuum or suction type, which include a case forming a suction chamber with an elongated mouth presented to the surface to be cleaned; and the object of the improvement is to provide means which may readily be operated by the foot, for adjusting the height of the suction mouth from the objective surface.

Machines of this character are frequently carried and operated on wheels located at the ends of a suction mouth, usually supplemented by a caster wheel under the rear end of the case, and the object of the improvement is attained by journalling the forward wheels upon an axle shaft having cam disks secured on its ends, and providing shoulders in the ends of the cleaner case bearing on the cam disks, with connections and spring ratchet pedal means for rotating the cam disks to raise and lower the case upon the forward wheels by downward strokes of the pedal.

The invention may be embodied in the preferred form shown in the accompanying drawings, in which—

Figure 1 is an under side plan view of the case of a suction cleaner;

Fig. 2, a fragmentary enlargement of the end portions of the mouth thereof;

Fig. 3, a fragmentary plan section of one brush spindle bearing;

Fig. 4, a fragmentary plan section of the cam disk and pedal clutch on one end of the axle shaft;

Fig. 5, a fragmentary plan section of the cam disk and stop ratchet on the other end of the axle shaft;

Fig. 6, a longitudinal section on line VI—VI, Fig. 1, showing the cleaner case lowered upon the cam disks; and

Fig. 7, a similar view showing the cleaner case raised partway upon the cam disks.

Similar numerals refer to similar parts throughout the drawings.

The case 1 of the suction cleaner may be of any well known construction, and as shown, forms a transverse suction chamber

2 across its forward end, with a rim 3 forming the suction mouth 4 of the machine.

Within the suction chamber is mounted the transverse brush spindle 5 which may be carried in screw bearings 6 secured in the walls of the case; and in the rear of the brush spindle is located the transverse axle shaft 7, which may be, and as shown preferably is also located within the suction chamber.

The end portions of the axle shaft 7 are journalled in the rear ends of the brackets 8, the forward ends of which bracket may be swiveled on the screw bearings 6 which carry the brush spindle 5, so that the axle shaft 7 may turn in the bearings formed by the brackets 8, and may oscillate upward and downward upon the brush spindle as a center, within the suction chamber of the case.

The forward wheels 9 are journalled on the axle shaft 7, so as to rotate without turning the shaft; the wheels being held in position by the brackets 8 on their outer sides, and the collars 10 secured to the shaft on their inner sides. A washer 10' may be used between the bracket 8 and the side of the wheel 9.

A portion 11 of each end of the axle shaft 7, outside of the bearing brackets 8, is shaped to form a square or angular section upon which is mounted a cam disk 12 at each end of the shaft, so that the disks will rotate in unison with the shaft.

A clutch disk 13 is also mounted on the square portion on one end of the shaft alongside the cam disk 12, and the hub 14 of a pedal arm 15 is journalled on the shaft alongside the clutch disk, there being ratchet teeth 16 on the side of the hub engaging in corresponding notch 17 in the side of the clutch disk; which teeth and grooves are normally held in engagement, by the coiled compression spring 18, mounted on the shaft between the pedal hub 14 and the bearing bracket 8.

The pedal arm 15 extends rearward through a vertical slot 19 in the wall of the case, and is provided with a pedal 20 on its rear end, by means of which the clutch may be operated. The pedal arm is normally held upward against the stop formed by the upper end of the slot 19, by the spring 21, which spring may be coiled around the shaft alongside the pedal hub, and has one end

engaged under the pedal arm 15, and the other end engaged thru the bearing bracket 8.

The parts are so arranged that a depression of the pedal, will positively rotate the axle shaft in one direction by the normal engagement of the ratchet teeth 16 in the corresponding notches 17, and that when pressure on the pedal is released, it will raise to normal position by action of the spring 21 and a disengagement of the ratchet teeth and notches permitted by a compression of the spring 18.

A reverse rotation of the axle shaft is prevented by the ratchet disk 22 mounted on the square portion of the other end of the axle shaft alongside the cam disk, and the spring detent 23 mounted on the adjacent bearing bracket 8. The ratchet disk and spring detent serve to stop a reverse rotation of the axle shaft when the pedal is raised between its successive downward operations.

Bearing shoulders 24 are provided in each end of the cleaner case, which shoulders rest and ride upon the peripheries of the cam disks 12; and the cam disks are pressed upward against these shoulders by action of the spring 25 having their rear ends extending under the ends of the axle shaft and their forward ends coiled around the brush screw bearing bosses 26 and then secured to the wall of the case, as shown at 27.

In the operation of the suction cleaner, the lips 3 forming the suction mouth, may be in contact with or adjacent to the objective surface by rotating the cam disks into the position shown in Fig 6; and when it is desired to elevate the suction mouth farther from the objective surface 28, it is only necessary to rotate the cam disks by depressing the pedal one or more times, to bring the disks into a position as shown in Fig.

7, the bearing shoulders resting and riding upon the peripheries of the cam disks, and it is evident that the mouth of the cleaner case may again be lowered toward the objective surface by continuing a succession of downward operations of the pedal, until the disks have rotated in the same direction back to the original normal position.

I claim:—

1. A portable cleaner or the like having wheels adjustable upward or downward therein, a pedal arm bearing in the cleaner, and means for adjusting the wheels upward and downward actuated by downward strokes of the pedal arm.

2. A portable cleaner or the like including an axle shaft with wheels and cam disks thereon, shoulders in the cleaner bearing on the cam disks in one direction, and means for rotating the disks to raise and lower the cleaner.

3. A portable cleaner or the like having movable brackets therein, an axle shaft bearing in the brackets, wheels and cam disks on the shaft, shoulders in the cleaner bearing on the disks in one direction, and means for rotating the disks to raise and lower the cleaner.

4. A portable cleaner or the like including an axle shaft with wheels and cam disks thereon, shoulders in the cleaner bearing on the cam disks, means for rotating the disks in one direction to raise and lower the cleaner, and means stopping a reverse rotation of the disks.

5. A portable cleaner or the like having brush spindle bearings therein, brackets journaled on the spindle bearings, an axle shaft bearing in the brackets and having wheels thereon, and means for swinging the shaft on the spindle bearings to raise and lower the cleaner.

DAVID H. FRIEND.