July 18, 1933. W. J. CLEMENTS 1,918,519

VACUUM CLEANER

Filed July 16, 1930 2 Sheets-Sheet 1

Fig. 1

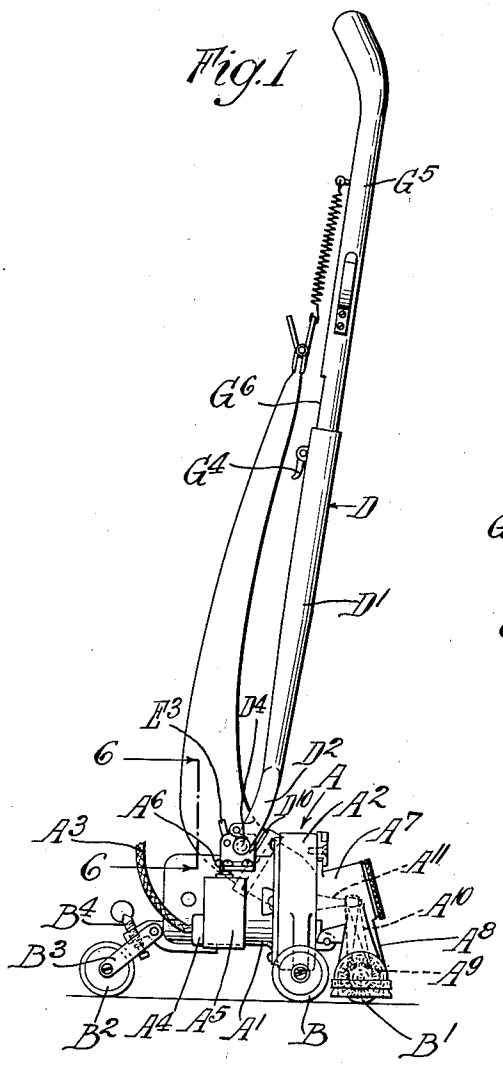


Fig. 3

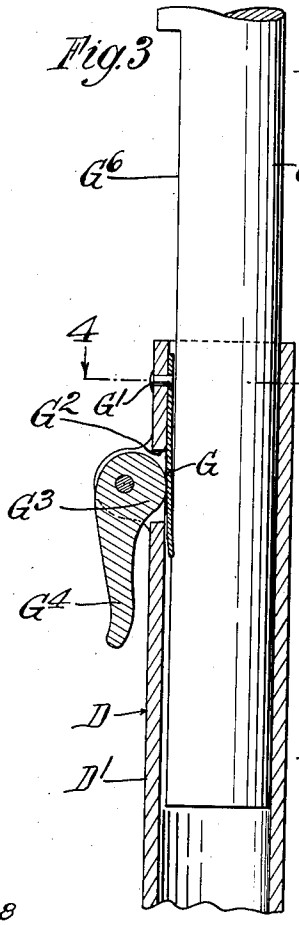


Fig. 2

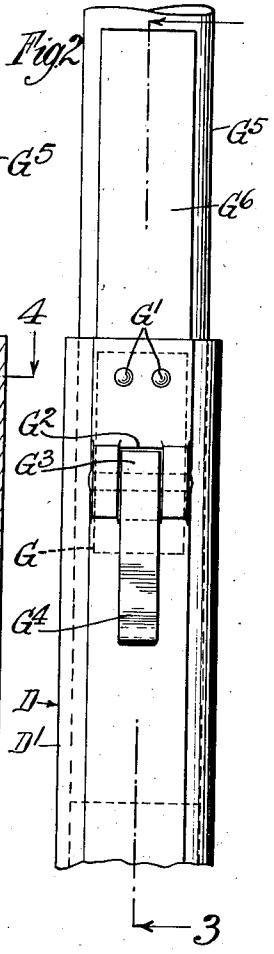


Fig. 5

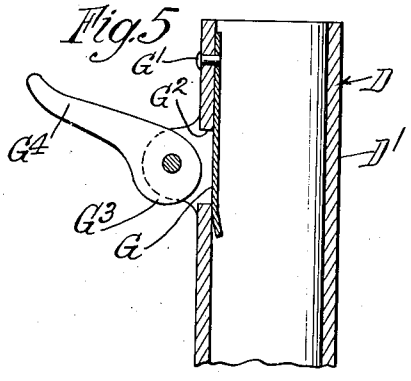
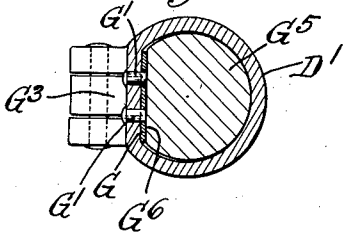


Fig. 4



Inventor
William J. Clements
by Parker & Carter
Attorneys.

July 18, 1933. W. J. CLEMENTS 1,918,519

VACUUM CLEANER

Filed July 16, 1930 2 Sheets-Sheet 2

Fig.6

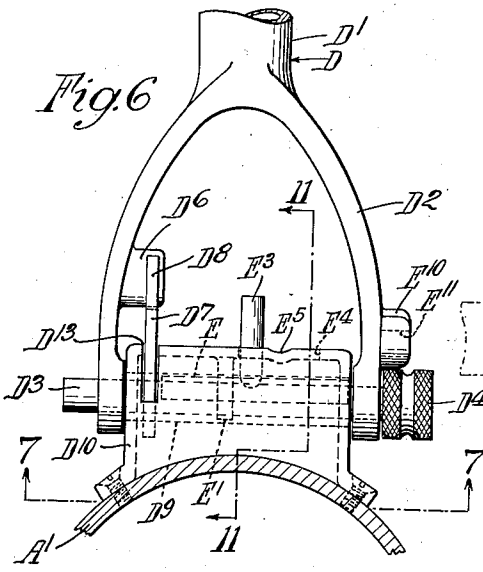


Fig.8

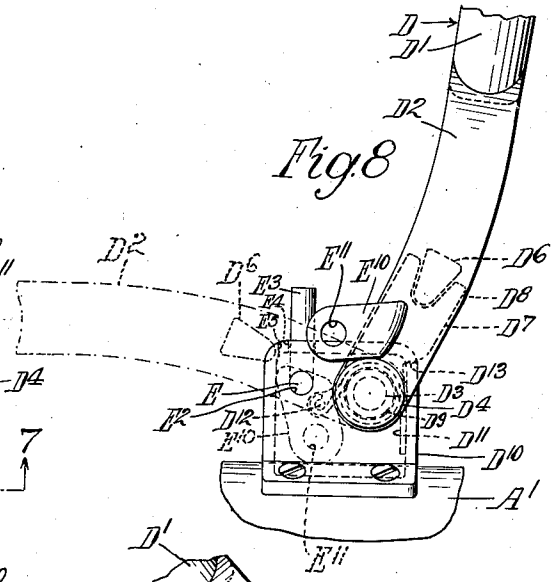


Fig.7

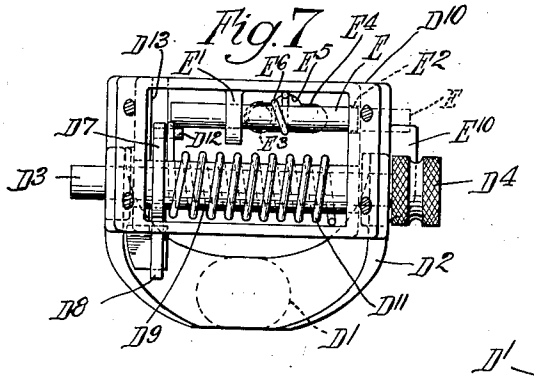


Fig.9

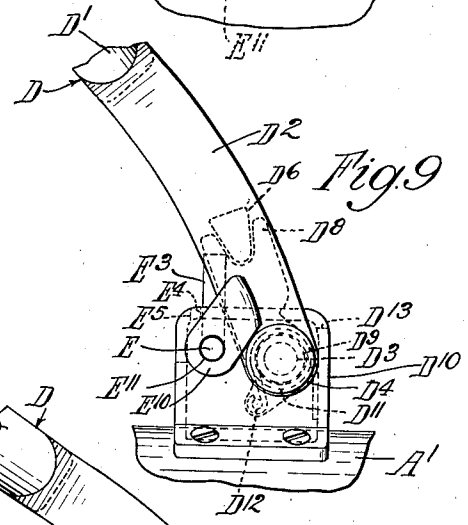


Fig.11

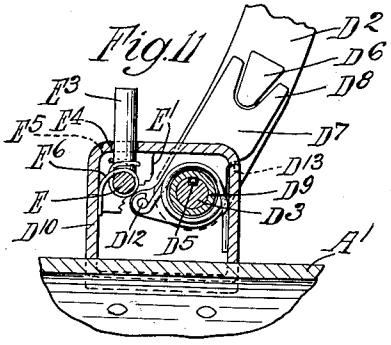


Fig.10

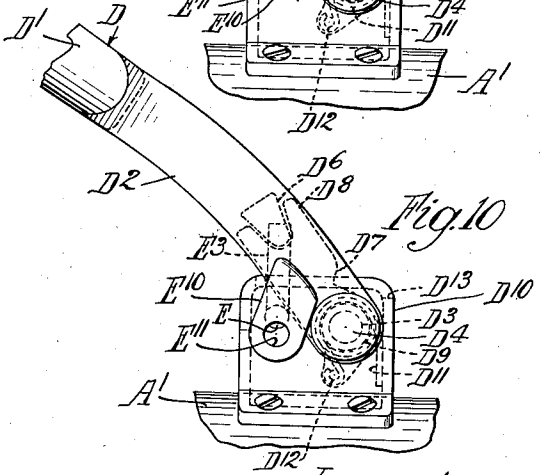
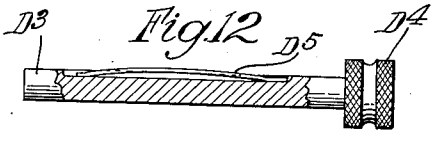


Fig.12



Inventor
William J. Clements
by Parker & Carter
Attorneys.

Patented July 18, 1933 1,918,519

UNITED STATES PATENT OFFICE

WILLIAM J. CLEMENTS, OF RIVER FOREST, ILLINOIS, ASSIGNOR TO CLEMENTS MFG. CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

VACUUM CLEANER

Application filed July 16, 1930. Serial No. 468,312.

My invention relates to an improvement in vacuum cleaners. One purpose is the provision of an improved handle for such vacuum cleaners. Another purpose is means for controlling the setting of the handle to vary and adjust its engagement with and angular relation to the motor housing. Another object is the provision of improved means for lifting a vacuum cleaner. Another object is the provision of improved means for guarding the inlet nozzle of a brush driven vacuum cleaner. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation;

Figure 2 is a detail of the handle;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 3;

Figure 5 is a section similar to Figure 3 with parts in different positions;

Figure 6 is a section on the line 6—6 of Figure 1;

Figure 7 is a section on the line 7—7 of Figure 6;

Figure 8 is a side elevation of the structure shown in Figure 6;

Figure 9 is a view similar to Figure 8 with parts in a different position;

Figure 10 is a similar view with the parts in a still different position;

Figure 11 is a section on the line 11—11 of Figure 6; and

Figure 12 is a detail.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings, A generally indicates a vacuum cleaner structure which includes a motor housing A^1 and a fan chamber A^2. Since the motor and fan do not of themselves form any part of the present invention, motor and fan are not indicated in detail. A^3 indicates a conductive connection for the motor which may be plugged in as by the plug A^4 into the switch box A^5, A^6 indicating a switch whereby the current may be turned on and off. A^7 is a forward extension of the fan chamber, which may be removable therefrom and which may include the downwardly extending and laterally expanded inlet and brush containing nozzle A^8 rotatable within which is any suitable brush A^9, which may be driven by the belt A^{10} from the motor rotated spindle A^{11}.

The motor is supported for example upon a pair of wheels B mounted on or beneath the fan casing. A pair of wheels B^1 are rotatably positioned within the nozzle A^8. B^2 indicates a rear wheel for supporting the opposite end of the motor housing. It may be mounted upon the lever B^3 adjustable as by the thumb screw B^4, whereby the vacuum cleaner as a whole may be rotated about the wheels B, to raise or lower the height of the nozzle A^8. The supplemental wheels B^1 within the nozzle serve to limit the downward movement of the nozzle toward the floor and to prevent its being positioned in such close proximity to the floor as would prevent proper suction. In the position in which the parts are shown in Figure 1 the cleaner has in effect a five point support. Tilting the lever B^3 in one direction or the other may lift the rollers B or the rollers B^1 from the floor, but it cannot be effective to thrust the lower edge of the nozzle A^8 lower than the position in which it is shown in Figure 1.

D generally indicates a handle structure which includes a lower handle portion D^1, which may be of metal and formed in one piece. It terminates in the lower fork D^2 rotatable upon the pin D^3, which is shown in detail in Figure 12 and is shown as having a knurled head D^4 and a spring D^5 which prevents unintended axial movement of the pin. Mounted on the interior of the fork D^2 is a lug D^6 which is adapted to be engaged by the fork D^8 of the lever D^7 which is rotatably mounted on the bushing D^9 which surrounds the pin D^3 and is fixed in relation to the housing D^{10}. Coiled about the bushing D^9 is the coil spring D^{11} one end of which abuts against the interior of the housing wall, as shown in Figure 11, the other end of which engages a pin or lug D^{12} upon the lever D^7. The spring normally tends to move the lever D^7 in clock-

wise position as shown in Figures 8 to 11, thus tending to throw the lever into the position in which it is shown in dotted line in Figure 8 or the full line in Figure 11. Thus the effect of the spring, and the lever D^7, is to move the fork D^2 into upright position, thus maintaining the handle in the position in which it is shown in Figure 1. The lever moves in a slot D^{13} in the housing D^{10}, the slot being proportioned to serve as a limit to limit the forward or rearward movement of the lever D^7. At one limit the handle is in the full line position of Figure 8 and at the other limit it may take the dotted line position of Figure 8.

Positioned in the housing D^{10} is a sliding pin E which may slide in the interior bearing E^1 and in the exterior bearing E^2 formed in the wall of the housing. Movement may be controlled as by the upwardly projecting handle or stop member E^3 which passes through a slot E^4 in the housing top. Note that said slot is centrally offset as at E^5, the spring E^6 tending to hold the member E^3 in said offset portion, and also frictionally to prevent movement of the member E^3 and the pin in any setting. When the member E^3 is in the position in which it is shown in Figures 6 and 7 the lever D^7 and the handle are freely movable. When the member E^3 is in intermediate position in the offset E^5 the end of the pin E projects outwardly through the aperture E^2 a sufficient distance to engage the fork D^2, as shown in Figure 10 to limit the downward movement of the fork to the full line position of Figure 10. Otherwise the movement of the fork or handle is not controlled or impeded. When the member E^3 is moved farther, to the right hand end of the slot E^4, referring to its position in Figure 7, then the end of the pin E projects outwardly so far through the aperture E^2 that it can penetrate the aperture E^{11} of the offset portion or lug E^{10} of the fork D^2, at that time effecting a positive locking function and preventing any movement of the fork D^2 or the handle. The parts are shown in this locking position in Figure 9.

As shown in Figure 1 the lower handle portion D^1 extends upwardly a substantial distance from the fork D^2. Mounted in the upper end thereof is a spring leaf G fixed at one end as at G^1, the free end being aligned with an aperture G^2. Adjacent such aperture a cam member G^3 is pivoted and is provided with a manual or finger controlled handle G^4. G^5 indicates an upper handle member cut away as at G^6 to provide a flat face opposed to the spring G. This flat face G^6 is of substantial length, to permit a substantially longitudinal adjustment of the handle. The operator may clamp the cam G^3 by use of the member G^4 at any position along the flat portion G^6, thus adjusting the handle as to height.

It will be realized that whereas I have described and shown a practical and operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to my specific showing.

The use and operation of my invention are as follows:

Referring to the structure shown in detail in Figures 6 to 12 I employ a ready locking means, including the pin E, which has three positions or adjustments. At one adjustment, as shown in Figure 7, it has no effect whatsoever upon the movement of the handle, which may be swung freely by the operator in employing the device. The pressure of the spring D^{11} on the lever D^7 normally holds the handle in upright position, but its pressure is insufficient to hamper the operator in depressing the handle. When the pin E is in intermediate position, with the member E^3 engaging the offset E^5 of the slot E^4, then the projecting end of the pin limits the downward movement of the handle. The purpose of this is to permit the operator readily to tilt the vacuum cleaner as when lifting it over the edges of rugs and the like. A further movement of the pin E permits a positive locking of the handle in an intermediate depressed position, the position in which it is shown in Figure 9. A rigid mounting of the handle in relation to the cleaner is useful for many purposes, for example for permitting the cleaner to be readily manipulated in cleaning stairs or in lifting it from one level to another.

The handle is adjustable as to length by employment of the structure shown in Figures 2 to 5 inclusive and including an upper handle member G^5 longitudinally slidable in the lower handle D^1. The spring leaf G and its controlling cam G^3 provides locking means operable at any point along the flattened portion G^6 of the member G^5, thus permitting a very substantial adjustment of the length of the handle.

I claim:

1. In a vacuum cleaner, a cleaner body, a handle pivoted in relation thereto, means tending normally to move said handle into a generally upright position, including a lever, an operative connection between said lever and said handle, and yielding means tending normally to rotate said lever in a predetermined direction, and a housing within which said lever is pivoted, said housing being apertured to permit the lever to extend therefrom, opposite ends of said aperture being adapted to serve as limit means for lim-

iting the arc through which said lever and handle may rotate.

2. In a vacuum cleaner, a cleaner body, a housing positioned upon said body, a handle pivoted in relation to said housing, the axis of rotation of said handle passing through said housing, means tending normally to move said handle into a generally upright position, including a lever pivoted within said housing and an operative connection between said lever and said handle, and yielding means tending normally to rotate said lever in a predetermined direction; in combination with a locking element, associated with said housing, and means for moving it, said element being adapted, when in one position to restrict the rotation of said handle to an arc less than its normal maximum arc of possible rotation.

3. In a vacuum cleaner, a cleaner body, a housing positioned upon said body, a handle pivoted in relation to said housing, the axis of rotation of said handle passing through said housing, means tending normally to move said handle into a generally upright position, including a lever pivoted within said housing and an operative connection between said lever and said handle, and yielding means tending normally to rotate said lever in a predetermined direction; in combination with a locking element associated with said housing, and means for moving it, said element being adapted, when in one position, to prevent rotation of said handle.

4. In a vacuum cleaner, a cleaner body, a housing positioned upon said body, a handle pivoted in relation to said housing, the axis of rotation of said handle passing through said housing, means tending normally to move said handle into a generally upright position, including a lever pivoted within said housing and an operative connection between said lever and said handle, and yielding means tending normally to rotate said lever in a predetermined direction; in combination with a locking pin slidably mounted in said housing, and means for moving it, including a handle element projecting upwardly through the housing, the housing being slotted, said pin being adapted, when in one position, to restrict the rotation of said handle to an arc less than its normal maximum arc of possible rotation, and being adapted when in another position, to lock the handle against rotation.

5. In a vacuum cleaner, a cleaner body, means for positioning said body, in predetermined position, upon a generally horizontal supporting surface, a handle pivoted in relation thereto, the weight of the handle being insufficient of itself to tilt the cleaner body. yielding means tending normally to move said handle into generally upright position, and means for limiting the arc through which said handle may be moved, and means for locking the handle at a predetermined position within the arc.

6. In a vacuum cleaner, a cleaner body. means for positioning said body, in predetermined position, upon a generally horizontal supporting surface, a handle pivoted in relation thereto, the weight of the handle being insufficient of itself to tilt the cleaner body, yielding means tending normally to move said handle into generally upright position. and means for limiting the arc through which said handle may be moved, and additional means for limiting the movement of the handle to an arc less than the maximum arc of movement of the handle, and means for locking the handle at a predetermined position within the maximum arc.

WILLIAM J. CLEMENTS.