

Aug. 1, 1939.

C. H. TAYLOR

2,167,785

SUCTION CLEANER

Filed Dec. 16, 1936

2 Sheets-Sheet 1

*Fig. 1*

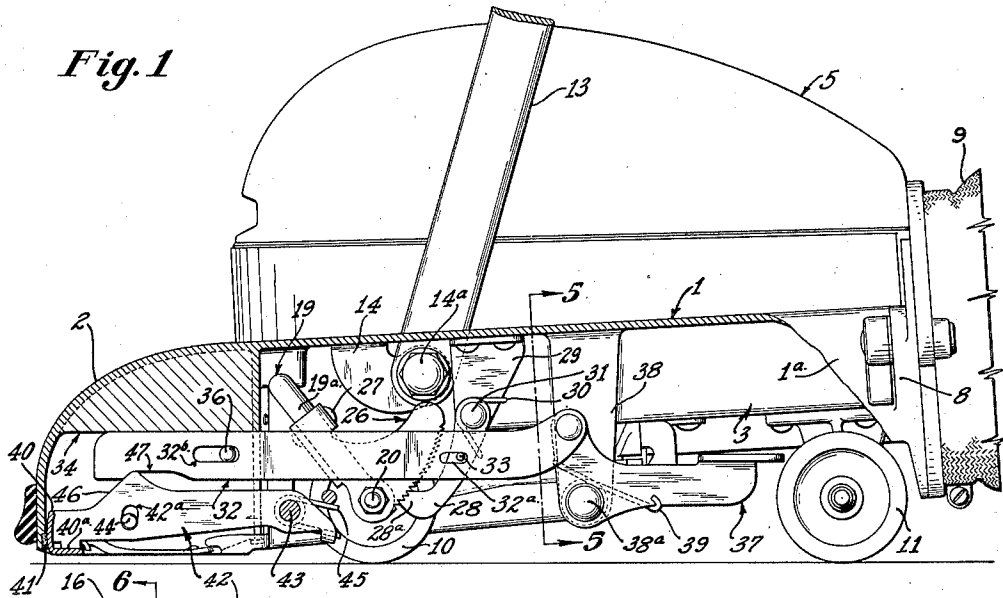
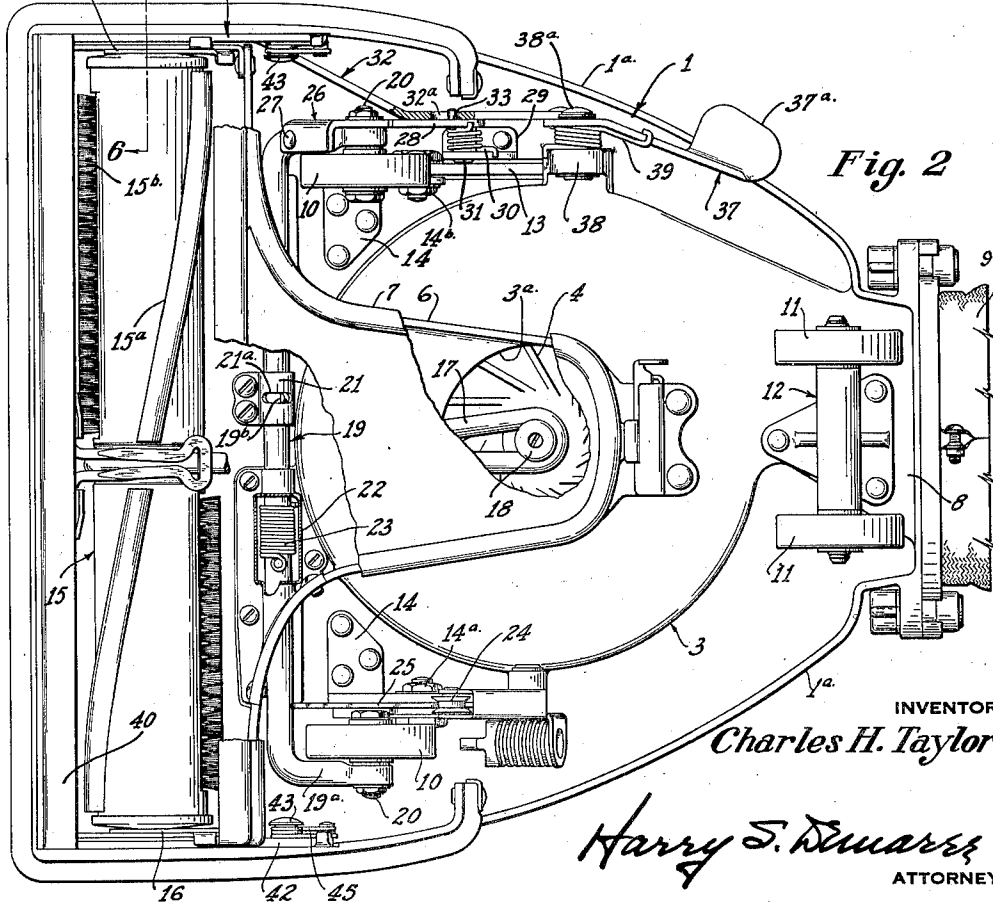


*Fig. 2*



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2 Sheets-Sheet 2

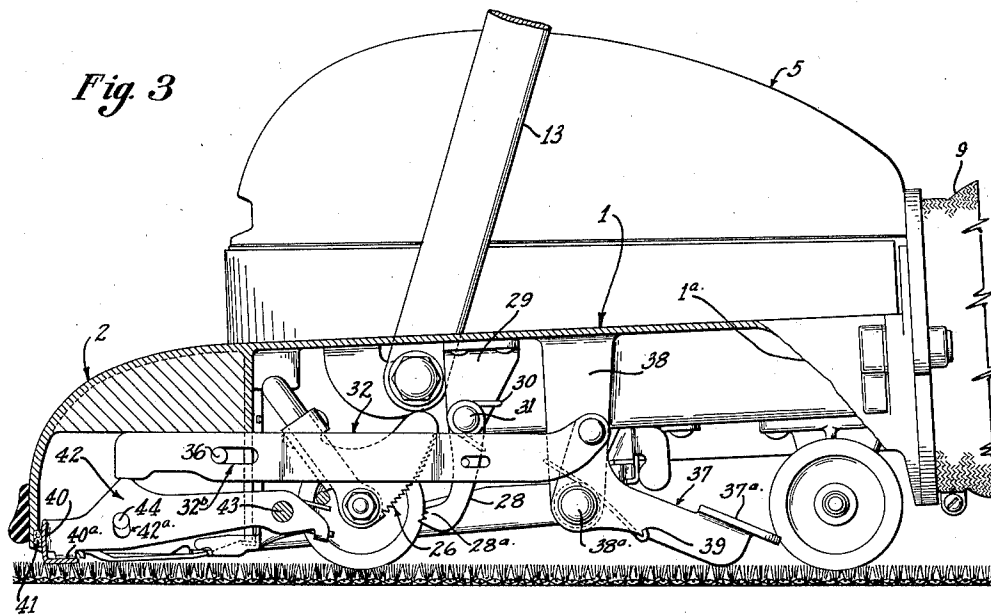
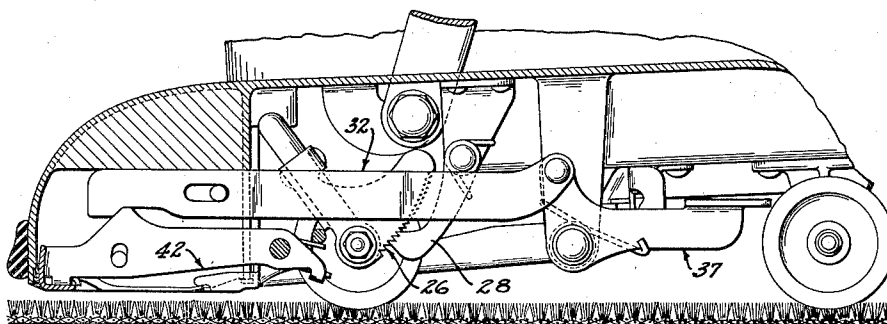


*Fig. 4*

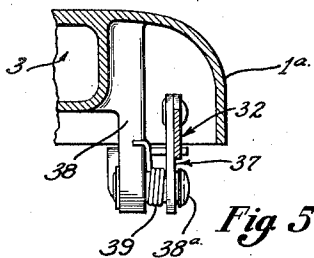


*Fig. 5*

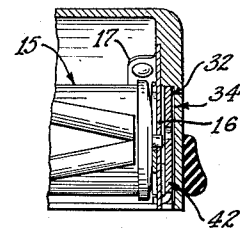


*Fig. 6*

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## UNITED STATES PATENT OFFICE

2,167,785

## SUCTION CLEANER

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Application December 16, 1936, Serial No. 116,081

11 Claims. (Cl. 15—16)

This invention relates to improvements in suction cleaners and more particularly to an improved mechanism for automatically adjusting or regulating the height of the nozzle of a suction cleaner above the surface of a carpet, rug or other floor covering to be cleaned.

In the operation of suction cleaners, effective cleaning requires a uniform spacing of the nozzle or suction mouth above the surface of the particular floor covering being cleaned and since operating conditions definitely vary with different types of floor coverings, a corresponding regulation of the nozzle height is essential to efficient operation. Heretofore it has been the practice to provide suction cleaners with manually actuated nozzle height adjusting devices, functioning through the supporting wheels and, with the aid of a visual indicator which registers "high", "medium" and "low", the operator is enabled to set the nozzle to any one of the three heights of adjustment indicated, by turning a knob in one direction or the other.

However, without knowing exactly the correct nozzle height setting for the various kinds and grades of floor coverings, it is quite impossible for the operator to adjust the cleaner properly for every condition of operation and hence there is no assurance that the cleaner is being operated at its utmost efficiency at any particular time.

Thus the primary object of the present invention is to provide an automatic type of nozzle height adjusting mechanism which embodies generally a foot actuated height gauging member or feeler which definitely establishes the correct setting of the nozzle for a particular surface and then adjusts the cleaner to that setting.

A further object of the invention is to provide a somewhat different arrangement of automatic nozzle height adjusting mechanism from that disclosed in an application filed by me on August 15, 1936, bearing Serial No. 96,222, it being understood, however, that the present disclosure is not necessarily to be considered as an improvement but rather as a different application of the automatic adjusting feature.

The invention will now be disclosed in greater detail in its connection with the accompanying drawings in which:

Figure 1 is a view in side elevation of a portable, handle-maneuvered type of suction cleaner having a portion of the main casing broken away to show the supporting wheels and the nozzle height adjusting mechanism associated therewith;

Figure 2 is a bottom plan view of the suction

cleaner with portions of the bottom plate broken away to show the parts beneath;

Figure 3 is a view in side elevation of the cleaner resting upon a carpet and the foot-operated lever of the nozzle adjusting device depressed in the act of adjusting the cleaner to that particular carpet.

Figure 4 is a view substantially duplicating that of Figure 3 but showing the nozzle elevated to its proper operating height upon the release of the foot-operated lever;

Figure 5 is a detailed view in vertical section taken on line 5—5 of Figure 1, and

Figure 6 is a detailed view in longitudinal section through one end of the nozzle portion of the main casing as taken on line 6—6 of Figure 2.

Referring first to the cleaner in its general aspects, the same comprises a main casing 1 including a nozzle portion 2 extending transversely of its forward end and consisting generally of an elongated nozzle chamber having a downwardly facing slot or mouth. Immediately to the rear of the nozzle 2 is a circular fan chamber 3 enclosing a fan 4 having direct driving connection with a motor enclosed within a dome-like cover or hood 5 surmounting the main casing. The axis of the motor and fan is vertical. In the bottom wall of the fan chamber is a circular opening or "eye" 3a which communicates with a passage extending forwardly along the underside of the casing 1 and communicating with the nozzle chamber, this passage being formed by a shallow depending wall 6, enclosing the sides and rear end of the passage, and a removal bottom plate 7. The casing 1 tapers rearwardly from the nozzle portion 2 and terminates in a rearwardly opening flanged outlet connection 8 from the fan chamber and to which is detachably secured the inlet end of the dirt bag 9.

The casing 1 is supported upon a pair of front wheels 10, 10 located along the sides and just rearwardly of the nozzle portion 2 and a pair of rear wheels 11, 11 mounted upon a bracket 12 to form a caster, fastened to the underside of the casing adjacent its rear end. The cleaner is thus free to travel in a straight line forwardly and rearwardly, being propelled manually by a handle, not shown except for its lower portion which has the form of an inverted U-shaped bail 13 straddling the motor hood 5 transversely and having pivotal connection at its lower ends with the underside of the casing 1 through the medium of fixed brackets 14, 14 carrying pivot bolts 14a, 14a.

Extending lengthwise of the nozzle 2 is a rota-

tive agitator 15 consisting primarily of a cylindric shell supported at its ends in suitable bearing plates 16 mounted at the ends of the nozzle chamber (Figure 6). The agitator is provided with helically arranged beater elements 15a and longitudinally arranged brush elements 15b projecting radially from the cylindric surface of the agitator and so positioned relative to the suction mouth of the nozzle that their edges or tips protrude slightly therefrom. The agitator is driven by the motor and through a driving belt 17 engaging a belt groove formed at the center of the agitator and, extending rearwardly through the air passage from the nozzle to the fan chamber, passes around a pulley 18 extended axially below the fan 4.

Referring again to the front supporting wheels 10, 10 it will be observed that these wheels are journaled at the outer ends of a rock shaft 19 extending transversely of the cleaner casing 1 between the nozzle 2 and the fan casing 3 and having its end portions bent at right angles to form a pair of crank arms 19a, 19a, normally assuming an inclined position rearwardly and downwardly at an angle of approximately 45 degrees to the vertical, as clearly shown in Figure 1. At the lower ends of these crank arms are carried stub shafts 20, 20 on which the front wheels 10, 10 are journaled. The rock shaft 19 is supported in suitable bearings 21 and 22, the latter including a cylindric housing for a torsion spring 23 acting on said shaft to turn it in a clockwise direction, that is to say, in a direction to swing the wheels downwardly and toward the front end of the cleaner casing. Moreover, it is important that this torsion spring exert the proper amount of force upon the shaft 19, namely, slightly less than the opposing weight of the cleaner normally carried by the front wheels. In other words, the pressure exerted by the spring 23 on the rock shaft 19 is not sufficient to overcome the normal weight carried by the front wheels without the application of some extraneous force.

The mounting of the front wheels 10, 10 is a common arrangement in suction cleaners of the particular type herein disclosed, and which preferably includes also, the formation of an arcuate slot 21a in the bearing member 21 engaged by a radial pin 19b projecting from the shaft 19, to limit the rocking movement of the shaft through an angle of approximately 45 degrees rearwardly from the extreme vertical position of the crank arms 19a.

Now referring to Figure 2 it will be noted that there are cavities or recesses in the vicinity of the front wheels 10, 10, and on either side of the circular fan chamber 3, which are partially enclosed by the skirt-like marginal wall 1a extending around the edges of the main casing 1 of the cleaner, and which are available to house the front wheel assembly, the nozzle adjusting mechanism and the handle position control device.

This latter device is more or less common to cleaners of the type herein illustrated and will be only described briefly. It consists of a spring-pressed cam roller 24 which bears against the lower edge of an arcuate sector 25 carried at one end of the handle bail 13 (and shown just above the lowermost front wheel in Figure 2). Formed in the edge of the sector 25 are notches so spaced as to correspond to certain predetermined positions of the handle and which when engaged by the roller 24 act to yieldingly hold the handle in that position.

Passing now to the other side of the cleaner casing there is located in the cavity along the upper side of the fan chamber (as shown in Figure 2) the nozzle height adjusting mechanism embodying the novel features of the present invention. This adjusting mechanism, it will be observed at the outset, acts upon the rock shaft 19 carrying the front wheels 10, 10 and directly through a ratchet sector 26 carried by the adjacent crank arm 19a. This ratchet sector has the form of a flat somewhat V-shaped plate abutting flatwise against the outer edge of the crank arm 19a and suitably fixed thereto as by means of a pin 27 and the outer end of the stub shaft 20. As an integral part of the front wheel assembly, the main portion of the sector 26 lies in a vertical plane and extends rearwardly at right angles to the crank arm 19a in the form of an upwardly inclined arm having a slightly curved outer edge in which are cut a plurality of ratchet teeth.

Immediately beyond the toothed edge of the ratchet sector 26 is a pawl lever 28 pivotally mounted at the lower end of a bracket 29 depending from the underside of the cleaner casing 1. The pawl lever assumes a general vertical position immediately adjacent the toothed edge of the ratchet sector 26 and at its lower end is provided with a pawl 28a having two or more teeth adapted to coact with the teeth of the sector 26. Moreover, a torsion spring 30 surrounding the pivot pin 31 supporting the pawl lever, serves to force the pawl forwardly and into engagement with the sector 26.

Now, it is obvious that the coacting ratchet sector 26 and pawl lever 28 would be available to regulate the height of the nozzle above the floor surface providing the pawl could be temporarily disengaged from the ratchet sector to permit the turning of the shaft 19 and the accompanying vertical displacement of the front wheels to raise or lower the nozzle to the desired height above the carpet surface. Indeed, the mechanism about to be described is designed to perform automatically the adjustment of the front wheel assembly in the manner just described, by the simple operation of depressing and releasing a foot-operated lever.

Extending fore and aft of the cavity housing the adjusting mechanism and lying just outside of the ratchet sector 26, is a horizontal endwise shiftable bar 32, its rear end portion bearing flatwise against the outer face of the pawl lever 28 and having a pin and slot connection therewith, the pin 33 projecting laterally from the pawl lever and engaging a slot 32a extending lengthwise of the shift bar 32 and having a length substantially two or three times the diameter of the pin. Just forwardly of its pin and slot connection with the pawl lever 28, the shift bar is bent outwardly toward the end of the nozzle at an angle of about 30 degrees whereupon it projects forwardly into a cavity 34 cut into the end wall of the nozzle and extended downwardly from a horizontal line coinciding with the upper edge of the shift bar 32, as clearly shown in Figures 1 and 6. Thus the forward end of the shift bar 32 lies outside of the bearing bracket 16 for the adjacent end of the rotary agitator 15 and is supported on a pin 36 projecting inwardly from the end wall of the nozzle chamber and engaging a longitudinal slot 32b in said bar.

The rear end of the shift bar extends a short distance beyond its connection with the pawl

lever 28 and, as shown in Figure 1, terminates in a slightly upturned end having pivotal connection with the shorter arm of a bell-crank lever 37 pivotally mounted at the lower end of a post 38 extending vertically downwardly along the side of the fan chamber 3 and a short distance therebeyond. A pivot pin 38a carries the operating lever 37 and a torsion spring 39, coiled around the shank of the pivot pin with its free ends hooked around the lower and forward edges of the lever 33 and post 38, respectively, yieldingly opposes the downward swinging movement of the lever which, it will be noted, extends rearwardly and is provided with a laterally offset pedal 37a projecting outwardly from beneath the side of the casing 1. The operating lever thus assumes a normal horizontal position with the bottom edge of the marginal wall 1a of the casing forming a stop member against the tension of the spring 39. Now, by exerting a downward pressure upon the pedal 37a with the foot, an endwise movement in a rearward direction, but limited by the pin and slot at its forward end, is imparted to the shift bar 32. And upon releasing the lever it is retracted to its normal position, that is, from the position of Figure 1 to that of Figure 3 and return.

Manifestly it is during the endwise movement of the shift bar 32 that the nozzle height adjustment takes place, and in part by the momentary retraction or withdrawal of the pawl 28 from the ratchet sector 26—and by the functioning, meantime, of the nozzle height gauging member now to be described in detail.

The gauge member comprises an angle bar 40 extending longitudinally across the forward edge of the nozzle just inside of the lower edge of the front wall thereof. This gauge bar is preferably a light metal stamping arranged with one of its webs facing downwardly to form a flat relatively wide lip 40a and the other web extending vertically upward and having contact with a sealing strip 41 along the inner edge of the nozzle. At the extreme ends of the bar 40 are supporting arms 42, 42, preferably formed integral therewith and extending rearwardly at right angles. These supporting arms lie just inwardly from the ends of the nozzle chamber and extend along the lower edges thereof, with their free ends pivotally mounted on suitable pins 43, 43 anchored in the side walls of the casing 1 just beyond the vertical rear wall of the nozzle chamber. The bar 40 with its supporting arms 42, 42, thus has the form of a light U-shaped frame pivotally mounted within the nozzle mouth for a limited swinging movement about a horizontal axis to depress and retract the contact lip 40a from its normal position in the plane of the suction mouth to one which may be roughly estimated from  $\frac{1}{8}$  to  $\frac{1}{4}$  of an inch below the nozzle, the distance being positively limited by pin and slot connections between the arms 42 and the end walls of the nozzle, the latter having inwardly projecting pins 44 engaging short vertically arranged slots 42a located near the outer ends of the arms. Moreover, the gauge bar assembly or frame is normally held in elevated position, as shown in Figure 1, by torsion springs 45, 45 which are coiled around the two pivot pins 43, 43 with their free ends suitably anchored so as to yieldingly hold the bar at the upper limit of its movement.

Now to render the gauge bar operative the supporting arm 42 directly beneath the forward end of the shift bar 32, has a pronounced pointed projection 46 along its upper edge which con-

tacts the bottom edge of said bar 32 and in the normal or inoperative position of the adjusting mechanism, engages the forward end of an elongated notch or depression 47 in the lower edge of said bar, as shown in Figure 1.

Now, if the bar 32 is retracted or shifted endwise in a rearward direction, as it does when the foot-operated lever 37 is depressed, the projection 46 leaves the notch 47 and slides into contact with the wider end portion of the bar immediately forwardly of the notch (Figure 3), and this cam action depresses the gauge bar 40 to its full extent.

Accompanying the lowering of the gauge bar 40, by depressing the foot-operated lever 37, is the release of the front wheel assembly by the retraction of the pawl 28 from engagement with the ratchet sector 26. Contrariwise, upon releasing the foot-operated lever 37 these members are restored to their initial positions, that is to say, the gauge bar 40 is returned to its normal inoperative position, and the pawl 28 is allowed to swing back into engagement with the ratchet sector 26, but it should be observed that the teeth on the pawl may not reengage the same ratchet teeth since the sector may have shifted its position in the meantime. This shifting of the ratchet sector and the front wheel assembly by which the nozzle adjustment is accomplished will be understood from the following discussion of the operation of the adjusting mechanism:

Let it be assumed at the outset that the cleaner is about to be put into operation on a medium thick carpet and that it may have been previously adjusted for a different grade of carpet or even a hard surface covering. Hence, to readjust or reset the nozzle height adjustment, the cleaner is wheeled onto the carpet to be cleaned, the foot-operated lever 37 is depressed and with its release the nozzle is automatically set to its correct height. But to understand exactly what takes place during this apparently simple operation, it is important to observe first of all that the supporting wheels will invariably sink into the nap of a carpet to an appreciable amount because of their limited tread area as is shown in Figure 3. Moreover, the amount of sinking or pile penetration by the wheels will vary with different makes of carpets and rugs depending on the length, stiffness and thickness of the fibers which make up the pile. Hence, the adjusting mechanism must function automatically to compensate for the varying pile characteristics in different kinds and grades of carpet, in order to obtain uniform and therefore effective cleaning performance.

Therefore, having wheeled the cleaner onto the carpet and depressed the foot lever to the position as shown in Figure 3, the pawl 28 is first withdrawn from engagement with the ratchet sector 26 and then the gauge bar 40 is depressed. Now, the result of releasing the ratchet sector 26 by the pawl lever 28 is to momentarily free the entire front wheel assembly so that it can respond to the resultant of the two opposing forces acting thereon, namely, the weight of the cleaner acting downwardly and the tension of the torsion spring 23 acting through the rock shaft 19 to oppose the downward force of gravity. But the effect of depressing the gauge bar 40 is always the same, namely, that of lowering the contact lip 40a a predetermined distance below the plane of the nozzle mouth, this distance for the purpose of this discussion being assumed to be one-quarter ( $\frac{1}{4}$ ) of an inch.

But it is important to observe in connection

with the movement of the gauge bar 40, that when the lip 40a contacts the carpet it does not sink into or penetrate the nap, but lies flush on top of the same. In other words, the area of the contact lip 40a is great enough to support the entire weight of the forward portion of the cleaner body upon the carpet nap without any appreciable penetration. Manifestly, this is a vital factor, for if the gauge bar did sink into the carpet nap to the same or approximately the same extent as the supporting wheels, no adjustment would take place and the mechanism would be quite useless. As it is, however, the contact lip of the gauge bar rests upon the surface of the floor covering and thus establishes a plane above which the nozzle mouth is to be uniformly spaced and this plane is always the top surface of the floor covering regardless of its kind and texture.

Now, having established the plane of the carpet surface and spaced the nozzle the predetermined distance above the same, it remains to raise or lower the front wheels the required amount to correspond to the nozzle setting. And this takes place when the pawl 28 releases the ratchet sector for the entire front wheel assembly is then freed to swing in either direction, that is clockwise, under the tension of the torsion spring 23 until the wheels are grounded upon the carpet, or counter-clockwise under the weight of the cleaner overcoming the tension of the spring 23 until the contact lip 40a rests on the carpet surface. But whether the adjustment is upwardly or downwardly, it occurs during the momentary release of the ratchet sector by the pawl.

Thus, regardless of the previous setting, the function of the gauge bar is always to reestablish the fixed distance between the contact lip and the mouth of the nozzle, whereupon the front wheel assembly is released long enough to automatically adjust its position to correspond, by shifting downwardly or upwardly under the tension of the spring 23 or the weight of the cleaner as the conditions require. In this manner, the correct nozzle height adjustment may be quickly and accurately made for any type or kind of floor covering, and continuous effective performance insured.

Having set forth a preferred embodiment of my invention, I claim:

50 1. In a suction cleaner, the combination of a casing having a nozzle and a supporting wheel adapted for adjustment vertically to raise or lower the nozzle relative to the surface to be cleaned, but normally adapted to be held in a given position of a vertical adjustment, a surface contacting member mounted on said casing and adapted to be shifted into a position below the plane of said nozzle to establish a predetermined height thereof above said surface, and means operative to release said vertically adjustable supporting wheel while said contacting member is in its shifted position to permit said wheel to adjust itself vertically to the position determined by said surface contacting member.

65 2. In a suction cleaner, the combination of a casing having a downwardly facing nozzle and supporting wheels vertically adjustable relative thereto to regulate the height of said nozzle above the surface to be cleaned, means normally acting to hold said supporting wheels in a given position of vertical adjustment, a surface contacting member mounted on said casing and adapted to be shifted a predetermined distance below the nozzle, and means for releasing said adjustable wheel retaining means whereby said supporting wheels

are free to assume a vertical position calculated to retain said nozzle at a height above said surface predetermined by said contacting member in its shifted position.

3. In a suction cleaner, the combination of a casing having a nozzle and supporting wheels adapted for adjustment vertically to raise or lower the nozzle relative to the surface to be cleaned, means normally acting to retain said wheels in a given position of a vertical adjustment, a surface contacting member mounted on said nozzle and adapted to be temporarily shifted to and from a position a predetermined distance below said nozzle and means operative to release said wheels while said floor contacting member is in its shifted position to permit the displacement of said nozzle necessary to bring said contacting member into bearing contact with said surface.

4. In a suction cleaner, the combination of a casing having a downwardly facing nozzle and supporting wheels adjustable vertically to raise and lower said nozzle relative to the surface to be cleaned, a surface contacting member mounted on said casing adjacent said nozzle and adapted to be shifted to and from a predetermined position below the mouth of said nozzle, means for normally retaining said adjustable supporting wheels in a given position of adjustment relative to said casing, tension means acting on said adjustable supporting wheel to oppose the weight of said casing thereon, and means for shifting said surface contacting member into its nozzle height determining position and for momentarily releasing said adjustable wheel retaining means to permit said wheels to shift automatically into the position determined by said surface contacting member.

5. In a suction cleaner, the combination of a casing having a downwardly facing suction mouth and supporting wheels adjustable vertically to raise and lower said nozzle relative to the surface of the floor covering, a nozzle height gauge member mounted on said casing and comprising a contact lip adjustable to and from a predetermined position below the plane of said suction mouth and capable of supporting the weight of said casing upon the surface of the floor covering, means for retaining said adjustable supporting wheels in any one of a plurality of adjusted positions, tension means acting on said supporting wheels to oppose their vertical adjustment under the weight of said casing and means operative to successively shift said gauge member into its predetermined position below the plane of the suction mouth and to release said supporting wheel retaining means to permit said wheels to shift vertically into a casing supporting position determined by said gauging member in bearing contact with the surface of said floor covering.

6. In a suction cleaner, the combination of a casing having a nozzle, supporting wheels for said casing, a carrying member on which said wheels are journaled and adjustably mounted on said casing for regulating the height of said nozzle above the floor surface covering, a gauge bar pivotally mounted on said casing adjacent said nozzle and adapted to be shifted to and from a predetermined position below the mouth thereof, means for retaining said wheel carrying member in any one of a plurality of adjusted positions including pawl and ratchet members, and means for successively shifting said gauge bar into its position below said suction mouth and for disengaging said pawl and ratchet members to per-

mit said wheels to be adjusted automatically to the height of the nozzle established by the contact of said gauge bar with the surface of the floor covering.

5 7. In a suction cleaner, the combination of a casing having an elongated nozzle mouth and supporting wheels mounted adjacent each end of said nozzle, a supporting member for said wheels adjustably mounted on said casing for regulating  
10 the height of said nozzle above the floor level, a gauge bar pivotally mounted on said casing and adapted to be shifted to and from a predetermined position below said suction mouth, means for retaining said wheel supporting member in  
15 any one of a plurality of adjusted positions including pawl and ratchet members, and a foot operated shift bar operatively connected with said gauge bar for depressing the same into position below said suction mouth and with said pawl  
20 to simultaneously disengage the same from said ratchet to allow said wheels to be adjusted automatically to the height of the nozzle established by the contact of said gauge bar with the surface of the floor covering.

25 8. In a suction cleaner, the combination of a casing having a downwardly facing nozzle, supporting wheels carried by said casing and adjustable vertically to raise and lower said nozzle relative to the floor surface covering, a gauge  
30 member mounted on said casing adjacent said nozzle and adapted to be shifted to and from a predetermined position below the nozzle, coacting pawl and ratchet members intermediate said casing and support wheels for normally retaining  
35 said wheels in any one of a plurality of positions of vertical adjustment, tension means acting on said adjustable supporting wheel to oppose the vertical bodily movement of said wheels under the weight of said casing, an operating lever connected with said gauge member and said supporting  
40 wheels and operative to shift said floor contacting member into its nozzle height determining position and for momentarily releasing said pawl and ratchet to effect the automatic adjustment of said wheels to the height of said nozzle as  
45 determined by said gauge member resting upon the surface of the floor covering.

9. In a suction cleaner, the combination of a casing having a downwardly facing suction  
50 mouth, sets of supporting wheels mounted adjacent the forward and rear ends of said casing, one of said sets of supporting wheels having a vertically adjustable mounting upon said casing whereby the same may be tilted about the other  
55 pair of supporting wheels to raise and lower the suction mouth relative to the surface of the floor covering, means for retaining said adjustable supporting wheels in one of a plurality of positions, including a pawl carried by said casing and  
60 a ratchet sector movable bodily with said supporting wheels, a gauge bar pivotally mounted on said casing and adapted to be shifted to and from a position a predetermined distance below the suction mouth and in said position to support the weight of the casing upon the surface of the floor covering, and foot operated means for re-

tracting said pawl member from said ratchet sector.

10. In a suction cleaner, the combination of a casing having a nozzle provided with a downwardly facing suction mouth extending transversely of said casing adjacent its forward end, wheels supporting said casing including a pair  
5 of wheels located at the forward end of said casing, an adjustable mounting for said front wheels comprising a shaft extending transversely of said casing and provided at its ends with crank arms on which said supporting wheels are journaled, said shaft being rotative through a limited angle to adjust said wheels vertically relative to said casing, a torsion spring acting on said shaft to oppose the normal weight of the casing carried by said wheels but not of sufficient strength to overcome the same, a ratchet sector carried by said shaft, a pawl pivotally mounted on said casing and adapted to be shifted into and out of engagement with said ratchet sector, a gauge bar extending along one edge of said suction mouth and comprising a flat contact lip sufficiently wide to support the normal weight of said casing upon the surface of the floor covering, and a foot-actuated member operatively connected with said pawl and said gauge bar and adapted to successively depress said gauge bar into a position at a predetermined distance below the plane of said suction mouth and release said ratchet  
10 sector to permit said wheel supporting shaft to swing said wheels into a position to support the nozzle at the height established by said gauge bar, and thence to reengage said pawl with said ratchet sector and return said gauge bar to its inoperative position.

11. In a suction cleaner, the combination of a casing having a nozzle provided with a downwardly facing suction mouth, wheels supporting said casing, a shaft extending transversely  
40 beneath said casing and provided at its ends with crank arms on which said supporting wheels are journaled, said shaft being rotative through a limited angle to adjust said wheels vertically relative to said casing, a torsion spring acting on said shaft but not of sufficient strength to overcome the normal weight of the casing carried by said wheels, a ratchet sector carried by said shaft, a pawl pivotally mounted on said casing and adapted to be shifted into and out of engagement with said ratchet sector, a gauge bar extending along the forward edge of suction mouth and having a flat lip adapted to contact the surface of the floor covering, and a foot-actuated shift member operatively connected with said pawl and said gauge bar and adapted to successively depress said gauge bar into a position at a predetermined distance below the plane of said suction mouth and to withdraw said pawl from said ratchet sector to permit said wheels to adjust  
45 their positions relative to the casing to the height established by said gauge bar, and tension means acting to reengage said pawl with said ratchet sector and to return said gauge bar to its inoperative position when said shift member is released.

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