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SUCTION CLEANER WITH CONVERTER FACILITY

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2 Sheets-Sheet 1

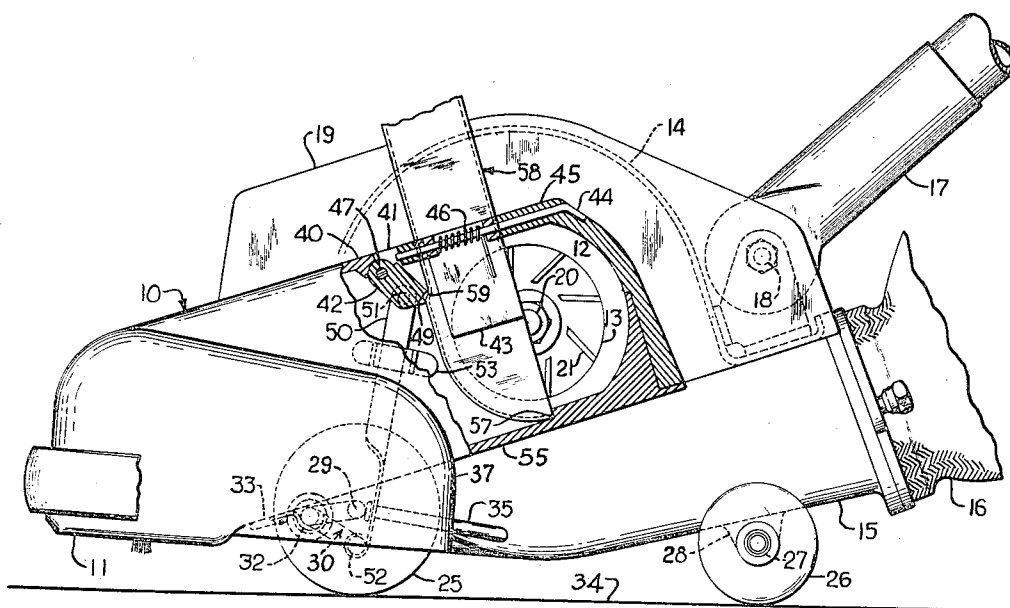
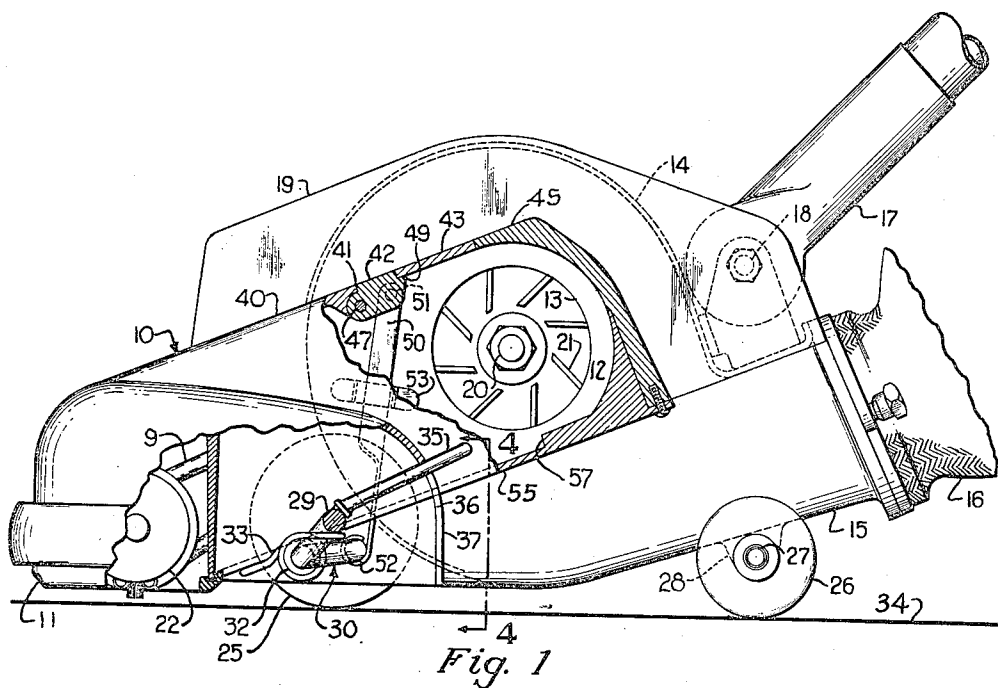


Fig. 2

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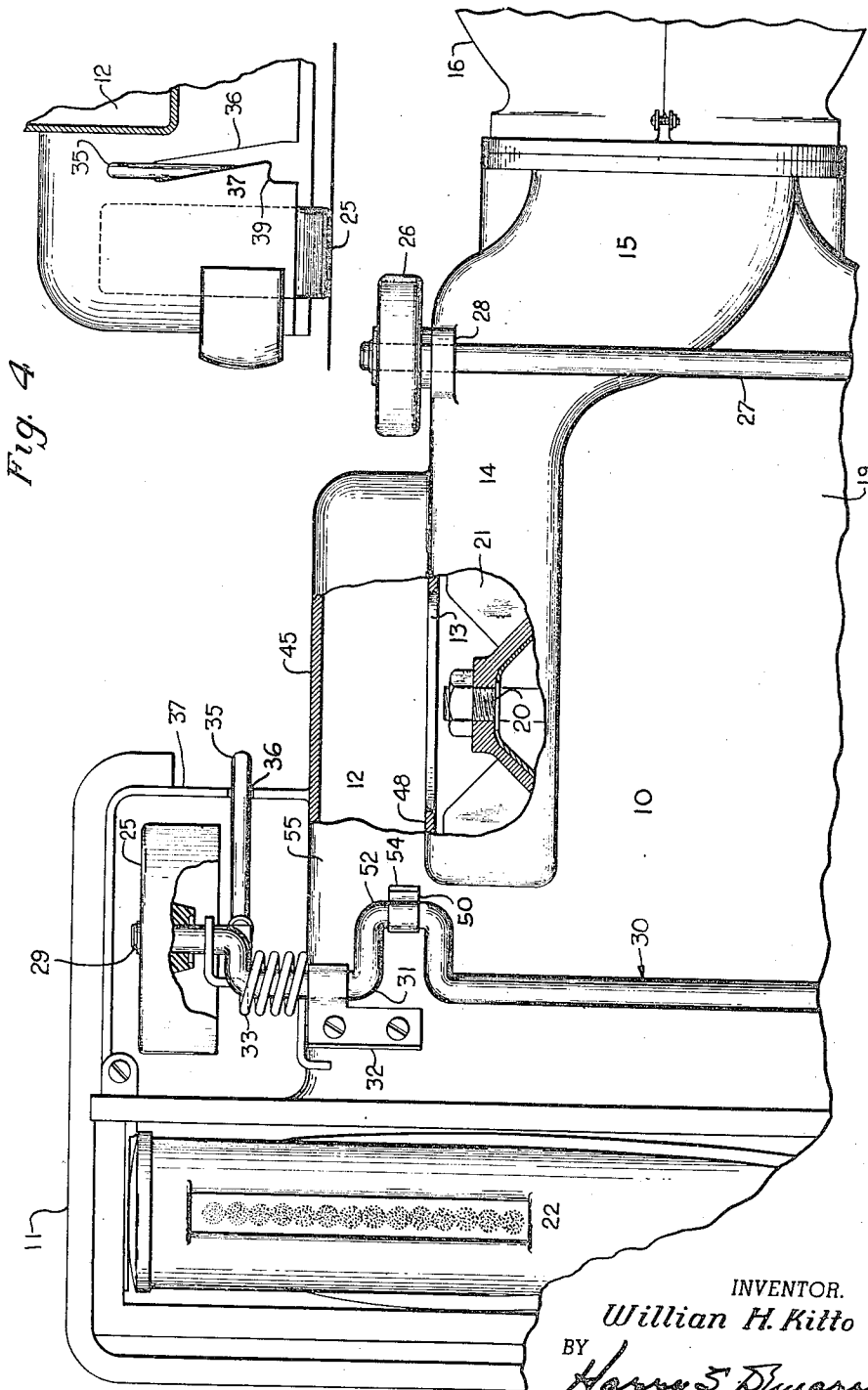
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## SUCTION CLEANER WITH CONVERTER FACILITY

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4 Claims. (Cl. 15—333)

The present invention relates to suction cleaners and more particularly to converting a cleaner from on-the-floor to off-the-floor cleaning.

An object of the invention is to provide a suction cleaner with a converter receiving port and a barrier therefor which is unlatched prior to inserting a converter tool in the port. Another object is to provide a barrier for a converter receiving port and the barrier is unlatched during adjustment of the cleaner for off-the-floor cleaning and thereafter the converter is employed to move the barrier away from the port to permit insertion of the converter. A further object is to provide a converter port barrier which maintains the nozzle in proper adjustment for on-the-floor cleaning and also locks the converter in position for off-the-floor cleaning. Other objects and advantages of the invention will be apparent from the following description and drawings, wherein:

Figure 1 is a side elevation, partly in section, showing the cleaner adjusted for on-the-floor cleaning;

Figure 2 shows the converter tool attached for off-the-floor cleaning;

Figure 3 is a bottom view showing the mounting for the front wheels, and

Figure 4 is a view taken on the line 4—4 of Figure 1 and illustrates the lever for adjusting the front wheels.

The embodiment of the invention disclosed in Figures 1 to 4 comprises a body 10 having a surface cleaning nozzle 11 from which extends a suction air passageway 12 communicating with a fan eye 13 of a fan chamber 14 provided with a discharge outlet 15 to which the lower end of a filter bag 16 is connected, and the upper end of the bag is suitably supported from a handle 17 pivotally mounted at 18 on the cleaner body 10. An unshown motor is disposed in a housing 19 and supported at one end of its shaft 20 is a suction creating fan 21, while the opposite unshown end of the shaft 20 is provided with a pulley for a belt 9 driving an agitator 22 rotatably mounted in the nozzle 11.

The cleaner body 10 is supported on front wheels 25—25 and rear wheels 26—26, the latter being mounted on a shaft 27 rigidly attached to the body in depending lugs 28. The front wheels 25 are rotatably mounted on offset ends 29 of an eccentric shaft 30 pivotally secured at 31 to the body 10 by brackets 32. A torsion spring 33 is arranged about the shaft 30 to at all times rotate the latter counter-clockwise, as viewed in Figure 1, to urge the front wheels 25 upwardly. A member 35 is rigidly attached to the offset portion 29 of the wheel shaft 30 and extends through a slot 36 in the body wall 37 for manipulation by the operator to adjust the wheels 25 and thus the nozzle 11. A recess 39 is provided in the slot 36 to receive the member 35 and lock the wheels in lowered position to maintain the nozzle 11 raised from the surface 34 for off-the-floor cleaning.

The top wall 40 of the suction air passageway 12 is provided with a converter receiving port 41 normally closed by a barrier including members 42 and 43. The member 43 is pivotally supported on a pin 44 mounted

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in the outer wall 45 of the air passageway 12, and a torsion spring 46 tends to move the barrier member 43 to its closed position, and the latter is limited in movement by an unshown shoulder contacting the top wall 40 of the air passageway 12. The barrier member 42 is rotatably mounted on a pin 47 supported in the inner and outer walls 48 and 45 respectively of the air passageway 12 and has a shoulder 49 which engages the adjacent edge of the barrier member 43 to prevent movement of the latter to its open position. As shown in Fig. 2, the members 42 and 43 pivot on axes transverse to each other. A link 50 is pivotally connected at one end to the barrier member 42 by a pin 51 and its opposite end encloses a crank portion 52 on the wheel shaft 30, whereby movement of the wheel adjusting member 35 operates the barrier member 42. The link 50 is partially disposed in the air passageway 12 and is guided along the inner wall 48 thereof by a bracket 53 and projects through an opening 54 in the lower wall 55 which may be provided with a suitable airtight seal. The spring 33 moves the front wheels 25, link 50 and barrier member 42 upwardly, and the shoulder 49 of the latter engages the barrier 43 to limit upward movement of the wheels 25 and thereby adjust the nozzle 11 in its normal position for on-the-floor cleaning.

The air passageway 12 is provided with a shoulder 57 to receive an end of a converter tool 58 when inserted in the opening 41, and the shoulder 49 on the barrier member 42 engages a flange 59 on the converter to lock the latter in the air passageway.

In operating the cleaner for on-the-floor cleaning, as shown in Figure 1, the torsion spring 33 urges the wheels 25 upwardly and such movement is limited by the barrier member 42 abutting the member 43 to thereby maintain the nozzle 11 in proper position for cleaning the surface 34. The spring 33 also retains the barrier member 42 in its port closing position and the shoulder 49 retains the other barrier member 43 in its closed position, whereby the port 41 is completely closed. The weight of the cleaner on the front wheels 25 also assists in maintaining the foregoing parts in the position shown in Figure 1. The rotating agitator 22 and the suction created by the fan 21 removes the dirt from the surface 34 and the dirt is carried by the air stream through the passageway 12 into the fan chamber 14 and discharged into the dirt filtering bag 16.

When it is desired to adjust for off-the-floor cleaning, the operator depresses the member 35 which rotates the shaft 30 clockwise and the front wheels 25 are lowered, causing the nozzle 11 to be raised to an inoperative position with respect to the surface 34. The nozzle 11 is maintained in adjusted position by seating the member 35 in the slot recess 39. Rotation of the wheel shaft 30 moves the link 50 downwardly and the barrier member 42 is shifted to the position shown in Figure 2 to unlatch the remaining barrier member 43 which is held in its closed position by the torsion spring 46. The converter 58 is then placed upon the barrier member 43 and a downward force exerted thereon to move the latter to its opened position to insert the converter through the port 41. When the converter 58 is completely inserted in the air passageway 12, it closes off the nozzle 11 to the fan eye 13 and the latter is connected to the interior of the converter to which is attached a hose and a suitable nozzle for cleaning surfaces solely by suction.

The weight of the cleaner on the front wheels 25 and the force exerted by the torsion spring 33 move the shoulder 49 of the barrier member 42 into engagement with the flange 59 on the converter 58 to lock the latter in the air passageway 12 and prevent displacement therefrom by a pulling force on the converter. When the barrier member 42 engages the flange 59 on the converter

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58 it cooperates with the latter to close that portion of the opening 41 not occupied by the converter.

In order to remove the converter 58, the operator depresses the member 35 below the slot recess 39 to rotate the wheel shaft 30 clockwise causing the barrier member 42 to be moved out of engagement with the flange 59 on the converter, whereby the latter can be pulled out of the passageway to permit the barrier members 42 and 43 to move to closed position and maintain the nozzle 11 in proper position for on-the-floor cleaning.

While I have shown and described but one embodiment of my invention, it is to be understood that it is to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the particular structure shown and described but to include all equivalent variations except as limited by the scope of the claims.

I claim:

1. A suction cleaner comprising: a body having a nozzle for on-the-floor cleaning and a port adapted to receive a converter for off-the-floor cleaning, barrier means including first and second means pivotally mounted on said body for movement on axes transverse to each other and cooperating to span said port for closing the latter during on-the-floor cleaning, barrier control means on said body connected with said first means and movable to one position to shift the latter about its axis into engagement with said second means to maintain said first and second means in said closed position for on-the-floor cleaning, said control means movable to another position to shift said first means about its axis to partially uncover said port and out of said engagement with said second means to release the latter for subsequent movement about its axis to its open position by placing the converter thereon for insertion into said port for off-the-floor cleaning.

2. A suction cleaner as described in claim 1 and means on said first means engageable with the converter when inserted in said port to retain the latter in said cleaner body.

3. A suction cleaner as described in claim 1 and said control means including cleaner supporting means movably mounted on said body for adjusting the cleaner to on-the-floor and off-the-floor cleaning positions, movement

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of said supporting means for said on-the-floor cleaning shifting said first means into engagement with said second means to maintain said barrier means in said closed position, and shifting said supporting means for off-the-floor cleaning positioning said first means to partially open said port and release said second means for insertion of the converter.

4. A suction cleaner comprising: a body having a nozzle for on-the-floor cleaning and a port adapted to receive a converter for off-the-floor cleaning, a cleaner propelling handle pivotally mounted on said body, first and second means pivotally mounted on said body for movement on axes transverse to each other and cooperating to span said port for closing the latter during on-the-floor cleaning, barrier control means disconnected from said handle and connected with said first means for movement unrestricted by the position of said handle, said control means mounted for movement to one position to shift said first means about its axis into engagement with said second means to maintain said first and second means in said closed position for on-the-floor cleaning, said control means movable to another position to shift said first means about its axis to partially uncover said port and out of said engagement with said second means to release the latter for subsequent movement about its axis to its open position by placing the converter thereon for insertion into said port for off-the-floor cleaning.

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