

May 19, 1931.

J. B. KIRBY

1,806,168

SUCTION CLEANER

Filed Nov. 5, 1927 2 Sheets-Sheet 1

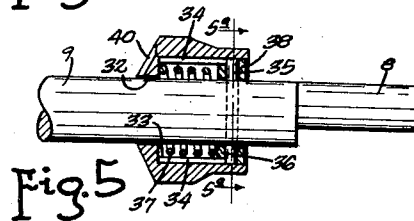
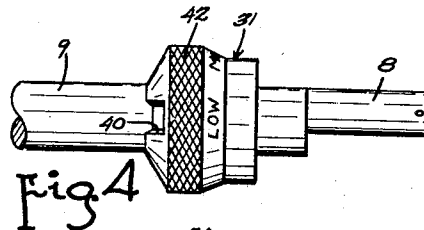
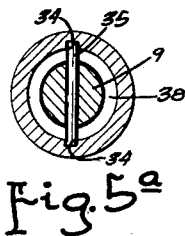
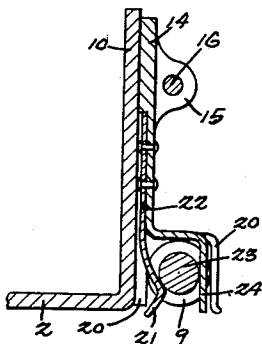
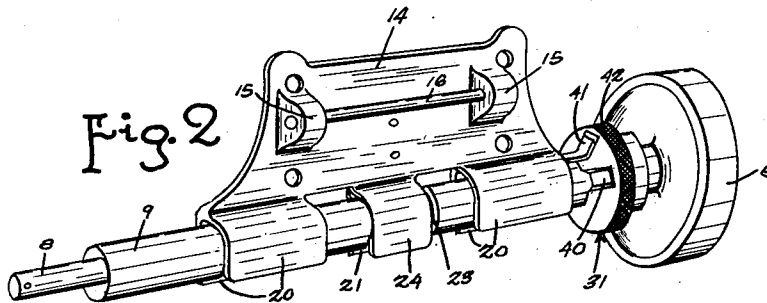
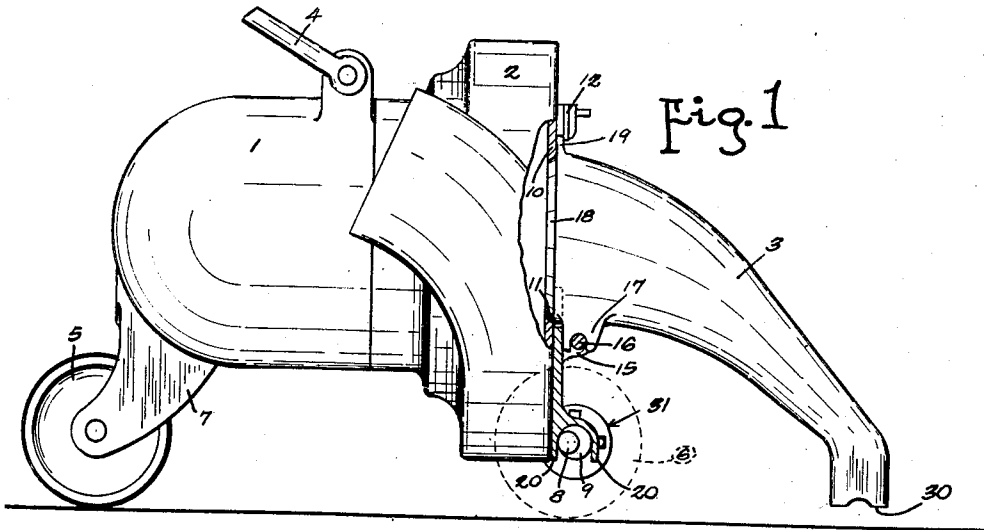


Fig. 3

Fig. 4

Fig. 5a

Fig. 5

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Fig. 6

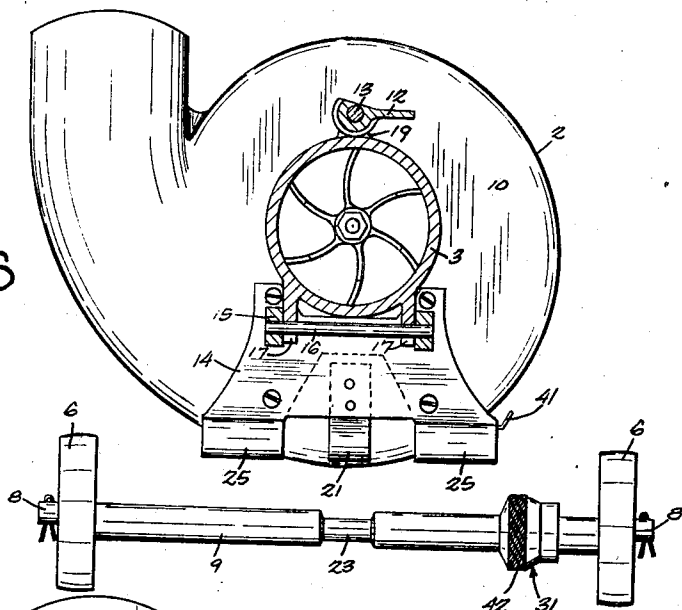


Fig. 7

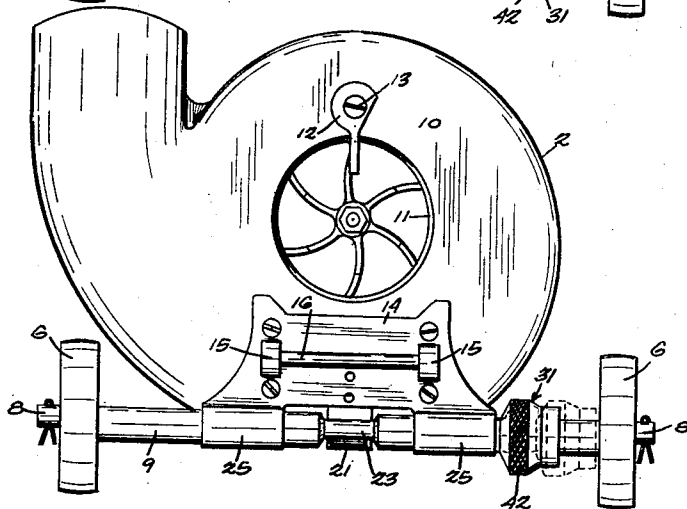
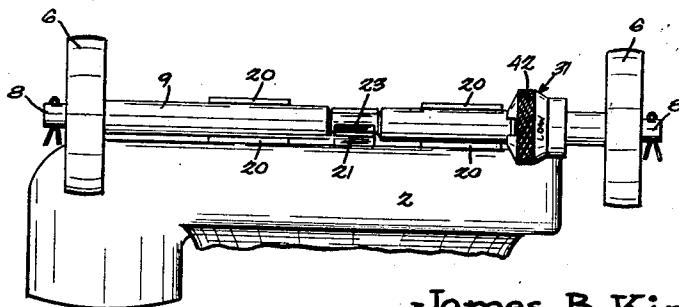


Fig. 8



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SUCTION CLEANER

Application filed November 5, 1927. Serial No. 231,197.

This invention relates to suction cleaners and has for its object the provision of new, improved and simplified means for securing the nozzle detachably to the cleaner casing and for detachably securing the wheels to the casing and for adjusting the elevation of the nozzle mouth relatively to the supporting surface. Further objects and advantages of the invention will become apparent as the description proceeds.

In the drawings accompanying and forming a part of this application I have shown certain illustrative embodiments of my inventive idea wherein Fig. 1 is a side elevation partly in section of an electric suction cleaner containing my improvements. Fig. 2 is a perspective view of the wheel and shaft assembly; Fig. 3 is a vertical sectional view through the middle of the shaft and adjacent parts; Figs. 4 and 5 are respectively an elevation and a longitudinal section of the locking button; Fig. 5^a is a cross-section of the locking button; Fig. 6 is a front elevation of the cleaner and shaft separated, illustrating a different kind of bearing bracket; Fig. 7 is a front view of the cleaner showing the mode of displacing the locking button; and Fig. 8 is a bottom plan view of the shaft and bracket shown in Fig. 1.

The cleaner chosen for illustrative purposes herein comprises a rigid casing having a motor housing 1, fan housing 2, nozzle 3, handle 4, rear wheel 5 and front wheels 6—6. The rear wheel in the present embodiment is carried by a suitable bracket 7 of fixed elevation while the forward wheels 6—6 are journaled on the eccentric end portions 8—8 of a horizontal shaft 9.

The fan casing has a transverse forward wall 10 formed with a tapered central opening 11 and provided above said opening with a cam button 12 journaled on a suitable stud 13 and below that opening with a bracket 14 constituting a rigid part of the cleaner casing. In this particular cleaner said bracket is made as a separate part rigidly secured to the fan casing and formed near its upper part with a pair of spaced integral ears 15—15 which support the rigid horizontal rod 16 located on the opposite side of the

opening 11 from the button 12 and adapted to receive the slotted projections 17 carried by one side of the nozzle 3. This then constitutes a pivot or fulcrum about which the nozzle is rocked until the tapered end 18 thereof is seated in the opening 11 where it is held by turning the button 12 to engage a lug 19 at the top of the nozzle.

The bottom of the bracket 14 is formed for the reception of the shaft 9. In the form of the invention shown in Figs. 1, 2, 3, and 8 the construction comprises depending fingers 20—20 defining an open bottomed recess into which the shaft can be inserted from below and wherein it is held by an angular spring finger 21 secured in a suitable recess 22 formed in the back of the bracket and engaging a reduced portion 23 in the middle of the shaft. This spring therefore serves the double function of holding the shaft against falling out of the bracket and also fixing its lengthwise position in such bracket. The latter function can also be assisted, as shown in Figs. 2 and 3, by an auxiliary depending finger 24 which occupies the forward part of this reduced portion.

In the form of the invention shown in Figs. 6 and 7 the lower part of the bracket is formed with two journal-bearings 25—25 apertured for the endwise reception of the shaft 9 which requires that one of the wheels 6 be removed for the application or removal of the shaft. The spring 21 is still used, however, and fixes the endwise position of the shaft by engaging the reduced portion 23 thereof.

The elevation of the inlet mouth 30 of the nozzle depends upon the angular adjustment of the shaft 9, for which purpose the shaft is provided with a combined adjusting and securing button indicated generally at 31. In its preferred form this button comprises a hollow metal member having an internal axial bore of two diameters, defining a portion 32 which slides on the shaft 9 and an aligned recess 33 of larger diameter which is formed interiorly with longitudinal slots 34, 34 adapted to receive the ends of the transverse pin 35 carried by shaft. Interposed between one side of the pin and the

reduced portion 32 is a washer 36 and coil spring 37. The mouth of the recess 33 is closed by a ring 38 tightly pressed therein and slidable on the shaft. The end of the button adjacent the bracket 14 is formed externally with angularly spaced recesses 40 adapted to receive a fixed finger 41 carried by and projecting from one end of the bracket. When the button is slid lengthwise of the shaft by retracting the button against the tension of spring 37 (as shown in dotted lines in Fig. 7) it becomes possible to turn the shaft freely in its bearing and when it is released the engagement of the finger and recess holds said shaft in place. The exterior of the button is preferably knurled as at 42 to facilitate its manipulation and is also preferably marked with directions indicating the nature of the adjustment as shown in Fig. 4.

It will be understood that while I have described my invention with particular reference to a single illustrative embodiment I do not limit myself to the details of construction shown except as the same are specifically recited in my several claims.

Having thus described my invention what I claim is:

1. In a suction cleaner, in combination, a casing having a recessed bracket, a shaft removably mounted in the recess and having eccentric portions on its ends, wheels journaled on said portions, means for securing said shaft in said recess, and means carried by said shaft and removable therewith for rotating said shaft and for holding it in different angular positions.

2. In a suction cleaner, in combination, a casing having a bracket formed with a side-opening recess, a shaft mounted in such recess and having reduced eccentric portions on its ends confined within the limits of the shaft, wheels journaled on said portions, a latch capable of being displaced by the fingers and carried by said casing for securing said shaft in said recess, and means for rotating said shaft in said recess and for securing it in any one of a plurality of different angular positions relative to its own axis.

3. In a suction cleaner, a casing having a recessed bracket, a shaft loosely mounted in the recess, said shaft having eccentric portions at its ends, wheels journaled on said eccentric portions, a spring having one part rigid with said casing and also having a nose overlapping said recess adapted to snap past said shaft to hold it in said recess, and means for securing said shaft in different angular positions relative to its own axis.

4. In a suction cleaner, a casing, a bracket carried by said casing, a shaft rotatable in said bracket, said shaft having eccentric portions at its ends, wheels journaled on said eccentric portions, and a horizontally movable button carried non-rotatably by said

shaft said button and bracket having interfitting projections and recesses whereby said shaft is held in angularly adjusted position.

5. In a suction cleaner, a casing, a bracket carried by said casing, a shaft rotatable in said bracket, said shaft having eccentric portions at its ends, and a reduced portion intermediate its ends, wheels journaled on said eccentric portions, a spring carried by said bracket engaging said intermediate reduced portion, a longitudinally movable button non-rotatably carried by said shaft, said button and bracket having interfitting projections and recesses, and a spring forcing said button toward said bracket.

6. In a suction cleaner, a casing comprising a fan-housing and a motor-housing and a nozzle, said nozzle being detachably secured to said fan-housing, a bracket carried by said fan-housing separate from said nozzle and having an open-sided recess therein, said bracket having a spring-part which overlaps said recess, a shaft fitting in said recess, and wheels journaled on said shaft, said spring-part having an angular portion projecting part way across said recess and adapted to snap past said shaft as the same is introduced into or withdrawn from said recess.

7. In a suction cleaner, a casing, a bracket carried thereby and having an open sided recess therein, a spring carried by said bracket, a shaft adapted to fit in said recess, and having a reduced portion intermediate its ends, wheels journaled on said shaft, and a part carried by said bracket adapted to enter said reduced portion to fix the endwise position of said shaft, said spring having a projection for securing the shaft in said recess.

8. In a suction cleaner, a casing comprising a fan-housing and a motor-housing and a nozzle, said nozzle being detachably secured to said fan-housing, a bracket carried by said fan-housing separate from said nozzle and having a downwardly opening recess, a horizontal shaft removably fitting in said recess, a snap spring overlapping said recess for holding said shaft, and wheels carried by said shaft.

9. In a suction cleaner, a casing having a removable nozzle and also having a recessed bracket separate from said nozzle, a shaft fitting the recess, wheels journaled on said shaft, and spring means detachably and impositively securing said shaft in said recess.

10. In a suction-cleaner, a fan-housing, a collecting nozzle detachably secured to said fan-housing, carrying-wheels, and means including a spring for securing said wheels impositively to said fan-housing whereby they can be removed without tools.

11. In a suction-cleaner, a casing comprising a fan-housing and a motor-housing and a collecting nozzle, said nozzle being de-

tachably connected to said fan-housing, said casing having a recessed bracket located at one side from and independently of said nozzle, said recess being arranged transversely of the cleaner and having an open side and a latch which overlaps and constricts the opening of said recess, in combination with a shaft fitting in said recess and held therein by said latch, and wheels carried by said shaft.

12. In a suction cleaner, a casing having a fan-housing and a collecting nozzle, said casing having an external bracket independently of said nozzle and formed with a channel-shaped recess horizontally arranged, an axle bar adapted to be introduced into and removed from said recess through its open side, and a latch capable of being displaced by the fingers and overlapping said bar and recess for detachably securing said axle bar in said recess.

13. In a suction cleaner, a casing having a fan-chamber and a collecting-nozzle detachably secured thereto, a channel-member attached to the exterior of said fan-chamber independently of said nozzle, an axle-bar fitting in said channel-member and adapted to enter and be removed from the channel through its open side, and wheels journaled on said axle-bar, said channel-member having a spring-part partially overlapping said channel for impositively securing said axle-bar in the channel.

14. In a suction cleaner of the portable type having a collecting nozzle, a bracket having an open-sided recess, a cross-bar fitting said recess and adapted to enter and to be removed from said recess through its open side, spring means for impositively securing said cross bar in said recess, and wheels carried by said cross bar, said wheels and bar being eccentric with respect to each other, and an adjusting device carried by and removable with said bar and cooperating with a part of said bracket to hold said bar in any one of a plurality of angularly spaced positions relative to said bracket.

15. In a suction cleaner, a casing having a collecting-nozzle and a fan-chamber, a bracket carried by the exterior of said casing and having an open sided recess which faces downwardly, said bracket having its lateral extremities overlapping the margins of that part of the casing to which said bracket is secured, an axle-bar fitting in said recess and adapted to be inserted into and removed therefrom through its open side, a knob carried by said axle-bar and located adjacent to an end of said bracket when said axle-bar is seated in said recess, and wheels carried by said axle-bar, said bracket having a spring-part partially overlapping said recess for impositively securing said axle-bar therein.

16. In a suction cleaner, in combination, a casing, a collecting nozzle detachably secured

thereto, a bracket carried by said casing independently of said nozzle and formed with a side-opening recess, a shaft removably mounted in such recess and having eccentric portions at its ends, wheels journaled on said portions, latching means for securing said shaft in said recess, and means for rotating said shaft in said recess and for securing it in any one of a plurality of different angular positions relative to its own axis.

17. In a suction cleaner, a casing, a bracket carried by said casing and having a recess therein, a shaft loosely mounted in said recess, said shaft having eccentric portions at its ends, wheels journaled on said eccentric portions, a spring carried by said bracket and having a nose overlapping said recess adapted to snap past said shaft to hold it in said recess, and means for securing said shaft in different angular positions relative to its own axis.

18. In a suction cleaner, a casing having a removable nozzle, a bracket carried by said casing separate from said nozzle, said bracket having a recess therein, a shaft fitting the recess, wheels journaled on said shaft, and spring means detachably and impositively securing said shaft in said recess.

19. In a suction cleaner, a fan housing, a collecting nozzle detachably secured to said fan housing, a bracket carried by said fan housing separate from said nozzle, said bracket having a recess therein, a wheel supporting element fitting in said recess, and means including a spring for securing said element impositively to said bracket.

20. In a suction cleaner, a casing comprising a fan housing and a motor housing and a collecting nozzle, said nozzle being detachably connected to said fan housing, a bracket carried by said fan housing independent of said nozzle and having therein a recess arranged transversely of the cleaner and having an open side, a latch which overlaps and constricts the opening of said recess, a shaft fitting in said recess and held therein by said latch, and wheels carried by said shaft.

21. In a suction cleaner, a casing having a fan housing and a collecting nozzle, a bracket carried by said fan housing separate from said nozzle and having a channel-shaped recess therein, horizontally arranged, an axle bar adapted to be introduced into and removed from said recess through its open side, an impositive latch carried by said bracket and having a part which overlaps a part of said bar when the same is located in said recess, and wheels carried by said axle bar.

In testimony whereof I hereunto affix my signature.

JAMES B. KIRBY.