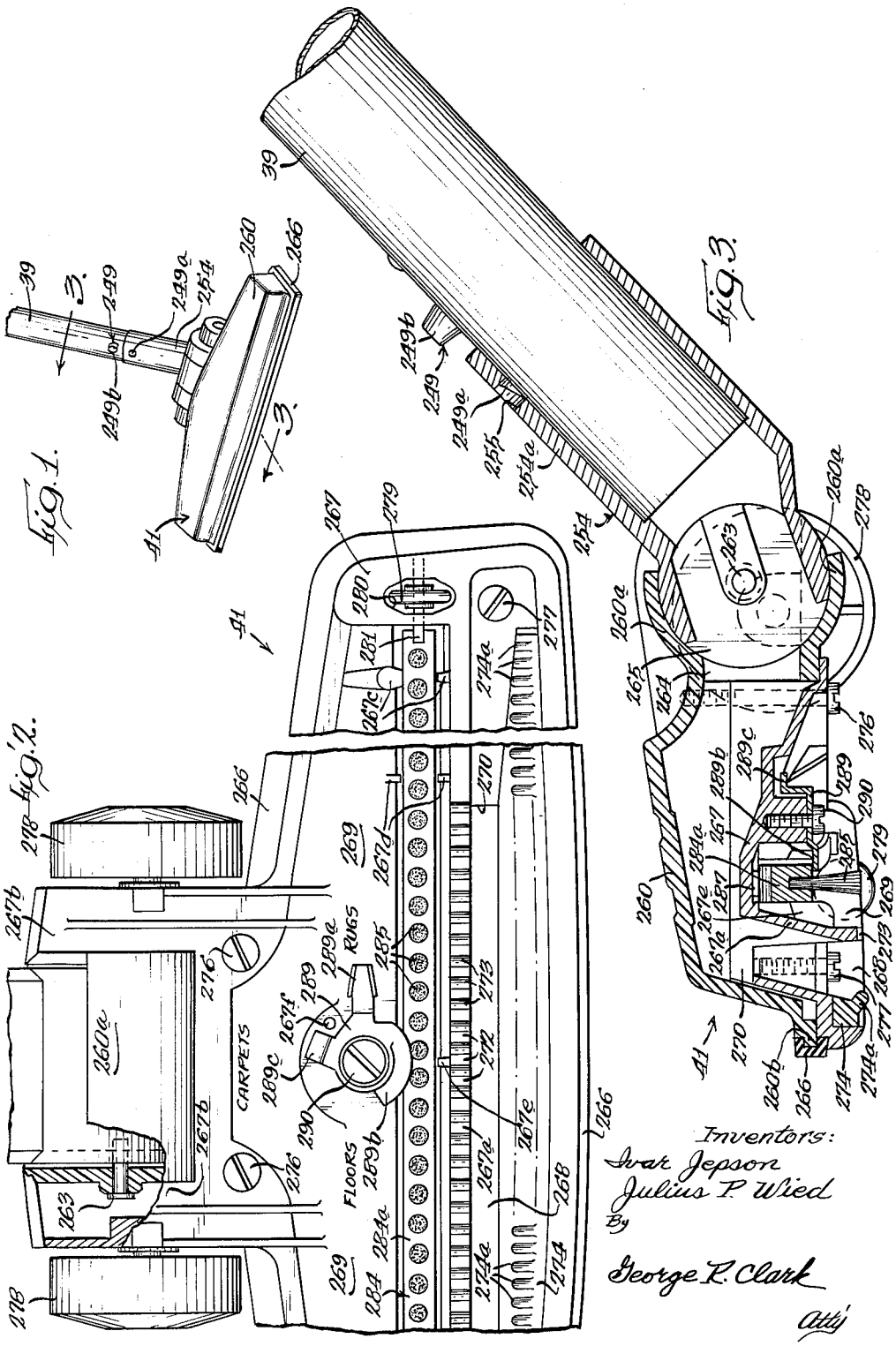
Aug. 31, 1965 I. JEPSON ETAL 3,203,023

CLEANING ATTACHMENT FOR VACUUM CLEANER

Original Filed June 30, 1960



United States Patent Office 3,203,023 Patented Aug. 31, 1965

3,203,023
CLEANING ATTACHMENT FOR VACUUM CLEANER

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Original application June 30, 1960, Ser. No. 39,865, now Patent No. 3,170,184, dated Feb. 23, 1965. Divided and this application Nov. 6, 1964, Ser. No. 409,533
5 Claims. (Cl. 15—371)

The present application is a division of copending Jepson et al. application Serial No. 39,865, filed June 30, 1960, now patent No. 3,170,184. The present invention relates to suction or vacuum cleaners for removing dirt from floors, carpets, and the like by virtue of the suction or vacuum produced by a motor driven fan. More particularly, the present invention is directed to a cleaning attachment for a vacuum cleaner.

So-called suction or vacuum cleaners particularly useful for use in the home have comprised two general types. One of these types commonly referred to as the upright cleaner comprises a housing having mounted therein a motor driven fan and also a rotatable brush driven by the motor. The housing terminates in a suction nozzle. Such a cleaner further includes a bag for receiving the dirt removed during the vacuum cleaning operation. The other type of cleaner commonly referred to as a tank or cannister type cleaner gets its name from its construction. It commonly comprises a tank or similarly shaped unit containing a motor driven fan for producing a suction, and connected to this unit through a flexible hose is a cleaning attachment. A detailed description of one tank or cannister type vacuum cleaner can be found in the above mentioned Jepson et al. patent. The present invention is concerned with improvements in rug and floor cleaning attachments for use with the tank or cannister type cleaner.

A principal cleaning attachment for tank or cannister type vacuum cleaners is the so-called rug or floor cleaning attachment. It generally comprises a housing defining a relatively wide suction nozzle to give substantial coverage when moved across a rug or floor. If only suction is applied such nozzles are not too satisfactory. Moreover, such nozzles should function to clean rugs or carpets having widely varying pile depths, and also should clean equally well, floors with no rug covering such as wood, linoleum, tile etc. For ease of movement such attachments preferably have some sort of supporting wheels. The use of some sort of brush with such attachment is desirable. If the brush is in a fixed position and a hard floor is being cleaned, the brush should extend down to the floor. If a carpet or a rug is being cleaned, the supporting wheels of the attachment tend to sink below the rug or carpet surface, and the brush must not be positioned too low or the friction with the rug surface will be too great. It would be desirable to provide a cleaning attachment for floors which will equally well clean rugs, carpets or bare floors.

Accordingly it is an object of the present invention to provide a cleaning attachment which will overcome the problems set forth above.

It is another object of the present invention to provide an improved vacuum cleaner floor cleaning attachment.

It is still another object of the present invention to provide a vacuum cleaning attachment with a movable but non-rotatable brush, and to provide improved adjusting means for the brush.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of the present invention, reference may be had to the accompanying drawing in which:

FIG. 1 is a perspective view of a vacuum cleaner floor cleaning attachment and associated connecting means embodying the present invention;

FIG. 2 is an enlarged fragmentary bottom view with certain portions broken away of the floor cleaning attachment of FIG. 1; and

FIG. 3 is an enlarged sectional view taken on line 3—3 of FIG. 1.

In the description which follows, and in the drawing, the identical reference numerals employed in the aforesaid parent Jepson et al. patent have been used for identifying corresponding parts. Moreover, the description of such parent patent is incorporated by reference into this divisional application to provide a full description of an operative device.

Briefly, the present invention is concerned with a floor cleaning attachment for a tank type vacuum cleaner. The attachment is secured to the end of a vacuum cleaner wand. It is provided with a swivel to permit raising and lowering the wand without disturbing the attachment relative to the floor surface. The attachment includes an elongated housing defining a suction nozzle connected to a suction producing source through the wand and other tubular means such as a flexible hose and the like. Suitable wheels support the attachment from the floor. A floating brush which is non-rotatable, but whose position may be adjusted is included in the nozzle. Novel adjustment means for the brush are provided to the end that the movable brush may readily be moved to and held in different positions for cleaning different surfaces, such as rugs, carpets and bare floors.

Referring now to the drawing, there is illustrated a floor cleaning attachment **41** secured to one end of a wand section **39**. The other end of the wand section **39** (not shown) is adapted to be connected with a flexible hose leading to a tank or cannister vacuum cleaner such as that described in detail in the above mentioned Jepson et al. patent. In order that the wand section **39** and the floor cleaning attachment **41** may be detachably joined together, the wand section **39** carries a locking member **249** including a latch portion **249***a* and a finger manipulating knob **249***b*. Details of construction of the locking means **249** may be found in the above mentioned Jepson et al. patent.

In FIG. 3 of the drawings the wand **39** is indicated as being locked to a tubular extension **254***a* of a swivel **254** associated with attachment **41**, which tubular extension is provided with a latch receiving opening **255** for receiving the latch portion **249***a* of locking member **249**. To separate the wand **39** from the attachment **41**, it is merely necessary to depress knob **249***b* to free latch portion **249***a* of the opening **255**, whereupon the wand **39** may be moved out of telescopic engagement with the tubular portion **254***a* of swivel **254**.

Considering now the floor cleaning attachment **41**, it comprises a molded plastic housing member **260**, which is open on the bottom. Rearwardly directed integral extensions of the housing **260** define a swivel socket portion **260***a* for receiving therein the swivel **254**. Preferably, the swivel **254** which may comprise a die casting, and the socket portion **260***a* are pivotally secured together by a pair of pivot pins **263**. The housing **260** and the swivel **254** are provided with aligned openings **264** and **265**, respectively, whereby suction applied through wand **39** to the tubular extension **254***a* of swivel **254** will be effective within housing **260**.

In order that the rug attachment **41** will not mar furniture if it should accidentally be engaged by the attach-

ment, a resilient bumper member 266 of U-shaped cross section, as best shown in FIG. 3 of the drawings, encloses a peripheral flange 260*b* surrounding the downwardly directed opening in housing 260. The ends of this bumper member 266 are preferably wedged in recesses provided therefor toward the rear of housing 260 whereby ready replacement of such bumper member can be accomplished.

Mounted within the housing 260 is a nozzle shoe 267 which preferably comprises a die casting of somewhat similar configuration to the housing 260. The nozzle shoe 267 includes an integral longitudinally extending partition members 267*a* which divides the nozzle shoe into an elongated narrow nozzle chamber 268 forwardly of the partition 267*a* and a brush chamber 269 rearwardly of the partition 267*a*. Both of these chambers 268 and 269 are open at the bottom, but the brush chamber 269 is closed at the top, whereas the nozzle chamber 268 is provided with a top opening 270 leading into the housing 260 and connected to the swivel 254 through the aligned openings 264 and 265. For the purpose of connecting the brush chamber 269 with the nozzle chamber, the partition 267*a* is provided along its lower edge at least for the length of the opening 270 with a plurality of spaced recesses 272 through which dirt particles released in the brush chamber 269 may enter the nozzle chamber 268. These recesses 272 define between them teethlike members 273 which also act to some extent as a litter rake. To improve the dirt removal, there is provided at the front of the nozzle shoe 267 and extending along the entire length of the nozzle chamber 268 a litter rake 274 preferably formed of a molded rubberlike material and including a plurality of angular extending resilient teethlike members 274*a*. Any suitable means for securing the litter rake in position may be employed. In an embodiment built in accordance with the present invention, the litter rake 274 was pressed into a recess provided therefor in the nozzle shoe 267. The housing 260 and the nozzle 267 are held together as a unitary structure by suitable fastening means such as bolts 276 and 277.

To support the rug attachment 41 on the surface to be cleaned, a pair of rear wheels 278 and a pair of front wheels or roller members 279 are provided. The front wheels 279 may be roller members formed of nylon or the like disposed in suitable recesses 280, one at either end of the nozzle shoe 267. Suitable pins 281 driven into aligned openings defined in nozzle shoe 267 rotatably support the rollers or front wheels 279. The rear rollers or wheels 278 are preferably pivotally mounted to a pair of rearwardly directed integral extensions 267*b* of the nozzle shoe 267. These rearward extensions 267*b* are disposed one on either side of the socket portion 260*a* of the housing 260 whereby the wheels or rollers 278 are disposed on either side of the socket 260*a* and the swivel 254.

In accordance with the present invention, and in order adjustably to position a brush within brush chamber 269, the nozzle shoe 267 is provided with pairs of spaced guide members, two pairs designated by the reference numerals 267*c* and 267*d* being shown in FIG. 2 of the drawings adjacent one end. It will be understood that identical pairs of such guide members will be provided on the other portion of the nozzle shoe 267 not shown in FIG. 2. Also, at the center, a single guide member 267*e* is provided. These guide members 267*c*, 267*d* and 267*e* position and vertically guide the movement of a brush 284 which has a rectangular support member 284*a* from which a plurality of tufts or bristles 285 extend. The maximum downward movement of the brush 284 is limited by the pins 281 supporting the rollers 279 as clearly shown in FIG. 2 of the drawings. A suitable leaf spring 287 disposed between the top of support 284*a* and the top of the brush chamber 269, as viewed in FIG. 3 of the drawings, constantly biases the brush 284 downwardly.

It will be appreciated that for best cleaning action the position of this brush will vary with the types of surfaces cleaned, and to this end there is provided a pivotally mounted brush lock plate 289 preferably secured as by a fastening means 290 within the brush chamber 269. The brush lock plate 289 includes a manipulating projection 289*a* and a pair of camlike extensions 289*b* and 289*c*. The projection 289*b* defines an inclined surface engageable with the bottom of the brush support 284*a* as clearly shown in FIGS. 2 and 3 of the drawings, so that, dependent upon the angular position of the brush lock plate 289, the relative vertical position of the brush 284 may be selectively controlled. As best shown in FIG. 2 of the drawings, the nozzle shoe 267 is provided with indicia such as "Rugs," "Carpets" and "Floors" positioned at various angular positions of the brush lock plate 289, and the extension 289*a* is in effect also an indicator to indicate the particular setting. As shown in FIG. 2, the brush is adjusted for cleaning rugs, which means that the brush is in its most retracted position. The extension 289*c* forms a stop member engageable with an integral projection 267*f* to limit the maximum clockwise rotation, as viewed in FIG. 2 of the drawings. This extension 289*c*, when the attachment is set for cleaning hard surfaced floors, moves above the top of brush support 284*a*, and in effect eliminates the action of spring 287 and provides a rigid support causing the brush to engage the floor being cleaned. When the brush lock plate 289 is in any other position wherein the extension 289*c* is not above the support 284*a*, then the spring 287 resiliently positions the brush so that it may move upwardly if the contacting force with the rug or carpet is sufficiently great.

In view of the detailed description, the operation of the cleaning attachment described will readily be understood by those skilled in the art, and no further discussion of such operation is included.

While there has been shown and described a particular embodiment of the present invention, it will be apparent to those skilled in the art that various changes and modifications may be made without departing from the invention in its broader aspects, and it is, therefore, contemplated in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A cleaning attachment for a suction cleaner comprising a housing defining an elongated chamber open at the bottom and including means adapted to be connected to a suction cleaner to produce a suction in at least a portion of said chamber, a plurality of pairs of spaced guide members in said housing, an elongated brush including an elongated rigid brush supporting member, said brush supporting member having its longitudinal axis parallel with the longitudinal axis of said elongated chamber and disposed in the space defined between said pairs of spaced guide members, fixed stop means engageable with the lower edge of said brush supporting member determining the lowermost position of said brush, spring means biasing said brush against said stop means, a brush lock plate pivotally mounted within said housing about a generally vertically axis when said open bottom of said chamber is adjacent a surface to be cleaned, said brush lock plate including a cam surface engageable with the lower edge of said brush supporting member to provide adjustable stop means determining selectively adjustable lower positions of said brush.

2. The cleaning attachment of claim 1 wherein said brush lock plate includes a projection engageable with the upper edge of said brush supporting member to lock said brush in a fixed lower position for one extreme position of said lock plate.

3. The cleaning attachment of claim 1 wherein said elongated chamber is provided with an elongated wall portion dividing said chamber into a forwardly disposed elongated nozzle section and a rearwardly disposed

elongated brush section, said guide members being disposed in said brush section of said chamber.

4. The cleaning attachment of claim 3 wherein a toother litter rake defines the front edge of said nozzle section.

5. A cleaning attachment for a suction chamber comprising a housing defining an elongated chamber open at the bottom and including means adapted to be connected to a suction cleaner to produce a suction in at least a portion of said chamber, an elongated brush including an elongated rigid brush supporting member in said housing, said brush supporting member havings its longitudinal axis parallel with the longitudinal axis of said elongated chamber and mounted for reciprocal vertical movement in said housing, guide means in said housing for guiding said reciprocal movement of said brush, fixed stop means engageable with the lower edge of said brush supporting member determining the lowermost position of said brush, spring means biasing said brush against said stop means, a brush lock plate pivotally mounted within said housing about a generally vertical axis when said open bottom of said chamber is adjacent a surface to be cleaned, said brush lock plate including

a cam surface engageable with the lower edge of said brush supporting member to provide adjustable stop means determining selectively adjustable lower positions of said brush, said brush lock plate including a projection engageable with the upper edge of said brush supporting member to lock said brush in a fixed lower position for one extreme position of said lock plate.

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