

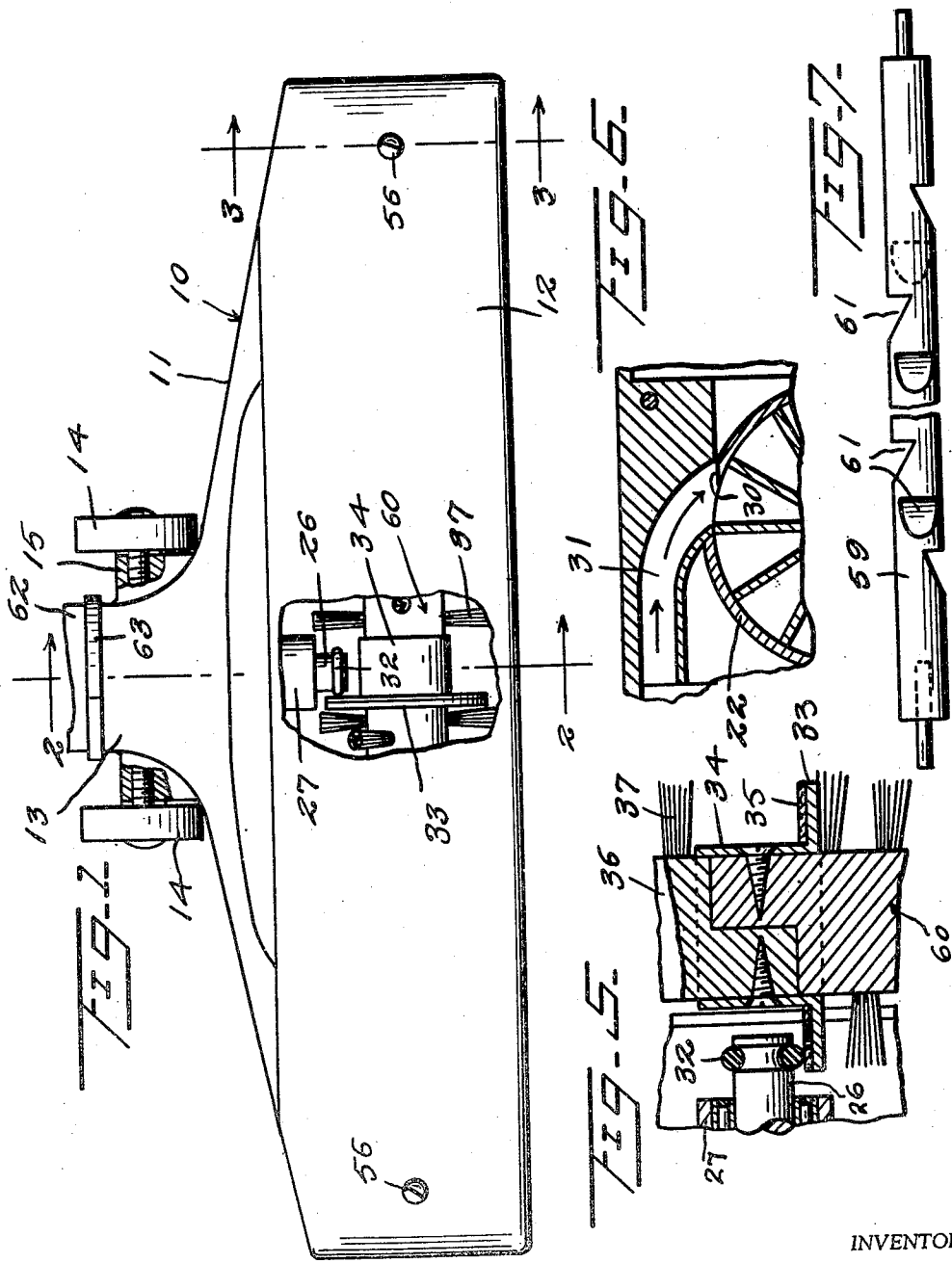
Feb. 15, 1955

E. C. MINGUS
VACUUM CLEANER

2,701,892

Filed Sept. 25, 1951

2 Sheets-Sheet 1



INVENTOR

E.C. Mingus

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ATTORNEYS

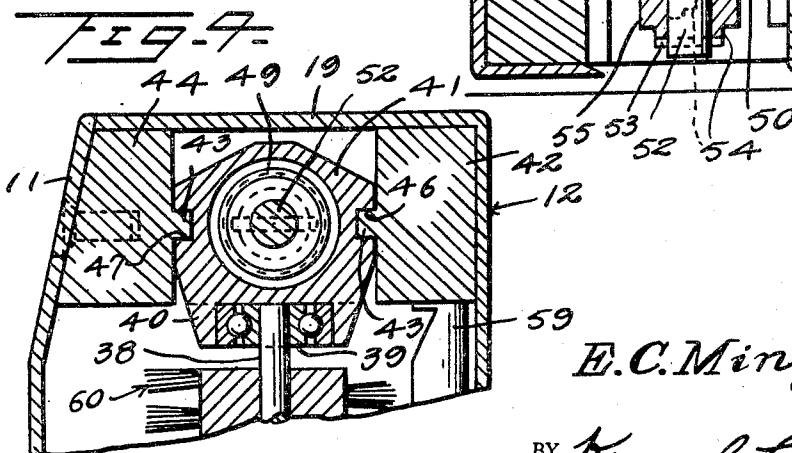
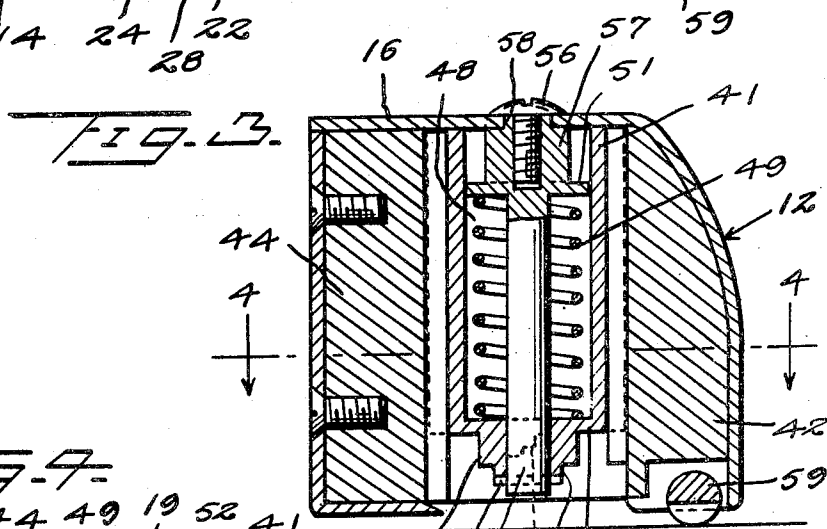
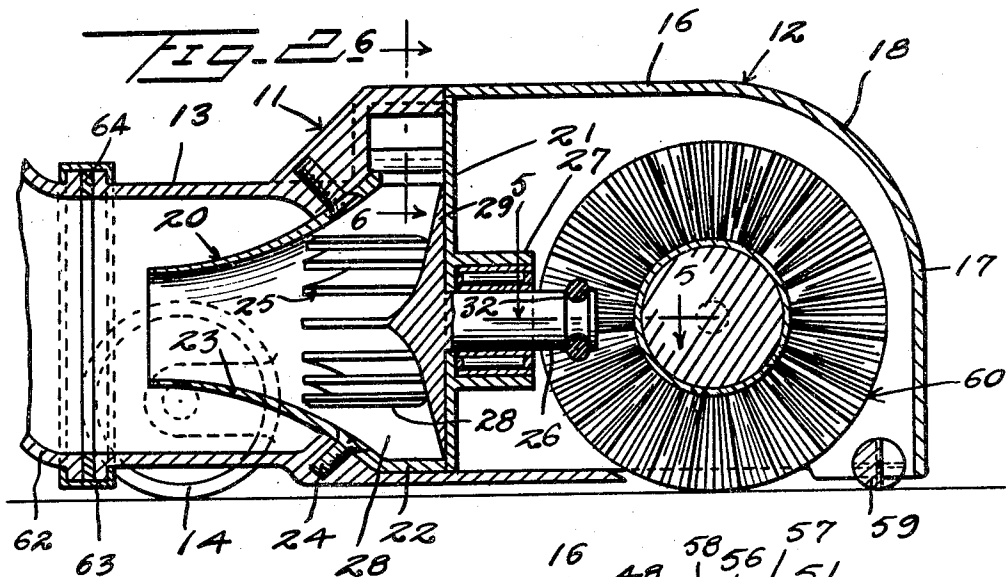
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VACUUM CLEANER

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1 Claim. (Cl. 15—387)

This invention relates to vacuum cleaners.

An object of this invention is to provide an improved suction head for vacuum cleaners in which a rotary brush is mounted, and the brush being operated by a suction power unit disposed within the head.

Another object of this invention is to provide an improved suction operated power member adapted to be mounted in the suction head or nozzle of a vacuum cleaner and coupled to a rotary brush, so that a rotary brush may be used with the tank type vacuum cleaners.

A further object of this invention is to provide in a suction head or nozzle of a vacuum cleaner, a rotary brush and means for adjusting the brush relative to the head to provide for predetermined contact of the brush with a rug.

A further object of this invention is to provide a brush operator for the suction head of a vacuum cleaner which will eliminate the undue wearing effect of the brush on the rug such as is caused by a brush which is connected to the power unit for the suction fan.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claim.

In the drawings—

Figure 1 is a plan view, partly broken away, of a suction cleaner head constructed according to an embodiment of this invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a fragmentary sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a fragmentary sectional view taken on the line 5—5 of Figure 2.

Figure 6 is a fragmentary sectional view taken on the line 6—6 of Figure 2.

Figure 7 is a plan view, partially broken away, of a constructional detail.

Referring to the drawings, the numeral 10 designates generally a suction head or nozzle which is formed of a rear member 11 and a front housing member 12. The rear member 11 is provided with a suction nipple 13 and a pair of wheels 14 are rotatably secured to oppositely disposed bearing bosses 15 carried by the nipple 13.

The front housing member 12 includes a top wall 16, a front wall 17 merging on a curvature as indicated at 18 with the top wall 16, and the front housing 12 also includes opposite end walls 19.

A suction operated power member generally designated as 20 is carried by the rear member 11 and includes an impeller housing having a front wall 21, a cylindrical wall 22, and a rearwardly projecting substantially conical nozzle 23. The nozzle 23 extends into the nipple 13, as shown in Figure 2, and the housing 20 is secured to the rear member 11 by means of fastening members 24.

An impeller generally designated as 25 is rotatably carried by the housing 20 and includes a shaft 26 journaled in a bearing bushing 27 carried by the wall 21 of the housing 20. A plurality of impeller blades 28 are fixed to a plate 29 which is fixed to or integral with the shaft 26. The cylindrical side wall 22 of housing 20 is provided with an intake opening 30 which registers with a channel 31 formed in the rear member 11, and channel 31 opens into the front housing member 12. The

2

shaft 26 is a drive shaft and has mounted thereon a ring-shaped rubber friction member 32 which is disposed in frictional contact with a driven plate 33 carried by a cylindrical bushing 34. The plate 33 is provided with a facing 35 confronting the ring 32 so as to provide the desired frictional contact between the ring 32 and the driven member 33.

The bushing 34 is mounted on a brush hub 36 carrying bristles 37. The hub 36 is provided in the opposite ends thereof with stub shafts 38 which extend into anti-friction bearing members 39. The anti-friction bearing members 39 are carried by bushings 40 extending from vertically adjustable brush carrying slides 41.

The front housing 12 has mounted adjacent each end thereof a vertically disposed block 42 having a key 43 extending from the inner side thereof, and the rear member 11 has a block 44 confronting block 42 and is also provided with a key 43. The slide 41 is formed with keyways 46 and 47 within which the keys 43 and 45 respectively, engage. The slide 41 is vertically adjustable and is placed under spring tension as will be hereinafter described.

Each slide member 41 is provided with a vertically disposed opening 48 within which a spring 49 engages. The lower end of the spring 49 bears against the bottom wall 50 of the slide 41 and the upper end of the spring 49 bears against a flanged head 51 which is carried by a vertically disposed pin 52. The pin 52 extends through the bottom wall 50 and a transversely disposed pin 53 extends through the pin 52 and engages in a series of steps 54 formed in a projecting stud 55 extending from the bottom wall 50.

A retaining screw 56 extends through the top wall 16 of the housing 12 and is threaded into a bushing 57 carried by head 51 and bushing 57 is formed with a reduced diameter bushing 58 extending loosely through top wall 16. A roller 59 is rotatably carried by the housing 12 forwardly of the brush generally designated as 60, and the roller 59 is formed with a plurality of lengthwise spaced notches 61, as shown in Figure 7, so as to admit air through the forward side of the housing 12. Those portions of the roller immediately adjacent the notches 61 engage the nap of the rug to depress and smooth it downwardly to offer less interference to the passage of air through the notches 61 as the cleaner is moved forwardly and rearwardly.

A suction elbow 62 is detachably coupled to nipple 13 by means of a split and flanged coupling ring 63, and a gasket 64 is interposed between nipple 13 and elbow 62.

In the use and operation of this suction head the nipple 13 may be secured to a suction tube formed as part of a tank type vacuum cleaner or may be secured to the forward end of a suction housing. As air is drawn from below the housing 12 this air will pass through the passage 31 and will rotate the impeller 25. Rotation of impeller 25 will effect rotation of the brush 60 so that threads, hair or other material on the surface of the rug or floor will be picked up by the bristles of the brush 60. The contact of the brush 60 with the surface of the rug or floor may be regulated by adjustment of the pin 52 to raise or lower the brush relative to the bottom of the front housing 12.

I do not mean to confine myself to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claim.

What I claim is:

A suction nozzle for a vacuum cleaner comprising an elongated housing having an opening in the lower side thereof, a nipple extending from the rear of said housing and adapted for connection with a suction source, a brush rotatably carried by said housing and projecting partly through said opening, an impeller housing carried by said first named housing and including a plate separating said first-named housing from said impeller housing, and a substantially conical member projecting rearwardly into said nipple, an impeller shaft rotatably carried by said impeller housing and projecting forwardly therefrom, an impeller including rearwardly projecting blades extending into said nipple fixed on the rear of said shaft in said impeller housing, a radially positioned bypass channel about the periphery of said impeller com-

municating said impeller housing with said first-named housing, a disc fixed on said brush, a friction drive ring member carried by said shaft bearing against said disc to thereby rotate said brush upon rotation of said impeller, and a smoothing roller rotatably mounted in said housing forwardly of the brush and formed with a plurality of spaced lengthwise notches to admit air to said housing for driving said impeller.

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