Dec. 7, 1937. D. M. DOW 2,101,575

VACUUM CLEANER

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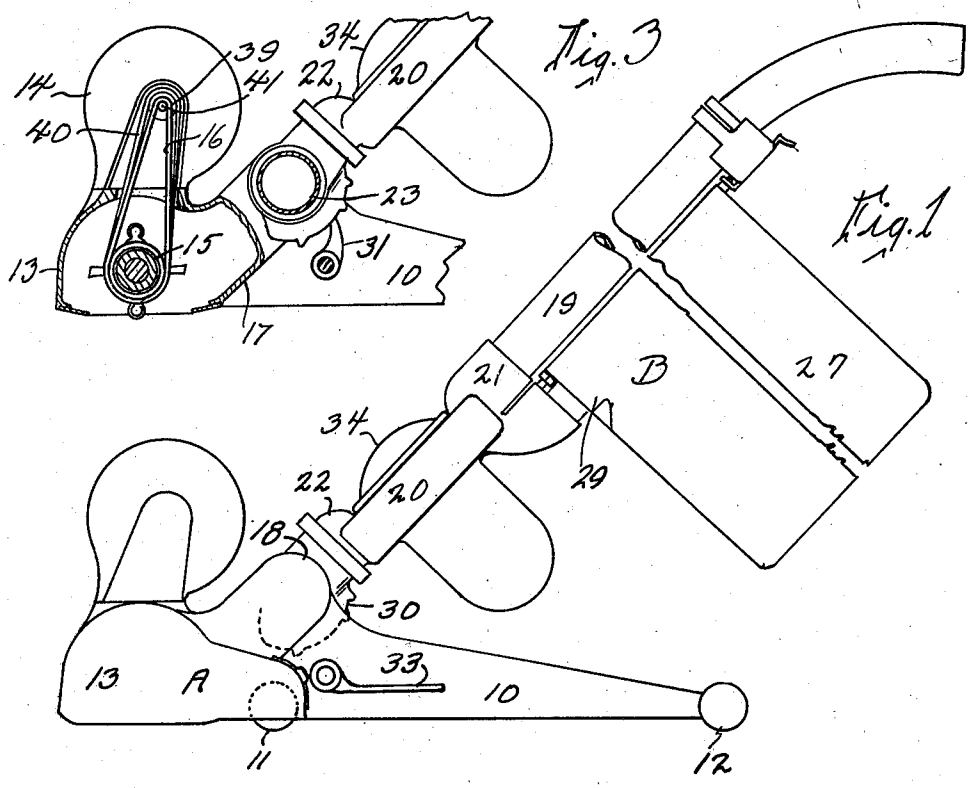


Fig. 3

Fig. 1

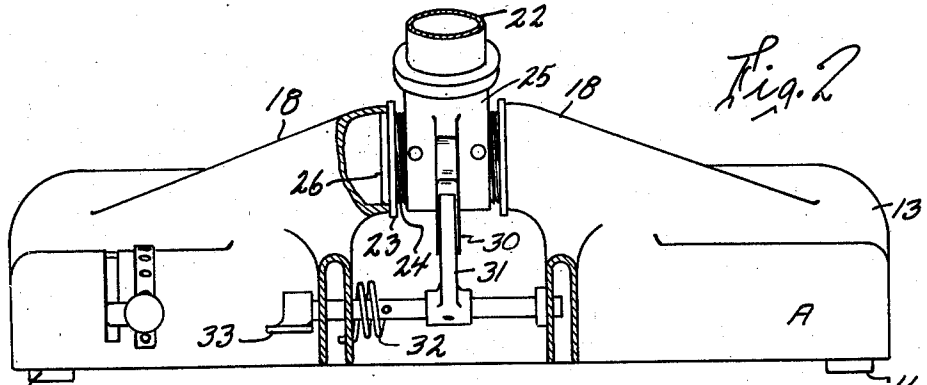


Fig. 2

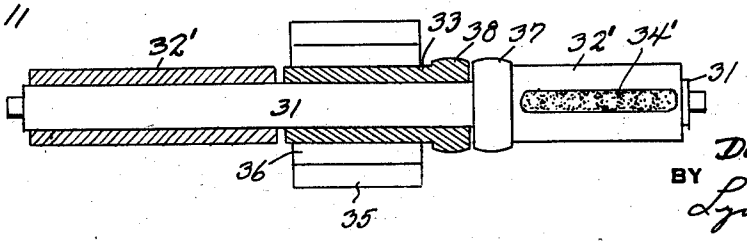


Fig. 4

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VACUUM CLEANER

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2 Claims. (Cl. 15—6)

This invention relates to vacuum cleaners of the type embodying a fan casing and handle rigidly attached together. The object of the present invention is to improve upon that type of cleaner by providing an arrangement in which the undercarriage has sufficient spread to support the cleaner in upstanding position, unaided, on the supporting surface.

Another object of the invention is to provide in a vacuum cleaner, rotary agitator mechanism including independently driven brushing and beating elements coaxially mounted on the same spindle but rotating at different rates of speed so as to achieve a maximum of beating effect with a minimum of wear upon the carpet.

One embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a side elevation of a cleaner embodying the invention.

Fig. 2 is a rear elevation thereof, partly in cross section.

Fig. 3 is a partial sectional view taken longitudinally through the lower region of the cleaner.

Fig. 4 is a detail view of the rotary agitator.

The invention comprises a floor unit A and a swinging unit B. The former comprises a base member or undercarriage 10 mounted on forward and rear wheels 11 and 12 respectively. A suction nozzle 13, formed on the forward end of the base overhangs the front wheels 11. A motor 14 is mounted on top of the nozzle 13 and drives a rotary agitator 15, revolubly mounted in the nozzle, by means of a belt 16.

A throat 17, extending rearwardly from the nozzle 13, is bifurcated to form the opposed hollow bearing members 18.

The swinging unit B comprises a tubular suction handle 19, a fan case 20 rigidly secured thereto, by means of a secondary inlet duct 21, and a primary inlet duct 22, swivelled to the unit A by means of nipples 23. The latter are threaded as at 24 into the ring shaped lower end 25 of the inlet 22, and have trunnion portions 26 journalled in the bearing members 18.

A bag 27 is suspended beneath the handle 19 and has a neck 29 coupled to the outlet of the fan case 20, which swings as a unit with the handle 19, rigidly positioned at a fixed distance therefrom.

The base 10 has sufficient spread in a direction longitudinal of the cleaner to support the entire cleaner, unassisted, in an upstanding position as shown, with the unit B upraised off the floor. A ratchet sector 30, secured to the inlet 22, coacts with a pawl 31 pivotally mounted in the base 10 actuated into operative engagement with the sector 30 by means of a spring 32, and released by depression of a foot lever 33. This pawl and ratchet arrangement transmits the weight of the unit B to the unit A and supports the unit B in any desired upraised position. A valve 34 selectively connects either inlet 21 or 18 to the suction fan 20.

The rotary agitator 15 comprises a spindle 31 to the end regions of which are secured a pair of sleeves 32' and on the middle region of which is journalled a sleeve 33. Mounted on the sleeves 32' are brushing elements 34' and mounted on the sleeve 33 are beater bars 35. Strips of resilient material 36 form the connection between the beater bars 35 and the sleeve 33.

The sleeve 33 is freely rotatable upon the spindle 31 while the sleeves 32' are fixed relative thereto. The spindle 31 is driven by means of a pulley 37 secured to one of the sleeves 32' and the sleeve 33 is independently driven by a pulley 38. The pulley 37 is driven by the belt 16 which in turn is driven by a drive pulley 39 on the motor 14, while the pulley 38 is driven by a belt 40 which in turn is driven by a drive pulley 41 on the motor 14. The drive pulley 41 is considerably less in diameter than the pulley 39 so that the brushing elements 34' will be driven at a considerably slower speed than the beater elements 35.

By means of this arrangement, the brushing elements which serve to pick up lint, thread, etc., and to brush up the nap of the carpet, are driven rapidly enough to perform these functions efficiently and yet they are driven at a much slower rate of rotation than they would be if rigidly associated to the beater members, and thus do much less damage to the carpet than would be true in the case of rigid association. This is important because of the fact that the brushing elements do most of the damage to the carpet, and the beating effect, which requires a rapid rotation is produced by the faster rotating beater members. Thus beating efficiency is maintained at a high level while the damage to the rug is greatly reduced.

I claim as my invention:

1. In a vacuum cleaner, a rotary agitator including a spindle, brushing and beating elements mounted thereon, said elements being rotatable relative to each other, and means for rotating said elements independently.

2. In a vacuum cleaner, a rotary agitator including a spindle, brushing and beating elements mounted thereon, said elements being rotatable relative to each other, and means for rotating said elements independently at different speeds.

DEWEY M. DOW.