

[54] **SHAG RUG FLUFFER**

[75] Inventor: **Charles H. MacFarland**, Cleveland, Ohio

[73] Assignee: **The Scott & Fetzer Company**, Lakewood, Ohio

[22] Filed: **Apr. 23, 1973**

[21] Appl. No.: **353,246**

[52] U.S. Cl. **15/373, 15/368, 15/402**

[51] Int. Cl. **A47I 9/06**

[58] Field of Search **15/368, 373, 401, 402**

[56] **References Cited**

UNITED STATES PATENTS

3,671,996	6/1972	Gaudry	15/368
3,685,089	8/1972	Lagerstrom	15/402 X
3,694,848	10/1972	Alcala	15/402 X
3,733,646	5/1973	Mein	15/402 X
3,783,474	1/1974	Fairaizl et al.	15/402 X

Primary Examiner—Billy J. Wilhite

Assistant Examiner—C. K. Moore

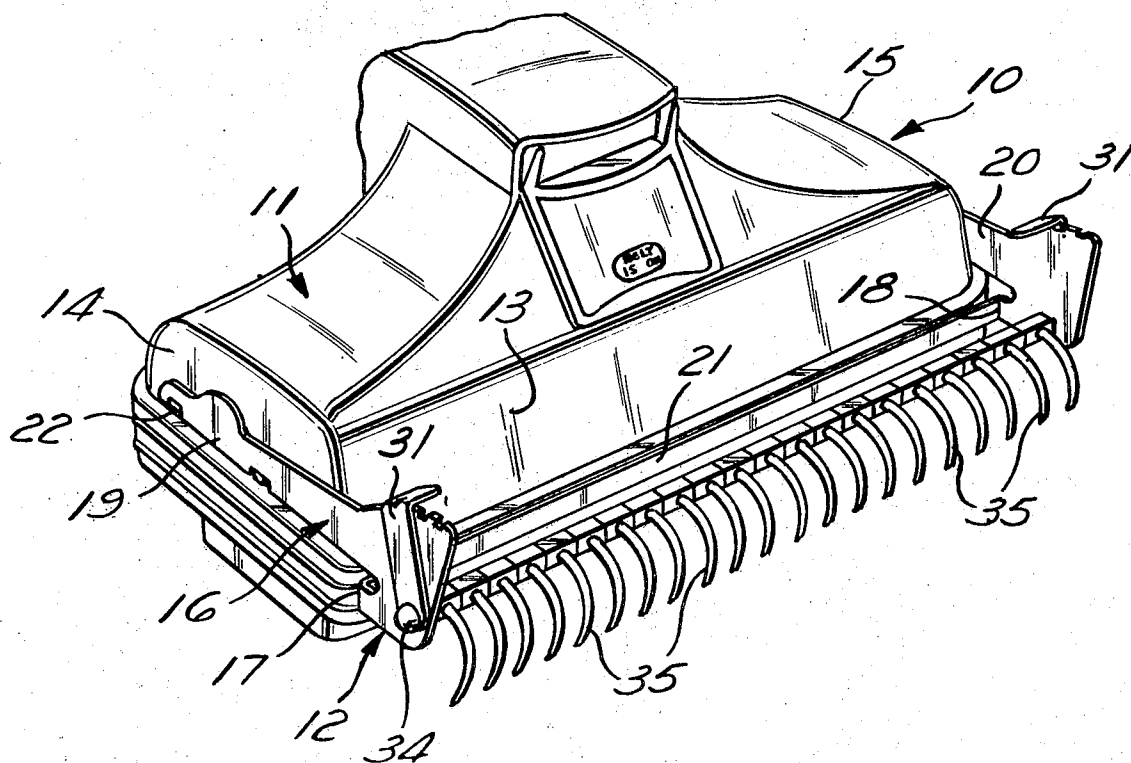
Attorney, Agent, or Firm—McNenny, Farrington, Pearne & Gordon

[57]

ABSTRACT

A shag rug rake attachment for a vacuum cleaner nozzle is disclosed. The attachment includes a U-shaped racket which clips to the vacuum cleaner nozzle so that a shaft pivotally connected to the bracket extends across the forward end of the nozzle and is substantially normal to the directions of movement of the nozzle along the rug. A plurality of laterally spaced, arcuate tines project outwardly and downwardly from the shaft and then inwardly toward the nozzle. A releasable lock is provided to lock the shaft in any one of a plurality of positions so that, as to at least some of those positions, the tine ends extend beyond the plane of the bottom of the cleaner nozzle when the bottom of the cleaner nozzle is off the rug. When the cleaner nozzle is applied to the rug, the tines are flexed so that tangents at tine-rug contact locations define acute angles with the rug and the measure of the angles is inversely related to the extent of tine extension beyond the plane. Increased flexure of the tines provides more rigid tines and increases the hooked configuration of the tines to more effectively comb deep pile shag rugs.

7 Claims, 5 Drawing Figures



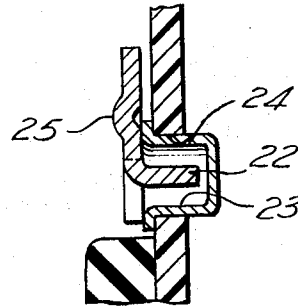
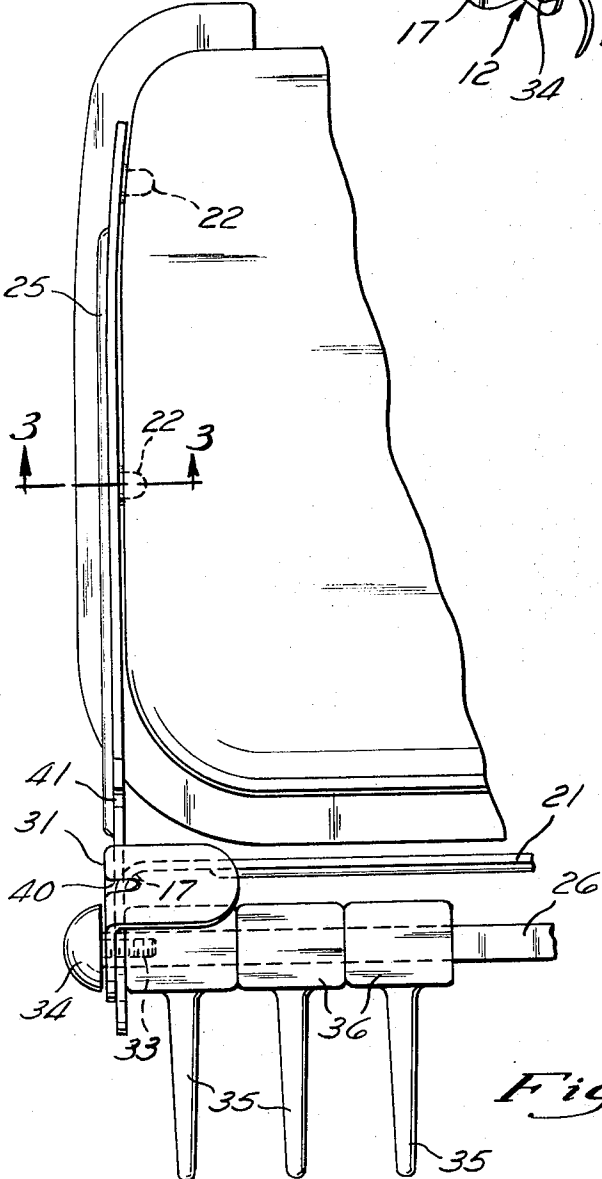
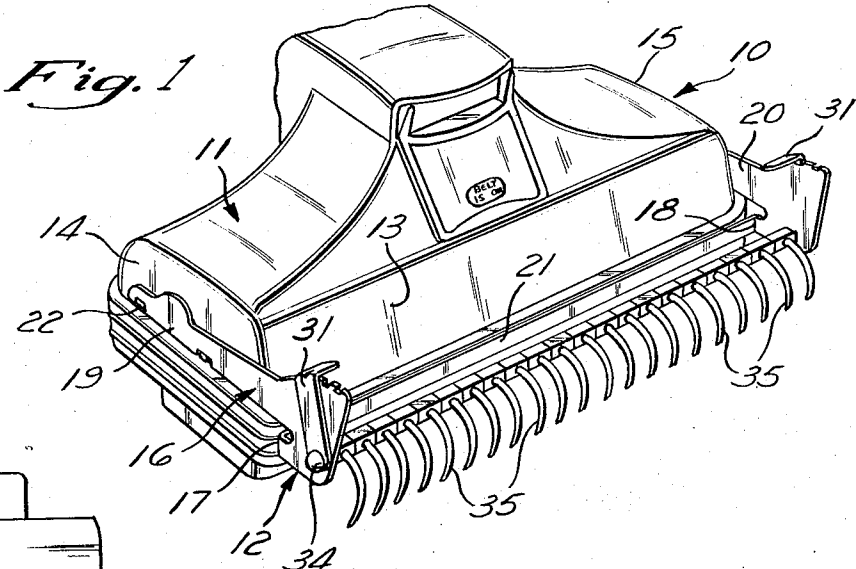


Fig. 4

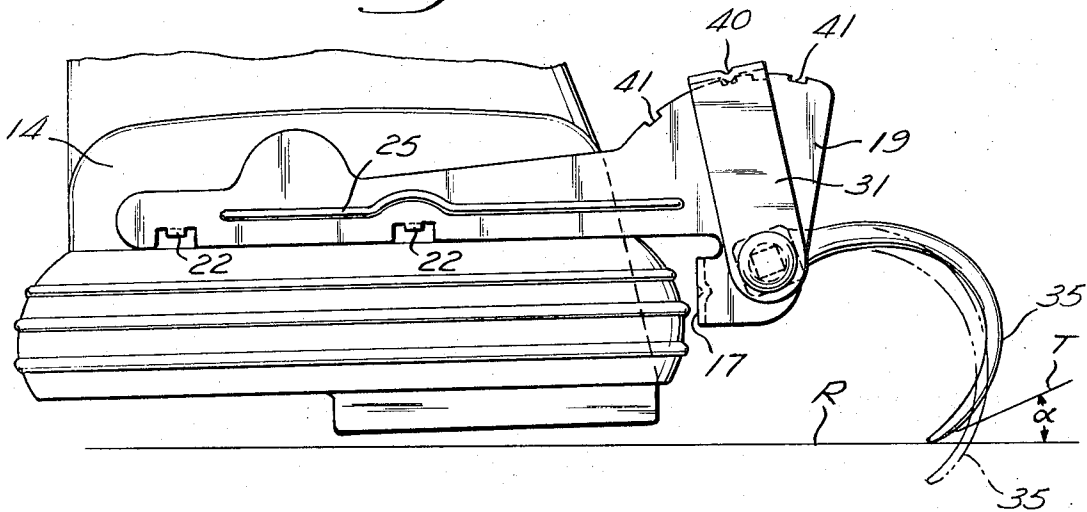
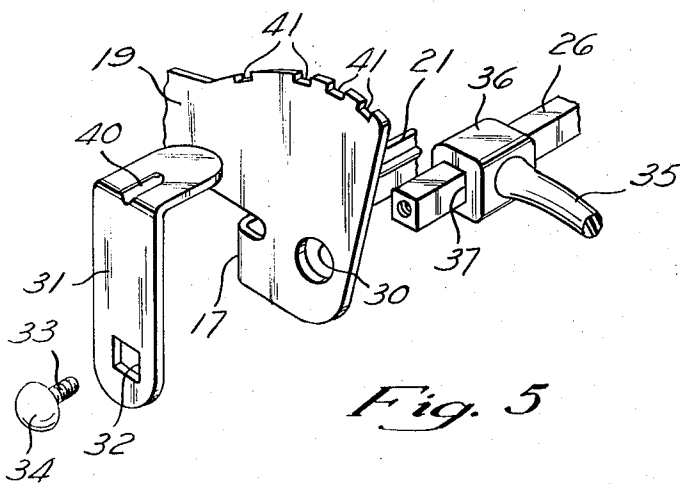


Fig. 5



SHAG RUG FLUFFER

BACKGROUND OF THE INVENTION

Shag rugs have gained increasing popularity in recent years because of their unusual appearance, texture, and durability. Such rugs, however, are unquestionably the most difficult to clean with a vacuum cleaner since the shag strands are merely leveled by the suction nozzle during the cleaning operation and such leveling tends to cover the dirt at the base of these strands to prevent dirt pick-up by the vacuum. It is only at the end of a cleaner stroke that the shag is picked up by the nozzle since stroke reversal mechanically pulls the shag strands to an upright position. This results in an unsightly situation since areas of the rug are flattened with tufts of upright strands at either end of those areas.

To overcome these problems, rug manufacturers have suggested that the shag rug be raked prior to cleaning to separate the shag strands so that the cleaner may pick up dirt between those strands. After vacuuming, the rug must be raked again to fluff the shag strands and to eliminate the matted strand areas.

To overcome this tedious operation, a shag rug rake which attaches to the front end of a vacuum cleaning nozzle has been proposed. This attachment is set forth in U.S. Pat. No. 3,685,089 and includes a plurality of rug raking tines pivotally connected to a cross shaft which, in turn, is clipped onto the front of the cleaning nozzle. Upon the forward stroke of the cleaning nozzle, the tines pivot rearwardly to straighten and separate the shag rug strands and, upon rearward movement of the nozzle, the tines pivot forwardly to comb the strands. On the rearward stroke of the cleaner, the tines are sloped rearwardly toward the cleaner so that the tine ends may tend to ride over rather than lift the matted strands, particularly if the rug is a deep pile shag rug and the downward pressure exerted by the tines is not sufficiently great.

SUMMARY OF THE INVENTION

This invention overcomes the foregoing problems involved in cleaning and raking shag rugs by providing an attachment for the cleaning nozzle of a vacuum cleaner which effectively separates the shag strands for deep cleaning during the forward stroke of the cleaning nozzle and which effectively lifts and combs the shag strands during the rearward stroke of the cleaning nozzle. According to this invention, a shag rug rake attachment for a vacuum cleaner nozzle comprises a U-shaped bracket having legs which clip to the sides of the cleaner nozzle so that the base of the U-shaped bracket extends across the front of the nozzle. A shaft is pivotally connected to the bracket so that it extends across the front of the nozzle and is substantially normal to the directions of movement of the nozzle along the rug. The attachment further includes a plurality of laterally spaced, arcuate tines which project outwardly and downwardly from the shaft and then inwardly toward the nozzle. The shaft is adjustable to any one of a plurality of positions so that the inwardly projecting tine ends are biased against the rug with a force proportional to the depth of rug pile. Additional adjustment of the tines may be provided if the shag rug rake is associated with a vacuum cleaner having a height adjustment for the front wheels of the cleaner, and therefore the nozzle. The tines are thereby flexed a predeter-

mined amount to stiffen the tines and to provide a greater degree of inward hooking so that the shag strands may be picked up and aligned upon the rearward stroke of the cleaning nozzle.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing the rug cleaning nozzle with a shag rug rake attached thereto, embodying the principles of this invention;

FIG. 2 is a fragmentary plan view of the assembly shown in FIG. 1;

FIG. 3 is a fragmentary cross sectional view, the plane of the section being indicated by the line 3—3 in FIG. 2;

FIG. 4 is a side elevational view of the assembly shown in FIG. 1 illustrating the tines in a flexed and unflexed condition;

FIG. 5 is an exploded view of the shaft adjusting assembly according to this invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, and particularly, to FIG. 1, a shag rug rake assembly 10 is illustrated. The assembly 10 includes a vacuum cleaner nozzle 11 and a shag rug rake 12 attached thereto. The nozzle 11 may be a standard cleaning nozzle such as that shown in U.S. Pat. No. 3,646,632 and has front wall 13 and spaced sidewalls 14 and 15. A rotatable belt driven brush (not shown) extends between the sidewalls 14 and 15 and connecting means (not shown) are provided to attach the nozzle and its belt to the motor housing of a standard vacuum cleaner. During a shag rug cleaning operation, it is recommended that the belt be disconnected from its drive shaft to render the brush inoperative.

The rake 12 comprises a U-shaped bracket 16 formed from a single stamping by bending the stamping at areas 17 and 18 to provide attaching legs 19 and 20 and a connecting brace member 21. The legs 19 and 20 are initially bent so that they extend slightly inwardly and are, thereby, spring biased against the sides 14 and 15 of the cleaner. As may be seen in FIG. 3, the legs 19 and 20 are provided with inwardly projecting tabs 22. The tabs 22 are received in pockets 23 in the nozzle, which are defined by hat-shaped eyelets or sockets press-fitted into nozzle openings 24. The sockets or eyelets prevent air leakage into the nozzle when the assembly is removed from the nozzle. The stiffness of the legs 19 and 20 may be increased by providing stiffening ribs 25 therealong. There is further provided a square cross shaft 26 which extends across the front of the nozzle between the legs 19 and 20. Apertures 30 provided in the legs 19 and 20 receive the ends of the square shaft 26 so that the shaft may pivot therein. Each projecting end of the shaft is fixed to an adjusting lever 31 by being received within a square aperture 32 provided therein and by a screw 33 which clamps the lever between its head and the associated leg. To prevent marring of furniture, the head of the screw may be covered by a soft plastic cap 34.

Carried by the shaft 26 is a plurality of laterally spaced, arcuate tines 35 which project outwardly and downwardly from the shaft and then inwardly toward the nozzle 11. Each tine may be molded from a suitable plastic having a "plastic memory" permitting each tine to be flexed and to spring back to a normal unflexed condition. Although the tines are flexible, they are rig-

idly connected at one end to the shaft 26 by hub portions 36 having square bores 37 therethrough. The hub portions also provide the desired lateral spacing of the tines and prevent side-to-side shifting, since all of the hubs are sandwiched between the legs 19 and 20.

Since the levers 31 are fixed to the rotatable shaft 26 and since the tines are rigidly associated at one end with the shaft 26, the position of the tines relative to the nozzle may be adjusted by flexing the levers 31 outwardly until a detent 40 on each lever 31 clears a plurality of notches 41 on each leg 19 and 20. When a desired pivoted position is selected the levers 31 are released to lock the shaft 26 and, therefore, the tines 35 in any one of a plurality of positions.

One such position obtains when the detents 40 engage the notch 41 most closely adjacent the nozzle 11. In that adjusted position, the tines are in a fully raised or off-the-rug position. This position should be used when cleaning short pile rugs and carpeting not requiring a raking action or when the bracket 16 is attached to or removed from the nozzle 11. As the levers 31 are moved to more forward notches 41, the tines 35 are brought into engagement with the rug with a biasing force that increases the flexure of the tines. Thus as may be seen in FIG. 4, one rug contacting position within the range of rug contacting positions is illustrated. If the bottom of the cleaning nozzle were raised from the plane of the rug R, the tines would assume the shape illustrated in phantom outline in FIG. 4. In this position, the tine ends extend beyond the plane of the bottom of the cleaner nozzle. However, when the nozzle is applied to the rug, the tine is flexed to the condition illustrated in solid outline in FIG. 4. It may be noted that in this position, the tines are flexed so that tangents T at tine-rug contact locations define an acute angle α with the rug. At more forward locations smaller tangent angles are defined so that the measure of the angle α is inversely related to the extent of tine extension beyond the plane of the bottom of the cleaner nozzle and the bottom of the nozzle is off the rug.

This adjusting feature has at least two beneficial effects. Firstly, since the more forward adjustment positions are intended for combing progressively deeper pile shag rugs, the tines will be more drastically flexed at those adjusted positions to thereby stiffen the tines and make them more suitable for increasingly difficult combing operations. Secondly, by decreasing the angle α , the tines are able to dig through randomly oriented shag strands downwardly to the carpet base and maintain engagement with that base so that the shag strands may be uniformly oriented by the resulting hooked combing action.

The invention is not restricted to the slavish imitation of each and every detail set forth above. Obviously, devices may be provided which change, eliminate, or add certain specific details without departing from the scope of the invention.

What is claimed is:

1. A shag rug rake attachment for a vacuum cleaner nozzle comprising:

- a. bracket means adapted to be connected to the forward end of the nozzle;
- b. shaft means pivotally connected to said bracket

means at each end and being substantially normal to the directions of movement of the nozzle along the rug;

- c. a plurality of laterally spaced, arcuate tines projecting outwardly and downwardly from said shaft and then inwardly toward said nozzle; and
- d. means to lock said shaft means in any one of a plurality of positions, at least including a range of positions which locate unflexed tine ends progressively beyond the plane of the bottom of the cleaner nozzle when the bottom of the nozzle is off the rug; whereby, when the cleaner nozzle is applied to the rug, the tines are flexed so that tangents at tine-rug contact locations define acute angles with the rug and the measure of said angles is inversely related to the extent of tine extension beyond said plane.

2. A shag rug rake attachment according to claim 1 wherein said plurality of positions includes a position wherein said tine ends do not contact the rug when the bottom of the nozzle is applied to the rug.

3. A shag rug rake attachment according to claim 1 wherein said bracket means comprises a U-shaped clip having a base substantially parallel to said shaft means and a pair of legs adapted to be attached to side portions of said nozzle.

4. A shag rug rake attachment according to claim 3 wherein said legs define acute angles with said base so that they may be sprung outwardly for resilient attachment to said nozzle.

5. A shag rug rake attachment according to claim 1 wherein said means to lock said shaft means includes a lever arm having one end fixed to said shaft means and another end releasably engageable with a plurality of notches on said bracket means.

6. A shag rug rake attachment according to claim 1 wherein said shaft means comprises a square rod and wherein said rod extends through a square aperture at the end of each tine.

7. A shag rug rake and cleaner comprising:

- a. a vacuum cleaner nozzle;
- b. bracket means connected to the forward end of the nozzle;
- c. shaft means pivotally connected to said bracket means at each end and being substantially normal to the directions of movement of the nozzle along the rug;
- d. a plurality of laterally spaced, arcuate tines projecting outwardly and downwardly from said shaft and then inwardly toward said nozzle; and
- e. means to lock said shaft means in any one of a plurality of positions, at least including a range of positions which locate unflexed tine ends progressively beyond the plane of the bottom of the cleaner nozzle when the bottom of the nozzle is off the rug; whereby, when the cleaner nozzle is applied to the rug, the tines are flexed so that the tangents at tine-rug contact locations define acute angles with the rug and the measure of said angles is inversely related to the extent of tine extension beyond said plane.

* * * * *