Nov. 29, 1927.

F. I. SIMPSON

1,650,660

FLOOR POLISHING ATTACHMENT FOR VACUUM CLEANERS

Filed May 25, 1926

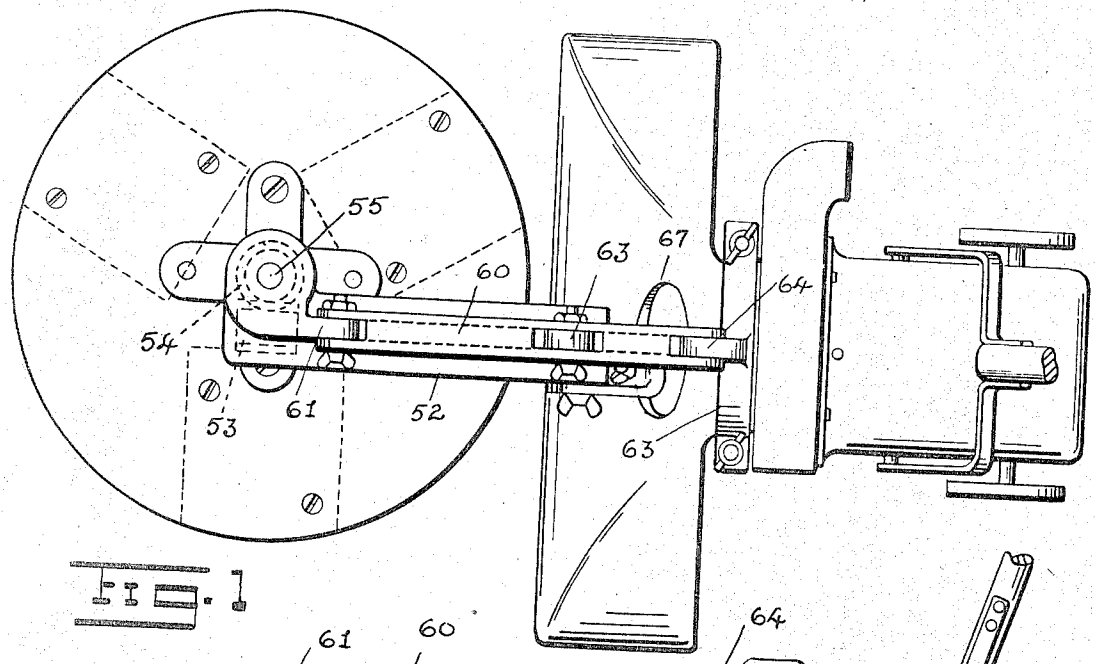


Fig. 1

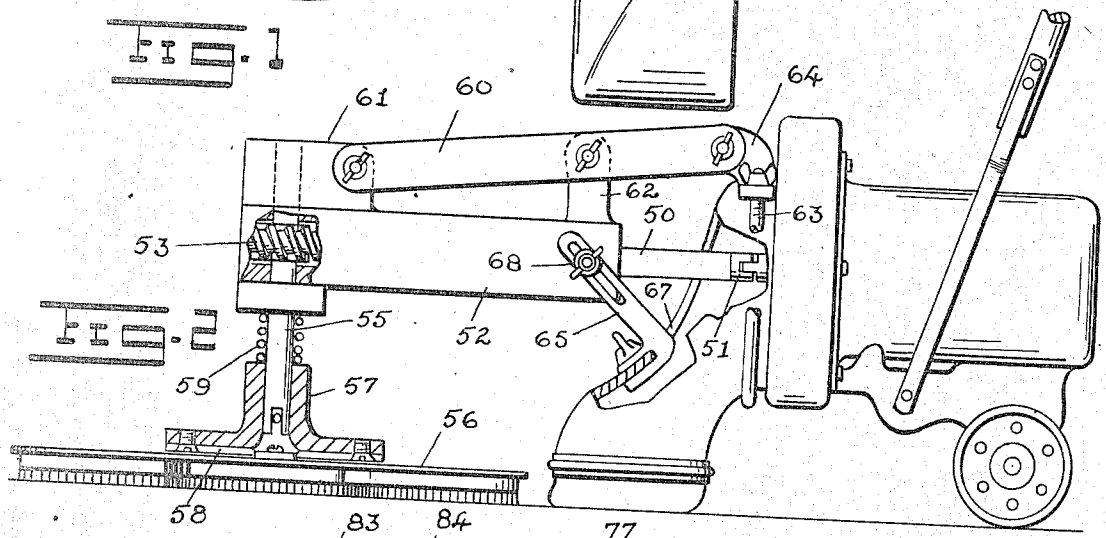


Fig. 2

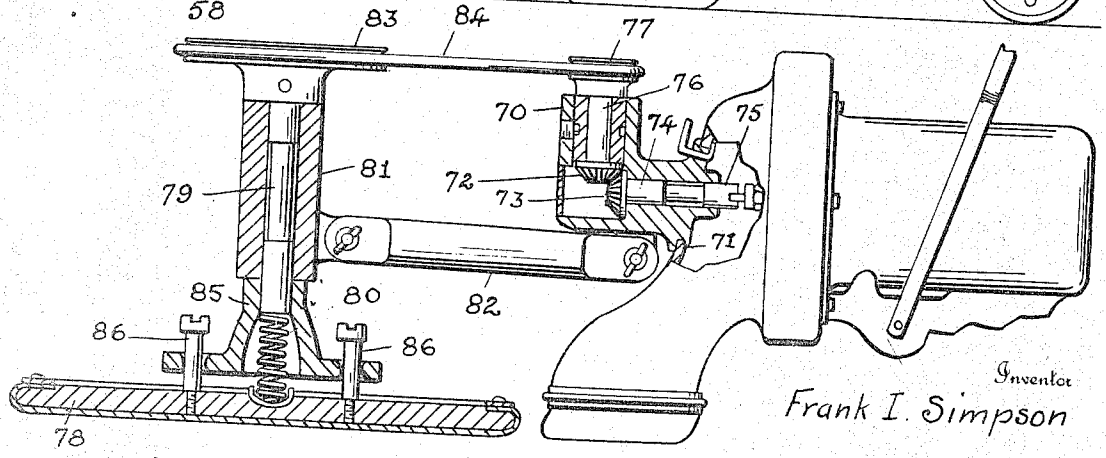


Fig. 3

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Patented Nov. 29, 1927. 1,650,660

UNITED STATES PATENT OFFICE.

FRANK I. SIMPSON, OF ROCHESTER, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO FIT-ALL FLOOR POLISHING ATTACHMENT CO., INC., OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

FLOOR-POLISHING ATTACHMENT FOR VACUUM CLEANERS.

Application filed May 25, 1926. Serial No. 111,653.

The object of this invention is to provide a new and improved attachment for vacuum cleaners by means of which the vacuum cleaner can also be used for polishing floors.

This and other objects of this invention will be fully illustrated in the drawings, described in the specification and pointed out in the claims at the end thereof.

In the accompanying drawings:

Figure 1 is a top plan view of a vacuum cleaner with one form of the polishing attachment connected thereto.

Figure 2 is a side elevation of the vacuum cleaner and polishing attachment illustrated in Figure 1, the vacuum cleaner being partly broken away to illustrate the driving connection between the vacuum cleaner and polishing attachment and the polishing attachment being partly broken away and illustrated in section to illustrate the detail construction thereof.

Figure 3 is a side elevation of the vacuum cleaner with a modified form of the polishing attachment connected thereto, the polishing attachment being illustrated in section.

In the several figures of the drawings like reference numerals indicate like parts.

The polishing attachment forming the subject matter of my present invention is an improvement over the attachment illustrated in my prior Patent No. 1,601,087 and makes this attachment more practical in its application to a vacuum cleaner and more efficient in its work.

In Figures 1, 2 and 3 I have illustrated the polishing attachment in connection with a certain type of vacuum cleaner. In order to make the attachment applicable to this type of vacuum cleaner the driving mechanism as well as the mode of application is somewhat modified. In this type of vacuum cleaners the motor is mounted horizontally so that its armature shaft is horizontal with the floor. The driving connection in this case is made either as illustrated in Figures 1 and 2 or as illustrated in Figure 3. The driving mechanism illustrated in Figures 1 and 2 is a worm drive and comprises the drive shaft 50 which is provided with the universal coupling 51 with which it is coupled to the end of the armature and fan shaft. As illustrated in Figure 2 the universal coupling 51 also forms a sliding connection between the shaft 50 and the armature shaft carrying the fan of the vacuum cleaner. This sliding connection is thus made self adjusting because it allows for a variation in the length of the armature or fan shaft without impairing the proper driving connection between the vacuum cleaner and the polishing attachment. The driving shaft is mounted to rotate in the gear housing 52 and carries the forward end of the worm 53. This worm meshes with the worm wheel 54 keyed to the upper end of the vertical shaft 55. The shaft rotates in suitable bearings in the gear housing 52 and extends downwardly therefrom and has the polishing disc 56 attached thereto. This is done by means of a flexible coupling comprising the sleeve 57 to which is fastened the flexible member 58. The flexible member in turn is suitably fastened to the center of the polishing disc and enables the disc to adjust itself to the level of the floor irrespective of the vertical position of the vertical shaft 55. An expansion spring 59 is interposed between the bottom of the gear housing and the top of the sleeve 57 and serves to yieldingly hold the polishing disc in contact with the floor.

The gear housing 52 is supported on the vacuum cleaner housing by means of the bracket 60 which is clamped to the lugs 61 and 62 by means of suitable bolts and thumb nuts. The free end of this bracket is clamped to the clamping ring 63 which encircles the reduced circular neck of the vacuum cleaner housing and is provided with the lug 64 to which the end of the bracket is attached. This supports the gear housing from the top. A second brace 65 is attached to the housing and projects downwardly and engages the edge of the opening 67 provided in the vacuum cleaner casing. The brace 65 is firmly fastened to this edge by means of the set screw 68.

The polishing disc illustrated in Figures 1 and 2 is provided with a set of three brushes which are suitably fastened to the under side of the disc and suitably spaced thereon.

In the modification illustrated in Figure 3 the gear housing 70 is provided. This housing is detachably fastened into the opening 71 of the vacuum cleaner housing and in it are mounted a pair of bevel gears

72 and 73 which mesh with each other. The bevel pinion 73 is carried on the end of the shaft 74 which is provided at its inner end with a slip joint and universal coupling 75 with which the shaft 74 is attached to the end of the armature shaft. The bevel pinion 72 is carried on the end of the shaft 76 and projects upwardly in the gear housing. At the upper end the small pulley 77 is keyed to this shaft.

The polishing disc 78 of this attachment is supported at the lower end of the vertical shaft 79 being connected thereto by means of the spring coupling 80. The vertical shaft is mounted to rotate in the sleeve 81 which is supported from the gear housing 70 by means of the brace or arm 82. This brace is attached and clamped to the sleeve and gear housing by means of suitable clamping bolts which pass through the ends of the brace and engage suitable lugs provided on the sleeve and gear housing.

The upper end of the vertical shaft 79 has the large pulley 83 keyed to the upper end thereof and the belt 84 passes over this pulley and the pulley 77 and drives the polishing disc through the gearing provided on the vacuum cleaner housing.

To the lower end of the vertical shaft 79 is also keyed or otherwise suitably fastened the flanged sleeve 85. Studs 86, 86 pass through openings in the flange of this sleeve and are threaded into the top of the polishing disc. This connection between the polishing disc in conjunction with the spring coupling provides flexibility in the driving connection between the polishing disc and the shaft and allows the disc to adjust itself to the level of the floor at all times.

I claim:

1. In a polishing attachment for a vacuum cleaner having an electric motor and a motor shaft, the combination of a polishing disc; a driving shaft connected to said polishing disc and driven by said motor shaft, a supporting bearing for said driving shaft, a supporting arm connecting said supporting bearing with the vacuum cleaner, a brace attached to the vacuum cleaner and supporting said supporting arm and connecting means carried by said driving shaft and adapted to slidably engage said motor shaft.

2. In a polishing attachment for a vacuum cleaner having a motor shaft, the combination of a polishing disc, means for mounting said disc on the front portion of the vacuum cleaner, an upwardly projecting shaft on said polishing disc, driving means for said shaft including a member connected with the motor shaft of the vacuum cleaner by a sliding engagement therewith, a flexible connection between said vertical shaft and said polishing disc to keep said polishing disc in constant contact with the floor irrespective of the position of the vacuum cleaner.

3. In a polishing attachment for a vacuum cleaner having a fan shaft for operating the fan of the vacuum cleaner, the combination of a horizontal bracket, means for clamping one end of said bracket to the vacuum cleaner, a horizontal drive shaft carried by said bracket, connecting means carried by said drive shaft and adapted to slidably engage said fan shaft, a vertical bearing supported on the other end of said horizontal bracket, a vertical shaft mounted to rotate in said vertical bearing and driven by said first named shaft, a universal joint on the lower end of said vertical shaft, and a polishing disc connected to said universal joint.

In testimony whereof I affix my signature.

FRANK I. SIMPSON.