

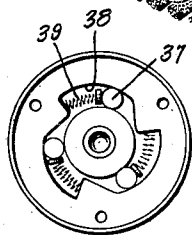
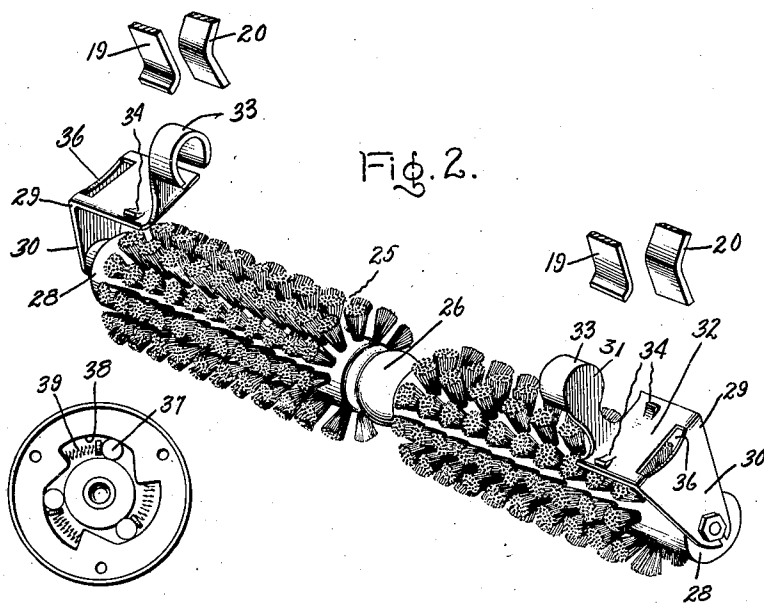
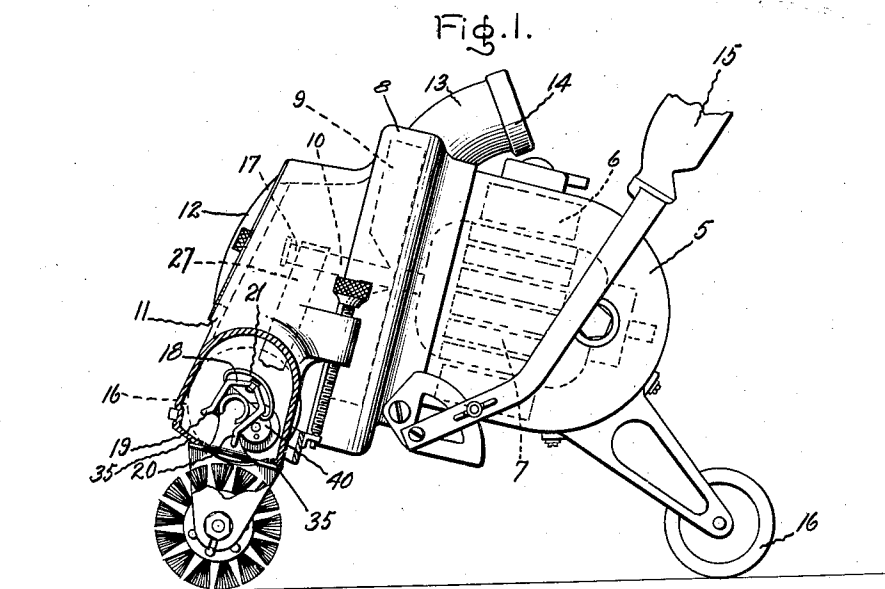
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FLOOR POLISHER

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## UNITED STATES PATENT OFFICE

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## FLOOR POLISHER

Application filed August 19, 1927. Serial No. 214,193.

The present invention relates to floor polishers which are adapted to be applied to and removed from a vacuum cleaner at will, and when so applied are adapted to be driven by the motor which normally drives the suction fan thereof.

In order for a device of this character to be commercially successful it must be so constructed and arranged that it can be easily and quickly applied to and removed from the cleaner by unskilled persons, and this without the use of a tool.

The present invention has for its object to provide a simple and effective means whereby a rotary polishing brush may be quickly mounted underneath the nozzle of a vacuum cleaner and in such position that it may be driven from the shaft of the cleaner motor, or removed therefrom.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying description and the claims appended thereto.

In the attached drawing which is illustrative of my invention, Fig. 1 is a perspective view of a vacuum cleaner with the polisher applied thereto; Fig. 2 is a perspective view of the polisher and its supporting brackets, and Fig. 3 is a detail view of the ratchet mechanism to prevent reverse rotation of the polisher.

I have chosen to illustrate my invention as applied to a well-known type of cleaner in which 5 indicates the casing of the driving motor, 6 its field magnet, and 7 its armature. 8 indicates the fan casing to which the motor casing is connected, and 9 the suction fan which is mounted on the armature shaft 10. Attached to the fan casing and usually cast integral therewith is a nozzle 11 having an open mouth or suction inlet at its lower end. In the front wall of the nozzle is an opening which is normally closed by a cover plate 12 when the cleaner is in operation. The discharge conduit 13 of the fan casing is normally connected to the dustbag when the apparatus is used as a vacuum cleaner. When the polishing brush is used, the end of the conduit is closed by a cover 14 to reduce the load on the motor by

decreasing the effective action of the fan. 15 indicates the operating handle and 16 the floor wheels of which there are three, two in the front for supporting the nozzle and one in the rear under the motor casing.

Such a cleaner in normal use is also provided with a relatively small rotary brush which is located wholly within the nozzle except for the tips of the bristles which brush the surface being cleaned. The brush is driven by a belt from a small pulley 17 located on the front end of the combined armature and fan shaft 10. The brush is carried on a spindle having bearings at its ends and these are mounted in spring hangers 18 which are supported by the end walls of the nozzle. Each hanger comprises a stationary member 19 which is firmly supported by the nozzle wall through part 40 and a movable member 20. The ends of the two members which are pivotally united at the top are pressed toward each other by a flat steel spring 21. The members have out-turned lower ends and the space between them is less than the diameter of the brush-supporting bearings. Thus far the description has been directed to a well known cleaner as previously indicated.

25 indicates a relatively large diameter polisher in the form of a brush of any suitable construction having bristles which are stiff enough to support the weight of the cleaner without appreciable bending thereof at the tips. 26 indicates a pulley located midway between the ends of the brush and by means of which and a belt 27 the brush is driven by the pulley 17. The polisher has bearings 28 at its opposite ends and to each is secured a bracket 29, the lower portion 30 of which is situated wholly below the lips of the cleaner nozzle and the upper part 31 wholly within the nozzle, the two parts being connected by a horizontal offset portion, element or member 32. The portions of the brackets which carry the heads 33 are so spaced apart in an axial direction that the distance between them is only slightly less than the distance between the members 40 which support the hangers. As a result of this the polisher is held against endwise movement.

The two brackets are preferably made of punched sheet steel and are wholly independent of each other, their only connection being through the spindle of the polisher and the bearings thereof. On the inner member of each bracket is fastened a relatively small rounded head 33 which is of such size as to permit of being pressed into a spring hanger through the open end by the application of a relatively small amount of pressure. When once seated in the hanger it will be retained by the pressure exerted by the flat spring 21 on the two members of the hanger, which tends to move the members toward each other at all times.

Since the heads or members 33 of the brackets entering the spring hangers are round, it is necessary to provide means for preventing the brush from rocking or moving back and forth with respect to the nozzle about the disks 33 as pivots as the device is operated. This is accomplished by so shaping and arranging the offset portions of the brackets that they engage the under surfaces of the nozzle walls and in so doing form relatively large flat bearing surfaces or seats. The seating portion of each bracket is provided with a pair of struck-up lugs 34 which engage the front and rear lips 35 of the nozzle. The point of connection between the parts 30 and 32 of the bracket is cut away at 36 to provide clearance for the front floor wheels 16 on the nozzle so that it is unnecessary to adjust the wheels in applying the polisher. Another feature of the offsets is that they permit of the use of a polisher which is at least as long as the nozzle opening thereby ensuring the polishing of a substantial area at each stroke. The bearings being wholly outside of the nozzle and being mounted on brackets impose no restrictions as to the length of the polisher. The spring hangers within the nozzle in addition to holding the upper ends of the brackets also serve to clamp the upper surfaces of the offset parts 32 against the under surface of the nozzle. This is due to the inclined fingers or parts of the hangers which engage the heads 33 at two points below the maximum diameter thereof and hence to pull the brackets upwardly.

In mounting the polisher in place, the first step is to remove what may be termed the normal brush together with its driving belt. Then one of the brackets is moved into alignment with a spring hanger inside the nozzle and the head or member 33 is pressed home. After this the same action is repeated with the second bracket and its head or member with the result that the polisher is firmly secured in place. It will facilitate the insertion of the heads 33 in the hangers and their removal if pressure be applied to the hanger member 20 by the thumb of the operator in a direction to move the same away from its companion part. The rubber belt 27 which

previous to mounting the polisher has to be slipped over the pulley is then passed up through the nozzle and over the pulley on the armature shaft. This is done through the opening in the front wall of the nozzle which is covered by the plate 12. As a general thing, it is preferable to remove the dust bag and also cover the outlet of the fan casing before mounting the polisher in place. To remove the polisher it is only necessary to remove the belt and then detach it by a relatively strong pull in a direction way from the nozzle.

The polisher rotates at relatively high speed and in such direction as to propel the apparatus forward. The operator through the handle restrains this forward movement and it is the difference in speed between the peripheral surface of the polisher and the forward movement of the device as a whole which causes the polishing action. Any suitable means may be employed to prevent the reverse action of the polisher when the device as a whole is moved backwardly by the operator. Such a device is shown in Fig. 3 where 37 indicates hardened steel rollers, 38 cam surfaces and 39 springs to seat the rollers. With this construction, the polishing brush is free to revolve in one direction but not in the opposite.

I have illustrated a type of spring hanger which is suitable for the purpose described but other types may be employed so long as they function to hold the brackets and the polisher. I have illustrated one type of polisher but it is evident that the invention in its broader aspects is not limited thereto.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a rotary floor polisher, brackets which support the polisher below the nozzle, each of said brackets having a member which extends upwardly inside the nozzle and is supported by the hangers, a second member which extends downwardly and supports one end of the polisher, and means for rotating the polisher.

2. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a rotary floor polisher, independent supporting brackets for the polisher, each of said brackets having a member which supports the polisher at one end, a second member which extends into the nozzle and is supported by a hanger, and means which engage the lips of the nozzle to hold the members against rocking movements.

3. A polishing attachment adapted to be

secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a rotary floor polisher, independent supporting brackets for the polisher, each of said brackets comprising two members which are connected by an offset portion which latter forms a seat and engages the under surface of the nozzle, one member of each bracket being seated in a hanger, and means for rotating the polisher.

4. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a rotary floor polisher which extends lengthwise of the nozzle, and a pair of independent brackets which support the polisher by its ends and below the nozzle, each of said brackets having a member which engages the brush and a second member which extends upwardly into the nozzle and is seated in a hanger.

5. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a rotary polisher which extends lengthwise of the nozzle, a pair of independent brackets for supporting the polisher, each of said brackets having a member which engages the polisher at one end and a second member which extends upward into the nozzle and has an enlargement which enters and is held by a hanger, and means for rotating the polisher.

6. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a rotary polisher, independent brackets for supporting the polisher, each of which comprises a member which enters a hanger and is held thereby, a second member which directly supports one end of the polisher, a flat surfaced element which connects said members and is held against the end surface of the nozzle by the action of the spring hanger on the first named member, and means for rotating the polisher.

7. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a rotary polisher located below the nozzle, bearings for the polisher, independent brackets, each of which carries one of the bearings at its lower end and at the other end extends into the nozzle and is seated in a hanger, means for preventing the brackets from rocking, and means for rotating the polisher.

8. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring

pressed cleaning brush hangers in the nozzle, comprising in combination a rotary floor polisher, means having portions to support the polisher at its ends below the nozzle and other portions which enter the nozzle, extend into the hangers and are held in place by the spring pressed elements thereof, and means extending downwardly to a point below the nozzle lips for rotating the polisher.

9. A polishing attachment adapted to be secured under the nozzle of a vacuum cleaner having the usual motor, fan, and spring pressed cleaning brush hangers in the nozzle, comprising in combination a floor polisher, brackets for supporting the polisher below the nozzle, one end of each bracket holding the polisher, the other end being seated in a hanger, and means located between the ends of the brackets which engage the lips of the nozzle and prevent the polisher from rocking.

In witness whereof, I have hereunto set my hand this 16th day of August, 1927.

JESSE F. CARSON.