April 19, 1932. A. E. MOORHEAD 1,854,214

FLOOR CLEANING APPLIANCE

Original Filed Aug. 7, 1923 3 Sheets-Sheet 1

Fig. 2.

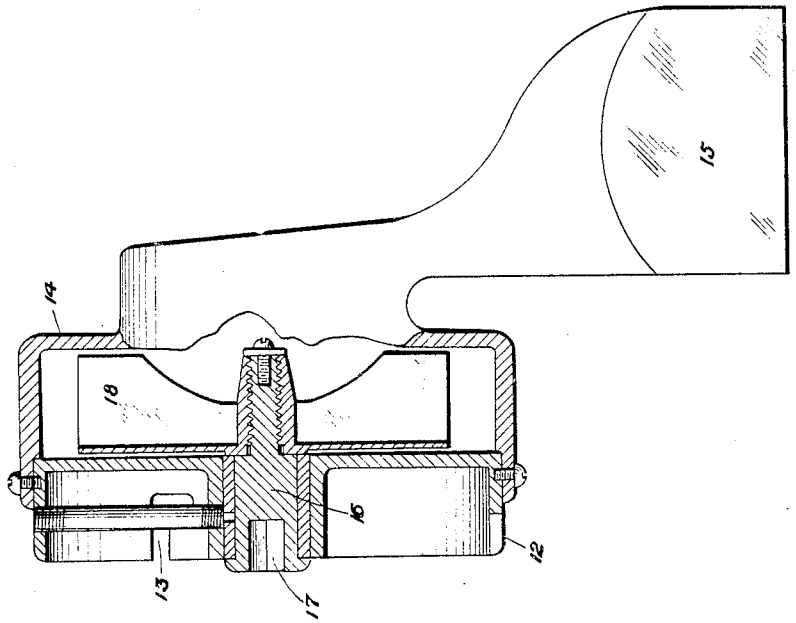


Fig. 1.

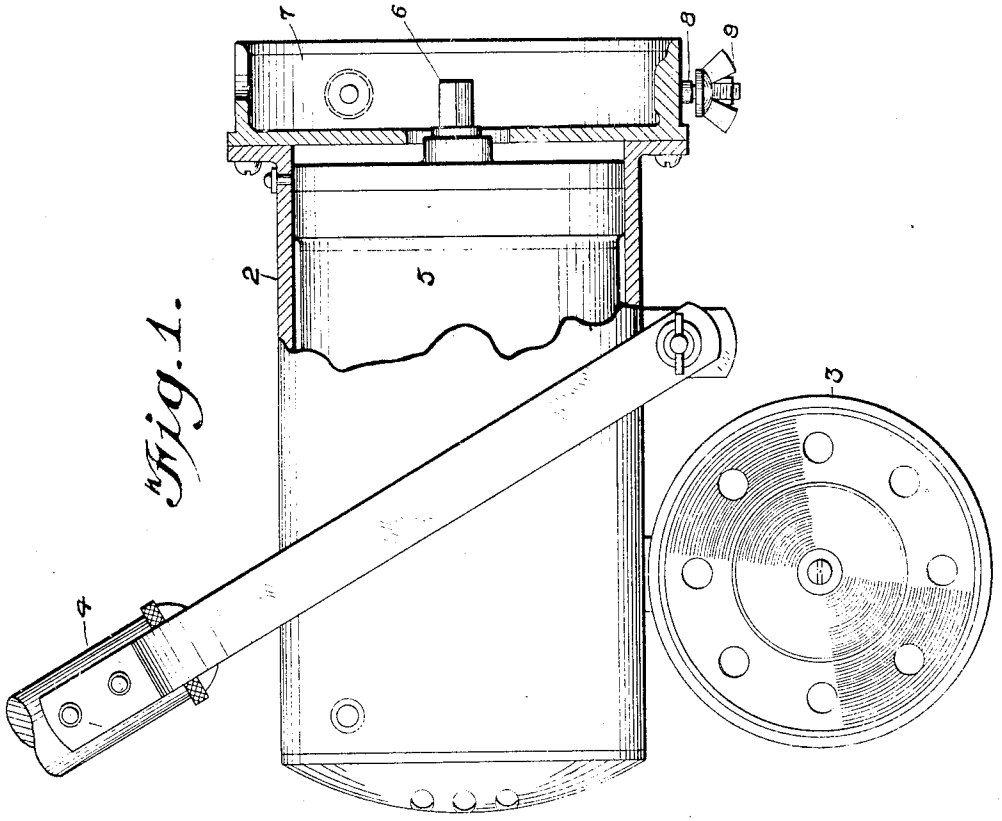


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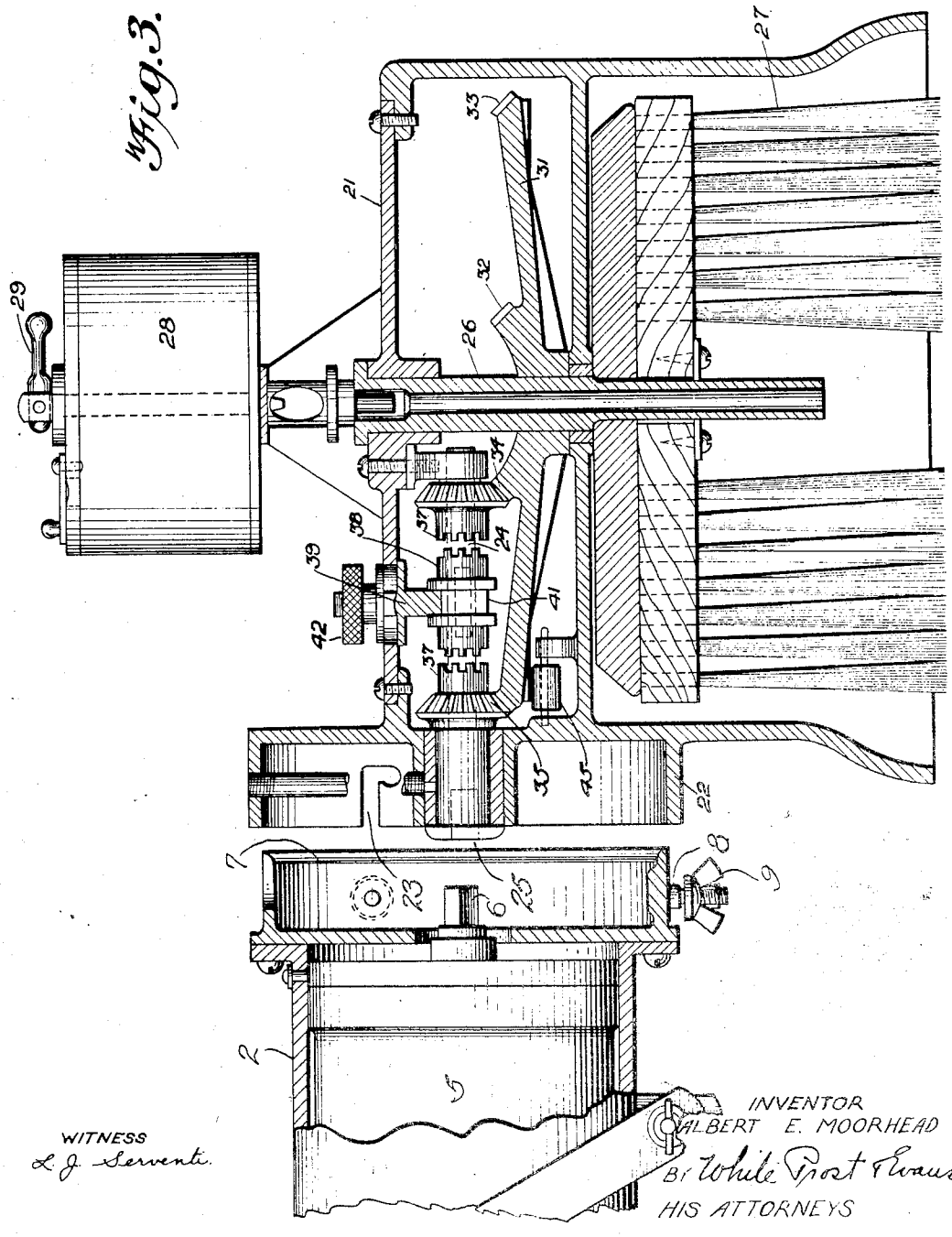
Fig. 3.

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FLOOR CLEANING APPLIANCE

Original Filed Aug. 7, 1923 3 Sheets-Sheet 3

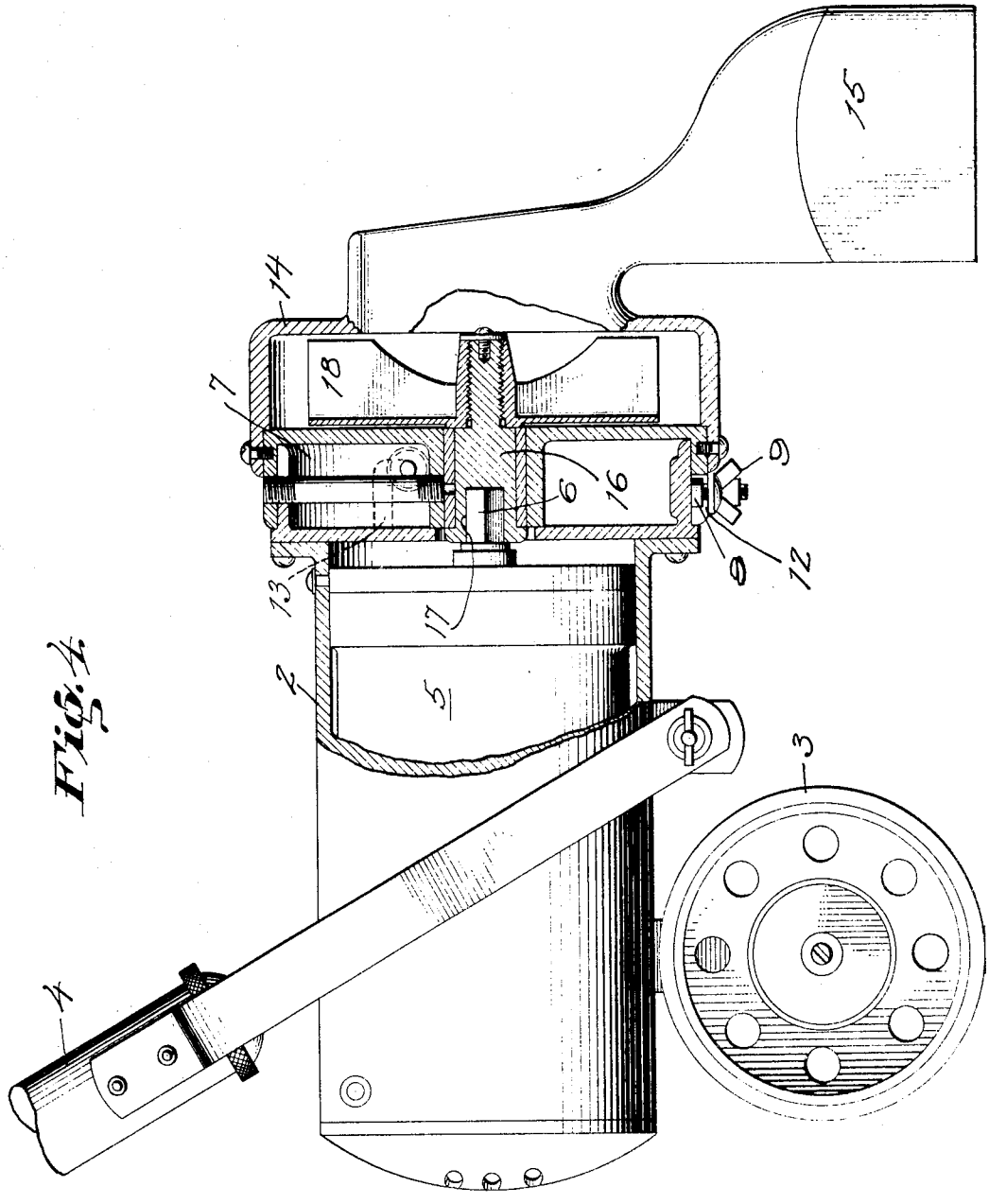


Fig. 4.

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Patented Apr. 19, 1932 1,854,214

# UNITED STATES PATENT OFFICE

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## FLOOR CLEANING APPLIANCE

Application filed August 7, 1923, Serial No. 656,158. Renewed August 30, 1930.

The invention relates to a device for cleaning floor coverings and floors, for removing the dust and dirt from floor coverings and for polishing hardwood floors.

An object of the invention is to provide an appliance which may be used both for cleaning rugs and carpets and other floor coverings and for polishing hardwood floors.

Another object of the invention is to provide a floor cleaning appliance having detachable attachments so that the same appliance may be used for cleaning rugs and carpets and for polishing floors.

Another object of the invention is to provide a device for polishing hardwood floors in which the polishing tool may be driven at different speeds, depending upon the service required of it.

It is now common to provide a motor driven vacuum cleaner; and it is also common to provide a brush that is also motor driven, to assist in the action of the vacuum cleaner. Such cleaners are provided with long handles and are arranged to be passed over the floor for treating the floor. This long handle arrangement is peculiarly well adapted to the treating of floors in general, in addition to vacuum cleaning, such for example, as polishing or scrubbing; and it is another object of my invention to make it possible to utilize the one and the same power unit, including the handle and motor, not only for driving, but also for supporting any one of a number of separate and distinct floor treating devices, and particularly is it an object of my invention to make it a very easy matter for anyone, without tools, to change the appliance from a vacuum sweeper to another floor treating device.

For this purpose, I provide a power unit that cooperates interchangeably with any one of several driven devices. It is accordingly still another object of my invention to provide a power unit that carries one portion of a readily detachable connection, and a series of devices each having a cooperating portion whereby any one of them can be coupled to the power unit as desired, and whereby it can be supported on the power unit.

The invention possesses other advantageous features, some of which with the foregoing, will be set forth at length in the following description, where I shall outline in full, that form of my invention which I have selected for illustration in the drawings accompanying and forming part of the present specification. In said drawings I have shown one form of apparatus embodying my invention, but it is to be understood that I do not limit myself to such form, since the invention, as set forth in the claims, may be embodied in a plurality of forms.

Referring to said drawings:

Figure 1 is a side elevation, partly in section, of the motor unit which forms part of my invention.

Figure 2 is a side elevation, partly in section, of the vacuum cleaning unit which is attachable to the motor unit to provide a vacuum cleaner for carpets and rugs.

Figure 3 is a vertical section through a floor polishing unit which is adapted to be attached to the motor unit for cleaning and polishing hardwood floors.

Figure 4 is a side elevation, partly in section, of a combined motor unit and vacuum cleaning unit.

At the present time most homes are provided with hardwood floors and while vacuum cleaning appliances are sold very largely, for the purpose of cleaning the carpets and rugs which cover the floors, no means have been provided for converting these vacuum cleaning appliances into devices which may be used for polishing the hardwood floors. In accordance with my invention I make the appliance in two units, a motor unit and a floor cleaning unit and provide a plurality of different types of floor cleaning units so that a floor polishing unit may be substituted for a vacuum cleaning unit. The principal cost of the vacuum cleaner is in the driving motor and by making this detachable from the floor cleaning unit I provide a general utility outfit at a cost very little in excess of the cost of a vacuum cleaner. The housewife is therefore enabled to readily polish her hardwood floors, a task which at the present time is extremely arduous and therefore seldom performed, with the result

that the harwood floors are not kept in particularly desirable condition.

The motor unit of my invention comprises a housing 2 which is preferably mounted on wheels 3 so that the appliance may be readily moved over the floor, the wheels and/or the handle constituting a support for the motor and motor housing. A handle 4, pivotally connected to the housing, serves as a means of moving the appliance over the floor. Disposed within the housing is a motor 5 the drive shaft 6 of which is provided preferably with a rectangular end which extends from the housing. The housing is provided with a cylindrical flange 7 which is adapted for telescopic engagement with a flange on the operating tool, to be detachably connected thereto. The flange 7 is provided with a plurality of bolts 8 which are adapted to engage in slots in the flange of the operating unit, when the two flanges are telescoped, and wing nuts 9 on the bolts serve to clamp the two flanges together.

The vacuum cleaning instrument shown in Figure 2, is provided with a flange 12 which fits over the flange 7 and the flange is provided with bayonet slots 13 which engage the bolts 8 on the flange 7. The flange 12 of the vacuum cleaning unit is secured to the housing 14 of such unit, which is provided with a nozzle 15, which is moved over the surface to be cleaned. Journalled in the housing 14 is a stub shaft 16 which is provided with a rectangular socket 17 adapted to receive the projecting shaft 6. Mounted on the stub shaft 16 and disposed within the housing is the impeller 18 which creates the vacuum in the nozzle 15. It is to be noted that the same movement causing engagement of the flanges 7 and 12 also causes operative engagement of shaft 6 and socket 17, and that a space is formed between the motor flange 7 and the appliance flange 12, for the accommodation of the clutching elements.

When it is desired to clean the hardwood floors, the vacuum cleaning tool is removed from the motor unit and a hardwood floor polishing tool substituted in its place. The hardwood floor polishing tool, shown in Figure 3, is provided with a housing 21, secured to which or formed integral with, is a flange 22 adapted to fit over the flange 7 of the motor unit. The flange 22 is provided with bayonet slots 23 for engagement with the bolt 8. Journalled in the housing 21 is a drive shaft 24 having a socket 25 adapted to receive the projecting end 6 of the motor shaft. Suitably journalled in the housing 21 is a hollow shaft 26 to which is secured the floor polishing brush 27, the bristles of the brush extending down below the lower edge of the housing. Liquid polishing material for the hardwood floor is deposited on the floor through the hollow shaft 26, which receives the material from the supply cup 28 which is provided with a valve which is operated by the lever 29. The lever is moved to open the valve when the brush is in operation, thus permitting polishing material to drop onto the floor, where it is picked up and spread by the brush. The brush is rotated at a sufficiently high speed, so that sufficient heat is produced by friction, to insure effective polishing of the floor.

Means are provided for driving the brush at two different speeds, depending upon the service required. Secured to the shaft 26 is a double gear 31 having toothed surfaces 32 and 33 of different diameter. Loosely mounted on the drive shaft 24 are two bevelled gears 34 and 35 which mesh respectively with the gears 32 and 33. Means are provided for locking either of the gears 34 or 35 to the drive shaft to rotate the gear 31. The gears 34 and 35 are spaced apart and are provided on their adjacent ends with clutch faces 37. Splined to the shaft 24 between the gears 34 and 35 is a clutch member 38 having opposed clutch faces adapted to engage the clutch face of either the gear 34 or 35. The clutch member 38 is moved into engagement with either of the gears by the stem 39 engaging the groove 41 on the clutch member. The stem 39 is held in adjusted position by the nut 42 so that the clutch 38 may be held in neutral position between the two gears 34 and 35 or may be moved into engagement with either gear 34 or 35. The gear 31 is preferably supported at its periphery, directly below the gear 35 by a roller or other similar device 45 so that the driving strain will not displace the gear 31.

By the possession of this appliance the housewife is able, at an expense only slightly in excess of the cost of a vacuum cleaner, to have an instrument which will effectively clean carpets and rugs and effectively polish hardwood floors. The polishing of the hardwood floor is accomplished without any great physical exertion, thereby producing an incentive to maintain the floor in perfect condition.

In the appended claims, I have used the term "power unit". This refers particularly to the motor 5 and its auxiliary parts, and it is intended to apply solely to such a power unit, exclusive of any operator whatsoever that may be driven thereby. In other words, the term means exactly and only what is ordinarily implied—a convenient source of power separate from the load imposed thereon.

The terms "floor cleaning or polishing appliance" or "floor treating device" appearing in the claims are directed to devices of the type disclosed in the present application such as suction devices, or brushing and polishing devices, or the like.

I claim:

1. Floor treating mechanism comprising a power unit, a detachable floor treating de-

vice, a floor support for said power unit independent of said device, said device having an operator that must be mechanically driven to enable it to perform its function, said power unit including one portion of a detachable connection, and the operator having a cooperating portion, for causing a driving connection to be made between the power unit and said device, and means for detachably joining said device to the power unit, said operator forming substantially the whole load for the motor.

2. A power unit, and a floor treating device, said device having an operator that must be mechanically driven to enable it to perform its function, said device also having an open flange at one end, said power unit including a motor and a support for the motor, said support having an end surface arranged to form with the open flange, a compartment that separates the power unit from the device, and a connection located in said compartment between the motor and the device, said operator forming substantially the whole load for the motor.

3. The combination of a power unit comprising a motor and a motor casing having a projecting flange, a floor treating tool comprising substantially the entire load for the motor and having a frame provided with a flange detachably connected with said first flange, a shaft operatively connected with said tool and quickly detachably connected with the motor.

4. A floor treating mechanism comprising a power unit, a detachable floor treating device, said device having an operator that must be mechanically driven to enable it to perform its function, said power unit including a portion of a detachable connection and the operator having a cooperating portion for causing a driving connection to be made to transfer motive power from the said unit to the said device, said operator forming substantially the whole load of the power unit, and means for operating the operator at a speed other than the speed of the said power unit.

5. A floor treating mechanism comprising a power unit and a detachable floor treating device, said device having an operator that must be mechanically driven to enable it to perform its function, said power unit including a portion of a detachable connection and the operator having a cooperating portion for causing a driving connection to be made to transfer motive power from the said unit to the said device, said operator forming substantially the whole load of the power unit, and said detachable device having means for operating the operator at a speed other than the speed of the said power unit.

6. A floor treating mechanism comprising a power unit and a detachable floor treating device, said device having an operator that must be mechanically driven to enable it to perform its function, said power unit including a rotatable motor and one portion of a detachable connection, the operator having a cooperating portion for causing a driving connection to be made to transmit motive power from said motor to said operator, said operator forming substantially the whole load for the motor, and means for transmitting and transforming the rotation of the said motor into a different rate of rotation of the said operator.

7. A floor treating mechanism comprising a power unit and a detachable floor treating device, said device having an operator that must be mechanically driven to enable it to perform its function, said power unit including a rotatable motor and one portion of a detachable connection, the operator having a cooperating portion for causing a driving connection to be made to transmit motive power from said unit to said device, said operator forming substantially the whole load for the motor, and means for transmitting and transforming the rotation of the said motor into a different rate of rotation of the said operator, said last named means constituting a part of said device.

In testimony whereof, I have hereunto set my hand.

ALBERT E. MOORHEAD.