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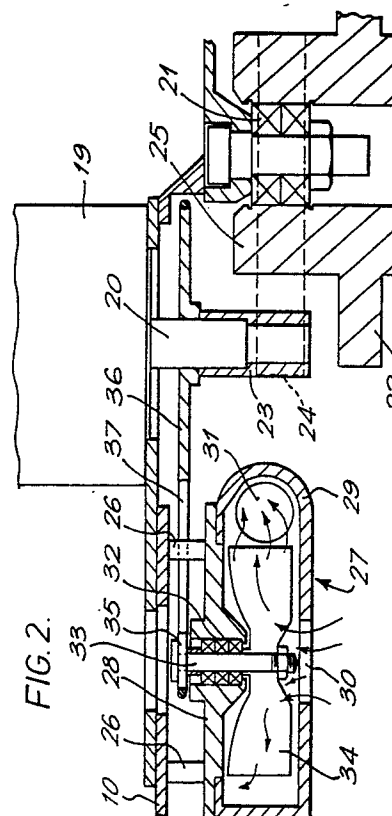
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"Avillion", Noads Way Dibden Purlieu
Southampton, Hampshire SO4 5PB(GB)(54) **Floor cleaning apparatus.**

(57) A floor cleaning apparatus consists of a main casing (10), a disc or plate (22) mounted for rotation within the casing (10) and to which a circular brush, pad or mop can be attached, a skirt (17) surrounding the periphery of the disc or plate (22), a fan or impeller unit (27) mounted within the casing (10) for providing suction within the area bounded the skirt (17) and which is connected by a conduit (38) to a filtered receptacle (39) and an electric motor (19) is mounted on the casing (10) and has its drive shaft (20) extending within the casing (10) and connected by a first drive transmission (23, 24) to the disc or plate (22) and connected by a second drive transmission (35, 36, 37) to the fan or impeller unit (27).



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FLOOR CLEANING APPARATUS

This invention relates to an electrically powered floor cleaning apparatus of the type provided with a rotatable plate or disc to which can be attached a circular brush or cleaning or polishing pad or mop.

It is known to provide such apparatus with a skirt which surrounds the periphery of the circular brush, pad or mop and to provide suction within the area bounded by the skirt for conveying dust or other debris to a receptacle via a conduit connected to the skirt, in order to prevent dust or other debris being expelled into the surrounding area and atmosphere. Suction is produced by a fan or impeller driven by an electric motor which is in addition to the electric motor used for driving the plate or disc. Such known apparatus has the disadvantage that if used on a wet floor surface water is sucked up by the fan or impeller and can come into contact with the electric motor used for driving the fan or impeller: this is undesirable from a safety point of view. The fan/motor unit for creating suction is usually mounted on a handle part of the apparatus and is thus spaced well above the base part of the apparatus. This arrangement increases the weight of the handle part and makes it tiresome to control the movement of the apparatus over the floor surface.

Such apparatus requiring the use of two or more electric motors, one of which is the vacuum motor, is noisy in operation. Floor cleaning is more and more being carried out in buildings during periods in which the building is occupied, e.g. in hospitals, offices, etc. and noisy machines can not be tolerated.

According to the present invention there is provided a floor cleaning apparatus having a main casing, a disc or plate mounted for rotation within the casing and to which a circular brush, pad or mop can be attached, a skirt surrounding the periphery of the disc or plate, a fan or impeller unit for providing suction with the area bounded by the skirt and electrically driven means for driving the disc or plate and the impeller unit, characterised in that the fan or impeller unit is located within the casing and has a conduit which extends to a filtered receptacle and the electrically driven means for driving the disc or plate and the impeller unit comprises an electric motor mounted on the casing with its drive shaft extending within the casing, a first drive transmission drivingly connecting the drive shaft to the disc or plate and a second drive transmission drivingly connecting the drive shaft to the fan or impeller unit.

Preferably the first and second drive transmissions each comprise a belt and pulley drive transmission.

An embodiment of the invention will now be described, by way of an example, with reference to the accompanying drawings, in which:-

Figure 1 is a diagrammatic illustration of a floor cleaning apparatus according to the present invention, and

Figure 2 is a cross-section through the casing.

The floor cleaning apparatus comprises a main casing 10 on which are mounted wheel 11 for use in moving the apparatus from one point of use to another or to storage. Hinged to the rear of the casing 10 by a hinge connection 12 is a handle 13 provided at its upper end with a control box 14 and hand grips 15. Secured to the main casing 10 is a cowling 16 to which is detachably fixed a circular skirt 17 which in use of the apparatus extends to the floor and surrounds the periphery of a rotatable circular brush, pad or mop (not shown). The bottom edge of the skirt 17 is provided with a slot or slots 18 to allow air to flow into the area surrounded by the skirt 17.

Mounted on the upper side of the main casing 10 is an electric motor 19 having an output shaft 20 which extends through the main casing 10 as shown in Figure 2. Rotatably mounted within the main casing 10 by bearings 21 is a drive disc or plate 22 which the circular brush, pad or mop is detachably secured. Secured to the shaft 20 is a pulley 23 which is drivingly connected by a belt 24 to a tubular part 25 of the disc or plate 22.

Mounted within the main casing 10 through support legs 26 is an impeller unit 27 located adjacent to the drive disc or plate 22. The impeller unit 27 comprises a mounting plate 28 to which is secured a scroll casing 29 having an air inlet 30 and an air outlet 31. Mounted for rotation in bearings 32 is an impeller shaft 33 on which is secured an impeller 34. The upper end of the shaft 33 is provided with a pulley 35 which is drivingly engaged with a second pulley 36 provided on the shaft 20 by means of a belt 37.

The outlet 31 is connected via a conduit 38 to a filtered receptacle 39 carried by the handle 13.

In use of the apparatus, the skirt 17 prevents dust and/or debris being thrown into the surrounding area and atmosphere by the brush, pad or mop and as the area contained within the skirt 17 and casing 10 is subjected to suction by the impeller unit 27 any dust and/or debris is conveyed to the filtered receptacle 39. If the apparatus is used on a wet floor any water sucked up by the impeller unit 27 is conveyed to the receptacle 39 and can not come into contact with the motor 19. As only a single motor 19 is used to drive the disc 22 and

the impeller unit 27 the operation of the machine is quiet compared with apparatus having two motors.

By having the impeller unit 27 mounted on the casing 10 instead of on the handle 13 ensures that its weight is distributed low down on the apparatus and does not adversely effect handling of the apparatus.

It will be appreciated that the drive transmissions to the disc 22 and impeller unit 27 may comprise a gear transmission or a chain and sprocket transmission, or other alternative transmission.

One or both drive transmissions to the disc 22 and the impeller unit 27 may include a jockey or tensioning pulley or sprocket.

6. A floor cleaning apparatus as claimed in any preceding claim, in which the skirt (17) is provided at its bottom edge with a slot or slots (18).

Claims

1. A floor cleaning apparatus having a main casing (10), a disc or plate (22) mounted for rotation within the casing (10) and to which a circular brush, pad or mop can be attached, a skirt (17) surrounding the periphery of the disc or plate (22), a fan or impeller unit (27) for providing suction within the area bounded by the skirt (17) and electrically driven means for driving the disc or plate (22) and the impeller unit (27), characterised in that the fan or impeller unit (27) is located within the casing (10) and has a conduit (38) which extends to a filtered receptacle (39) and the electrically driven means for driving the disc or plate (22) and the impeller unit (27) comprises an electric motor (19) mounted on the casing (10) with its drive shaft (20) extending within the casing (10), a first drive transmission (23, 24) drivingly connecting the drive shaft (20) to the disc or plate (22) and a second drive transmission (35, 36, 37) drivingly connecting the drive shaft (20) to the fan or impeller unit (27).

2. A floor cleaning apparatus as claimed in claim 1, in which the first drive transmission (23, 24) and the second drive transmission (35, 36, 37) each comprise a belt and pulley drive transmission or a chain and sprocket drive transmission.

3. A floor cleaning apparatus as claimed in claim 2, in which one or both drive transmission (23, 24) and (35, 36, 37) include a jockey or tensioning pulley or sprocket.

4. A floor cleaning apparatus as claimed in any preceding claim, in which the main casing (10) is provided with wheels (11).

5. A floor cleaning apparatus as claimed in any preceding claim, in which the main casing (10) is provided with a cowling (16) to which the skirt (17) is detachably fixed.

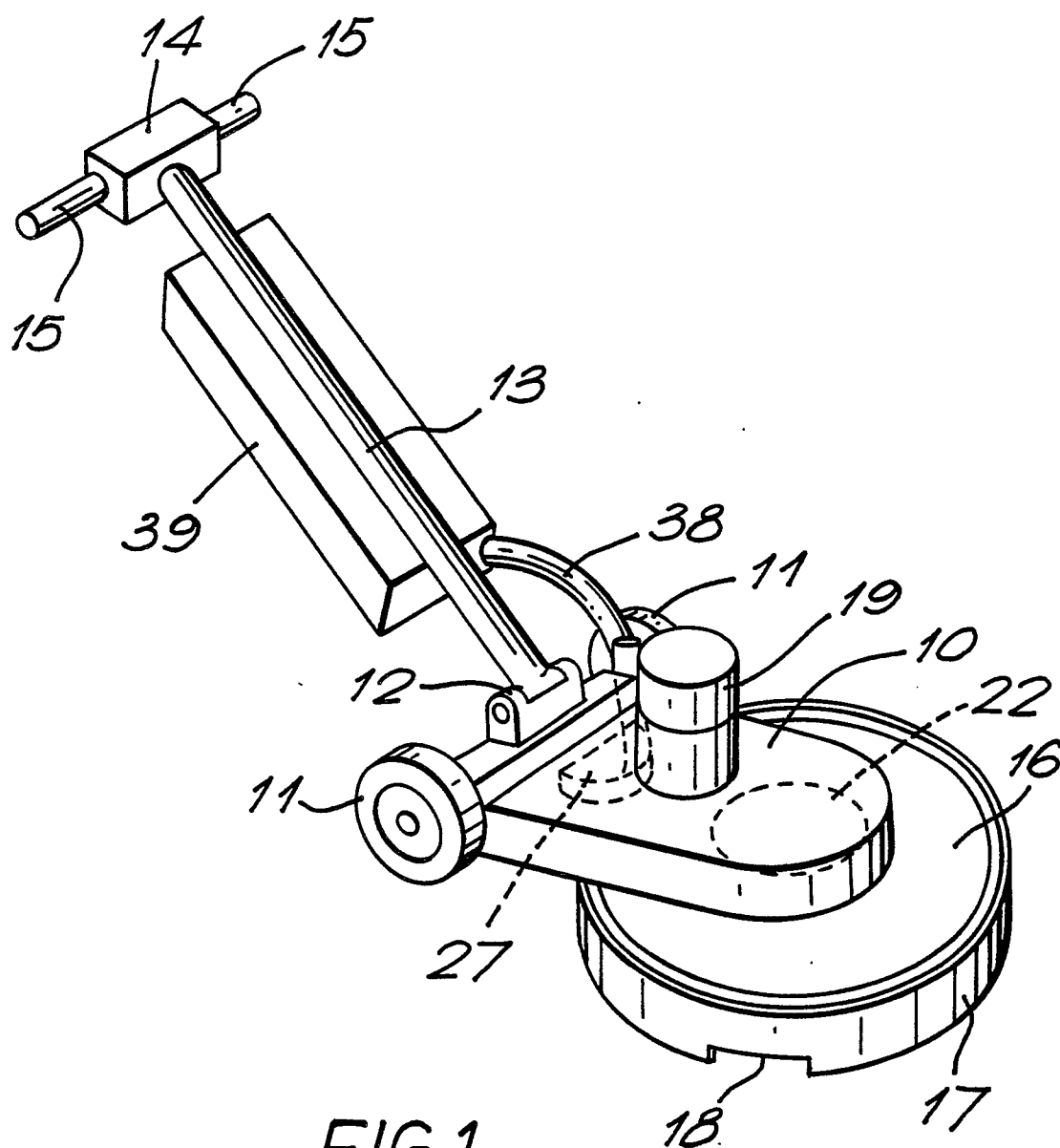


FIG. 1.

FIG. 2.

