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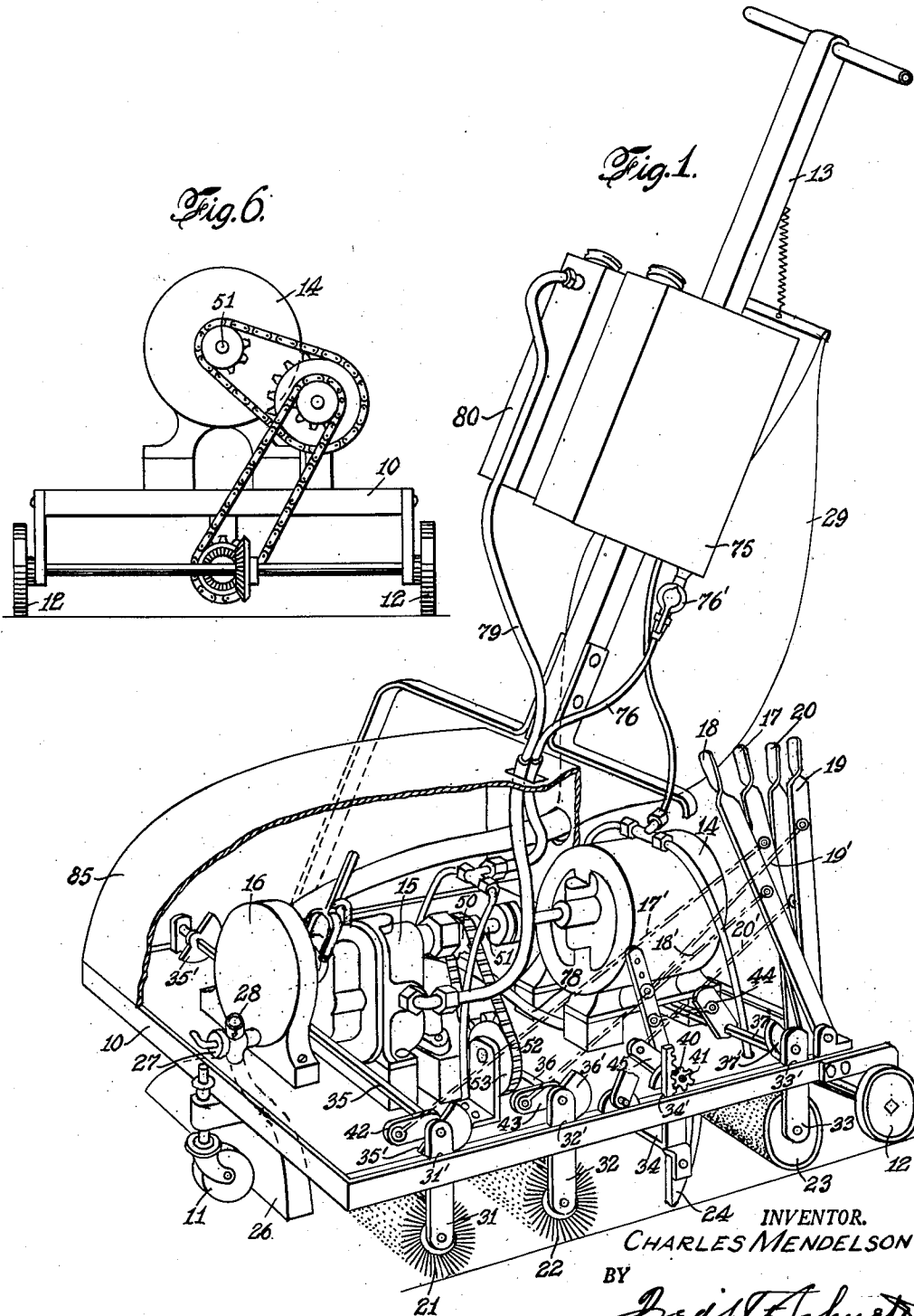
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PORTABLE AND MANUALLY OPERABLE APPARATUS FOR THE CLEANING
AND/OR FINISHING OF CARPETED OR UNCARPETED FLOORS

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3 Sheets-Sheet 1



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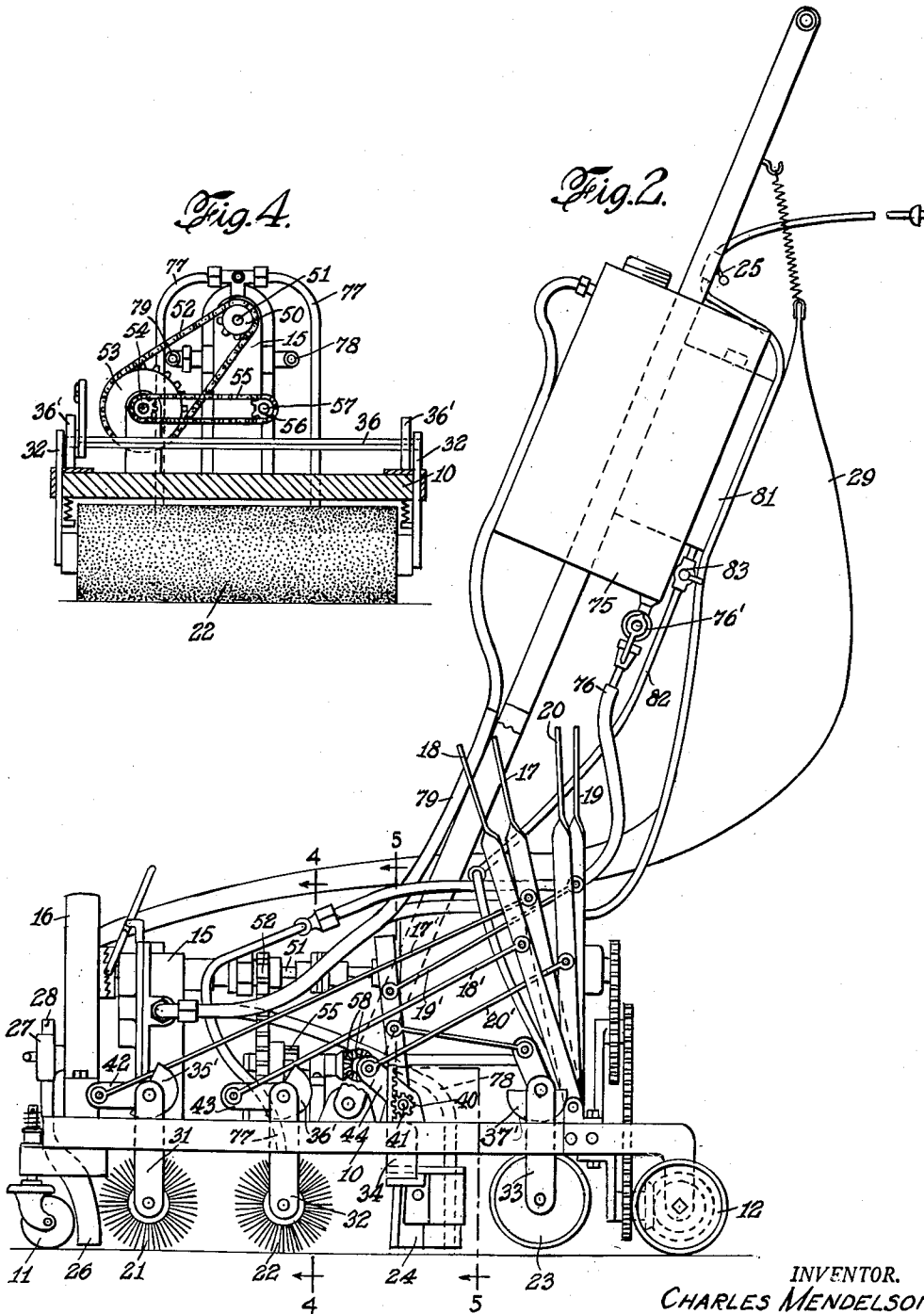
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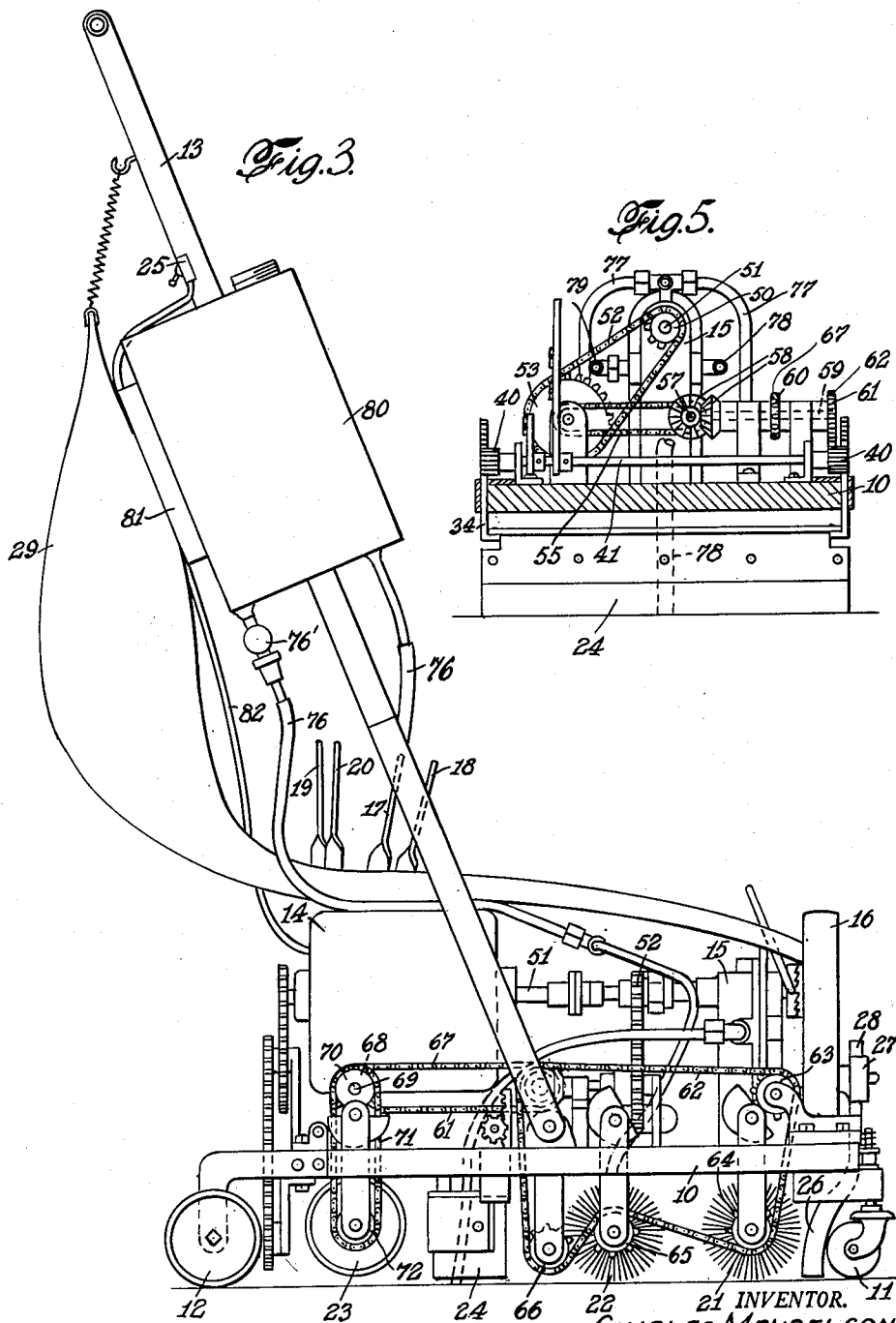
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PORTABLE AND MANUALLY OPERABLE APPARATUS FOR THE CLEANING AND/OR FINISHING OF CARPETED OR UNCARPETED FLOORS

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1 Claim. (Cl. 15—52)

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The invention relates to surface processing apparatus of a portable nature adapted for manual operation, more especially such as is suited to the cleaning and/or finishing of floors both carpeted and uncarpeted.

Another object of the invention is to provide a common driving means for effecting the various processing operations, with provision for selective control of each individual processing member whereby any desired number or only a single one of these members may be retained in operative position.

Still another object of the invention is to effect such control without disturbing the common drive mechanism for the various processing members.

A further object of the invention is to provide selection mechanism which will require no tool for its adjustment or operation, the same being readily performed manually.

In carrying out the invention, provision is made to mount upon the underside of a platform supported on a suitable manually- or mechanically-movable carriage a succession of rotatable members designed to effect the varying processing operations, these members being rotatably supported transversely to the direction of travel of the carriage over the surface. A motor supported by the carriage, and under control of an operator of the apparatus, serves to provide power for operating the individual rotatable members as well as a suction pump and a vacuum pump, the former being designed to remove through a further member, namely a squeegee, liquid distributed to one or more of the other members.

The vacuum pump may be adapted for general vacuum cleaning purposes through a hose connection thereto and/or to collect dust and other light matter stirred up by one of the rotatable members such as a brushing roll, a vacuum nozzle or head being then located in advance of the said roll and is connected to a bag or like receptacle carried, for example, on a handle for manipulating the carriage.

In the event that the action of any one or more of the processing members should not be desired, provision has been made through means readily accessible to the operator of the apparatus to displace temporarily such member or members to an extent to prevent contact of the same with the surface being processed; and the action

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of the dust collecting mechanism may be mechanically or electrically controlled.

The nature of the invention, however, will best be understood when described in connection with the accompanying drawings, in which:

Fig. 1 is a view in perspective of the novel apparatus.

Fig. 2 is an elevation of one side of the apparatus and Fig. 3 an elevation of the opposite side of said apparatus.

Figs. 4 and 5 are transverse sections taken respectively on the lines 4—4, 5—5, Fig. 2 of the drawings, and looking in the direction of the arrows.

Fig. 6 is a fragmentary rear elevation view.

Referring to the drawings, 10 designates a platform or carriage supported for movement manually or, preferably, under motor propulsion, in which case there is provided a forward caster 11 and a pair of rear driving wheels 12. The platform has pivotally secured along its opposite sides a bail to which is attached a handle member 13 for manipulating the apparatus over a surface to be processed such as a carpet, rug, or uncovered floor or linoleum covered floor. The upper face of this platform supports an electric driving motor 14 for the actuation of the various cleaner members, a water or suction pump 15, and a vacuum pump 16, together with suitable transmission mechanism, as will hereinafter be more fully set forth. There is also supported on said surface a plurality of manually-operable levers 17, 18, 19 and 20 for positioning a plurality of processing members 21, 22, and 23, as well as for positioning a squeegee member 24 which may be provided, if desired. Energization of the motor for the various operations is controlled by a suitable switch member 25 located on the handle member 13 conveniently to an operator of the apparatus.

Beneath the platform are located transversely to the longitudinal axis of the apparatus the plurality of processing members such as a succession, from front to rear, of rolls, for example the sweeping roll 21, the scrubbing roll 22, and the polishing roll 23, the squeegee member 24 being included beyond the scrubbing roll, that is to say, between said roll and the polishing roll 23, said squeegee member being likewise located transversely of the longitudinal axis of the apparatus. A dust collector nozzle 26 or the like may also be

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provided, if desired, in advance of the sweeping brush or roll 21 to collect dust stirred up by said roll when passing over a surface, said nozzle to this end having connection with the vacuum pump 16 as through the three-way valve 27. This valve may be operated to connect the said pump 16 either to nozzle 26 or to a suction inlet 23 in accordance with the operation of said valve, the inlet affording a means for connecting a suction hose or the like (not shown) for vacuum operation beyond the apparatus. Vacuum pump 16 is connected to a collecting bag 29 supported on handle 13.

All of the aforesaid roll members and the squeegee are carried by the platform 10 in a manner such that they may be individually displaced vertically relatively thereto, thereby rendering each respectively active or ineffective in accordance with their location relative to said platform. To this end, each rotatable processing member except the squeegee member is rotatably supported in a corresponding vertically reciprocable bracket, in the case of the rolls 21, 22 and 23 by the brackets 31, 32 and 33, and in the case of the squeegee member 24 by the bracket 34. In the case of all these brackets, end arms thereof extend upwardly through respective pairs of guide openings 31', 32', 33' and 34' of the platform along opposite sides thereof.

The respective outer ends of these arms, except in the case of the arm of the squeegee member passing through opening 34', are carried by corresponding rock shafts 35, 36 and 37. On each of these shafts is fixed a cam element, or, preferably, pairs of cam elements 35', 36' and 37' which contact the upper surface of the platform under the action of the weight of said roll members and compression springs inserted between the brackets and undersurface of platform 10. By rocking a selected one of said shafts, the varying contact surface of the cam thereon will elevate or cause to be depressed the corresponding roll member with respect to the platform 10 to disengage it respectively from a surface over which the apparatus is caused to travel or to cause it to engage such surface. In the case of the squeegee, the upper ends of the arms of its carrying bracket 34 are provided with rack teeth designed to engage respectively with corresponding teeth of a pair of pinions 40 on a rock shaft 41.

Rocking of any selected one of the rock shafts is effected conveniently from the rear of the platform by the corresponding levers 17, 18, 19 and 20 by appropriately moving the corresponding lever. These levers are each connected by respective links 17', 18', 19' and 20' to the rock shafts 35, 36, 37 and 41, or rather to respective arms 42, 43, linkage 44 and an arm 45 thereof. When the shaft 41 is rocked, the engagement between the racks and pinions will through rotation of the latter reciprocate the former, and with them the squeegee to secure the desired pressure of the latter upon the surface over which the apparatus travels, and thus accommodating the squeegee to various thickness of floor coverings.

Rotation for operating rolls 21, 22 and 23 is derived from a sprocket 50 on the drive shaft 51 of motor 14 through a sprocket chain 52 inclined to the platform and running over a sprocket wheel 53, the latter in turn rotating a sprocket 54 for driving a horizontally disposed further chain 55. This further chain through a sprocket 56 on shaft 57 carrying one of a pair of bevel gear wheels 58 transmits through said

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gear wheels the rotation to a shaft 59 on which is mounted for rotation with said shaft 59 a sprocket 60 and a sprocket 61. The latter sprocket through a horizontally disposed endless chain 62 passing over an idler sprocket 63, serves to drive the forward brush 21 and the succeeding brush 22, the said chain to this end passing beyond idler sprocket 63 vertically downwardly through the platform 10 and over the underside of a driving sprocket 64 on the shaft of brush 21, then over the upper side of driving sprocket 65 on the shaft of the brush 22, and finally over an idler sprocket 66 back to the sprocket 61.

The other sprocket 60 on shaft 59 drives through a horizontally disposed chain 67 a further sprocket 68 on shaft 69 having also a sprocket 70 for driving a vertically disposed endless chain 71 which rotates a sprocket 72 on the shaft of roll 23 and thereby said roll.

In the use of these sprocket chains and their arrangement with respect to the idler sprockets and roll and brush sprockets, to communicate the rotation from the motor to the various brushes and roll, the rotation of the different members will be in the desired direction and the brushes and roll may themselves partake of the required, but limited, reciprocations without disturbing the driving action thereon.

In the case of the brush 22 which is to be used as a scrubbing roll, provision is made to deliver cleansing liquid thereto as from a tank 75 through the connection 76 therefrom and valve 76' to distributing pipes 77 at the roll. When the squeegee member 24 is to be utilized for mopping up the spent cleansing liquid, said member is connected through a pipe 78 with the suction pump 15 connected with motor shaft 51, the said pump having a connection through pipe 79 to a collecting receptacle 80 for spent liquid also carried by the handle 13.

Liquid for waxing and/or polishing purposes is obtained from a tank 81, also carried by the handle 13, through a supply pipe 82 discharging above the roll 23, a control valve 83 being provided in said pipe for regulating the supply of material.

A removable casing 85, Fig. 1, may, if desired, be provided over the platform to house the different mechanisms.

I claim:

In apparatus of the nature set forth and including a movable carriage with handle pivoted thereto for manipulating the carriage: the combination with an elongated platform of said movable carriage; of a succession of members disposed normally in a common plane transversely to the longitudinal axis of the carriage along the underside of the platform and including a plurality of rotatable brushes, and pairs of reciprocable bracket supports carrying the respective members having portions extending upwardly through the platform and rock shafts connecting the extending portions of the respective brackets, together with cam elements fixed on the rock shafts of the corresponding rotatable brushes and adapted for engagement with the upper surface of the platform to displace a corresponding brush vertically; a motor supported by the platform and intermediate mechanism to transmit rotation from said motor to the respective rotatable brushes to rotate all simultaneously; and manually retractable elements carried by the platform and accessible to the operator of the apparatus and connected with the respective rock shafts to rock the latter for

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selective actuation thereof to displace vertically the corresponding brackets with respect to the platform.

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