

May 24, 1932.

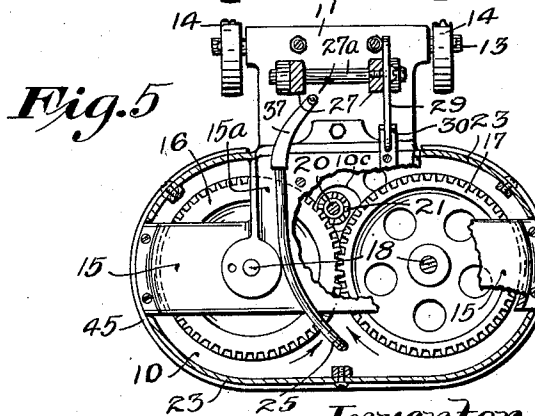
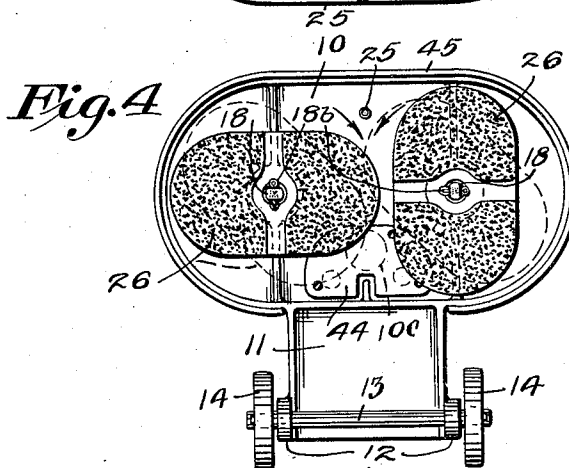
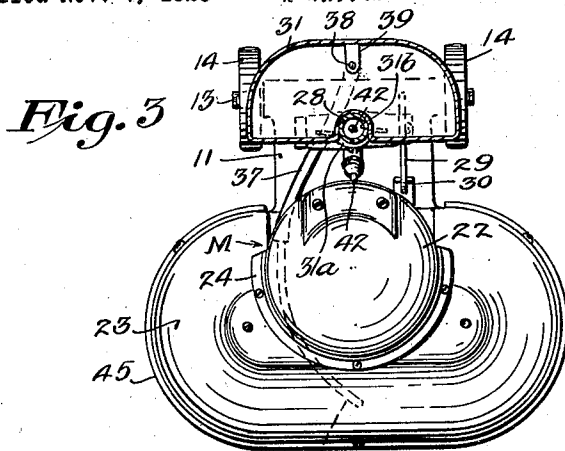
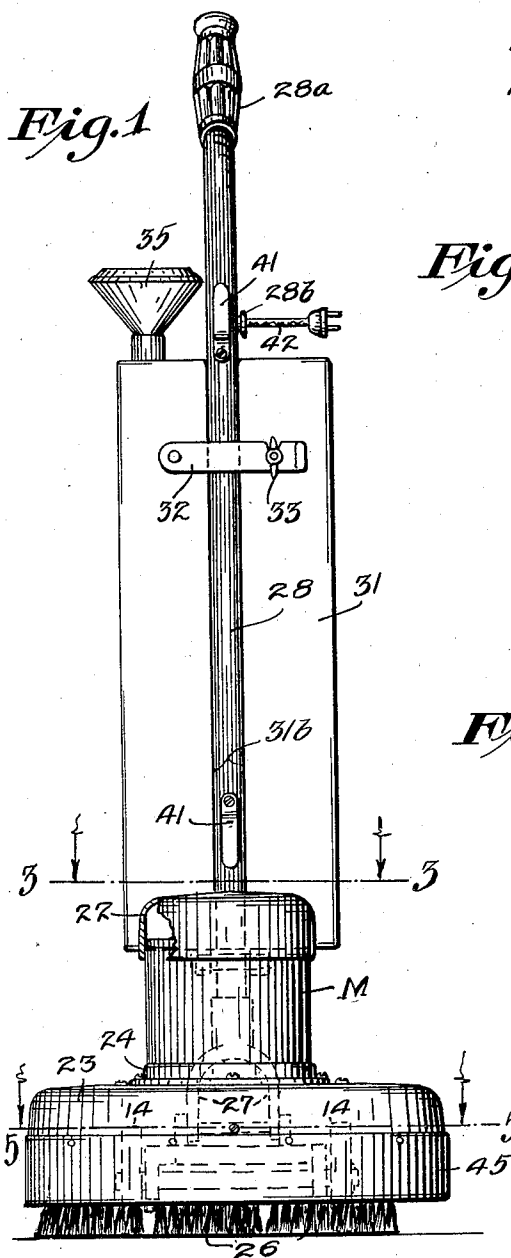
L. J. BEDARD

1,860,168

FLOOR TREATING MACHINE

Filed Nov. 7, 1928

2 Sheets-Sheet 1



Inventor
Ludger J. Bedard
 By his Attorneys
Williamson Rees Williamson

May 24, 1932.

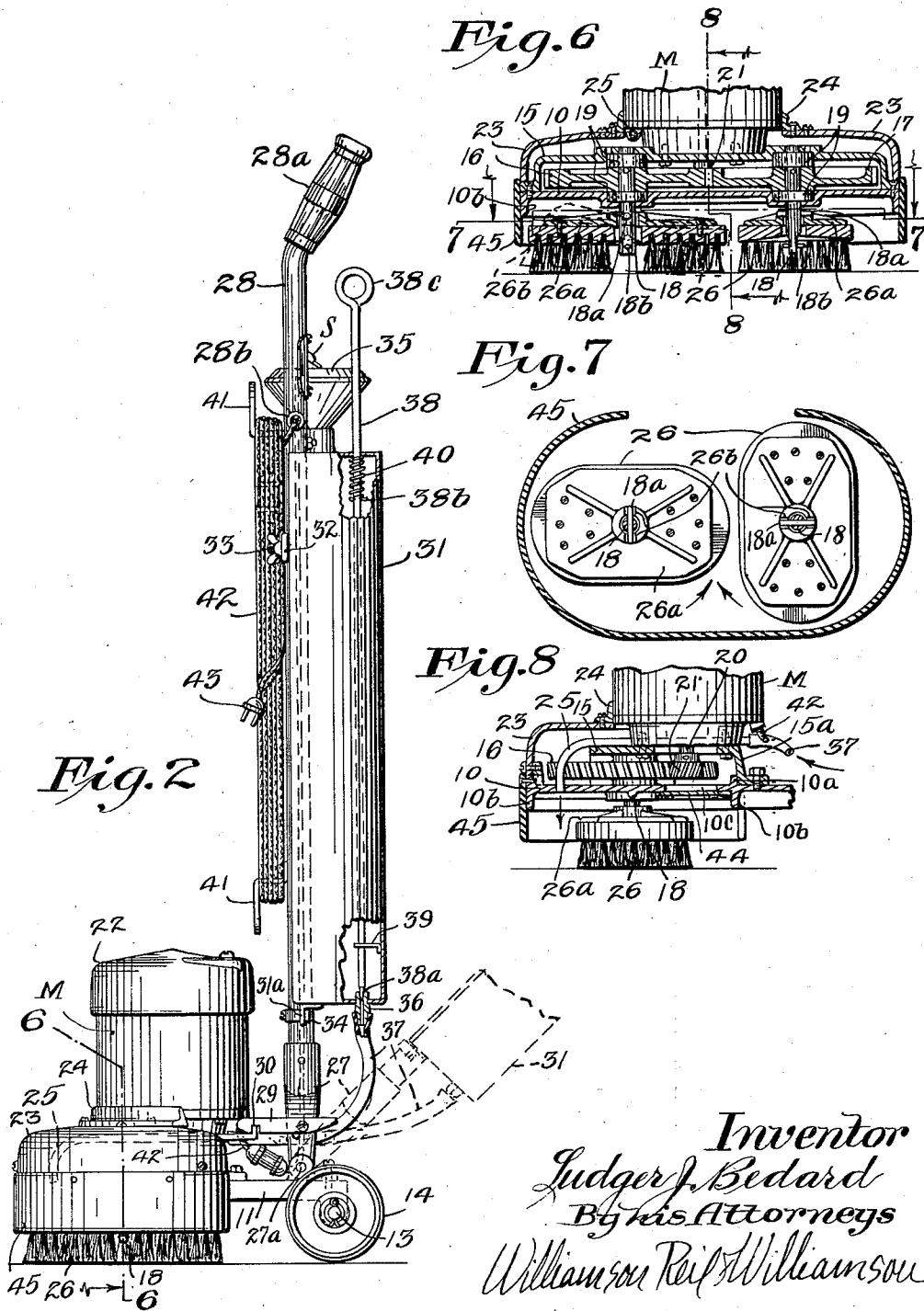
L. J. BEDARD

1,860,168

FLOOR TREATING MACHINE

Filed Nov. 7, 1928

2 Sheets-Sheet 2



Inventor
Ludger J. Bedard
By his Attorneys
Williamson Reip Williamson

UNITED STATES PATENT OFFICE

LUDGER J. BEDARD, OF MINNEAPOLIS, MINNESOTA

FLOOR TREATING MACHINE

Application filed November 7, 1928. Serial No. 317,788.

This invention relates to surface treating machines and especially to portable machines for treating floors.

It is an object of my invention to provide a simple, compact, portable, surface treating machine of high efficiency which may be utilized to scrub, wax, polish or sand a floor.

Another object is to provide a surface treating machine having at least a pair of rotary treating elements driven in opposite directions and having an overlapping relation, whereby a relatively large area may be treated by one application of the machine without leaving streaks between the areas covered by the two treating elements.

A further object is to provide a compact, scrubbing machine having oppositely rotating elements of the type above described and means whereby washing material may be dispensed just forwardly of the scrubbing elements and in alinement with the overlap of said elements, the supply of said washing material being conveniently controlled from a point adjacent the handle of the machine.

Another object is to provide in a machine of the class described, rotary surface treating elements which may be quickly and easily detached from their driving shafts to substitute rotary elements of a different type and which elements are moreover mounted for limited rocking movement on horizontal axes permitting them to conform to irregular contours on the surface of floors to be treated.

Further objects are to provide in said machine, a movable tank for supplying the washing material, said tank being provided with a trigger action valve conveniently controllable and a combined splash skirt and bumper surrounding the frame of the machine and preventing the washing material from being thrown outwardly.

These and other objects and advantages

of the invention will be apparent from the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:—

Fig. 1 is a front elevation of a preferred embodiment of the invention with the handle and tank disposed in upright unobstructing position.

Fig. 2 is a side elevation of the same, the dotted lines indicating the position of the handle and tank when the machine is in operation;

Fig. 3 is a cross section taken on the line 3—3 of Fig. 1, showing the top of the frame casing and the motor case in plan;

Fig. 4 is a bottom plan view of the machine, the dotted lines indicating a moved position of the two treating elements;

Fig. 5 is a horizontal cross section taken on the line 5—5 of Fig. 1, and showing the driving mechanism for the two brushes or treating elements, as well as the construction of the frame and truck;

Fig. 6 is a vertical section taken on the line 6—6 of Fig. 2;

Fig. 7 is a horizontal cross section, taken on the line 7—7 of Fig. 6, showing the manner in which the treating elements are mounted on their respective driving shafts and connected therewith for limited rocking movement on horizontal axes; and

Fig. 8 is a vertical section taken on the line 8—8 of Fig. 6, showing the driving connection between the motor and the treating elements and also showing the structure and arrangement of the conduit for dispensing the washing material.

The preferred embodiment of the invention, as illustrated, comprises a substantially elliptical plate 10 constituting the frame for the working parts of the device, plate 10 having an upstanding peripheral flange 10a and a depending peripheral flange 10b. Plate 10

is disposed in horizontal position and has integrally formed therewith or rigidly connected thereto a rear tongue 11 which may be provided with a pair of depending ears 12, said ears securing an axle 13 on which a pair of supporting wheels 14 are pivotally mounted. An elongated spider 15 straddles plate 10 longitudinally, being suitably secured to the ends of said plate and having its body spaced some distance thereabove. Between spider 15 and plate 10 a pair of relatively large meshed gears 16 and 17 shown of the helical type are mounted, said gears being fixed to short vertical shafts 18, which are journaled in suitable ball bearing races 19 provided in plate 10 and spider 15 respectively. I prefer to construct gear 16 of fiber or some non-metallic material, while the gear 17 may be constructed of metal. The shafts 18 extend through plate 10 and depend for some distance below said plate and are adapted to be connected with a pair of treating elements, such as brushes, polishers or sanders.

A suitable electric motor M is mounted on spider 15 with its armature shaft positioned vertically and as shown with its base secured to the rear and enlarged portion 15a of said spider. The armature shaft 20 of said motor is positioned slightly off center between the ends of spider 15 and carries at its lower end a driving pinion 21 in mesh with the fiber gear 16. The upper end of motor M may be covered by a suitable motor cap 22 preferably surrounding the motor case to prevent dust and other material from entering the same.

A suitable gear casing 23 in the form of a shell having a recessed portion to accommodate the motor is telescoped over the upper flange 10a of the frame and may be suitably secured thereto and a semi-annular collar 24 surrounds the lower portion of the motor and has a flange which is secured to the edge of the recessed portion of gear casing 23, collar 24 forming a tight fit between the base of the motor and the gear casing to exclude water and dirt.

A dispensing tube 25 extends horizontally through gear casing 23 and may be welded or otherwise fastened to the top of the spider 15, having a downwardly curved forward discharge end terminating just below plate 10 and adjacent the forward edge of plate 10 approximately midway between the ends of said plate and preferably constructed of metal.

The scrubbing or treating elements are attached to the depending ends of shafts 18 in a simple but efficient manner. Shafts 18 are provided at their intermediate portion just below plate 10 with diametrically extending fulcrum pins 18a and as shown have their extremities flattened out and diminished in width to receive cotter keys 18b. As illustrated, scrubbing brushes 26 of ordinary type are provided having central vertical bores to

receive the shafts and metal reinforcing plates 26a are attached to the tops of said brushes in any suitable manner. Plates 26a have central bosses, each provided with a pair of oppositely disposed notches 26b in which pins 18a on shafts 18 are adapted to lie, thereby keying the brushes to the shafts. The cotter keys 18b are, of course, disposed below the lower portion of the bodies of the brushes retaining the same on the shafts. It will be seen that the brushes may rock slightly being fulcrumed on the pins 18a and will thus automatically conform to irregular surfaces in a floor to be treated.

A handle socket 27 is pivoted to the tongue portion 11 of the frame by means of a horizontal pin 27a and to the upper end of said handle socket an elongated straight tubular handle 28 is secured terminating in an angularly disposed hand grip 28a which may be constructed of rubber or other compressible material. Handle socket 27 is provided at its intermediate portion with a pivoted retaining link 29 which when the handle 28 is disposed in vertical position will engage at its outer end a detent 30, said detent being secured to the rear edge of the spider 15. When the detent 30 is engaged by the link 29, the handle will obviously be held in erect, non-obstructing position. Handle 28 carries an elongated tank 31 of box-like form extending from a point just above handle socket 27 to a point adjacent the hand grip 28a. Tank 31 has a longitudinally extending groove 31b which accommodates the handle and said tank is removably secured at its upper end to said handle by means of a retaining strap 32 pivoted at one end to said tank, overlying said handle and having engagement beneath a wing nut 33 on the opposite side of said handle. The lower end of said tank is detachably secured to the handle by means of engagement between a pair of depending tank lugs 31a and a horizontal cross piece 34 attached to said handle just above the handle socket 27. Tank 31, if desired, may have a funnel 35 secured to its upper end to facilitate filling.

An outlet valve is provided within and at the lower end of said tank, including a short valve tube 36 having an axial bore therein, said tube depending from said tank and having its lower end connectible with the outer end of dispensing tube 25 by suitable means, such as by a short piece of rubber hose 37. The upper end of the valve tube 36 is provided with an internal tapered valve seat and an elongated plunger 38 extending longitudinally within tank 31 has a needle valve 38a at its lower end adapted to snugly fit said valve seat. Plunger 38 is precisely guided to its seat by means of an eye formed in the upper end of tank 31 and a guide 39 adjacent the lower end thereof. A coiled spring 40 is interposed between the top of tank 31 and

a cross pin 38b fixed to plunger 38 a short distance below the top of the tank, said spring yieldingly holding the needle valve against its seat. The upper end of plunger 38 extends beyond the upper end of the tank to a position adjacent the hand grip 38a and may be provided with a trigger handle 38c.

A pair of spaced oppositely extending cleats 41 are provided on the front portion of the handle 28 about which an elongated electric cord 42 containing the service wires for the motor may be coiled, as shown in Fig. 2. A conventional electric plug 43 is connected to the free end of the cord 42 and the opposite end of said cord extends into the upper portion of tubular handle 28 through an eye 28b and downwardly through said handle and through said handle socket 27 and is connected with the motor in suitable fashion. A suitable switch is disposed within tubular handle 28 adjacent the upper end thereof and has a switch lever S projecting externally of said handle and in convenient position to be manipulated by an operator.

As illustrated, an aperture 10c is formed through plate 10 and substantially aligned with the driving pinion 21 of the motor and an inspection plate 44 may be detachably secured to the bottom of plate 10 to cover said aperture.

A combined splash skirt and bumper 45, constructed of some relatively soft material, such as fabric, surrounds plate 10 and may be suitably secured to one of the flanges of said plate having its lower edge spaced some distance above the floor but depending sufficiently to prevent splashing of the washing material when the machine is in operation.

The rotary scrubbing brushes or other elements for treating the floor surface are of general oblong shape having parallel longitudinal sides and semi-circular ends. Scrubbing brushes of this type may be found on the market. The shafts carrying fulcrum pins 18a are so arranged that when the brushes or other elements are attached thereto, said elements will be spaced a slight distance apart throughout their rotation in opposite directions but the working areas of said brushes will overlap or merge. This will be apparent from an inspection of Figs. 4 and 7, the dotted lines in Fig. 7 indicating the position of the two brushes when moved approximately 45° from the position shown in full lines. Shafts 18 are spaced the proper distance apart to permit this overlapping relation of the brushes, the brushes being maintained at all times throughout their rotations due to the particular shape and arrangement thereof, a constant distance apart. In actual practice, in the embodiment illustrated in the drawings, the distance between the brushes at all times throughout their opposite rotation is constant and approximately one-fourth of an inch. It will thus be seen that

the maximum co-operation is obtained between two brushes or other treating elements and due to their overlap no streaks will be left upon the surface of the floor treated.

As illustrated, the machine is equipped for scrubbing and after filling the tank 31, the handle 28 may be lowered by releasing retaining link 29, the electrical connection made with the ordinary household source of electricity and the device may then be pushed over the floor to scrub the same. It will be noticed that the greater part of the weight of the motor, the heavy frame, and the gears is impressed upon the brushes, giving the necessary pressure to the brushes for efficient scrubbing action. To remove the brushes from engagement with the floor, it is only necessary to depress handle 28 below the inclined position shown in dotted lines in Fig. 2, the frame then fulcruming on the wheels 14 to lift the brushes. The truck may then be easily moved over the floor.

The detergent or washing material may be easily dispensed as desired by applying an upward pull upon plunger 38 through the trigger handle 38c conveniently disposed adjacent the handle grip 28a. It will be noticed that the washing material is dispensed just forwardly of the overlap between the two brushes and consequently washing material will be distributed by the brushes and utilized to best advantage. The removable brush plates 26a reinforce the brushes, preventing warping of the same and when the brushes become worn the plates may be detached and secured to the tops of new brushes.

It will be noticed that due to the curved structure of dispensing tube 25, the same may be easily cleaned if it becomes clogged by inserting a wire through the same. Likewise the valve stem 36 may be easily cleaned.

If it is desired to utilize the machine for waxing, polishing or sanding, the appropriate treating elements of similar shape to the brushes, illustrated in the drawings, are provided. Cotter keys 18b are withdrawn from the lower extremities of shafts 18 and the brushes are removed and the desired elements are quickly installed, their notches 26b being engaged with the fulcrum pins 18a. Cotter pins 18b may then be replaced. The tank may be removed for greater convenience in waxing, polishing or sanding by releasing retaining strap 32 and the engagement between depending tank lugs 31a with the cross piece 34 and then detaching the rubber connection tube 37 from the rear and outer end of metal dispensing tube 25.

Attention is called to my simple, compact structure of frame, spider and gears. Gears 16 and 18 are conveniently mounted between the frame plate 10 and the spider 15, the gear shafts 18 being journaled in said members and the bearing races efficiently installed at the upper and lower ends of each

shaft without the use of set screws or other retaining devices. As illustrated, bearing races 19 are snugly fitted into recessed bosses in the plate 10 and spider 15 and this can be quickly and easily attached or replaced.

From the foregoing description it will be seen that I have invented a highly efficient, compact floor treating machine having a large capacity for work and adapted to efficiently treat the irregular surfaces or contours of the floor and to further work a comparatively large area without leaving streaks on the treated surface. It will further be seen that when used for scrubbing, washing material may be easily and conveniently dispensed just ahead of the overlap of the two rotary brushes and will be applied to the floor consequently in the most advantageous manner.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of applicant's invention.

The floor treating elements may rock on the fulcrum 18a and may also have a lateral tilting movement due to the engagement of pin 18a with the confining notches of the boss 26b of said elements, this action increasing the ability of the brushes or other treating elements to conform to variations in the surface to be treated.

What is claimed is:

1. In a machine for treating floors, a horizontal frame mounted on wheels for moving across the floor, a shaft depending from said frame and mounted therein, means for rotating said shaft, said shaft having a diametrically disposed fulcrum pin at some distance above the lower end thereof, a floor treating element having a vertical socket connected with its top, said socket being of greater internal diameter than the external diameter of said shaft, the lower end of said shaft extending through said socket and being provided with a detachable retaining pin disposed in spaced relation below the under surface of the top of said element, the upper edge of said socket having opposed slots therein for receiving the ends of said fulcrum pin to key said element to said shaft with freedom for limited rocking movement on said pin and with freedom for limited vertical movement of said element relatively to said shaft.

2. A floor treating machine comprising a horizontal frame adapted to be moved over a floor, a floor treating element mounted below said frame, means for rotating said element, an elongated handle secured to said frame, a tank carried by said handle and disposed above said frame, a dispensing tube connected with said tank and having a depending discharge end adjacent said floor treating element, a valve in the lower end of

said tank, means for conveniently controlling said valve from adjacent the outer end of said handle, one surface of said tank having a longitudinally extending groove therein adapted to accommodate said handle, means adjacent the upper end of said tank for overlying said handle to detachably retain the upper end of said tank thereto, and means for detachably securing the lower end of said tank to the lower end of said handle.

In testimony whereof I affix my signature.

LUDGER J. BEDARD.