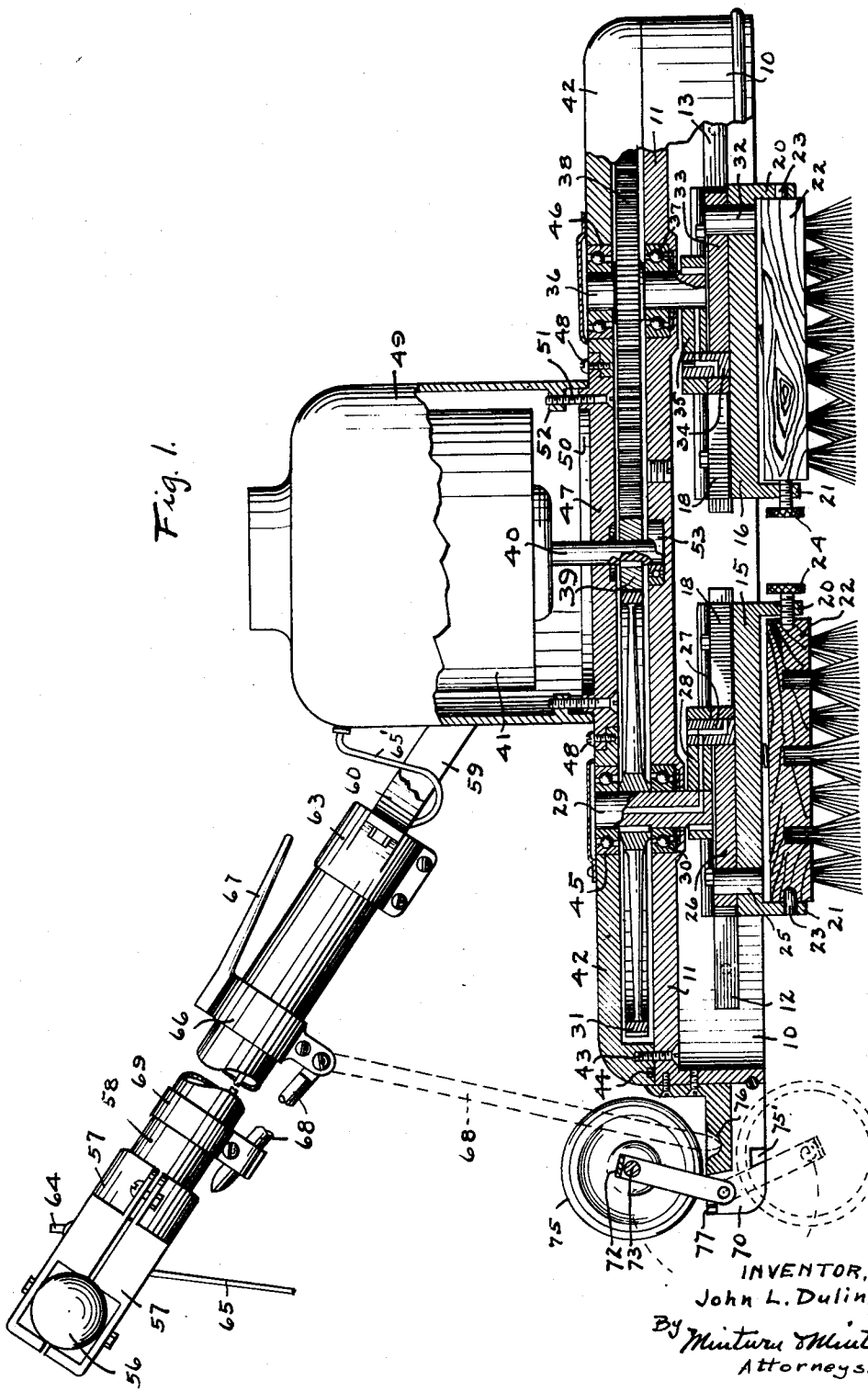
May 16, 1933. J. L. DULIN 1,909,338

FLOOR POLISHING MACHINE

Filed March 9, 1932 4 Sheets-Sheet 1

Fig. 1.



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FLOOR POLISHING MACHINE

Filed March 9, 1932 4 Sheets-Sheet 2

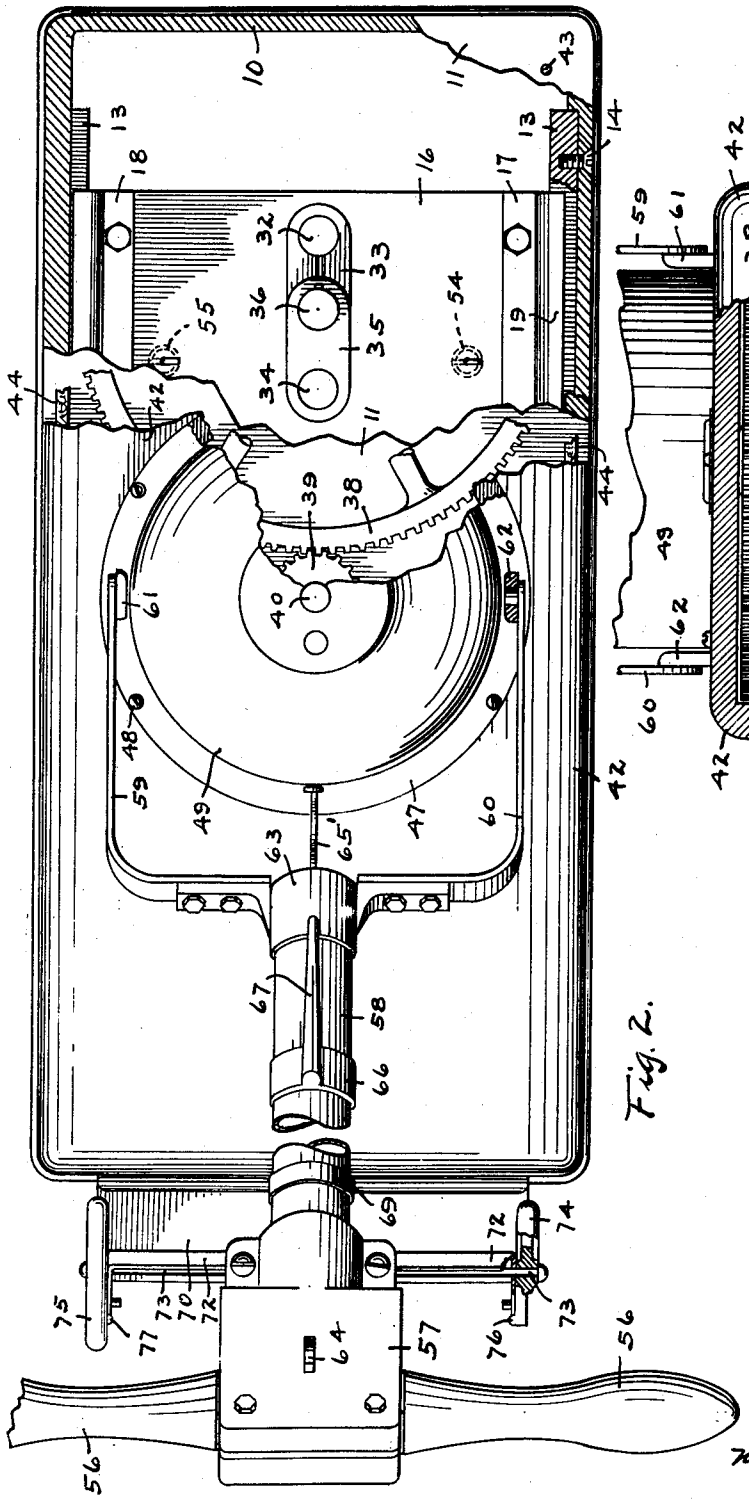


Fig. 2.

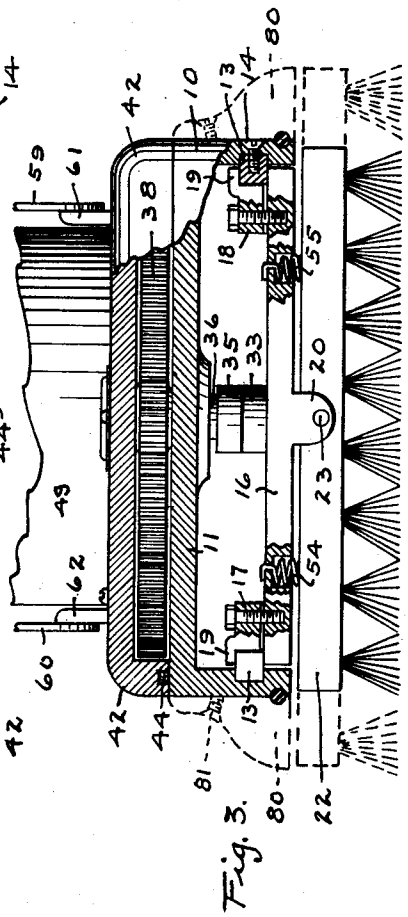


Fig. 3.

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May 16, 1933. J. L. DULIN 1,909,338

FLOOR POLISHING MACHINE

Filed March 9, 1932 4 Sheets-Sheet 3

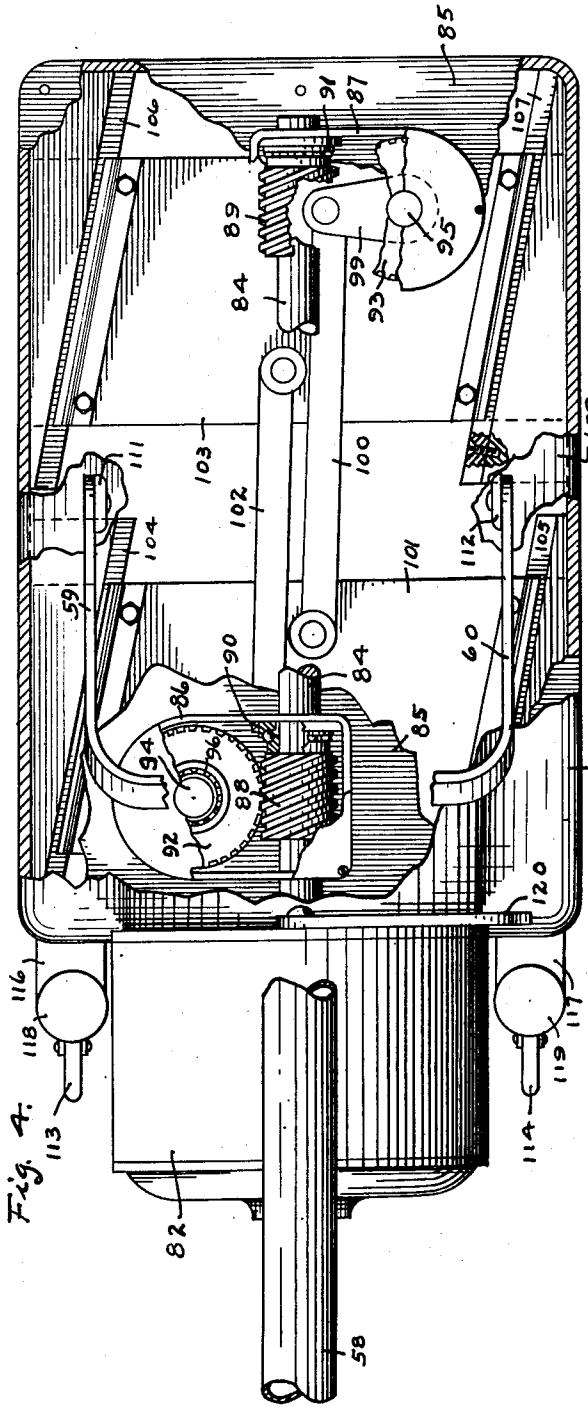


Fig. 4.

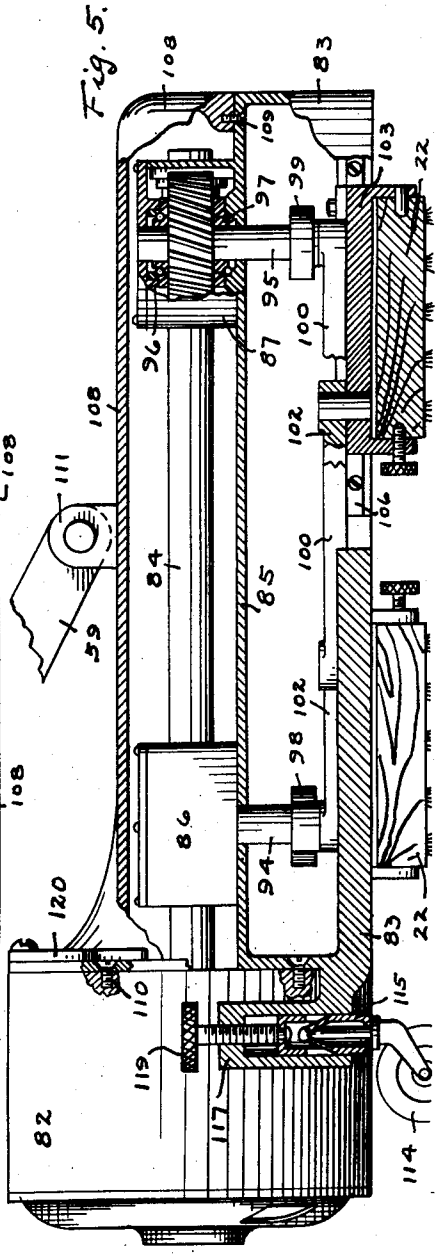


Fig. 5.

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May 16, 1933. J. L. DULIN 1,909,338

FLOOR POLISHING MACHINE

Filed March 9, 1932 4 Sheets-Sheet 4

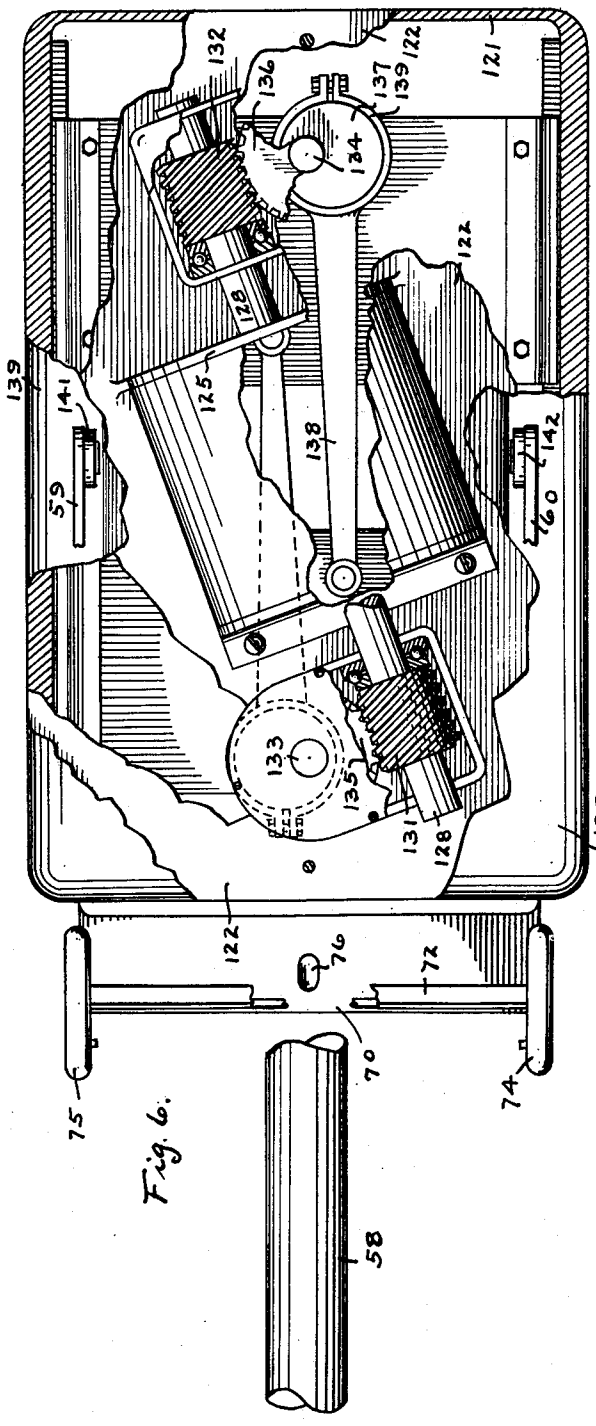


Fig. 6.

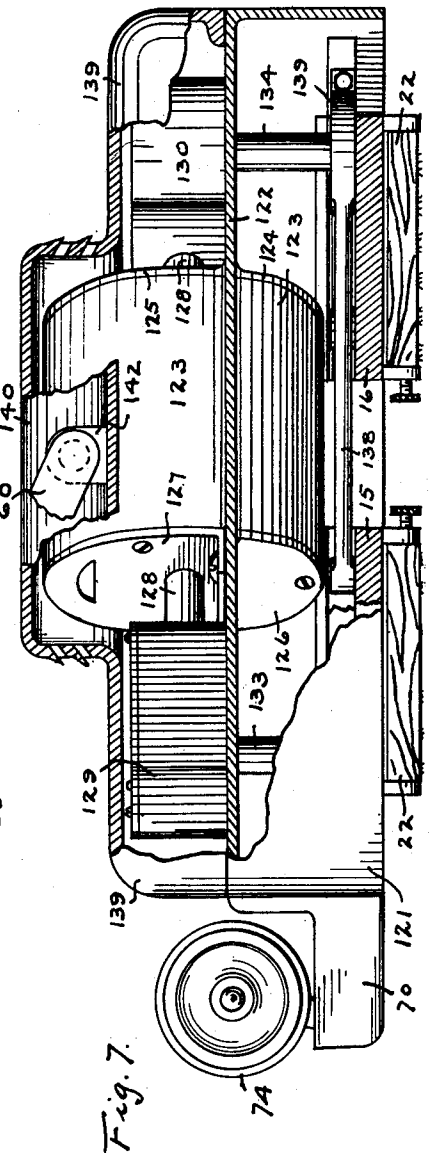


Fig. 7.

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Patented May 16, 1933 1,909,338

UNITED STATES PATENT OFFICE

JOHN L. DULIN, OF NOBLESVILLE, INDIANA, ASSIGNOR TO CONTINENTAL CAR-NA-VAR CORPORATION, OF BRAZIL, INDIANA

FLOOR POLISHING MACHINE

Application filed March 9, 1932. Serial No. 597,672.

This invention relates to the art of mechanical floor polishers or cleaners and has for one of its primary objects a provision of a mechanical movement by means of which the floor polishing or cleaning elements may be given a reciprocating motion rather than a rotary movement so that the finished floor will not show rings but will present an even surface without marks indicating where the device has passed over the floor.

An important object of the invention is to provide a device which may be perfectly safe in the hands of any operator and that will not have a tendency to move around over the floor should the operator release the guiding handle.

A further important object of the invention is to provide a structure of the nature above indicated which may be used on a floor having an uneven surface to impart an equal pressure thereover.

A still further important object of the invention is to provide a structure that may be produced at a relatively low cost and that will have a pleasing external appearance together with a long life of the moving parts. A still further object of the invention is to provide means whereby the device may be moved from place to place readily with the floor contacting members elevated above the floor.

These and other objects and advantages will become apparent in the following description to those versed in the art and reference is made to the accompanying drawings, in which

Fig. 1 is a fragmentary side elevation of a structure embodying my invention in the form having a spur gear drive;

Fig. 2, a fragmentary top plan view of that structure;

Fig. 3, a fragmentary front elevation of the structure;

Fig. 4, a top plan view of a structure embodying a modified form of the driving mechanism;

Fig. 5, a fragmentary side elevation of the modified form;

Fig. 6, a fragmentary top plan view of a structure embodying a still further modified driving mechanism and

Fig. 7, a fragmentary side elevation of the structure as shown in Fig. 6.

Like characters of reference indicate like parts throughout the several views in the drawings.

Referring first to the structure as illustrated in Figs. 1–3, I form a main housing 10 which is essentially a rectangular shaped inverted pan open from the under side and having the top enclosing floor 11. In parallel alignment and at the same elevation on each side I mount guides 12 and 13 which are rectangular in cross section and secured in place by screws 14 passing through the downturned or side walls of the housing 10. These guides may be made of metal but are preferably formed of some fibrous material. Rear and front brush plates 15 and 16 respectively are placed between the side walls of the housing 10 to bear by their upper faces against the under sides of the guides 12 and 13 and brackets 17 and 18 are bolted to the top faces of the plates to have a lip 19 extending to over the top side of the guides whereby the plates may be moved fore and aft of the housing along these guides and be prevented from dropping thereaway by reason of the retaining brackets 17 and 18. Each of the plates 15 and 16 has a front leg 20 and a rear leg 21 between which the head of a brush 22 may be rockably retained. The head of the brush 22 is here shown as having one vertical side forced over a pin 23 carried in one of the legs and retained by a setscrew 24 entering a hole in the opposite edge of the brush head. By loosening the screw 24 the brush may be removed for replacement if desired. While I have here shown brushes 22 as being carried by the plates 15 and 16, it is obvious that other polishing elements may be substituted therefor such as sanding blocks which would be of the same substantial size and shape of the brush heads.

In the center of the plate 15 and toward its rear edge is fixed a pin 25 to project upwardly therefrom to receive thereover the rear end of a connecting rod 26. The for-

ward end of this connecting rod 26 receives rotatively therein the lower end of a pin 27 which is fixed in the crank 28. This crank 28 is fixed on the lower end of the vertically disposed shaft 29 so as to be capable of being revolved in a horizontal plane immediately above the connecting rod 26. The shaft 29 is carried vertically through the floor 11 of the housing 10 with a supporting ball bearing 30 therearound fixed in the floor. A spur gear 31 is fixed to the shaft 29 to carry the shaft therewith.

The plate 16 has a pin 32 fixed thereto near its forward edge in a central position to extend vertically upward therefrom and to receive the forward end of a connecting rod 33 pivotally therearound. The rear end of the connecting rod 33 receives the lower end of a pin 34 rotatively therein while the upper end of the pin 34 is fixed in the crank 35 which is mounted on the lower end of the vertically disposed shaft 36 in a fixed position. This shaft 36 extends upwardly through the floor 11 through a ball bearing 37 and has a spur gear 38 fixed thereto. The gears 31 and 38 are of the same pitch diameter and are spaced apart on centers by the shafts 29 and 36 to leave a space therebetween into which is inserted the pinion gear 39 to mesh with both of the gears. This pinion gear 39 is fixed on the armature shaft 40 of an electric motor 41.

A cover plate 42 is formed to fit over the gears 31 and 38 and be fixed in position over the housing 10 by means of screws 43 passed up through the floor 11 and into the cover. Preferably a felt gasket 44 is carried around between the downturned edge of the cover 42 and the floor 11 so as to form a grease tight joint therebetween. The cover 42 carries the bearings 45 and 46 which fit about the upper ends respectively of the shafts 29 and 36 so as to hold the shafts in vertical parallel alignment. The central portion of the cover 42 is left with a circular opening having a stepped edge into which is fitted a plate 47 having a correspondingly stepped outer edge to match with the edge of the opening. Screws 48 passed through the plate into the cover 42 retain the plate in position. A motor housing 49 is removably fixed to this plate 47 by placing the lower open end of the housing down over an annular flange 50 extending upwardly from the plate and passing screws 51 up through the plate to engage screwthreadedly in lugs 52 extending inwardly from the housing. The motor 41 is suspended within the housing 49 in a fixed position and the armature shaft 40 extends rotatively through the plate 47 through the pinion gear 39 and on down into a bearing 53 carried in the floor 11. The entire space between the cover 42 and the floor 11 may be filled with suitable grease as a lubricant for the gears carried therebetween and the bearings located in the cover and the floor.

The gears 31 and 38 are so meshed with the pinion gear 39 as to have the cranks 28 and 35 turned in opposite directions one from the other. Now by setting the motor 41 into operation, the spur gear 39 is revolved to turn the gears 31 and 38 in opposite directions and in turn revolve the cranks 28 and 35 also in opposite directions. In the positions as shown in Figs. 1-3 the cranks 28 and 35 are here shown as being directed one toward the other to shift the plates 15 and 16 to their innermost positions. As the motor 41 continues to revolve, the plates 15 and 16 are given a fore and aft reciprocating motion, one plate moving always in the opposite direction to the other, that is while one plate moves to the rear the other plate moves to the front and the reverse. Thus it is to be seen that the tendency to move the entire structure over the floor by the travel of one brush is counteracted by the opposite travel of the other brush. Also it is to be seen that the entire weight of the structure as above described is carried directly by the brushes mounted on the plates 15 and 16.

The upper faces of the heads of the brushes 22 are spaced below the under sides of the plates 15 and 16 a slight distance so that the brush heads may rock laterally between the legs 20 and 21. In order to support the housing 10 in a central position over these brush heads, I mount the springs 54 and 55 in sockets entering the under sides of the plates. Fig. 3, to extend therefrom compressively against the top sides of the brush heads. These springs are fixed to the plates so that they will not drop out when brushes are being replaced. By reason of the springs bearing against the brush heads, the housing 10 is normally held in a central position above the brushes but as the brushes may travel over the uneven spots in a floor, the brushes may rock in reference to the housing or plates to accommodate themselves to such unevenness.

In order to push the polisher over the floor, I provide a handle which consists essentially of a hand grip 56 extending to either side of a central box-like clamp 57, a central shaft 58 and an attaching bail in two sections 59 and 60. The bail sections 59, 60 are rockably secured by their lower forward ends to upturned ears 61, 62 respectively carried by the plate 47. The upper rear ends of these bail sections are attached to a bracket 63 which is fixed on the lower end of the shaft 58 which is tubular. The upper end of the shaft 58 is engaged by the clamp 57 which clamp also carries the electric switch (not shown) having an externally projecting operating lever 64. A current supply cable 65 enters the clamp box 57 and a motor conducting cable 65′ returns from the box down through the hollow shaft 58, out its lower

end and into the housing 49 to the motor 41. Above the bracket 63 is positioned a bracket 66 having a downwardly and slightly upwardly extending finger 67 fixed thereto, under which finger the cable 65 may be carried and back around the handle 56 a sufficient number of times to take up the slack that may exist in the cable.

The under side of the bracket 66 has a rod 68 pivotally secured thereto and normally swung around to have its outer end frictionally retained by the upper spring clamp 69. On the rear end of the housing 10 is mounted a bracket 70 and a U-shaped member 72 is pivotally connected to this bracket to carry an axle 73 thereacross, on the outer ends of which axle are mounted wheels 74 and 75. The member 72 may be swung around from the position shown in Figs. 1 and 2 to the dotted line position in Fig. 1 so as to drop the wheels to below the bracket 70. A stop 75′ is provided forwardly of the pivot point of the member 72 to serve as a stop limiting the forward swing of the member 72 when in the lowered position. Lugs 76 and 77 are carried by the bracket 70 above the pivot point of the member 72 past which lugs the member may be swung to swing the legs of the member 72 inwardly slightly so as to retain the member in the upper position as shown.

When it is desired to move the polishing machine from one point to another, the member 72 is pulled around to the lower position and the rod 68 is lowered to have its outer end placed in a cup 76 formed in the upper side of the bracket 70 as indicated by the dash lines in Fig. 1. By pushing down on the handle 56 with the rod 68 in that position, the housing 10 and its attached parts may be thus fulcrumed over the wheels 74 and 75 to be lifted free of the floor and supported by the wheels. The machine is immediately available for use again by lifting the rod 68 around to its position as held by the clamp 69 and swinging the wheels around to their upper positions.

The width of the brushes 22 is here shown as being approximately that of the housing 10. However, wider brushes may be employed as indicated by the dash lines, Fig. 3, which would cause the outer ends of the brushes to extend beyond the sides of the housing. In order to prevent damage to baseboards and articles of furniture, a guard 80 is bolted on each side of the housing 10 having a cross section somewhat of the shape as indicated by the dash lines whereby the guard will extend outwardly from the sides to overhang the extending end of the brush. These guards 80 may be attached to the sides of the housing by means of screws 81 so that the guards may be removed when narrow brushes are to be employed.

Referring now to Figs. 4 and 5, a form of the invention is illustrated wherein the vertically disposed motor as shown in Figs. 1–3 is eliminated and a horizontally disposed motor 82 is mounted at the rear end of a housing 83 which is employed in place of the housing 10 above described. The form illustrated in Figs. 4 and 5 is preferable where the machine is to be used to pass under articles of furniture which have but small clearance above the floor. In this form the armature shaft 84 of the motor 82 extends horizontally forward on the center line of the housing 83 but above its top floor 85. The shaft 84 rotatively extends through the two gear boxes 86 and 87 which are carried by the floor 85 and has the worm gears 88 and 89 fixed thereto to be within these boxes. Suitable bearings 90 and 91 rotatively support the shaft 84 in passing through these boxes and gears 92 and 93 mounted respectively on the shafts 94 and 95 are carried within the respective boxes to be in mesh with the respective worms 88 and 89. The shafts 94 and 95 are rotatively held in fixed vertical positions by suitable bearings 96 and 97 above and below the gears. These vertical shafts extend downwardly through the floor 85 and have the cranks 98 and 99 fixed respectively to their lower ends. A connecting rod 100 has its forward end pivotally connected to the crank 99 and its rear end pivotally connected to near the forward edge of the rear brush plate 101. Likewise a connecting rod 102 has its rear end pivotally connected to the crank 98 and its front end pivotally connected to near the rear edge of the front brush plate 103. It will be noted, Fig. 4, that the shafts 94 and 95 are on opposite sides of the center line of the housing 83 and of the drive shaft 84. On account of this fact, the brush plates 101 and 103 have their lateral ends sloped at acute angles to the side walls of the housing 83 and guides 104, 105 and 106, 107 are carried by inwardly turned arms from the side walls of the housing 83 along which the respective plates 101 and 103 are slidingly guided and retained.

It is thus to be seen that upon operation of the motor 82, the shafts 94 and 95 will be revolved so as to reciprocate the plates 101 and 103 not fore and aft along the longitudinal center line of the housing 83 but in parallel alignment at an angle thereto. The cranks 98 and 99 are set oppositely to each other so that the relative motion of the plates 101 and 103 is in opposite directions. By mounting the plates 101 and 103 to slide on the angularly disposed guides, much of the side thrust by the connecting rods on the plates by reason of the shafts 94 and 95 being off of the center line is eliminated and a smoother operation is secured than were the plates guided to slide in directions parallel to the main drive shaft 84.

The boxes 86 and 87 are each provided

with top enclosures whereby grease may be retained therewithin for lubricating purposes. A cover 108 is provided to fit over the top side of the housing 83 to enclose the boxes and drive shaft 84 therewithin and to be secured by screws 109 passed upwardly through the floor 85 into the cover. The rear end of the cover 108 is provided with a flange through which screws 110 may be passed into the housing of the motor 82. The two sections 59 and 60 of the handle attaching bail are pivotally fixed by their forward lower ends to the ears 111 and 112 extending upwardly from the transverse center line of the cover 108. Since the motor 82 hangs from the rear of the machine in this case, more weight would normally be applied to the rear brush 22 than would be to the forward brush and consequently I provide casters 113 and 114 at the rear of the housing 83 to each side of the motor 82 to support part of the additional overhanging weight of the motor at the rear end of the housing. These casters are each carried in a cage 115 which fits within a cylindrical bore provided in the brackets 116 and 117 extending rearwardly from the housing 83. Adjustable screws 118 and 119 screwthreadedly pass through the upper closed ends of these brackets and revolubly connect with the upper ends of the cage 115 whereby the cage may be raised or lowered by turning of the screws. Thus by suitable adjustment of the screws, the rear end of the housing 83 may be raised or lowered to give the desired pressure and to uniformly distribute the pressure between the two brushes.

In case the machine is to be moved from one point to another, I provide an arm 120 rockably attached to the forward face of the upturned flange of the cover 108 which fits against the motor 82. This arm 120 is normally turned downwardly to one side as indicated in Figs. 4 and 5 but may be turned to an upper vertically extending position to come directly under the tubular shaft 58 so that the shaft may be lowered against this upturned arm in order to lift the front end of the machine and have all of the weight then placed upon the two casters 113 and 114 so that the machine may be pushed around with the handle in this lowered position without the brushes rubbing over the floor.

A much more compact and preferable form of driving mechanism is shown in Figs. 6 and 7. In this form a housing 121 is employed similar to the housing 10 but somewhat shorter and an opening is provided through the floor 122 through which a motor 123 is inserted to have its forward end secured to a downturned flange 124 and an upturned flange 125 both carried by the floor 122 and to have its rear end engaged between the downturned flange 126 and the bracket 127 which is removably secured by a foot to the upper side of the floor 122. The motor 123 is carried to extend through the floor 122 as indicated and has a driving shaft 128 extending from both ends thereof and disposed at an angle to the longitudinal center line of the housing instead of being in parallel alignment.

The shaft 128 extends by its respective ends through the gear boxes 129 and 130 respectively to have the worm gears 131 and 132 fixed thereon within these boxes. Vertical shafts 133 and 134 extend through these boxes respectively and carry the gear wheels 135 and 136 to be in mesh with the respective worms 131 and 132. The shafts 133 and 134 extend vertically downwardly through the floor 122 to have the lower ends terminate immediately above the brush plates 15 and 16 which are slidingly carried between the side walls of the housing 121 exactly the same as in the manner first above described and as shown in Figs. 1–3. On the lower end of each of these vertically disposed shafts is a wheel 137 eccentrically mounted thereon in fixed relation and a connecting rod 138 has a strap 139 revolubly surrounding the periphery of the wheel 137 whereby the connecting rod will be given a reciprocating motion upon the revolving of the vertical shaft. The opposite end of the connecting rod is pivotally fixed to the brush plate which is normally under the other vertical shaft.

Thus it is to be seen that by placing the axis of the motor 123 at an angle to the longitudinal center line of the housing 121 the vertical shafts 133 and 134 may be on that center line and the motor shaft 128 carried to opposite sides of those vertical shafts whereby they may be driven in opposite directions to give the desired opposite travel of the brush holding plates and the reciprocating travel of the connecting rods will be evenly divided on each side of the longitudinal center line. It is also to be seen that by so mounting the motor to extend down through the housing, a relatively low over all structure is obtained, much lower than the structure as shown in Figs. 1–3 where the vertically disposed motor is shown. As a finishing means, I employ a cover 139 which fits over the top side of the floor 122 to enclose the gear boxes 129 and 130 and the upper side of the motor 123. The housing 139 is here shown as having a central raised portion 140 to have louvers in both the front and rear ends in order to permit air to circulate therethrough so as to provide a circulation for the motor 123 and prevent it from becoming overheated. The handle bail sections 59 and 60 are pivotally secured to this housing 139 through the ears 141 and 142. The housing 121 carries the same transporting bracket 70 at its rear end and wheels 74 and 75 as provided in the structure illus-

trated in Figs. 1–3 and the same rod 68 is carried by the handle shaft 58.

While I have herein shown and described my invention as now best known to me, it is obvious that structural changes may be made without departing from the spirit of the invention and I therefore do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claims.

I claim:

1. In a floor polishing machine, a housing, a pair of floor rubbing member retaining plates mounted in the housing to be horizontally reciprocable, a motor carried by the housing, and driving means comprising cranks between said motor and each of said plates, one of said driving means being connected with the motor to operate in a direction opposed to the other whereby said plates will be simultaneously reciprocated in opposite directions and guides directing the plates at an angle to the longitudinal center line of the housing.

2. In a floor polishing machine, a housing having a rear bracket, floor contacting elements extending from below the housing, a handle shaft attached to the housing near the transverse center line of the machine, a U-shaped member pivotally connected with the bracket at the rear end of the housing, an axle supported by the U-shaped member, a pair of wheels mounted on the axle movable from a position contacting the floor below the housing to a position above the bracket in advance of the pivotal line of the U-shaped member and a shiftable member between the handle shaft and bracket through which downward pressure on the shaft is transmitted to raise the floor-elements with the wheels serving as a fulcrum.

3. In a floor polishing machine, a housing, floor contacting elements extending from below the housing, a handle shaft rockably attached to the housing near the transverse center line of the machine, wheels at the rear of the housing, and a shiftable member carried by the shaft and closing up under the shaft in reach from the operator's handle for quick release to bear between the shaft and the machine upon lowering the shaft whereby the shiftable member may serve as a stop against which the handle shaft may be rocked to raise said floor elements with the wheels serving as a fulcrum, arms pivotally supporting the wheels from the housing, stops limiting the downward and forward travel of the arms, and means for retaining the wheels in an upper position removed from the floor.

4. In a floor polishing machine, a housing having side walls, guides carried by the side walls, a pair of plates slidingly retained by said guides to permit fore and aft movement of the plates therealong, a driving motor, a pair of vertically disposed shafts, gear means between said motor and said shafts arranged to turn one of said shafts in a direction opposite to that of the other, crank means fixed to said shafts, connecting means between said crank means and said plates whereby operation of said motor will revolve said shafts to reciprocate said plates in opposite directions, said guides directing the plates in parallel alignment at an angle to the longitudinal center line of the housing, said connecting means spacing said plates apart along said guides to prevent interference therebetween.

5. In a floor polishing machine, a housing, a pair of floor rubbing member retaining plates mounted on the housing to be horizontally reciprocable, a motor carried by the housing, and driving means between said motor and each of said plates, one of said driving means being connected with the motor to operate in a direction opposed to the other whereby said plates will be simultaneously reciprocated in opposite directions, a central downturned leg on the front and back of each of said plates, a floor rubbing member head between each pair of said legs, members carried by the legs pivotally engaging each of said heads therebetween to permit lateral rocking of the heads under the plates, and springs between the plates and the heads yieldingly resisting said rocking.

6. In a floor polishing machine, a housing, a pair of plates mounted on the under side of the housing to be shiftable fore and aft, guides directing the plates at an angle to the longitudinal center line of the housing, a motor supported by the housing, a pair of vertical shafts, gear driving means between each of said shafts and said motor, one of said gear means being reversed in direction of rotation from the other, a crank fixed on each of said shafts, a connecting rod pivotally interconnecting one of said cranks with one of said plates, a second connecting rod pivotally interconnecting the other of said cranks and plates, and floor rubbing members carried by the plates.

7. In a floor polishing machine, a housing, horizontally disposed guides extending inwardly from the side walls of the housing, a pair of plates slidingly engaged with said guides to permit fore and aft reciprocation of the plates, a motor carried by the housing to have its driving shaft horizontally disposed above said plates but at an angle to the longitudinal center line of the housing, a vertically disposed shaft in front of the motor, a vertically disposed shaft to the rear of the motor, a gear on each of said vertical shafts, said motor drive shaft being passed diagonally between said vertical shafts and having gears thereon meshing with the gears on the vertical shafts, said drive shaft gears being respectively meshed on opposite sides

of the vertical shaft gears, means interconnecting one of the vertical shafts and one of said plates for transforming rotary motion of the shaft into reciprocating motion of the plate, like means interconnecting said other vertical shaft and plate, and floor rubbing members attached to said plates, said means spacing apart and controlling the length of travel of the plates to prevent interference therebetween.

8. In a floor polishing machine, a housing, horizontally disposed guides extending inwardly from the side walls of the housing, a pair of plates slidingly engaged with said guides to permit fore and aft reciprocation of the plates, a motor carried by the housing to have its driving shaft horizontally disposed above said plates but at an angle to the longitudinal center line of the housing, a vertically disposed shaft in front of the motor, a vertically disposed shaft to the rear of the motor, a gear on each of said vertical shafts, said motor drive shaft being passed diagonally between said vertical shafts and having gears thereon meshing with the gears on the vertical shafts, said drive shaft gears being respectively meshed on opposite sides of the vertical shaft gears, means interconnecting one of the vertical shafts and one of said plates for transforming rotary motion of the shaft into reciprocating motion of the plate, like means interconnecting said other vertical shaft and plate, and floor rubbing members attached to said plates, said means spacing apart and controlling the length of travel of the plates to prevent interference therebetween, said means being set oppositely one to the other to bring the plates simultaneously to their outer and innermost positions.

9. In a floor polishing machine, a housing, horizontally disposed guides extending inwardly from the side walls of the housing, a pair of plates slidingly engaged with said guides to permit fore and aft reciprocation of the plates, a motor carried by the housing to have its driving shaft horizontally disposed above said plates but at an angle to the longitudinal center line of the housing, a vertically disposed shaft in front of the motor, a vertically disposed shaft to the rear of the motor, a gear on each of said vertical shafts, said motor drive shaft being passed diagonally between said vertical shafts and having gears thereon meshing with the gears on the vertical shafts, said drive shaft gears being respectively meshed on opposite sides of the vertical shaft gears, means interconnecting one of the vertical shafts and one of said plates for transforming rotary motion of the shaft into reciprocating motion of the plate, like means interconnecting said other vertical shaft and plate, and floor rubbing members attached to said plates, said means spacing apart and controlling the length of travel of the plates to prevent interference therebetween, each of said interconnecting means comprising an eccentric on the vertical shaft to be connected with a plate and a pitman rod connecting the eccentric with the plate.

10. In a floor polishing machine, a housing, a pair of plates mounted on the under side of the housing to be shiftable fore and aft, guides directing the plates in parallel alignment at an angle to the longitudinal center line of the housing, a motor supported by the housing, a pair of vertical shafts, gear driving means between each of said shafts and said motor, one of said gear means being reversed in direction of rotation from the other, a crank fixed on each of said shafts, a connecting rod pivotally interconnecting one of said cranks with one of said plates, a second connecting rod pivotally interconnecting the other of said cranks and plates, and floor rubbing members carried by the plates, a cover over said gear means, and a handle hingedly connected to near the transverse center line of the cover.

11. In a floor polishing machine, a housing, a pair of floor rubbing member retaining plates mounted on the housing to be horizontally reciprocable, a motor carried by the housing, and driving means between said motor and each of said plates, one of said driving means being connected with the motor to operate in a direction opposed to the other whereby said plates will be simultaneously reciprocated in opposite directions, a central downturned leg on the front and back of each of said plates, a floor rubbing member head between each pair of said legs, and members carried by the legs pivotally engaging each of said heads therebetween to permit lateral rocking of the heads under the plates.

In testimony whereof I affix my signature.

JOHN L. DULIN.