March 15, 1932. C. H. BEACH 1,849,218

FLOOR POLISHING MACHINE

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Fig.1

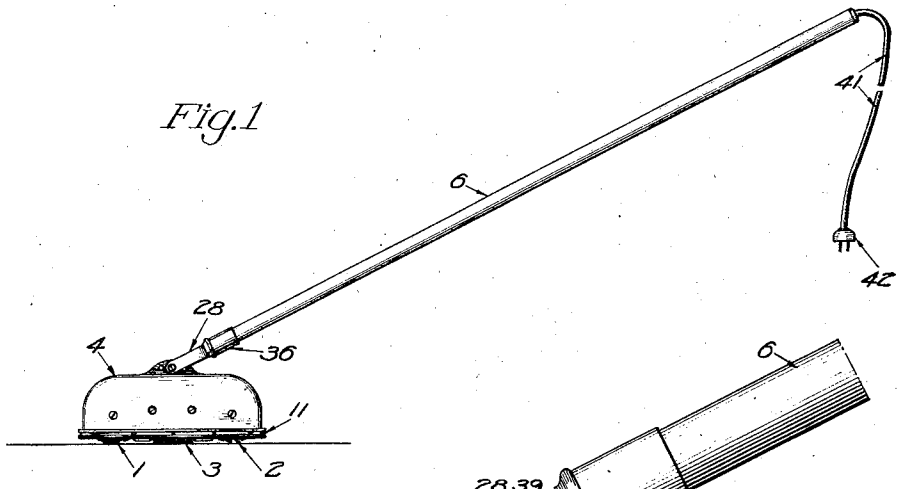


Fig.2

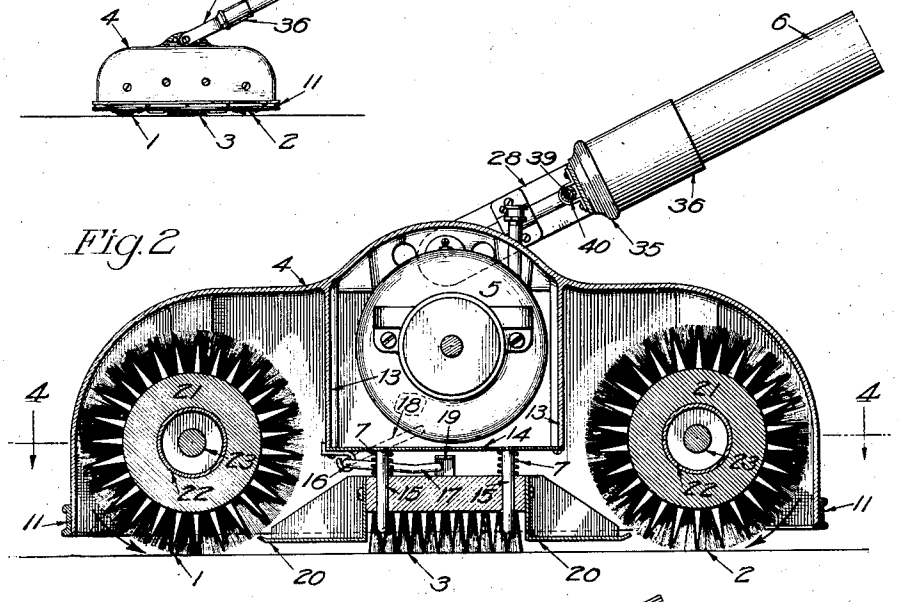
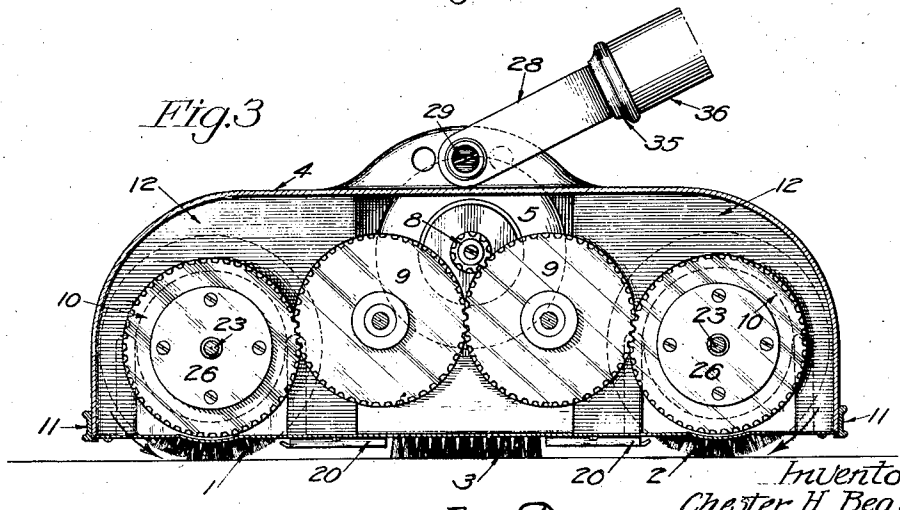


Fig.3



Inventor:
Chester H. Beach.
By: Edwin B. H. Tower Jr Atty.

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Fig.4

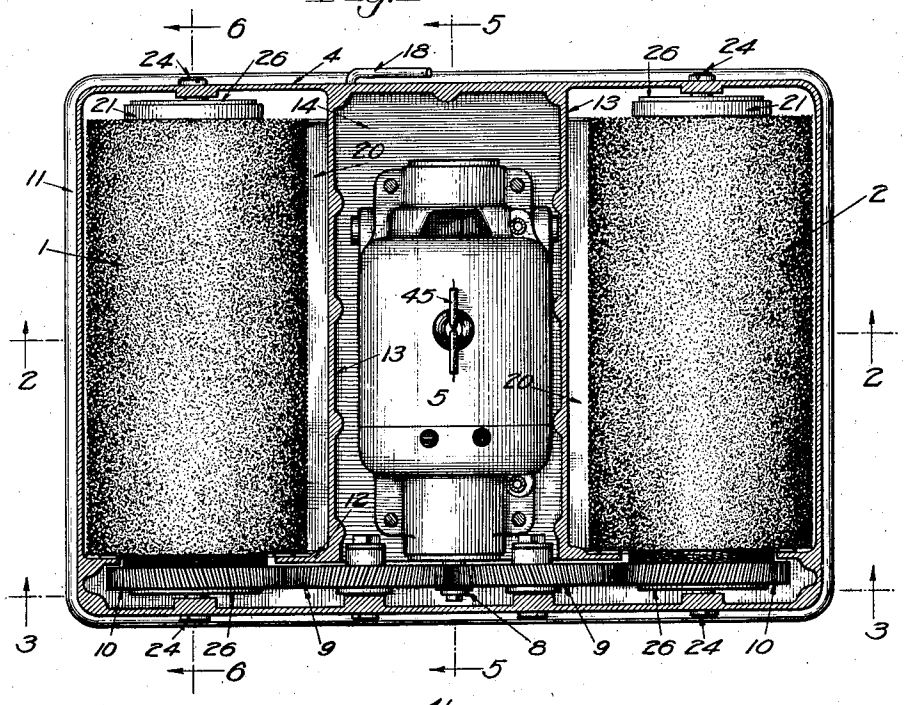
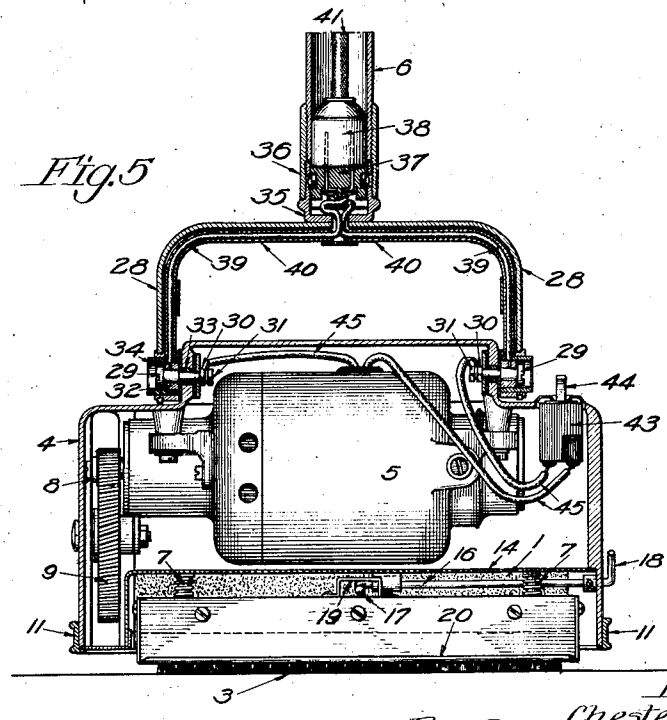


Fig.5



Inventor:
Chester H. Beach
By: Edwin B. M. Towers Jr Atty.

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FLOOR POLISHING MACHINE

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Fig. 6

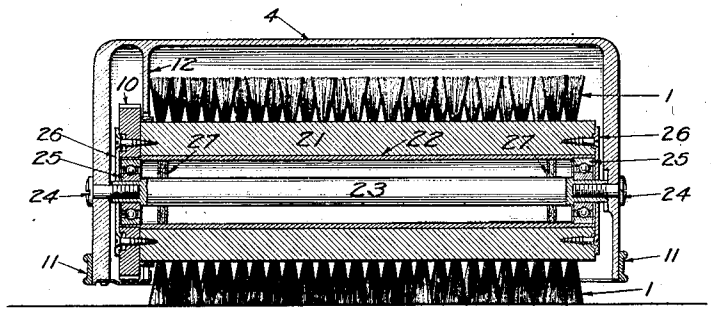


Fig. 7

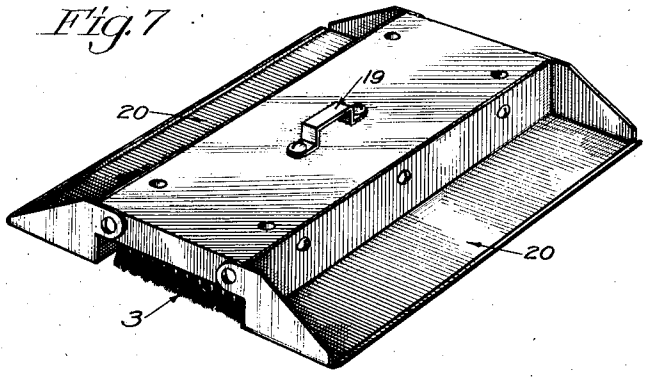


Fig. 8

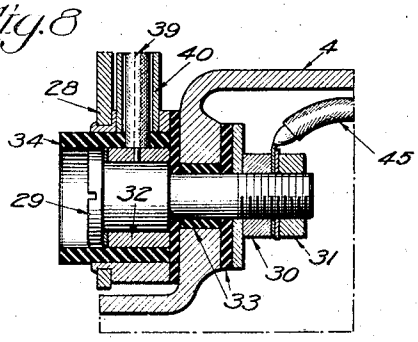
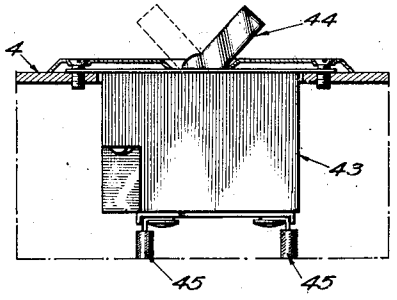


Fig. 9



Inventor:
Chester H. Beach
By: Edwin B. Hopper, Jr. Atty

Patented Mar. 15, 1932 1,849,218

UNITED STATES PATENT OFFICE

CHESTER H. BEACH, OF RACINE, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO S. C. JOHNSON & SON, OF RACINE, WISCONSIN

FLOOR POLISHING MACHINE

Application filed November 5, 1925, Serial No. 67,026, and in Canada May 17, 1924.

This invention relates to a floor polishing machine.

The machine to which the invention is applied is provided with two cylindrical rotary polishing brushes or rubbers for rubbing and polishing the floor, a frame mounted on the axles thereof, a motor carried by the frame and driving the brushes, and a handle connected to the frame to move the machine back and forth.

The object of the invention is to provide a machine which may be readily and easily manually moved.

Another object is to provide a machine in which the brushes assist in moving the machine.

Another object is to provide a machine which is efficient and which will produce an even polish.

Another object is to provide a machine which will remain in a stationary position with the brushes rotating, unless it is manually moved.

Another object is to provide a machine which may be readily guided.

Another object is to provide a machine in which only the polishing brushes or rubbers engage the floor.

Another object is to provide a durable and efficient electrical connection between the motor and the electrical circuit.

Another object is to provide a machine which may be readily and economically manufactured.

The invention contemplates a machine in which the rotary brushes or rubbers rotate in opposite directions and turn inwardly toward each other at the bottoms thereof and the handle is pivotally connected to its frame at such a point that it causes the front brush to assist in moving the machine forward and the rear brush to assist in moving the machine backward.

It further contemplates a machine in which the frame is provided with a stationary brush for keeping the machine from being moved and vacillated by the rotary brushes unless it is manually moved.

It further contemplates a machine in which the rotary brushes and the stationary brush entirely support the frame and only these brushes engage the floor.

This application is a continuation of pending application filed December 19, 1924, Serial No. 757,062, as to matter common to both applications.

The accompanying drawings illustrate a floor polishing and cleaning machine embodying the present invention, and the views therein are as follows:

Fig. 1 is a side view of the entire machine;

Fig. 2 is a longitudinal sectional view on the line 2—2 of Fig. 4;

Fig. 3 is a longitudinal sectional view on the line 3—3 of Fig. 4;

Fig. 4 is a sectional plan view on the line 4—4 of Fig. 2;

Fig. 5 is a sectional end view on the line 5—5 of Fig. 4;

Fig. 6 is a sectional view on the line 6—6 of Fig. 4;

Fig. 7 is a perspective view of the stationary brush and dust pans;

Fig. 8 is a sectional view of the pivot, and

Fig. 9 is a side view of the switch.

The machine, in general, comprises two cylindrical rotary brushes or rubbers 1 and 2, a stationary brush 3, a frame or casing 4, an electric motor 5, and a pivoted handle 6.

The frame 4 is supported from the floor entirely by the rotary brushes and the stationary brush.

The stationary brush is pressed downward upon the floor by springs 7, and ordinarily its pressure is about the same as the aggregate or combined pressure of the two rotary brushes.

The motor 5 is carried by the frame and removably fastened to the top thereof.

It drives the rotary brushes in opposite directions through gearing having a driving pinion 8 mounted on the motor, intermediate gears 9 mounted on the frame, and driven gears 10 mounted on the brushes.

It is set to run in such a direction that the brushes turn inwardly at the bottoms thereof, as indicated by the arrows, and accordingly, the front brush tends to move the ma-

chine forward and the rear brush tends to move it backward.

These brushes counteract each other and thereby tend to keep the machine in a stationary position unless it is manually moved by the handle.

The handle 6 is pivotally connected to the frame at such a point above and between the brush axles that it causes the front brush to assist in moving the machine forward and the rear brush to assist in moving the machine backward.

The reason therefor is that the handle tends to tilt the frame in such a way that the front brush has more pressure and traction than the rear brush as the machine is pushed forward, and the rear brush has more pressure and traction than the front brush as the machine is pulled backward.

The intermediate stationary brush facilitates this action, as it forms a pivot or fulcrum on which the frame tilts or rocks, but such brush is not required to cause the rotary brushes to assist in moving the machine.

When the rotary brushes are rotating and the machine is not being manually moved back and forth, it is kept in a stationary position by the stationary brush which acts as a brake to oppose the rotary brushes.

If this brush were not present, the machine would vacillate and move backward and forward and sidewise, due to the rotary brushes not having constant equal traction.

The stationary brush facilitates guiding the machine in a right line, as it keeps the machine from being moved sidewise by the rotary brushes.

The frame or casing 4 extends over and covers the brushes and gearing, and it may be provided at its lower edge with a cushion or bumper 11.

The gearing 8, 9 and 10 is enclosed within the casing between the side thereof and a vertical longitudinal partition 12.

The motor is enclosed within the casing between two vertical transverse partitions 13 and a transverse horizontal partition 14 removably fastened to these vertical partitions.

The stationary brush is held in position by vertical pins 15 which are carried by the horizontal partition and have thereon the springs 7.

The stationary brush may be readily removed from the pins by an ejector or crank 16 which is carried by the frame and provided with an arm 17 and a handle 18.

The arm extends over the brush and under a loop 19 fastened upon the back thereof, and the handle is arranged outside the frame.

When the ejector is turned by the handle the brush is removed from the pins.

The stationary brush may be provided with dust pans 20 fastened upon the back thereof.

Each rotary brush has a tubular hub 21 which has the bristles set upon the outside thereof, and a metallic tube 22 arranged therein.

It is rotatably mounted upon a spindle or shaft 23 which is removably fastened to the frame by screws 24 and carries ball bearings 25 on which the brush rotates.

The ball bearings are held upon the spindle by plates 26 fastened to the hub by screws.

The driven gear 10 is mounted upon the inner tube 22 and held thereon against the hub 21 by the plate 26.

The lubricant for the ball bearings is retained thereon by the plates 26 and rings 27.

The handle 6 is provided at its lower end with a yoke 28, the ends of which are connected to the frame by pivot pins 29.

The pivot pins extends through the frame or casing and are fastened thereto by nuts 30 and provided with binding nuts 31 for connecting electrical conductors thereto.

The yoke is provided with a contact ring 32, which surrounds the pivot pins and makes electrical contact therewith.

The pivot pin is insulated from the casing by insulation 33, and the contact ring is insulated from the yoke by insulation 34.

The yoke is provided at its center with a ferrule 35 having a sleeve 36 in which the handle is threaded and thereby fastened to the yoke.

The handle has therein a separable electrical connector which has a plug 37, and a receptacle 38.

The plug is connected to the contact rings 32 by insulated conductors or wires 39 arranged in tubes 40 fastened upon the yoke.

The receptacle 38 is provided with a cord 41, which passes through the handle and is provided at its outer end with a connector plug 42 for connecting it to the electrical circuit.

The switch 43 for starting and stopping the motor is mounted upon the frame and provided with a key 44 for opening and closing the same.

The motor and the switch are connected in circuit between the two pivot pins 29 by conductors 45.

The current for operating the motor passes from the supply circuit through the connector to one pivot pin, thence through the motor and switch to the other pivot pin, and then through the connector back to the supply circuit.

The machine set forth herein is very efficient and will evenly and uniformly polish a floor.

It is very easy to operate as its rotary brushes assist in moving it back and forth.

It will serve both as a polisher and as a cleaner or sweeper, and it may be employed

to clean the floor first and polish it thereafter, or to clean and polish the floor simultaneously.

The dust and dirt and other matter removed from the floor by the rotary brushes is collected in the dust pans.

Of course, the invention disclosed herein may be applied to machines for various purposes and it may be embodied in different forms.

The invention is hereby claimed as follows:

1. A floor polishing machine comprising two cylindrical rotary rubbers having parallel axles, a frame carried by said axles and supported from the floor by said rubbers, a motor carried by said frame and driving said rubbers in opposite directions to turn inwardly at the bottoms thereof, and a handle pivotally connected to said frame at such a point above and between said axles as to cause the front rubber to have more traction than the rear rubber as the machine is moved forward and the rear rubber to have more traction than the front rubber as the machine is moved backward.

2. A floor polishing machine comprising two cylindrical rotary rubbers arranged parallel to each other, a frame mounted upon the axles thereof, a motor carried by said frame and driving said rubbers in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame at such a point above and between said axles as to cause the front rubber to have more traction than the rear rubber as the machine is moved forward and the rear rubber to have more traction than the front rubber as the machine is moved backward, and means for holding the machine from being moved by said rotary rubbers unless it is manually moved by said handle.

3. A floor polishing machine comprising two cylindrical rotary rubbers arranged parallel to each other, a frame mounted upon the axles thereof, a motor carried by said frame and driving said rubbers in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame at such a point above and between said axles as to cause the front rubber to have more traction than the rear rubber as the machine is moved forward and the rear rubber to have more traction than the front rubber as the machine is moved backward, and a stationary rubber carried by said frame between said rotary rubbers to hold said machine from being moved by said rotary rubbers unless it is manually moved by said handle.

4. A floor polishing machine comprising two cylindrical rotary rubbers arranged parallel to each other, a frame mounted upon the axles thereof, a motor carried by said frame and driving said rubbers in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame at such a point above and between said axles as to cause the front rubber to have more traction than the rear rubber as the machine is moved forward and the rear rubber to have more traction than the front rubber as the machine is moved backward, a stationary rubber carried by said frame between said rotary rubbers, and resilient means pressing said stationary rubber downward.

5. A floor polishing machine comprising two cylindrical rotary rubbers arranged parallel to each other, a frame mounted upon the axles thereof, a motor carried by said frame and driving said rubbers in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame at such a point above and between said axles as to cause the front rubber to have more traction than the rear rubber as the machine is moved forward and the rear rubber to have more traction than the front rubber as the machine is moved backward, a stationary rubber arranged between said rotary rubbers, pins mounted upon said frame to hold said stationary rubber in position, and springs for pressing said stationary rubber downward.

6. A floor polishing or cleaning machine comprising two cylindrical rotary rubbers arranged parallel to each other, a frame mounted upon the axles thereof, a motor carried by said frame and driving said rubbers in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame at such a point above and between said axles as to cause the front rubber to have more traction than the rear rubber as the machine is moved forward and the rear rubber to have more traction than the front rubber as the machine is moved backward, a stationary rubber removably mounted upon said frame between said rotary rubbers, and dust pans carried by said stationary rubber.

7. A floor polishing or cleaning machine comprising two cylindrical rotary brushes arranged parallel to each other, a frame mounted upon the axles thereof, a motor arranged between said brushes and connected thereto to drive the same in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame and having its pivots arranged above the shaft of said motor and substantially in vertical alinement therewith to cause the front brush to assist in moving the machine forward and the rear brush to assist in moving the machine backward, and a dust pan mounted upon said frame between said rotary brushes.

8. A floor polishing or cleaning machine comprising two cylindrical rotary brushes

arranged parallel to each other, a frame mounted upon the axles thereof, a motor carried by said frame and driving said brushes in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame at such a point above and between said axles as to cause the front brush to assist in moving the machine forward and the rear brush to assist in moving the machine backward, and a stationary brush and a dust pan carried by said frame between said rotary brushes.

9. A floor polishing or cleaning machine comprising two cylindrical rotary brushes arranged parallel to each other, a frame mounted upon the axles thereof, a motor carried by said frame and driving said brushes in opposite directions to turn inwardly at the bottoms thereof, a handle pivotally connected to said frame at such a point above and between said axles as to cause the front brush to assist in moving the machine forward and the rear brush to assist in moving the machine backward, a stationary brush removably mounted upon said frame between said rotary brushes, and dust pans carried by said stationary brush.

10. A floor polishing or cleaning machine comprising two cylindrical rotary brushes, a stationary brush arranged between said rotary brushes, a frame mounted on the axles of said rotary brushes and entirely supported by said rotary and stationary brushes, a motor carried by said frame and driving said rotary brushes, a dust pan arranged between said rotary brushes, and a handle connected to said frame.

11. A floor polishing or cleaning machine comprising two cylindrical rotary brushes, a frame mounted upon the axles thereof, a removable stationary brush and dust pans arranged between said rotary brushes, and a handle connected to said frame.

12. A floor polishing machine comprising two cylindrical rotary brushes, a frame mounted on the axles thereof, a motor carried by said frame for driving said bushes, vertical pins fastened to said frame, and a stationary brush removably mounted upon said pins.

13. A floor polishing machine comprising two cylindrical rotary brushes, a frame mounted on the axles thereof, a motor carried by said frame for driving said brushes, vertical pins fastened to said frame, a stationary brush removably mounted upon said pins, and springs arranged upon said pins and pressing said stationary brush downward.

14. A floor polishing machine comprising two cylindrical rotary rubbers arranged parallel to each other, a stationary rubber arranged between said rotary rubbers, a frame supported entirely from the floor by said rubbers, a motor in said frame to drive said rotary rubbers in opposite directions to turn inwardly at the bottoms thereof, and a handle pivotally connected to said frame at a point above and between the axles of said rotary rubbers to cause the front rubber to assist in moving the machine forward and the rear rubber to assist in moving the machine backward.

15. A floor polishing machine comprising two cylindrical rotary rubbers having parallel axles, a frame carried by said axles and supported from the floor by said rubbers, a motor carried by said frame and having its shaft parallel to the axles of said rubbers, a drive connecting said motor and said rubbers to drive said rubbers in opposite directions to turn inwardly at the bottoms thereof, and a handle pivotally connected to said frame at such a point above and between said axles as to cause the front rubber to have more traction than the rear rubber as the machine is moved forward and the rear rubber to have more traction than the front rubber as the machine is moved backward.

In witness whereof, I have hereunto subscribed my name.

CHESTER H. BEACH.