Aug. 18, 1925. 1,550,102

M. L. SCHLUETER

FLOOR POLISHING MACHINE

Filed Nov. 24, 1922 2 Sheets-Sheet 1

Fig. 1.

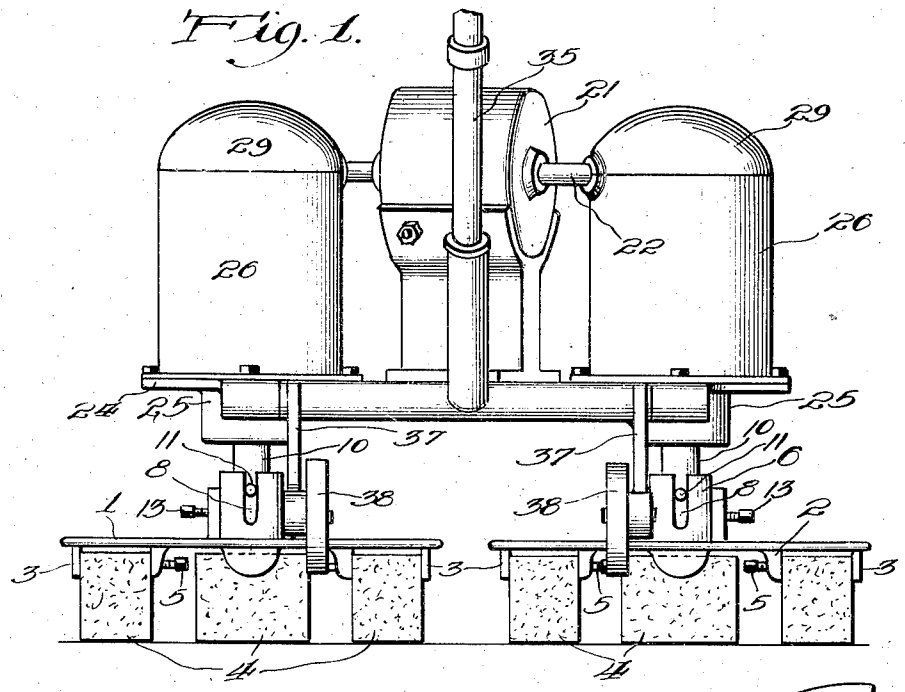
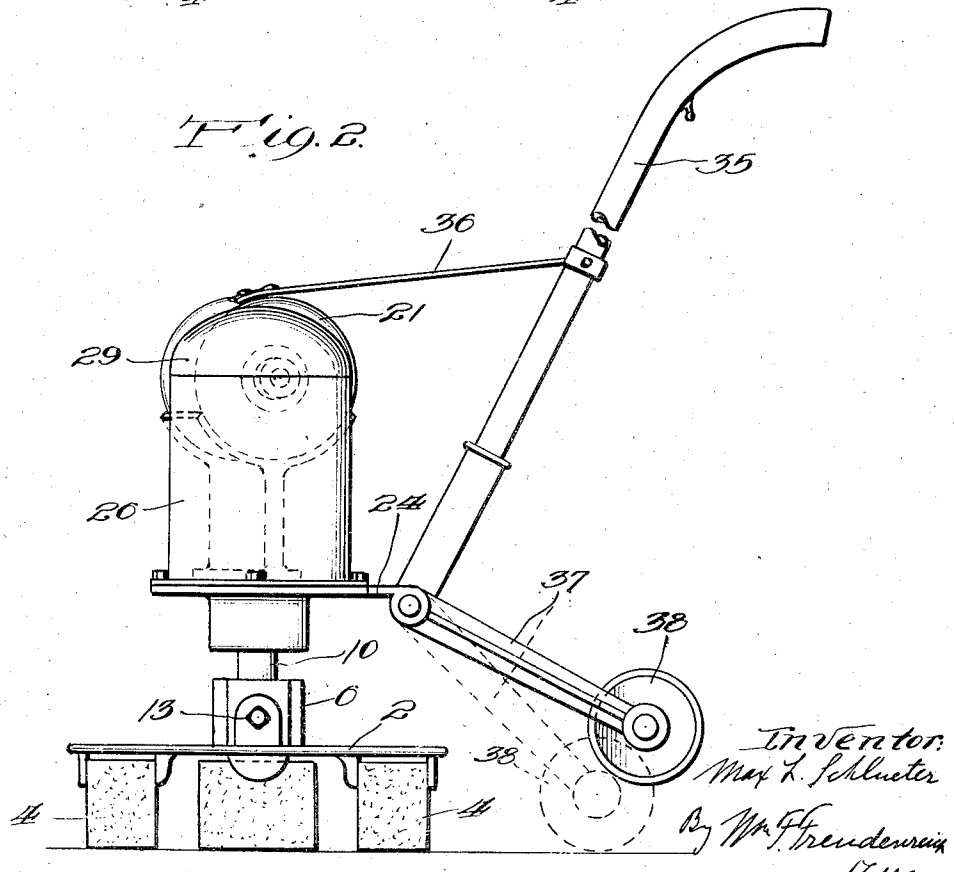


Fig. 2.



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Fig. 3.

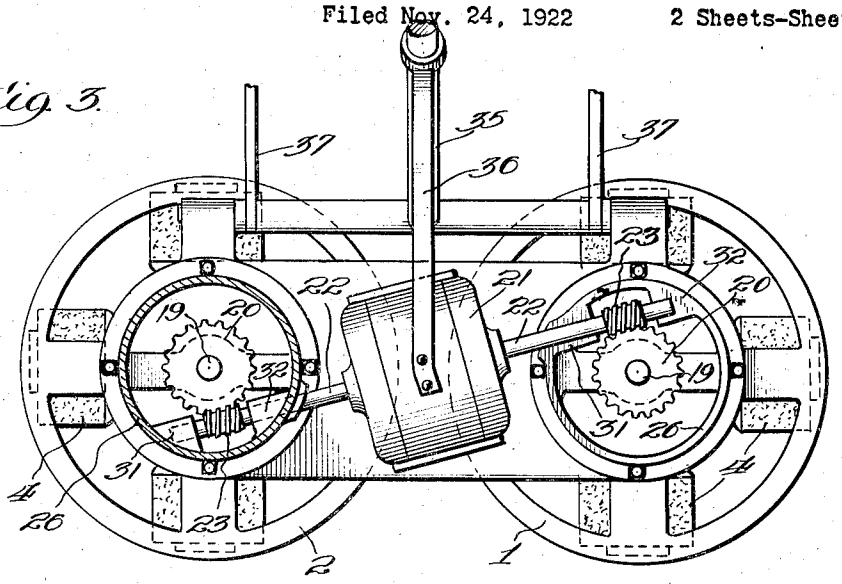
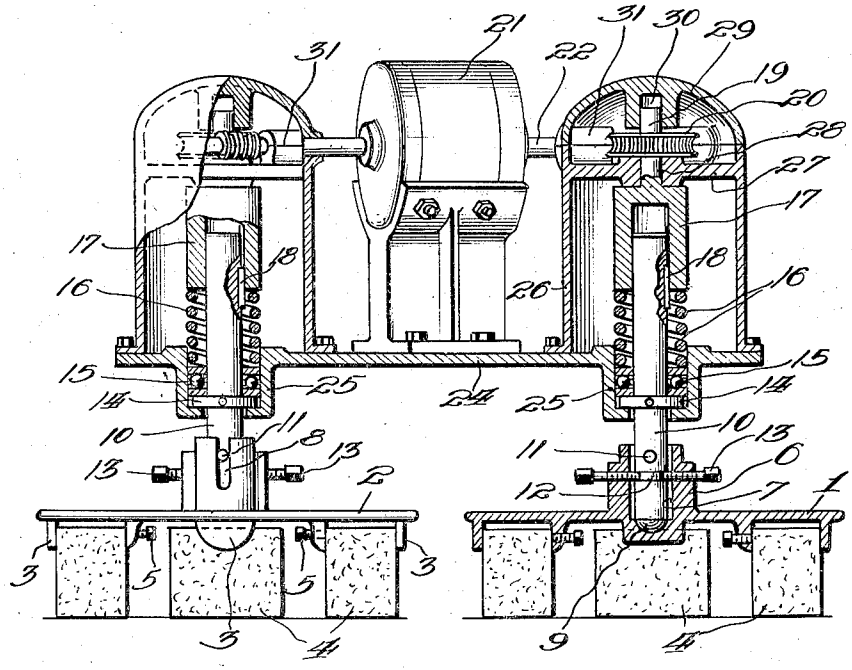


Fig. 4.



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UNITED STATES PATENT OFFICE.

MAX L. SCHLUETER, OF CHICAGO, ILLINOIS.

FLOOR-POLISHING MACHINE.

Application filed November 24, 1922. Serial No. 602,926.

To all whom it may concern:

Be it known that I, MAX L. SCHLUETER, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Floor-Polishing Machines, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The present invention has for its object to produce a polishing machine of the type in which the polishing elements rest on the surface to be treated and form the support for the machine, which shall be simple and compact in construction; in which the polishing elements will be flexibly connected to the remainder of the machine so that they may adjust themselves independently of each other to the surface on which work is being done, and in which the driving motor will be yieldingly supported so that it will be protected from shocks or jars transmitted upwardly through the polishing elements.

A further object of the present invention is to produce a polishing machine constructed of a few simple parts which will make it possible to build machines of extremely light weight and small size for simply brushing a floor or other surface, or of any other size up to large heavy machines adapted to smooth floors or other surfaces by a powerful abrading action.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but for a full understanding of my invention and of its objects and advantages reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a rear elevation of a machine arranged in accordance with my invention;

Fig. 2 is a side view of the machine;

Fig. 3 is a top plan view, portions of the housings for the gears being broken away or removed; and

Fig. 4 is a view partly in front elevation and partly in section.

In the machine illustrated in the drawings I have shown stones as the immediate polishing elements, and shall confine the detailed description to this particular form of machine, although the polishing elements may of course be in the form of brushes or any other usual or suitable device.

Referring to the drawings, 1 and 2 are similar circular holders for blocks of polishing material. In the arrangement shown, the members 1 and 2 are in the form of spoked wheels, each spoke having in the under side, adjacent to the rim of the wheel, a downwardly-opening pocket 3, in which may be situated the upper end of a polishing stone or block 4. Set screws 5 passing through the inner walls of the pockets into engagement with the adjacent faces of the stones or blocks, serve to fasten the latter rigidly to the holders. Projecting upwardly from the center of each of the circular holders is a hub-like part 6 having therein a socket 7 opening out of the top thereof. The elongated vertical slots 8 extend downwardly through the upper edge of each hub at diametrically opposed points therein. The bottom of each socket may be provided with a concave seat 9.

The polishing elements, consisting of the holders and the blocks carried thereby serve to support the remainder of the machine, including a motor for driving the polishing elements. There are two vertical shafts 10, smaller in diameter than the socket 7, which extend at their lower ends into the sockets and may conveniently fit into said concave seats. Each shaft has a pin 11 extending transversely through the same, the ends of the pin lying loosely in the slots at the sides of the socket. Each shaft is furthermore provided with a transverse groove at a point within the socket, this groove conveniently extending entirely around the shaft, as indicated at 12. Set screws 13 extend through the wall of each hub into the groove in the corresponding shaft and hold the shaft and the corresponding polishing element against vertical separation. However, because the shafts do not closely fit the sockets, the polishing elements may rock or wobble on the ends of the shafts, although they are compelled to rotate with and are prevented from being disengaged from the shafts unless the set screws are first removed.

Fixed on each of the shafts, a distance above the corresponding polishing element, is a collar 14, above which is arranged a suitable ball bearing 15. Springs 16 surround the shafts above the ball bearings and rest on the latter. Telescoped on the upper end of each shaft is a sleeve 17 splined to

the shaft, as indicated at 18, so as to be rotatable with the shaft but movable axially of the latter. Each sleeve has at its upper end a short shaft section or trunnion 19 to which is fixed a worm wheel 20. Located between the two vertical shafts is a motor 21 having a shaft 22 extending in both directions therefrom; the motor being so disposed that one end of the shaft lies in front of one of the worm wheels while the other end lies in rear of the other worm wheel. Worms 23 on the ends of the motor shaft mesh with the worm wheels, so that when the motor is set in operation it drives the vertical shafts and consequently the polishing elements in opposite directions. The motor is supported on a platform 24 provided with vertical hub-like parts 25 surrounding the lower ends of the spring 16, the ball bearings and the collars on the vertical shafts. Fixed to the platform and surrounding the upper portions of the vertical shafts and the sleeves are shells 26. Each shell has at the top a cross bar 27 resting on top of the corresponding sleeve 17 and provided with a bearing 28 through which the corresponding trunnion 19 extends; the worm wheels lying above the cross bars. It will thus be seen that the platform rests on the springs 16, the weight being transmitted through the shells and cross pieces 27 to the upper ends of the sleeves 17 and thence to the springs. The upper end of each shell is closed by means of a dome-like cap 29 containing a suitable bearing 30 for the upper end of the corresponding trunnion 19. Bearings for the ends of the motor shaft are placed between the upper end of each of the shells 26 and its cap or dome, as indicated at 31 and 32; this bearing being of the usual type of shaft bearings divided into upper and lower halves, the lower halves being formed in the body portion of the shells and the upper halves being formed in the caps or domes.

On the rear side of the machine is arranged a handle 35 attached at its lower end to the rear portion of the platform 24 and extending upwardly and rearwardly from the point of attachment. A suitable brace 36 extends from an intermediate point on the handle to the shell of the motor to which it is fastened. The handle is provided at the lower end with rearwardly projecting arms 37 each provided at its free end with a small truck wheel 38; the parts being so arranged that when the polishing elements are resting on a floor or other surface which is being treated, the wheels 38 lie a short distance above such surface, as indicated in full lines in Fig. 2. When it is desired to move the machine about, without performing any polishing operation, the upper end of the handle is pushed back and down until the wheels rest on the floor, as shown in dotted lines in Fig. 2; whereupon the wheels become fulcrums about which the handle, serving as a lever, may be swung to raise the machine bodily from the floor and permit it to be wheeled around just as though it had been placed on a carriage or truck.

It will be seen that I have produced an extremely simple and compact machine in which two rotatable polishing elements are flexibly mounted so that each may adjust itself independently of the other to irregularities in the surface on which the polishing elements are resting; in which the motor is yieldingly supported so as not to be subjected to the full force of jars or vibrations transmitted upwardly through the polishing elements; and in which the driving of the polishing elements in opposite directions is effected by two simple worms and worm wheels mounted directly on the motor shaft and the actuating shafts for the polishing elements, without the intervention of idle gears of any kind. It will also be seen that the moving parts of the transmission mechanism are effectively housed, so as to overcome all danger of injury to the operator or other persons through accidental contact with moving gearing or the like. Furthermore, my improved construction lends itself equally well to machines that are so small and light that they may be easily carried out in one's hand, and to large heavy machines intended for severe service.

While I have illustrated and described with particularity only a single preferred form of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the terms employed in the definitions of my invention constituting the appended claims.

I claim:

1. In a machine of the character described, two rotatable polishing elements adapted to rest upon the surface to be treated and form the supporting means for the machine, a vertical actuating shaft extending upwardly from each of said elements, shoulders on said shafts, springs surrounding said shafts and resting on said shoulders, sleeves splined to the upper ends of said shafts and resting on said springs, a platform supported on said sleeves, a motor on said platform, and driving connections between said motor and said sleeves.

2. In a machine of the character described, two rotatable surface-treating elements adapted to rest on the surface to be treated, two vertical actuating shafts projecting upwardly from said elements, a frame carried by said shafts, driving mechanism for said shafts mounted on said frame, a handle secured to said frame and extending upwardly and rearwardly therefrom, and wheels

mounted on said frame beneath the handle in a position to be held above said surface when said treating elements are resting on the latter and to rest on said surface and support said treating elements above said surface.

3. In a machine of the character described, two rotatable polishing elements adapted to rest upon the surface to be treated and form the support for the machine, a platform yieldably supported on said elements, a motor supported on said platform between the axes of rotation of said elements and having its shaft extending in opposite directions therefrom in front of one of said axes and behind the other of said axes, actuating shafts for said elements located at said axes, and a worm and worm wheel driving connection between said motor shaft and each of said actuating shafts.

4. In a machine of the character described, two rotatable polishing elements adapted to rest upon the surface to be treated and form the support for the machine, an actuating shaft connected to each of said elements and rising upwards therefrom, shoulders on said shafts in the vicinity of said elements, springs surrounding the shafts and resting on said shoulders, sleeves surrounding said shafts and resting on said springs, a platform lying above said polishing elements and having openings for the passage of said shafts, shells fixed at their lower ends to the platform and surrounding said shafts and the sleeves thereon, a cross piece in each shell resting on the corresponding sleeve, each sleeve having a trunnion passing through the overlying cross piece, a worm wheel fixed to each trunnion above the corresponding cross piece, a motor supported on said platform at the middle thereof, the motor shaft being extended in opposite directions and lying in front of one of said worm wheels and behind the other worm wheel, and worms on the motor shaft meshing with said worm wheels.

5. In a machine of the character described, two rotatable polishing elements, a platfrom lying above said elements, rotatable sleeves supported by said platform in axial alignment with said polishing elements, means on the platform for rotating said sleeves, shafts connected with said polishing elements and extending into said sleeves; and a driving connection between each shaft and the corresponding sleeve.

6. In a machine of the character described, two rotatable polishing elements, a platform lying above said elements, rotatable sleeves supported by said platfrom in axial alignment with said polishing elements, means on the platform for rotating said sleeves, shafts connected with said polishing elements and extending into said sleeves, springs surrounding said shafts and lying underneath said sleeves yieldingly to support the sleeves and, through the sleeves, the platform; and a connection between each shaft and the corresponding sleeve for causing them to rotate with each other and permitting relative movements in the axial direction between them.

In testimony whereof, I sign this specification.

MAX L. SCHLUETER.