

[54] **VIBRATING FOOT DRYING AND TREATING APPARATUS**

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[58] Field of Search **128/24.1, 24.2, 25 B, 33, 38,**
128/265, 266

[56]

References Cited

UNITED STATES PATENTS

3,366,105	1/1968	Sadowski et al.....	128/25 B
3,378,009	4/1968	Peplin.....	128/266

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[57]

ABSTRACT

The footrest of a small machine, on which a person can stand, is provided with means for spreading the toes apart. There also are means for blowing drying air and foot-treating between the spread toes. Additional means vibrate the feet during the drying and treating operation.

12 Claims, 9 Drawing Figures

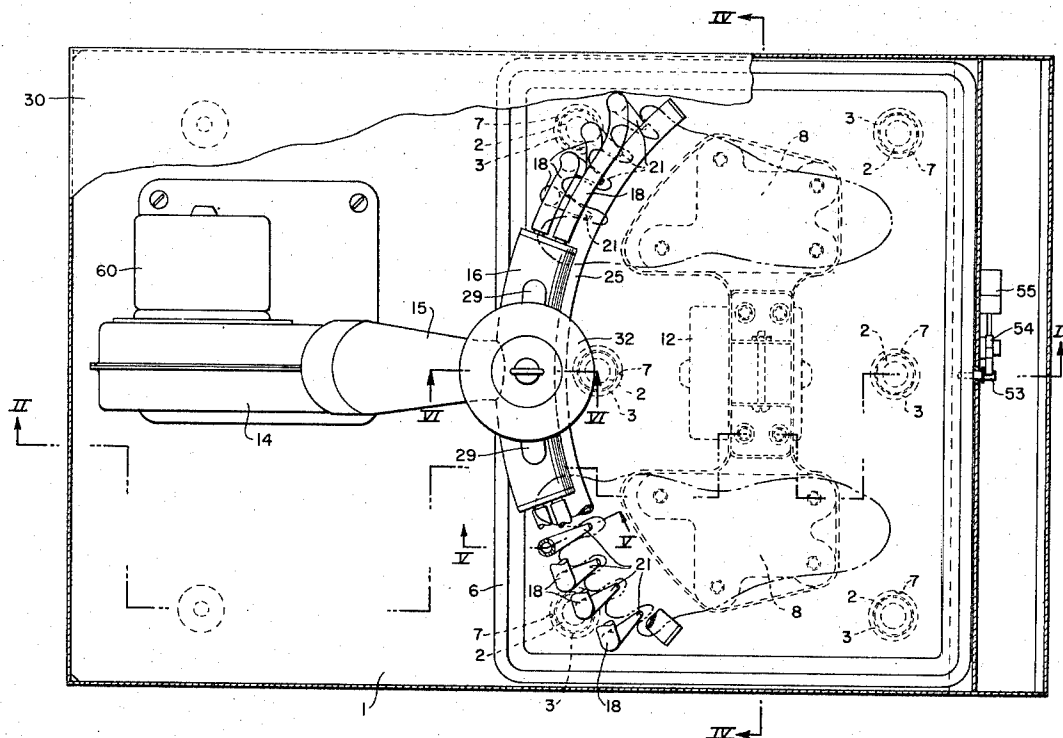
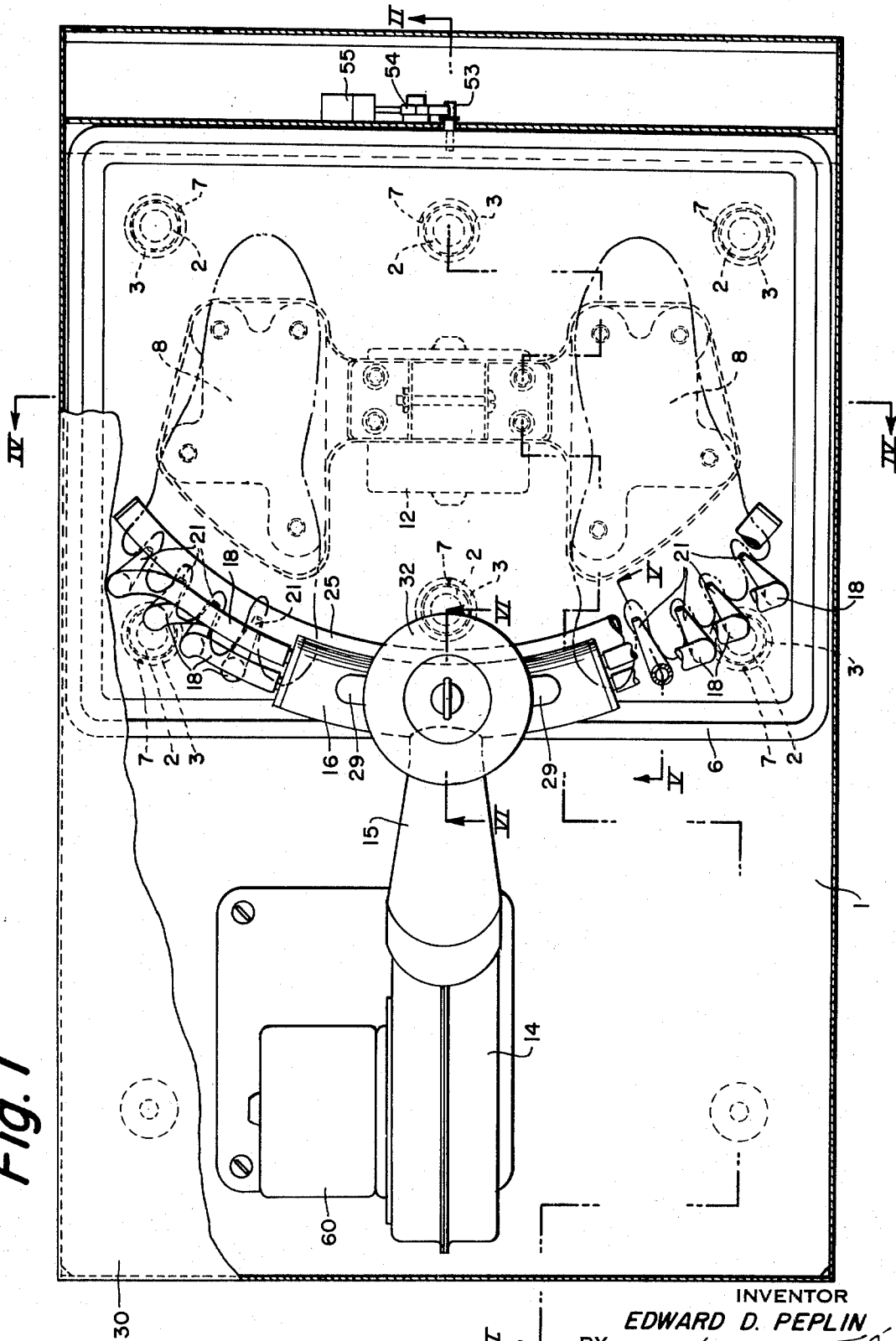
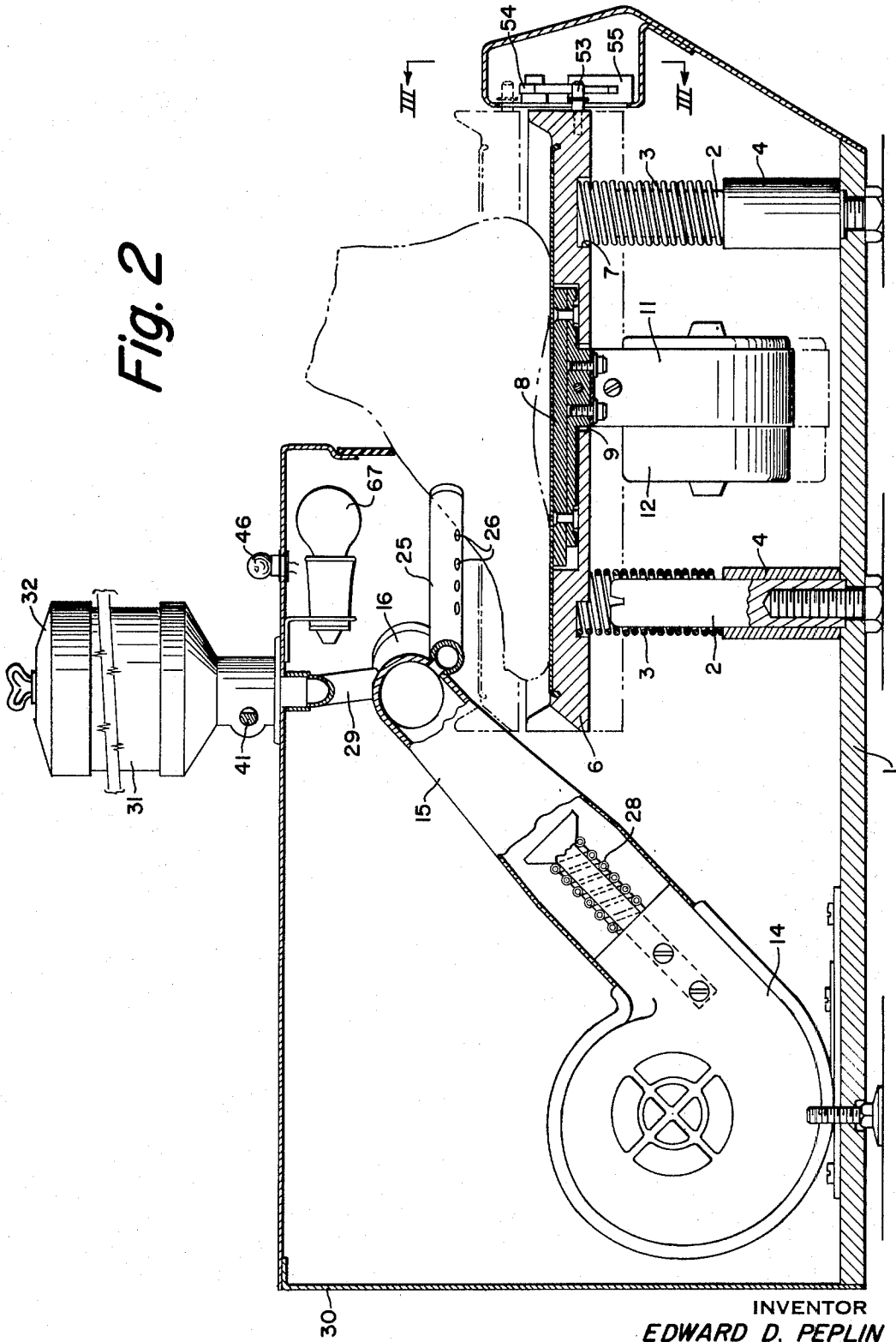


Fig. 1



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Fig. 2



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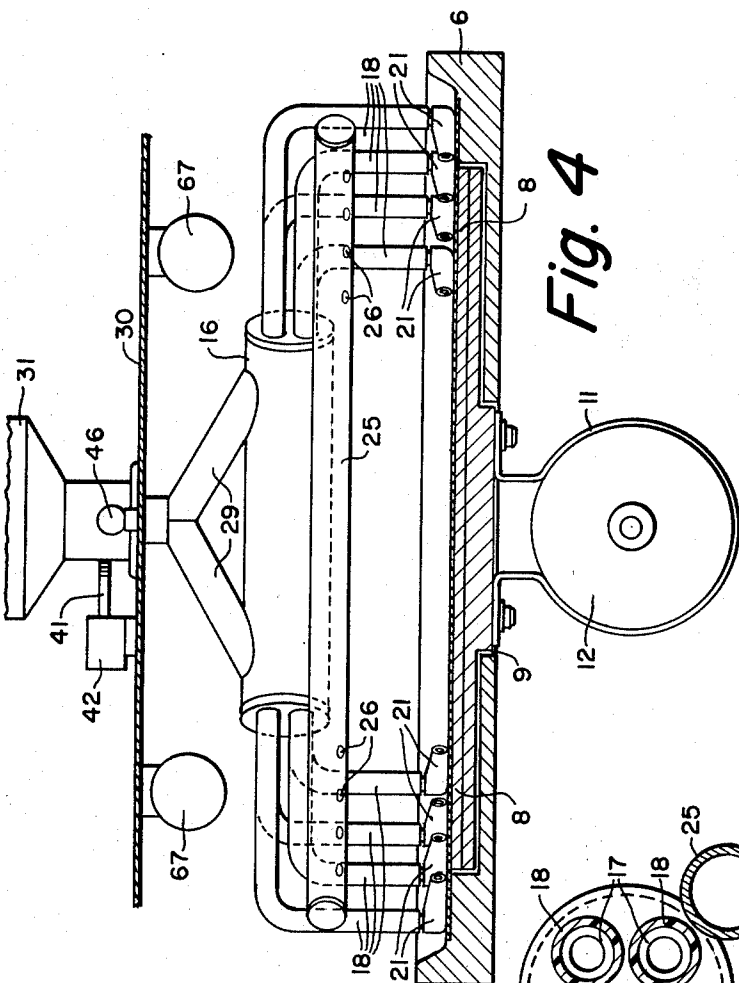


Fig. 4

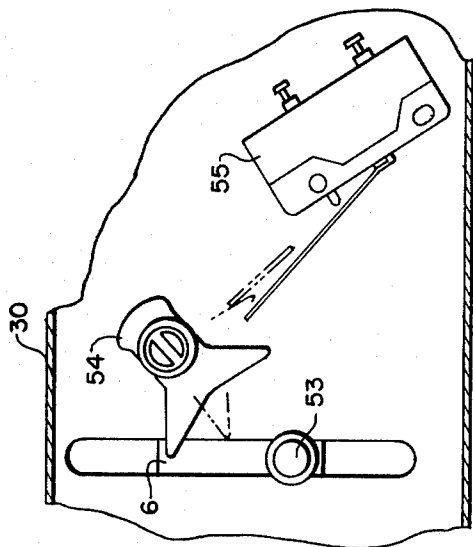


Fig. 3

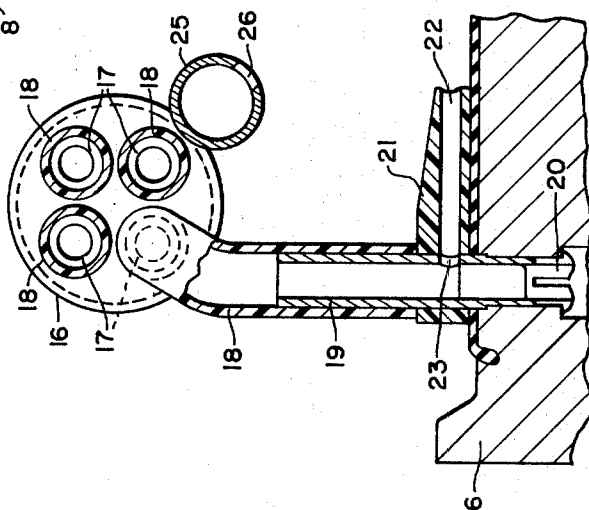
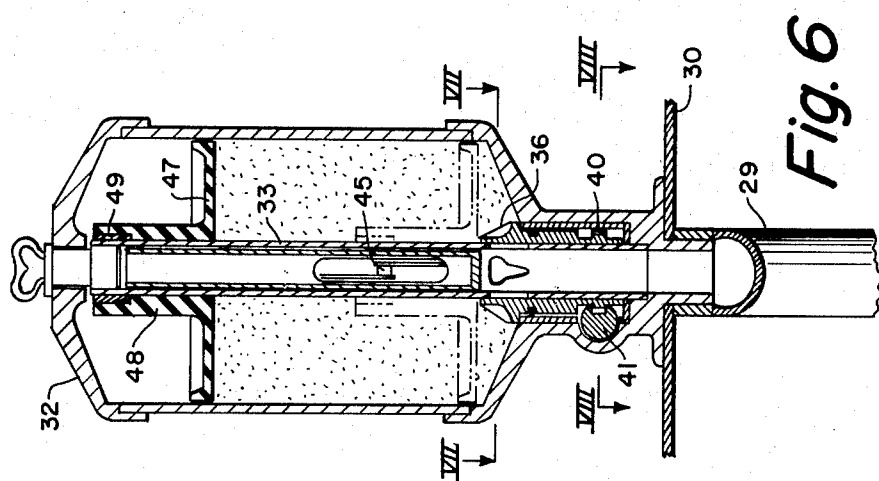
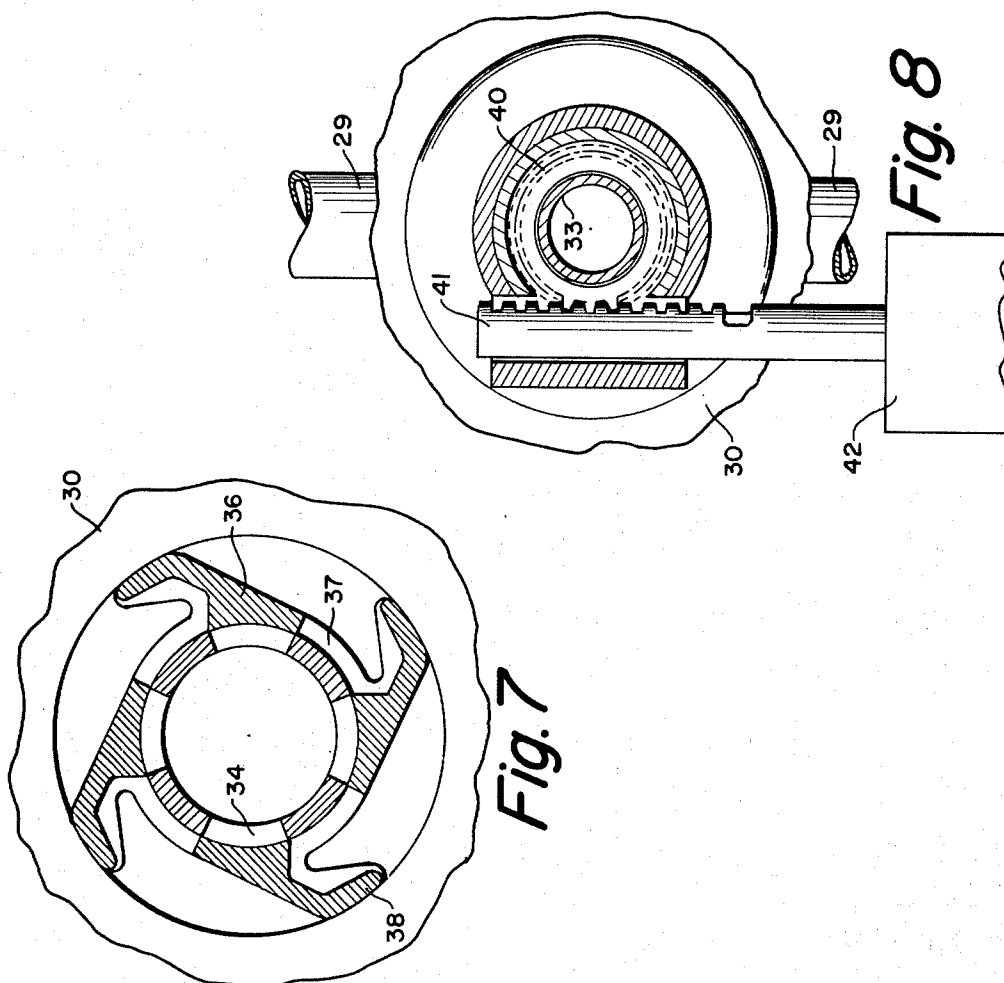


Fig. 5

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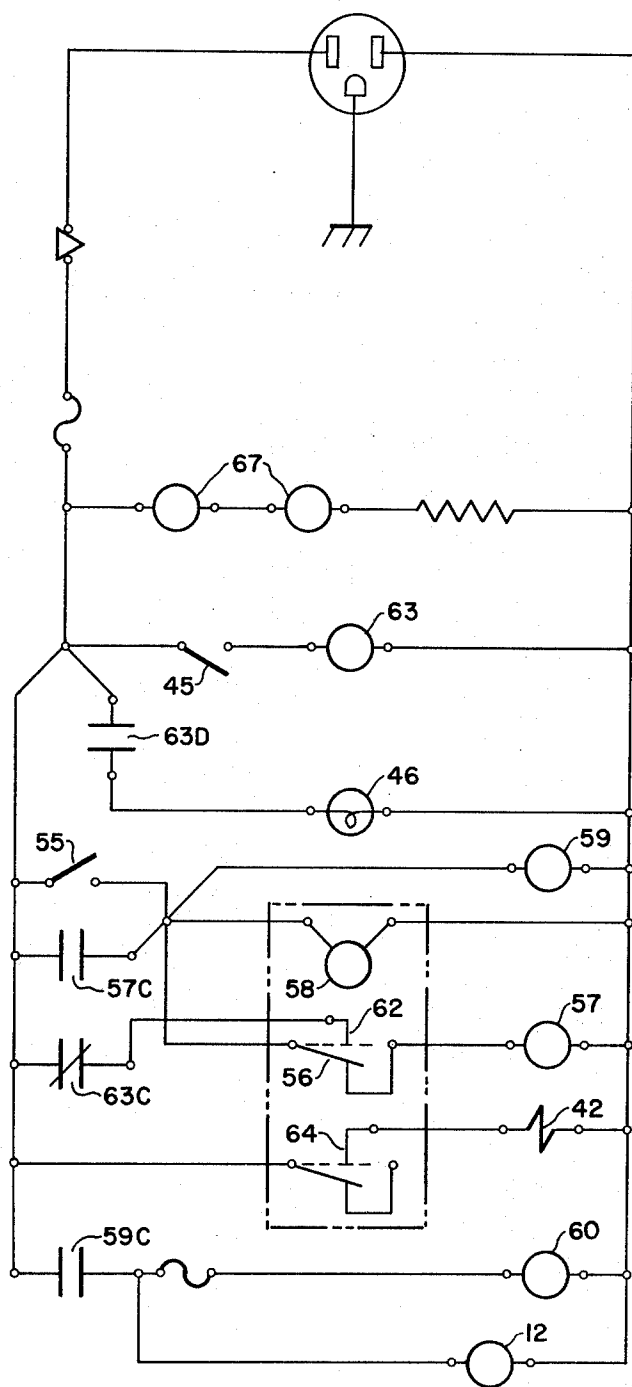


Fig. 9

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VIBRATING FOOT DRYING AND TREATING APPARATUS

In U.S. Pat. No. 3,378,009 a machine is shown for blowing drying air between a person's toes and for then blowing a powder between the toes. It is among the objects of this invention to provide such a machine that will also vibrate the feet while they are being dried and powdered or otherwise treated. The vibration increases the circulation in the feet, relaxes them and the legs and is quite restful and stimulating.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

FIG. 1 is a plan view;

FIG. 2 is a vertical section taken on the line II—II of FIG. 1;

FIG. 3 is an enlarged fragmentary vertical section taken on the line III—III of FIG. 2;

FIG. 4 is a fragmentary vertical section taken on the line IV—IV of FIG. 1;

FIG. 5 is an enlarged fragmentary vertical section taken on the line V—V of FIG. 1;

FIG. 6 is an enlarged vertical section taken on the line VI—VI of FIG. 1;

FIGS. 7 and 8 are further enlarged horizontal sections taken on the lines VII—VII and VIII—VIII, respectively, of FIG. 6; and

FIG. 9 is a wiring diagram.

Referring to FIGS. 1 and 2 of the drawings, one end of a rectangular base plate 1 supports a number of posts 2, the upper portions of which are encircled by coil springs 3 that extend above them. The lower ends of the springs are supported by sleeves 4 mounted on the posts. Resting on top of the springs is a heavy plate 6 that forms a footrest for both feet of a person standing on it. The bottom of this plate is provided with recesses 7 in which the upper ends of the coil springs are disposed. Near each end, the top of the footrest is provided with a recess in which there is a vibratable member 8 that fits the bottom of the foot like an arch preserver. The two members have portions extending toward each other and down into an opening 9 through the center of the footrest, where they are secured to the top of a bracket 11 in which an electric motor 12 is clamped and by which the motor is suspended below the footrest. The motor is the type that will vibrate the bracket and thereby the vibratable members 8 on which a person is standing. These will vibrate the feet with stimulating and beneficial results. If desired, two motors can be used, one for each foot.

Rigidly mounted on the base plate in front of the footrest is an electric blower 14 that has an outlet nozzle 15 inclined upwardly and rearwardly over the front edge of the footrest. Secured to the upper end of this nozzle is a horizontal tubular header 16 provided with a central opening communicating with the nozzle outlet. This is in front of vibratable members 8 and is not much longer than the space between them. Each end of the header is provided with four tubular connections 17, as shown in FIG. 5, on each of which one end of a flexible tube 18 is mounted. The other ends of the tubes are mounted on vertical tubular connections 19, the plugged lower ends of which are rigidly mounted in vertical openings 20 in the footrest near its front. Each of these vertical connections extends through a toe-spreading member or nozzle 21 mounted on the footrest and provided with a horizontal passage 22

communicating at its inner end with a lateral opening 23 in the tubular connection 19. The nozzles 21 are so arranged on the footrest that they will extend between the toes of feet standing on the vibratable members, and the outer or rear ends of their passages are directed rearwardly for delivering air from the blower and header to the areas between toes that are spread apart by the nozzles.

It also is desirable to blow air downwardly onto the feet, and this is accomplished by a curved horizontal pipe 25 secured to the lower part of the header and curved rearwardly away from both of its ends so that the end portions of the pipe will overlie the feet above the toes. These end portions are provided with downwardly directed outlet ports 26. The central portion of the pipe is connected by one or more openings with the inside of the header.

Means also is provided for heating the air delivered by the blower. This may be done by means of an electric heating coil 28 in the blower nozzle. Consequently, heated drying air issues from the toe-spreading members and also from the curved pipe above them. At the same time that the feet are being dried they are vibrated by the motor beneath the footrest.

Another feature is that as soon as the feet have been dried, a foot treating material, such as powder, is injected into the air system and blown between and around the toes. This powder may be simply talcum powder or it may be a medicated powder. To feed this powder into the header 16, various feeding devices may be used. One satisfactory device is illustrated, according to which the header 16 is provided with a pair of top openings, from which tubes 29 converge upwardly to the lower end of an outlet passage from a powder container rigidly mounted on top of a housing 30 that surrounds base plate 1 and covers the blower, header and nozzles. This container, shown in detail in FIG. 6, may be a vertical cylinder 31 provided with a removable cover 32. Inside the container there is a central vertical tube 33, the lower end of which is rigidly mounted in the outlet passage. At a position immediately above the bottom wall of the container the tube is provided with a plurality of radially spaced inlet openings 34 so that powder in the container can enter the tube and fall into the header 16, where it will be picked up by the air stream and blown onto the feet. Encircling tube 33 around its inlets is a rotatable impeller or powder feeder 36 which, as shown in FIG. 7, is provided with a number of circumferentially spaced openings 37 that can register with tube inlets 34 when the feeder is in the correct position. The feeder is provided with scoops 38 that extend outwardly and forward from in back of each of its openings. When the feeder is rotated on the tube, these scoops will force powder through registering openings 37 and 34 and into the tube, from which the powder will drop into tubes 29 and then fall into the header.

For rotating the powder feeder 36, it is provided below the tube inlets 34 with an encircling gear 40 that meshes with a gear rack 41 that can be reciprocated horizontally by a spring-return solenoid 42 indicated in FIG. 8 and mounted on top of housing 30. As the bar reciprocates, it oscillates the feeder so that it periodically receives powder in its scoops and then forces it into the encircled tube.

The powder container may be provided with means for signalling when the container needs refilling. This can be done by suspending a normally open magnetically operated electric switch 45 (FIG. 6) inside the central tube. This switch is connected with a signal, such as a buzzer or a light 46 mounted on top of housing 30. Slidably mounted on tube 33 is a follower disc 47 of insulating material, which rests on top of the powder in the container. This disc is at the lower end of a sleeve 48 that extends upwardly and contains a circular permanent magnet 49. When most of the powder in the container is exhausted, the disc will have descended to a point close to its bottom, as shown in dotted lines. In this position the magnet will encircle the switch and close its contacts to signal the fact that the container needs to be refilled.

If desired, in addition to or in place of the powder blower a device can be used for spraying a foot-treating liquid on the feet, using air from the blower to atomize the liquid.

OPERATION

When a person steps on the footrest, the supporting coil springs are compressed under his weight and the footrest therefore moves downwardly. As this happens, a stud 53 projecting from the back of the footrest engages and rotates a member 54, shown best in FIG. 3, that closes a microswitch 55 momentarily. The member 54 is provided with a spring return so that it returns to its normal position immediately after the stud passes it. The member 54 and the microswitch are mounted in a chamber in housing 30. The switch completes a circuit through a normally closed timer switch 56 and a relay 57 shown in FIG. 9, so that the relay contacts 57C are closed to form a holding circuit because the microswitch opened immediately after closing. Contacts 57C couple a circuit to a timing motor 58 and also to a relay 59 that closes its contacts 59C to start the blower motor 60 and the vibrator motor 12. Warm air therefore is blown onto the feet as they are vibrated.

After a period of time, such as 15 or 20 seconds, the timer motor opens the circuit to relay 57 by shifting the timer switch to another contact 62 which is connected with the normally closed contacts 63C of a third relay 63 in the circuit of the powder container switch 45. The timer, blower and vibrator motors therefore continue to operate, but relay contacts 57C open. At the same time that the timer switch shifts, a normally open timer switch 64 is closed to complete a circuit through the solenoid 42 that operates gear rack 41. The moving rack rotates the powder feeder to transfer a charge of powder from the container to the header. After this powder has been blown onto the feet, the timer motor times out, the two timer switches return to their original positions, and the contacts 59C of the second relay 59 open to shut off the blower and vibrator.

If, while the timer is operating, the powder container is emptied, the powder level switch 45 will close and that will cause relay 63 to close its normally open contacts 63D connecting the signal lamp 46 into the circuit. At the same time, the normally closed contacts 63C of relay 63 will open so that the current to the timer motor and relay 59 will be cut off. With the opening of relay contacts 59C, the blower and the vibrator also will be stopped.

It also is desirable to provide this apparatus with a pair of germicidal lamps 67, which are supported inside housing 30 over the toes.

It will be seen that with the apparatus disclosed herein the feet are not only dried and powdered, but they are vibrated throughout the operation. If the powder container becomes empty, that fact is signalled and the machine shuts down until the container is refilled. The machine is readily adaptable to coin controlled operation, as a conventional coin mechanism can easily be connected into the electric circuit.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. Vibrating foot drying and treating apparatus, comprising a footrest, means on the footrest for spreading the toes apart, means for blowing drying air and foot-treating material between the spread toes, vibratable means carried by the footrest for vibrating a foot thereon, and means for vibrating said vibratable means during said blowing.

2. Vibrating apparatus according to claim 1, in which said vibrating means include an electric motor suspended from said vibratable means.

3. Vibrating apparatus according to claim 1, in which said toe-spreading means are provided with passages therethrough, said blowing means include a blowing device and tubes connecting it with said passages, and said apparatus includes springs supporting the footrest for straight up and down movement, said vibratable means being movable relative to the footrest.

4. Vibrating apparatus according to claim 3, including vertical posts rigidly mounted beneath the footrest and spaced therefrom, said springs being coil springs mounted on said posts and extending above them into engagement with the footrest.

5. Vibrating apparatus according to claim 3, in which said blowing and vibrating means are electrically operated, said apparatus including a normally open electric switch mounted in fixed position beside the footrest, a switch-actuating member connected with the footrest for closing the switch when the footrest is depressed, and an electric circuit energized by closing the switch and connected with said blowing and vibrating means to actuate them.

6. Vibrating apparatus according to claim 1, in which said toe-spreading means are provided with passages therethrough, a stationary support is disposed in front of the footrest, and said blowing means include an electrically driven blower rigidly mounted on said support, a tubular header supported above the footrest by the blower for receiving air therefrom, flexible tubes connecting the header with said passages, and a pipe supported by the header above said toe-spreading means and communicating with the inside of the header to receive air therefrom, said pipe being provided with outlet openings for directing streams of air downwardly between the toes.

7. Vibrating apparatus according to claim 6, including a powder container provided with an outlet

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mounted on said header, the header being provided with a powder inlet for receiving powder from said container outlet.

8. Vibrating apparatus according to claim 1, in which a stationary support is disposed in front of the footrest, a housing covers said support and extends over said toe-spreading means, electric germicidal lamps are mounted in the housing over said toe-spreading means, and said blowing means include an electric blower mounted on said support, and tubes connecting it with said passages.

9. Vibrating apparatus according to claim 1, including a powder container provided with an outlet at its lower end, a feeding member in the container rotatable on a vertical axis to feed powder to said outlet, and means for periodically rotating said member.

10. Vibrating apparatus according to claim 9, in which said member-rotating means include a gear rigidly connected to the feeding member, a rack bar meshing with the gear, and means for reciprocating the bar.

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11. Vibrating apparatus according to claim 9, including a normally open magnetically operated electric switch in the lower part of the powder container, a vertically movable member for resting on powder in the container and carrying a permanent magnet, said magnet being positioned to descend in the container with the powder and cause said switch to close, and an electric signal operated by the closed switch to indicate that the container should be refilled.

12. Vibrating apparatus according to claim 9, including a central tube in the container extending upwardly from said outlet and having lateral inlets near the bottom of the container, said feeding member encircling said tube and provided with openings that register with said inlets periodically when said member revolves around the tube, and said member being provided with scoop portions for forcing powder inwardly through said registering openings and inlets into said tube for discharge from said outlet.

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