March 17, 1936. R. M. BAIRD 2,034,455

POLISHING DEVICE

Filed May 15, 1933

Fig. 1.

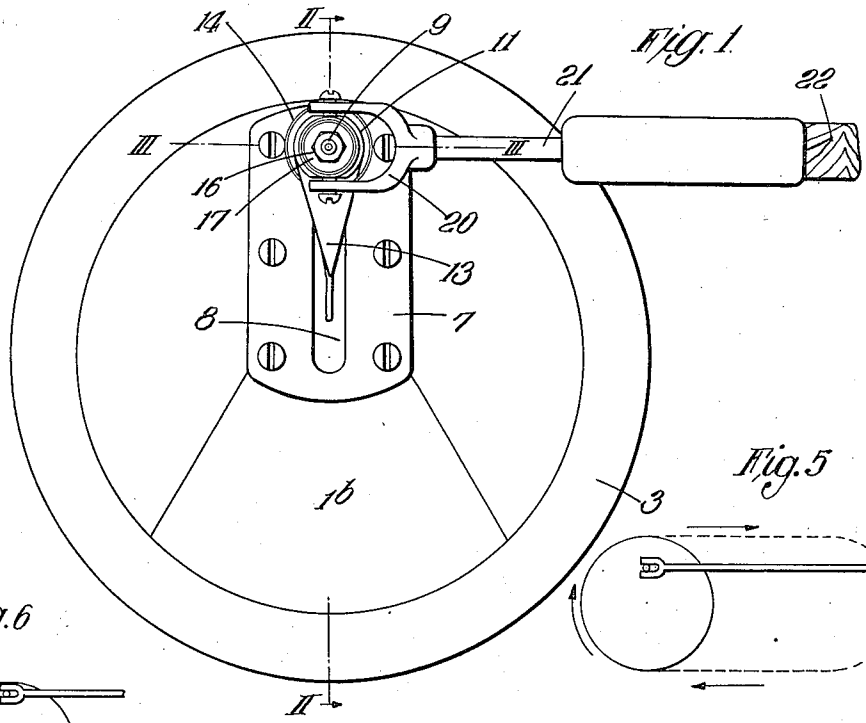


Fig. 5

Fig. 6

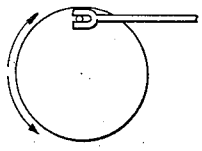


Fig. 2.

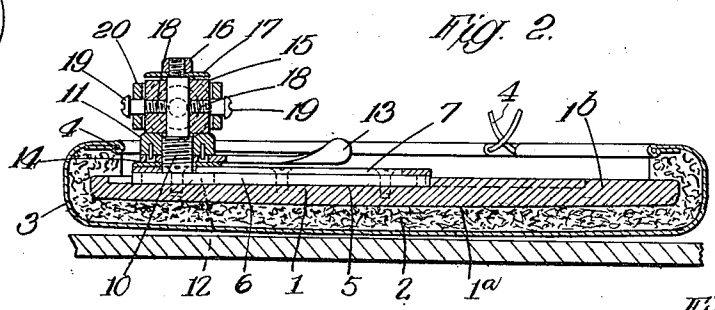


Fig. 7

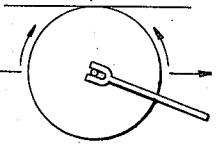


Fig. 3.

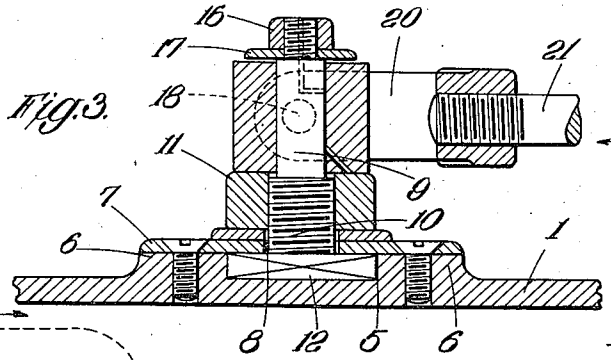
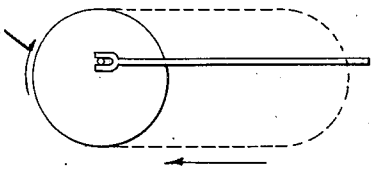


Fig. 4



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UNITED STATES PATENT OFFICE

2,034,455

POLISHING DEVICE

Ralph Manderson Baird, Sunbury-on-Thames, England

Application May 15, 1933, Serial No. 671,258
In Great Britain May 18, 1932

12 Claims. (Cl. 15—98)

This invention relates to an improved hand-operated device for working upon horizontal surfaces, such as floors, tables, whereby dusting, cleaning, washing, waxing, polishing, scrubbing, sanding, grinding and similar operations may be performed with a minimum of physical effort owing to the possibility of attaining high surface speed without fatigue and thereby enabling a comparatively light device to be effectively utilized without the exertion of any downward pressure by the operator.

The invention is hereinafter described by way of example with reference to the accompanying diagrammatic drawing, in which:—

Figure 1 is a plan view illustrating one embodiment of the improved device according to the invention;

Figure 2 is a section on the line II—II, Figure 1;

Figure 3 is a section on the line III—III, Figure 1;

Figure 4 is a diagram illustrating the manner in which the device moves during normal operation of the handle with the pivotal or swivel device set to the "Slow" position;

Figure 5 is a similar view illustrating the movement with the pivotal or swivel device set to the "Medium" position;

Figure 6 is a similar view illustrating the movement of the device with the pivotal or swivel device set to the "Fast" position; and

Figure 7 is a similar view showing the manner in which the device is operated against a wall or skirting.

In carrying the invention into effect according to one embodiment and referring more particularly to Figures 1 to 3 of the accompanying diagrammatic drawing, the device comprises a circular disc 1 of cast iron or other metal, but which may be constructed of wood or partly of wood and partly of metal, such disc 1 having a slightly convex lower surface 1a. Preferably a padding layer 2 of thick felt or like material is applied so as to extend around the underside 1a of the disc 1 and around the peripheral edge thereof, such layer 2 conveniently being held in place by means of a permanent cover cloth 3 which is fixed as by means of a draw-string 4, such cover 3 having a roughened outer surface adapted to grip a loose polishing or other cloth upon which the device is laid for use. Preferably the cover cloth 3 consists of a pliable strong cloth having a rough rubberized contact surface or of rough surfaced rubber. It will be understood that the cover cloth 3 is applied so that the felt or other layer 2 will be pressed against the underside 1a of the disc 1 and thus assume the convex profile thereof. This slightly convex formation concentrates more pressure at the centre of the device.

The felt or other layer 2, however, is sufficiently resilient to ensure that the whole under surface of the device will be in contact with the surface to be polished, the pressure to which the cloth is subjected being greatest at the centre and diminishing towards the periphery and thus substantially equalizing the work done by the cloth polisher throughout its radius.

The disc 1 is formed with a radially extending slot 5 disposed between raised ribs 6 upon which a plate 7 is screwed, such plate 7 having a slot 8. A crank pin 9 is provided with an enlarged part 10 screwed to co-operate with a clamping nut 11 and having a flattened and enlarged head 12 which is slidable in the slot 6 and engages at the underside of the plate 7. The clamping nut 11 is fitted with a handle or lever 13 by which it may be readily tightened and slackened, a washer 14 being interposed between the nut 11 and the plate 7. A swivelling member 15 is applied upon the crank pin 9 and held in position thereon by means of a nut 16 and washer 17, such member 15 having diametrically opposite tapped holes 18 for the reception of screws 19 engaging the forked part 20 of a member 21 connected to the handle 22.

By slacking the nut 11 the pivotal or swivel device may be adjusted along the slots 6, 8 and by tightening the nut may be locked in any desired position. In practice four positions, which may be indicated as shown on the drawing by the words "Fast", "Medium", "Slow" and "Skirtings" are sufficient. When the pivotal or swivel device is set to the "Slow" postion the movement of the device with a simple to and fro movement of the handle is approximately as illustrated diagrammatically in Figure 4, the device moving to and fro and at the same time rotating slowly. With the pivotal or swivel device set to the "Medium" position the movement of the device will be approximately as illustrated diagrammatically in Figure 5, the rotation being more rapid, while the to and fro travel is shorter. With the pivotal or swivel device in the "Fast" position as shown in Figure 6, the device may be caused to rotate at high speed and may be caused to travel in any direction by a slight side pressure on the handle or by directional impulses thereon. Furthermore, in this position the rotating device normally

tends to travel automatically at a relatively slow speed in a direction dependent on the direction of rotation. With the pivotal or swivel device in the "skirtings" position, that is to say, with the crank pin 9 coincident with the centre of the disc or member 1, the device may be used as illustrated diagrammatically in Figure 7 by causing the edge of the device to run along a wall or skirting and thus rotate during its travel to and fro.

The weight of the rotating part of the device may be, for example, between five and five and a quarter pounds which, owing to the high surface speeds attainable, and which may be for example up to about 600 ft. per minute at the periphery of the device, is sufficient to secure effective polishing. In use the device tends to work in a rocking fashion owing to the convexity of the under surface and thus has what may be termed an imperceptible pounding action which enhances the polishing effect, while owing to the convex profile of the underside 1*a* of the disc 1 the device accommodates itself to slight undulations or irregularities in the surface being treated. In addition to the movements illustrated in Figures 4 to 7, the device may be used in various other ways as may be desired by the operator. For instance, the disc may be caused to swing around the axis of the crank pin. The disc 1 may be formed with a thickened part 1*b* arranged to serve as a counterpoise more particularly when the crank pin 9 is the "Fast" position to maintain equilibrium when a force is exerted on the handle.

For most purposes it is preferred to use the device in conjunction with a separate cloth which is simply laid upon the floor to receive the device which, owing to the roughened under surface of the cover cloth 3, grips the separate cloth and rotates the same. The use of such a separate cloth has the advantage that when polishing close to skirtings or to obstructions such as furniture legs the free projecting part of the separate cloth is capable of folding up and thus effectively polishing right up to the wall or obstruction.

What I claim is:—

1. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side provided with surface-treating material, an operating handle for said member, and means for pivotally mounting said handle about a vertical axis on said member eccentric to the center of mass thereof.

2. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a circular rotary member provided on its under side with surface-treating material, a vertical crank pin mounted on the upper face of said member eccentric to the center of mass thereof, and a handle pivotally mounted upon said crank pin for imparting rotation to said member upon reciprocation of said handle parallel to the surface to be worked.

3. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side, the surface of which is provided with surface-treating material, an operating handle for said member, means for pivotally mounting said handle on said member for movement about a vertical axis, and means for adjustably securing the handle mounting means on said means to vary the eccentricity of the vertical axis of said handle mounting means relative to the center of mass of said member.

4. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side, the surface of which is provided with surface-treating material, an operating handle for said member, means for pivotally mounting said handle on said member for movement about a vertical axis, a guide provided on the upper surface of said member extending outwardly from the center of mass thereof, and means for securing the handle mounting means in adjusted positions on said guide.

5. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side, the surface of which is provided with surface-treating material, an operating handle for said member, means for pivotally mounting said handle on said member for movement about a vertical axis, said member being provided with a slot on its upper surface extending outwardly from the center of mass thereof, and means for securing the handle mounting means in adjusted positions in said slot.

6. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side, the surface of which is provided with surface-treating material, said member being provided with a slot on its upper surface extending outwardly from the center of mass thereof, a vertical pin adjustably mounted in said slot for varying the radial distance between the same and the center of mass of said member, means for securing said pin in adjusted positions, and a handle mounted on said pin for pivotal movement about the axis thereof.

7. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side, the surface of which is provided with surface-treating material, said member being provided with a slot on its upper surface extending outwardly from the center of mass thereof, a vertical pin adjustably mounted in said slot for varying the radial distance between the same and the center of mass of said member, means for securing said pin in adjusted positions, a swivel pivotally mounted on said pin, and a handle mounted on said swivel for pivotal movement about a horizontal axis.

8. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side provided with surface-treating material, an operating handle for said member, means for pivotally mounting said handle about a vertical axis on said member eccentric to the center of mass thereof, and a counterpoise positioned on said member diametrically with respect to the handle mounting means.

9. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side, the surface of which is provided with surface-treating material, an operating handle for said member, means for pivotally mounting said handle on said member for movement about a vertical axis, means for adjustably securing the handle mounting means on said means to vary the eccentricity of the vertical axis of said

handle mounting means relative to the center of mass of said member, and a counterpoise positioned on said member diametrically with respect to the handle mounting means.

10. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a slightly convex under side provided with surface-treating material, an operating handle for said member, and means for pivotally mounting said handle about a vertical axis on said member eccentric to the center of mass thereof.

11. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a slightly convex under side provided with surface-treating material, an operating handle for said member, means for pivotally mounting said handle on said member for movement about a vertical axis, and means for adjustably securing the handle mounting means on said means to vary the eccentricity of the vertical axis of said handle mounting means relative to the center of mass of said member.

12. A hand-operated device for polishing or otherwise working upon horizontal surfaces, comprising a rotary member having a substantially flat under side provided with surface-treating material, said member having a radially extending slot in its upper surface, a plate extending over the said slot and having a slot therein of narrower width than the slot in the said member, a vertical crank pin having a head engaging the slot in the said member and extending upwardly through the slot in the said plate, a swivel fitting rotatable on the said said crank pin for the connection of an operating handle, a nut cooperating with a screw-threaded portion of the crank pin for clamping the same at any desired position in the slot in the said member, and a handle fixed to and extending from the said nut for its manipulation.

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