Aug. 16, 1938. A. O. ENGBERG 2,126,761

SURFACE TREATING APPARATUS

Filed March 28, 1935 2 Sheets-Sheet 1

Fig.1

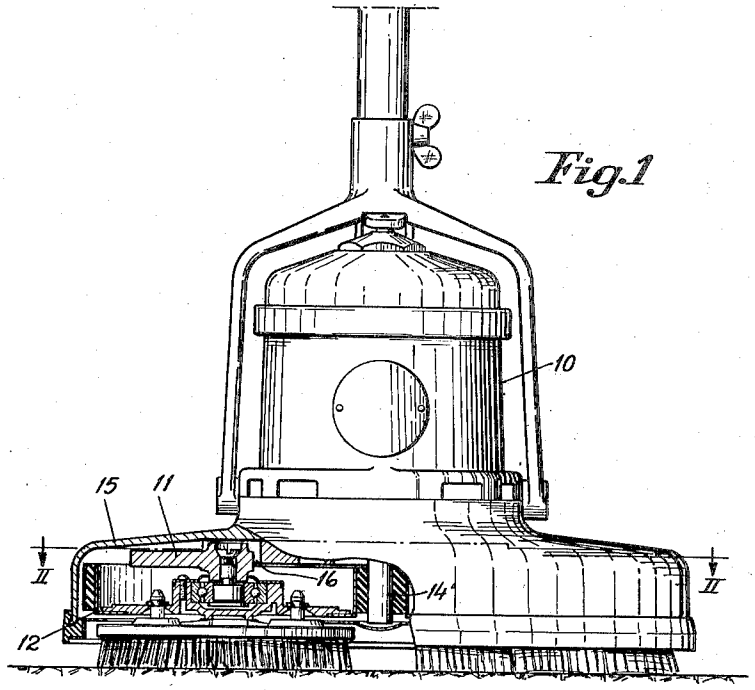


Fig.2

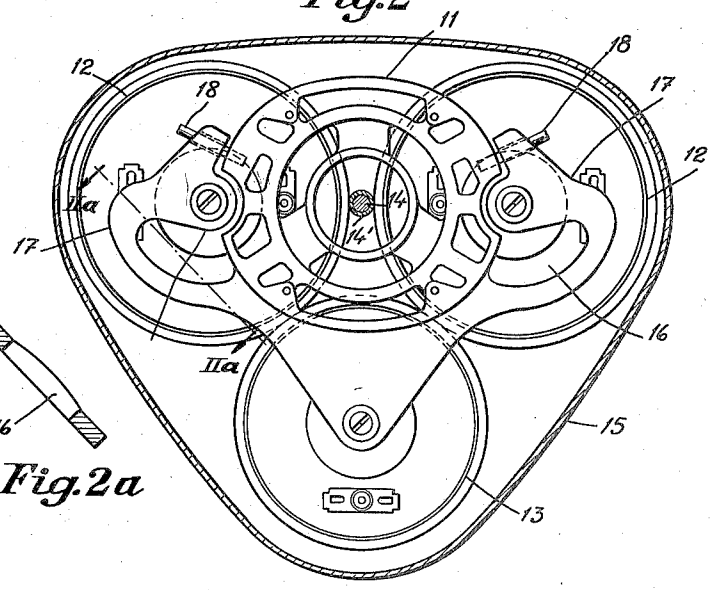


Fig.2a

INVENTOR
Axel Olof Engberg
BY
Wm. T. Hedlund
his ATTORNEY

Aug. 16, 1938. A. O. ENGBERG 2,126,761

SURFACE TREATING APPARATUS

Filed March 28, 1935 2 Sheets-Sheet 2

Fig. 7

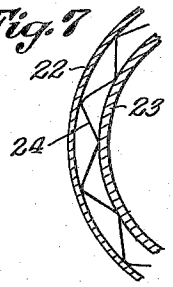


Fig. 3

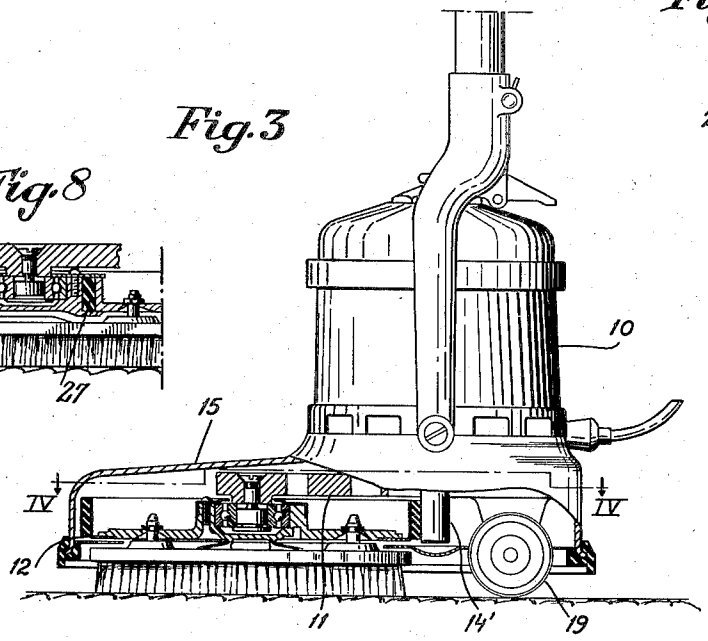


Fig. 8

Fig. 4

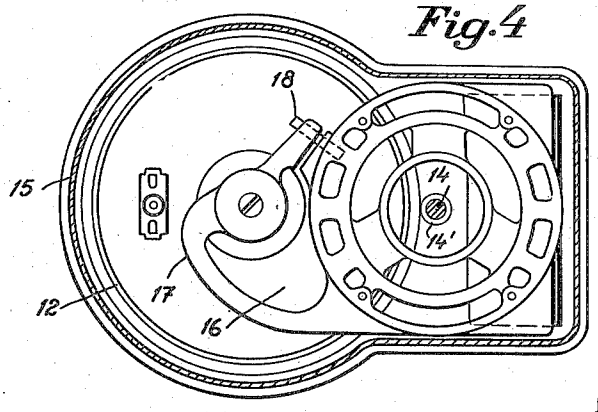


Fig. 6

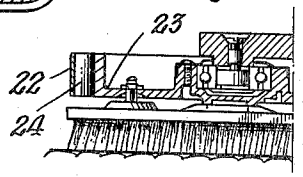
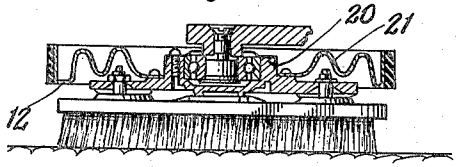


Fig. 5



INVENTOR
Axel Olof Engberg
BY
Wm. J. Hedlund
his ATTORNEY

Patented Aug. 16, 1938

2,126,761

UNITED STATES PATENT OFFICE

2,126,761

SURFACE TREATING APPARATUS

Axel Olof Engberg, Stockholm, Sweden, assignor to Aktiebolaget Elektrolux, Stockholm, Sweden, a corporation of Sweden

Application March 28, 1935, Serial No. 13,567
In Germany March 29, 1934

9 Claims. (Cl. 15—49)

My invention relates to surface treating apparatus and more particularly to electrically driven apparatus of this kind adapted to treat floors, windows and the like. In apparatus of this kind the power often is transmitted from the driving motor to the members carrying the implements for treating the surfaces by a friction gearing. Between the driving pinion connected to the motor shaft and the discs in such machines there must be a certain amount of resiliency so as to ensure the necessary frictional pressure between the rotating parts.

In previous apparatus of this kind this frictional pressure was obtained by arranging the discs movably in the frame of the apparatus against an elastic pressure or by pivotally connecting them by pin joints to the frame. Such apparatus are however not only complicated and consequently expensive in manufacture but their bearings are also subjected to heavy vibrations from the motor rotating at a high speed. According to the invention these disadvantages are removed by supporting the carriers for the said implements in stationary manner relative to their carrying frame and ensuring the frictional pressure between the discs and the friction pinion, or between the discs themselves, by the construction or the selection of the material of the frame and/or the carriers themselves.

A further object of the invention is to equip the frame with slots or the like in such a way that resilient arms are formed in which the carriers are journalled.

A still further object of the invention resides in providing the carrying discs themselves with a ring-shaped member of elastic material, or a ring-shaped part of the disc may be resilient, due to the construction of this part.

The nature of the invention will become apparent from the following description taken in conjunction with the accompanying drawings forming part of the specification which show a preferred surface treating apparatus embodying the invention. Of the drawings

Fig. 1 is a sectional view of a surface treating apparatus according to the invention and provided with three carriers for surface treating implements;

Fig. 2 is a section of the same apparatus along the line II—II in Fig. 1;

Fig. 2*a* is a sectional view taken on the line IIa—IIa of Fig. 2;

Fig. 3 is a view partly in section of a further embodiment of a surface treating apparatus according to the invention and provided with a single carrier only;

Fig. 4 is a sectional view taken on the line IV—IV of Fig. 3; and

Figs. 5–8 show various embodiments of rotatable implement carriers whereby the carriers themselves are arranged or constructed to produce the necessary resilient frictional pressure.

In the surface treating machine according to Figs. 1 and 2 the driving motor is enclosed by a casing 10. The motor rests on a frame 11 consisting, for example of cast-iron on the underside of which brush disc carriers 12 and 13 are supported. The shaft of the motor is designated by 14 and is formed at its lower end into a friction pinion 14'. The frame 11 and the brush discs are covered by a hood 15 preferably made of sheet aluminium or of any cast metal. As shown in Fig. 2, the frame 11 is provided with slot 16 so that bent arms 17 are formed. In these arms the two discs 12 bearing on the friction pinion 14' are journalled, while the front disc 13 is journalled in that part of the frame which has no slots. Owing to the form of the slots 16 the arms 17 will be resilient to a certain degree, and careful investigations have shown that this self-resiliency of the frame is sufficient to ensure the necessary frictional pressure between the discs 12 and the friction pinion on the one hand and between the discs 12 and 13 on the other hand. It is evident that in the manufacture and mounting of the surface treating machine the distances between the axis of the friction pinion and the axes of the rotating discs must be dimensioned in such a way that the desired frictional pressures are ensured by the spring action of the arms 17. In order to prevent an undesirable distortion of the arms 17 in any direction other than in a plane perpendicular to the axis of shaft 14, pins or the like 18 are, as shown in Fig. 2, fixed in the rigid central part of the frame, which pins have sliding engagement in guides or apertures in the outer ends of the arms 17. These guiding devices permit movement of the ends of arm 17 in a plane perpendicular to the axis of shaft 14, but prevent the frictional pressure between the discs 12 and 13 from being reduced appreciably owing to an undesirable bending of the arms 17.

Figs. 3 and 4 show a modified embodiment of a surface treating machine in which only a single carrier 12 for a surface treating disc is used. In other respects the construction is the same as that previously described. In order to relieve the strain on the rear part of the surface treating

machine rollers 19 are provided under the driving motor, the supporting points of these rollers forming together with the points of the brushes the supporting surface of the apparatus.

In the embodiments described the frictional pressure between the different rotating parts is produced by the form of the frame in which the brush discs are journalled. According to the invention it is however also possible to give the brush discs themselves the necessary frictional pressure by a suitable construction or by the use of suitable materials. In Fig. 5 a ring-shaped member 21 of corrugated sheet metal or the like is inserted between the hub 20 of the disc and its periphery. This annular corrugation of the ring-shaped intermediate member 21 gives the necessary resiliency for the desired frictional pressure. In Figs. 6 and 7 a corrugated sheet metal ring or the like 24 is inserted between the periphery 22 and the inner rigid part 23 of the disc in order to ensure the necessary spring action. In Fig. 8, finally, a thick rubber ring 27 is inserted between the hub 20 of the disc and its outer rigid part, which rubber ring gives the necessary resiliency. Under certain circumstances the methods described for obtaining the desired frictional pressure may also be applied in any desired combination.

What I claim is:

1. In a floor polisher, a frame having integral parts, a driving shaft rotatable about an axis fixed with respect to a part of said frame, a pin rigidly fixed to another part of said frame, a brush carrier member having a hub rotatably mounted on said pin and having a rigid circular edge, the hub of said brush carrier member being permanently concentric with said pin, and resilient means arranged in the path of force transmission between the first mentioned part of said frame and said edge for resiliently urging said edge toward said driving shaft.

2. A device as claimed in claim 1 in which a resilient tire is interposed between said rigid edge and said driving shaft.

3. A device as claimed in claim 1 in which a resilient tire is carried by said rigid edge for frictional engagement with said driving shaft.

4. In a floor polisher, an integral frame including a rigid main part and a resilient arm, a driving shaft rotatable about an axis fixed with respect to said main part, and a circular brush carrier member rotatably mounted on said arm, said carrier member being urged into rotating engagement with said driving shaft by the resiliency of said arm.

5. A device as claimed in claim 4 including a rigid pin secured to said main part and having sliding engagement with said arm in a plane perpendicular to the axis of said driving shaft for preventing distortion of said arm in a direction at an angle to said plane.

6. In a floor polisher, an integral frame including a rigid main part and a pair of resilient arms, a driving shaft rotatable about an axis fixed with respect to said main part, a first circular brush carrier member rotatably mounted on said main part, and a circular brush carrier member rotatably mounted on each of said arms, said last-mentioned carrier members being urged into rotating engagement with said driving shaft and with said first carrier member by the resiliency of said arms.

7. In a floor polisher, a rigid frame having integral parts, a driving shaft rotatable about an axis fixed with respect to a part of said frame, a pin rigidly fixed to another part of said frame, and a brush carrier member rotatably mounted on said pin and including a hub, a rigid circular edge and resilient means between said hub and said edge for urging said edge toward said driving shaft, said hub being permanently concentric with said pin.

8. A device as claimed in claim 7 in which said resilient means comprises a rubber ring.

9. A device as claimed in claim 7 in which said resilient means comprises a corrugated disc of metal.

AXEL OLOF ENGBERG.