

Sept. 15, 1964

A. KUCHAR ET AL  
DEVICE FOR ADJUSTING THE PROTECTIVE  
RUBBER STRIP OF WAXING MACHINES

3,148,397

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4 Sheets-Sheet 1

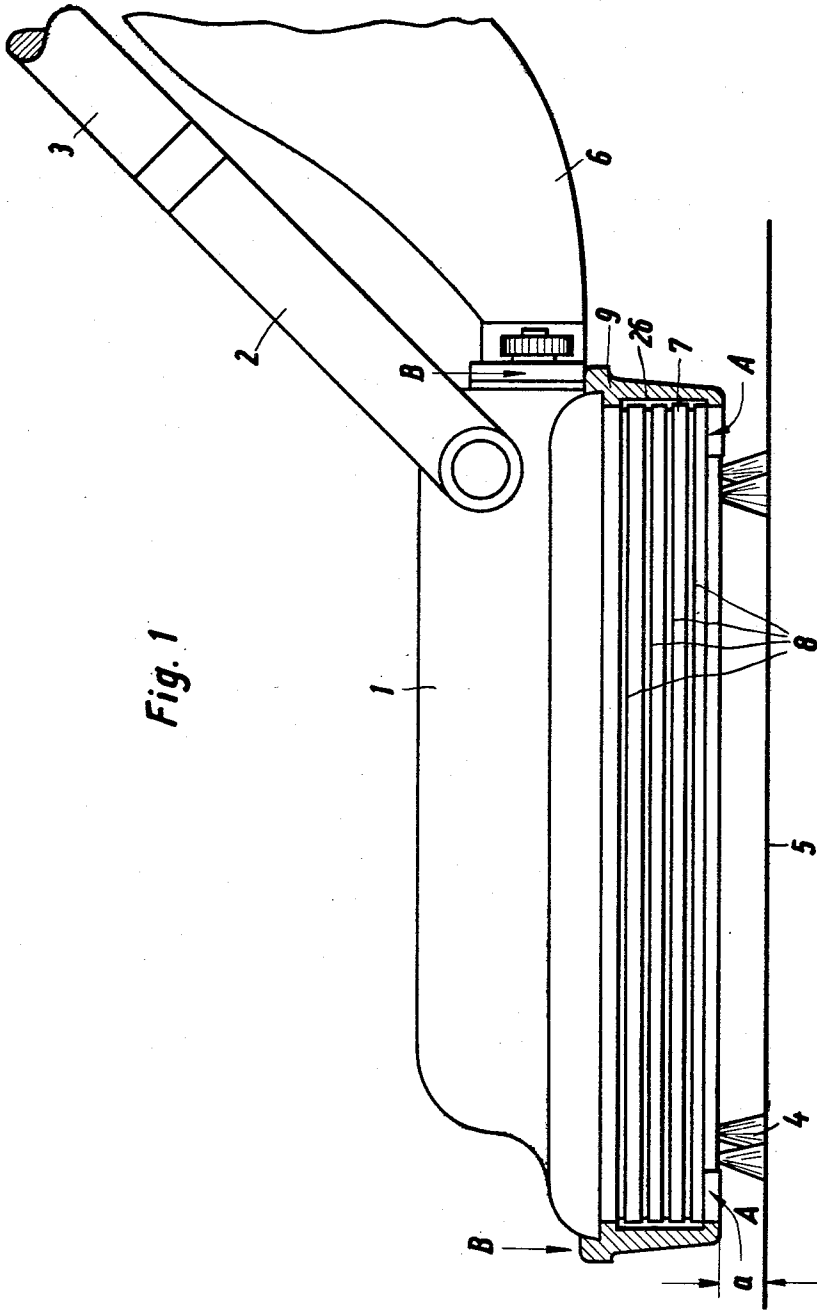


Fig. 1

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4 Sheets-Sheet 2

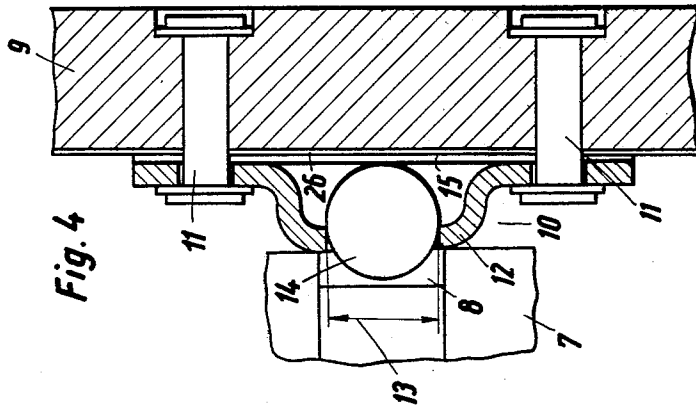


Fig. 4

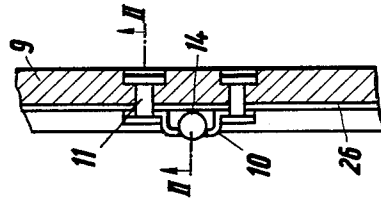


Fig. 3

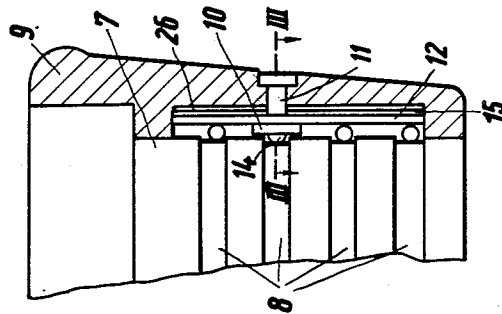


Fig. 2

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4 Sheets-Sheet 3

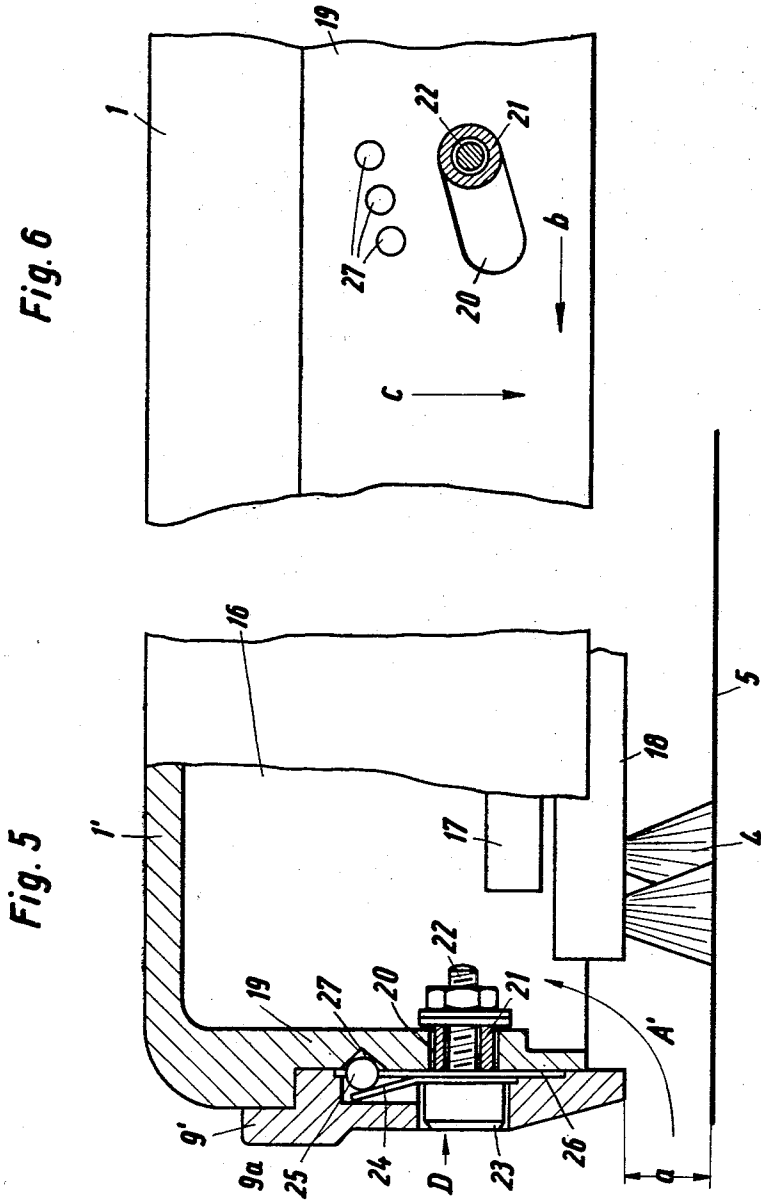


Fig. 6

Fig. 5

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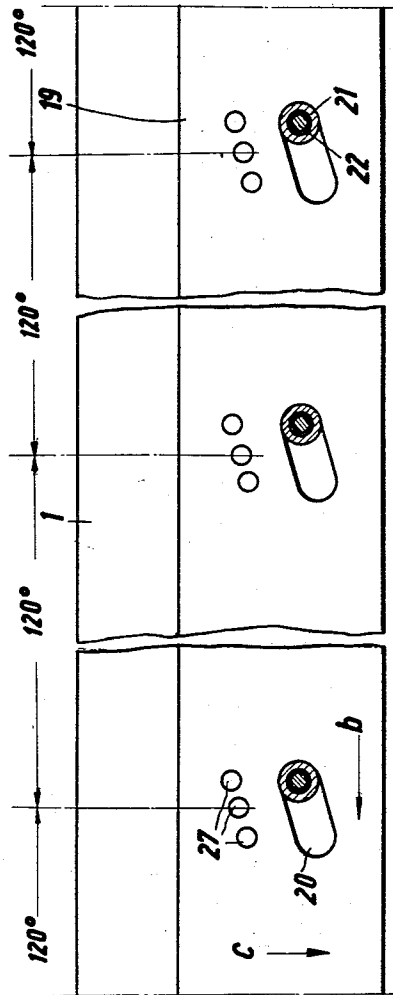
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4 Sheets-Sheet 4

Fig. 7



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1

3,148,397

**DEVICE FOR ADJUSTING THE PROTECTIVE RUBBER STRIP OF WAXING MACHINES**

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M 51,638

4 Claims. (Cl. 15—49)

The present invention relates to waxing machines, and, more particularly, concerns the protective rubber strip around waxing machines.

It is a well known fact that with increasing wear of the brushes of a waxing machine, also the width of the gap between the lower edge of the protective rubber strip and the surface to be cleaned, will decrease. If the said distance is too great, the cross section of the flow of the suction air will be too great when the waxing machine is operated as suction waxer, so that the air velocity will drop below the extent necessary for vacuum cleaning.

Furthermore, if the distance between the said protective rubber strip and the floor is too great and a wet cleaning is effected, the drawback may be encountered that the washing liquid will, due to the rotative movement of the brushes, be sprayed around in an annoying manner.

If, on the other hand, the said distance is adjusted small from the very start, with increasing wear of the brushes the time is fast approaching at which the lower edge of the protective rubber strip will drag along the floor and will leave marks.

Waxing machines of the type involved are known in which the protective rubber strip may be adjusted as to its distance from the floor in order at least to a certain extent to counter the above-mentioned defects. These heretofore known devices are, however, rather difficult for an unskilled person to adjust in such a way that the protective rubber strip will assume the proper position as to height. One of the factors which affect the easy adjustability of the rubber strip is the high friction between the elastic material of the rubber strip and the respective adjacent surface of the machine. On the other hand, a certain friction between said machine surface and the rubber strip is necessary in order to prevent an unintentional self-adjustment of the rubber strip.

It is, therefore, an object of the present invention to provide an arrangement for adjusting the protective strip around a waxing machine, which will overcome the above-mentioned drawbacks.

It is another object of this invention to provide improved holding means for holding the protective strip on the waxing machine while simultaneously permitting a safe step-wise adjustment of said strip.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

FIGURE 1 illustrates a disc waxing machine partly in view and partly in section, which is provided with a protective strip adjusting arrangement according to the present invention;

FIGURE 2 illustrates on a somewhat larger scale than FIGURE 1 that portion thereof which is encircled by a dot-dash line;

FIGURE 3 is a section taken along the line III—III of FIGURE 2;

FIGURE 4 shows the same section as is illustrated in FIGURE 3 but on a considerably larger scale than the latter;

2

FIGURE 5 represents a partial section through a modified guiding and locking device for the protective rubber strip;

FIGURE 6 illustrates partly in view and partly in section a portion of a modified lower housing section as seen in the direction of the arrow D of FIGURE 5 while the protective rubber strip is removed;

FIGURE 7 is a developed view of the exterior of the housing of the FIGURES 5 and 6 modification.

The arrangement according to the present invention is characterized primarily in that the lower marginal portion of the housing of the waxer is provided with holding means by which the adjustable protective rubber ring is held at the respective desired height, while insert means, preferably steel band insert means, are provided for imparting upon the rubber ring a certain stiffness for preventing any unintentional distortion of the circumference of the protective strip in axial direction of the housing.

According to one embodiment of the present invention, the said holding means are formed by balls which are held in cages connected to the inside of the protective ring, in such a way that they protrude in a resilient manner and will, during the displacement of the protective ring, simultaneously serve as sliding aid. These ball cages may be formed, for instance, by an annular sheet metal part provided with passages of a smaller diameter than the diameter of the respective balls. Locking springs are provided for pressing the balls into depressions in the housing wall. The said depressions may consist, for instance, of grooves along the lower marginal housing portion.

However, if desired, according to a modification, the protective strip may be connected to the housing of the waxing machine by means of one or more screw bolts which extend through bores in the protective ring and adjustably extend through slots in the lower marginal portion of the machine housing. In the respective adjusted position of the protective strip, balls engage corresponding recesses while the firm connection of the protective strip to the housing is assured by said bolts. Preferably, the said locking bolts are spring-biased by a leaf spring for urging the balls into their respective recesses. Advantageously, in this instance, a plurality of locking means is provided with the recesses offset with regard to each other in conformity with guiding slots uniformly distributed over the circumference of the housing of the waxer.

Referring now to the drawings in detail and FIGS. 1 to 4 thereof in particular, the waxing machine shown therein comprises a housing 1 adapted to be handled in a manner known per se by means of a guiding bar 3. The waxing machine is furthermore, in a manner known per se, provided with brushes 4 for waxing the floor 5, said brushes being adapted to be rotated by means of an electric motor (not shown) which is arranged in the interior of housing 1.

If desired, the housing 1 may contain a suction blower for drawing air into the machine along the arrow A to such an extent that the air suction at a corresponding high speed will be able to draw in dust particles within the gap a. The drawn-in air and dust are, in a manner known per se, conveyed into a filter sack 6 serving as dust-bag. The lower cylindrical portion 7 of the waxing machine housing is provided with substantially evenly spaced horizontal grooves 8. A protective rubber ring or strip 9 reinforced by a steel band 26 firmly engages the cylindrical portion 7 of the waxing machine. The said rubber strip 9 is in a manner known per se designed as a closed ring or as an extruded strip fused at its ends to a closed ring in any suitable manner. Connected to the inner circumferential surface of said ring along pe-

ripheral lines extending in axial direction to the housing there are a plurality of means 10. The connection of these means is effected by rivets 11 and the number of said means depends on the circumferential size of the machine. These means or devices 10 substantially comprise a U-shaped member 12 provided with a number of passages 13 the diameter of which is such as to prevent balls 14 from falling therethrough while permitting said balls under the influence of a leaf-spring 15 to protrude beyond the outer surface of the adjacent portion 12. The balls 14 are adapted to engage the grooves 8 of the housing.

If it is desired to adjust the rubber ring 9 as to height, this may be effected by pressing upon the said rubber ring 9 in the direction of the arrow B (FIG. 1) to thereby overcome the thrust of the leaf-spring 15 and thus cause the balls 14 to leave the respective groove 8 engaged thereby. The balls will then slide along the outer wall of the cylinder housing portion 7 considerably easier than would be the case if the adjustment of the rubber ring would have to be effected under full frictional engagement of the rubber ring with the housing. A braking effect by engagement of the elastic rubber ring 9 with the rotating balls will be avoided by the fact that the leafspring 15 will prevent a direct engagement of the balls by the rubber ring.

The employment of the two rivets 11 will assure the location of the locking device 10 parallel to a surface line extending in axial direction of the housing on the inner surface of the rubber ring 9 even though the space on the rubber ring for the locking device is not shaped in the form of a nest but is circumferential, as will be evident from FIG. 3. In view of this inner relief extending around the entire circumference, a cumbersome braking tendency is prevented which would act against an intended adjustment and which could occur if the rubber elastic ring 9 would to a greater extent engage the cylindrical portion 7. Furthermore, a steel band 26 is located in said relief which band counteracts any tendency of the rubber ring to distort in axial direction. The presence of the locking grooves 8 will, when said grooves are properly spaced from each other, assure a sufficiently fine adjustment as to height of the rubber ring while the parallel adjustment along the entire circumference will likewise be possible without difficulties.

Referring now to the embodiments of FIGS. 5 and 6, the housing of the waxer is designated with the reference numeral 1'. The chamber 16 confined by said housing 1' is connected with a suction passage (not shown) of a blower. In conformity with the customary construction, said chamber 16 also houses the rotating brush-carrying discs 18 which are driven by the driving disc 17. The brushes are adapted in the usual manner to engage the floor 5 while simultaneously an air suction is created in the direction of the arrow A'. The rubber ring 9' together with the floor 5 confines a gap *a*. This gap decreases with increasing wear of the brushes 4. However, in order to prevent a premature dragging of the lower edge of rubber ring 9' on the floor, it is customary, with protective rubber rings of the heretofore known type, to keep the gap *a* as wide as possible, which fact, however, interferes with the suction effect in view of a decrease in the air velocity.

In order to remedy this drawback, the circumferential marginal portion 19 of housing 1' is at least at one, preferably at a plurality of locations, provided with cutouts or cutout sections 20 along a spiral line. These cutouts are shown developed in FIGURE 7. It is in these cutouts or cutout sections that bolts 22 are guided by means of spacer bushings 21. The bolts 22 are by means of a washer and nut secured against tilting and dropping out. The said bolts have a head 22a of a larger diameter than the shank of the bolt and the diameter of bushing 21. The said bolt head 22 is located in a corresponding circular cutout 23 of the protective rubber

ring 9'. In this way, a positive connection of the rubber ring and also of the bolts 22 with the housing 1' is obtained. Arranged below the head 22a of bolt 22 is a leaf-spring 24 in such a manner that it will not turn. The said leaf-spring 24 acts upon a ball 25. Interposed between the rubber ring 9' and the outer circumferential marginal portion of the housing 1' is a steel band 26 which likewise extends all the way around and to which bolt 22 is firmly clamped through the intervention of the spacer roll 21. The steel band 26 serves the double purpose of locating the bolts 22 in case a plurality of bolts 22 is employed while the bolts are correspondingly circumferentially spaced from each other over the circumference of the marginal portion 19. Another purpose of the steel band 26 consists in improving the sliding properties of the protective strip 9' on housing portion 19 and also in preventing the balls 25 from dropping out during the installation on the waxing machine. Still another purpose of the steel band 26 consists in preventing an axial distortion of the rubber ring along the circumferential portion thereof. The leaf-spring 24 brings about a locking of the balls 25 in recesses 27 on the housing.

The arrow B in FIG. 6 indicates the adjusting possibility of the elements 9', 21, 22, 24 and 25 from the position shown in FIG. 6. As will be evident therefrom, such an adjustment automatically brings about an adjustment as to height of the rubber ring 9' in the direction of the arrow C, which in turn results in reducing the gap *a*.

Preferably, a plurality of slots 20 is uniformly distributed over the circumference of the housing, as shown in FIGURE 7. Correspondingly, a plurality of possibilities of locating locking means 27, also shown in FIGURE 7, may be provided in conformity with the respective individual recesses 20. In such instance, the locking possibilities for a second passage 20 may be so arranged that alternately the recesses of a different row become effective so that a finer adjustment will be possible. The more locking devices or arrangements are provided, the finer and more uniform the adjustment can be effected. One of the bolts 22 simultaneously serves for holding the ends of the steel band 26 in abutting engagement. The upper marginal portion 9a of the rubber ring 9' will be held in firm engagement with the housing 1' to the desired extent by the elasticity of the rubber ring.

It is, of course, to be understood that the present invention is, by no means, limited to the particular constructions shown in the drawing, but also comprises any modifications within the scope of the appended claims.

What we claim is:

1. In a waxing machine: a housing having its lower peripheral portion provided with spaced circumferentially inclined slot means, an annular rubber member arranged on the lower peripheral portion of said housing and being provided with holes therethrough registering with said slot means, said annular rubber member having its inner peripheral surface provided with annular recess means thereby reducing the area of engagement of said rubber member with said housing, circumferentially spaced screw bolt means extending through said passage means and said holes and operable to permit circumferential and simultaneous axial adjustment of said annular rubber member relative to said housing while retaining said rubber member on said housing, and detent means provided between said rubber member and said housing for releasably holding said rubber member in predetermined adjusted positions relative to said housing.

2. A waxing machine according to claim 1, in which said detent means comprises spaced recesses in said housing and also comprises ball means carried by the rubber member resiliently urged toward said recesses.

3. In a waxing machine: a housing having its lower peripheral portion provided with spaced circumferentially

5

6

inclined slot means, an annular rubber member arranged on the lower peripheral portion of said housing and being provided with passage holes therethrough registering with said slot means, said annular member having its inner peripheral surface provided with annular recess means thereby reducing the area of engagement of said rubber member with said housing, the outer peripheral housing surface adjacent said recess means also being provided with space depressions, screw bolt means extending through said holes and said slot means and operable to permit circumferential and simultaneous axial adjustment of said annular rubber member relative to said housing and to support said rubber member on said housing, ball means arranged within said recess means, and leaf spring means interposed between said rubber member and said housing and yieldably engaging said ball means for urging the same in a radial inward direction with regard to said housing to cause said ball means to engage said depressions.

4. In a waxing machine: a housing having its lower peripheral portion provided with spaced circumferentially inclined slot means, an annular rubber member arranged on the lower peripheral portion of said housing and being provided with holes therethrough registering with said slot means, said annular rubber member having its inner peripheral surface provided with annular recess means thereby reducing the area of engagement of said rubber member with said housing, screw bolt means

provided with a head and extending through said holes and said slot means and operable to permit circumferential and simultaneous axial adjustment of said annular rubber member relative to said housing and to support said rubber member on said housing, said heads of the bolt means being in said holes, circular sheet metal means interposed between the heads of said screw bolt means and the outer peripheral surface of said housing and reinforcing said rubber member against distortion in axial direction, and detent means provided between said rubber member and said housing for releasably holding said rubber member in predetermined adjusted positions relative to said housing.

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