July 29, 1958 J. Z. NISHIOKA 2,844,834

POLISHING DEVICE

Filed Nov. 7, 1956 2 Sheets-Sheet 1

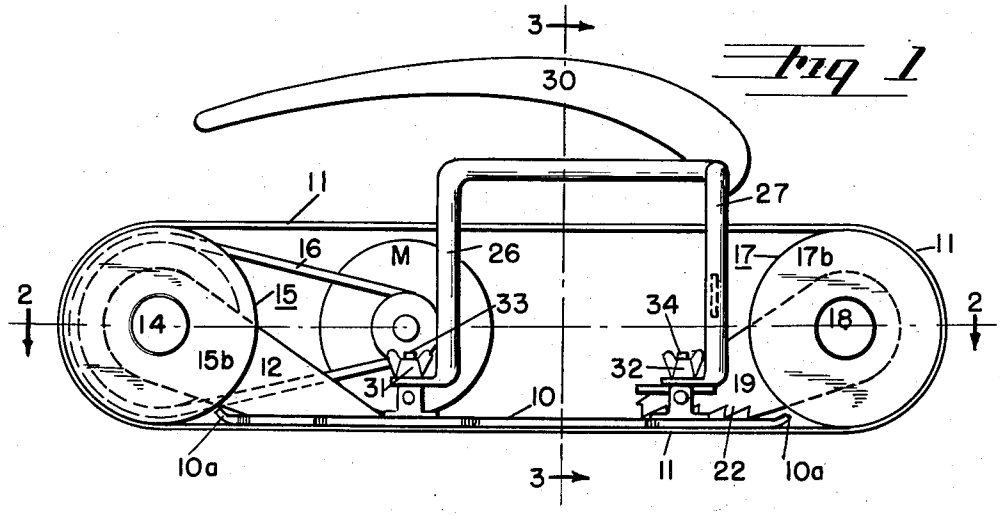


fig 1

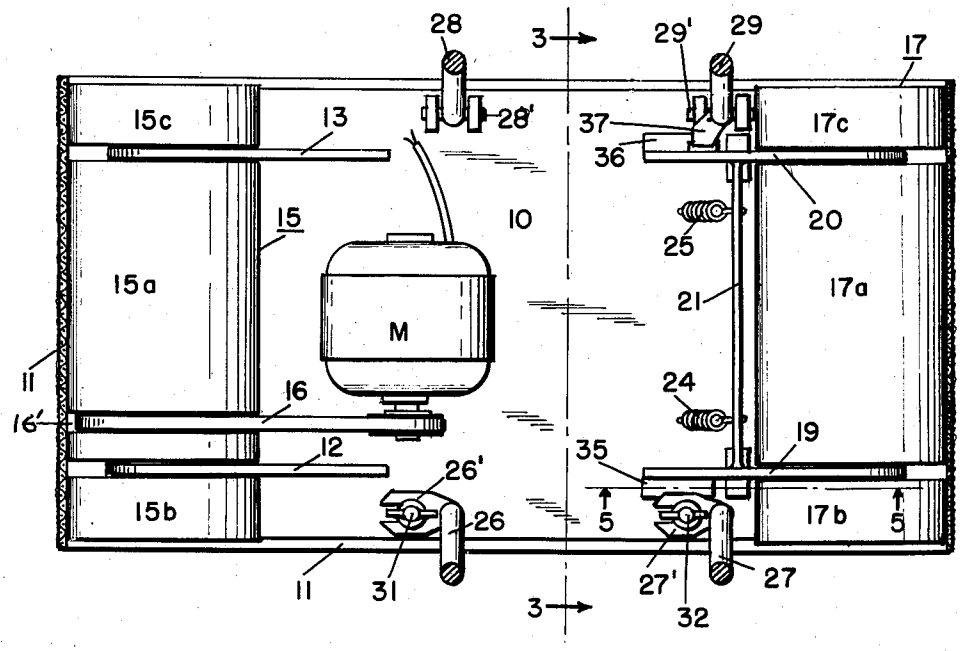


fig 2

INVENTOR.

JIM Z. NISHIOKA

BY

F. R. Fenlon

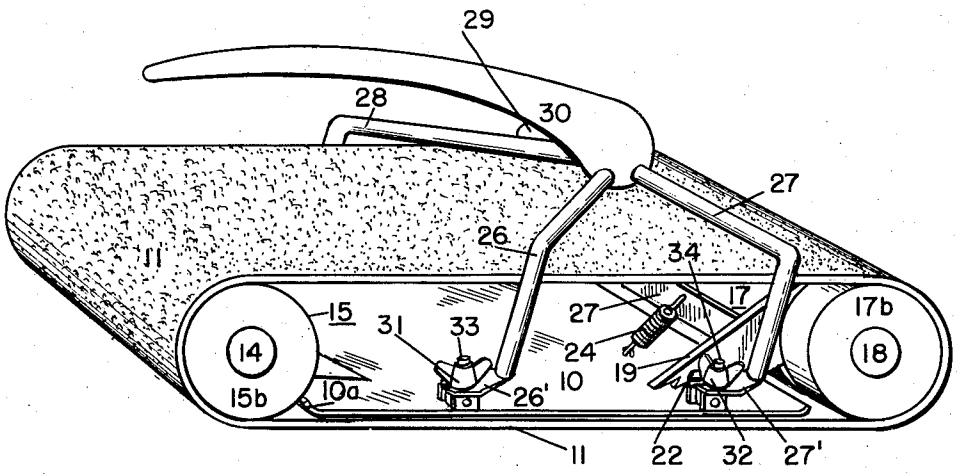
ATTORNEY

July 29, 1958 J. Z. NISHIOKA 2,844,834

POLISHING DEVICE

Filed Nov. 7, 1956 2 Sheets-Sheet 2

Fig 4



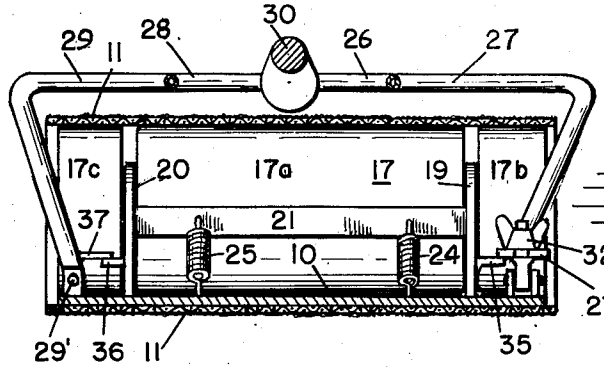
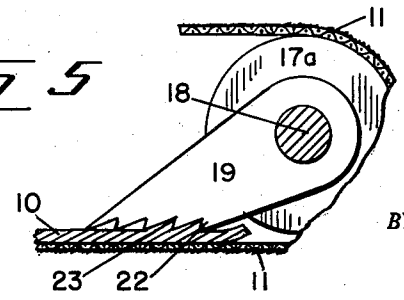


Fig 3

Fig 5



INVENTOR.
JIM Z. NISHIOKA
BY
F. R. Geisler.
ATTORNEY

United States Patent Office 2,844,834 Patented July 29, 1958

2,844,834

POLISHING DEVICE

Jim Z. Nishioka, John Day, Oreg.

Application November 7, 1956, Serial No. 624,187

4 Claims. (Cl. 15—99)

This invention relates in general to portable, power-driven polishers, and especially to small, electrically-operated surface polishers adapted to be held in the hand of the operator and conveniently usable particularly in the polishing of automobiles, as well as for polishing such articles as furniture and the like which have a surface suitable for such polishing.

More specifically, this invention relates to the type of power-driven polishers in which an endless driven belt or band of a polishing element is employed instead of the familiar rotary brush or disc polisher.

One of the objects of the present invention is to provide an improved power-driven polisher of the type above indicated which will be extremely easy to handle and operate and which can be used in small surface spaces and without the likelihood of any part of the polisher, other than the polishing belt, coming into contact with any portion of the surface which is being polished.

A related object is to provide an improved polisher in which the operating mechanism, including even the driving motor, will be completely encompassed by the endless polishing belt and in which only a minimum amount of metal, limited to that necessary for providing and supporting a hand hold, will extend outside of the space within the path of the polishing belt.

Another object of the invention is to provide an improved polisher in which the endless polishing belt can quickly and easily be replaced and also in which the tension on the polishing belt can be easily adjusted, as desired, or when the stretching of the belt with use makes such an adjustment necessary.

A further object of the invention is to provide an improved power-driven polisher which will be light in weight and simple and practical in construction, and also which will be relatively inexpensive to manufacture.

The manner in which these objects and other advantages are attained with the polisher of the present invention, and the novel features of construction, combination and arrangement of parts of which the invention consists, will be briefly described and explained with reference to the accompanying drawings.

In the drawings:

Figure 1 is a side elevation of the device.

Figure 2 is a plan section on line 2—2 of Figure 1;

Figure 3 is a transverse section on line 3—3 of Figures 1 and 2;

Figure 4 is a perspective view of the device; and

Figure 5 is a fragmentary sectional elevation on line 5—5 of Figure 2.

The entire mechanism for the device is mounted on a base plate **10**, the width of which is slightly less than the width of the endless polishing belt **11**, and which base plate is curved upwardly at its ends as shown as **10***a* in Figures 1 and 4. A pair of identical and parallel brackets **12** and **13** are rigidly secured to the base plate **10** in the relative position indicated in Figure 2 and extend obliquely upwardly from the base plate **10**. These brackets rotatably support the shaft **14** (Figures 1 and 4) for the composite roller **15** (Figure 2) composed of a center section **15***a* and two opposite end sections, **15***b* and **15***c*, all rigidly secured on the common roller shaft **14**. The spacing between the center section **15***a* and the two end sections **15***b* and **15***c* is sufficient to allow clearance for the roller brackets **12** and **13**, and this arrangement avoids the use of brackets at the outer ends of the composite roller **15**, a feature which will be referred to later.

An electric motor M is secured on the base plate **10** and is connected with and drives the roller **15** by means of a small V-belt **16**, which is received in an annular groove **16'** provided in the center section **15***a* of the roller in order that this driving belt **16** will be positioned within the cylindrical outer surface of the roller at all times. Thus neither the roller brackets **12** and **13** nor the driving belt **16** will ever be in contact with the endless polishing belt **11**.

A second composite roller **17**, similarly composed of a center section **17***a* and end sections **17***b* and **17***c*, secured on the roller shaft **18**, is similarly mounted on a pair of identical brackets **19** and **20**. These two brackets, however, are adjustably mounted on the base plate **10** and are rigidly connected together by the common cross bar **21**. These brackets **19** and **20** are provided with teeth (as shown best at **22** in Figure 5) along their bottom edges, which teeth engage a pair of cooperating rows of teeth **23** provided on the base plate **10**. A pair of springs **24** and **25** have their lower ends attached to the base plate **10** and their upper ends attached to the cross bar **21**. These springs are so positioned that they slope obliquely upwardly from the base plate **10** and are mounted under sufficient tension to hold the pair of brackets **19** and **20** down on the base plate with the cooperating rows of teeth engaged, but the springs also enable the position of the composite roller **17** to be adjusted to a limited extent outwardly or inwardly with respect to the adjacent end of the base plate **10**.

The two composite rollers **15** and **17** are identical in overall size, and, as apparent from Figures 1 and 4, provide a mounting for the endless polishing belt **11**. Also, as apparent, the tension of this polishing belt **11** can be adjusted by manually adjusting the position of the roller **17**. Preferably, although not necessarily, the roller **17** may be made of softer material than the other motor-driven roller **15** to give an added cushioning effect and to aid further in maintaining the endless polishing belt **11** at an even tension. The rollers **15** and **17** may be made of any suitable material such as rubber, cork, wood or various composition materials, and can even be made of metal although a softer material than metal is generally to be preferred.

A handle frame assembly consists of two pairs of legs **26**, **27** and **28**, **29**, located respectively on opposite sides of the device, which legs are attached to the base plate **10** at their bottom ends and which extend outwardly and upwardly so as to clear the side edges of the top stretch of the polishing belt **11**. These legs converge above the polishing belt, so as to provide a rigid support mounting for the handle **30** by which the entire device is held and moved about by the operator.

The legs **28** and **29** of the handle frame assembly are hingedly mounted on the base plate **10** by means of hinge pins **28'** and **29'** (Figure 2) which are mounted in pairs of lugs secured to the base plate **10** and located a short distance in from the lateral edge of the base plate. The bottom ends of the legs **26** and **27** terminate in bifurcated flanges **26'** and **27'** respectively which are adapted for engagement by wing nuts **31** and **32** carried on bolts **33** and **34**, which bolts in turn are pivotly mounted in pairs of lugs secured to the base plate **10**. Thus the loosening of the wing nuts **31** and **32** enables the nuts and bolts to

be moved out of engagement with the bottom flanges **26'** and **27'** and releases the legs **26** and **27** from their connection with the base plate **10** so that the entire handle frame assembly can be swung upwardly and to one side on the hinge pins **28'** and **29'**. This is done whenever the polishing belt **11** requires replacement or adjustment.

While the springs **24** and **25** act to hold the brackets **19** and **20** for the roller **17** down against the base plate **10**, with the bracket teeth **22** in adjusted engagement with the teeth **23** on the base plate **10** as desired, the operation of the device, and especially the pressing of that portion of the device, where the roller **17** is located, into contact with the surface to be polished, would cause the roller **17** to move up or down sufficiently to unseat the brackets **19** and **20** on the base plate **10** unless, by some means, the brackets were firmly locked in place. Consequently in order to hold the brackets **19** and **20** and therewith the roller **17** firmly in place at all times while the device is in use, a pair of outwardly extending engageable lugs, **35** and **36** (Figures 2 and 3) are secured on the outside faces of the brackets **19** and **20** respectively a short distance above the bottom edges of the brackets. The lug **35** on the bracket **19** extends out far enough and is so positioned as to be engaged by the flange **27'** at the bottom of the leg **27** when the flange **27'** is secured by the wing nut **32**. The corresponding lug **36** on the bracket **20** is similarly engaged by a finger **37** mounted near the bottom of the leg **29**. Thus when the handle frame assembly is secured in position, as illustrated in the drawings, the brackets **19** and **20** will be locked in place where they have been set, but when the handle frame assembly is released and swung over on the hinge pins **28'** and **29'**, the brackets **19** and **20** can then have their positions manually adjusted if this is desired.

The over-all length of the rollers **15** and **17** is approximately equal to the width of the base plate **10**. Preferably, however, the polishing belt **11** is wider than the base plate **10** so that it will extend a slight distance beyond the side edges of the base plate and extend slightly over the ends of the rollers, as shown in Figures 2 and 3, and the belt **11** could be so made as to lap over the edges of the roller and base plate. Having the belt **11** extend beyond the ends of the rollers and beyond the side edges of the base plate prevents any possibility of the edges of the base plate or the edges at the ends of the rollers from coming into direct contact with the surface which is being polished. Otherwise, under certain circumstances, such contact might cause some marring of the polished surface. The edges of the rollers can also be slightly rounded to avoid the possibility of the belt wearing where it extends beyond and over the ends of the rollers.

As apparent, the only metal which can contact the surface which is being polished would be the legs of the handle frame assembly, but since these extend out beyond the sides of the polisher only at some distance above the bottom of the polisher, there would be no likelihood of this occurring. This fact also enables the end portions of the polisher to be used for polishing curved surfaces and grooved surfaces, a feature which is generally lacking in other power-driven polishers of the endless polishing belt type.

As previously mentioned, the rollers **15** and **17** may be made of various suitable materials in preference to metal. They may, however, be made of metal and provided with a relatively soft surfacing to give a soft but firm base for the polishing belt at both ends of the device. Similarly, the base plate **10** could be surfaced on the bottom side with a softer surfacing, for example, nylon or woven glass, which would also provide a slick surface for the polishing belt to slide over while producing a softer though firm polishing base for the device.

Other minor modifications might be made in the construction of the polisher described without departing from the principle of the invention, but the particular form in which the polisher is illustrated in the drawings is considered to be the preferred form for the carrying out of the invention and makes possible the inclusion of all the mechanism of the device within the space encompassed by the polishing belt, which is an important feature of the invention.

I claim:

1. In a polishing device of the character described, a substantially rectangular base member, a pair of brackets secured near one end of said base member and located inwardly from the side edges respectively of said base member, a roller rotatably mounted on said brackets, an electric motor mounted on said base member, a driving belt connecting said roller with said motor, a second pair of brackets adjustably mounted near the opposite end of said base member, cooperating engaging elements carried by said second pair of brackets and said base member for setting said second pair of brackets in desired adjustable position, a second roller rotatably mounted on said second pair of brackets, an endless polishing belt extending around said rollers and passing beneath said base member and encompassing the space in which said motor and said pairs of brackets are located, a handle assembly attached to said base member on opposite sides and extending around and above the side edges of the upper stretch of said polishing belt and terminating in a handle centrally spaced above said polishing belt, said handle assembly hinged to said base member on one side edge of said base member and removably secured to said base member on the opposite side edge of said base member, and cooperating engaging means on said handle assembly and on said second pair of brackets holding said second pair of brackets firmly against said base member when said handle assembly is secured in normal position on said device.

2. In a power-driven polishing device, a substantially rectangular base member, a pair of brackets secured near one end of said base member and located inwardly from the side edges respectively of said base member, a roller rotatably mounted on said brackets, said roller having an intermediate portion positioned between said brackets and end portions located on the outside of said brackets respectively, an electric motor mounted on said base member, a driving belt connecting said roller with said motor, a second pair of brackets adjustably mounted near the opposite end of said base member, cooperating engaging elements carried by said second pair of brackets and said base member for setting said second pair of brackets in desired adjusted position, a second roller similar to said first mentioned roller rotatably mounted on said second pair of brackets, an endless polishing belt extending around said rollers and passing along over the bottom face of said base member and encompassing the space in which said motor and said pairs of brackets are located, a handle assembly attached to said base member, a pair of legs on said handle assembly hinged to said base member on one side edge of said base member, an opposite pair of legs on said handle assembly removably secured to said base member on the opposite side of said base member, said pairs of legs extending upwardly and outwardly over the side edges of the upper stretch of said polishing belt and meeting in a handle spaced above the top of said upper stretch of said polishing belt, and cooperating engaging means on said second pair of brackets and on the adjacent legs of said handle assembly holding said second pair of brackets firmly against said base member when said handle assembly is secured in normal position on said device.

3. A power-driven polishing device including a substantially rectangular base plate, a roller positioned above and beyond one end of said base plate, means for rotatably supporting said roller in fixed position with respect to said base plate, an electric motor mounted on said base plate, drive means connecting said roller with said motor, a second roller positioned similarly above and beyond the opposite end of said base plate, means for rotatably supporting the second roller in ad-

justable position with respect to said base plate and said first mentioned roller, an endless polishing belt extending around said rollers and passing over the bottom face of said base plate and encompassing the space in which said motor is located, and a handle assembly attached to said base plate on opposite sides and extending around and above the side edges of the upper stretch of said polishing belt and terminating in a handle centrally spaced above said polishing belt, said handle assembly hinged to said base plate a slight distance inwardly from one side edge of said base plate and removably secured to said base plate a slight distance inwardly from the opposite side edge of said base plate, the width of said polishing belt being not less than the width of said base plate and over-all length of said rollers.

4. A power-driven polishing device including an elongated substantially rectangular base plate, a pair of brackets secured near one end of said base plate and located inwardly from the side edges respectively of said base plate, a roller rotatably mounted on said brackets, said roller having an intermediate portion positioned between said brackets and end portions located on the outside of said brackets respectively, an electric motor mounted on said base plate, a driving belt connecting said roller with said motor, a second pair of brackets adjustably mounted near the opposite end of said base plate, cooperating engaging elements carried by said second pair of brackets and said base plate for setting said second pair of brackets in desired adjusted position, spring means resiliently holding said second pair of

brackets on said base plate, a second roller similar to said first mentioned roller rotatably mounted on said second pair of brackets, said second roller similarly having an intermediate portion between said second pair of brackets and end portions located on the outside of said second pair of brackets respectively, an endless polishing belt extending around said rollers and passing along over the bottom face of said base plate and encompassing the space in which said motor and said pairs of brackets are located, a handle assembly attached to said base plate, a pair of legs on said handle assembly hinged to said base plate on one side edge of said base plate, an opposite pair of legs on said handle assembly removably secured to said base plate on the opposite side edge of said base plate, said pairs of legs extending upwardly and outwardly over the side edges of the upper stretch of said polishing belt and meeting in a handle centrally positioned and spaced above the top of said upper stretch of said polishing belt, and cooperating engaging means on said second pair of brackets and on the adjacent legs of said handle assembly holding said second pair of brackets firmly against said base plate when said handle assembly is secured in normal position on said device.

References Cited in the file of this patent

UNITED STATES PATENTS

1,503,048	Huber	July 29, 1924
1,882,270	Beach	Oct. 11, 1932