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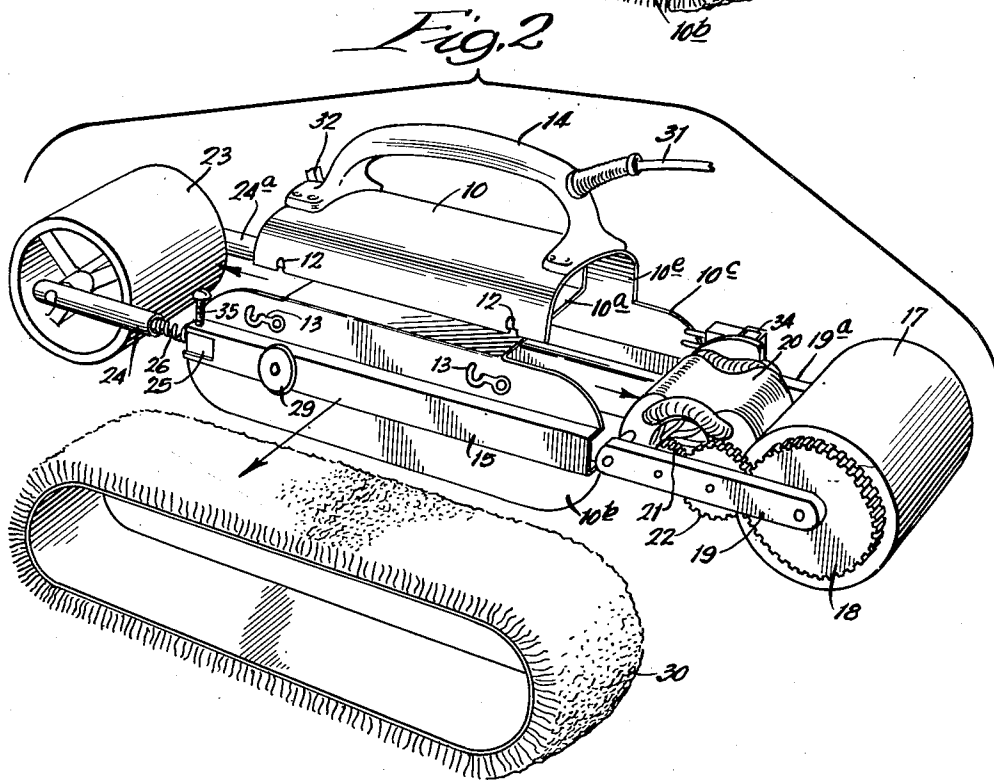
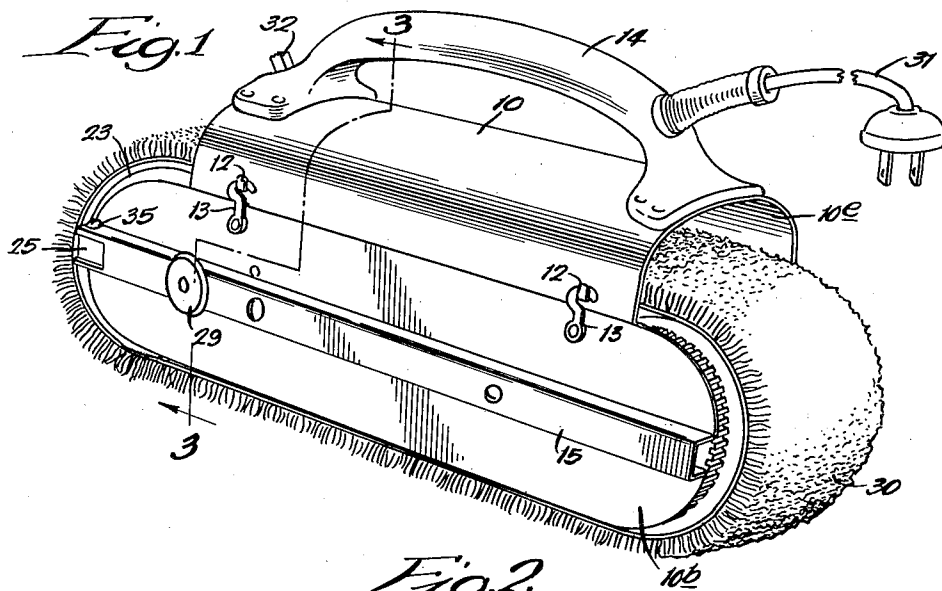
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MACHINE FOR BUFFING, SANDING AND THE LIKE

Filed Sept. 30, 1949

2 SHEETS—SHEET 1



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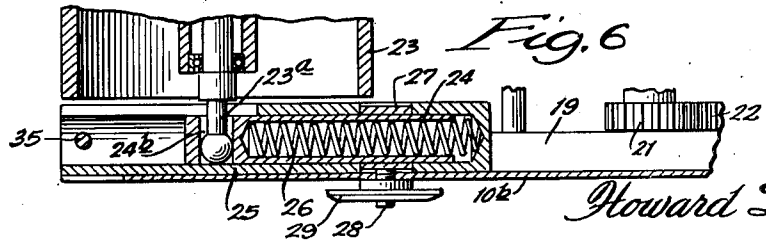
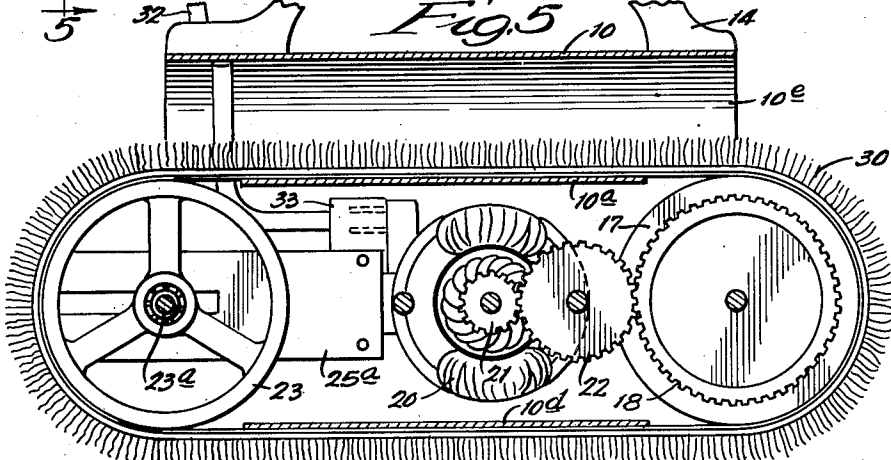
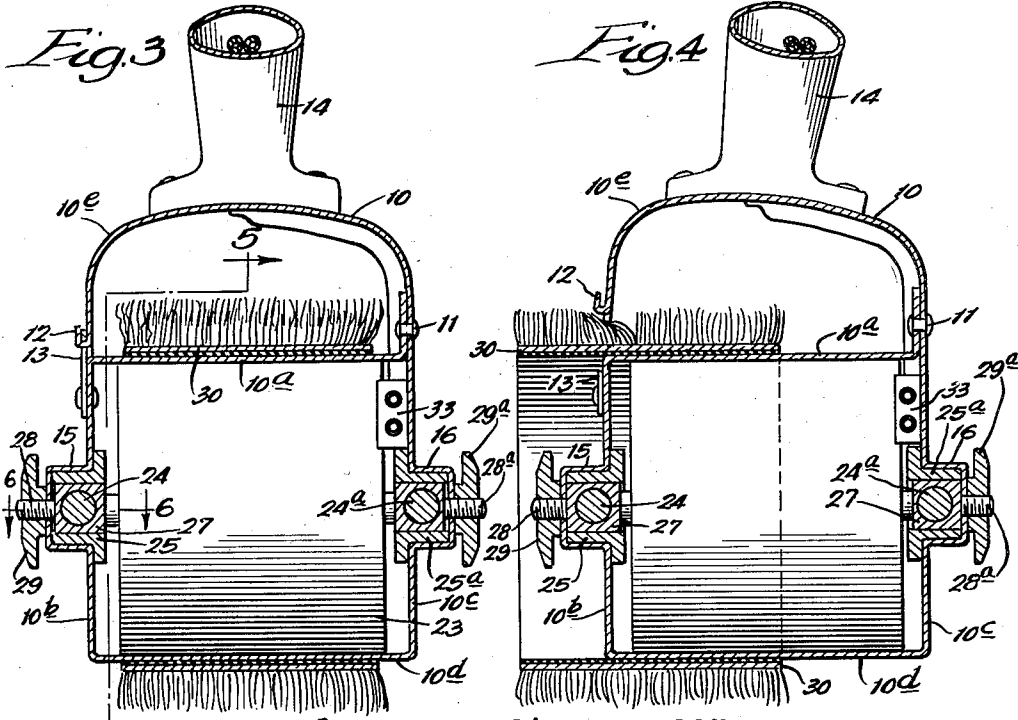
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MACHINE FOR BUFFING, SANDING AND THE LIKE

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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

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MACHINE FOR BUFFING, SANDING, AND THE LIKE

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9 Claims. (Cl. 51-170)

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This invention relates to a power-driven buffing or sanding machine; in particular, it concerns a greatly improved power-driven buffer or sander having important and novel structural features which contribute greatly to ease of manufacture and repair.

Portable buffers or sanders, usually provided with a small, self-contained electric motor, have been in quite general use for some years. In various forms and models, such machines have been used for smoothing surfaces by sanding, for finishing furniture, automobile bodies, and other objects by buffing a wax finish, for polishing shoes, and many other functions in which a rapid buffing or abrasive action was required.

The prior-art machines of this sort, however, have had serious practical shortcomings which have kept their price high and their range of application limited. For one thing, they have in general been very complicated mechanically and thus very difficult to assemble and to repair. There has been, in general, no convenient and rapid means of removing a particular belt and replacing it with another belt without the use of tools. This fact has, as a practical matter, prevented any widespread sale of such devices to amateur woodworking enthusiasts and other non-professional artisans.

I have developed an improved power buffing or sanding machine in which the shortcomings of the prior-art structures are overcome and a much higher degree of flexibility and versatility is achieved. Moreover, my invention embodies certain novel structural features which make the machine economical to construct, easy to disassemble for lubrication or repair, and particularly well adapted for easy and rapid substitution of belts without need for tools.

The conspicuous advantage of having the belt readily replaceable is that a single machine may be thus employed for a great variety of uses. Equipped with a belt having a natural or artificial fur surface, the machine can be used as a shoe polisher or as a machine for finishing waxed surfaces on furniture, floors, etc. Equipped with a sanding belt of appropriate fineness, the machine may be used in woodworking and carpentry for sanding down wood surfaces. Metal polishing could equally well be accomplished with the same machine by the substitution of an appropriate emery belt.

Accordingly, one of the major objects of my invention is to provide a portable power buffer or sanding machine in which novel and effective means are employed for easy and rapid replacement of the belt without the aid of tools.

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Another important object of my invention is to provide a portable power buffer or sanding machine which can be completely disassembled into a group of compact, readily accessible sub-assembly units within a matter of seconds, thus facilitating repair, lubrication, and other servicing operations.

Still another object of my invention is to provide a portable power buffer or sanding machine wherein the casing is formed from a single sheet metal stamping and is provided with longitudinal recesses or track members into which the sub-assembly units may slide to form the completed machine, thus materially adding to ease and economy of manufacture.

A still further object of my invention is to provide a portable buffer or sanding machine in which an endless belt is normally kept under tension by a spring-based idler roller which can at will be locked in a position which relieves the belt from tension, thus facilitating interchange of one belt for another.

Other objects and advantages of my invention will appear as the specification proceeds.

An illustrative embodiment of my invention is shown in the accompanying drawing, of which Figure 1 is a perspective view of a machine embodying my invention, it being equipped, by way of example, with a fur-surfaced belt adapted for buffing operations; Fig. 2, an exploded perspective view of the Fig. 1 machine as it appears when the belt has been removed by lateral movement and the sub-assembly units have been allowed to slide out of the casing; Fig. 3, a transverse sectional view taken along the line 3-3 of Fig. 1; Fig. 4, a sectional view along the same section line as Fig. 3 but showing the machine with the casing cover released and the belt partially removed; Fig. 5, a longitudinal sectional view of the Fig. 1 embodiment, the section being taken along the line 5-5 of Fig. 3; and Fig. 6, a fragmentary sectional view along the line 6-6 of Fig. 3 showing in detail the novel structure by which the belt can be placed under tension or relieved of tension at the operator's will.

As may be observed from Figs. 1, 3, and 4, the casing 10 is a single sheet metal stamping. It is bent, as shown in Figs. 3 and 4, so as to provide a main housing of substantially square cross section and having a top wall 10a, side walls 10b and 10c respectively, and a bottom wall 10d. The terminal edge of top wall 10a is bent to form a flange which may be bolted or riveted, as by rivets 11, to side wall 10c. An upward extension 10e of side wall 10c is bent over top wall 10a and is provided with stamped-out hooks 12 adapted for

co-operation with pivoted hook members 13 on side wall 10b for the purpose of holding cover portion 10e in closed position.

Cover portion 10e, in the illustrated embodiment, is provided with a handle 14, riveted or bolted thereto.

Side wall 10b is modified by an outwardly projecting longitudinal recess or track member 15, extending the entire length of the side wall 10b and being open at each end as best shown in Figs. 1 and 2. Track member 15 is oriented parallel to bottom wall 10d, so that when the casing is resting on bottom wall 10d in a horizontal position, track member 15 is also horizontal.

Side wall 10c is equipped with a corresponding track member 16 which is in every respect symmetrical in shape and orientation to track member 15 on the opposite side wall 10b.

A driven roller 17 is provided with a coaxially mounted driving gear 18 keyed thereto. Roller 17 and driving gear 18 are journaled into bearings provided in side rails 19 and 19a, which are adapted to slide within track members 15 and 16 respectively. On the forward portion of side rails 19 and 19a an electric motor 20 is mounted, gears 21 and 22 being supported in one of the side rails and operative to form a gear train directly coupling the shaft of motor 20 to main drive gear 18.

As may be seen from Fig. 2, side rails 19 and 19a, electric motor 20, driven roller 17, and the gear train combine to form a compact sub-assembly which slides into casing 10 in track members 15 and 16. When electrical current is supplied to motor 20, roller 17 is rotated.

An idler roller 23 is journaled into bearings 24b provided in tubular support members 24 and 24a, the axles 23a being terminated in generally ball-shaped members adapted to ride within bearings 24b while leaving a limited axle play available for belt alignment.

A pair of side rails 25 and 25a are adapted, like rails 19 and 19a, to nest within track members 15 and 16. The lengths of rails 19 and 25 respectively are substantially equal and their combined length is approximately equal to that of track member 15. Rails 19a and 25a are bilaterally symmetrical to their counterparts, rails 19 and 25.

As may be best seen in Fig. 6, rails 25 and 25a are provided with a longitudinal bore extending almost throughout their entire length, but terminating slightly before the rear wall is reached. Into the longitudinal bores in rails 25 and 25a respectively, support members 24 and 24a are inserted, the bores being adapted to receive the support members readily. A coil spring 26, seated within an axial recess in the rear face of support member 24, bears against the rear wall of rail 25 and thus causes support member 24 normally to be urged forward with respect to rail 25. A similar coil spring (not shown) couples support member 24a to rail 25a and causes member 24a to be urged forwardly of rail 25a.

Rails 25 and 25a have a transverse bore near their rear walls, and lock members 27 and 27a respectively are carried therewithin. The lock members 27 and 27a have longitudinal bores corresponding to the longitudinal bores in the rails 25 and 25a. A screw member 28 is keyed to the forward face of lock member 27 and protrudes through a small aperture in track member 15, screw 28 being secured by an external thumb-nut 29. A corresponding screw member 28a is keyed to lock member 27a and in turn protrudes through an aperture in track member 16, being secured by thumb-screw 29a.

An endless belt 30, having length adapted to fit over rollers 23 and 17 when they are in normal position within casing 10, may be fitted over the rollers by separating hooks 12 and 13 and raising cover member 10e slightly. The belt 30 is shown in Fig. 4 in the process of being placed in position. It will be understood that, while the belt shown is that of a fur-surfaced buffer, any desired type of belt may be used.

Electrical cord 31 is mounted within handle 14 and wires therefrom are carried through handle 14 through switch 32 into the space immediately under cover member 10e. From that point they are carried along the under surface of cover 10e and finally terminate in a jack plate 33, mounted on wall 10c above track member 16. A suitable plug member 34, adapted for co-operation with jack plate 33, provides a connection for carrying electric current to motor 20. It will be understood that the method shown of supplying current to motor 20 is entirely a matter of choice, and any suitable connecting means may be used.

Stop screws 35 may be vertically mounted in the forward end of rails 25 and 25a if desired; these screws serve the purpose of providing a limit for outward movement of bearing members 24. They may be omitted if desired, since the belt 30 normally limits the outward excursion of idler roller 23 and its associated parts; and, when belt 30 has been removed, bearing members 24 and 24a are normally locked in place by tightening of manual nuts 29 and 29a respectively.

Assembly and operation

Assembly of a machine made according to my invention is rapid and simple. The rails 19, motor 20, driven roller 17, and the gear train connecting motor 20 to the roller together constitute a compact sub-assembly. It may be moved into position by sliding rails 19 and 19a into the open ends of channels 15 and 16 respectively.

Rails 25 and 25a are fitted into position at the opposite end of channels 15 and 16, the insertion being made with lock nuts 29 and 29a removed. These nuts can be screwed onto bolts 28 and 28a respectively after the rails are in place. Coil springs 26 may be next inserted, followed by bearing members 24 and 24a. The nuts 29 should be tightened to lock the idler roller in a position close enough to driven roller 17 to afford ready clearance for endless belt 30, which can then be slipped over the rollers in the manner shown in Fig. 4. The lock nuts should then be loosened and idler roller 23 will immediately spring forward, placing belt 30 under tension and insuring effective, non-slipping drive thereof when motor 20 is started.

Effective belt alignment is assured by the limited universal movement provided by the ball-terminated axles carried by the idler roller 23. When the position of stable operation has been assumed by the idler roller and its bearing members, lock nuts 29 and 29a may be tightened and left thus locked until the next time a belt change is desired.

After the belt has been placed on the machine, hooks 12 and 13 can be coupled to secure the cover member in place, and the machine is then ready for use.

Should it be desired to remove a particular belt and substitute a different one, as in changing the machine from a buffer to a sander, the cover member is raised slightly after releasing

hooks 12 and 13. The idler roller 23 is pushed a short distance inward and is locked in that position by tightening nuts 29 and 29a. The belt may then be readily removed and replaced.

While I have in this specification described, for purposes of illustration, a particular embodiment of my invention, it will be understood that many changes and variations in detail can be made therein by persons skilled in the art without departing from the spirit of my invention.

I claim:

1. In apparatus of the class described, a housing comprising a pair of longitudinal track members, a carriage having a pair of side rails adapted to ride on the track members, said carriage carrying a driven roller and having an electric motor mounted between the rails and mechanically coupled to the roller for rotating the same, an idler roller mounted between the track members at the opposite end of the housing and adapted to support an endless belt in co-operation with the driven roller, and spring tensioning means tending normally to urge the two rollers apart.

2. Apparatus according to claim 1 wherein the track members are channels integrally formed in the side walls of the housing.

3. Apparatus according to claim 1 wherein the track members are channels integrally formed in the side walls of the housing and wherein the idler roller is supported by a pair of side rails formed to slide within the channels in the housing walls.

4. Apparatus according to claim 1 wherein the housing is formed from a single piece of material bent into generally rectangular cross section to provide an open-ended enclosure and an extension of one side is bent over the top to form a cover member for supporting a handle and enclosing the top of the endless belt.

5. Apparatus according to claim 1 wherein the idler roller is journaled into bearing members and wherein a pair of rails provided with longitudinal bores are mounted within the track members, said bearing members being slidably supported within said bores.

6. Apparatus according to claim 1 wherein the idler roller is journaled into bearing members and wherein a pair of rails provided with longitudinal bores are mounted within the track members, said bearing members being slidably supported within said bores, and wherein the tensioning means comprises a compression spring for each bearing member, said spring being mounted to bear against the end of the bore and to seat on the bearing member with which it is associated.

7. Apparatus according to claim 1 wherein manually operable lock means are provided to lock the idler roller temporarily in a desired position to facilitate removal of the endless belt, notwithstanding the action of the tensioning means tending to urge the two rollers apart.

8. Apparatus of the class described comprising an integrally formed housing forming an open-ended body portion with a cover member, formed by an extension of one side of the body portion, bent over the top of the body portion, means detachably securing the free edge of the cover member to the body portion, a handle carried by the cover member, longitudinal channels formed in the sides of the body portion, a sub-assembly unit designed to slide into said channels comprising a pair of rails, a roller journaled between them, a motor supported between the rails, and linkage coupling the motor to the roller for rotation, a second pair of rails mounted in the opposite ends of the channels, said rails being bored longitudinally, bearing members slidably supported in the bores, an idler roller journaled in the bearing members, springs in the bores for urging the rollers apart, lock means carried by the last-mentioned pair of rails for securing the idler roller temporarily in a desired position notwithstanding the action of the springs, and an endless belt mountable on the rollers when the free edge of the cover member is detached from the body portion and slightly raised.

9. Apparatus according to claim 1 wherein the idler roller is journaled into bearing members and wherein a pair of rails provided with longitudinal bores are mounted within the track members, said bearing members being slidably supported within said bores, and said idler roller being provided with axles having limited play within said bearings for facilitating belt alignment.

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