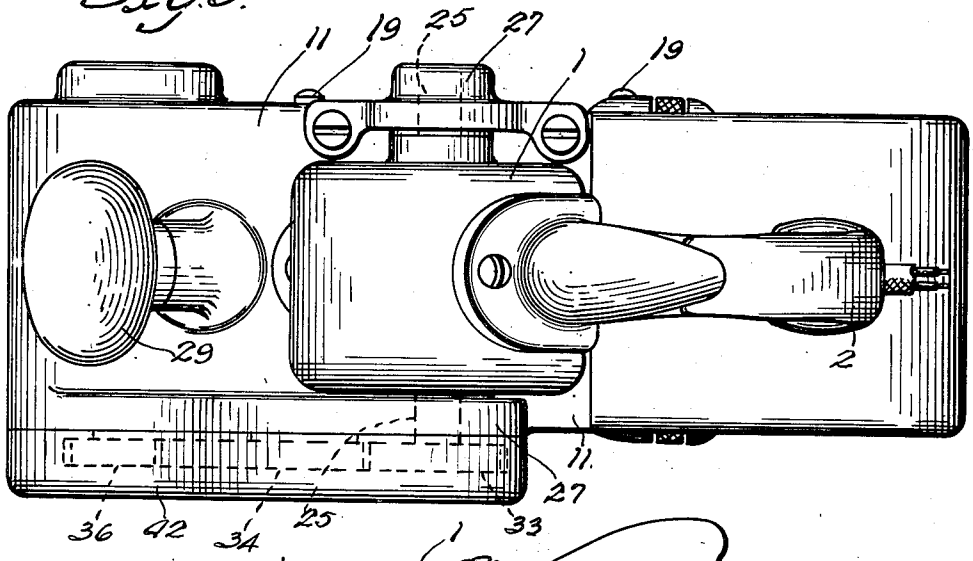
Dec. 16, 1952 B. S. OREN 2,621,453

PORTABLE ELECTRIC BELT SANDING MACHINE

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Fig. 3.



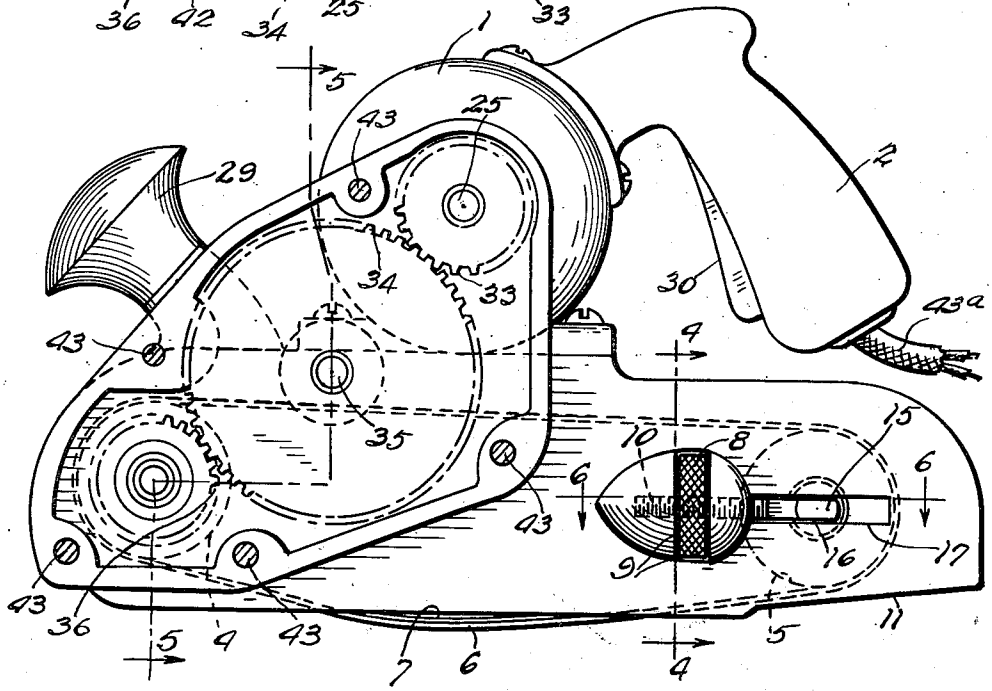


Fig. 1.

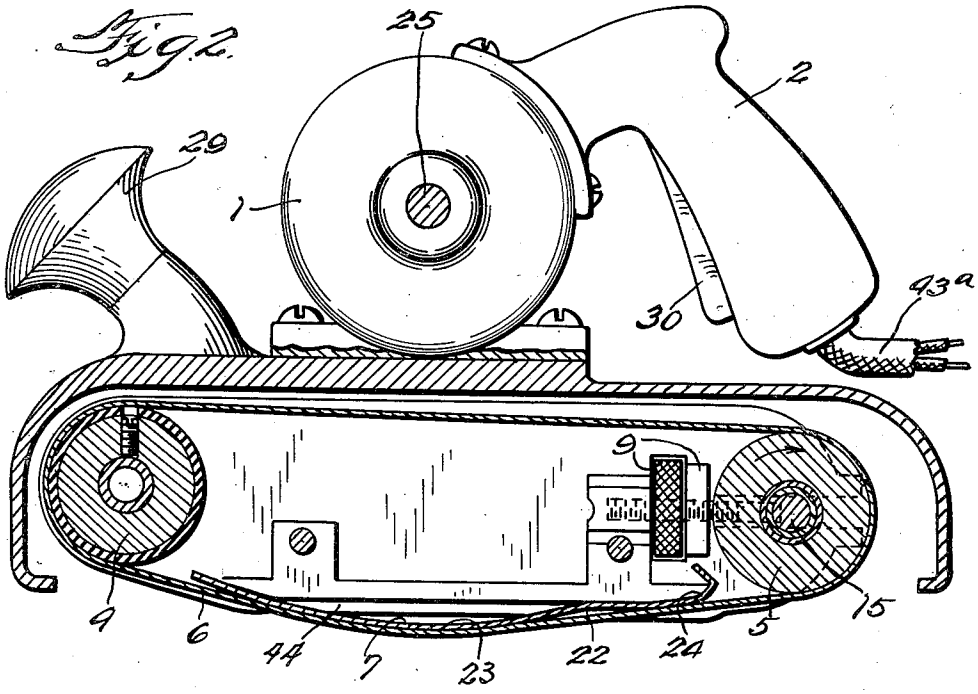
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PORTABLE ELECTRIC BELT SANDING MACHINE

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Fig. 2.



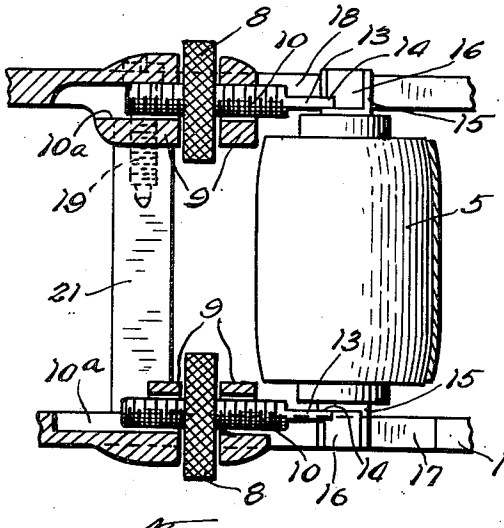
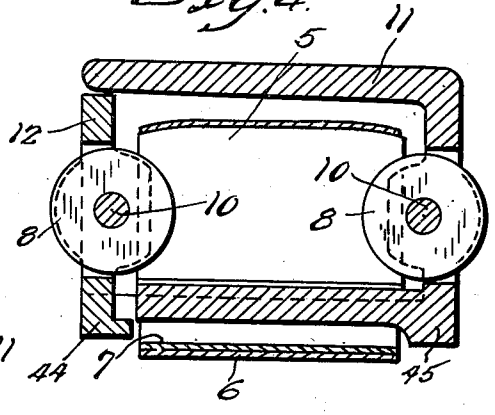


Fig. 6.

Fig. 4.



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Fig. 5.

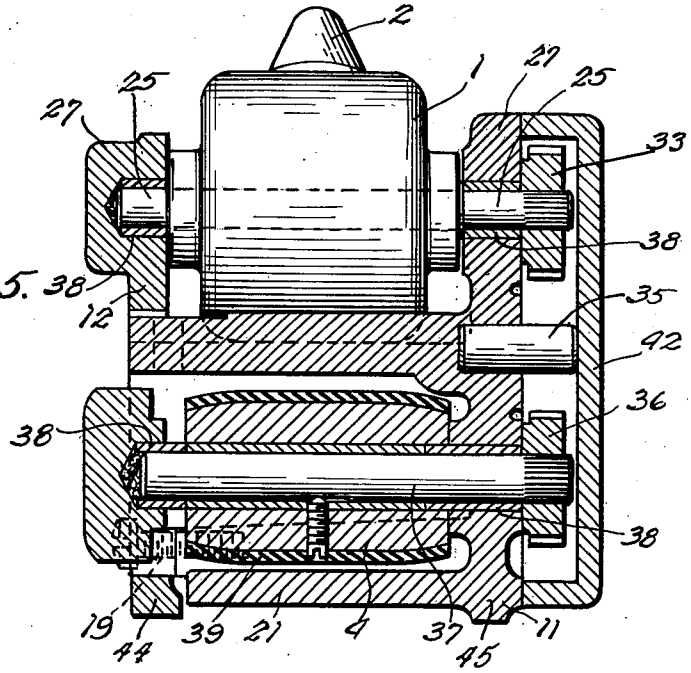
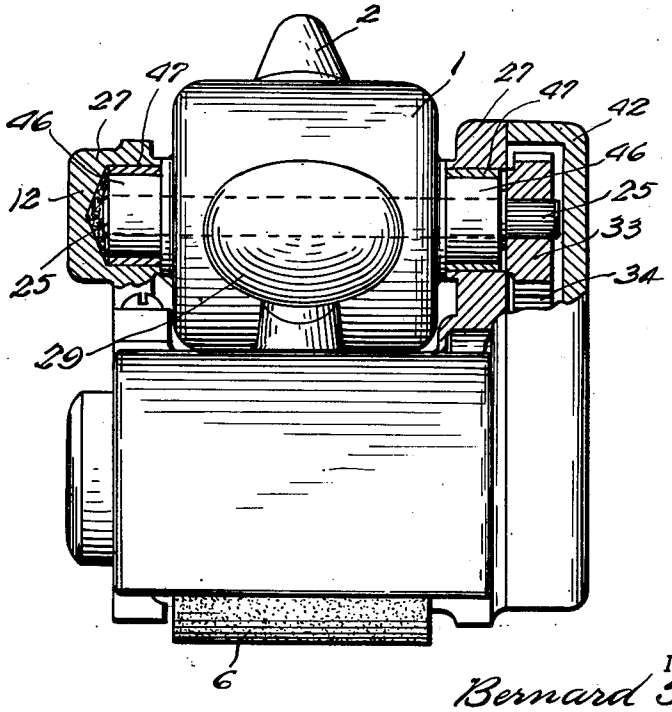


Fig. 7.



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PORTABLE ELECTRIC BELT SANDING MACHINE

Bernard S. Oren, Chicago, Ill.

Application June 28, 1949, Serial No. 101,821

7 Claims. (Cl. 51—170)

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My invention relates to portable electric belt sanding machines.

One of the objects of my invention is to provide an improved portable motor driven sanding machine having a handle rockable with the motor to the desired position of angular adjustment in order to secure the desired pressure and direction of motion on the sander and to maintain the full operating sanding surface of the machine in contact with the work at all times during the forward and backward motion of the hand and arm during the sanding operation.

A further object is to provide an improved belt sanding machine as indicated above having a suitable knob by means of which the workman can adjust the pressure on the work and guide the sander, and having a suitable handle rockable with the motor and operable by the right hand of the workman for securing the desired direction of motion of the sander.

A further object of my invention is to provide an improved hand portable electric sanding machine of the belt sander type carrying a motor having a drive shaft for driving the sander and having a handle for use in directing the movement of the machine in which the motor and handle are mounted for rocking movement about the axis of the drive shaft of the motor.

Further objects and advantages of the invention will be apparent from the description and claims.

In the drawings, in which two embodiments of my invention are shown,

Figure 1 is a side elevational view of an improved sanding tool embodying my invention;

Fig. 2 is a fore-and-aft vertical section of the tool showing the rollers and sanding belt;

Fig. 3 is a plan view of the construction shown in Fig. 1;

Fig. 4 is a vertical detail sectional view on the line 4—4 of Fig. 1;

Fig. 5 is a vertical staggered sectional view on the line 5—5 of Fig. 1;

Fig. 6 is a horizontal detail sectional view on the line 6—6 of Fig. 4; and

Fig. 7 is a view similar to Fig. 5 showing a somewhat different form of mounting the motor and handle for rocking movement.

Referring to the drawings in detail, and first to Figs. 1 to 6, inclusive, the construction shown comprises a portable sanding apparatus, including a motor 1, a handle 2 secured to the motor for manipulating the tool, and a pair of spaced-apart rollers 4 and 5 having parallel axes, a sanding belt 6 running over said rollers 4 and 5,

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and transmission from the motor 1 to the front roller 4.

In order to provide a generally uniform yielding pressure for the sanding belt 6 on the wood or other material being surfaced, a bowed spring metal pressure pad 7 is provided for holding the sanding belt 6 in good working engagement with the material being surfaced. In order to secure the proper tension in the belt 6, a belt-tightening device is provided comprising a pair of knurled nuts 8 held against axial movement between opposed abutments 9 on the sander frame, and a pair of screw-threaded rods 10 mounted for axial movement in cylindrical recesses 10a in the frame or housing 11 and side cover 12, respectively, and having threaded engagement with the nuts 8. Each of these rods 10 has a flattened end 13 which engages a notch 14 in the transversely slidable shaft 15 on which the rear roller 5 is mounted. This transversely extending shaft 15 has its ends 16 flattened on both sides. One flattened end of the shaft is slidable in a slot 17 in the side of the frame or housing 11, and the other flattened end of the shaft is slidable in a slot 18 in the removable side cover 12 of the frame. This side cover is detachably secured to the frame by means of screws 19 extending through the cover 12 and threaded into bosses on the upper side of the backing plate 21 of the frame.

In order to make sure that the belt 6 does not become slackened when downward pressure is exerted on the sander to cause it to properly engage the surface to be sanded, the spring pressure pad 7 is bent so as to provide a fulcrum-engaging portion 22 (Fig. 2) which engages a portion of the backing plate 21 which acts as a fulcrum so that when downward pressure is exerted on the tool, acting to straighten out the downwardly bowed portion 23 of the pressure pad, the rear end 24 of the pressure pad will be caused to move away from the rear end of the backing plate 21, thus counteracting or counterbalancing the belt slackening effect due to the straightening out of the downwardly bulged front portion 23 of the pad.

The motor 1 and handle 2 are mounted on the base of the tool to rock about the axis of the motor shaft 25, the ends of which are rotatably mounted in pillow block 27 on the sander housing 11. This enables the workman using the tool 2 to hold the handle in any desired position of angular adjustment about the axis of the motor shaft 25 in order to maintain the full operating sanding surface of the machine in contact

with the work at all times during the forward and backward motion of the hand and arm during the sanding operation.

The sander housing 11 is provided with a suitable knob or handle 29 which the workman can hold with the left hand, using the right hand to manipulate the handle 2 of the motor and to control the action of the motor by means of the on and off switch lever 30 located in convenient position with respect to the handle.

The transmission from the motor shaft 25 to the front roller 4 comprises a small spur pinion 33 mounted to rotate with the transversely-extending motor shaft 25, an idler gear 34 (removed in Fig. 5 but shown in Fig. 1) mounted on a stud 35 extending from the side of the sander frame 11, a spur gear 36 meshing with the idler gear 34, and a transversely-extending shaft 37 with which the front roller 4 is secured to rotate. Suitable bearing bushings 38 are provided for the motor shaft 25 and the transversely-extending shaft 37. In order to prevent slippage between the roller 4 and sanding belt 7 a nonslip sleeve 39 of rubber or other suitable material is secured about the front roller.

In tightening or loosening the belt 6, the tool is placed in position so that the workman can have ready simultaneous access to both of the belt adjusting nuts 8 so that by using both hands simultaneously he can turn these nuts so as to tighten or loosen both sides of the belt at the same time, thus insuring equalized tension. Improper tracking of the belt 6 may be corrected by tightening or loosening the belt on one side only. The engagement of the flattened portions 13 of the screw-threaded rods 10 with the notches 14 in the roller carrying shaft 15 prevents rotation of the screw-threaded rods. The engagement of the flattened portions 16 of the roller carrying shaft 15 prevents any rotation of this shaft as it slides back and forth in the slots 17 and 18.

In using the sander, after tightening up the belt 6 to the desired degree, the workman will place his left hand on the knob 29 and his right hand on the handle 2, press on the switch lever 30 to start the motor and apply the sander belt 6 to the work, bringing the exposed portion of the sander belt into juxtaposition with respect to the surface to be sanded. He will move the sander over the work, moving the sander in general in the direction of the grain of wood (if the surface being finished is wood), and will continue to move the sander over the surface until the desired finish is obtained. The rockable mounting of the motor 1 and handle 2 greatly facilitates the work of the operator in handling the sander. The provision of the knob 29 greatly facilitates the matter of securing the desired pressure of the sanding belt on the work. Any suitable materials may be used for the various parts. For example, the bushings 38 may be of brass. The frame or housing 11, the housing cover 12, and the rockable transmission housing 26 may be aluminum castings.

The gears 33, 34 and 36 are enclosed by a removable cover 42 secured to the frame 11 by means of cap screws 43. Cup grease may be placed in the housings 11 and 26 for the transmission gears. The handle 2 may be provided with a suitable passage for the feed wires 43a leading to the motor 1.

While I have described my invention mainly in connection with a sanding tool for cutting, grinding, or surfacing woodwork, it is obvious that in some of its phases it might be embodied in other types of machines; for example, rotary planers, routers, and circular saws, and for use on other types of material such as plastics, metal, etc.

The frame 11 and cover 12 may be provided with parallel skids or shoes 44 and 45, respectively, which extend downwardly below the lower surface of the backing plate 21 for engagement with the surface of the work being sanded, thus preventing the backing 21 from causing the bowed leaf spring 23 to exert a positive pressure on the work being sanded. By the use of leaf springs of different thicknesses for different conditions of use, the spring pressure on the sanding belt 6 when the shoes 44 and 45 are pressed against the surface of the work, may be varied as desired. In effect, therefore, the pressure exerted by the workman has little or no effect upon the results obtained.

In the claims where the expressions "surface finishing device" and "planar finishing surface" are used, they are to be understood as exemplified in the drawings by the surface finishing sander belt 6 having a substantially flat planar sander surface in engagement with the work. The expression "mounting carriage" is to be understood as exemplified in the drawings by the frame 11 and cover 12 on which the sander belt 6 and shoes or skid means 44 and 45, etc., are mounted.

The construction shown in the modification of Fig. 7 is the same as that previously described in connection with Figs. 1–6, inclusive, except as to the means for mounting the motor and handle for rocking movement. In Fig. 7 the motor 1 is provided with tubular trunnions or end shields or castings so designed, constructed and/or machined as to serve as trunnions 46 rockably mounted in bushings 47 in the pillow block 27 and sander base 11, or mounted directly in pillow block 27 and sander base 11 without the bushings 47 in pillow block 27. The ends of the motor shaft 25 extend outwardly through the trunnions 46. The drive pinion 35 which drives the sander belt is mounted on the right-hand projecting end of the motor shaft 25. The use and operation of the construction shown in Fig. 7 is the same as that described in connection with Fig. 5. In both forms the motor 1 and handle 2 are mounted on the base of the tool to rock about the axis of the motor shaft 25.

Further modifications will be apparent to those skilled in the art, and it is desired, therefore, that the invention be limited only by the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A portable power driven finishing tool comprising a mounting carriage, a surface finishing device having a substantially planar finishing surface, mounted on said carriage, a handle for guiding said tool over the work, mounted on the carriage, skid means mounted on said carriage extending alongside and adjacent the peripheral edges of said finishing surface for supporting and positioning the carriage with respect to the surface to be finished, spring means acting between said carriage and finishing device for exerting downward pressure on said finishing device to press the finishing surface downwardly with respect to said skid means into engagement with the work, and a motor having a rotary drive shaft for driving said finishing device, said handle be-

ing rockably mounted to rock about the axis of said shaft.

2. A portable power driven finishing tool comprising a mounting carriage, a surface finishing device having a substantially planar finishing surface, mounted on said carriage, a handle for guiding said tool over the work, mounted on the carriage, skid means mounted on said carriage extending alongside and adjacent the peripheral edges of said finishing surface for supporting and positioning the carriage with respect to the surface to be finished, spring means acting between said carriage and finishing device for exerting downward pressure on said finishing device to press the finishing surface downwardly with respect to said skid means into engagement with the work, and a motor having a rotary drive shaft for driving said finishing device, said handle and motor being rockably mounted to rock about the axis of said shaft.

3. A portable power driven finishing tool comprising a mounting carriage, a surface finishing device having a substantially planar finishing surface, mounted on said carriage, a handle for guiding said tool over the work, mounted on the carriage, skid means mounted on said carriage extending alongside and adjacent the peripheral edges of said finishing surface for supporting and positioning the carriage with respect to the surface to be finished, spring means acting between said carriage and finishing device for exerting downward pressure on said finishing device to press the finishing surface downwardly with respect to said skid means into engagement with the work, and a motor having a rotary drive shaft for driving said finishing device, said handle being rockably mounted to rock about the axis of said shaft and having a downwardly and rearwardly extending one-hand grippable portion.

4. A power hand portable surface finishing machine comprising a mounting carriage, a surface finishing device mounted thereon having a substantially planar finishing surface, a pusher handle for exerting a variable direction forward and downward pressure on said planar finishing surface, rockably mounted thereon to rock about an axis parallel to the plane of said finishing surface comprising a downwardly and rearwardly extending one-hand grippable portion, and a motor having a rotary drive shaft mounted on said carriage for driving said surfacing device, said handle being rockable about the axis of said shaft.

5. A power hand portable surface finishing machine comprising a mounting carriage, a surface finishing device mounted thereon having a substantially planar finishing surface, a pusher handle for exerting a variable direction forward and downward pressure on said planar finishing surface, rockably mounted thereon to rock about an axis parallel to the plane of said finishing surface comprising a downwardly and rearwardly extending one-hand grippable portion, and a motor having a rotary drive shaft mounted on said carriage for driving said surfacing device, said handle being rockable about the axis of said shaft, said motor being rockable with said handle.

6. A power hand portable surface finishing machine comprising a mounting carriage, a surface finishing device mounted thereon having a substantially planar finishing surface, a pusher handle for exerting a variable direction forward and downward pressure on said planar finishing surface, rockably mounted thereon to rock about an axis parallel to the plane of said finishing surface comprising a downwardly and rearwardly extending one-hand grippable portion, and a motor having a rotary drive shaft mounted on said carriage for driving said surfacing device, said handle being rockable about the axis of said shaft and having control means mounted thereon for controlling the motor operable by the hand holding the handle.

7. A power hand portable surface finishing machine comprising a mounting carriage, a surface finishing device mounted thereon having a substantially planar finishing surface, a pusher handle for exerting a variable direction forward and downward pressure on said planar finishing surface, rockably mounted thereon to rock about an axis parallel to the plane of said finishing surface comprising a downwardly and rearwardly extending one-hand grippable portion and a motor having a rotary drive shaft mounted on said carriage for driving said surfacing device, said handle being rockable about the axis of said shaft, said surfacing device comprising a pair of spaced rollers having axes parallel to the axis of said handle.

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