April 3, 1956 S. H. SHARPLESS 2,740,238

SANDING MACHINE FOR BOWLING ALLEYS

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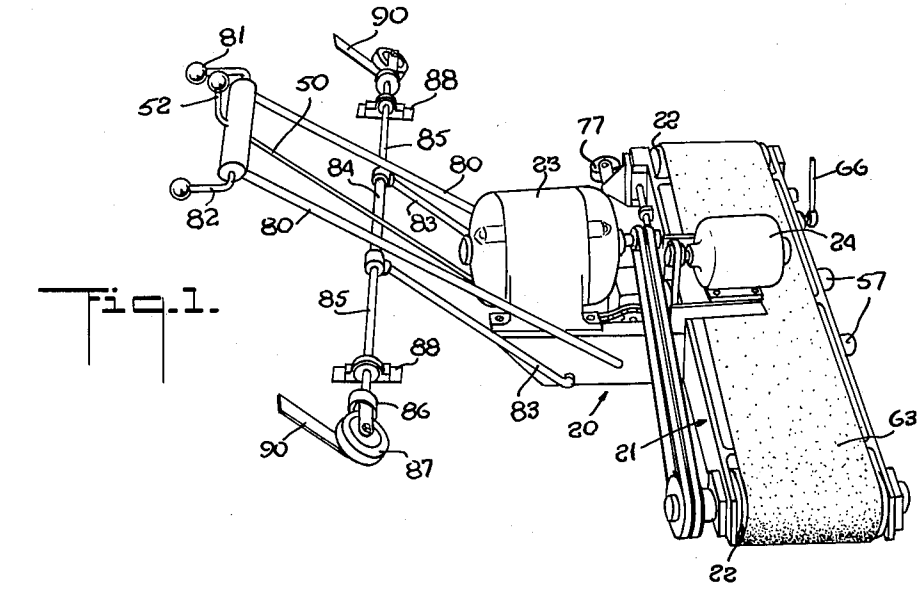


Fig. 1.

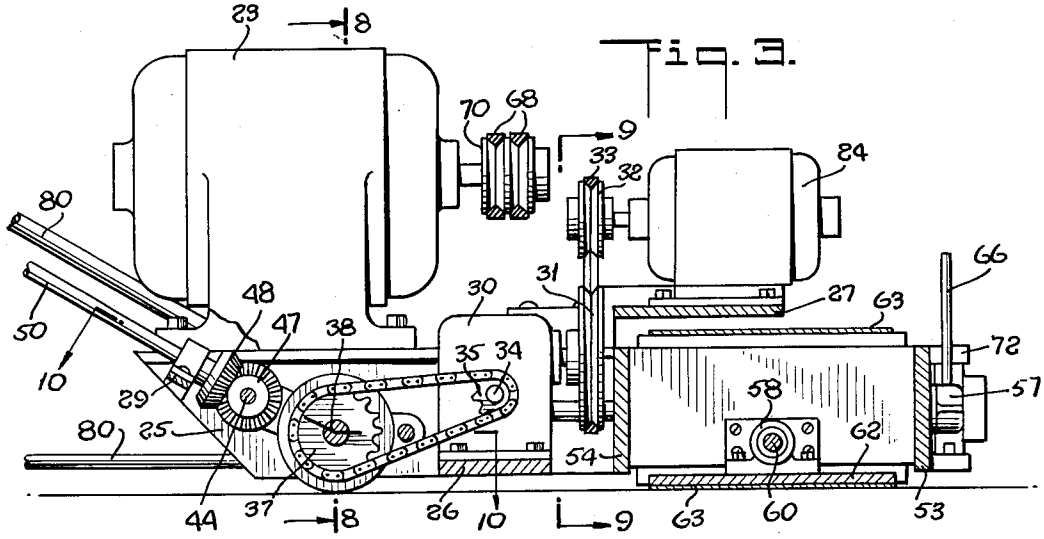


Fig. 3.

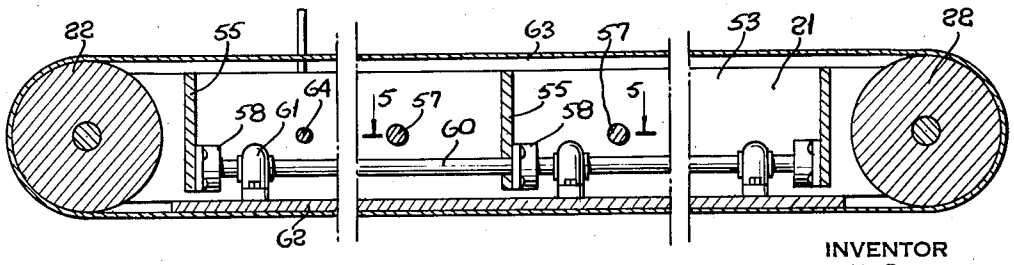


Fig. 4.

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Fig. 2.

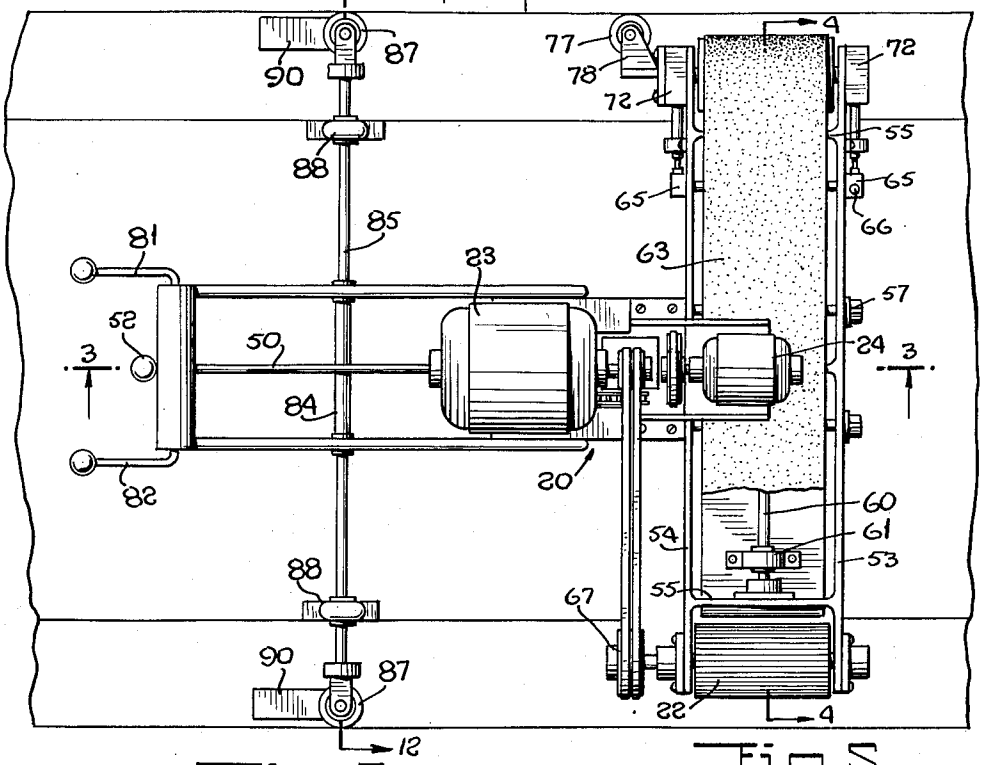


Fig. 6.

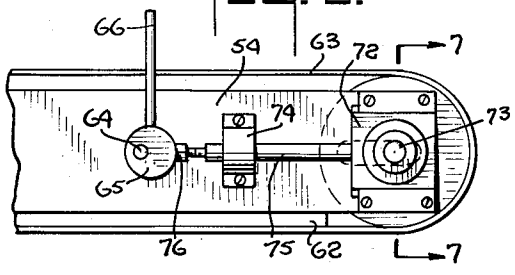


Fig. 5.

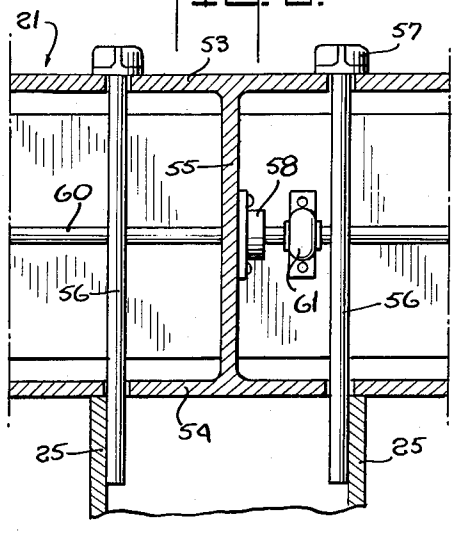
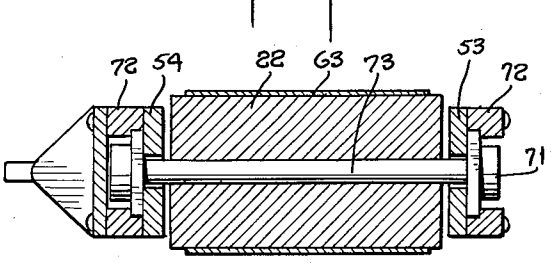


Fig. 7.



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Fig. 8.

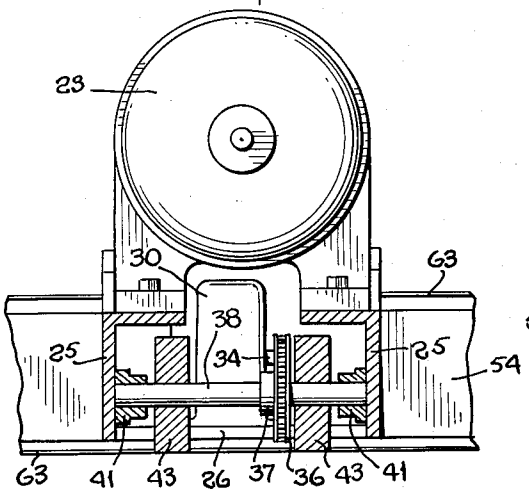
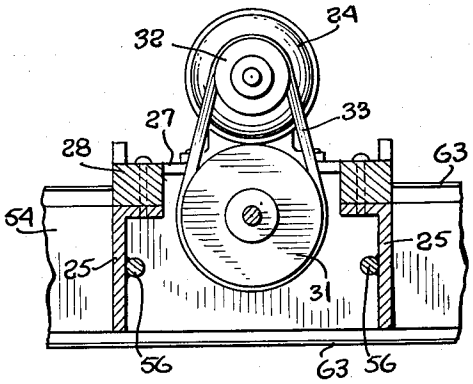


Fig. 9.



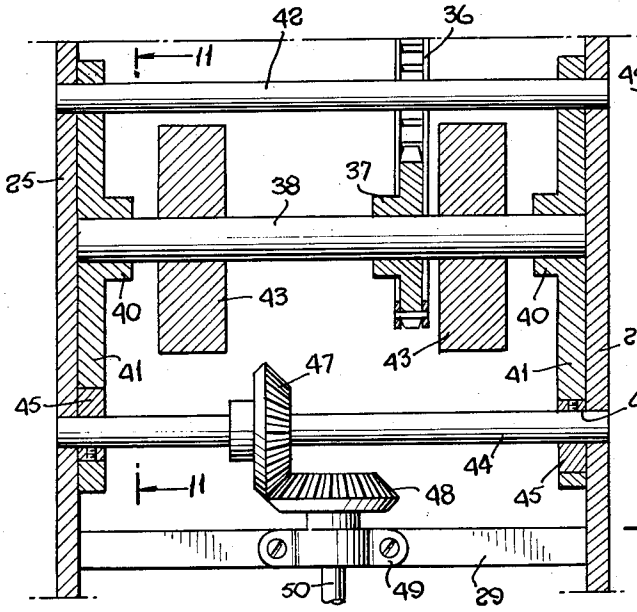


Fig. 10.

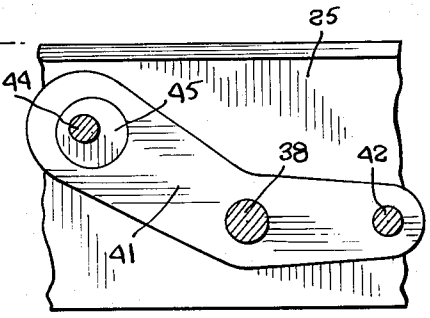


Fig. 11.

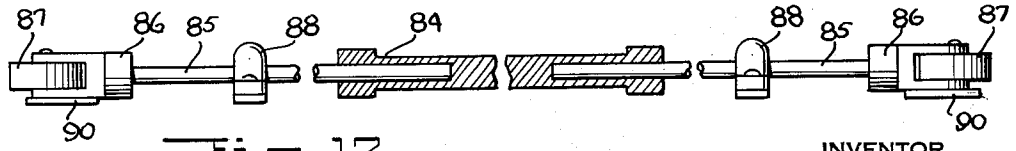


Fig. 12.

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SANDING MACHINE FOR BOWLING ALLEYS

Samuel H. Sharpless, Hazleton, Pa.

Application March 26, 1953, Serial No. 344,706

3 Claims. (Cl. 51—174)

The present invention relates to sanding machines and particularly to a sanding machine adapted to re-surface bowling alleys.

More particularly, the invention relates to a bowling alley sanding machine which is readily transportable to the place of operation and which is easily assembled for operation and when assembled may readily be adjusted to assure that the new surface provided by sanding is level in a sidewise direction.

It is an object of the invention to provide a sanding machine for bowling alleys which is adjustable to assure that the sanding is level in the direction transverse of the alley and that it conforms to the original condition longitudinally of the bowling alley.

It is another object of the invention to provide such a machine in which both the sanding belt and the driving wheels are motor driven.

It is a further object of the invention to provide such a sanding machine having means for readily adjusting the tension of the sanding belt and having additional means for guiding the machine in its traverse of the bowling alley.

It is a still further object of the invention to provide a machine as above-described so organized that it may be readily disassembled for transportation and in which the wheels normally used for driving the machine may be utilized without being motor driven for such transportation purposes.

Other objects and features of the invention will be apparent when the following description is considered in connection with the annexed drawings, in which,

Figure 1 is a perspective view of the bowling alley sanding machine of my invention, certain guide means being shown in elevated position as they would be prior to placing the machine into operation;

Figure 2 is a top plan view of the device of Figure 1 showing the machine in position on a bowling alley;

Figure 3 is a longitudinal vertical cross-sectional view of the device of Figure 1, the view being taken on the plane of the line 3—3 of Figure 2;

Figure 4 is a transverse vertical cross-section of the bowling alley sanding machine the view being taken on the plane of the line 4—4 of Figure 2;

Figure 5 is a fragmentary horizontal cross-sectional view, the view being taken on the plane of the line 5—5 of Figure 4;

Figure 6 is a fragmentary front elevational view of the bowling alley sanding machine showing particularly the mode for adjusting the tension of the sanding belt;

Figure 7 is a vertical cross-sectional view of the tension adjusting means of Figure 6, the view being taken on the plane of the line 7—7 of Figure 6;

Figure 8 is a transverse vertical cross-sectional view showing particularly the means for driving the driving wheels of the machine, this view being taken on the plane of the line 8—8 of Figure 3;

Figure 9 is a vertical cross-sectional view showing particularly the wheel driving means and the means for attaching the sanding belt to the driving mechanisms, this view being taken on the plane of the line 9—9 of Figure 3;

Figure 10 is a fragmentary cross-sectional view taken on the plane of the line 10—10 of Figure 3 and showing particularly the mode of adjusting the machine to assure that the sanding be level transverse of the bowling alley;

Figure 11 is a fragmentary cross-sectional view of the levelling mechanism of Figure 10, the view being taken on the plane of the line 11—11 of that figure; and

Figure 12 is a transverse vertical cross-sectional view of the means for guiding the machine to assure that it will move longitudinally along the alley. This view is taken on the plane of the line 12—12 of Figure 2.

Referring now to the drawings, there is shown at 20 a main frame on which is supported a secondary frame 21 which in turn carries the sanding pulleys or drums 22. The main frame 20 carries the sanding motor 23 and likewise the motor 24 which serves to drive certain wheels for causing the device to traverse the bowling alley.

As is clearly seen in Figures 2 and 8 through 10 the main frame 20 is composed of two angle irons 25 connected at the bottom thereof by the transversely extending bars 26 and 29. Mounted on the horizontally extending flanges of the angle irons 25 is a sanding belt driving motor 23, the motor and the bars 26 and 29 serving to form, with the angle irons, a channel-like structure of considerable rigidity.

Mounted at the forward ends of the angle irons 25, as is clearly shown in Figures 2 and 9, is a motor mounting plate 27, the plate being formed with integral downwardly extending flanges 28 so that the motor 24 is supported above the level of the flanges of the channels 25. The mounting plate 27 also extends between the horizontal flanges of the angles 25 thereby further adding to the rigidity of the structure of the main frame 20.

Supported upon the transversely extending bar 26 is a gear reduction unit 30 the input shaft of which extends longitudinally of the machine and is provided with a pulley 31. The shaft of motor 24 is also provided with a pulley 32 and a V-belt 33 interconnects the pulleys 31, 32 so that the gear unit is driven by the motor 24. The output shaft 34 of the gear reduction unit extends transversely of the machine and has fastened thereon a sprocket wheel 35 which is coupled by means of a chain 36 to a sprocket wheel 37 fixed to the shaft 38.

The shaft 38 is supported at its ends in the bearings 40 (see Figure 10), one in each of the two arms 41, which arms are pivotally mounted on a shaft 42 which extends across between the depending portions of the angles 25. Mounted on the shaft 38 for rotation therewith are the driving wheels 43.

By adjustment of the position of shaft 38 the machine is levelled so that the bowling alley, after re-surfacing, will be exactly level as respects a line transversely of the alley. Another shaft 44 extends between the depending portions of the angles 25 and has fixed thereto two eccentrics 45, one at either end thereof. These eccentrics lie within bores 46 in the ends of arms 40 opposite the pivot point of those arms on the shaft 42. Consequently as the eccentrics are rotated the arms 41 move in opposite directions and thereby adjust the position of the shaft 38 relative to the angles 25. Fixed to the shaft 44 is a bevel gear 47 which meshes with a bevel gear 48 mounted on the shaft 50, the shaft 50 extending rearwardly and upwardly as seen in Figure 1 and being journalled in the cross piece 51 of a handle and in the bracket 49 mounted on cross piece 29. Above the handle the shaft 50 is bent over to provide a handle 52 by means of which the shaft may be rotated, such rotation of course

serving to adjust the wheel shaft 40 in the manner just described.

Rigidly fixed to the front of the angles 25 is the frame 21 on which the sanding belt pulleys 22 are mounted. The frame 21 consists of the front and rear plates 53 and 54 (see Figures 1, 3 and 5) joined together by the interconnecting webs 55. The secondary frame 21 is fixed to the forward ends of the angle plates 25 in any suitable manner. As shown in the drawings, bolts 56 are welded to the angle members 25 and extend forwardly through aligned bores in the plates 54 and 53 and are provided with nuts 57 at their forward ends. Thus the secondary frame 21 is supported on and rigidly held in place by the bolts 56 and nuts 57.

Referring now to Figure 4, it will be seen that a bushing 58 is fixed to each of the webs 55, a shaft 60 being supported in the bushings 58. Rotatably mounted on the shaft 60 and spaced apart along that shaft are three bearings 61 which bearings are rigidly fixed to a plate 62 which plate extends across between the sanding belt pulleys 22. The plate 62 extends longitudinally of the machine substantially the same distance as do the pulleys 22. This plate bears against the sanding belt and holds it against the bowling alley to be surfaced the plate being of substantially the same width as the bowling alley between the gutters and being approximately ten inches in dimension longitudinally of the machine. By virtue of the pivotal mounting of the plate 62 on shaft 60 the plate conforms to the slope of the bowling alley longitudinally. This is necessary because although alleys are level as originally installed some old alleys are out of level when re-surfaced.

Referring now to Figure 7, there is shown therein the means for adjusting the tension on the sanding belt 63. This tension adjusting means comprises a shaft 64 rotatably mounted in the plates 53 and 54 and having an eccentric 65 mounted on either end thereof. The eccentric 65 at the forward end is provided with an upwardly extending rod or handle 66 by means of which the position of shaft 64 and therefore of the eccentrics 65 can be adjusted.

The sanding pulley 22 at the right hand side of the machine (the lower pulley as seen in Figure 2) is provided with a bevel V-belt pulley 67 and is driven by means of the belts 68 and the similar pulley 70 mounted on the shaft of the main driving motor 23. The sanding belt pulley 22, mentioned, is journalled in bearings fixed in the plates 53 and 54.

The pulley 22 at the left hand side of the machine is journalled in the journal blocks 71 which blocks are slidable in grooves in the guides 72 which are fixed to the plates 53 and 54. The shaft 73 on which this left hand one of the sanding belt pulleys 22 is mounted extends as stated into the blocks 71 and passes through slots in the plates 53 and 54.

Guided in the guideways 72 as well as in brackets 74 fixed on the front and rear plates 53 and 54 are tensioning rods 75 which rods are provided with threadedly adjustable heads 76 bearing against the eccentrics 65. Thus as the handle 66 is rotated it will cause rotation of the eccentric and movement of the shaft 73 outwardly to apply tension to the sanding belt 63.

It should be noted that a guide wheel 77 is mounted on a vertical axis in a bracket 78 which bracket is fixed to the rearward one of the journal guides 72.

As has been indicated, a handle is provided, this handle comprising the two members 80, one rigidly mounted, as by welding, on each of the angles 25, these members extending upwardly and terminating in the cross bar 51 already described. At one side of the handle 51 there is provided a control handle 81 which controls a three-position switch in the circuit of the driving motor, this switch being arranged so that in a central position the sanding belt driving motor 23 is inoperative, while in either rotated position the motor is energized. At the opposite or right hand end of the handle 51 is a control handle 82 which, like the handle 81, may be positioned in either of three positions. In the central position the handle breaks the circuit to the wheel driving motor 24, while in one extreme position it causes the motor to operate in a direction to move the machine forward and in the other extreme position causes the motor to drive the machine rearwardly.

Pivotally attached to each of the angles 25 is a rearwardly extending member 83, these members being joined together by a tubular cross member 84 which comprises a part of a mechanism for guiding the machine with respect to a bowling alley. Threadedly mounted in either end of the cross member 84 is a rod 85. Each rod 85 terminates in a bracket member 86 which supports a roller 87 on an axis which is substantially vertical. Pivotally mounted on each rod 85 is a plate 88 which when the members 83 are rotated counterclockwise from the position shown in Figure 1 rest against the bowling alley and support the entire guiding mechanism just described. The rollers 87 are spaced apart the proper distance to make contact with the sides of the alley as seen in Figure 2 and the plates 88 are spaced apart to make contact with the surface of the bowling alley.

The skids 90, one mounted on either end of the supporting mechanism above described, are rigidly fixed to the brackets 86 and serve to maintain the axis of the rollers 87 substantially vertical.

As will be seen from the above the machine of my invention may be readily transported from one job to another since the secondary frame 21 can be readily detached from the main frame 20 and in addition the guiding mechanism may be disassembled by removing the rods 85 from the central tube or block 84. The parts thus removed are light in weight and can readily be carried. The main frame 20, together with the relatively heavy motors 23 and 24, may be easily rolled about upon the wheels 43 it being of course understood that at this time the driving belt 33 will have been removed.

The machine is of course reassembled before an alley is to be resurfaced and positioned so that the rollers 87 bear against the sides of the alley. Additionally, the roller 77 is positioned against the side of the alley and is maintained in this position due to the direction of travel of the belt which constantly tends to move the secondary assembly 21 toward the left. The device is levelled as has been described by operation of the handle 52 which alters the relationship of the wheels 43 with respect to the main frame 20 and thereby adjusts the position of the sanding belt 63 and pressure plate 62 therefor, thus making it possible to keep the belt horizontal at all times. The motor 24 is reversible so that the alley may be sanded in both directions the motor being reversed by means of the control handle 82. Also as has been described the motor 23 which drives the sanding belt is controlled by means of its switch 81 and may be de-energized at will.

While I have described a preferred embodiment of my invention, it will be understood that many other modifications may be made without deviating from the principles thereof; therefore I wish to be limited not by the foregoing description, but solely by the claims granted to me.

What is claimed is:

1. In a sanding machine for bowling alleys, in combination, a main frame, a secondary frame removably mounted on said main frame, said secondary frame supporting a sanding belt, said secondary frame being rigidly fixed to said main frame, wheel means on said main frame for supporting said sanding device, a pair of levers pivotally mounted on said main frame, a shaft extending between said levers and carrying said supporting wheels and a pair of eccentrics operating in a bore of one of said levers, said eccentrics being rotatably mounted in said frame with the points of maximum eccentricity

180° apart whereby movement of said eccentrics causes said levers to move to effect adjustment of the wheels with respect to said main frame so that the longitudinal center of the lower reach of said sanding belt may be made horizontal.

2. A device in accordance with claim 1 characterized in that a handle is provided, the handle being fixed to said main frame, and further characterized in that said eccentrics are mounted on a shaft which shaft is manually operable by means of a control handle mounted on said machine handle.

3. A tensioning means for a sanding machine of the class described, and in which an endless sanding belt passes over a pair of pulleys one of which is driven, said tensioning means comprising a shaft extending parallel to the axes of said pulleys, a pair of eccentrics one mounted on either end of said shaft, a handle for rotating said shaft, one pulley shaft being mounted in sliding journals for movement toward and away from said eccentric shaft, and a pair of push rods slidably mounted for engagement with said eccentrics and said sliding journals whereby rotation of said eccentric shaft positively varies the distance between the axes of said two pulleys to thereby vary the tension of the sanding belt extending about said pulleys.

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