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BELT TIGHTENING AND ALIGNING MECHANISM
FOR ABRADING DEVICES
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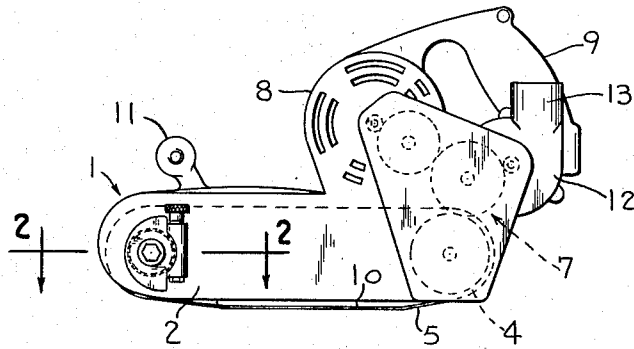


FIG. 1

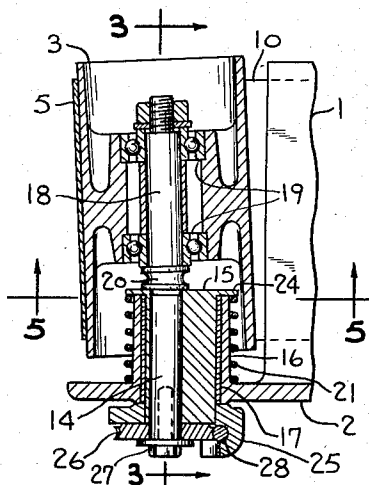


FIG. 2

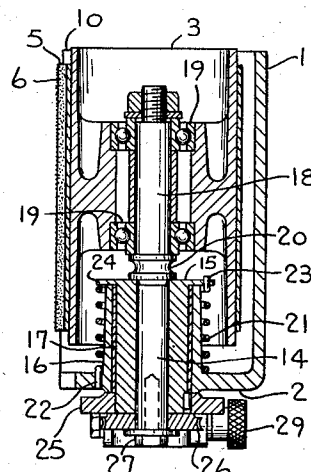


FIG. 3

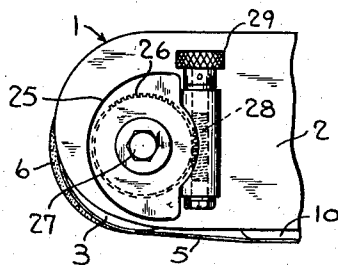


FIG. 4

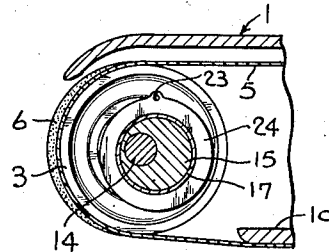


FIG. 5

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BELT TIGHTENING AND ALIGNING MECHANISM FOR ABRADING DEVICES

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3 Claims. (Cl. 51-148)

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This invention relates to improvements in a belt tightening and aligning mechanism for a portable sanding or abrading device.

The principal object and purpose of my invention is to provide an improved belt tightening and aligning mechanism simple in construction and operation and adaptable to a sanding machine of the portable type without increasing the over all dimensions and/or weight thereof.

A further object and purpose of my invention is to provide such mechanism for the idler drum at the front end of the machine and readily available for adjustment at the front end of the machine.

The invention consists further in the features of construction and combination of parts as hereinafter described and claimed.

In the accompanying drawing—

Fig. 1 is a side view on a reduced scale of a portable power operated sanding or abrading machine embodying my invention;

Fig. 2 is a sectional view taken on line 2-2 of Fig. 1 to show certain details of construction with respect to the belt tightening and aligning mechanism;

Fig. 3 is a longitudinal sectional view taken on line 3-3 of Fig. 2, said sectional view being through the axis element of the idler drum;

Fig. 4 is an end view of the belting tightening and aligning mechanism to more clearly show the knob and adjusting worm wheel and worm to be hereinafter described; and

Fig. 5 is a transverse sectional view taken on line 5-5 of Fig. 2.

In the drawing, 1 indicates the supporting frame of a portable sanding or abrading machine of the desired size and shape and having a lateral wall 2 at one side to mount a pair of revoluble pulleys or drums 3, 4 at or adjacent to the opposite ends of the machine as in devices of this character. Trained over the drums 3, 4 is an endless, flexible, abrading belt 5 approximately as wide as the length of a drum and driven thereby. The outer surface of the belt 5 is provided with a layer 6 of abrading material, such as grains of sand or the like, for smoothing or otherwise treating a work surface against which the belt is applied in the use of the device.

Mounted on the frame 1 is a gear train 7 for driving the belt 5 through the rear drum 4 at the desired speed from an electric motor 8 carried by the machine frame 1 adjacent to its rear handle 9 which may be of the D-type, and is equipped with an electric supply cable or cord (not shown) for the motor 8. The gear train

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7 is shown in dotted lines in Fig. 1 and in mesh with the operative teeth on the rear drum 4 and the armature shaft of the motor 8, respectively.

The frame 1 has a bed or pressure plate 10 to support the lower lap or layer of the belt 5 when pressed against the work surface being operated upon. The machine has a forward handle 11 adjacent to its front end to be gripped and/or engaged by one hand of the operator in manipulating the machine.

Also, the machine has a dust removing system including a rotary fan 12 at the rear end of the machine and geared into the gear train 7 for operation thereby. The fan 12 has a discharge spout 13 to which a dust collecting bag, also not shown, is connected. The bag is supported from the machine frame 1 and movable therewith as a unit.

The belt tightening and aligning mechanism of my invention is associated with the forward or idler drum 3 and such mechanism is detailed in Figs. 2 to 5, inclusive.

As there shown, the drum 3 is mounted on a shaft or axis element 14 journaled in an eccentric or movable means 15 revolvably supported in a tubular bracket or formation 16 fixed to and extending into the drum 3 at its adjacent end, the drum 3 being made hollow and open at its opposite ends for simplicity in construction and lightness in weight. A wear bushing 17 is interposed between the eccentric 15 and the bracket 16 as shown in Figs. 2 and 3.

The inner portion or section 18 of the shaft 14 is within the drum 3 and supports the latter for rotation on ball bearings or the like 19. There is an enlargement 20 on the shaft 14 at its junction with the section 18 to keep the drum 3 in operative position on the shaft portion 18.

Surrounding the bracket 16 is a spiral spring 21 having its opposite ends anchored to the frame wall 2 and the eccentric 15 at 22 and 23, respectively, in Fig. 3. The eccentric 15 has a flange 24 at its inner end to which the adjacent end 23 of the spring is secured.

The spring 21 acts normally to turn the eccentric 15 clockwise as viewed in Fig. 4, to tighten the belt 5. This is accomplished by having the axis means 14 journaled in the member 15 in eccentric relation thereto. Hence turning the eccentric 15 changes the position of the drum 3 laterally towards the forward end of the machine frame 1 to tighten the belt 5. Turning the eccentric 15 in the opposite direction or counter-clockwise shifts the position of the axis means 14 laterally to loosen the belt. The extent of shift-

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ing which may be given to the axis means 14 is from the position shown in Fig. 2 to the diametric opposite position. Fig. 3 shows the axis means mid-way between the limits just mentioned.

The belt is loosened for changing as required for wear or using different grade of abrasive material. The eccentric 15 is turned manually through its knob 25 fixed to the eccentric 15 at its outer end slightly beyond the frame wall 2 for grasping by the hand of the operator. Turning the knob 25 against the tension of the spring 21 or counter-clockwise rotates the eccentric 15 to shift the drum 3 laterally towards the rear drum 4 as shown in Fig. 3. This reduces the distance between the drums less than the operative length of the belt. Releasing the knob 25 allows the spring 21 to swing the drum back, automatically, to tighten the belt 5 and thus increase its tension for driving by the tool motor 8.

It will be noted that the shaft or axis section 18 which mounts the drum 3 is bent so to speak at an angle to the shaft portion 14. This disposes the center line of the drum 3 at an angle to the length of the belt 5 with the result that the belt on the drums is kept from running off the same under a disturbing pressure in the use of the machine or otherwise. This angularity is shown in Fig. 2.

To change the forementioned angularity from time to time as may be required in the use of different belts, provision is made for turning the axis element 14 by the operator. This is accomplished by keying the shaft 14 just beyond the eccentric 15 to a worm gear 26 which is held on the shaft by bolt and washer assembly 27. To turn the worm gear 26 and, thus the shaft 14, a worm 28 is mounted in the knob 25 and has a turnable element 29 to be engaged between the fingers of the operator.

Turning the knob 29, which may be knurled, provides for alignment of the idler drum 3 with the driving drum 4 as is apparent.

The mechanism herein described and shown is simple and inexpensive in construction and operation and provides a compact adaption for a device of the character described without materially adding to the weight or overall dimension to the machine.

The belt 5 is slipped on and off the drums 3, 4 at their ends opposite the frame wall side 2, the machine frame 1 being open at such side for that purpose.

The details of construction and arrangement of parts of the belt tightening and aligning mechanism herein disclosed may be changed and modified without departing from the spirit and scope of my invention, except as pointed out in the annexed claims.

I claim as my invention:

1. In an abrading device of the character de-

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scribed, a support, spaced idler and driving drums on said support, an endless abrading belt looped about said drums and driven thereby, a tubular formation fixedly secured on and extending through the support, a member revolvably mounted in said tubular formation and projecting beyond said formation exteriorly of said support, axis means for said idler drum journaled in said revolvable member in eccentric relation thereto for tightening and loosening the belt on turning the revolvable member, and means secured to said revolvable member exteriorly of the support for turning the member for adjusting the same.

2. In an abrading device of the character described, a support, spaced idler and driving drums on said support, an endless abrading belt looped about said drums and driven thereby, a tubular formation on the support, a member revolvably mounted in said tubular formation, an axis element for the idler drum journaled in said member in eccentric relation thereto for rotation relative thereto and having a section to dispose the idler drum in angular relation to the length of the belt, and means for independently turning the member and the axis element for tightening and loosening the belt and for varying the angularity of the idler drum, respectively.

3. In an abrading device of the character described, a support, spaced idler and driving drums on said support, an endless abrading belt looped about said drums and driven thereby, a tubular formation on the support, a member revolvably mounted in said tubular formation, an axis element for the idler drum journaled in said member in eccentric relation thereto and for rotation relative thereto and having a section to dispose the idler drum in angular relation to the length of the belt, spring means for turning the member to normally tighten the belt, a knob for turning the member to loosen or tighten the belt, a worm gear on the axis element, and a worm carried by the knob and meshing with the worm gear for turning the axis element relative to the revolvable member to vary the angularity of the idler drum relative to the belt.

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