SANDER OR SMOOTHING MACHINE

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Sander or Smoothing-Machine.


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To all whom it may concern:

Be it known that we, Joseph L. Mary and Milton Lambert, citizens of the United States, residing at Shelbyville, in the county of Shelby and State of Indiana, have invented certain new and useful Improvements in Sanders or Smoothing-Machines, of which the following is a specification. This invention relates to that type of abrading or smoothing machines wherein an endless "sanding belt" is employed, and the object of the invention is to provide an apparatus by means of which the polishing operation can be easily and quickly performed at different angles.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a side elevation of a sanding machine embodying our invention, the "sandling belt" being shown to operate in a horizontal plane, Fig. 2 is a similar view illustrating the belt operating in a vertical plane, Fig. 3 is a detail sectional view illustrating the driving belt and pulley, Fig. 4 is a detail view of the shaft shifter or clutch, Fig. 5 is a detail view, partially in section, of one of the "sandling belt" pressure plates.

In the drawing, 6 represents the frame of the machine, wherein an operating mechanism is mounted. This frame is provided at one end with a vertically adjustable work support of suitable construction, consisting of a table 7 having a block movable vertically in ways and engaged by an adjusting screw 9. Journal boxes 10 and 11 are mounted on the frame wherein a shaft 12 is journaled, said shaft being provided at one end with a fork or yoke 20, carrying a spindle 21 upon which a pulley 22 is mounted. 23 is a driving belt for the pulley 22, and 14 is a pulley supported on the spindle 21, around which pulley the abrading belt 15 passes. At the other end of the frame an adjustable slide 18 is provided, having an arm upon which a pulley 16 is mounted and around which pulley the belt 15 passes. The 50 belt as shown in Fig. 1 is arranged so that the face against which the work is held is vertical. In Fig. 2 a different arrangement of the belt is shown, wherein its face is still shown as vertical but moving horizontally, 55 the operating mechanism being substantially the same as described with reference to Fig. 1. We will, therefore, use the same reference numerals in referring to the corresponding parts.

The work table in Fig. 2 we have designated by the reference numeral 8. This work table is mounted in vertical ways at the side of the work support and is moved in said ways by the adjusting screw 9. Mounted on the bearing box 11 is an extension 16 having a cam surface at one end to engage a similar cam surface on a collar 17 that is secured to the shaft 12. The meeting faces of the parts 16 and 17 have projections and depressions therein, and when the projecting portions of the faces are brought in contact with one another by turning the shaft, a longitudinal movement of the shaft will result. This lengthwise movement of the shaft toward and from the driving belt will increase or decrease the distance between the pulleys 22 and 26 and compensate for the different positions of the "sandling belt." For instance, in Fig. 1 the belt is illustrated with its working portion operating vertically and the driving belt operating the belt 22 in a vertical plane. When, however, the belt 22 is swung down to a horizontal position it is evident that the driving 85 belt will be twisted and shortened and at such time the shaft 12 should move toward the driving belt 26 to compensate for the shortening of the driving belt. The sinuous faces of the members 16 and 17 will maintain the driving belt at the proper tension when the shaft is rotated and also when it is desired to support the "sandling belt" at an angle to the work supports, as in grinding or polishing a beveled surface.

The spindle supporting the pulley 13 is mounted on a block 18 slidably supported on the shaft 12, and an adjusting screw 19 has a
threaded connection with said block and is provided with a hand wheel and has a link connection with the shaft 12. By the operation of this threaded rod the pulley 13 is moved to regulate the tension of the "sand belt" and permit the use of a belt guide. When the "sand belt" has been adjusted for use, the shaft 12 may be locked by means of a clamp screw 14, as shown, in the bearing 10. The yoke 20 carries a shaft 21 to which the pulleys 22 and 14 are secured, and said yoke is secured by a set screw and rendered capable of turning on the shaft to cross the "sand belt" when it is desired to use it in that position for smoothing cylindrical, conical or irregular shaped objects. A driving belt 23 engaging the pulley 22 is driven by a pulley 26 attached to a shaft 25, which also has idle and fixed pulleys. The frame supporting the shaft 25 is provided with a belt tightener and guide roller 27, and the frame for the driving mechanism is preferably connected to the frame 6 by beams 24. As shown in Fig. 1, the shaft 25 may be provided with a guide roller 21 carried by an arm 32, which is attached to a slide mounted on the shaft. A pressure plate 33 may be secured to said arm. The shaft may also carry a pressure plate 34 of ordinary construction, as shown in Fig. 5, such pressure plate being connected to the shaft so that its face, which contacts with the inner surface of the belt 15, may be placed in an angle to change the direction of travel of the belt.

With a sander or smoothing machine constructed in accordance with our invention, the driven belt need not be adjusted by the operator, as the rotation of the shaft 12 moves the belt 22 toward or from the driving pulley when the abrading belt is shifted from one position to another, the yoke and shaft turning with the belt. The pulley 13 may also be quickly adjusted to provide proper tension for the abrading belt and all parts relating to the position and tension of the abrading belt are mounted on the shaft 12 and turn therewith.

This machine, while designed particularly for use in sand-papering wood surfaces, is adapted for a variety of rubbing or polishing operations upon any suitable material.

We do not wish to be confined to the details of construction herein, as they are susceptible of various modifications such as, for instance, the means for imparting a longitudinal movement of the shaft. This feature we believe to be provided for by various mechanisms without departing from the scope of our invention.

We claim as our invention:

1. In a machine of the class described, a frame, bearings thereon, a shaft journaled in said bearings and capable of longitudinal movement, one of said bearings having a sinuous face, a yoke secured to said shaft, a driven pulley carried thereby, guide pulleys, an abrading belt carried by said guide pulleys, and a collar mounted on said shaft and having a sinuous face to engage the face of said bearing.

2. In a machine of the class described, the combination, with a frame, of bearings mounted thereon, a shaft mounted in said bearings, guide pulleys provided at each end of said shaft, an abrading belt for said pulleys, means for driving said belt, said shaft being capable of a limited axial adjustment in its bearings to change the angle of said belt with respect to the horizontal without twisting the belt.

3. The combination, with a frame, of a shaft journaled thereon, guide pulleys carried by said shaft, an abrading belt for said pulleys, said shaft being capable of a limited rotary movement to vary the angle of said belt with respect to the horizontal, a driving belt operating in line with said shaft, and means for moving said shaft lengthwise to compensate for the shortening of said drive belt when the angle of said abrading belt is changed.

4. The combination, with a frame, of a shaft journaled thereon, idle pulleys carried by each end of said shaft, an abrading belt for said pulleys, means for driving said belt, said shaft being capable of a limited axial adjustment to permit the angle of said belt to the horizontal to be changed without twisting the belt, said driving means remaining in driving connection with said belt during said adjustment.

5. The combination, with a frame, of a shaft journaled thereon, guide pulleys carried by said shaft, an abrading belt carried by said pulleys, said shaft being capable of limited axial adjustment without twisting said belt on its longitudinal axis, a driving means for said belt, said driving means remaining in driving connection with said belt during the rotary adjustment of each end of said shaft, and a work table capable of adjustment to accommodate itself to the angle of said belt to the horizontal.

6. The combination, with a frame, of a shaft journaled thereon, guide pulleys carried by said shaft, an abrading belt carried by said pulleys, said shaft having a limited rotary movement to permit the variation in the angle of said abrading belt to the horizontal, a driving pulley operatively connected with said abrading belt and in line substantially with said shaft, a fixed member having a sinuous face, and means carried by said shaft and having a part to engage said sinuous face and thereby impart a lon-
gitudinal movement to said shaft and compensate for a strain or slack on said driven belt when said shaft is rotated.

7. The combination, with a frame, of a shaft journaled therein, an abrading belt and guide pulleys carried by each end of said shaft, said shaft being capable of a limited adjustment on its longitudinal axis, and a driving means for said shaft.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."