Aug. 19, 1947. A. F. KRUEGER 2,426,028

SANDING MACHINE

Filed April 16, 1945

Fig. 1.

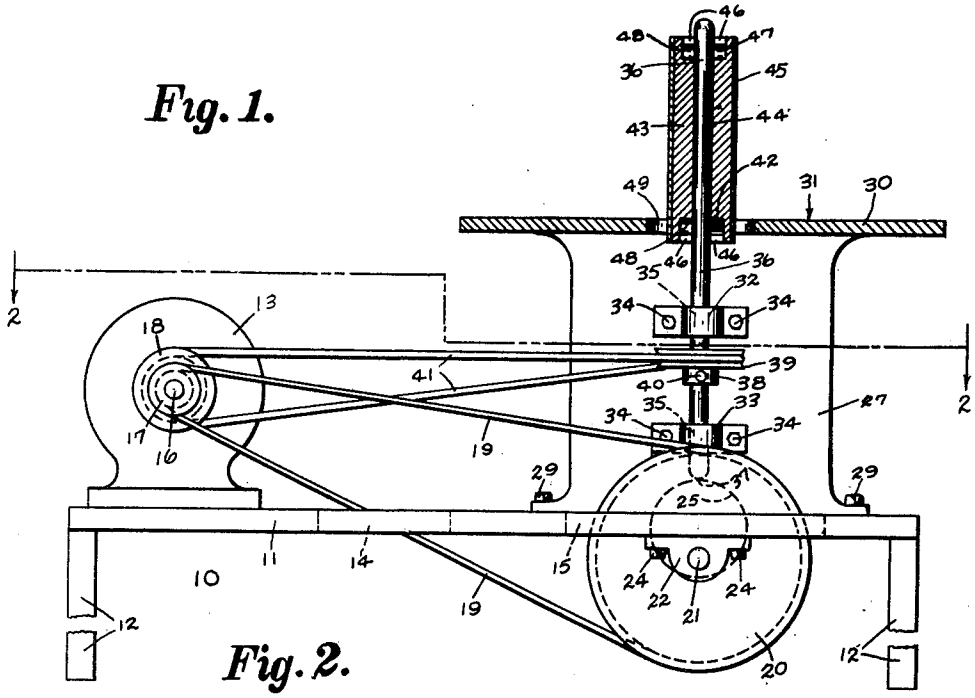
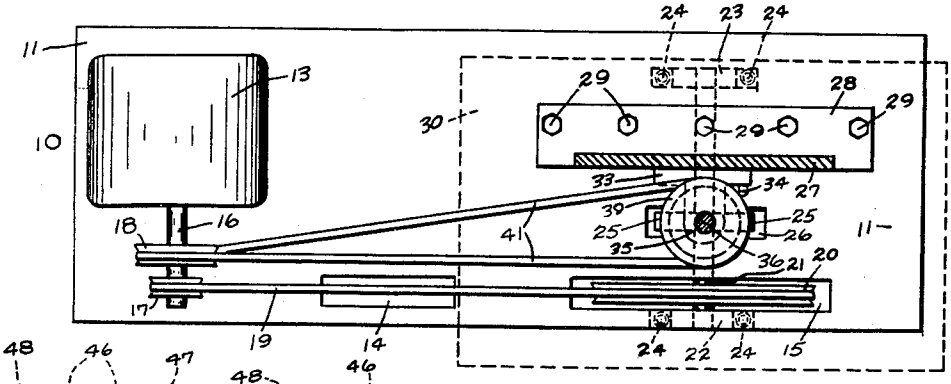


Fig. 2.



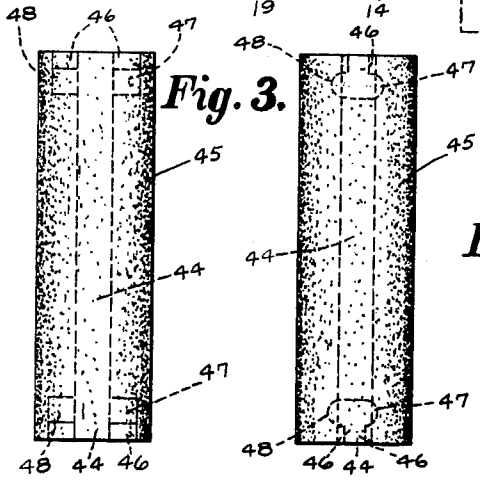


Fig. 3.

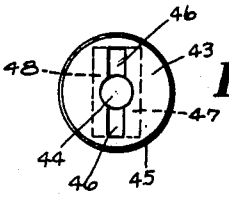


Fig. 5.

Fig. 4.

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SANDING MACHINE

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6 Claims. (Cl. 51—34)

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The present invention relates to abrasive and polishing machinery and more particularly to mechanisms employed for applying sandpaper and the like to work.

It is an object of the invention to provide a device for the above stated purposes for sanding materials, particularly wood, and in a more facile and economical manner than heretofore.

Another object of the invention is to provide a device for the above stated purposes which is of few and simple parts, whereby manufacture is proportionally lessened with respect to the prior practice.

A further object of the invention is to provide a sanding machine having a sanding cylinder so constructed and arranged that it may be readily attached to and removed from its actuating shaft for interchanging cylinders of various sizes and different degrees of abrasiveness in accordance with the requirements of particular materials and operations.

A still further object of the invention is to provide an abrading cylinder which may be readily detached from its actuating arm and turned end for end and reattached to said actuating arm for causing a substantially even wear of the abrasive surface thereof.

An important object of the invention is to provide an abrading machine which does not employ springs of any type.

Other and further objects and advantages of the invention will be understood from the following detailed description thereof.

In the drawings:

Figure 1 is a side elevation of a sanding machine, embodying the present invention, certain parts thereof being in section.

Figure 2 is a sectional view taken substantially on line 2—2 of Figure 1.

Figure 3 is a side view of a sanding cylinder employed, certain parts thereof being represented by dotted lines.

Figure 4 is a view similiar to Figure 3 and depicting the sanding cylinder shown in Figure 3 when turned ninety degrees with respect to the showing thereof in Figure 3.

Figure 5 is a bottom plan view of the sanding cylinder.

Referring now to the drawing for a more particular description, 10 generally indicates a platform or stand having a top 11 and two or more legs 12 secured to each end thereof.

Adjacent to one end of the top 11, a motor 13 is secured thereto by any suitable means such as bolts or the like, not shown.

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The top 11 is provided with two apertures 14 and 15 which, as best shown in Figure 2, are of rectangular elongated contour in plan. The aperture 14 permits passage of a later described belt through the top 11 and the aperture 15 permits a portion of a later described pulley wheel to be disposed therethrough.

As best shown in Figure 2, the shaft 16 of the motor 13 is provided with two driving pulley wheels 17 and 18, the latter preferably being larger in diameter.

A belt 19 extends through the aperture 14 and over the pulley 17 for driving a large pulley wheel 20, the latter, as best shown in Figures 1 and 2, being disposed through the slot 15 of the top 11.

The pulley wheel 20 is splined or otherwise suitably secured to an axle shaft 21. The shaft 21 is carried in trunnions or journal bearing blocks 22 and 23, said blocks being secured to the underneath side of the top 11 by any suitable means such as the stud bolts 24.

During use, the motor 13 is connected to a suitable source of electrical energy such as a 110 v. circuit for driving the motor and its shaft 16 in a clockwise direction for imparting a corresponding movement to the pulley wheel 20.

Between the ends of the shaft 21, a cam or eccentric 25 is secured thereto and, as shown in Figure 1 by means of dotted lines, the member 25 is in an upwardly disposed position. The eccentric 25 moves through a third aperture 26 of the top 11 during its revolvable movements.

A standard 27 is employed, having a foot 28 which, as best shown in Figure 2, is secured to the upper surface of the top of the platform 11 by suitable keepers such as the bolts 29.

The upper end of the standard 27 is formed integral with a table top 30 and the latter is provided with a machine-smoothed surface 31.

That vertical side of the standard 27 which is disposed toward the eccentric 25 has attached thereto two like spaced apart guide blocks 32 and 33. The blocks are secured to the standard 27 by any suitable means such as the bolts 34. The guide blocks are provided with aligned apertures 35, the bores of which are of substantially the same diameter as the diameter of a push-pull rod 36.

The rod 36 extends through the guide blocks and is provided with a semi-globular lower end 37 which, as shown by dotted lines in Figure 1, is in an engagement with the perimetrical edge of the eccentric 25 and, as thus described, it will be seen that during revolvable movements of the eccentric, the latter causes the rod 36 to move

upwardly and a downward movement of said rod is occasioned by means later described.

The hub 38 of a driven pulley wheel 39 is secured by means of a set screw 40 to the rod 36 and between the guide blocks 32 and 33.

A belt 41 is reeved over the pulley wheel 39 of the rod 36 and over the driver pulley wheel 18 of the shaft 16 of the motor 13 for causing the rod 36 to revolve during its longitudinal reciprocating movements.

The belts 19 and 41 are preferably of truncated conical contour in cross section, commonly known as V-belts. The several pulley wheels of the mechanism have grooves on their perimetrical edges of complemental shape in cross section with respect to the belts, and the belt 41 particularly is slightly resilient.

Since the pulley wheel 39 is secured to the rod 36 with respect to the end 37 of said rod in the position shown in Figure 1, the belt 41, during its traveling movements, causes a sufficient pull in a downward direction to be applied to the rod 36, during reciprocation of the latter, to cause the lower end 37 of the rod 36 to remain in contact with the eccentric 25 in a manner whereby the eccentric pushes the rod upwardly and the belt 41 pulls the rod 36 downwardly during revolvable movements of said rod, this being of advantage for purposes later described.

Between the ends of the rod 36, the latter is provided with a lug 42 which is disposed at a right angle with respect to the longitudinal length of the rod 36 for purposes later described, said lug 42 being shown in Figure 1.

The mechanism of the present invention further includes at least one sanding cylinder.

The sanding cylinder 43 is provided with an axially disposed bore 44 which is approximately the same diameter as the rod 36 for receiving the latter therein.

The sanding cylinder 43 is provided with a sheet of sandpaper, emery paper or the like abrasive material on its annular wall. The sheet of sandpaper 45 is secured to the cylinder 43 by any suitable means, not shown, such as an adhesive and preferably, the sheet 45 is secured to the cylinder 43 in a manner whereby it may be readily removed therefrom when it becomes unduly worn.

Referring to Figure 5, the end of the cylinder 43 is provided with a recess 46 at each side of the bore 44 thereof. The transverse widths of the recesses 46 are each slightly larger than the transverse width of the lug 42, whereby one of said recesses receives the lug 42 therein during operation for imparting revolvable movements to the cylinder 43 at times when the rod 36 rotates. Preferably a recess 46 is disposed at each side of the bore 44 of the cylinder 43 for readily attaching the cylinder to the lug.

As best shown by dotted lines in Figures 4 and 5, the recesses 46 are flared at each side thereof and at the inwardly disposed ends of the recesses, as indicated at 47 and 48, for purposes later described.

As best shown in Figures 1, 3 and 4, the sanding cylinder 43 is provided with like sets of recesses and flared ends of recesses at each end thereof, whereby either end of the sanding cylinder may be readily attached to the lug 42, since each said flared end constittues a kerf.

In operation, a piece of work which it is desired to sand is placed upon the upper surface 31 of the table top 30 and moved against the revolving reciprocating sanding cylinder for treating said work. During an upward movement of the rod 36, the lug 42 causes a corresponding upward movement of the sanding cylinder and at times when the belt 41 causes the rod 36 to move downwardly, a corresponding movement is applied to the sanding cylinder since the lug 42 engages in a flared end of a recess 46, whereby the sanding cylinder moves downwardly even at times when the work is pressed strenuously, by the operator, against the sanding cylinder.

The sanding cylinder 43 is disposed through a well or aperture 49 formed through the table top 30.

In actual practice, several of said sanding cylinders are employed, each having differing degrees of abrasiveness and also an adequate number of said sanding cylinders are employed of different diameters complemental to several types of work and materials.

From the foregoing description, it is thought to be obvious that a sanding machine constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason, I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, except as claimed.

I claim:

1. A machine for abrading articles comprising a supporting frame, an electrical motor secured to said frame, two pulleys secured on the shaft of said motor, an axle-shaft carried by said frame, a third pulley on said axle-shaft, a belt reeved over said third pulley and one of the pulleys on said axle-shaft, a cam disposed eccentrically about and secured to said axle-shaft, a rod disposed approximately at a right angle with respect to said axle-shaft, guide-blocks for said rod, the latter having an end disposed in engagement with said cam, a fourth pulley disposed about and secured to said rod and having its faces disposed at approximately a right angle with respect to the faces of the pulleys on said motor shaft, a second belt reeved over the other pulley of the motor shaft and said fourth pulley, whereby simultaneous rotary and reciprocating movements are imparted to said rod at times when said motor is electrically energized, and a cylinder having an abrasive surface attached to the other end of said rod, said frame having a flat surface adjacent said cylinder upon which work may be guided against said abrasive surface during abrasive movements of the latter.

2. A machine for abrading articles as claimed in claim 1 in which the perimetrical surface of the fourth pulley thereof is provided with an anular groove for receiving the said second belt thereof.

3. In an abrading machine, an abrasive member having a rod, a driven pulley axially secured to said rod, a belt for said pulley, an eccentric-cam positioned below said rod and having a perimetrical edge engaging the said rod, means including a driving pulley for driving said belt to rotate said rod and member, and means for rotating said eccentric, the center of said driving pulley being below the center of said driven pulley so that the tension of said belt causes an end of said rod to engage said edge for reciprocating said rod and member during rotation of the rod.

4. An abrading machine as claimed in claim 3 in which the perimetrical surface of the pulley thereof is provided with an annular groove for receiving said belt.

5. An abrading machine as claimed in claim 3 in which said notch of said driven pulley and said belt are both of substantially a V-shape in cross section so that said belt will not tend to become disengaged from said driven pulley.

6. In an abrading machine, an abrasive member having a rod, a driven pulley having a notched circumferential surface annularly secured to said rod, a belt for said pulley, an eccentric-cam positioned below said rod and having a perimetrical edge engaging the said rod, means including a driving pulley for driving said belt to rotate said rod and member, and means for rotating said eccentric, the center of said driving pulley being

below the center of said driven pulley so that the tension of said belt causes an end of said rod to engage said edge for reciprocating said rod and member during rotation of the rod.

ADOLPH F. KRUEGER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
988,285	Rains	Mar. 28, 1911
1,836,064	Boche	Dec. 15, 1931
125,948	Gear	Apr. 23, 1872
76,755	Hammer	Apr. 14, 1868