Nov. 21, 1933. W. G. NORTON 1,935,660

ABRADING AND POLISHING MACHINE

Filed Dec. 18, 1931 3 Sheets-Sheet 1

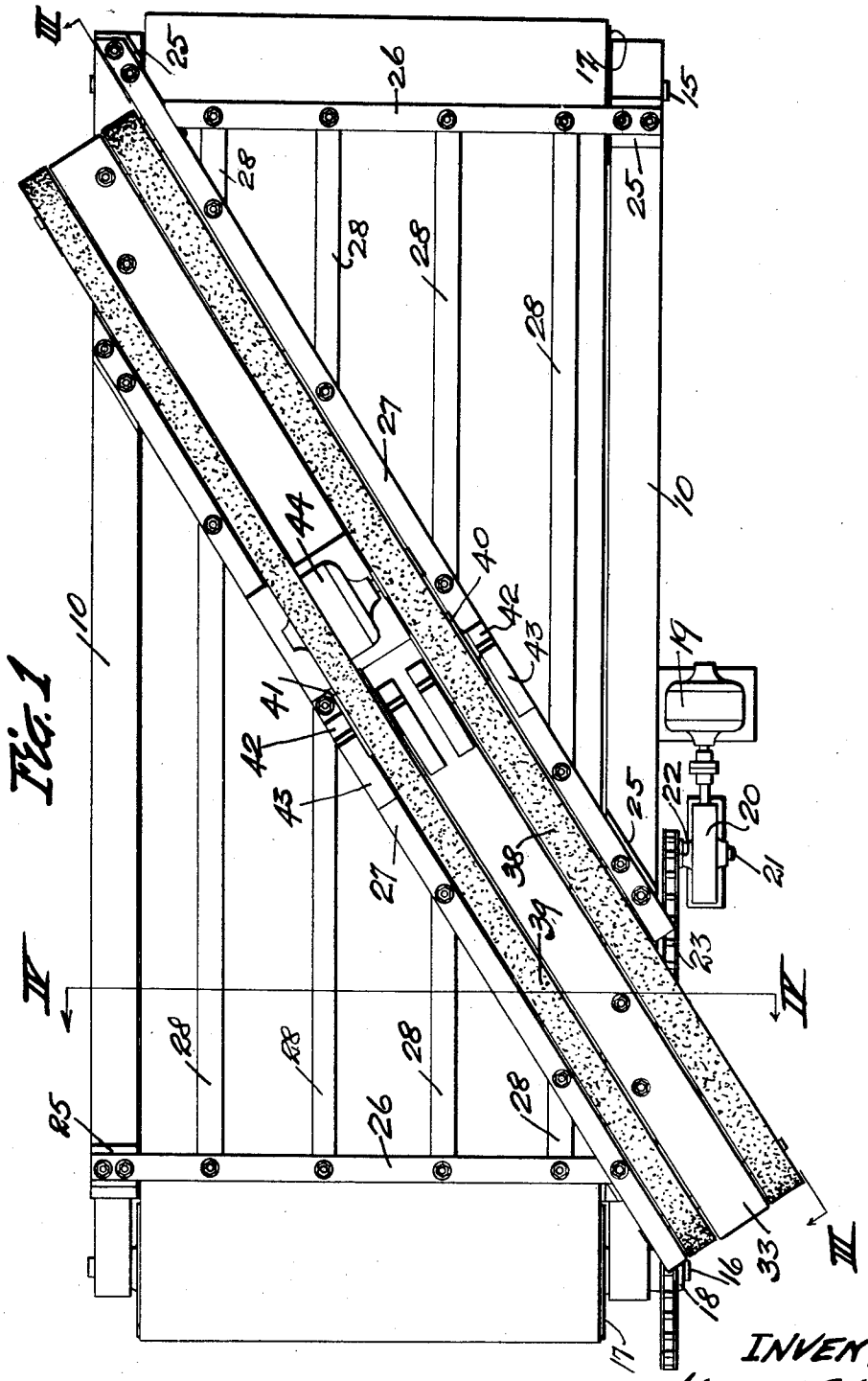


Fig. 1

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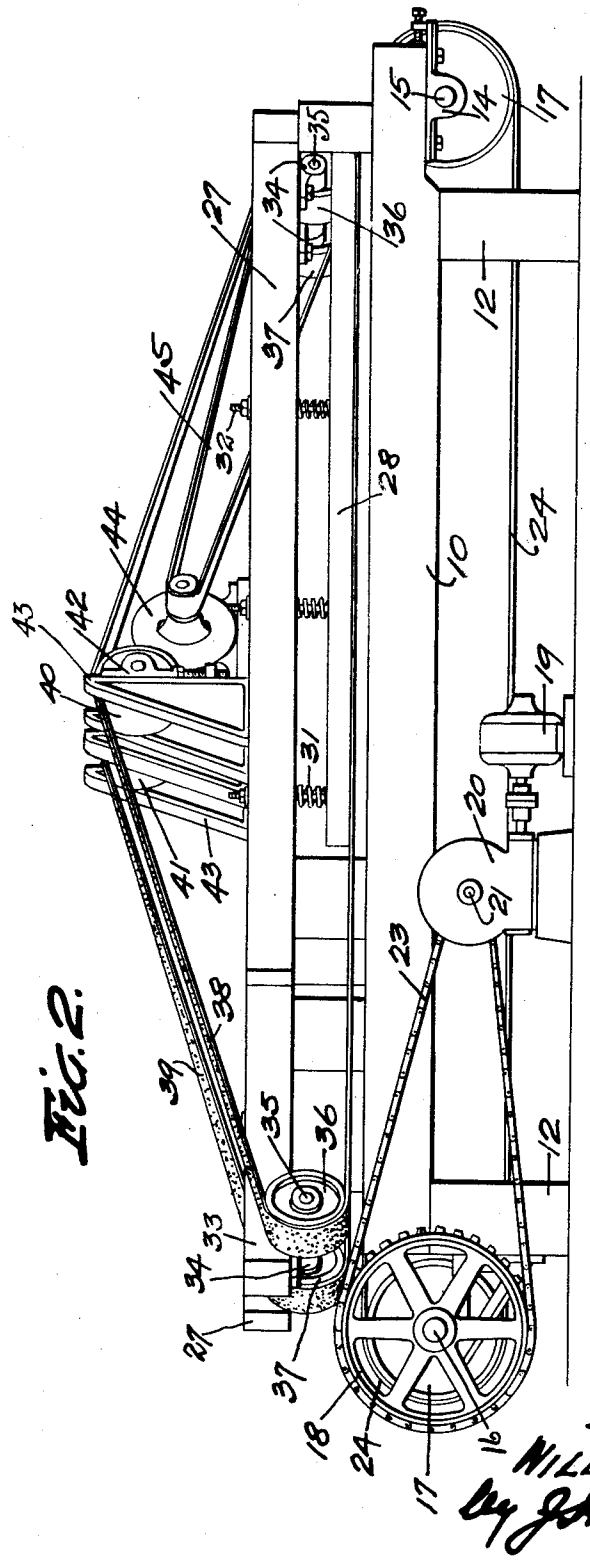


FIG. 2.

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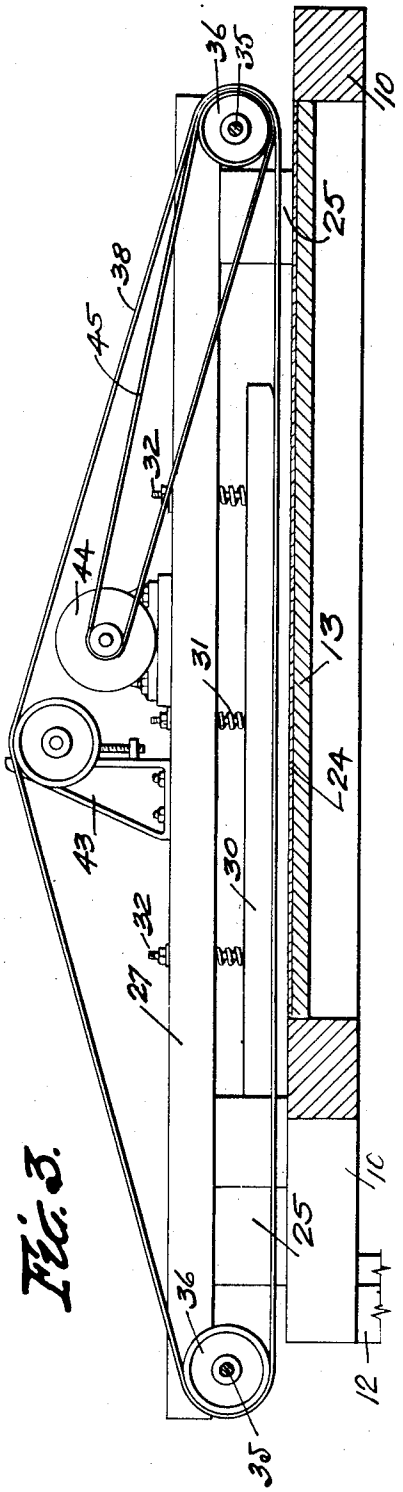


Fig. 3.

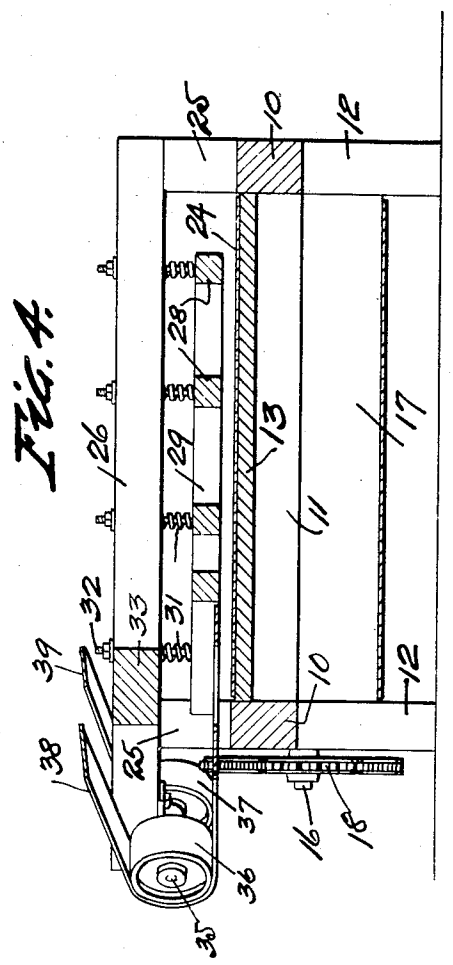


Fig. 4.

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UNITED STATES PATENT OFFICE

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ABRADING AND POLISHING MACHINE

William G. Norton, Memphis, Tenn.

Application December 18, 1931
Serial No. 581,808

12 Claims. (Cl. 51—138)

This invention relates to improvements in machines for abrading or polishing round wooden rods, such as broom handles or the like, and has for its objects to provide a simple and effective machine which is adapted to receive and traverse round rods and during such movement to repeatedly present the entire surface of the rod for action thereon of an abrading or polishing belt; and

To position and actuate belts in a manner to most efficiently abrade or polish the rod as the case may be.

The means by which the foregoing and other objects are accomplished and the manner of their accomplishment will readily be understood from the following specification on reference to the accompanying drawings, in which:

Fig. 1 is a plan view of the machine;

Fig. 2 is a side elevation;

Fig. 3 is a sectional elevation taken along the line of the abrading or polishing belts, being along the line III—III of Fig. 1; and

Fig. 4 is a transverse sectional elevation taken as on the line IV—IV of Fig. 1.

Referring now to the drawings in which the various parts are indicated by numerals, the machine comprises essentially a table, having side rails 10, end rails 11, legs 12, and a floor or bed 13. Mounted below the side rails 10 are bearings 14, in which are journalled shafts 15 and 16. Mounted on and secured to these shafts are drums 17 which preferably are of equal size. One of the shafts, as the shaft 16, is extended and has secured thereon a sprocket wheel 18 which is driven at a moderate rate of speed by an electric motor 19 through a speed reduction unit 20. 21 is the reduced speed shaft 21 of this unit, on which shaft is secured a sprocket pinion 22 which drives the sprocket wheel 18 through a chain 23. Mounted on and driven by the drums 17, is a wide traversing belt 24 which is supported on and slides along the top of the table bed 13.

Supported above the side rails 10 of the table by legs 25 are auxiliary frames each comprising a transverse member 26 and a diagonal member 27. Disposed beneath and supported from these frames are longitudinally disposed pressure bars 28. The outer ends of these bars are framed respectively into transverse members 29 which underlie the transverse member 26, and their inner ends into diagonal members 30 which similarly underlie the diagonal members 27, these bars and members forming pressure units or members. Disposed between the pressure members and the supporting frame are compression springs 31 which yieldingly hold the pressure members down. 32 are adjustable bolts which limit downward movement of the pressure bars.

Disposed between and lying parallel with the diagonal frame members 27 and similarly supported, is an additional frame member 33. Supported beneath the diagonal frame members 27 and 33 are bearings 34 in which are journalled shafts 35 to which are secured pairs of pulleys 36, 37. The pulleys 36 carry an abrading belt 38 and the pulleys 37 a similar belt 39. 40 is a tightener pulley for the belt 38 and 41 a similar pulley for the belt 39, these pulleys being mounted on shafts carried by bearings 42 which are adjustably mounted on brackets 43.

The abrading belts are driven by a motor 44 through a belt 45, this belt underlying the abrading belt 38 and driving one of the pulleys 36, this pulley preferably being reduced in diameter to compensate for the thickness of the driving belt.

To convert the abrader into a polisher, polishing belts of desired texture are substituted for the abrading belts.

In using the machine the rods to be finished are delivered on to the belt 24 exactly at right angles to the machine and are carried by this belt beneath the pressure bars 28 being held against these bars by the downward pressure exerted on the bars by the springs 31. When in contact with the pressure bars the rods are rolled along the underside of the bars with a resulting forward speed one-half that of the driving belt. As the rods progress beneath the pressure bars one end of each in succession is brought beneath the abrading belt 39 and eventually the entire rod is passed therebeneath. During this progression the same end of the rod comes beneath the belt 38 and thereafter the entire length of the rod passes beneath this belt, the resulting abrading action being substantially identical for the two belts. During the time each portion of the rods is being acted on by the abrading belt or belts it is steadily held against the unmoving undersurface of the pressure bar thereby effecting a steady substantially rigid surface for the abrading belt to act against, resulting in a finished article singularly free from imperfect action.

It will be particularly noted that abrading action at each instance is on that particular element of the rod which at that instant is at rest and in contact with the pressure bars. Abrading action being on a portion of the rod which is thus momentarily immovable may be definitely

and accurately regulated and does not accelerate or retard the feeding speed. Steady, smooth feeding flow is thus accomplished and accurate and even abrading action is had with a minimum of moving parts and complications.

It will of course be understood that the belt 39 which is the first to act on the rod throughout its entire length may if desired be a coarse belt and the second belt of much finer grain, or smoother, so that a coarse cut may be followed by a fine or finished cut and a very smooth article be turned out.

The rods thus finished may be delivered directly to a second machine provided with polishing or buffing belts, though ordinarily they will be subjected to additional treatments before such delivery, such treatments however not being pertinent to this invention. In any event this machine may be either an abrading or polishing machine depending on the character of abrading or other belts used.

It will be distinctly understood that in the appended claims the words finishing belt are used to cover either an abrading belt or a polishing belt.

It will further be understood that the machine may be inverted without departing from the principles or invention herein involved.

Having described my invention, what I claim is:

1. In a device of the character described, a pair of pressure members, spaced apart, to form a channel-way, means for contacting and rolling rods to be abraded along the under surfaces of said pressure members, and across said channel-way, in an angular direction with respect to the spaced edges of said members, and abrading means disposed and actuated in the channel-way between said spaced members, acting on the upper surfaces of rods being rolled along said pressure members.

2. In a device of the character described, an elongated table, belt rollers journalled at opposite ends of said table with their tops substantially flush with the top of said table, a traversing belt carried by said rollers, and having the top flight thereof resting on said table, a frame supported by said table and thereabove, an elongated rectangular pressure member, carried by said frame above and substantially parallel with the top surface of said table and said belt thereon, and in proximity thereto, said pressure member being diagonally interrupted to provide a channel-way across said table, belt pulleys journalled in said frame at opposite sides of said table, finishing belts thereon having their lower flights in said channel-way substantially flush with the lower surface of said pressure member, means for driving said traversing belt to roll rods to be finished along said pressure member, while holding them solidly thereagainst and in working contact with said finishing belts, and means for driving said abrading belts.

3. In a device of the character described, an elongated table, belt rollers journalled at opposite ends of said table with their tops substantially flush with the top of said table, a traversing belt carried by said rollers, and having the top flights thereof resting on said table, a frame supported by said table and thereabove, a plurality of pressure bars carried by said frame above and substantially parallel with the top surface of said table and said belt thereon, and in proximity thereto, said pressure bars as a group being diagonally interrupted to provide a channel-way thereacross, belt pulleys journalled in said frame at opposite sides thereof, abrading belts thereon having their lower flights in said channel-way substantially flush with the lower surfaces of said pressure bars, means for driving said traversing belt, to roll rods to be finished along said pressure bars, while holding them solidly thereagainst and in working contact with said abrading belts, and means for driving said abrading belts.

4. In a device of the character described, an elongated table, belt rollers journalled at opposite ends of said table, a traversing belt carried by said rollers, and having the top flight thereof movable over the top of said table, a plurality of pressure bars supported from said table in proximity to said belt, above and substantially parallel with the top surface of said table and said belt, said pressure bars as a group being diagonally interrupted to provide a channel-way across said group, belt pulleys journalled at diagonally opposite corners of said group, abrading belts thereon having their lower flights in said channel-ways substantially flush with the lower surfaces of said pressure bars, means for driving said traversing belt to roll rods to be finished along said bars while holding them solidly thereagainst and in working contact with said abrading belts, and means for driving said abrading belts.

5. In a device of the character described, a traversing belt, an elongated rectangular pressure member disposed in proximity to said belt and adapted to hold rods to be finished against said belt, means for driving said belt to roll said rods along said member, said pressure member being diagonally interrupted to form a channel-way above said rods, a pair of finishing belts positioned in said channel-way, means for maintaining said belts in contact with said rods and means for driving said belts.

6. In a device of the character described, a traversing belt, an elongated pressure member disposed in proximity to said belt and adapted to hold rods to be finished against said belt, means for driving said belt to roll said rods along said member, said member being diagonally interrupted to form a channel-way above said rods, a finishing belt positioned in said channel-way, means for maintaining said belt in contact with said rods and means for driving said belt.

7. In a device of the character described, a member having a flat surface, and having a channelway transversely thereacross, means for contacting rods to be abraded with said flat surface and compelling them to roll therealong across said channelway, and abrading means disposed in and actuated along said channelway, acting upon said rods along an element of each thereof, a major portion of which element is concurrently in contact with said member and said abrading means.

8. In a device of the character described, an elongated member having a flat surface transversely interrupted by a channelway, a mechanism for urging rods to be abraded into contact with said flat surface, and compelling them to move along said surface in a longitudinal direction and diagonally across said channelway, and abrading means disposed in said channelway, acting upon said rods along the lines of contact thereof with said elongated member.

9. In a device of the character described, a member having its face transversely interrupted by a channelway, abrading means disposed in and actuated along said channelway, and a belt for

urging rods to be abraded into contact with said flat surface, and compelling them to roll diagonally across said channelway in abrading contact with said abrading means, whereby such abrasive action will be effective upon elements of said rods in contact with said member.

10. In a device of the character described, a plurality of bars transversely interrupted to form a channelway thereacross, a mechanism for holding bars against and rolling them along said bars and diagonally across said channelway, and a finishing belt disposed in and actuated along said channelway in abrasive contact with said rods.

11. In a device of the character described, an elongated member having a flat contact surface transversely interrupted to form a channelway thereacross, a traversing member for holding rods to be finished against, and rolling them along, said elongated member and diagonally across said channelway, and a finishing belt disposed in and actuated along said channelway in abrasive contact with said rods.

12. In a device of the character described, a member having a flat surface, interrupted transversely to form a channelway thereacross, a belt disposed adjacent to and parallel with said member for holding rods to be finished thereagainst and rolling them therealong and diagonally across said channelway, means for driving said belt, and a finishing belt disposed in and actuated along said channelway in abrasive contact with said rods.

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