Jan. 5, 1932. R. M. KINCAID 1,840,108

POLISHING TOOL

Filed July 27, 1929

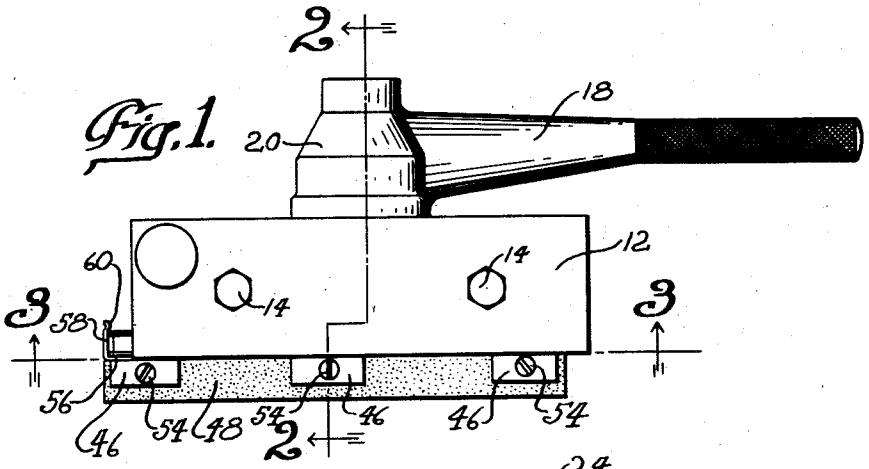


Fig. 1.

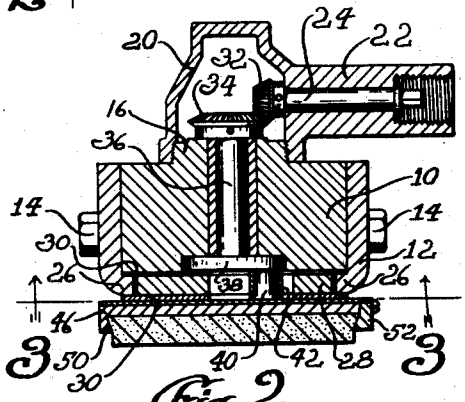


Fig. 2.

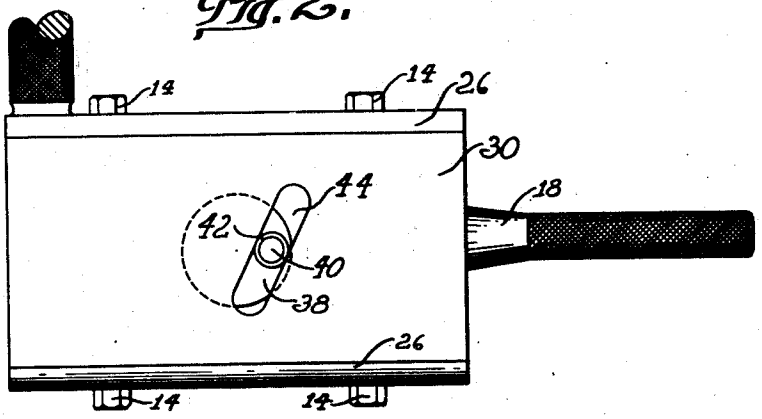


Fig. 3.

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POLISHING TOOL

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This invention relates to a polishing machine and is illustrated as embodied in a manually supported device particularly adapted for use in polishing vehicle bodies.

Heretofore machines intended for this use have had a reciprocating movement and it has been found that when the machines are in use there is considerable vibration and that such vibration is caused by the harmonic movement of the reciprocating or polishing member. It is, therefore an important object of the invention to provide a reciprocating member, the movement of which is progressively decreased throughout its movement in either direction.

Other objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings, in which:

Fig. 1 is a side elevation illustrating an embodiment of my invention.

Fig. 2 is a sectional view on line 2—2 of Fig. 1.

Fig. 3 is a bottom view taken on line 3—3 of Fig. 1, showing in elevation the under-surface of the tool with the abrasive holding member removed.

Referring to the drawings wherein I have illustrated a preferred form of my device, the reference numeral 10 designates a block having lateral plates 12 which are detachably secured to the block 10 such as by bolts 14. The upper surface of the block 10 is provided with a screw threaded boss 16 which receives a handle portion 18, the attaching portion of which is hollowed out to form a gear housing 20. Extending at right angles to the handle portion 18 is a boss 22 carrying a shaft 24 adapted to engage a suitable driving mechanism, such as a flexible cable, not shown.

The lateral flanges 12 have their lower ends turned in under the block 10, as at 26, to provide a retaining means and a guide for the reciprocating member.

The reciprocating member comprises a plate 28 having upper and lower plates 30 extending beyond the opposite sides of the plate 28. The portions 26 of the plates 12 are received between the plates 30.

Mounted within the housing 20 and driven by the shaft 24 is a pinion 32 meshing with a gear 34, keyed to a shaft 36 journaled in the block or body portion 10. The lower end of the shaft 36 is provided with a flange 38 recessed in the block 10 and an eccentrically mounted pin 40 extends downwardly from the flange 38. A roller 42 is carried by the pin 40. The pin 40 and roller 42 are received in a slot 44 in the plates 28 and 30. It will be understood that rotation of the shaft 36 and eccentric pin 40 imparts reciprocating movement to the plates 28 and 30 guided by the flanges 26.

Heretofore slots of this nature have been provided, but such slots have extended at right angles to the direction of the reciprocating movement. By the arrangement of a slot in this manner the reciprocating member, at the beginning of its movement in one direction, moves at a speed equal to the speed at the end of the movement. Such movement causes considerable vibration. It has been found that by extending the slot on an angle less than 90 degrees the speed of the movement at the beginning of the stroke can be varied relative to the speed of the movement at the end of the stroke.

To move the reciprocating member one half of its distance in one direction it is desirable to have it travel the one half distance in one third of the time that it takes to travel the entire distance in one direction, and to complete its movement for the remaining half distance in two thirds of the time that it takes to move the entire distance. On the return movement it is again desirable to move the reciprocating member in the opposite direction one half of its return distance in one third of the time and the remaining half of the distance in two thirds of the time. It will be understood that in making a complete cycle the reciprocating member starts its movement in one direction very rapidly and decreases its speed toward the end of its movement in that same direction. When the reciprocating member is returned the speed is comparatively fast and is again slowed up at the end of its return movement, thus breaking up the harmonic movement of the recip-

rocating member and eliminating vibration of the device.

It will be understood that the angle at which the slot 44 extends may be varied, depending on the amount of time required to move the reciprocating member over a given distance of its travel. It has been found that an angle of 26 degrees and 30 minutes from a line at right angles to the direction of travel of the reciprocating member is most desirable.

As shown on the drawings, three locking plates 46 have been secured to the reciprocating member and each are adapted to detachably receive an abrasive member 48. One face of the locking member is dove-tailed, as shown at 50, and the opposite face 52 thereof is dove-tailed and detachably secured to the locking member 46, such as by screws 54. The locking members 46 are secured to a plate 56 as a unit and the opposite ends of the plate 56 are turned upwardly, as at 58. The outer ends of the upwardly extending portion 58 are bent inwardly, as at 60, and snap over the upper plate 30 to secure the unit on the reciprocating member. It will be understood that the upwardly extending arms 58 are resilient and can be snapped over the ends of the reciprocating member.

Various changes, including the size, shape and arrangement of parts, may be made without departing from the spirit of my invention and it is not my intention to limit its scope other than by the terms of the appended claims.

What I claim is:

1. A device of the class described comprising a body portion, a reciprocating member on the lower surface of said body portion, a rotatable member in said body portion, an eccentrically mounted pin on said rotatable member in driving engagement with said reciprocating member, said reciprocating member being provided with a slot extending at an angle of less than 90 degrees to the direction of movement of the reciprocating member for the reception of the eccentrically mounted pin.

2. A device of the class described comprising a body portion, a reciprocating member carried by said body portion having a slot extending in a direction at an angle of approximately 26 degrees to a line at right angles to the direction of movement of the reciprocating member, a rotatable member in said body portion, and an eccentrically mounted pin on said rotatable member received in the slot.

3. A polishing tool of the class described comprising a manually supported body portion, a reciprocating member carried by said body portion having a slot extending in a direction between a line at right angles to the direction of travel of the reciprocating member and a line parallel to the direction of travel of the reciprocating member, an eccentrically movable member in the slot, and a detachable abrasive member carried by said reciprocating member.

4. A polishing tool of the class described comprising a body portion, a rotatable member in said body portion, a reciprocating member on one face of said body portion having a slot arranged diagonally with respect to the direction of travel of the reciprocating member, a pin carried by said rotatable member eccentrically mounted with respect to the axis of said rotatable member received in the slot, and an abrasive member on said reciprocating member.

5. A polishing tool of the class described comprising a body portion, a reciprocating member on one face of said body portion, an abrasive member carried by said reciprocating member, and means for moving said reciprocating member in one direction, first at a relatively high rate of speed and then at a relatively slow rate of speed.

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