Dec. 11, 1928. 1,695,090

A. N. EMMONS

ABRADING MACHINE

Filed Dec. 30, 1926 2 Sheets-Sheet 1

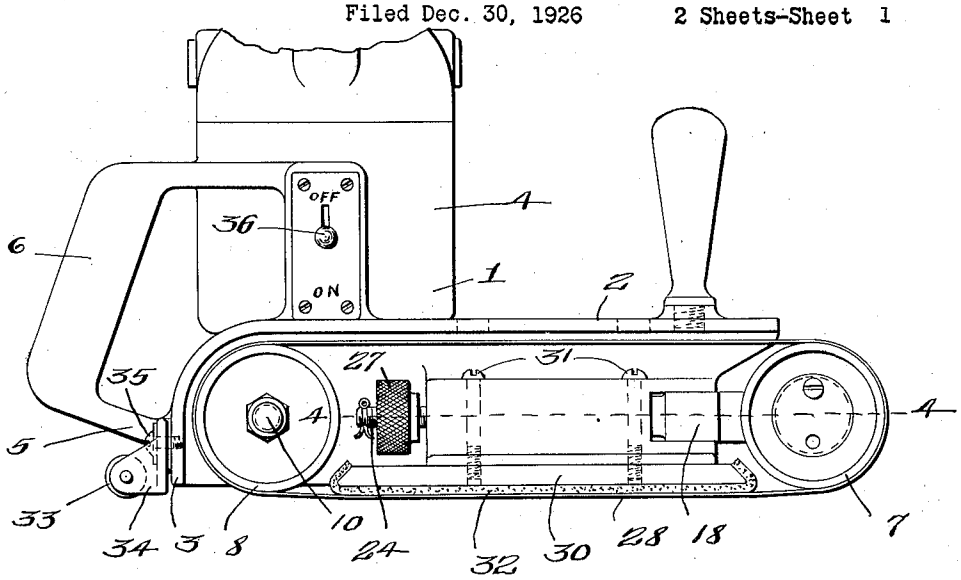


Fig. 1.

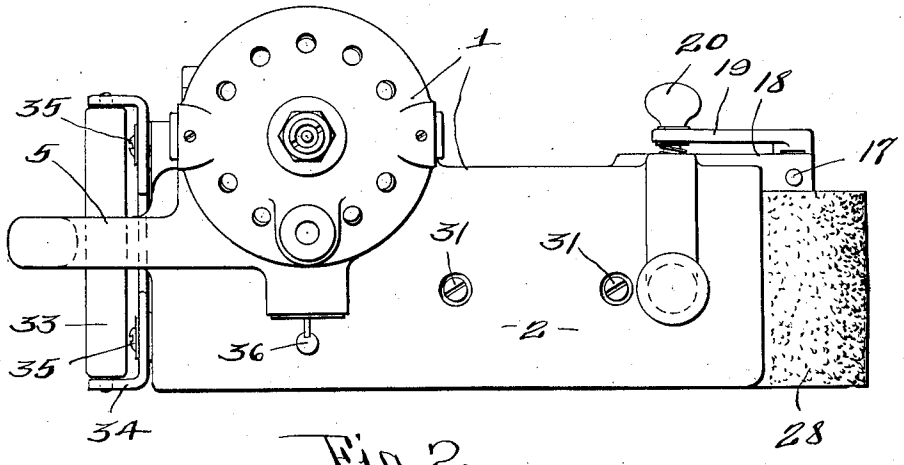


Fig. 2.

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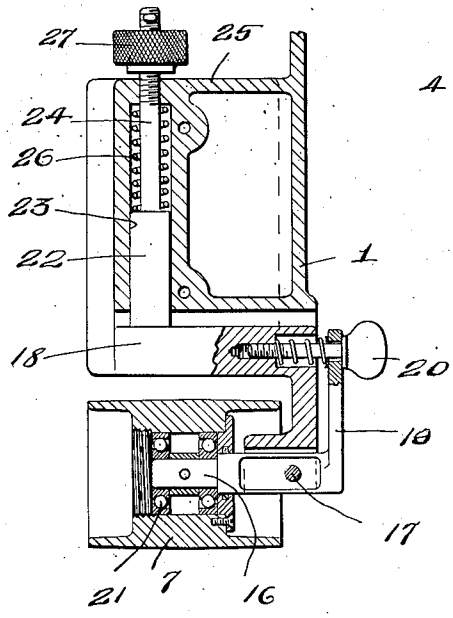


Fig. 4.

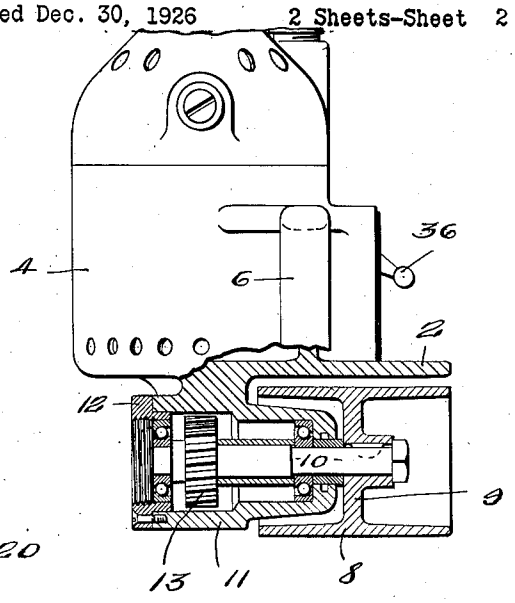


Fig. 3.

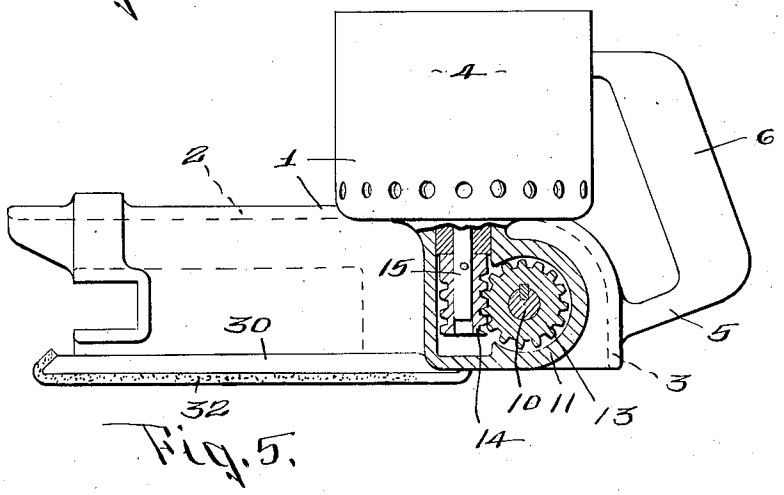


Fig. 5.

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Patented Dec. 11, 1928. 1,695,090

UNITED STATES PATENT OFFICE.

ARTHUR N. EMMONS, OF NEDROW, NEW YORK, ASSIGNOR TO THE PORTER-CABLE MACHINE COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

ABRADING MACHINE.

Application filed December 30, 1926. Serial No. 158,062.

This invention relates to portable abrading machines, particularly machines for the carrying of belt of abrading material as sand paper for finishing floors and other surfaces and has for its object a particularly simple and efficient construction whereby the belt bears equally throughout its working surface and means for steadying the machine during its movement over the surface being finished.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all of the views.

Figure 1 is a side elevation, partly broken away, of a machine embodying my invention.

Figure 2 is a plan view thereof.

Figure 3 is an end elevation partly broken away looking to the right in Figure 1.

Figure 4 is a sectional view taken on line 4—4, Figure 1, parts being omitted.

Figure 5 is an elevation of the frame of the machine and the portion of the driving mechanism connected to the motor carried by the frame.

This abrading machine comprises generally, a frame, a pair of rollers carried by the frame at the front and rear ends thereof, an abrading or polishing belt movable over the rollers and arranged so that its lower run bears on the surface being finished and means for steadying the machine in its movement over said surface and holding the machine so that the pressure is applied equally throughout the area of the lower run of the belt between the rollers.

1 designates the frame, which may be of any suitable form, size and construction, it being shown as having a flat upper plate 2, and a downward shield portion 3 at its rear end. The frame is also formed at one side of the longitudinal median line thereof and near its rear end, with a casing 4 for the motor and with a handle 5 located substantially centrally thereof at its rear end and having an upwardly extending grip portion 6.

7 and 8 designate respectively the front and rear rollers, the rear roller being open at its ends and having a web 9 midway between its ends, which web is mounted upon a shaft or spindle 10 journalled in a casing or hollow bracket 11 depending from, and integral with, the top plate 2 of the frame, this casing having a portion which projects into one end under roller 8. The spindle 10 is also journalled at its outer end in a bearing carried by the closure 12 for the outer end of the casing 11. A worm gear 13 is mounted on the shaft within the casing 11 and meshes with a worm 14 mounted on a vertical shaft 15 extending into the casing 4 where it is connected to the armature shaft of the motor therein.

The front roller 7 is mounted on an axle 16, here shown as pivoted at one end at 17 to a carrier 18 supported by the frame between the rollers 7, 8, the axle 16 having an angular arm 19 secured to the carrier by an adjusting screw 20, the screw being operable to move the spindle on its pivot in order to vary slightly the angle of the axis of the front roller 7 in order to cause the belt to run straight on the rollers. The roller 7 is of slightly greater diameter midway between its ends than at its ends in order to hold the belt thereon. Also, suitable anti-friction bearings 21 are interposed between the spindle and the roller. The carrier 18 is adjustable to carry the roller 7 toward and from the roller 8 to tension the belt and as here shown, the carrier is formed with a stem 22 slidable in a suitable passage 23 in the frame between the rollers, this stem having a reduced threaded portion or stud 24 extending rearwardly through the bracket portion 25 of the frame in which the stem 22 is located.

A spring 26 is located in the passage 23 between the bottom of said passage and the end of the stem 22 at the base of the reduced portion 24. An adjusting nut 27 threads on the outer end of the threaded stud 24. Obviously, as this nut 27 is tightened, the carrier 18 and hence, the roller 7 will be pulled backwardly toward the roller 8 and as the nut is loosened, the spring 26 will force the carrier 18 and roller 7 forwardly away from the roller 8 and tighten the belt.

28 designates the belt running over the rollers, this being of any abrasive material, usually sand paper. The lower run of the belt between the rollers 7, 8 is pressed or held out of the horizontal plane tangent to the lower sides of the rollers by a removable pressure plate 30 secured to the bracket 25 as by screws

31, the plate being removable in order that other plates of different character or material may be interchanged therewith.

The plate here illustrated is shown as formed of a covering of soft material, as felt, designated 32. In some instances, a thicker plate or plate of a hard material may be desirable. The plates thus support the frame with the rollers 7, 8 and the portions of the belt thereon off the surface being finished.

The means for steadying the machine acts to prevent sidewise tipping of the machine due to any overweight on one side thereof as the weight of the motor 4, or to any other cause. As here shown, it consists of a roller or rest 33 extending transversely of the frame at the rear end thereof and arranged tangent to the plane of the lower run of the belt. The roller is here shown as carried by a bracket 34 secured as by screws 35 to the shield 3. The handle 6 has an upwardly extending grip arranged directly above this roller so that the operator is relieved of any sidewise twist on his hand due to the tendency of the machine by tip sidewise.

35 is the handle of the switch for controlling the current to the motor, and this switch handle is located in front of the upright portion of the handle 6 in position to be engaged by the thumb while the hand is gripping the handle 6.

Owing to the arrangement of the handle 6 and the switch handle 36, the motor can be started and stopped at will by the hand operating the tool. Owing to the roller 33, or its equivalent, and its relation to the handle 6 and further, owing to the location of the lower run of the belt and its relation to the roller 33, the machine is particularly easy to control and guide with minimum effort.

What I claim is:

1. An abrading machine comprising a frame, a pair of rollers carried by the frame at the front and rear ends thereof, an abrading belt movable over the rollers, means carried by the frame for actuating the rollers, a pressure member carried by the frame between the rollers and arranged to hold the lower run of the belt out of a plane tangent to the lower sides of the rollers, a support for the rear end of the frame arranged in the rear of the rear roller to hold the rear roller and the portion of the belt thereon off the surface being finished whereby the lower run of the belt rests on the work and a handle arranged at the rear end of the frame above said rear end support and between the lateral sides of the frame, the front end of the frame being unsupported except by the intermediate run of the belt on the surface being finished.

2. An abrading machine comprising a frame, a pair of rollers carried by the frame at the front and rear ends thereof, an abrading belt movable over the rollers, means carried by the frame for actuating the rollers, said means being located over the rear roller, a pressure member carried by the frame between the rollers and arranged to hold the lower run of the belt out of a plane tangent to the lower side of the rollers, a support for the rear end of the frame arranged in the rear of the rear roller to hold the rear roller and the portion of the belt thereon off the surface being finished and an upright handle arranged above the rear support and between the lateral sides of the frame, the handle being rigid with the frame, the front end of the frame being unsupported except by the pressure member and the lower run of the belt.

In testimony whereof, I have hereunto signed my name, at Syracuse, in the county of Onondaga, and in the State of New York, this 21st day of December, 1926.

ARTHUR N. EMMONS.