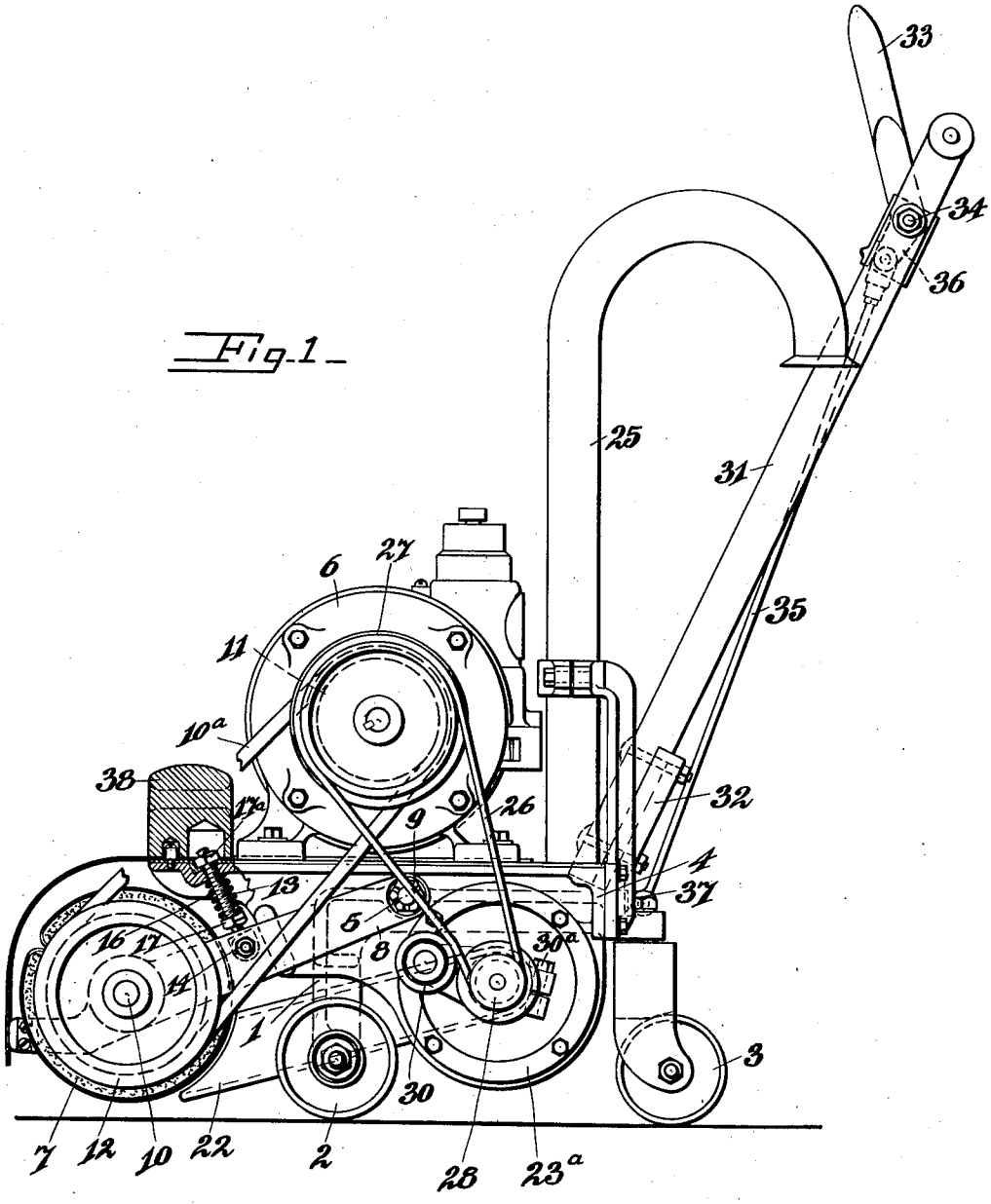
May 5, 1931. A. N. EMMONS 1,803,549

SURFACE FINISHING MACHINE

Filed Feb. 26, 1930 3 Sheets-Sheet 1

Fig. 1



INVENTOR:
Arthur N. Emmons,
BY Bodell & Thompson
ATTORNEYS.

May 5, 1931. A. N. EMMONS 1,803,549

SURFACE FINISHING MACHINE

Filed Feb. 26, 1930 3 Sheets-Sheet 2

Fig 4.

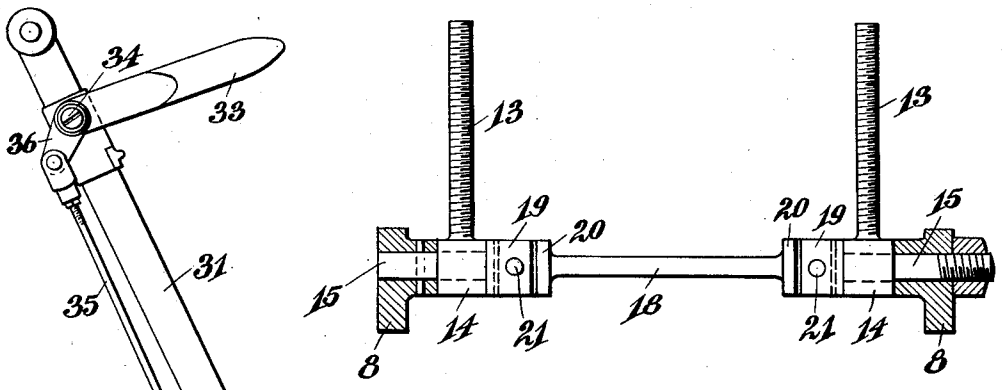
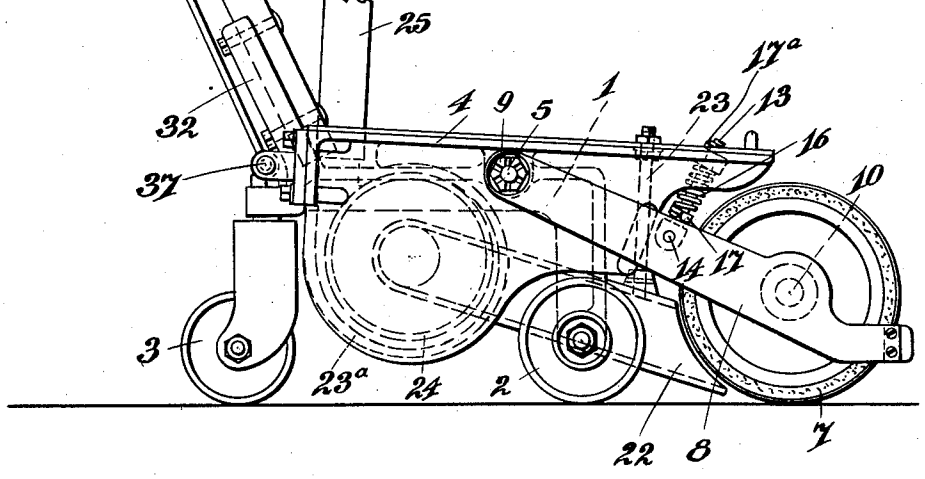


Fig 2.



INVENTOR:
Arthur N. Emmons,
BY Bodell & Thompson
ATTORNEYS.

May 5, 1931. A. N. EMMONS 1,803,549

SURFACE FINISHING MACHINE

Filed Feb. 26, 1930 3 Sheets-Sheet 3

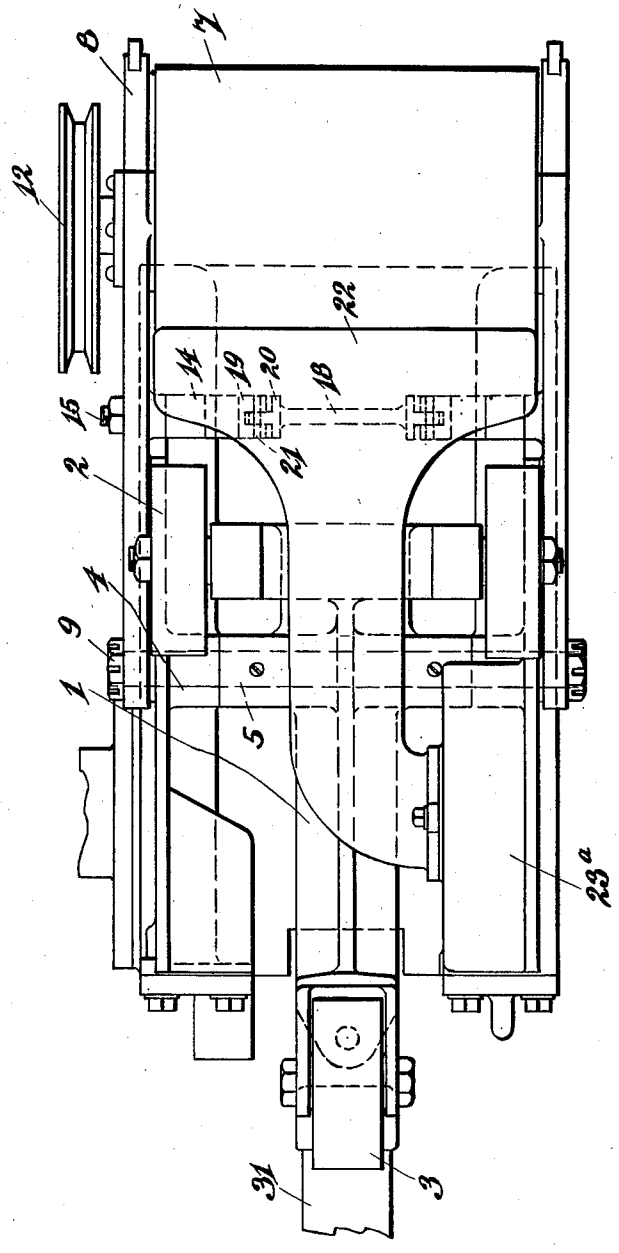


Fig. 3.

INVENTOR:
Arthur N. Emmons,
BY
Boelell & Thompson
ATTORNEYS.

Patented May 5, 1931

1,803,549

UNITED STATES PATENT OFFICE

ARTHUR N. EMMONS, OF SYRACUSE, NEW YORK

SURFACE-FINISHING MACHINE

Application filed February 26, 1930. Serial No. 431,600.

This invention relates to surface or floor finishing machines, and has for its object, a particularly simple arrangement of the support of the abrading tool or roller, and the actuating means therefor, whereby the pressure of the roller against the surface being finished, can be readily adjusted with minimum effort on the part of the operator.

Another object, is a machine which is particularly simple and compact in construction and consists of a minimum number of parts.

Another object, is the mounting of the abrading roller so that the roller may have a rocking movement to conform, within limits, to unevenness on 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 the views.

Figure 1 is a side elevation, partly in section, of a machine embodying my invention.

Figure 2 is an opposite side elevation, parts being removed, showing the chassis, the adjustable tilting carriage, and the adjustable abrading roller.

Figure 3 is a bottom plan view of parts seen in Figure 2.

Figure 4 is an enlarged detail view of a portion of the connection between the carriage and the supports for the abrading member.

This machine comprises generally, a chassis or truck having means as front and rear wheels for resting on the floor or surface being finished, a carriage mounted on the chassis to have an up and down or tilting adjusting movement, a motor mounted on the carriage, an abrading roller, supports for opposite ends of the roller connected to the chassis to have an up and down movement, yielding motion transmitting means between the supports for the roller and the carriage, whereby the adjusting movement of the carriage is transferred to the roller, means, as a handle, by which the machine is guided over the surface, said handle being connected to the chassis, and operator-operated means connected to the carriage to adjust it and hence, raise or lower the roller relatively to the chassis.

1 designates the chassis which may be of any suitable form, size and construction.

2 and 3 are respectively front and rear wheels, the front wheels being preferably mounted on rigid axles, there being one rear wheel 3 which is a castor wheel.

4 designates the carriage which is pivotally mounted at 5 between its front and rear ends on the chassis so that it has an up and down tilting movement.

6 is an electric motor mounted on the adjustable carriage 4 to partake of the adjusting or tilting movement thereof.

7 is the abrading roller which is located in front of the chassis to have an up and down adjusting movement to raise or lower, or to vary the pressure of the roller on the floor, or to lift the roller entirely off the floor.

The supports for the roller are preferably links 8 which extend forwardly and rearwardly, these links being pivoted at their rear ends to the chassis, and preferably coaxial with the pivot of the carriage 4. They are here illustrated as mounted upon the same pivot 5 that the carriage is mounted on, this pivot 5 being a rod extending transversely of the chassis, the carriage being pivoted on the intermediate part of the rod and the links on the opposite ends of the rod.

Nuts 9 thread on the opposite ends of the pivot rod to hold the parts assembled. The front ends of the links are mounted upon the opposite ends of the shaft or axle 10 of the roller 7.

The motion transmitting means between the rotor of the motor 6 and the roller 7 may be of any suitable form, size and construction, and that here illustrated, is a belt 10 running over a pulley 11 on the rotor of the motor, and over a pulley 12 mounted on one end of the axle 10 of the roller 7 outside of the adjacent supporting link 8. The connections between the adjustable carriage 4 and the supports 8 for the roller 7 are arranged to permit independent movement of the links 8 upwardly and downwardly, within limits, when the roller is engaged with the surface being

finished and encounters small obstructions nearer either end than the other so that the roller is capable of a rocking movement.

These connections comprise rods 13 having bearings 14 pivotally mounted on studs 15 carried by the links 8 on the inner sides thereof, the studs being in alinement, the rods extending upwardly through the front end of the carriage, and springs 16 encircling the rods, and each thrusting at one end against the carriage, and at its other end against an adjusting nut 17 near the lower ends of the rods or the bearings 14 thereof. During the up and down yielding movement of the roller, the rods 13 slide in the carriage. Suitable retaining nuts 17ª thread on the upper ends of the rods against the carriage. A tie-rod 18 connects the studs 15 and is connected to each of said studs by a universal joint, each including a section 19 on the stud, and a section 20 on the end of the tie-rod, these sections being pivoted together by a pin 21.

The machine is provided with a suitable dust collector 22 arranged in the rear of the roller 7 and connected to the carriage at the forward end by means as rods 23 to partake of the up and down movement of the carriage 4.

This construction provides for holding the dust collector always in the same position relative to the roller 7 with the exception of the slight movement allowed between the roller and the carriage 4 through the rods 13 and the spring 16 as above described. Accordingly, when the roller 7 encounters any obstacle on the floor other than slight humps or uneven spots, as for example, a threshold in a doorway, the dust collector will be carried from the floor with the roller, thus preventing the dust collector from catching in such an obstacle.

The rear end of the dust collector communicates with a casing 23ª on the carriage in which a blower 24 is mounted. The casing 23ª has an outlet pipe 25 for connection to a suitable sack, not shown, in which the dust is collected. The blower 24 is actuated by the motor through suitable motion transmitting mechanism as a belt 26 running over pulleys 27, 28 mounted respectively on the rotor shaft of the motor and the shaft of the blower 24. Inasmuch as the blower runs at a comparatively high speed, a belt tightening means is provided in the nature of an idler pulley 30, which may be adjusted and secured in any position by screw 30ª.

It is to be noted that the motor 6 and the blower casing 23ª are both mounted on the carriage and that the arms 8 are also connected to the carriage so that the entire operating mechanism moves as a unit. Whether the roller is in contact with the floor surface or raised from it, there is no variation in either of the belts 10 or 26. The slight movement of the roller relative to the carriage on account of unevenness in the floor as before mentioned is of short duration and does not effect or vary the belt 10 to any noticeable extent.

To compensate for the stretching of the belt 10, the motor legs are slotted where the same are bolted upon the carriage whereby the motor may be adjusted to remove the slack from the belt, if any should develop.

The machine is guided over the surface of the floor by an upwardly and rearwardly inclined handle 31 secured at its lower end to the angular casting 32 which is part of the chassis 1. The means for tilting the carriage 4 is connected to the carriage and includes a handle 33 in the form of a bell crank lever pivoted at 34 to the handle 31, and a rod 35 connecting one arm of the handle 33, or arm 36 thereon, and the rear end of the carriage, the rod being pivoted to the rear end of the carriage 37. When the handle 33 is pulled upwardly into the position shown in Figure 1, the arm 36 and link 35 move beyond a dead center line and thus hold the carriage in its position assumed when the roller 7 is held entirely off the surface being finished. By pushing downwardly on the handle 33 to break the toggle formed by the links 36, 35, the rear end of the carriage 4 moves upwardly and the front end downwardly, lowering the roller against the surface with the weight of the carriage and parts carried thereby transmitted to the roller through the springs 16. A suitable weight 38 is mounted on the front end of the carriage to press the roller with considerable force against the surface being finished.

Heretofore in machines of this kind, the abrasive roller has been pivoted to the chassis of the machine and the roller has been raised and lowered relatively to the floor independently of the chassis. Material advantages are apparent in my invention in that by providing a tilting carriage and having the roller secured thereto, the operator, when completing a sanding operation across the floor can gradually raise the roller from the floor as the machine approaches the base board. Accordingly, the operator does not sand valleys in the floor around the edges of the room. The machine leaves a smooth even surface due to the fact that the pressure between the roller 7 and the surface of the floor is maintained constant by the weight of the apparatus upon the carriage. It does not depend upon the pressure applied by the operator as in the case of machines where the roller itself is lowered into contact with the surface of the floor through a lever mechanism.

This construction greatly facilitates the manipulation and operation of the tool with minimum effort on the part of the operator.

What I claim is:

1. In a floor surfacing machine, the combination of a supporting chassis having means

for resting on the floor, a carriage adjustably mounted on the chassis to have an up and down movement, an abrading roller, supporting means therefor adjustably mounted on the chassis to have an up and down movement, a motor mounted on the carriage, motion transmitting means between the motor and the abrading roller, means for adjusting the carriage relatively to the chassis, and means for transmitting the adjusting movement of the carriage to the supporting means for the roller.

2. In a floor surfacing machine, the combination of a supporting chassis having means for resting on the floor, a carriage adjustably mounted on the chassis to have an up and down movement, an abrading roller, supporting means therefor adjustably mounted on the chassis to have an up and down movement, a motor mounted on the carriage, motion transmitting means between the motor and the abrading roller, means for adjusting the carriage relatively to the chassis, and yielding motion transmitting connections between the carriage and the supporting means for the roller.

3. In a floor surfacing machine, the combination of a supporting chassis having means for resting on the floor, a carriage adjustably mounted on the chassis to have an up and down movement, an abrading roller, supporting means therefor adjustably mounted on the chassis to have an up and down movement, a motor mounted on the carriage, motion transmitting means between the motor and the abrading roller, means for adjusting the carriage relatively to the chassis, and yielding motion transmitting connections between the carriage and the supporting means for the roller, said connections being arranged to permit a yielding up and down movement of the opposite ends of the roller independently of each other.

4. In a floor surfacing machine, the combination of a chassis having means for resting on the surface being finished, a carriage pivoted to the chassis on a horizontal axis, an abrading roller and a support therefor pivoted to the chassis on the horizontal axis, a motor carried by the carriage, motion transmitting means between the motor and the roller, a handle connected to the chassis, means, including a handle lever located adjacent the former handle, for adjusting the carriage about its axis, and motion transmitting means between the carriage and the support for the roller, whereby the tilting of the carriage in one direction or the other raises or lowers the support.

5. In a floor surfacing machine, the combination of a chassis having means for resting on the surface being finished, a carriage pivoted to the chassis on a horizontal axis, an abrading roller and a support therefor pivoted to the chassis on the horizontal axis, a motor carried by the carriage, motion transmitting means between the motor and the roller, a handle connected to the chassis, means for adjusting the carriage about its axis, and motion transmitting means between the carriage and the support for the roller, whereby the tilting of the carriage in one direction or the other raises or lowers the support for the roller, the last mentioned motion transmitting means including spring means arranged to permit an up and down yielding movement of the roller relatively to the carriage due to unevenness on the surface being finished.

6. In a floor surfacing machine, the combination of a chassis having means for resting on the surface being finished, a carriage pivoted to the chassis on a horizontal axis, an abrading roller and a support therefor pivoted to the chassis on the horizontal axis, a motor carried by the carriage, motion transmitting means between the motor and the roller, a handle connected to the chassis, means for adjusting the carriage about its axis, and motion transmitting means between the carriage and the support for the roller, whereby the tilting of the carriage in one direction or the other raises or lowers the support for the roller, the last mentioned motion transmitting means including spring means arranged to permit an up and down yielding movement of the roller relatively to the carriage due to unevenness on the surface being finished, said spring means being arranged to permit up and down movement of opposite ends of the roller within limits independently of each other.

7. In a floor surfacing machine, the combination of a chassis having mechanism for resting on the surface being finished, a carriage pivoted to the chassis on a horizontal axis, an abrading roller and a support therefor pivoted to the chassis on a horizontal axis substantially coincident with that of the carriage, a motor mounted on the carriage, motion transmitting means between the motor and the roller, a handle connected to the chassis, means for adjusting the carriage about its axis, and yielding motion transmitting means between the carriage and the support for the roller.

8. In a floor finishing machine, the combination of a chassis having means for resting on the floor to be finished, a carriage mounted on the chassis to have an up and down movement, a motor mounted on the carriage, an abrading roller, a support therefor connected to the chassis to have an up and down movement, spring means between said supports and the carriage, a dust collector arranged in the rear of the roller and being supported so that its rear end adjacent the roller is movable upwardly and downwardly, connections between the dust collector and the carriage, whereby the dust collector partakes of the up

and down movement of the carriage, a handle connected to the chassis, and means for adjusting the carriage upwardly and downwardly.

9. In a floor finishing machine, the combination of a chassis having front and rear wheels resting on the surface being finished, a carriage pivotally mounted on the chassis, a motor mounted on the carriage, an abrading roller arranged in front of the chassis, forwardly and rearwardly extending links supporting opposite ends of the roller, the rear ends of the links being pivoted to the chassis, spring means interposed between the links and the carriage to transmit the pivotal movement of the carriage to the links, motion transmitting means between the motor and the roller, a dust collector arranged in the rear of the roller with its rear end adjacent thereto, connections between the rear end of the dust collector and the carriage, whereby the rear end of the dust collector partakes of the adjustment of the carriage, and means for adjusting the carriage.

10. In a floor surfacing machine, a chassis having wheels for running on the surface being finished and an abrading roller arranged in front of the chassis, a carriage pivotally mounted on the chassis, means for adjusting the carriage about its pivot, the roller being mounted to have an up and down movement, the roller having an axle, links mounted at like ends on opposite ends of the axle and at their other ends on the chassis concentric with the pivotal axis of the carriage, and connections between the carriage and the links to lift the roller with the carriage during pivotal movement of the carriage in one direction and springs interposed between the carriage and the links to permit the roller and the links to have an up and down yielding movement in any pivotal adjustment of the carriage.

In testimony whereof, I have hereunto signed my name, at Syracuse, in the county of Onondaga, and State of New York, this 22 day of February, 1930.

ARTHUR N. EMMONS.