

Sept. 13, 1932.

C. J. OLSON

1,877,031

FLOOR SURFACER

Filed Dec. 11, 1929

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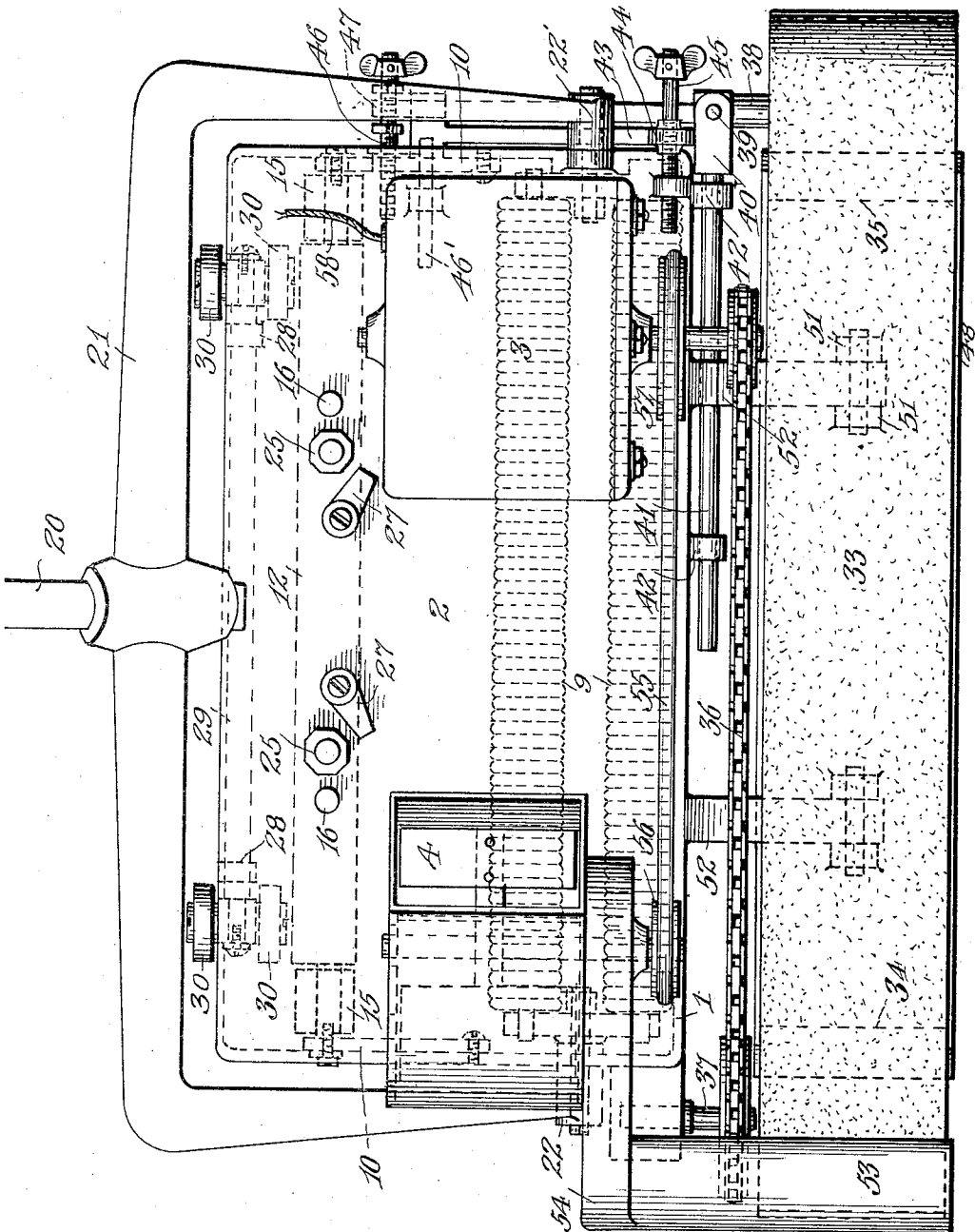


Fig. 1.

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5 Sheets-Sheet 2

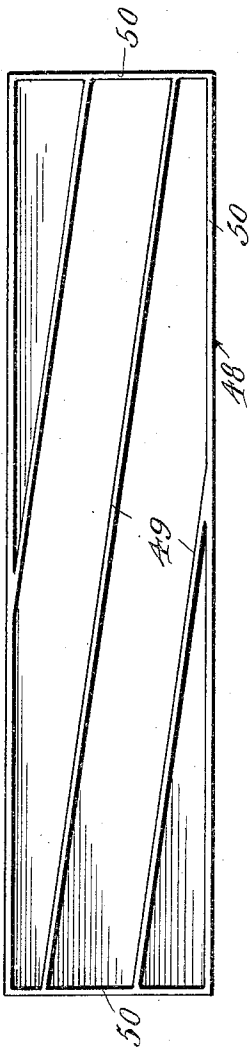


Fig. 1.

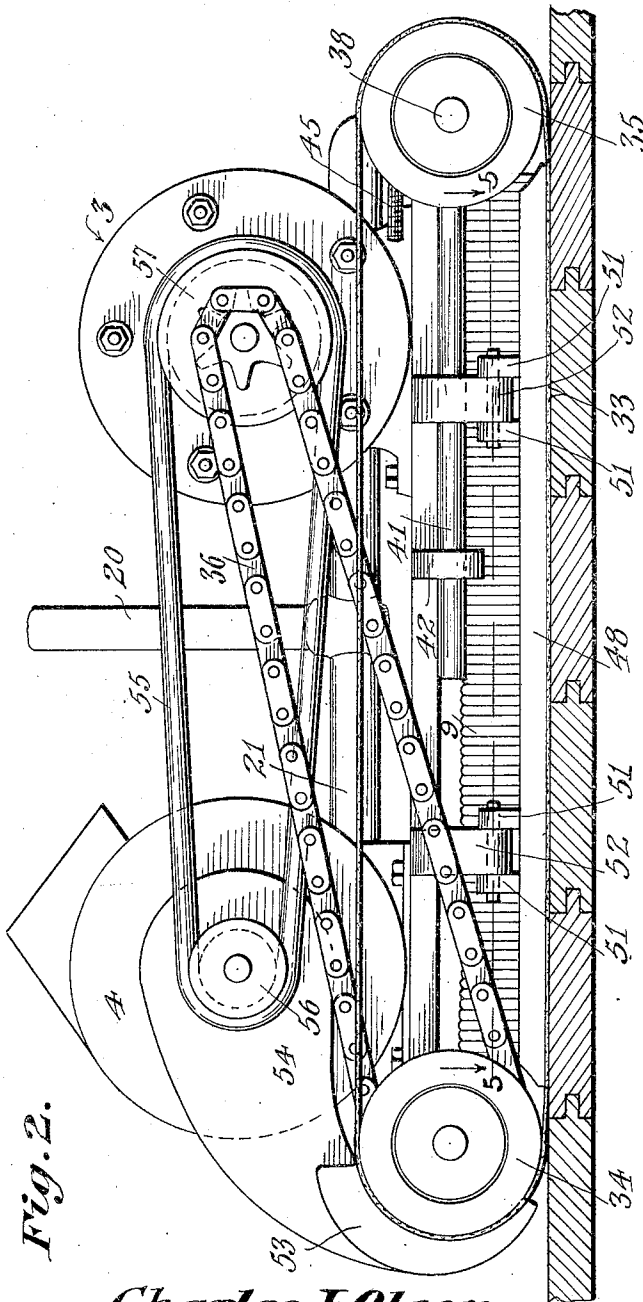


Fig. 2.

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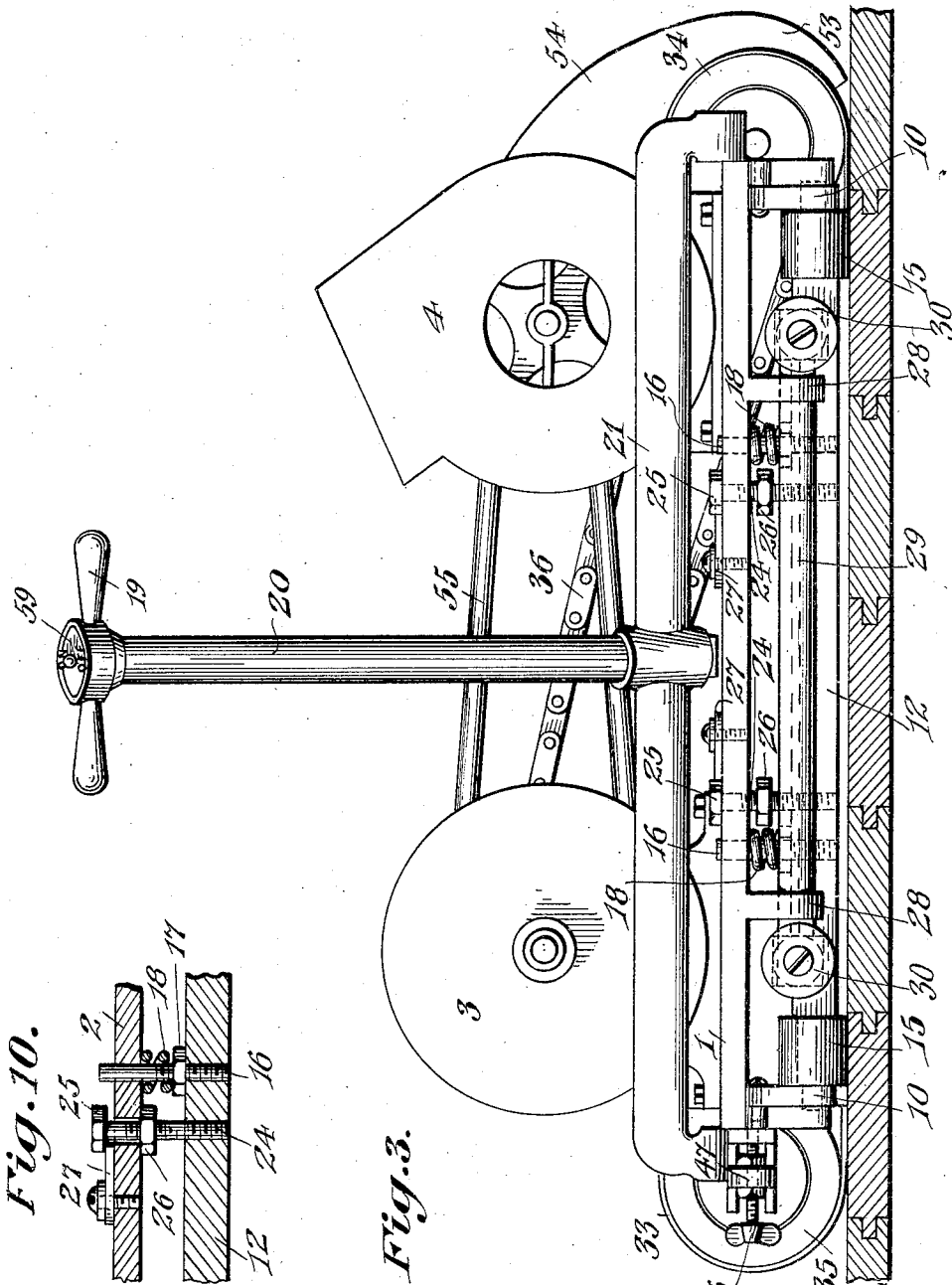


Fig. 3.

Fig. 10.

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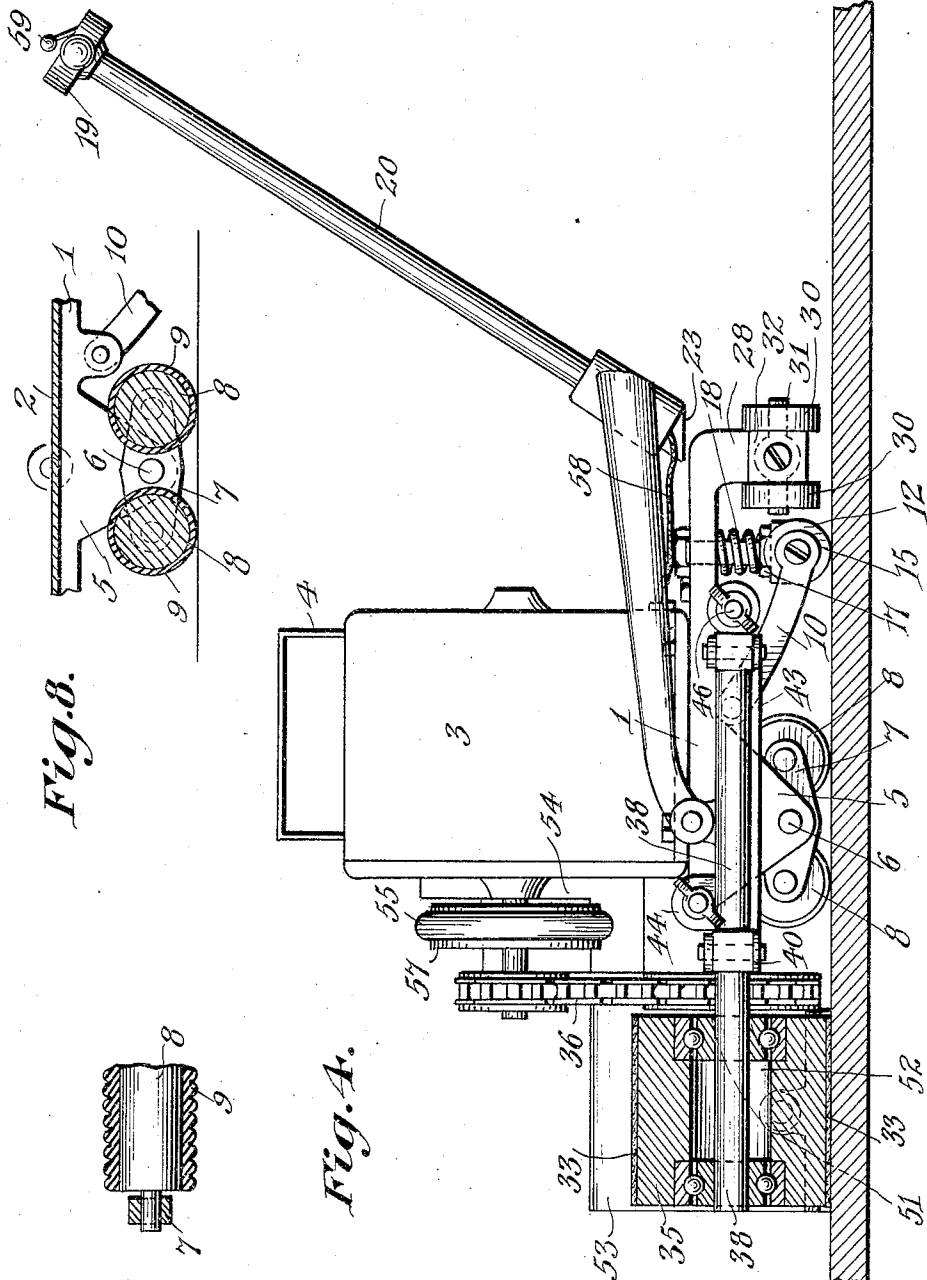


Fig. 8.

Fig. 4.

Fig. 9.

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5 Sheets-Sheet 5

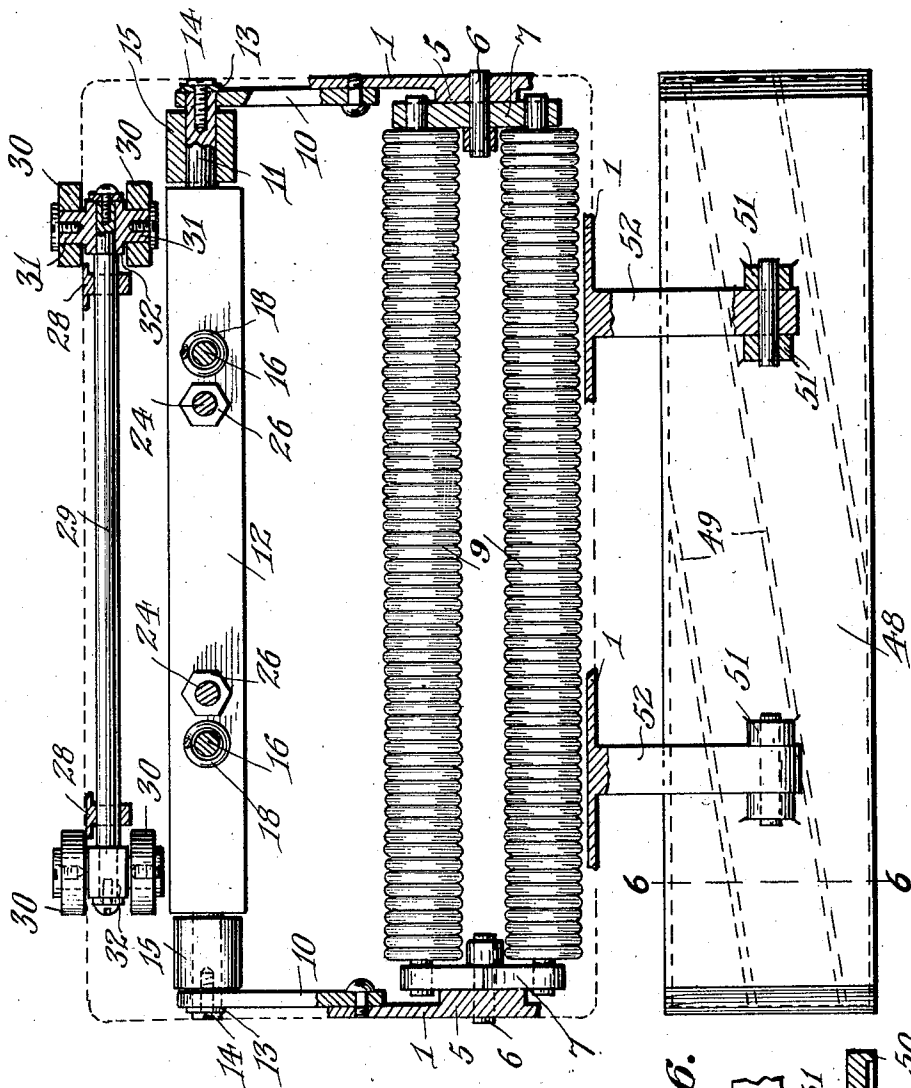
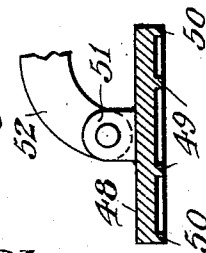


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE

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FLOOR SURFACER

Application filed December 11, 1929. Serial No. 413,343.

This invention relates to machines for smoothing floor surfaces and the primary object is to provide a light compact and simple machine which may be easily propelled over the surface to be treated by hand and will operate efficiently to remove rough areas from the surface. The invention is illustrated in the accompanying drawings and consists in certain novel features which will be hereinafter first fully described and then more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a plan view of the machine embodying the present invention,

Fig. 2 is a front elevation of the same,

Fig. 3 is a rear elevation thereof,

Fig. 4 is an end elevation with parts in section,

Fig. 5 is a view, partly in plan and partly in horizontal section, on the line 5—5 of Fig. 2,

Fig. 6 is a detail section on the line 6—6 of Fig. 5,

Fig. 7 is a bottom plan view of the presser bar,

Fig. 8 is a detail section showing the mounting of the carrying rollers,

Fig. 9 is a detail section of a portion of one of the carrying rollers taken longitudinally thereof, and

Fig. 10 is a detail sectional elevation of a portion of the rear frame support.

In carrying out the present invention, there is provided a frame 1 which is covered by a platform 2 of any suitable material whereby a motor 3 and a fan 4 may be firmly supported.

At an intermediate point of the frame between the front and rear thereof depending lugs or brackets 5 are provided thereon and in the lower ends of these brackets are formed or secured studs or pins 6 upon which are mounted rocker arms 7 which extend forwardly and rearwardly from the lugs, as shown clearly in Figs. 4 and 8. Extending between the rocker arms 7 and journaled in the ends thereof are rollers 8 which have their circumferential surfaces covered with corrugated rubber, as shown at 9. It will be noted

that a pair of these rubber covered rollers is provided and that they may readily conform to the surface over which the machine is traveling inasmuch as they are carried solely by the rocking arms 7 which are firmly supported upon the frame. These carrying rollers 9 are intended to run upon the floor at the rear of the leveling instrumentality and resist sidewise movement of the machine which is imparted thereto by the travel of the surfacing element. The rubber will obtain a firm grip upon the surface of the floor without marring the same and the corrugated formation of the rubber covers will effectually resist sidewise movement of the machine. Upon the sides of the frame 1 at the rear of the rubber covered rollers are pivoted links 10 which extend downwardly and rearwardly and are provided at their rear ends with eyes receiving spindles or shanks 11 formed at the ends of a cross bar 12, the shanks being retained in engagement with the links by washers 13 and cap screws 14, as shown most clearly in Fig. 5. The bar 12 is preferably rectangular in cross section, as will be understood upon reference to Fig. 5, so as to furnish a substantial support for adjusting and retaining devices presently mentioned, and also to define shoulders at the ends of the spindles or shanks 11 to resist inward movement of rollers 15 which are mounted on said shanks or spindles. Threaded into the bar 12 are posts or studs 16 having nuts 17 fitted thereon above the bar and having their upper ends extending through the rear portion of the platform 2, an expansion spring 18 being disposed about the studs or pins between the platform and the nut 17, as shown in Fig. 10. By adjusting the nuts the tension of the springs may be regulated and the bar 12 thus held lowered so that the rollers 15 will ride upon the floor with any desired pressure. Inasmuch as the links 10 are pivoted to the main frame of the machine, the rollers 15 will permit the platform and frame to move relatively to the rollers so that the platform may be caused to ride upon the rollers 15 alone or may be carried by the rubber covered rollers 8. When the machine is in operation, it will be supported principally

by the rubber covered rollers but if it is to be shifted from one path of operations to another path, it is tilted so as to rest upon the shorter rollers 15 and may then be easily veered from a direct path so as to shift to another working position. To effect the tilting of the platform and the frame, the handle bar 19 is manipulated. The handle bar is carried at the upper end of a post 20 which extends downwardly toward the platform and at its lower end is secured in a bail 21 which is disposed at the rear of the platform and has its side members disposed at the sides thereof and pivoted thereto, as indicated at 22. If pressure be exerted downwardly upon the handle bar, the lower extremity thereof, shown best at 23 in Fig. 4, will be caused to rest upon the rear edge of the platform and, consequently, will cause the platform to rock upon the pivotal mountings of the links 10 so that the front of the platform and frame will be raised and the platform will then be supported by the rollers 8 and 15 with the surfacing element out of contact with the floor. Lock bolts 24 are secured in the bar 12 preferably adjacent the respective posts or studs 16 and pass loosely through the platform 2, as shown clearly in Fig. 10, the heads 25 of these bolts being disposed above the platform and stop nuts 26 being fitted upon the bolts between the bar 12 and the platform. Pivotaly mounted upon the platform adjacent the bolts 24 are latches 27 which may engage under the heads 25, as shown in Fig. 10. If sufficient pressure be exerted upon the platform to depress the same relative to the roller carrying bar 12, and the latches then swung under the respective heads, the front of the platform will be held in a raised position and any necessary adjustment of the surfacing element may then be effected.

At the rear of the frame are formed depending lugs 28 in which is fitted a rod or axle 29 upon the ends of which are supported pairs of rollers 30 which are arranged with their axles at right angles to the axles of the rollers 15 and 8. When the machine is to be moved transversely so as to be brought into position to operate upon a path of work, the weight of the machine is carried by the rollers 30 and the forward portion of the machine is lifted clear of the floor. The rollers 30 are mounted upon trunnions 31 formed on the sides of blocks 32 which are rotatably mounted upon the ends of the rod or stationary shaft 29, as clearly shown in Fig. 5. The rollers 30 may thus obtain a square engagement with the floor surface notwithstanding the angle at which the machine may be tilted.

The surfacing element comprises an endless belt 33 which is trained around pulleys 34 and 35 situated at the front of the machine and driven from the motor 3 through sprocket gearing, indicated at 36, whereby the rotation

of the motor shaft is transmitted directly to the pulley 34. The pulley 34 is fixed upon a shaft 37 which is mounted in any convenient manner at one front corner of the main frame while the pulley 35 is mounted loosely upon a shaft 38 which is disposed at the opposite side of the machine and pivotally secured, as indicated at 39, within a fork 40 formed at the outer end of a rod 41 which is fitted in eyes or lugs 42 on the front side of the frame. From the yoke or fork 40 a frame bar 43 extends rearwardly alongside the main frame, as shown clearly in Fig. 1, and adjacent the yoke this frame bar 43 is formed with an upwardly extending lug 44 through which is fitted a set bolt 45 which is threaded into the main frame, as will be understood. At the rear end of the frame bar 43, there is provided a guide pin 46 which extends through a suitable opening in the main frame and serves to maintain the parallelism between the side of the main frame and the frame bar 43 in all adjustments of the latter. In order to compensate for wear upon the pulleys or the surfacing element, the set bolt 45 is adjusted so as to move the frame bar 43 toward or from the main frame, as will be understood. The shaft 38 extends rearwardly beyond the rear end of the frame bar 43 and in the rear extremity of the shaft is mounted a set bolt 46 which is also engaged in the main frame, the end of the shaft or axle having a swiveled connection with the set bolt, as indicated at 47, so that when the set bolt is turned to cause the end of the axle to move inwardly or outwardly the front end thereof will be moved in the opposite direction and there will be no binding between any of the engaging surfaces. If it should be found that the endless belt 33 is not running true upon the pulleys, it will also be found that the pulleys are not in true parallelism and to overcome this derangement the set bolt 46 is manipulated so that the front end of the axle or fixed shaft 38 will be rocked and the pulley 35 thereby brought into exact parallelism with the pulley 34. Manipulation of the set bolt 45 obviously moves the pulley 35 toward or from the pulley 34 and thereby maintains the proper tension upon the endless belt. The endless belt 33 may be of any suitable material and is preferably formed from stout canvas. Its outer surface is formed to constitute an abrading element and this may be accomplished by simply applying strips of sand paper to the surface of the belt, but it may be found desirable to coat the belt directly with some abrasive material, such as emery. It will be understood that the abrading belt operates at a right angle to the line of travel of the machine and, consequently, it imposes a sidewise thrust upon the machine which is resisted by the rubber covered rollers 8. The lower run of the abrading belt

is held evenly upon the surface of the floor by a presser bar 48 having obliquely disposed parallel ribs 49 on its under surface and also having depending flanges 50 around its edges so that the abrading belt will be held close to the floor surface without undue drag or resistance. The presser bar 48 is provided on its upper side with lugs 51 disposed in pairs and between the lugs of each pair is pivoted the lower end of an arm 52 which projects forwardly and downwardly from the front side of the main frame.

Disposed concentric with the pulley 34 is a casing 53 which is closed upon three sides but is open or provided with openings on the side presented to the pulley, it being noted that the casing is of an arcuate formation so that it will fit closely to the periphery of the pulley and the abrading belt passing over the same. From the rear end of this casing 53, an extension conduit 54 extends upwardly to the side of the casing of the fan 4 so that when the fan is in motion a suction will be created through the casing and the conduit to draw from the abrading belt the dust and other particles taken up thereby. Around the mouth of the fan casing may be secured a bag or other receptacle (not shown) so that the dust will be collected. The fan is driven by a belt 55 trained about pulleys 56 and 57 secured upon the fan shaft and the motor shaft respectively.

From the foregoing description, taken in connection with the accompanying drawings, it will be understood that the machine is pushed forward over the floor which is to be dressed and the abrading belt is driven so that its lower run will travel across the surface of the floor and quickly remove therefrom an old finish or otherwise reduce the surface to a level condition, eliminating rough places which have been developed through usage. The motor, of course, is a small electric motor and the current for actuating the same is carried thereinto through a cable 58 which is extended through the post 20, as indicated in Fig. 4, and connected to a switch 59 at the handle bar, the handle being provided with a plug connection whereby the cable may be connected with the house current in the usual manner. In order to fit an abrading belt upon the pulleys which carry and actuate the same, a pressure is exerted upon the rear edge of the main frame and platform by pressing downwardly upon the handle bar so that the lower extremity 23 of the post 20 will be brought into contact with the rear edge of the frame. The pressure thus exerted will cause the platform to move downwardly relative to the keeper bolts 24 and a slight space will be thus obtained between the platform and the heads of said bolts into which the latches 27 are swung, as will be understood upon reference to Fig. 10. The rocking thus imparted to

the platform and main frame will lift the pulleys 34 and 35 from the floor so that a worn belt may be removed and a new belt substituted therefor in a very convenient manner. The motor may then be energized and the belt permitted to travel idly for a few moments so that it may be definitely ascertained whether it is under the proper tension and is running true upon the respective pulleys, any inaccuracies being corrected by manipulation of the set bolts 45 and 46 in the manner above explained. It will be understood that the latches 27 when engaged under the heads of the retaining bolts 24 will maintain the rear end of the platform in its lowered position and the springs 18 will be under increased tension. After the belt is properly adjusted, the latches are swung out to the position shown in Fig. 1 and by retaining sufficient pressure upon the handle bar the platform is permitted to slowly assume its normal working position under the influence of the springs 18, the abrading element being thus brought gradually into contact with the floor so that its proper working position will be assured before it is permitted to rest upon the floor with its full pressure. It will be understood that, inasmuch as the abrading element is disposed at the extreme front of the machine and runs transversely thereto, the machine may be operated close to the base boards of the walls and close to fixed articles of furniture. When one path of operations has been traveled and it is desired to shift the machine to an adjacent path of operations, downward pressure is exerted upon the handle bar, as before described, but this time the pressure will be increased so that the platform and main frame will be tilted to such an extent that it will rest upon the rollers 30 and it may then be shifted transversely without causing any marring of the dressed surface. It will be noted upon reference to Fig. 4 more particularly that the rollers 30 are normally out of contact with the floor and, consequently, do not interfere with the forward movement of the machine while the abrading belt is at work.

My present machine is light and compact and may be easily propelled over the floor by hand. It is intended more particularly for use in small rooms where the use of a larger heavier machine would not be advantageous but, of course, it may be used upon surfaces of any size and wherever used will be found highly efficient.

Having thus described the invention, I claim:

1. A floor-dressing machine comprising a portable frame, an abrading mechanism mounted at the front of the frame and comprising a pair of pulleys and an endless abrading belt carried by the pulleys, a frame comprising a bar disposed at one side of the

- main frame parallel therewith and a rod slidably mounted on the front of the main frame, means connecting said frame bar with the main frame and adjusting it transversely thereto, an axle carrying one of said pulleys and pivotally mounted upon said frame bar, and means at the rear end of the axle for adjusting the same relative to the main frame and locking it in adjusted position.
2. A floor-dressing machine comprising a portable frame, an abrading belt mounted at the front of the frame and operating at right angles to the travel of the frame, and supporting rollers mounted on and extending across the frame at the rear of the abrading belt and maintained constantly in parallelism therewith and having surfaces of smooth friction material whereby to resist sidewise movement of the frame.
3. A floor-dressing machine comprising a portable main frame, an abrading element mounted at the front of the frame and operating transversely to the line of travel of the frame, rocker arms pivotally mounted upon the frame at the rear of the abrading element, and rollers mounted in and extending between the ends of said rocker arms and covered with corrugated rubber whereby to engage the floor being dressed and resist sidewise movement of the frame.
4. A floor-dressing machine comprising a portable frame, an abrading element mounted at the front of the frame and operating transversely thereto, links pivoted to the frame at the rear of the abrading element, a bar carried by and between said links, rollers mounted at the ends of said bar, retaining elements secured to said bar and extending upwardly therefrom through the frame and having heads above the frame, latches mounted upon the frame and engageable under said heads, and means whereby the frame may be rocked to permit engagement of the latches under said heads and cause the frame to be supported by said rollers with the abrading element out of contact with the floor.
5. In a floor-dressing machine, a portable frame, an abrading element mounted at the front of the frame and operating transversely thereto, links pivoted at their front ends to the frame at the rear of the abrading element, a bar carried by and between said links, rollers mounted at the ends of said bar, pins rising from said bar and playing loosely in the main frame, expansion springs around said pins between the main frame and said bar, means for adjusting the tension of said springs, and means whereby the frame may be rocked to rest upon said rollers.
6. A floor-dressing machine comprising a main frame, an abrading element mounted at the front of the main frame and operating transversely thereto, means supporting the main frame and permitting travel of the same in a path at a right angle to the abrading element, rollers mounted at the rear of the main frame and normally in an elevated position, and means whereby the frame may be rocked to rest upon said rollers and travel transversely.
- In testimony whereof I affix my signature.
CHARLES J. OLSON [L. S.]