G. F. HALL.

FLOOR DRESSING MACHINE.

APPLICATION FILED AUG. 24, 1906.

972,446. Patented Oct. 11, 1910.

3 SHEETS—SHEET 1.

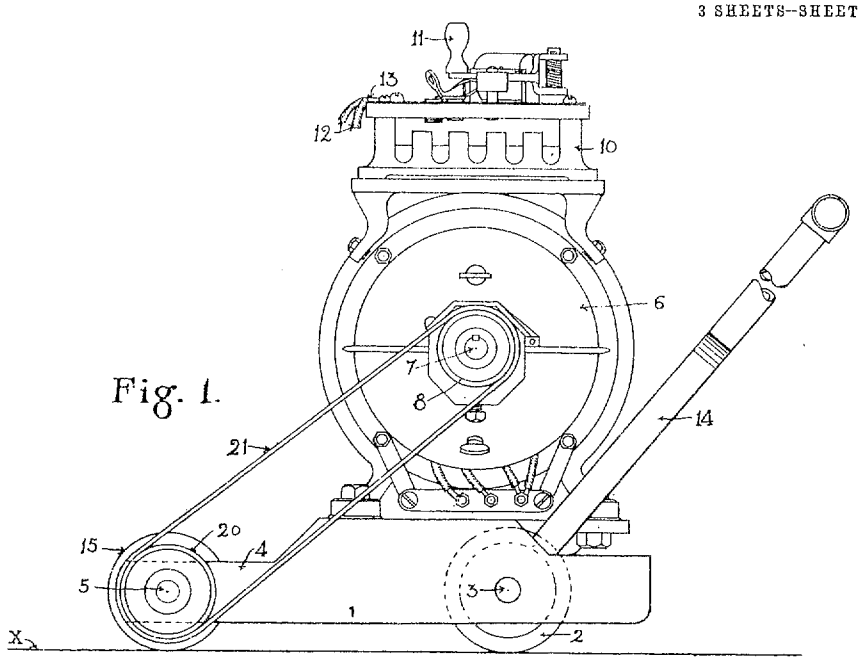

Fig. 1.

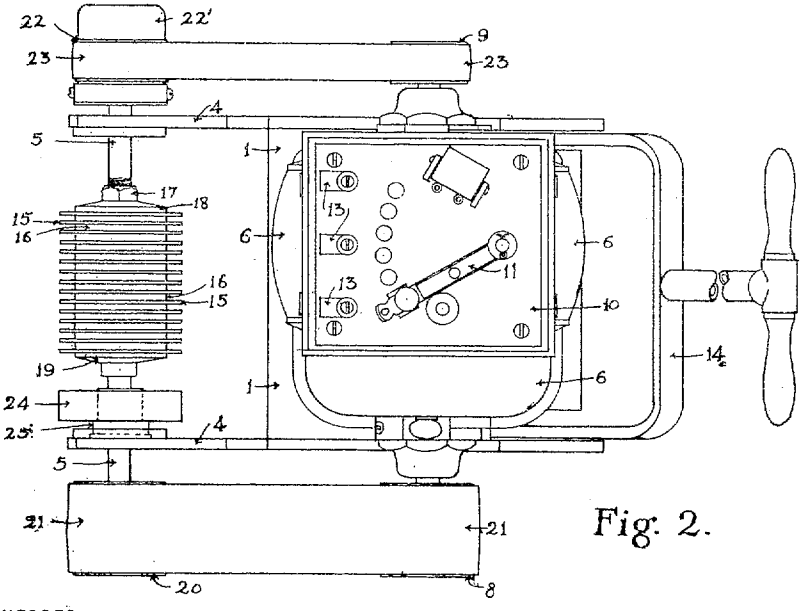

Fig. 2.

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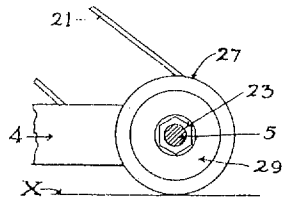

Fig. 4.

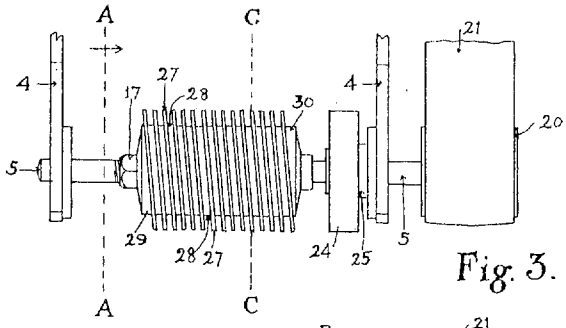

Fig. 3.

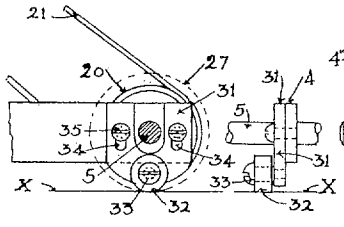

Fig. 6.

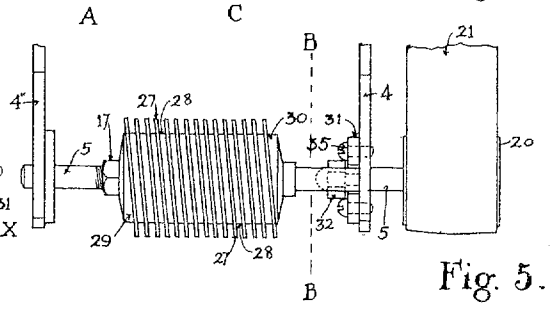

Fig. 5.

Fig. 7.

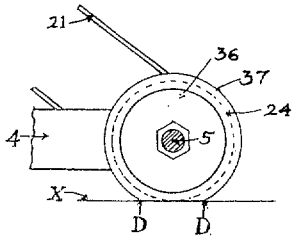

Fig. 9.

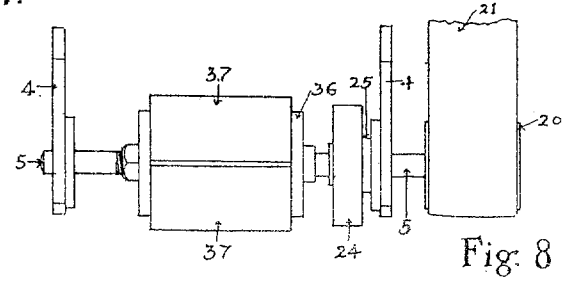

Fig. 8

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3 SHEETS—SHEET 3.

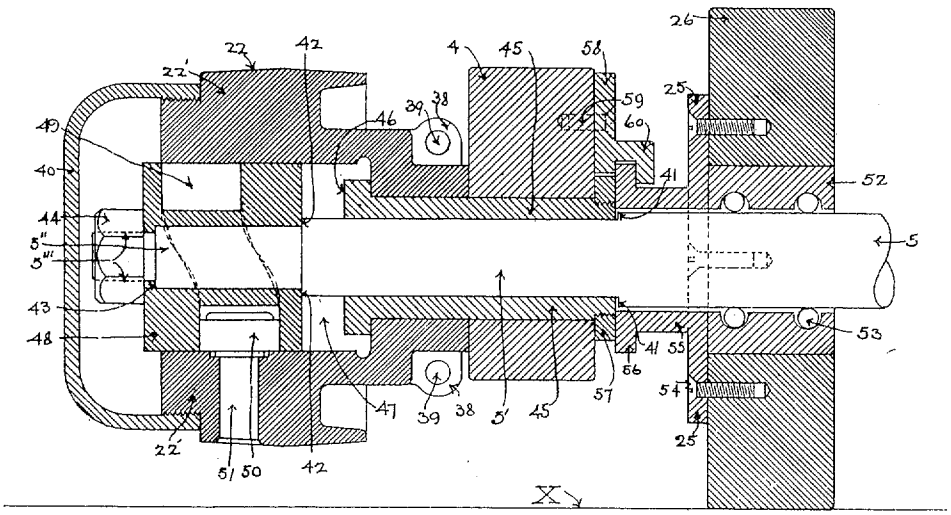

Fig. 10.

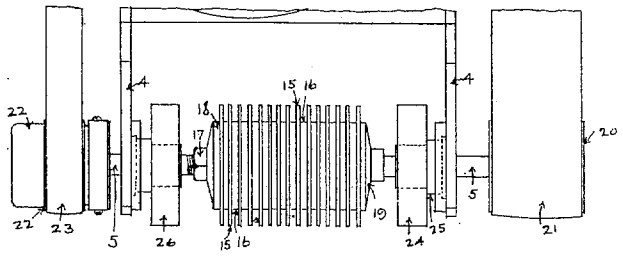

Fig. 11.

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GEORGE F. HALL, OF PROVIDENCE, RHODE ISLAND.

FLOOR-DRESSING MACHINE.

972,446. Specification of Letters Patent. **Patented Oct. 11, 1910.**

Application filed August 24, 1906. Serial No. 331,940.

To all whom it may concern:

Be it known that I, GEORGE F. HALL, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Floor-Dressing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Like reference numerals indicate like parts.

Figure 1 is a side elevation of my improved floor-dressing machine in operative position. Fig. 2 is a top plan view of the same. Fig. 3 is a view in top plan of the saw roller used in my said machine and means for rotating said roller. Fig. 4 is a view partly in side elevation and partly in vertical section, as seen on line A A of Fig. 3 and shows the saw roller, together with the means of mounting it and of giving it rotary movement. Fig. 5 is a top plan of the forward end of my machine and shows the saw roller in position, the method of mounting and rotating said roller, and the means of adjusting said roller in relation to the floor upon which it is to operate. Fig. 6 is a side elevation of the same, as seen on section line B B of Fig. 5. Fig. 7 is a front elevation of said adjusting means. Figs. 8 and 9 show the said machine in top plan with the saws removed and a compressible pad substituted therefor which is covered or provided with sandpaper or other abrasive material. Fig. 10 is a view on an enlarged scale in a vertical axial plane of certain details of construction, including the mechanism for giving longitudinal reciprocation to the shaft, which carries the abrading means. Fig. 11 is a modified form of the device, being the same as Fig. 2, except that the machine is provided with an additional wheel upon the forward shaft.

My invention relates to machines for abrading, surfacing, dressing and finishing floors in position, and it consists in the novel construction and combination of the several parts as hereinafter described and specifically set forth in the claims.

Floors, as they are left by the floor layers, are in a rough, unfinished condition. There are always irregularities and unevenness in the surface, especially along the joints. It frequently happens that in wooden floors some of the boards project considerably above the general level.

In providing means for reducing such irregular and uneven floors to a uniform surface, the mechanism or devices employed must be capable of such adjustment and control as to confine the operation only to such portions of the floor as require to be reduced, but without action on such parts of the floor, as are already in proper level and surface.

The purposes of my invention are to improve the abrading devices of such machines so that the floor operated upon can be quickly brought to the desired surface; to provide adjusting means for bringing the abrading device into proper vertical relation to the floor and so to regulate the depth of the cut; to prevent the abrading device from plowing into the floor or reducing its surface below the level fixed by said adjusting means, and all this regardless of the unevenness of the floor at the commencement of the operation, or of the carelessness or unskilfulness of the workman using the machine.

In the accompanying drawings the floor surface, which is operated upon, is designated as X. The frame 1 of the machine is mounted and supported on wheels 2, which are in rolling contact with the floor X. The wheels 2 are rotatably mounted on the axle 3, which is secured in bearings in the frame 1.

The frame 1 has two forwardly extending projections or horns 4, in which an axle or shaft 5 is rotatably mounted.

An electric motor 6 is fixed in position upon the frame 1 and has a revoluble shaft 7. Pulleys 8 and 9 are mounted fast on the shaft 7 at the ends thereof. A rheostat 10 is seated on the top of the motor 6 and is operated by means of a switch 11 for starting and stopping the motor 6. Electric energy is supplied to the motor from a proper source adjacent to the machine by means of flexible cables 12, attached to the rheostat at the binding posts 13. These cables as also the wiring between the rheostat and motor are omitted from the drawing, but operate in the well-known manner.

The machine is propelled by hand over

the floor by means of a handle 14, attached thereto and preferably pivotally mounted on the axle 3.

The abrading or dressing roller or tool consists of a plurality of circular saws 15, all of equal diameter and mounted concentrically on the shaft 5, to which they are fastened. These circular saws 15 are mounted on the shaft 5 preferably at right angles thereto and are parallel with each other. Each saw 15 is provided with cutting teeth around its entire periphery. Separating disks or plates 16, each having a central aperture, are mounted on the shaft 5 and are placed between the circular saws 15 respectively, thus supporting and stiffening them, and fixing their relative distances apart. The saws 15 are secured in position by means of the nut 17 in screw-adjustment on the shaft 5. The nut 17 forces the collar 18, which is loosely mounted on the shaft 5, and the collar 18, so moved, clamps the saws 15 and separator plates 16 together against a fixed collar 19, which is near the opposite end of the shaft 5. Instead of using separator disks or plates 16, however, the saws may be assembled on the shaft 5, side by side, in direct contact, the one with the others next adjacent respectively.

It is desirable, in order to secure the best results, that the teeth of the several saws be staggered in their relation to each other, lengthwise of the roller or tool.

A pulley 20 is mounted fast on one end of the shaft 5, and a belt 21 rotates the pulley 20 from the pulley 8 of the shaft 7 of the motor 6. A pulley 22 is mounted fast on the opposite end of the shaft 5 and a belt 23 rotates the pulley 22 from the pulley 9 of the shaft 7 of the motor 6. The shaft 5 is mounted in the projections 4, 4, of the frame 1 in such a manner that it not only is rotatable therein, but is capable of a reciprocating longitudinal movement from side to side of the machine. The device for giving this reciprocating longitudinal movement is designated at 22'. This movement of the shaft 5 is not less in extent than the greatest distance between any two of the saws 15 of the series constituting the abrading roller or tool. There are various well-known devices for giving this reciprocating longitudinal movement to the shaft. The particular device shown in the drawings is of the cam variety and is rotated by the pulley 22, driven by the belt 23.

An adjusting wheel 24 is loosely mounted on the shaft 5 in a suitable bearing, preferably a ball bearing, shown in Fig. 10 in such a manner as to allow said shaft to rotate and to have at the same time its reciprocating longitudinal movement, above described, independently of the revolutions of said wheel. The adjusting wheel 24 has a flanged collar 25, which engages loosely with a projection on one of the extensions 4 of the frame 1, as illustrated in Figs. 2 and 10, to prevent the lateral movement of said wheel on the shaft 5. This construction and arrangement allow great rapidity of revolution of the saw roller 15, while the adjusting wheel 24 is revolving in unison with the wheels 2, 2, which support the machine in its movement over the floor.

In some cases it may be desirable to provide a similar adjusting wheel, loosely mounted in a similar manner upon the shaft 5, for the support of the forward end of the machine, and such additional wheel is shown in Fig. 11 and designated as 26.

The adjusting wheel 24 is shown in the drawings as of the same diameter as the saws 15, but it is my purpose to use wheels, such as wheel 24, of various diameters interchangeably, in order to adjust the abrasive roller or saws in relation to the floor and thereby to regulate the depth of the cut,—the smaller the diameter of said wheel, the deeper is the cut and vice versa.

One of the essential features of a floor-dressing machine is that the abrading or reducing means or tool should be fixedly guided in relation to the surface on which it is operating. Such machines are of considerable weight and when such weight or other means is applied to the tool to cause it to do its intended work, there is the liability of accidentally cutting the floor to a greater depth than is desired, especially where the operator of the machine is unskilled. The damage thus done sometimes renders it necessary to re-surface the entire floor area. By the use of my improved machine and the means of adjusting and maintaining the depth of the cut, such accidents are avoidable, and the machine can be successfully operated even by an unskilled workman, with the assurance of uniform, positive and correct results. In Figs. 3 and 4 is shown a modification of said machine, in which the means of giving a reciprocating longitudinal movement to the roller shaft 5 are omitted, so that said shaft is capable of only a rotary movement. The abrading roller or tool is composed of disk saws 27, mounted slidingly on the shaft 5 parallel to each other, but extending at an angle from the axial line of the shaft 5, which varies slightly from a right angle. These angularly directed saws 27 are separated from each other and kept in the angular direction described by means of space-plates or disks 28 of less diameter, also slidingly mounted on the shaft 5. The angle is determined by and varies with the spacing of the saws 27, but it is always such that a line projected through and at a right angle to the axis of the shaft 5 passes through the point of one saw tooth of one of the saws 27 and also through that one of the saw teeth of the

next adjacent saw 27 which is 180° distant from the first mentioned tooth as measured on the said line, which line is shown in Fig. 3 and designated C C. The saws 27 and space-plates 28 are held and secured in position by the nut 17, which is screw-threaded on the shaft 5 and so forces the collar 29, which slides on said shaft and presses the saws 27 and plates 28 against the fixed collar 30, the latter being formed on or attached to the shaft 5. In this kind of angular arrangement of the saws 27, the inwardly directed faces of the collars 29 and 30 are beveled or angularly inclined, as represented in Figs. 3 and 5. It is desirable that the teeth of the saws 27 be staggered laterally in their relation to each other.

The saws 27 are not circular, but are slightly elliptical in shape, and are so formed, assembled and placed that all the saw teeth, as they respectively come into their actual cutting position, are, in said position, equally distant from the axial line of the shaft 5. This is an important feature of my improvement and assures equality in the depth of the cutting. As this roller moves over the floor, each of the saws 27 will make a cut of a width which is equal to the distance between that saw and the saw next adjacent. As the adjusting wheel 24 is detachable and may be replaced by another of a different diameter, it is possible to fix exactly the depth of the cut, and as the adjusting wheel is on the same shaft as the saws, the cut will always be of the predetermined depth as fixed by the diameter of said wheel, regardless of the fact whether the surface, over which the machine is propelled, is smooth and level or rough, uneven or undulating.

While a three-wheel bearing of the machine upon the floor is in general preferable, there are sometimes conditions of the work in which an additional wheel is desirable.

In Figs. 5, 6 and 7 I show other adjusting means for the abrading roller in its position relatively to the floor. This device consists of the U-shaped piece 31, which is provided with a wheel 32, rotatably mounted on a screw 33 from the piece 31. The wheel 32 is in rolling contact with the floor surface X. The U-shaped piece 31 has the vertical slots 34, shown in Fig. 6. Screws 35 pass through the slots 34 into the projection 4 of the frame 1. In this manner the vertical position of the wheel 32 in relation to the floor surface is adjustably determined and the depth of the cut of the saws 27 is regulated. It is obvious that another similar device may be used with advantage at or near the opposite end of the shaft 5, or on the opposite projection 4 of the frame 1.

The saws 15 or 27 in operation, while they are efficient to reduce the surface of the floor to a uniform level, leave the said surface in an unfinished, slightly roughened condition, and in order to bring such surface to a smooth finish, the saws are removed from the shaft 5, and another tool or roller is substituted, which has a different covering adapted to dress the floor to a finer finish, but such other tool or roller is equipped with a shaft and wheel, though not necessarily with the reciprocating device.

In Figs. 8 and 9 is shown such other form of roller or abrading tool, consisting of a cylinder 36 concentrically mounted on the shaft 5 and fastened thereto. This cylinder is faced with an elastic or compressible pad of rubber, or other suitable material, adapted to yield readily to pressure and provided with means to hold an abrasive material, such as sandpaper or cloth 37 for dressing the surface of floors. As already described, the machine is supported on the wheels, 2, 2, and 24, and when so supported, as the diameter of the roller-facing 37 is considerably greater than the diameter of said wheels, that part of the facing 37, which is in contact with the floor, is so compressed by the weight of the machine as to present a greater abrasive surface in contact with the floor and this surface, rapidly revolving, reduces the floor surface more rapidly because of its said increased area caused by said compression. The width or extent of this operative contact of the compressible pads or coverings 37 may be increased or diminished by substituting wheels of a greater or less diameter. In Fig. 9 the relations of the diameter of the adjusting wheel 24 to the face 37 of the roller 36 is indicated and the extent of the contact of the compressible pad or cover 37 is shown by the distance between the lines D D.

In operation it is important that the abrading roller 15 (or 27) and the adjusting wheel 24 (or 32) shall be brought to and kept in a certain relation, so that that longitudinal tangent line of each of them, which is in contact with the floor surface, shall be in the same plane. This plane is one which is projected through the axial line of the shaft 5 and coextensive therewith, and which includes at the same time all said longitudinal tangent lines.

The mechanism for imparting a longitudinal reciprocating movement to the shaft 5 is shown in Fig. 10 and is described as follows. The cam casing 22′ is made in two equal parts or halves, each having two lugs 38, held together by screws 39 and by the screw cap 40, the latter being threaded to each of the halves of said cam casing 22′. This cam casing, when assembled, is circular in shape. As shown in Fig. 10, each half of the cam casing 22′ is integral with one-half of the pulley 22.

The shaft 5 is circumferentially reduced as shown at 41 to form there an annular

shoulder and is also circumferentially reduced as shown at 42 to form another annular shoulder. The portion of the shaft 5 between said annular shoulder 41 and 42 is marked 5′ in Fig. 10, and the portion of the shaft 5 extending outwardly from the annular shoulder 42 is marked 5″. The shaft 5 is still further reduced diametrically at one end as seen at 5‴, thus leaving another annular shoulder 43. The portion 5‴ of the shaft is provided with a screw thread upon its circumferential surface and a nut 44 is engageable with said screw thread. A tubular bearing or sleeve 45 is mounted loosely on the reduced portion 5′ of the shaft and abuts the annular shoulder 41 thereof. The tubular bearing 45 has an annular flange 46 at one end and its opposite end is diametrically reduced and provided with a circumferential screw thread. The tubular bearing 45 extends through the adjacent horn or projection 4 and supports the shaft on one side of the machine. The shaft 5 is similarly supported at its opposite end in the other horn or projection 4 and is adapted to slide longitudinally in said bearings to an extent equal to the width of the chamber or space marked 47 in Fig. 10.

A cam 48 has a cylindrical body and a tubular bore, by which it is mounted on the portion 5″ of the shaft 5. The nut 44 presses the cam 48 tightly against the annular shoulder 42 of the shaft, so that the cam 48 is fast upon the shaft and revolves with it. The cam 48 has a cam groove 49 cut in its periphery and extending angularly as shown. The pulley 20 (see Figs. 1 and 2) at the opposite end of the shaft 5 is fixedly attached to said shaft and by the belt 21 passing over the pulley 20 the shaft 5 is rotated. The inner portion 5′ of the shaft extends into and through the central annular chamber 47 shown in Fig. 10.

A hardened roller 50 is rotatably mounted on the inner end of the pin 51, which extends through the casing 22′ at one side thereof. The diameter of the roller 50 is nearly equal to the width of the cam groove 49 so that said roller can easily rotate therein. The rotation of the shaft 5, which is caused by the pulley 20 and belt 21, rotates the cam 48, which is fixedly attached to said shaft, and the engagement of the roller 50 in the cam groove 49 of the cam 48 causes the cam 48 to move with a limited longitudinal reciprocation and to impart an equal longitudinal reciprocation to the shaft 5. The cam casing 22′ has on its inner end a tubular hub, by which it is mounted on the tubular bearing 45, and said hub lies between the outer edge of the adjacent horn or projection 4 and the inner edge of the annular flange 46 of the tubular bearing 45 as shown. Thus the cam casing 22′ revolves in part on the bearing 45, and on its opposite side it revolves on the cylindrical surface of the cam 48, which surface serves as a bearing. The cam casing 22′ thus has no longitudinal movement, because such movement is prevented by the abutting of its hub with the horn 4 and flange 46, as already explained.

The wheel 24 (or 26) has a central tubular box or bearing 52 provided with interior annular channels, in which are ball bearings 53, said balls 53 being in contact with the shaft 5. The circular disk 25 (Fig. 2) is fastened by screws 54 to the side of the wheel and has a sleeve or tube 55 (through which the shaft 5 passes loosely) and an annular flange 56. A ring 57 is secured by an inner screw thread to the threaded portion of the tubular bearing 45. A plate 58, is fastened upon the horn or projection 4 by the screw 59. A hook-shaped bracket 60 extends from the plate 58, and shuts over the annular flange 56.

The cam casing 22′ is rotated by the belt 23 passing over the pulleys 9 and 22. The roller 50 travels with the cam casing 22′, which has one fixed plane of rotation and has no lateral movement. The roller 50, being always within the groove 49 of the cam 48, oscillates the cam, and as the cam is fixed upon the shaft gives a longitudinal reciprocating movement to the shaft 5 and the abrading tool or means carried by said shaft. The wheel 24 revolves independently of the shaft 5 as the machine is propelled over the floor by the workman, and the shaft 5, which carries the abrading tool, is free to reciprocate longitudinally by reason of the ball bearings 53 and the tubular bearing 45.

Wheels similar to the wheel 24 but of different diameters, may be separately used to adjust the relation of the working surface of the abrading roller with the floor to determine the depth of the cut, and in some instances two wheels are mounted on the shaft at opposite ends, in which case the method of construction and attachment is similar in all respects to that hereinbefore described for the wheel 24 and its connections.

There are several kinds of floor-dressing machines equipped with horizontal rollers, some of which machines are operated by traction wheels and gearing; some by motors; some are propelled over the floor by hand power, and others by motors; some have each only one abrasive roller and others have each more than one of such rollers; some are provided with levers and other means to bring said roller or rollers into contact with the floor. But any machine which has a horizontal rotatable tool or roller with means, by which the entire weight of the machine can be supported independently of said roller, while at the same time

the weight of the machine is directly utilized to cause the tool or roller to effect its abrasive action, is within the scope of my invention. So, also, is any roller comprising disk saws, which are adapted for dressing floors in position, provided that the weight of the machine is supported in rolling contact with the floor.

In the prior art, floor-dressing machines have been constructed which are supported on four wheels, one on each corner of the base thereof, and the abrading tool or roll has been located on said machines sometimes in front of the two forward wheels and sometimes between the forward wheels and rear wheels and sometimes in the rear of the back wheels. In such machines, however, the abrading tool or roll is not on the shaft of either of the wheels or in the vertical plane therewith, but on another shaft and in a different plane. My device hereinbefore described differs from these because the abrading tool or roll is mounted so that the axis of the tool and axis of the wheel (32) are in the same vertical plane or is mounted upon the same shaft as the wheel (or wheels) 24 (26), by which a portion of the weight of the machine is supported, and thus the vertical radii of the roll and wheels are always in one vertical plane.

In the foregoing description I have referred only to motors energized from a source of supply outside of the machine, but any form of motor is applicable to my said improved machine, whether it receives energy from without, or its energy is contained within said machine, and any means of operatively connecting the motor with the abrasive roller for the purpose specified is within the scope of my invention.

I claim as a novel and useful invention and desire to secure by Letters Patent:

1. In a floor-dressing machine, the combination of a frame, two supporting wheels on which said frame is mounted and which are in rolling contact with the floor surface, means for propelling said machine, a shaft mounted in said frame parallel to the axial line of said two supporting wheels, an abrading tool mounted on and revolving with said shaft and crossing the central longitudinal line of said machine, and two supporting wheels loosely mounted on said shaft and adapted to roll on the floor surface.

2. In a floor-dressing machine, the combination of a frame, two supporting wheels on which said frame is mounted and which are in rolling contact with the floor surface, means for propelling said machine, a shaft mounted in said frame parallel to the axial line of said two supporting wheels, an abrading roller mounted on said shaft and crossing the central longitudinal line of said machine, and a supporting wheel mounted on said shaft, said roller and the last named supporting wheel being in such relation that that longitudinal tangent line of said roller which is in contact with the floor surface and that longitudinal tangent line of said last named supporting wheel which is in contact with the floor surface are in that one vertical plane which is projected through and coextensive with the axial line of said shaft.

3. In a floor-dressing machine, the combination of a frame, two supporting wheels on which said frame is mounted and which are in rolling contact with the floor surface, means for propelling said machine, a shaft mounted in said frame parallel to the axial line of said two supporting wheels, an abrading roller mounted on said shaft and crossing the central longitudinal line of said machine, and a supporting wheel mounted on said shaft, said roller and the last named supporting wheel being in such relation that that longitudinal tangent line of said roller which is in contact with the floor surface and that longitudinal tangent line of the last named supporting wheel which is in contact with the floor surface are in the same vertical or approximately vertical plane.

4. In a floor-dressing machine, the combination of a frame, two rear wheels of equal diameter supporting the frame and mounted in one axial line and in rolling contact with the floor surface, means for propelling the machine over the floor surface, a revoluble shaft mounted in bearings at or near the forward end of the machine and parallel with the axis of said two wheels, an abrading roller mounted upon said shaft and extending across the central longitudinal line of the machine, a motor upon said frame having a shaft which is parallel to the first named shaft, means for energizing said motor, means for operatively connecting said motor shaft with said first named shaft, and two forward wheels mounted on the first named shaft in such manner and relation that a plane projected through and coextensive with the axial line of the first named shaft and also through that longitudinal tangent line of each of said forward wheels which is in contact with the floor surface will also pass through that longitudinal tangent line of the abrading roller which is in contact with the floor surface.

5. In a floor-dressing machine, the combination of a frame, two rear wheels of equal diameter supporting the frame and mounted in one axial line and in rolling contact with the floor surface, means for propelling the machine over the floor surface, a revoluble shaft mounted in bearings at or near the forward end of the machine and parallel with the axis of said two wheels, an abrading roller mounted upon said shaft and extending across the central longitudinal line of the machine, a motor upon said frame hav-

ing a driving shaft which is parallel to the first named shaft, means for energizing said motor, means for operatively connecting said motor shaft with the first named shaft, two forward wheels mounted on the first named shaft in such manner and relation that a plane projected through and coextensive with the axial line of the first named shaft and also through that longitudinal tangent line of each of said forward wheels which is in contact with the floor surface will also pass through that longitudinal tangent line of the abrading roller which is in contact with the floor surface, and means of adjusting said forward wheels to bring and maintain said tangent lines thereof within said plane and adapted to regulate the depth of the cuts of said abrading roller.

6. In a floor-dressing machine, the combination of a frame, two rear wheels on which the frame is mounted and which are in rolling contact with the floor surface, a shaft mounted at or near the forward end of the machine in suitable bearings, an abrading roller mounted on said shaft, means for rotating said roller, and a detachable wheel mounted loosely on said shaft.

7. In a floor-dressing machine, the combination of a frame, two rear wheels on which the frame is mounted and which are in rolling contact with the floor surface, a shaft mounted at on near the forward end of the machine in suitable bearings, an abrading roller mounted on said shaft, and adjusting means adapted to regulate and determine the depth of the abrasive action of said roller, which means comprise one or more detachable wheels adapted to be mounted at will on said shaft.

8. In a floor-dressing machine, the combination of a frame, two rear wheels on which the frame is mounted and which are in rolling contact with the floor surface, a shaft mounted at or near the forward end of the machine in suitable bearings, an abrading roller mounted on said shaft, and a wheel mounted on said shaft and capable of rotating at a different rate of speed than said shaft.

9. In a floor-dressing machine, the combination of a frame, two axles rotatably mounted in said frame horizontally across the central longitudinal line of said frame, one of which axles is at or near the rear end of the machine and the other of which axles is at or near the forward end of the machine, two wheels of equal diameter rotatably mounted on the rear axle and in rolling contact with the floor surface, a revoluble dressing roller or tool attached to the forward axle and revoluble with it, one or more wheels loosely mounted on the forward axle and adapted to contact with the floor surface, a pulley on the forward axle, a motor on the frame, means for energizing said motor, and means for operatively connecting the motor and said pulley for the purpose of revolving the dressing roller.

10. In a floor-dressing machine, the combination of two axles crossing the longitudinal middle line of the machine, one or more wheels on the rearward axle, a revoluble tool on the forward axle, and one or more forward wheels the axis or axes of which last named wheel or wheels being in alinement with the axis of said tool.

11. In a floor-dressing machine, the combination of a frame, two axles mounted in bearings in the frame and crossing the longitudinal middle line of the machine, a wheel or wheels on the rearward axle and in rolling contact with the floor, a revoluble tool on the forward axle adapted to abrade the floor, a motor on the frame operatively connected with the tool to revolve said tool, one or more forward wheels the axis or axes of which last named wheel or wheels being in or approximately in a vertical plane which extends through the forward axle, and means for propelling the machine along the floor surface.

12. In a floor-dressing machine, the combination of a frame, two axles mounted in bearings in the frame and crossing the longitudinal middle line of the machine, a wheel or wheels on the rearward axle and in rolling contact with the floor, a horizontal revoluble tool on the forward axle adapted to abrade the floor, a motor on the frame operatively connected with the tool to revolve said tool, one or more forward wheels the axis or axes of which last named wheel or wheels being in or approximately in a vertical plane which extends through the forward axle, means for propelling the machine along the floor surface, and means for vertically adjusting the relation of the axis or axes of the wheel or wheels and the forward axle.

13. In a floor-dressing machine adapted to be propelled along a floor surface in contact therewith, the combination of a horizontal rotatable tool mounted on the shaft, bearings for the shaft, a motor operatively connected with said tool, and a wheel or wheels adapted for vertical adjustment the axis or axes of said wheel or wheels being located in or approximately in a vertical plane extending through the axial line of said tool.

14. In a floor-dressing machine adapted to be propelled along a floor surface in contact therewith, the combination of a horizontal rotatable tool mounted on a shaft, bearings for the shaft, a motor operatively connected with said tool, a wheel or wheels adapted for vertical adjustment the axis or axes of which wheel or wheels being located in or approximately in a vertical plane extending through the axial line of said tool, and means for giving a reciprocating longitudinal movement to said shaft.

15. In a floor-dressing machine, the combination of a forward axle, a wheel or wheels rotatably mounted on said axle and adapted to rotate at speeds varying from the speed of the rotation of the axle, a horizontal rotatable tool mounted concentrically on the axle, a motor operatively connected with the tool, means for giving said tool a longitudinally reciprocating movement, and means adapted to prevent the lateral movement of said wheel or wheels during the reciprocating movement of said tool.

16. In a floor-dressing machine, the combination of means for supporting the machine in rolling contact with the floor, means for propelling the machine along the surface of said floor, a shaft, and a horizontal rotatable dressing tool mounted on said shaft, the supporting means including an adjusting device adapted to contact with the floor and to regulate the relations of the tool to the floor surface and so placed that a vertical plane coextensive with the axis of the shaft passes through said device.

17. In a floor-dressing machine, the combination of means adapted to support the machine in rolling contact with the floor and means for propelling said machine along the surface of said floor, a shaft, a horizontal rotatable dressing tool mounted on said shaft the supporting means including an adjusting device adapted to contact with the floor and to regulate the relations of the tool to the floor surface and so placed that a vertical plane coextensive with the axis of the shaft passes through the device, and means for giving to said tool a reciprocating movement in the direction of its axis, all said component parts being so assembled and adapted that the supporting means are free from lateral movement during the reciprocating movements of said tool.

18. In a floor-dressing machine, the combination of a frame, two rear wheels, one or more forward wheels on which wheels the frame is mounted, all said wheels together being adapted to support said frame from the floor and to be in rolling contact therewith, a horizontal shaft mounted at or near the forward end of the machine in bearings, an abrading tool mounted on said shaft, the forward supporting means of the frame being so located that a vertical plane extending through the axial line of the shaft passes through said supporting means and through said tool, and means adapted to determine and regulate the depth of the abrasive action of said tool, and comprising a device for adjusting the vertical relations of the axis of said tool and the axis of the said forward supporting means.

19. In a floor dressing machine, the combination of means adapting it for support upon and for propulsion along the floor surface; a shaft; a horizontal rotatable dressing tool mounted on said shaft; and an adjusting device adapted for contact with the floor as a part of said supporting means to regulate the relations of the tool and the floor surface, which device is so placed that a vertical plane coextensive with the axis of the shaft passes through said device.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE F. HALL.

Witnesses:

BENJAMIN A. ARMSTRONG,

WARREN R. PERCE.