May 8, 1934. H. J. MAVIS ET AL 1,957,790

FLOOR SANDER

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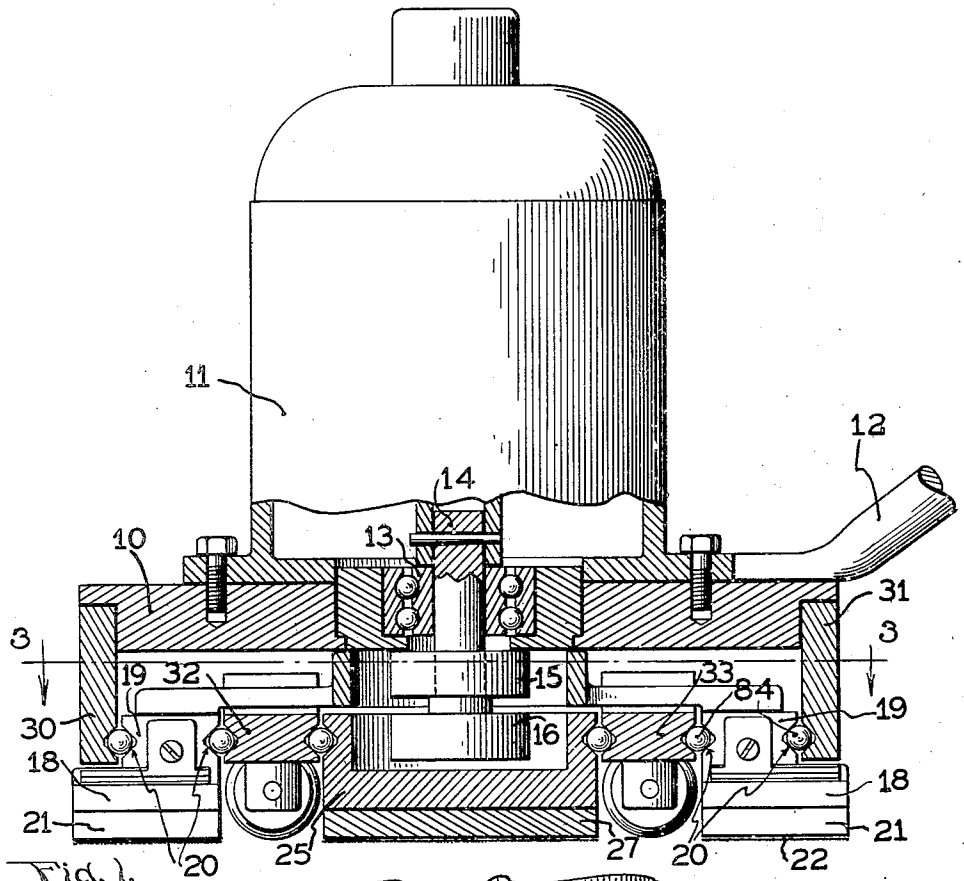


Fig. 1.

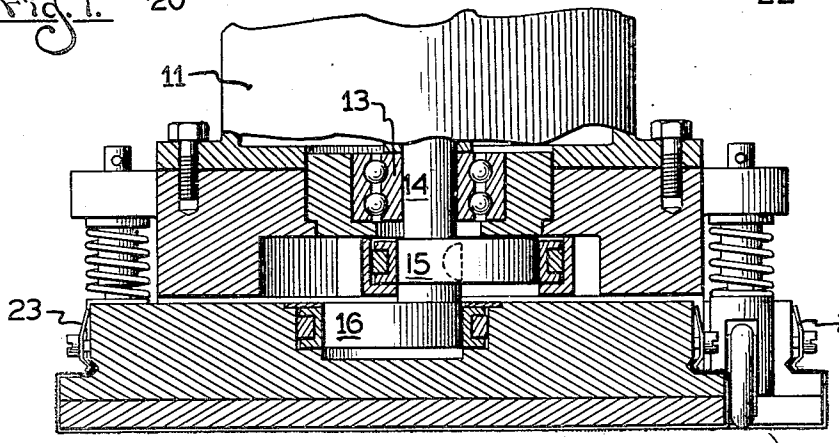


Fig. 2.

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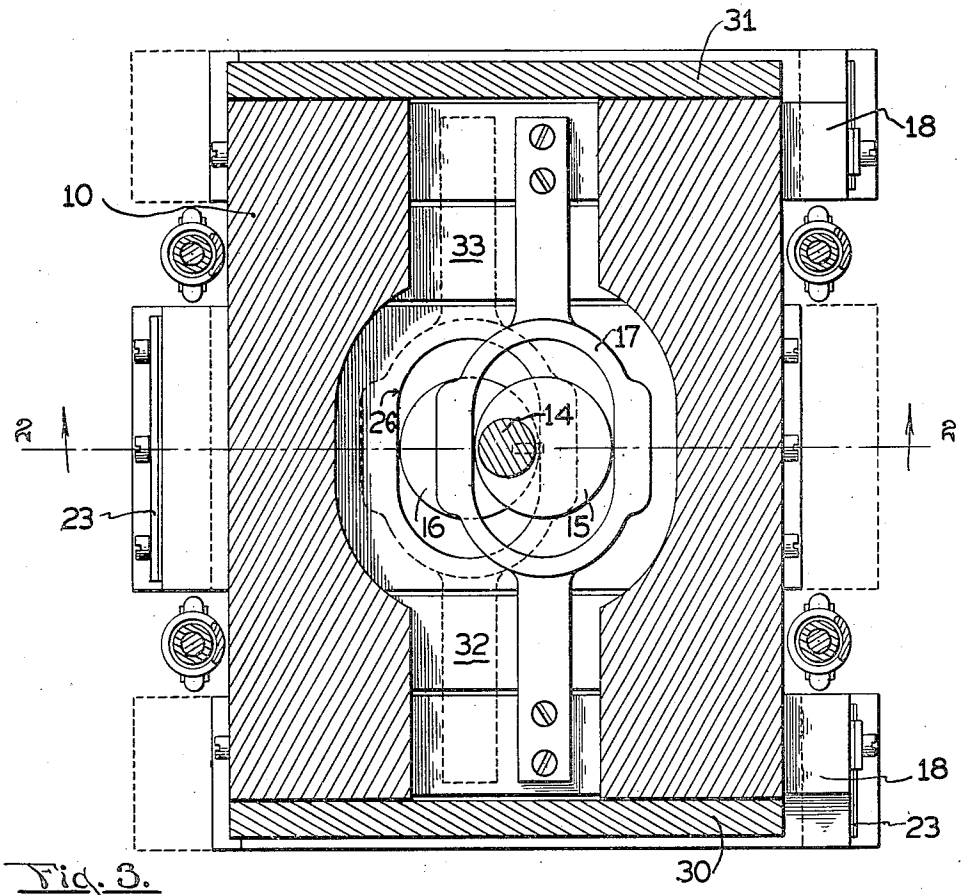


Fig. 3.

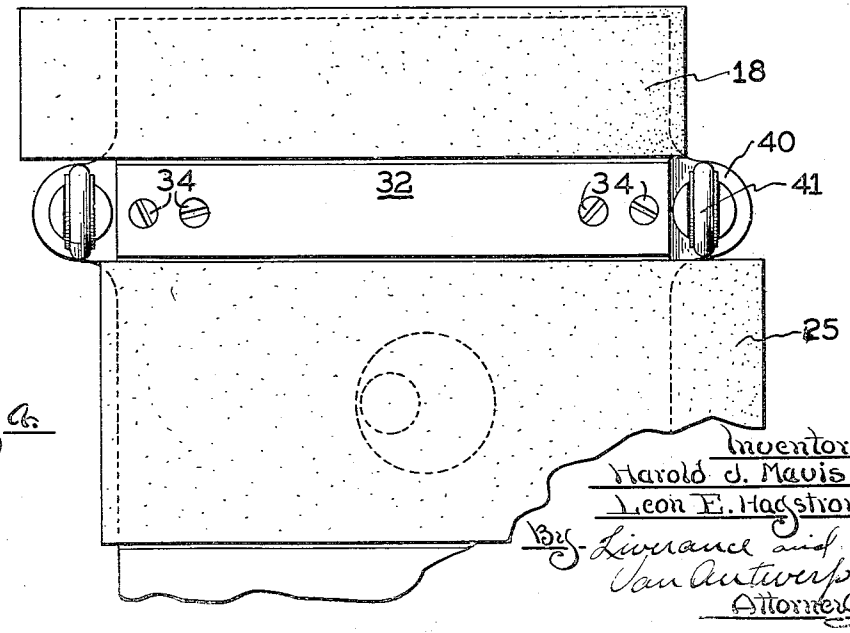


Fig. 6.

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UNITED STATES PATENT OFFICE

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FLOOR SANDER

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5 Claims. (Cl. 51—175)

Our invention relates to surfacing machines and more particularly to floor sanders.

One disadvantage of previous machines of this character of the revolving type is that the abrasive sheet or sand paper quickly becomes worn and inefficient in that it travels in the same direction continuously and thus tends to "lay down" the grains of the sand and thus render the surface of the sand paper smooth. Also, in this revolving type of machine circular sheets of sand paper must be used, these being more expensive than those of rectangular form.

It is appreciated that certain reciprocating sanding machines have been previously made but these have not been entirely satisfactory due to the fact that they do not operate at a high enough speed to be efficient and economical. In other words, the areas of the surfaces which they were capable of sanding in a given time were too small. This was due to the fact that the machines were not properly balanced and hence could not be operated at a high speed without racking themselves to pieces.

Now, in our improved sander, we overcome the first mentioned difficulty by using a reciprocating type of sander, and the second difficulty is eliminated by so constructing our sander as to be in perfect balance.

Another advantage is to provide a sander which has its sanding surface capable of extending well beyond the fixed part of the machine whereby ready access is had to corners and the like.

Briefly described, our invention consists of a main frame having three reciprocating slides mounted therebelow and means adapted to reciprocate these slides, the end slides and the yoke connecting the same being equal in weight to the larger central slide and being reciprocated in an opposite direction thereto. Spring pressed rollers are adapted to lightly contact with the floor whereby the sand paper on each of the three slides is properly maintained in frictional engagement with the surface upon which operation is had.

Still further objects or advantages subsidiary or incidental to the aforesaid objects, or resulting from the construction or operation of the invention as it may be carried into effect, will become apparent as the same invention is hereinafter further disclosed.

An understanding of our invention may be had from the following description taken in connection with the accompanying drawings, in which,

Fig. 1 is a view of our floor sander, certain parts being broken away and shown in cross section in order to expedite the showing thereof.

Fig. 2 is a view taken along the plane of line 2—2 of Fig. 3.

Fig. 3 is a plan view taken along the line 3—3 of Fig. 1, the dotted lines indicating the extent of movement of the several reciprocating parts, and

Fig. 4 is a bottom view of the floor sander, one end thereof being broken away as the machine is symmetrical about its center line.

Similar numerals refer to similar parts throughout the several views.

Our floor sander consists of a frame or support 10 having a suitable motor 11, and a handle 12 attached thereto as clearly shown in Fig. 1. This body or frame is recessed or hollowed out on its underside and has an opening about centrally thereof adapted to receive a bearing 13 which revolubly supports the stub shaft 14, this shaft having cams 15 and 16 rigid therewith. Anti-friction bands encircle these cams and a yoke 17 lies in the same plane as the upper cam 15 and is adapted to be reciprocated thereby. See Fig. 3.

The yoke 17 is bolted at each end to end slides 18 which have upstanding ribs 19, grooved as at 20 and having cushion blocks 21 adjacent to the lower surface thereof. These cushion blocks are formed of any light material or suitable composition and the sheet 22 of sand paper or the like is held against the bottom face of the cushion blocks by clips 23.

The center slide 25 is recessed as at 26, to receive the lower cam 16, and is grooved at its edges as clearly shown in Fig. 1. A light composition block 27 is held against the lower face of the center slide by means of the abrasive paper 22 and the clips 23. The main frame has grooved end plates 30 and 31, see Figs. 1 and 3, and cross supports 32 and 33, grooved at either edge, are fastened parallel to the end plates by means of screws 34. See Fig. 4.

The main frame 10 is provided with ears 40 which support the spring pressed rollers 41 and hence maintain just the right amount of friction between the abrasive surfaces and the floor which is being sanded or acted upon.

The operation is readily understood. Rotation of the motor, which is in one direction only, causes the stub shaft 14 to revolve and likewise the two cams, rigid therewith, also revolve. The upper cam 15 actuates the yoke member 17 and causes it to move to and fro. The yoke in turn

carries with it the two end slides 18, these slides being mounted upon the balls 84. The lower cam 16, which is placed exactly opposite or at 180° to the upper cam 15 acts upon the sides of the opening or recess 26 and causes the central slide to reciprocate through a similar distance but in exactly opposite phase to the movement of the end slides. As the masses reciprocated are exactly equal in weight and as their accelerations and decelerations are exactly the same but act in opposite directions, little or no vibration will occur and hence the speed of the motor may be high enough so that efficient and economical operation may be obtained. Also due to the fact that the direction of the operation of the sand paper is changed at every stroke the result is that an extremely rough surface is had, there being no chance of the sand particles becoming grained together and filling up with dust from the floor. Thus the sand paper keeps itself clean and moreover wears entirely out.

Having thus described our invention we desire it to be understood that the invention is in no wise limited to the particular illustrative embodiment disclosed, the scope thereof being set forth in the following claims:

We claim:

1. In a floor sanding device of the character described, the combination of, a frame member having depending portions at opposite sides thereof and a central opening extending therethrough, a bearing fitting in said opening, a stub shaft revolubly mounted in said bearing, a motor mounted upon said body member and connected onto the said stub shaft to rotate the same, and plates mounted upon said body member at right angles to the said depending side portions on said body member and extending therebelow, said end plates having grooves at their inner edges, cross supports fastened to the bottom sides of the said depending portions of the body member so as to extend in parallelism to the said end plates, said cross supports being grooved on opposite sides thereof in alinement with the previously mentioned grooves, and slides having portions extending upwardly between the end plates and the said cross supports, antifriction means located in the said grooves whereby the end slides may be reciprocated, a central slide having opposed grooves, said grooves being located adjacent grooves in the said cross supports, antifriction means in each of these respective sets of grooves, said central slide member also having a recess therein, a cam located in said recess whereby the said slide may be reciprocated, a connecting member fastened to the end slides and extending over the said cross supports whereby the end slides move as one, a cam adapted to reciprocate said connecting member and means for fastening the said cams to the said stub shaft whereby simultaneous operation of the three slides will be had.

2. In a floor sanding device of the character described, the combination of, a frame member having a central opening extending therethrough, a bearing fitting in said opening, a stub shaft revolubly mounted in said bearing, a prime mover mounted upon said body member and connected onto the said stub shaft to rotate the same, means mounted upon said body member at each end and extending therebelow, said means having grooves at their inner edges, cross supports fastened to the body member so as to extend in parallelism to the said end means, said cross supports being grooved on opposite sides thereof in alinement with the previously mentioned grooves, and slides having portions extending between the end means and the said cross supports, anti-friction means located in the said grooves whereby the slides may be reciprocated, a central slide having opposed grooves, said grooves being located adjacent grooves in the said cross supports, anti-friction means in each of these respective sets of grooves, said central slide member also having a recess therein, an operating means located in said recess whereby the said slide may be reciprocated, a connecting member fastened to the end means and extending over the said cross supports, whereby the end slides move as one, additional operating means adapted to reciprocate said connecting member and means for fastening the said operating means to the said stub shaft whereby simultaneous operation of the three slides will be had.

3. In a sanding apparatus of the character described, a frame, a central slide thereon, two smaller slides thereon, said smaller slides being spaced from each other and located on opposite sides of said central slide, means for slidably mounting the slides upon the frame, means for rigidly connecting the two smaller slides so that they move together, and means to operate the two connected slides in timed relationship to the third slide, said means including a prime mover, the center of gravity of said prime mover and said operating means being located exactly above the center of the said frame.

4. A combination of elements as set forth in claim 3 in which said slides extend beyond the confines of the frame for the purpose described.

5. A floor sander of the class described comprising a main frame having a centrally located recess in its lower side and a centrally located hole therethrough, a motor rigid with the frame, said motor being located exactly over said hole, a stub shaft fastened to the motor shaft and depending through the hole in the frame member, a bearing surrounding said shaft and resting in the hole through said frame, plates depending from the frame member and extending therebelow, supports fastened to the frame member spaced from and in parallelism with the said plates, slides mounted between the plates and the supports, means connecting the said slides, another slide mounted between the supports, said last mentioned slide having a recess therein, and cam means on the stub shaft adapted to reciprocate said slides, said cam means being concealed within the recess in the said slide member and the recess in the lower side of the main frame.

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