May 1, 1945. F. HARRIS 2,375,102

FLOOR SANDING MACHINE

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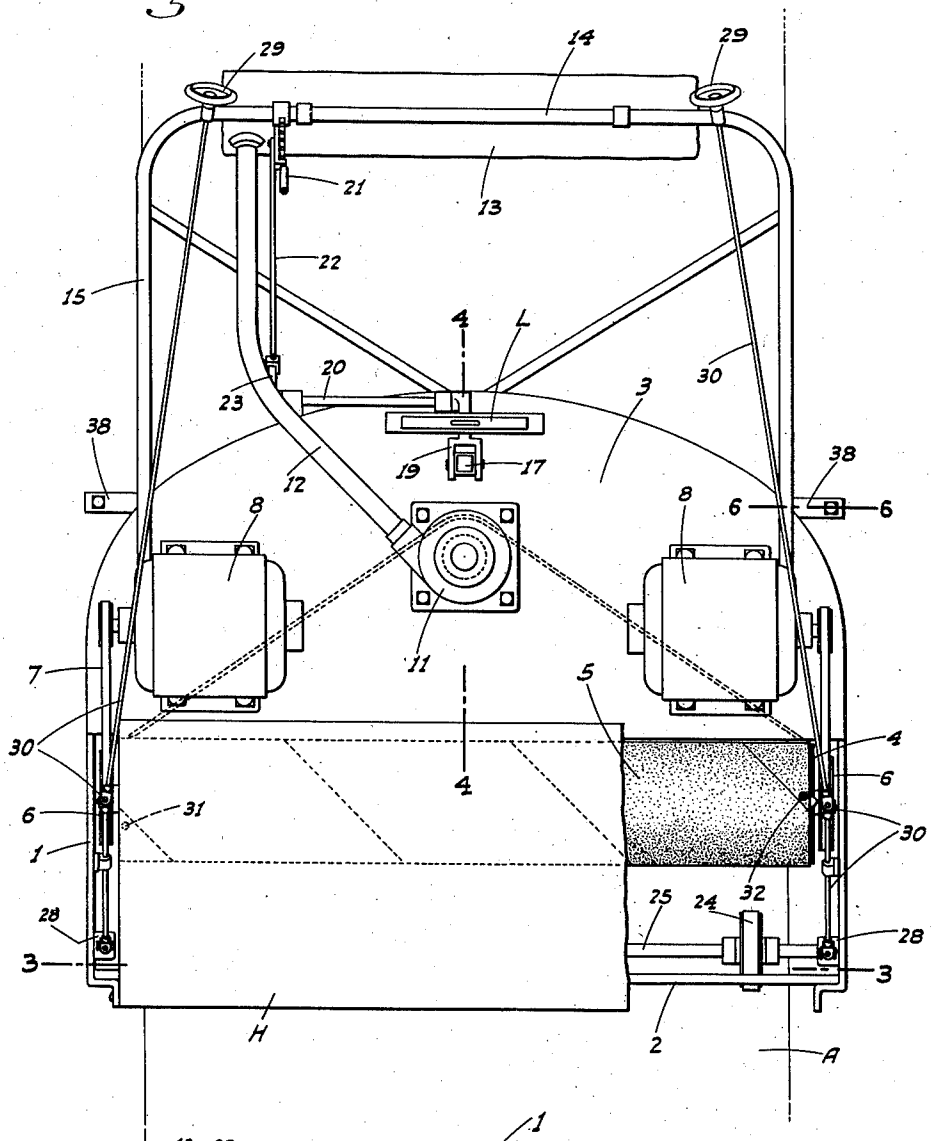
Fig. 1



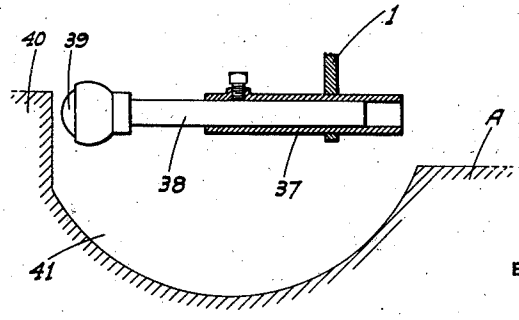


Fig. 6

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Fig. 2

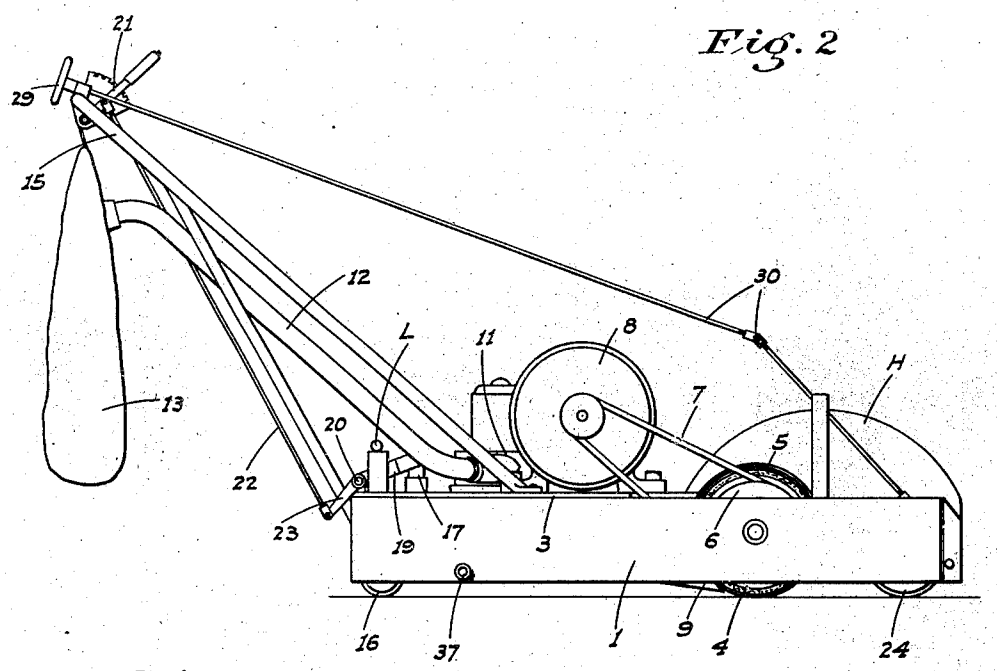
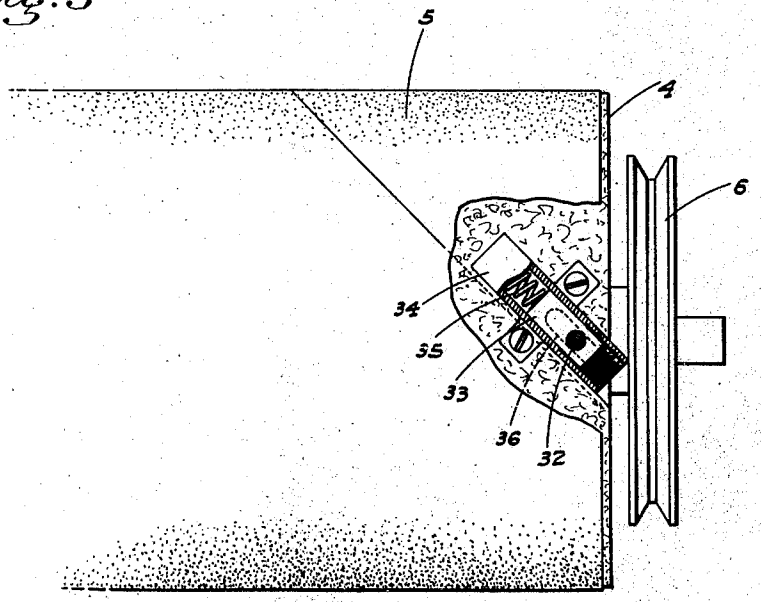


Fig. 5



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FLOOR SANDING MACHINE

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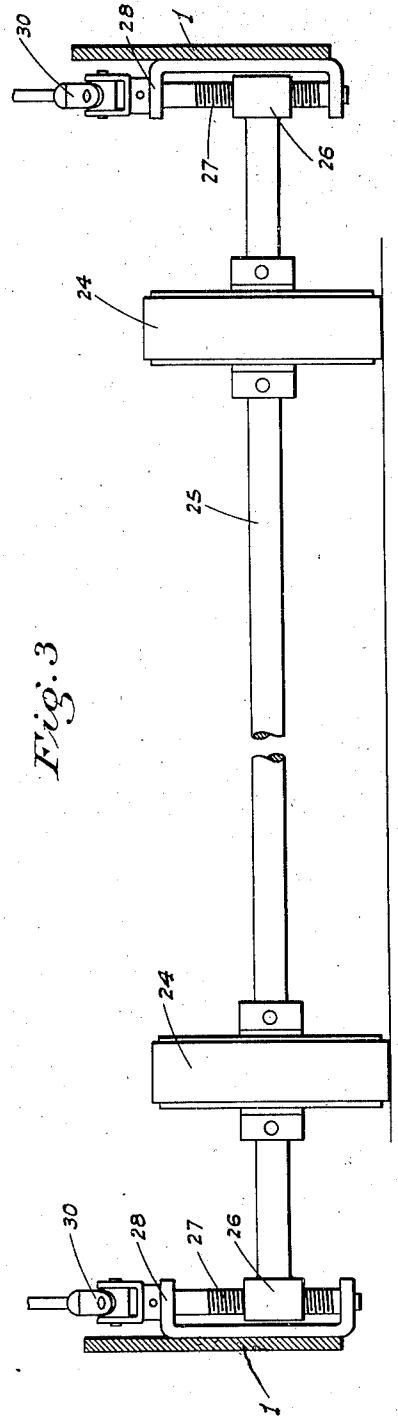

Fig. 3

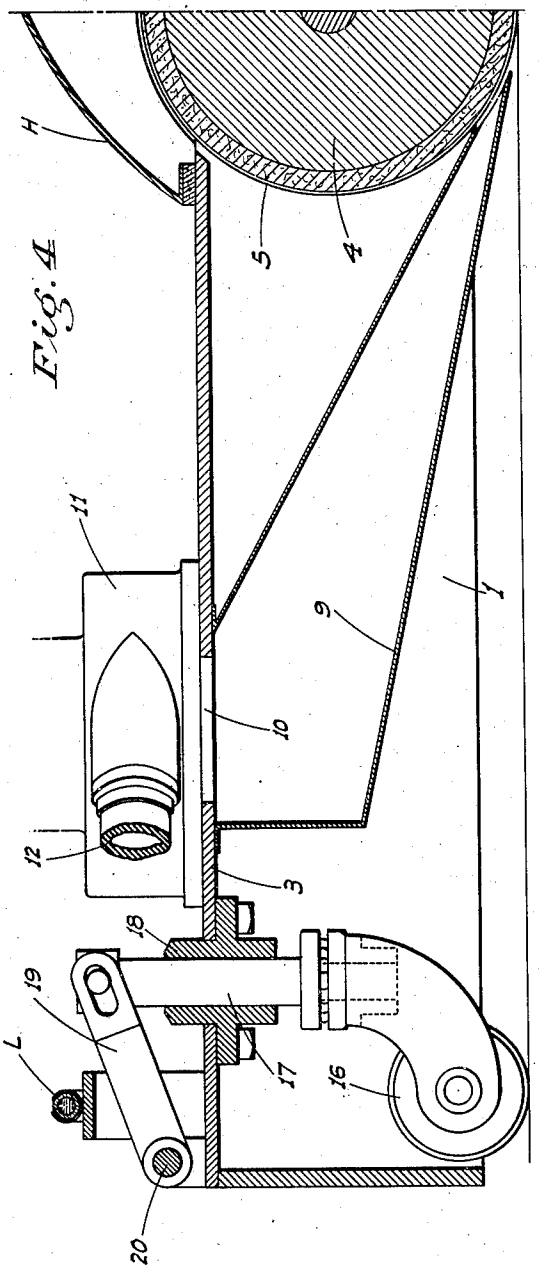

Fig. 4

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2,375,102

FLOOR SANDING MACHINE

Forist Harris, Merced, Calif.

Application February 11, 1942, Serial No. 430,374

2 Claims. (Cl. 51—176)

This invention relates to floor sanding machines and particularly to one designed for sanding bowling alleys, which must be refinished at stated intervals, and also maintained or restored to accurate level transversely.

The principal object of my invention is to provide a sanding machine for the purpose by means of which the alley may be sanded for its entire width at one operation, and provided with sensitive and readily controlled adjusting means to maintain the sanding drum level at all times, irrespective of alley level, so that the alley will be restored to such level upon engagement of the drum therewith.

A further object is to provide a means for easily attaching the sanding strip so that it is continuous circumferentially of the drum, and for maintaining the strip taut at all times.

A further object of the invention is to provide a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a top plan view of the machine, with the sanding drum hood partly broken away.

Figure 2 is a side elevation of the machine.

Figure 3 is an enlarged fragmentary transverse section on the line 3—3 of Fig. 1.

Figure 4 is an enlarged fragmentary longitudinal section on the line 4—4 of Fig. 1.

Figure 5 is a fragmentary elevation of the sanding drum and sanding strip thereon, the latter being partly broken away.

Figure 6 is a fragmentary transverse section on the line 6—6 of Fig. 1, showing a removable guide member in place.

Referring now more particularly to the characters of reference on the drawings, the frame of the machine comprises a heavy U-shaped band set on edge and near the floor level, and forming transversely spaced straight side members 1 at the front, connected at their forward end by a cross bar 2. The rearward portion of the frame is floored over by a plate 3 which stiffens the frame and also forms a supporting platform for the operating motors, etc., as will be seen later.

Journaled in and extending between the members 1 just ahead of the plate 3 is a sanding drum 4, on which the sanding strip 5 is wrapped and secured in the manner hereinafter described. This drum has pulleys 6 at both ends inwardly of the frame members, these pulleys being engaged by belts 7 driven from separate duplicate synchronized motors 8 mounted on the platform 3 in symmetrical relation to the longitudinal central plane of the frame. The use of two motors reduces the torque on the drum, and since they are mounted equal distances from the central plane of the frame, the machine as a whole is well balanced, which makes for ease of control of the lateral tilting of the same by the operator.

The platform 3 also forms the top of a dust-catching nozzle 9, which leads rearwardly and upwardly from the drum adjacent the bottom and for the full width thereof; the sides of the nozzle converging rearwardly, as indicated in Fig. 1, to a central opening 10 in the plate 3 (see Fig. 4). This opening registers with the intake of a conventional vertical motor driven suction fan 11 mounted on the platform, the fan thus drawing air and dust from the floor adjacent the drum. A hinged hood H covers the upper part of the drum and normally rests along its free edge on the forward edge of the platform 3 in dust-sealing relation.

The outlet from the fan is connected by a flexible conduit 12 with a dust-collecting bag 13 hung on the cross bar 14 of the handle unit 15 which projects upwardly and rearwardly from the frame and by means of which the machine is manipulated along the alley.

The frame adjacent its rear end is supported by a central castor wheel or roller 16 pivoted for rotation about a vertical stem 17 slidable but non-turnable in a guide bushing 18 mounted on the platform 3. Vertical movement of the stem is controlled by an arm 19 connected to the stem above the platform and radiating from a transverse supporting shaft 20 journaled on the platform 3 at its rear end. Rotation of the shaft is controlled from the handle unit by a hand lever 21 of conventional type mounted thereon, and connected by a pull rod 22 to another arm 23 extending rearwardly from the shaft 20. By this means the frame is raised at its rear end, lifting the sanding drum from the floor.

The frame immediately ahead of the sanding drum is supported by a pair of transversely spaced rubber-tired rollers 24 independently turnable on a non-rotary shaft 25 which terminates short of the members 1. At its ends this shaft is provided with heads 26 through which

vertical screws 27 are threaded, these screws being mounted in brackets 28 secured on the members 1 and held against longitudinal movement therein. Hand wheels 29 are turnably mounted on the cross member 14 adjacent the sides of the machine and are separately connected to the screws by rod and universal joint units 30.

A transverse horizontal spirit level L is mounted on the platform centrally thereof at its rear end in a position where it may be readily observed by the operator manipulating the machine from the rear.

By reason of this arrangement the operator can tell at a glance whether the rollers 24, and consequently the sanding drum which is close thereto, are level or not and can instantly restore the level of the drum by a turn of one or the other of the hand wheels 29. These wheels are positioned where they are naturally convenient to the hands of the operator, and in fact the machine can be manipulated by always maintaining a grasp on the wheels and turning them only when necessary to restore the level. Such leveling of the machine of course causes the sanding drum to engage a tilted alley more heavily on one side than the other, and consequently restores the alley to a proper level after one or more passes of the machine thereover.

The rollers 24 are spaced apart a distance but slightly less than the width of a standard bowling alley A, so that the leveling action is effective over the entire width of the alley. The sanding drum, however, is wider than the alley so that it will always engage the alley from side to side.

In order to enable the sanding strip 5 to extend continuously about the circumference of the drum without any break, it is wrapped spirally or helically thereabout from one end to the other, as shown. At one end of the drum the strip where it tapers to a point is secured to the drum by a removable pin 31 or the like. At the other end the strip is secured by a pin 32 to a plunger 33 slidable in a cylinder 34 embedded in the drum just under the sanding strip and disposed parallel to the slope or pitch of the spiral or helix. The plunger is urged outwardly or away from the drum by a spring 35 in the cylinder behind the plunger, so as to always take up slack in the strip as the latter becomes more tightly wrapped about the drum with the driving rotation of the same. The cylinder is longitudinally slotted for the pin as shown at 36, and in order to enable the plunger to be retracted in the cylinder when the pin 32 is initially engaged with the plunger, the outer end of the cylinder is tapped for engagement with a screw or bolt so that the advance of this screw will forcibly retract the plunger. When connection with the pin has been made the screw is withdrawn and thereafter the plunger, and the strip secured thereto, are subject to the tension of the spring.

The machine is ordinarily guided along the alley by the operator holding the handlebar unit and swinging the same from side to side, as may be necessary. As an aid to guiding the machine under certain conditions, however, lateral socket elements 37 are mounted on the opposite sides of the frame near its rear end. A stem 38 is slidably and adjustably mounted in each socket, this stem having a free turning ball 39 or the like mounted in its outer end facing and normally close to the adjacent division board 40 upstanding from the far side of the corresponding ball return trough 41 of the alley, as shown in Fig. 6. The use of these balls of course prevents any material deviation of the machine laterally of the alley, as will be evident.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. A sanding machine comprising a frame including side members, a handle unit upstanding from the rear end portion of the frame, a transversely mounted driven sanding drum extending between and supported by the side members, an axle extending transversely between the side members ahead of the sanding drum, floor engaging wheels on the axle adjacent the ends thereof, heads on opposite ends of said axle, inwardly opening U-shaped brackets secured in upstanding position against adjacent faces of said side members, a vertical screw rotatably mounted in each bracket and extending in supported, axially immovable relation between opposite ends thereof, said screws being threaded through corresponding heads on the axle, the upper ends of the screws projecting through corresponding ends of the brackets, a rotatable connecting rod unit extending at a rearward and upward incline from adjacent the upper end of each screw to the handle, means supporting said rods for rotation, a universal coupling between the upper end of each vertical screw and the lower end of the corresponding rod, and a hand wheel mounted on each rod at its upper end at the handle, said wheels being spaced apart for ready access to corresponding hands of an operator standing adjacent and back of said handle.

2. A sanding machine for a bowling alley comprising a frame, a power driven sanding drum mounted on the frame, a handle unit for manipulating the machine projecting upwardly from the frame at the rear, a pair of transversely spaced alley engaging rollers mounted adjacent the drum in connection with the frame for selective, relative vertical adjustment, a transverse level mounted on the machine in position to be observed by the operator from his station behind the handle unit, and separate mechanisms for so adjusting the rollers including operating handles mounted on the handle unit in position to be engaged and manipulated by the hands of the operator without relinquishing control of the machine or halting its movement along the alley.

FORIST HARRIS.