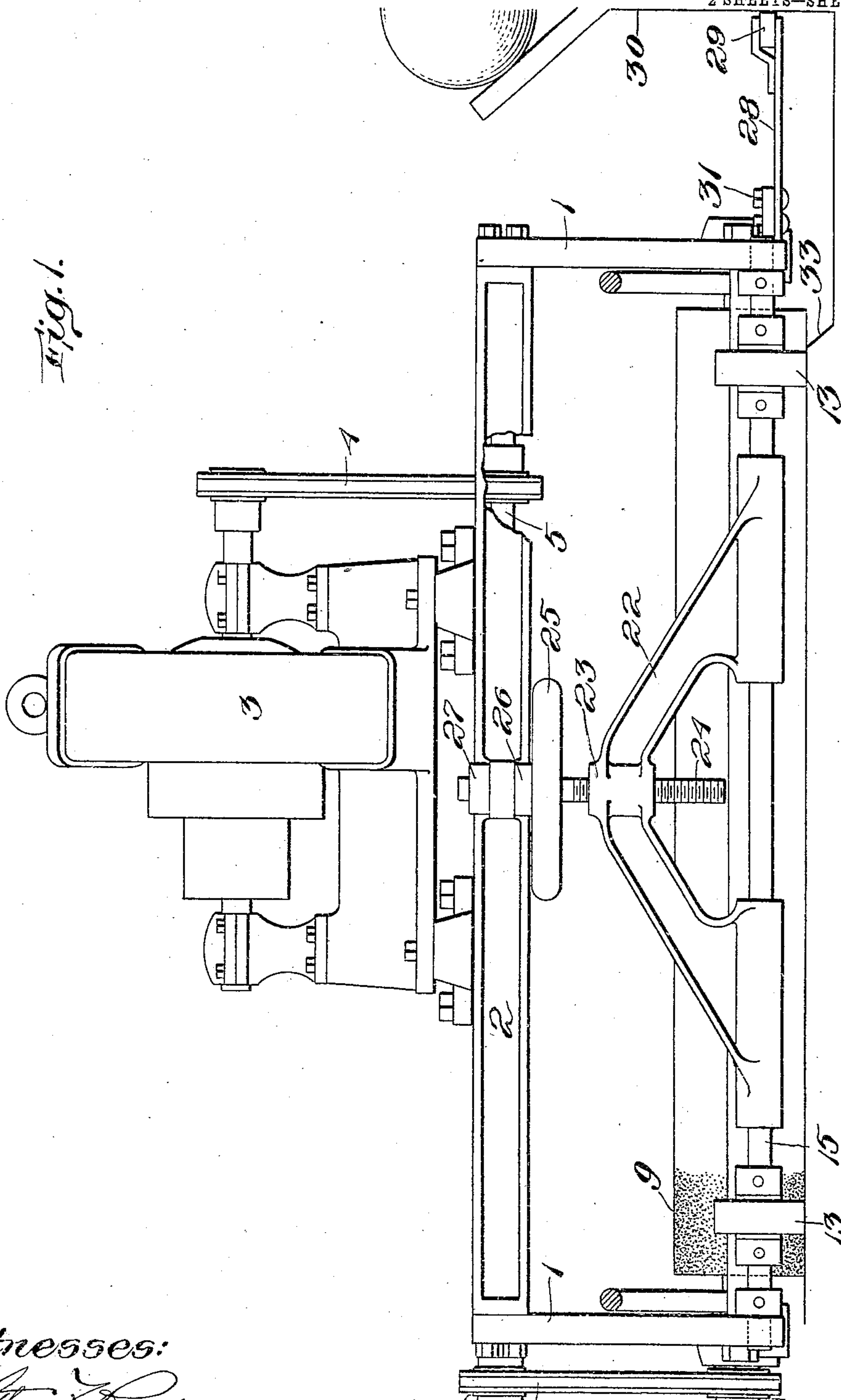


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APPLICATION FILED DEC. 21, 1905. RENEWED APR. 5, 1909.

940,004.

Patented Nov. 16, 1909.

2 SHEETS—SHEET 1.



Witnesses:

Arthur E. Randall
M. A. Jones

Inventor:

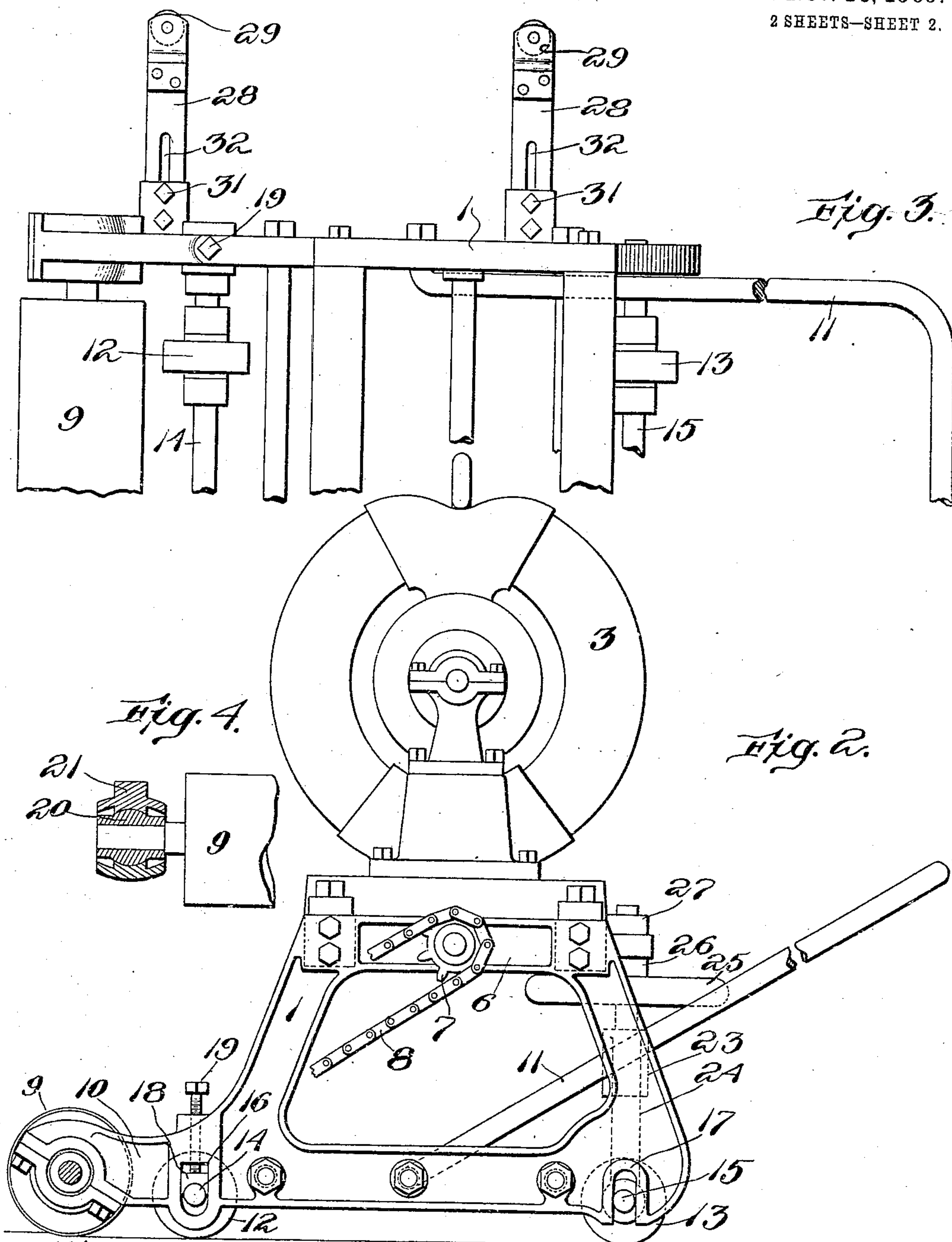
George B. Gonia,
by Geo. S. Maxwell, Atty.

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UNITED STATES PATENT OFFICE.

GEORGE B. GONIA, OF REVERE, MASSACHUSETTS.

BOWLING-ALLEY-SURFACING MACHINE.

940,004.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed December 21, 1905, Serial No. 292,744. Renewed April 5, 1909. Serial No. 488,119.

To all whom it may concern:

Be it known that I, GEORGE B. GONIA, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Bowling-Alley-Surfacing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

My invention is a machine for surfacing bowling alleys and the like whereby the unevennesses, roughness, etc. of a bowling alley may be readily and quickly removed by a machine instead of by the ordinary laborious sand papering and scraping by hand. To this end I have provided a frame carrying an evening device (preferably a roller covered with sand paper) which the operator pushes ahead of him and thereby automatically trues up or levels the floor. The frame is quite heavy so that it keeps the abrading surface of the roller hard pressed against the floor, and in connection therewith I provide means for tilting the roller lengthwise and also means for varying the pressure by tilting the frame of the machine longitudinally.

The structural details of my invention and other advantages thereof will be pointed out more at length in the course of the following description, reference being had to the accompanying drawings in which I have illustrated a preferred embodiment of my invention, and the latter will be more particularly defined in the claims.

In the drawings, Figure 1 is a rear view of the machine, the handle and frame being broken away or sectioned, said figure showing the apparatus in position on a bowling alley floor; Fig. 2 is a left-hand end elevation thereof; Fig. 3 is a fragmentary view in top plan of the right hand end of the machine; and Fig. 4 is a fragmentary detail of the operating roll showing the bearing thereof in cross-section.

While it will be understood that my invention is capable of a wide variety of embodiments, I prefer to employ a heavy substantially rectangular frame 1 on whose cross-beams 2 is mounted suitable driving means, herein shown as an electric motor 3 connected by a belt or chain 4 to a countershaft 5 journaled in the end frames 6 and

provided with a sprocket wheel 7 driving a sprocket chain 8 in driving engagement with the shaft of a sand-papering roll 9 as clearly shown in Figs. 1 and 2. The roll 9 is journaled at the extreme forward end of a projecting leg or heavy bracket 10 constituting a portion of the frame 1, and the latter is provided with a bail-like handle 11 so that when the operator grasps the handle of the machine he pushes the machine forward and the roller gets the combined force of the pushing movement and the weight of the frame and motor while at the same time reaching to the very end of the alley floor before the main part of the machine arrives at that point.

The machine is supported on front rollers or wheels 12 and rear wheels 13 on shafts 14, 15 whose ends are retained in vertical guides 16, 17 formed in the ends of the frame as clearly shown in Figs. 1 and 2. The shaft 14 of the front wheels rests against a journal box 18 held in proper adjustment by any suitable means as by a set bolt 19 operating in a long threaded bearing in the top of the bracket or projection 10. This adjustment permits the opposite ends of the shaft 14 to be independently raised or lowered, thereby correspondingly tilting the sand papering roller 9. This is for the purpose of truing up or leveling a floor which may be lower on one side than on the other. To permit the roll 9 to accommodate itself freely to this adjustment, I provide the end of its shaft with a ball bearing 20 mounted in a socket bearing 21, as shown clearly in Fig. 4.

The shaft 15 which carries the rear wheels 13 is journaled in a heavy casting or bracket 22 extending in arched form upwardly at the middle of the rear end of the machine, as clearly shown in Fig. 1, where it is provided with a threaded boss 23 for receiving a heavy post 24 depending from the main frame and operated by a hand-wheel 25 held against longitudinal movement by nuts 26, 27. Raising or lowering the wheels 13 correspondingly tilts the machine longitudinally on the wheels 12 as fulcras, thereby enabling the operator to bring exactly the desired pressure upon the roll 9 according to the requirements of the particular work or condition in hand. By having the abrading roll 9 and the wheels 12, 13, so mounted in the weighted frame 1 that the entire

weight of said frame and its weighting driving-mechanism comes on said roll and wheels, and by having the rear end of said weighted frame mounted on a single intermediate point instead of at its corners, I am enabled to transmit with the most efficiency the desired pressure to the abrading roll at either end thereof simply by adjusting the set-bolts 19 up or down, thereby tilting the abrading roll endwise at the same time that the frame is tilted sidewise. This three-point support of the weighted frame, the wheels 12, 12, constituting two separated supports at the opposite front corners of the frame and the post 24 constituting the third intermediate point, at the rear, permits the tilting or effective rocking of the frame by the adjustment of the bolts 19 with the result that a maximum amount of the weight of the frame and superposed mechanism is transmitted directly to the abrading roll. Turning the hand wheel 25 so as to raise and lower the frame at its single rear intermediate point of support transmits directly to the abrading roll the desired proportion of the weight of the frame and hence the desired amount of pressure distributed equally throughout the length of the roll, whereas adjusting the bolts 19 transmits to the abrading roll the desired proportion of the weight of the frame, and hence the desired amount of pressure, at one end of the abrading roll.

The supporting wheels 12, 13 of the machine are set in considerably inside of the ends of the frame of the machine, and the operating roll 9 extends beyond said wheels, as clearly shown in Fig. 1. The purpose of this construction is to provide means for insuring that the floor will be dressed evenly to its extreme edge. By having the roll carried in front of the machine I make certain that the floor will be dressed to its extreme end and by prolonging the roll farther than the width-apart of the supporting wheels I make certain that the floor will be dressed to its extreme edge.

In order to keep the machine in proper longitudinal alinement with the edge of the alley floor as it is pushed lengthwise thereof, I provide alining means coöperating with the supporting wheels, herein shown as arms 28 carrying anti-friction rolls 29 at their extremities for bearing against the return ball trough 30 and made adjustable by any suitable means as by clamping bolts 31 and slots 32.

In use the operator first adjusts the alining arms 28 so as to bring the adjacent supporting wheels 12 and 13 close to the edge of the bowling alley floor which is represented at 33. He then tilts the sand paper roll 9 to the proper angle to dress the floor to a level condition, by lowering or raising one

or the other of the wheels 12 by the adjusting means 19. Next he turns the hand wheel 25 one way or the other so as to transfer the proper pressure of the frame and motor to the roll 9 according to the condition of the floor. Having adjusted the machine properly in the above respects, the operator simply raises the handle 11 and pushes the machine forward. As he approaches the end of the alley, the roll 9 dresses the floor down, to the extreme end of the latter before the wheels have come dangerously near to the edge or end of the floor. So likewise the floor is dressed to its extreme longitudinal edge as the machine is pushed along, because of the fact that the end of the roll 9 projects beyond the supporting wheels 12, 13, Fig. 1.

It will be understood that the various adjustments mentioned may be accomplished by other equivalent means within the spirit and scope of my invention, and, as already mentioned, other driving power than an electric motor may be employed. Also while my invention is primarily intended for surfacing bowling alleys, it will be understood that it is not confined to this use, but may be readily adapted to general use in a variety of situations where analogous work or surfacing is required.

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

1. A machine of the kind described, comprising a frame, two sets of supporting wheels, and an abrading roll, combined with means for simultaneously adjusting one set of said wheels with relation to the other set of wheels for varying the pressure transmitted by the frame to said abrading roll, and means for independently adjusting the wheels of said other set for varying the angle of said abrading roll with relation to the floor.

2. A machine of the kind described, comprising a frame, heavy driving mechanism mounted on said frame to weight the latter, an abrading roll at the front of the machine, front supporting means consisting of separated supporting wheels journaled in the frame adjacent the opposite ends of said abrading roll, and rear supporting means at the rear of the frame, combined with means for adjusting one of said supporting means with relation to the other supporting means for varying the pressure transmitted from the frame to said abrading roll, and means for independently adjusting said separated wheels for varying the angle of said abrading roll with relation to the floor.

3. A floor surfacing machine, comprising a frame weighted by superposed operating mechanism mounted thereon, an abrading roll at the front of the machine, front sep-

arated supporting means adjacent the opposite ends of said roll supporting the front end of said frame at its opposite front corners, rear supporting means supporting said frame at a single point at the rear end of the frame, and means for raising the rear end of the frame with relation to said rear supporting means to transmit thereby the weight of said weighted frame directly to said roll for controlling the pressure of the latter on the floor.

4. A floor surfacing machine, comprising a frame weighted by superposed operating mechanism mounted thereon, separated supporting means supporting the front end of said frame at its opposite front corners and means supporting said frame at a single point at its rear end, whereby said weighted frame has substantially a three-point support, an abrading roll at the front of the machine, and means for transmitting the weight of said weighted frame directly to said roll for controlling the pressure of the latter on the floor, including adjusting means for varying the relative vertical height of said separated front supporting means for thereby varying the lengthwise pressure of said abrading roll.

5. A floor surfacing machine, comprising a frame, heavy operating mechanism mounted on said frame as a means of weighting the same, separated supporting means arranged to support said weighted frame at three points, two at the opposite front corners adjacent the ends respectively of the abrading roll and one intermediately at the rear of the machine, an abrading roll extending transversely of the machine ahead of said two front supporting means, and means for raising and lowering the machine at said intermediate rear support for increasing and decreasing the pressure of the roll on the floor by transferring thereto more or less of the weight of said frame.

6. A machine of the kind described, comprising a frame having two sets of vertical slots in its opposite sides, shafts mounted therein, supporting wheels journaled on said shaft inside of the frame, intermediate means rigidly supporting one of said shafts, a hand wheel and screw engaging said supporting means at one end and said frame at the other end for simultaneously adjusting said shaft and its wheels, independent adjusting means for the opposite ends of said other shaft and its wheels, an abrading roll for engaging the floor as the machine travels over the same on said supporting wheels, and means carried by said machine for operating said abrading roll.

7. In a machine for surfacing floors, a frame provided with a forwardly projecting end, an abrading roll mounted transversely by ball and socket bearings in the forward

extremity of said projecting end, separated supporting wheels mounted in the front of said frame immediately behind the opposite ends of said roll respectively, supporting means at the rear end of the frame, and tilting means operating on said separated supporting wheels adjacent said abrading roll for independently raising or lowering either of the front corners of the frame and the corresponding end of said roll.

8. In a machine for surfacing floors, a portable frame provided with supporting wheels and a transversely extending abrading roll at one end of said frame, opposite alining devices projecting from one side of said frame one at the front and the other at the rear end of the machine, and adjusting means for shortening and lengthening said two alining devices.

9. In a machine for surfacing floors, a portable frame provided with supporting wheels and a transversely extending abrading roll at one end of said frame, opposite independent alining devices projecting from one side of said frame at the front and rear ends of the machine, each alining device carrying an antifriction roll at its outer end, and adjusting means for separately shortening and lengthening said two alining devices.

10. A machine for surfacing floors, comprising a frame, an abrading roll at one end of said frame, supporting wheels adjustably mounted in said frame close to said abrading roll, a set of connected supporting wheels at the opposite end of said frame, a heavy A-shaped casting supporting said set of supporting wheels, and central adjusting means positively connected with the frame and with the upper end of said casting for positively adjusting said casting and its supporting wheels with relation to said frame, for varying the pressure of said roll.

11. A machine for surfacing floors, comprising a frame, an abrading roll at one end of said frame, supporting wheels adjustably mounted in said frame close to said abrading roll, a set of connected supporting wheels at the opposite end of said frame, a heavy A-shaped casting supporting said set of supporting wheels, and central adjusting means positively connected with the frame and with the upper end of said casting for positively adjusting said casting and its supporting wheels with relation to said frame, for varying the pressure of said roll, and means for independently adjusting said first mentioned supporting wheels for varying the pressure of the opposite ends of said roll.

12. In a floor surfacing machine, in combination, a motor-supporting frame, a motor mounted thereon, rotatable wheels carried by said frame at its front end to support said end, rotatable wheels for supporting the rear

end of said frame, said rear supporting wheels being disconnected from the rear end of said frame to permit movement of the rear end away from the floor while said
5 front and rear end supporting wheels remain thereon, and means to effect the upward movement of the rear end of said frame, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence 10 of two subscribing witnesses.

GEORGE B. GONIA.

Witnesses:

HARRY HAGER,
GEO. H. MAXWELL.