

L. ENGEL.
SURFACING MACHINE FOR BOWLING ALLEYS.
APPLICATION FILED JUNE 12, 1912.

1,057,953.

Patented Apr. 1, 1913.

3 SHEETS-SHEET 1.

Fig. 1

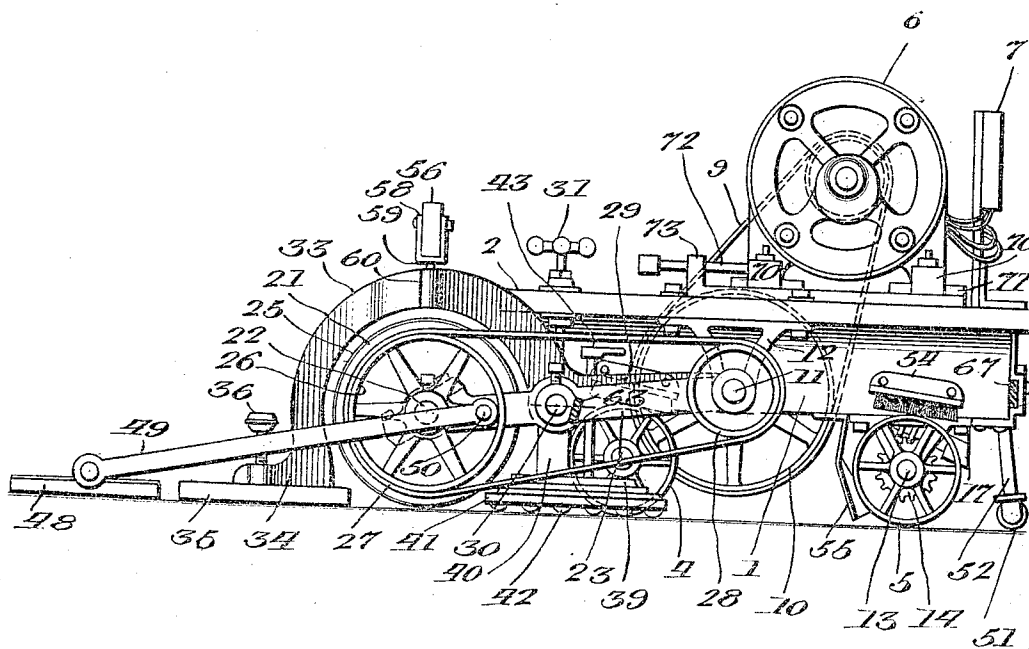
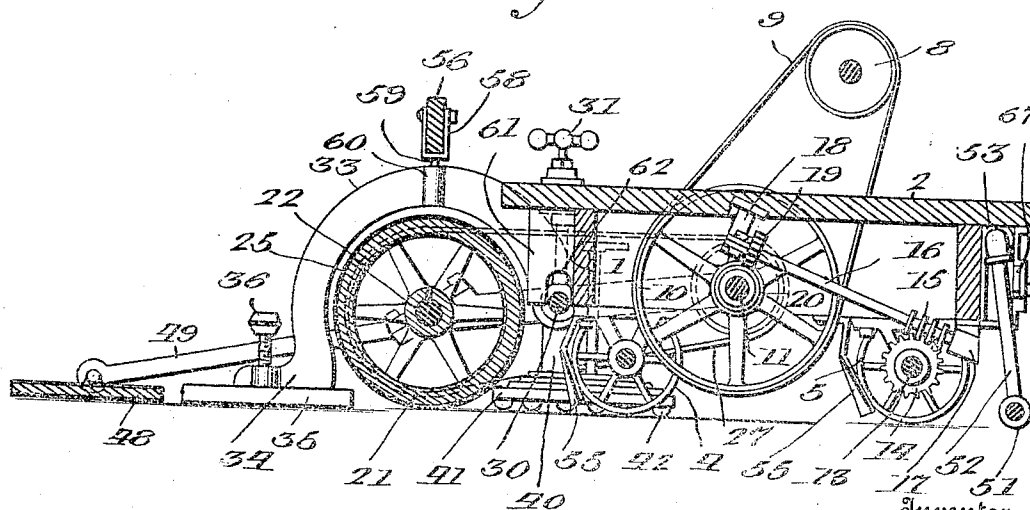


Fig. 3.



Witnesses

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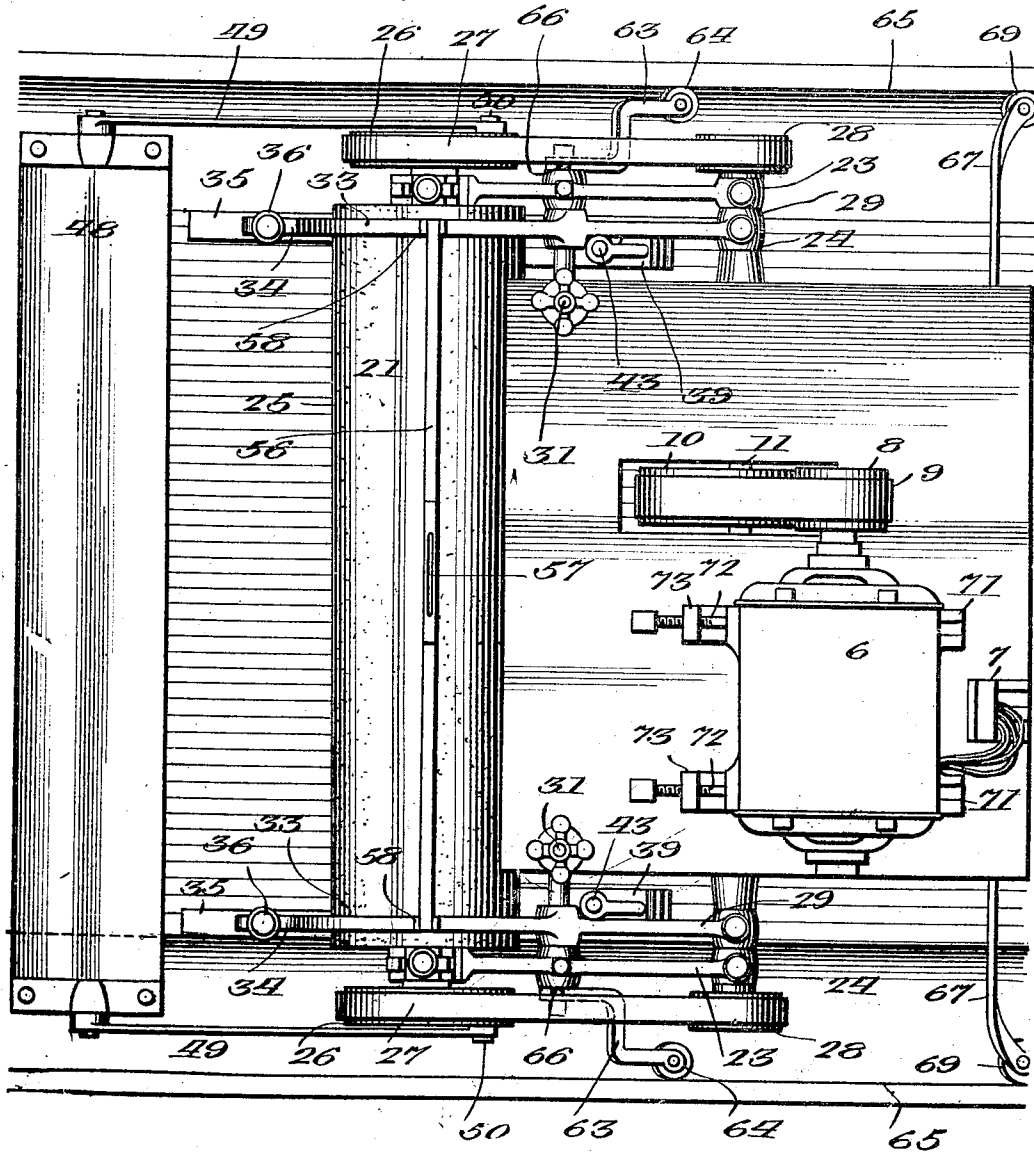
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS-SHEET 3.

Fig. 4.

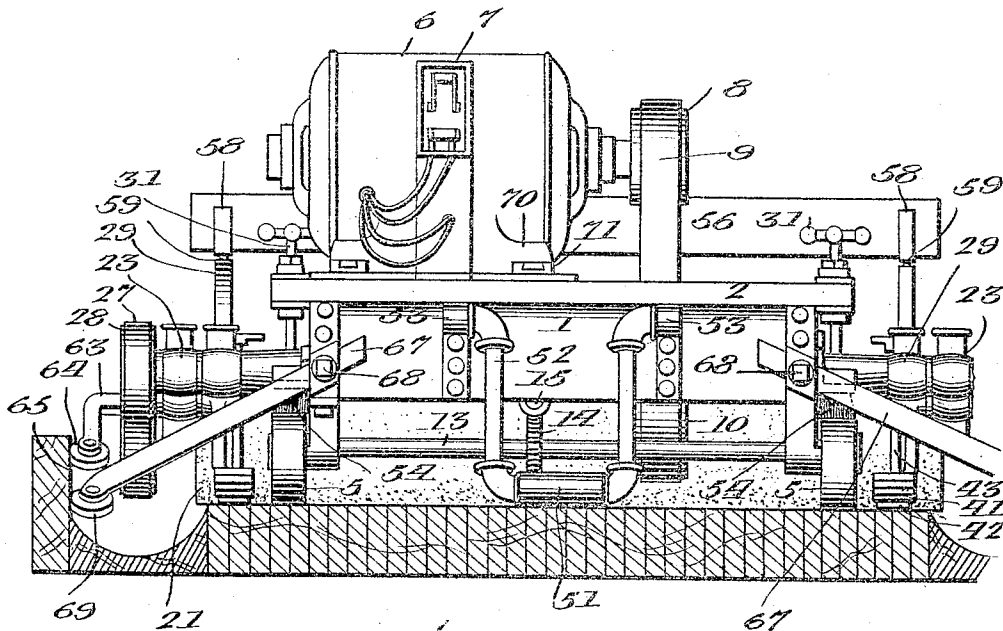


Fig. 5.

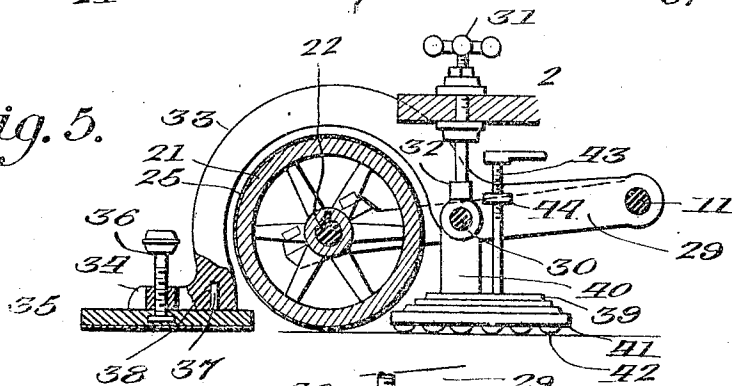
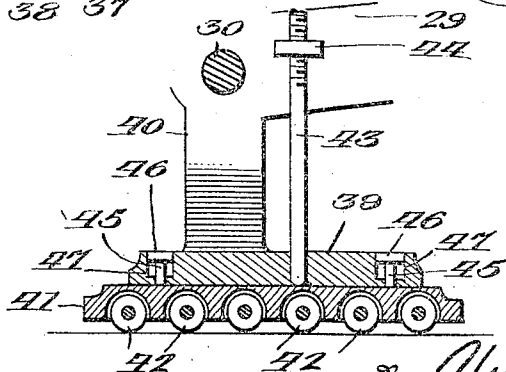


Fig. 6.



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UNITED STATES PATENT OFFICE.

LOUIS ENGEL, OF CLEVELAND, OHIO.

SURFACING-MACHINE FOR BOWLING-ALLEYS.

1,057,953.

Specification of Letters Patent.

Patented Apr. 1, 1913.

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To all whom it may concern:

Be it known that I, LOUIS ENGEL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Surfacing-Machines for Bowling-Alleys, of which the following is a specification.

This invention relates to surfacing machines for bowling alleys, the object of the invention being to provide a simple, motor operated machine which will propel itself along the bed of the bowling alley, and simultaneously actuate the surfacing elements which are rendered adjustable to suit the existing conditions, so that any desired amount of surface may be removed from the alley bed, and the alley leveled up.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts, as will be hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereunto appended.

In the drawings: Figure 1 is a side elevation of a surfacing machine, embodying the present invention, showing the lateral gage arms in section. Fig. 2 is a plan view of the same. Fig. 3 is a vertical longitudinal section through the machine, taken about centrally thereof. Fig. 4 is a rear elevation of the machine, showing its relation to an alley which is illustrated partly in section. Fig. 5 is a detail vertical longitudinal section showing the surfacing drum, the arms by which said drum is carried, and the skids and runners. Fig. 6 is a detail sectional view of one of the runners, showing a portion of one of the skid arms.

The machine contemplated in this invention comprises a truck frame 1, embodying a platform 2 and mounted upon front and rear carrying wheels 4 and 5, respectively, the rear wheels 5 constituting traction wheels for propelling the machine as a whole along the surface of the alley. Mounted upon the platform 1 is a motor 6 which is shown as an electric motor, 7 designating the switch box or control of the motor. From a pulley 8 on the shaft of the motor, a driving belt 9 passes around a band wheel 10 on the main driving shaft 11 of the surfacing machine; the said shaft being mounted in suitable bearings or hangers 12 fastened to the truck frame.

The traction wheels 5 are mounted fast on a rotating axle 13, and this axle is driven in the manner illustrated in Fig. 3, said axle having fast thereon a worm wheel 14 which is driven by a worm 15 on a counter shaft 16 journaled in suitable bearings 17 and 18 connected to the truck frame. The same shaft 16 is provided with a worm wheel 19 which is actuated by a worm 20 on the main driving shaft 11, above referred to. This provides for driving the truck along the surface of the alley being operated upon.

Mounted in advance of the front carrying wheels 4 is a surfacing drum 21, the shaft 22 of which is journaled at its opposite ends in a pair of pivoted carrying arms 23, said arms being journaled at 24 on the opposite ends of the shaft 11. The surfacing drum 21 has applied thereto a covering 25 of sand paper, of any desired fineness or coarseness, according to the work to be performed, and the shaft of the drum is provided at its opposite ends with pulleys 26, around which pass driving belts 27 which extend backward around pulleys 28 on the opposite ends of the main driving shaft 11. In this way, motion is simultaneously imparted to the traction wheels 5 and the surfacing drum 21.

Arranged in parallel relation to the pivoted arms 23 are other pivoted arms 29 which are connected to the arms 23 by a shaft 30 extending across the machine and adjustable up and down by means of shaft adjusting screws 31, said screws having a swiveled connection at their lower ends with sleeves 32 which are loose on the shaft 30. The arms 29 are provided with arched extensions 33 which extend over the surfacing drum 21, and are provided in advance of said drum with forwardly projecting feet 34, to the bottom of which are secured a pair of oppositely arranged skids 35 adjustable up and down with respect to the feet 34 by means of screws 36, the skids 35 being further provided with upstanding guide pins 37 which work in sockets 38, so as to steady the skids and prevent the same from swinging laterally. By means of the screws 36, the skids 35 may be adjusted up or down, so as to give the drum 21 any desired pressure against the surface of the alley.

Just in rear of the surfacing drum 21, and at opposite sides of the machine there are arranged runners, one of which is illustrated

in Fig. 6, said runner comprising a head 39 having an arm 40 which is connected to and depends from the shaft 30, above described. On the lower side of the head 39 is a runner shoe 41, comprising a plurality of rollers 42 which project below the bottom of the runner 41, as shown in Fig. 6. The runner head and the runner carried thereby are adjustable up and down by means of a screw 43 threaded through a lug 44 on the adjacent skid arm 29. The runner shoe 41 is also provided at the front and rear with guide pins 45 extending up through holes in the runner head, and provided with enlarged heads 46 which move up and down in sockets or guide ways 47 formed in the head, thus maintaining the parallelism between the runner head and runner shoe while permitting the shoe to be adjusted in a manner described, for the purpose of enabling the truck frame as a whole to travel easily and smoothly along the alley being planed, and for the further purpose, in conjunction with the skids 35, of preventing undue vibration of the machine under the impulses of the motor.

Operating in advance of the skids 35 is a polisher 48, consisting of a flat plate or board adapted to have a covering of sand paper, carpet, or other polishing fabric applied to the lower surface thereof, so as to operate in direct contact with the surface of the alley. This polisher 48 is connected by means of rods 49 to the crank pins 50 projecting laterally from the pulleys or band wheels 26, as shown in Fig. 2. Reciprocatory motion in a back and forth manner is thus imparted to the plate.

Arranged at the rear of the machine is a traction relief roller 51 which is carried by a swinging U-shaped frame 52 journaled at its upper end in bearings 53 on the truck frame, thus enabling said frame to be swung upward or downward, and when said frame is in its lowermost position, the roller 51 travels in contact with the surface of the alley, and elevates the traction wheels 5, just a sufficient amount to enable the truck frame as a whole to be pushed along the alley, while the motor 6 is out of operation, this feature being useful in order to adapt the machine to be moved backward to its initial point of operation, without actuating the surfacing mechanism.

Cleaning brushes 54 are arranged adjacent to the treads of the carrying wheels 4 and 5, as shown in Fig. 1, and fenders 55 are also arranged adjacent to the wheels, so as to catch the dust and deflect the same out of the way, giving the wheels a perfectly smooth and clean surface to travel on, thereby adding greatly to the accuracy of the machine in its operation.

Extending across between the arched portions 33 of the skid carrying arms is a cross

bar 56 provided about centrally with a spirit level 57 to assist in properly leveling up the alley from side to side. The opposite ends of the bar 56 are carried by brackets 58 having shanks 59 removably fitted in sockets 60 formed in the uppermost points of the arched portions 33 of the skid carrying arms.

61 designates a pair of guides provided with guide slots 62, in which the shaft 30 is adapted to move up and down in effecting the adjustment hereinabove referred to.

In order to cause the machine to travel in a straight course along the alley, I provide the machine at opposite sides with gage arms 63 provided at their extremities with gage rollers 64 which travel in contact with the side division rails 65 of the alley, as shown in Fig. 4. Each of the arms 63 is adjustably mounted on the adjacent end of the shaft 30 by means of a set screw 66. Other lateral gage arms 67 are adjustably connected by means of set screws 68 to the rear end of the truck frame, as shown in Fig. 2, and are provided at their outer ends with gage rollers 69 which also travel in contact with the side division rails 65, as is also shown in Fig. 4. This steadies the machine in its movement along the alley, and insures the entire width of the alley being simultaneously operated upon by the surfacing and polishing elements, hereinabove described.

In order to provide for keeping the proper tension on the main driving belt 9, the motor 6 is shown as provided with feet 70 which engage dove-tailed guides 71 on the platform 2, the motor being adjustable back and forth by means of adjusting screws 72 threaded through lugs 73 projecting upward from the platform 2.

What is claimed is:

1. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, and vertically adjustable skids for elevating and depressing said drum.

2. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, pivoted arms carrying said drum, and vertically adjustable skids attached to said arms for elevating and depressing said drum.

3. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, pivoted arms carrying said drum, and runners attached to said

arms and embodying liftable and depressible shoes for elevating and depressing said drum.

4. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, pivoted arms carrying said drum and having arched extensions over the drum, and vertically adjustable skids attached to the arched extensions of said arms.

5. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, means for elevating and depressing said drum, a bar extending parallel to the axis of the drum, and a spirit level on said bar.

6. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, means for elevating and depressing said drum, and lateral gage arms projecting from the truck.

7. A bowling alley surfacing machine,

comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, means for elevating and depressing said drum, and lateral gage rollers at opposite sides of the truck.

8. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, a reciprocating polisher geared to and actuated by said drum, and means for elevating and depressing said drum.

9. A bowling alley surfacing machine, comprising a truck frame, front and rear axles and carrying wheels therefor, a motor mounted on the truck and geared to one of said axles, a surfacing drum geared to and driven by said motor, a reciprocating polisher, actuating rods connecting the polisher to crank pins on said drum, and means for elevating and depressing said drum.

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

LOUIS ENGEL.

Witnesses:

BERNARD KROECKEL,
JOSEPHINE KROECKEL.