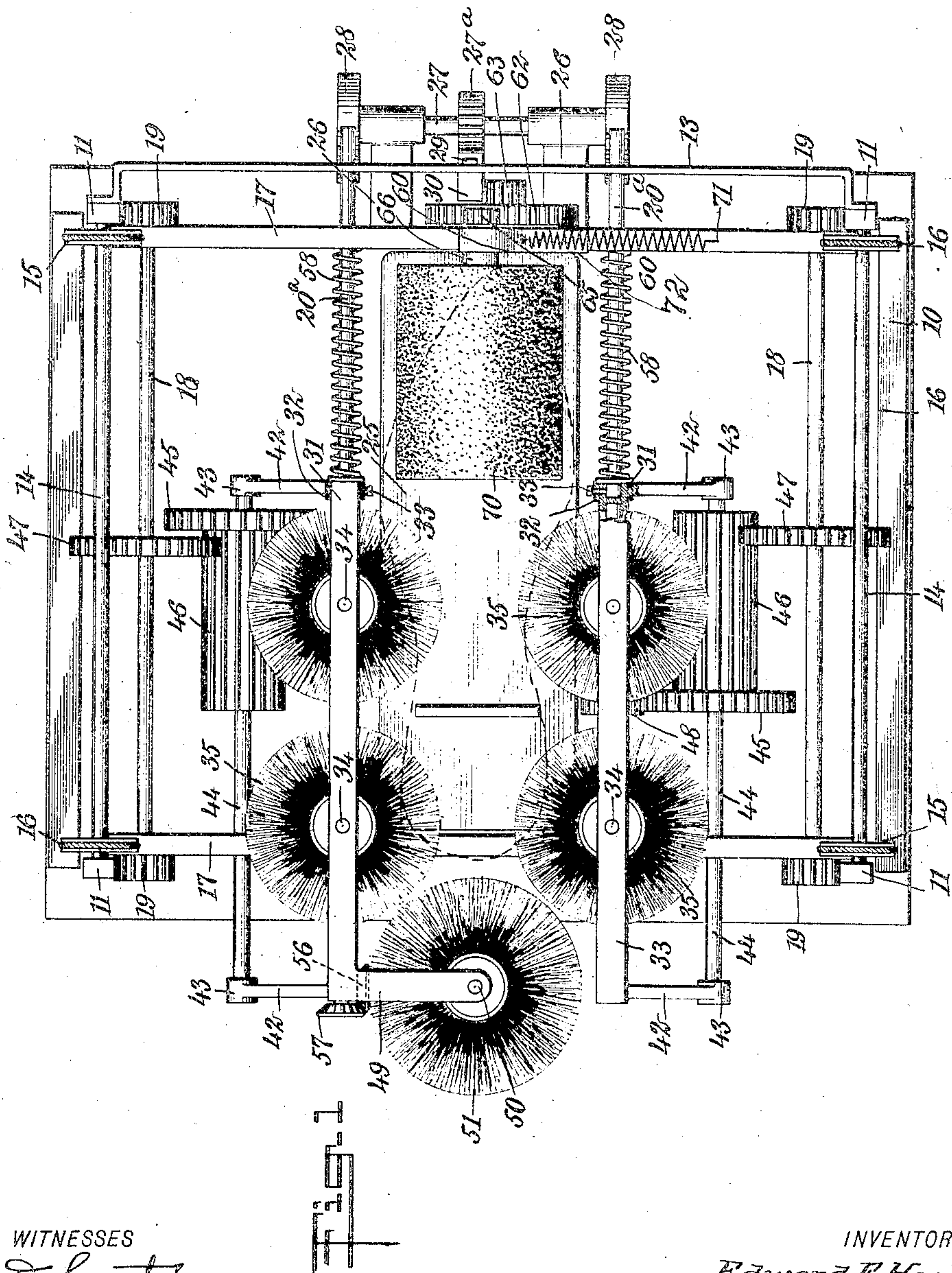


E. F. HECKER.  
SHOE POLISHING MACHINE.  
APPLICATION FILED OCT. 31, 1908.

983,138.

Patented Jan. 31, 1911.

3 SHEETS—SHEET 1.



WITNESSES  
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W. K. Buchholz

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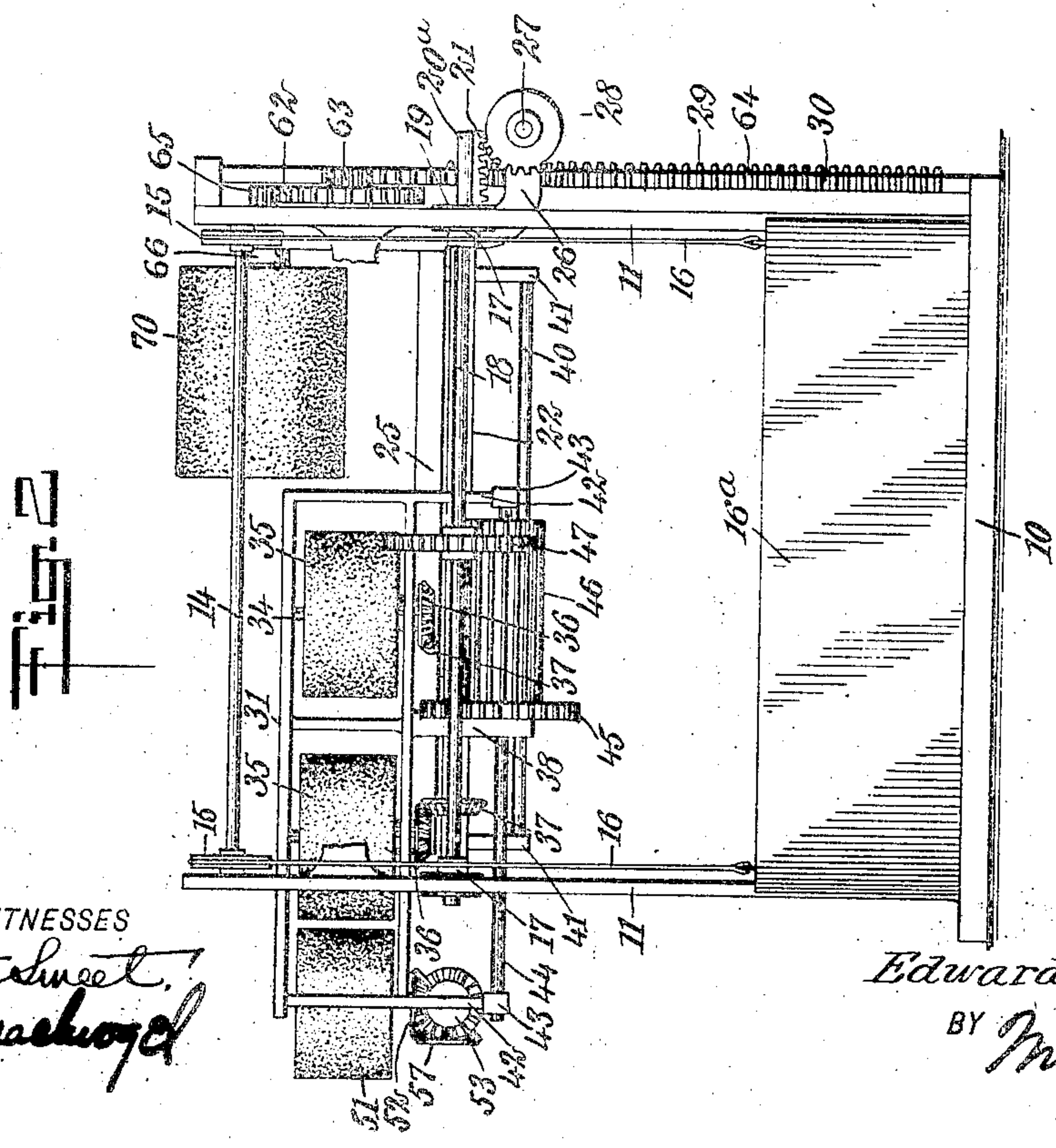
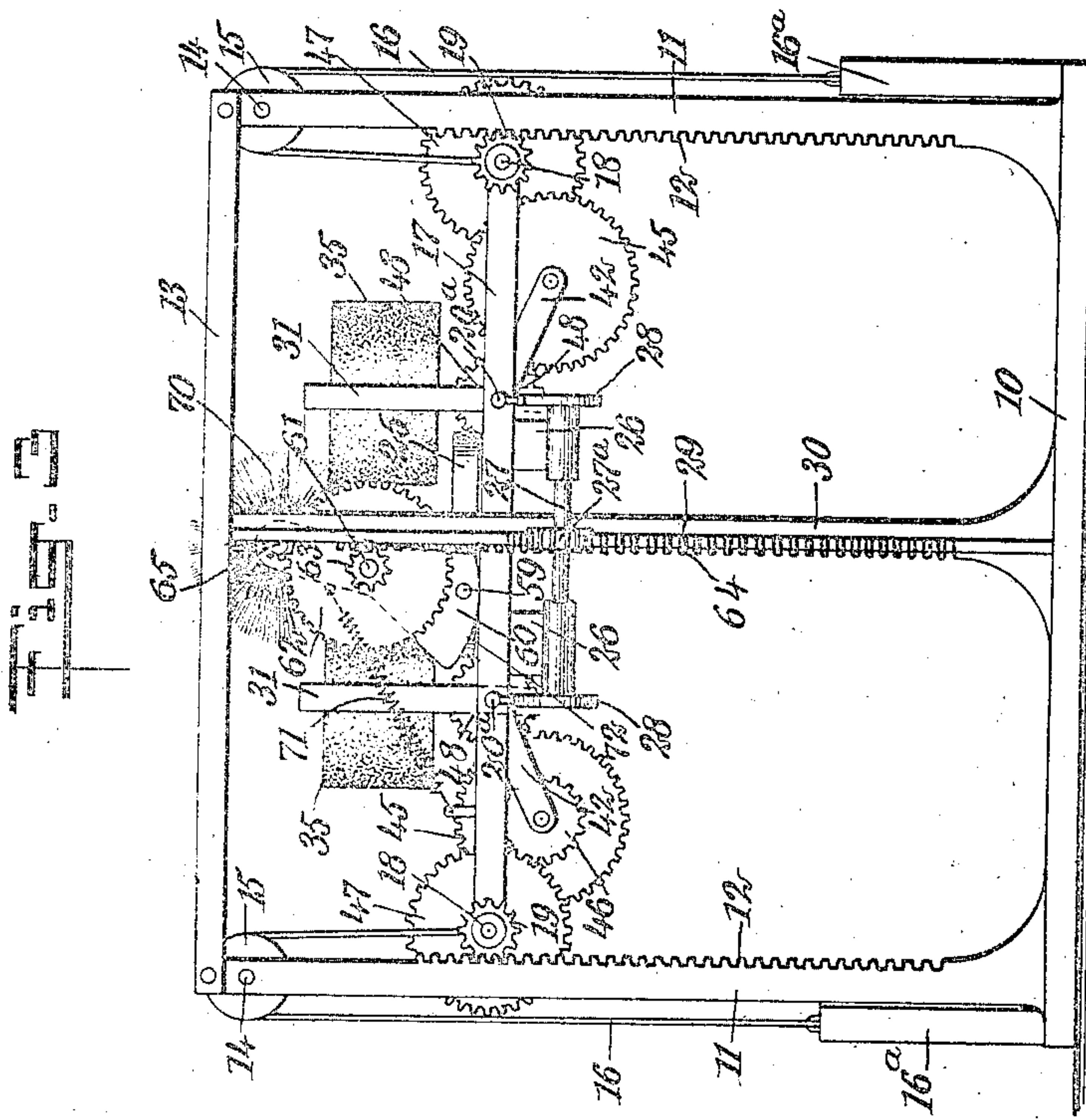


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3 SHEETS-SHEET 2.



WITNESSES  
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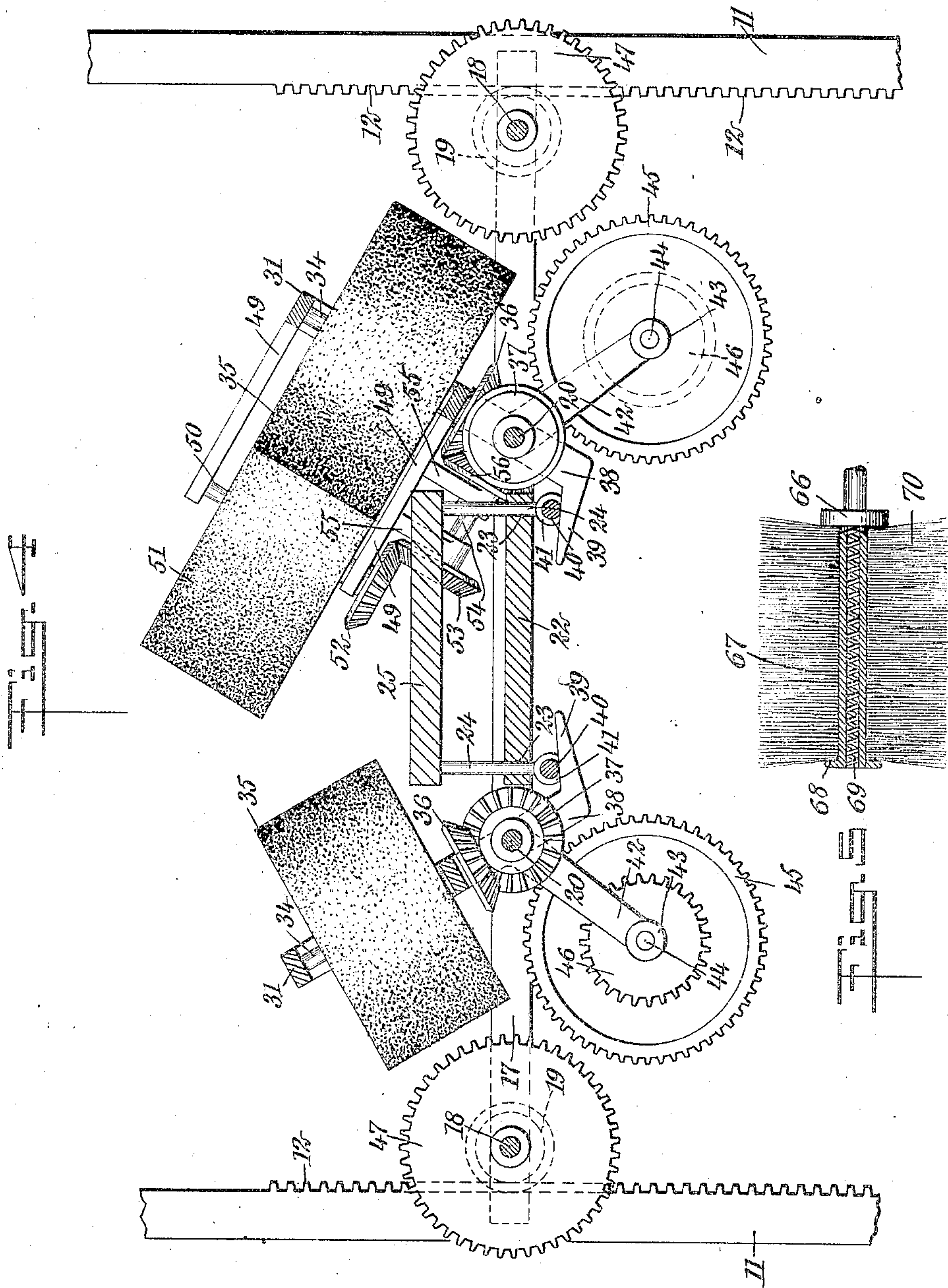
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3 SHEETS—SHEET 3.



WITNESSES

*F. D. Sweet*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

EDWARD F. HECKER, OF NEW YORK, N. Y.

SHOE-POLISHING MACHINE.

983,138.

Specification of Letters Patent. Patented Jan. 31, 1911.

Application filed October 21, 1908. Serial No. 453,749.

*To all whom it may concern:*

Be it known that I, EDWARD F. HECKER, a citizen of the United States, and a resident of the city of New York, Ozone Park, borough of Queens, in the county of Queens and State of New York, have invented a new and Improved Shoe-Polishing Machine, of which the following is a full, clear, and exact description.

10 This invention relates to shoe polishing machines, and more particularly to a machine of this class in which the foot is placed upon a movable support, so that the latter can be depressed under the imposed weight of the foot, thereby to operate the shoe polishing brushes or other mechanism, the foot support comprising relatively movable parts so that the movement of one of these parts with respect to the other causes the brushes or polishing mechanism to assume operative positions, the brushes or the like being normally inoperatively disposed when the machine is not in use, so that the support is free for the reception of the foot.

25 An object of the invention is to provide a simple, strong and efficient machine for polishing boots and shoes, in which the polishing brushes, cloths or buffers are actuated by suitable mechanism which in turn is operated through the movement of the foot support under the imposed weight and downward pressure of the foot.

30 A further object of the invention is to provide a machine of the class described, in which the brushes are normally held inoperative with respect to the foot support, in which an initial movement of the foot support operatively positions the brushes, and in which a second movement of the foot support causes the brushes to be actuated.

35 A still further object of the invention is to provide a shoe polishing machine in which the foot support has an initial movement under the imposed weight of the foot, which operatively positions the brushes or other polishing mechanism, in which the continued pressure of the foot upon the foot support causes the latter to move downward to actuate the polishing mechanism, and to maintain the same operative with respect to the shoe in position, for the time being, upon the foot support, in which the brushes automatically return to an inoperative position, and the entire foot support returns to its initial position as soon as the weight of the foot is removed from the foot support.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a plan view of an embodiment of my invention, showing in dotted outline a foot in position upon the foot support; Fig. 2 is a side elevation of the machine; Fig. 3 is an end elevation of the machine; Fig. 4 is an enlarged transverse section showing the foot support, certain of the brushes inoperatively disposed, and the means for operating the brushes; and Fig. 5 is a longitudinal section of one of the brushes.

Referring more particularly to the drawings, I employ a base 10 of any suitable form which carries the uprights or posts 11 near the corners thereof, the base being substantially rectangular in form. At the inner edges the posts 11 are provided with teeth 12 so that the posts are virtually racks. At the upper ends two of the posts are connected by a cross bar 13 which braces the structure. Shafts 14 are journaled near the upper ends of the posts 11 and carry grooved pulleys 15 rigid therewith. Flexible members 16 are arranged to travel over the pulleys and are secured at their outer ends to counterweights 16<sup>a</sup> arranged to move up and down at the outside of the posts at the sides of the machine.

Carriers 17 are arranged transversely of the shafts 14 adjacent to the posts 11. The carriers have the inner ends of the flexible members 16 secured thereto in any convenient manner and have journaled thereon shafts 18 substantially parallel to the shafts 14 and extending at the ends outwardly beyond the carriers. The shafts 18 at the projecting extremities carry rigid pinions 19 normally in mesh with the teeth 12 of the rack posts, so that as the carriers move up and down with respect to the posts, the shafts 18 are thereby caused to rotate. The counterweights 16<sup>a</sup> tend to maintain the carriers normally elevated, that is, in a position such that the counterweights rest upon the base 10. Intermediate the shafts 18, one of the carriers has spaced shafts 20, aligned with rack bars 20<sup>a</sup> arranged like the shafts 20 to slide transversely of the car-



rier, as will appear more clearly hereinafter. The rack bars 20<sup>a</sup> at the under sides are provided with lateral extensions having teeth 21 and are thus formed into racks for  
 5 a purpose which will also appear more clearly hereinafter.

A platform 22 is rigidly secured between the carriers and has transverse openings 23 therethrough in which are slidably arranged guide supports 24 carrying an upper platform 25. The platforms 22 and 25 form the foot support, and the upper platform itself forms the foot rest proper upon which the foot wearing the shoe to be polished is placed. The upper platform is movable relatively to the lower and may have any suitable form which serves as a foot rest, conveniently to receive the foot. The rear carrier 17 has laterally extending  
 10 journal brackets 26 which rotatably carry a shaft 27 substantially parallel to the carrier and having at the ends rigid segmental gears 28, the teeth of which are adapted to mesh with the rack teeth of the rack bars  
 20 20. Intermediate the brackets 26 the shaft 27 has a rigid pinion 27<sup>a</sup> in mesh with a rack 29 of a post 30, between adjacent posts 11, so that as the carriers are raised and lowered the shaft 27 is correspondingly actuated.  
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Rotatably mounted upon the shafts 20 at both sides of the foot support are frames 31 substantially rectangular in form and having transverse shafts 34 journaled between opposite frame members. The shafts 34 carry brushes or other polishing members 35 and at the lower ends which project beyond the lower frame members have bevel gears 36 in mesh with bevel gears  
 35 37 rigidly mounted upon the shafts 20. The frames have downward extensions 38 provided with inwardly and laterally disposed toes 39. These engage cross rods 40 connecting the lower ends of the guide rods 24. The cross rods are rigidly mounted in enlargements 41 at the lower ends of the guide rods 24. The frames have bearings 32 in which the shafts 20 are journaled, the rack bars 20<sup>a</sup> being rigidly secured in the  
 40 bearings by means of set screws 33.

The frame extensions 38 have rigid outwardly and downwardly inclined arms 42 which terminate in bearings 43 in which are journaled shafts 44. These carry rigid gear wheels 45 and wide pinions 46 for a purpose which will appear hereinafter. The shafts 18 have rigid gear wheels 47 which are adapted to mesh with the pinions 46. The gear wheels 45 are in mesh with pinions 48 of the shafts 20.  
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One of the frames 33 at the front end has lateral extensions 49 between the extremities of which is journaled a shaft 50 carrying a brush or polishing member 51. The shaft 50 at the lower end has a bevel gear  
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52 in mesh with a bevel gear 53 mounted upon a shaft 54 journaled in downwardly extending arms 55 rigid with the lower extension 49. At the opposite end, the shaft 54 has a bevel gear 56 in mesh with a similar gear 57 at the extremity of the adjacent shaft 20.  
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Helical springs 58 are mounted upon the shafts 20 and engage at the front the frames 33 and at the rear carrier 17 and tend normally to force the frames toward the front of the machine. It will be understood that the frames are movable backward and forward as the shafts 20 and the rack bars 20<sup>a</sup> are slidably supported by the carriers. The gears 47 are in slidable engagement with the wide pinions 46 which are proportioned to accommodate the backward and forward movements of the frames 33. The relative positions of the pinions 46 and the gears 45 on the respective shafts 44 are reversed as is shown most clearly in Fig. 1, so that the engagement of the gears 47 with the gears 45 limits the backward and forward movement of the frames.  
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At the rear end, the upper platform 25 has a pintle 59 upon which is pivotally mounted a swinging member 60. The latter, intermediate its ends has a spindle 61 carrying a gear wheel 62 and a pinion 63. The latter is in mesh with rack teeth 64 formed upon the intermediate post 30 so that as the platform is depressed the rack operates the spindle. A pinion 65 in mesh with the gear wheel 62 is journaled at the upper end of the member 60 and is rigid with a rotatable head 66. The latter carries a flexible shaft consisting preferably of a hollow flexible member 67 having at the end a collar 68 and therewithin a stiff helical spring 69.  
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 100  
 105

A brush 70, or other polishing means is carried by the flexible shaft. This polishing member is operable by the downward movement of the foot support, owing to the provision of the pinion 65, the gear 62, the pinion 63 and the rack 64. A light spring 71 is secured to the member 60 and to the adjacent carrier 17, and tends normally to swing the member aside, so that the brush is inoperatively disposed with regard to the upper platform when the latter is in its elevated position with respect to the lower platform. The lower edge of the member is rounded to form a cam 72, which engages the carrier 17 in such a manner that when the upper platform is initially depressed, the member is swung upon the pintle 59 to position the brush 70 operatively. The foot support of the polishing machine which consists of the upper and the lower platforms has an initial movement, broadly speaking, which operatively positions the brushes or other polishing members, and a secondary movement which actuates the latter. These brushes have a plurality of movements, the  
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 115  
 120  
 125  
 130



first of which is into an operative position, and the second of which is the polishing movement. Certain of the brushes, furthermore, have a movement longitudinally of the foot support in addition to the first two movements.

When the foot is placed upon the foot supporting member, the platform is depressed and the engagement of the cross rods 40 with the toes 39 swings the frames 33 about the shafts 20, so that the brushes are brought into engagement with the shoe upon the foot support. An additional downward movement of the depressible foot support causes the shaft 18 to be actuated by the racks 12 and the pinions 19. As the operative positioning of the frames has brought the pinions 46 into engagement with the gear wheels 47, the downward movement of the foot support causes the shafts 20 to be actuated. These in turn drive the brushes through the connecting bevel gears. At the same time the downward movement of the foot support which has initially swung the member 60 into an operative position, causes the brush 70 to be rotated by means of the rack 64 and the gears connecting the rack with the brush. Simultaneously, the rack 29 actuates the pinion 27<sup>a</sup>, which in turn through the shaft 27, rotates the segmental gears 28. As long as the teeth of the latter are in engagement with the rack teeth 21 of the bars 20<sup>a</sup>, the latter are moved longitudinally against the tension of the springs 58. Through this longitudinal movement the frames 33 are moved in the direction of the length of the foot support, so that the brushes 35 engage at the sides of the shoe at all points and so that the brush 51 is brought into complete contact with the heel portion of the shoe. The brush 70 polishes the toe and the instep of the shoe and owing to its flexibility, adjusts itself easily to the form of the shoe.

When the teeth of the segmental gears 28 pass beyond and out of engagement with the rack teeth, the springs 58 instantly return the frames to the initial positions. When the shoe support reaches its last position under the downward pressure of the foot, the latter is lifted to release the upper platform 25. This returns to its initial elevated position with respect to the lower platform 22, which permits the frames to swing into their inoperative positions gravitationally. At the same time the counterweights 16 raise the carriers and with the latter the operative parts to their initial elevated positions. Another downward movement of the mechanism can then be effected to continue or complete the polishing action.

In the normal positions of the parts the frames are outwardly disposed, and when the foot rest is depressed they are swung inwardly about the shafts 20 carrying with

them the rack bars 20<sup>a</sup>. The latter have the rack teeth so placed that when the frames are in operative positions the rack teeth are alined for engagement with the gears 28 as is shown clearly in Fig. 2. It will be understood that the rack bars 20<sup>a</sup> are rigid with the frames and move therewith so that the gears 28 operate to move the shaft sections and the frames in the direction of their lengths. The release of the platform causes the bars to be turned so that the extensions thereof which have the teeth 21 are disposed out of the paths of the teeth of the segments 28 when these are rotated by the upward movement of the shaft 27. When the platform is again depressed to effect the next downward movement of the parts, the teeth 21 are again brought into the paths of the segments 28 so that they can be operatively engaged thereby.

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

1. In combination, a depressible support adapted to receive the foot only, rotary brushes bodily movable toward and away from said support, means connecting said support and said brushes whereby the latter are rotated while said support is being depressed, and means tending to hold said support normally elevated.

2. In combination, a depressible support adapted to receive the foot only, rotary brushes bodily movable toward and from said support, gearing connecting said support and said brushes, whereby the latter are rotated while said support is being depressed, and counterweights tending to hold said support normally elevated.

3. In combination, a movable support arranged to be depressed and adapted to receive the foot only, a brush, means for positioning said brush by the downward movement of said support, and gearing connecting said support and said brush, whereby the additional downward movement of said support operates said brush.

4. In combination, a movable foot support arranged to be depressed, rotary brushes movable toward and away from said support, means connecting said brushes and said support, whereby said brushes are operatively positioned when said support is in an initial, elevated position, and gearing connecting said support and said brushes whereby the downward movement of said support after said brushes are operatively positioned, serves to operate said brushes.

5. In combination, a depressible support for the foot, rotary brushes having inoperative positions when said depressible support is in an elevated position, gearing connecting said support and said brushes whereby the downward movement of said support



when a weight is imposed thereon serves to position said brushes operatively and to operate the same, and a counterweight controlling said support to hold the same in a normal elevated position.

5 6. In combination, a depressible support for the foot, means tending to hold said support elevated, brushes having operative and inoperative positions, means connecting said brushes and said support whereby said  
10 brushes are inoperatively positioned when said support is in an elevated position and whereby said brushes are operative when said support is being depressed, and means  
15 for actuating said brushes by a downward movement of said support.

7. In combination, a depressible support for the shoe, polishing brushes, means connecting said support and said brushes where-  
20 by an initial downward movement of said support brings said brushes into contact with the shoe, means whereby a second downward movement of said support actuates said brushes, and means tending to hold  
25 the support in a normal elevated position.

8. In combination, a depressible support for the foot, rotary brushes normally in inoperative positions and mounted to move  
30 bodily, means connecting said support and said brushes whereby an initial movement of the former operatively positions said brushes, and means whereby a second move-  
ment of said support rotates said brushes and moves the same bodily.

35 9. In combination, a depressible support, frames arranged adjacent to said support and carrying rotary brushes, said frames being mounted to swing toward and away  
40 from said support and to move longitudinally thereof, means whereby an initial movement of said support swings said frames toward said support, and means  
whereby an additional continued movement of said support moves said frames longi-  
45 tudinally of said support and rotates said brushes.

10. In combination, a depressible support for the foot, brushes arranged adjacent to said support and movable therewith, said  
50 brushes being normally in inoperative positions, means whereby an initial downward movement of said support moves said brushes into operative positions, and where-  
by an additional downward movement of  
55 said support rotates said brushes and moves the same longitudinally of said support, and means tending to hold said support and said brushes normally elevated.

60 11. In combination, a depressible support for the foot comprising relatively movable upper and lower parts, the upper of said parts being formed to receive the foot, brushes arranged adjacent to said support and normally inoperatively positioned,  
65 means whereby a movement of said upper

part relatively to said lower part, of said support operatively positions said brushes, and means whereby a bodily downward movement of said support actuates said brushes.

70 12. In combination, a depressible support comprising relatively movable upper and lower parts, frames pivoted adjacent to said supports, rotary brushes carried by said frames, said frames being movable bodily  
75 longitudinally of said support, said frames being arranged to swing toward and away from said support, means whereby a movement of said upper part toward said lower part of said support swings said frames, and  
80 means whereby a bodily downward movement of said support rotates said brushes and moves said frames longitudinally.

13. In combination, uprights, carriers ar-  
85 ranged to move longitudinally of said up- rights and having pinions mounted thereon, racks carried by said uprights, a support mounted upon said carriers and consisting of an upper part and a lower part, said  
90 upper part being formed to receive a foot and being adapted to move relatively to said lower part, shafts arranged adjacent to said support, frames pivoted upon said shafts, rotary brushes mounted in said  
95 frames, means for operatively connecting said shafts and said brushes, means for connecting said shafts and said pinions where-  
by said pinions when rotated actuate the shafts to drive said brushes, and means for  
100 connecting said frames and said upper part of said support, whereby the depressing of said upper part swings said frames toward said support.

14. In combination, upright rack posts, carriers movable longitudinally of said  
105 posts, a platform mounted upon said carriers, a second platform above said first platform and movable relatively thereto, shafts supported by one of said carriers, frames carried by said shafts and arranged  
110 to swing toward said platforms, rotary brushes carried by said frames, means connecting said frames and said upper platform whereby a downward movement of said up-  
per platform swings said frames toward the  
115 same, pinions journaled upon said carriers and engaging said rack posts whereby said pinions are actuated as said carriers are moved longitudinally of said posts, means  
for operatively connecting said pinions and  
120 said shafts when said frames are in predetermined positions whereby said pinions can drive said brushes, and means whereby said shafts can be moved in the direction  
of their length when said brushes are being  
125 rotated.

15. In combination, depressible carriers, uprights having racks, pinions mounted upon said carriers and engaging said racks, a foot support upon said carriers, frames  
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pivoted upon one of said carriers and having rotary brushes, means whereby when said frames are in operative positions said pinions can drive said brushes, an additional upright having a rack, an additional pinion in engagement with said rack, and means whereby said additional pinion moves said frames longitudinally of said foot support, means tending to hold said frames normally inoperative, a pivoted member having an additional rotary brush, and means whereby said additional rotary brush can be actuated by a downward movement of said member.

15 16. In combination, upright rack posts, carriers movable longitudinally of said posts, shafts journaled upon one of said carriers and movable in the direction of their length, means whereby the movement of said carriers longitudinally of said posts rotates said shafts, a foot support upon said carriers, brushes carried by said shafts and rotated by the rotary movement of said shaft, an additional rack post, means whereby the movement of said carriers longitudinally of said additional rack post moves said shafts in the directions of their lengths, and means for holding said shafts in normal positions.

30 17. In combination, depressible carriers, a foot support mounted upon said carriers and having an upper platform depressible with respect to said carriers, a member pivoted upon said upper platform and engaging one of said carriers, a brush carried by said

member, means for holding said member in a normal position such that said brush is inoperative, said member having a cam on its lower end extending laterally of its pivot whereby when said upper platform is depressed the engagement of said cam with said carrier swings said member into an operative position, and means for operating said brush through a movement of said carrier.

45 18. In combination, depressible carriers, shafts slidably and rotatably mounted upon said carriers, a foot support mounted upon said carrier, frames movably mounted upon said shafts and having rotary brushes, gearing for operatively connecting said brushes and said shafts, additional shafts carried by said frames, gears connecting said additional shafts and said first shafts, gearing for rotating said additional shafts and including fixed racks and pinions connected with said additional shafts whereby said gearing and brushes can be operated by a movement of said carrier, said gearing having a part constituting a stop to limit the movement of said first shafts in the directions of their lengths, and means for holding said carrier normally elevated.

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

EDWARD F. HECKER.

Witnesses:

JOHN K. BRACHVOGEL,  
JOHN P. DAVIS.