

B. F. C. JACOBS & E. L. LINDROTH.
FLOOR GRINDER AND POLISHER.
APPLICATION FILED SEPT. 8, 1909.

948,174.

Patented Feb. 1, 1910.

4 SHEETS—SHEET 1.

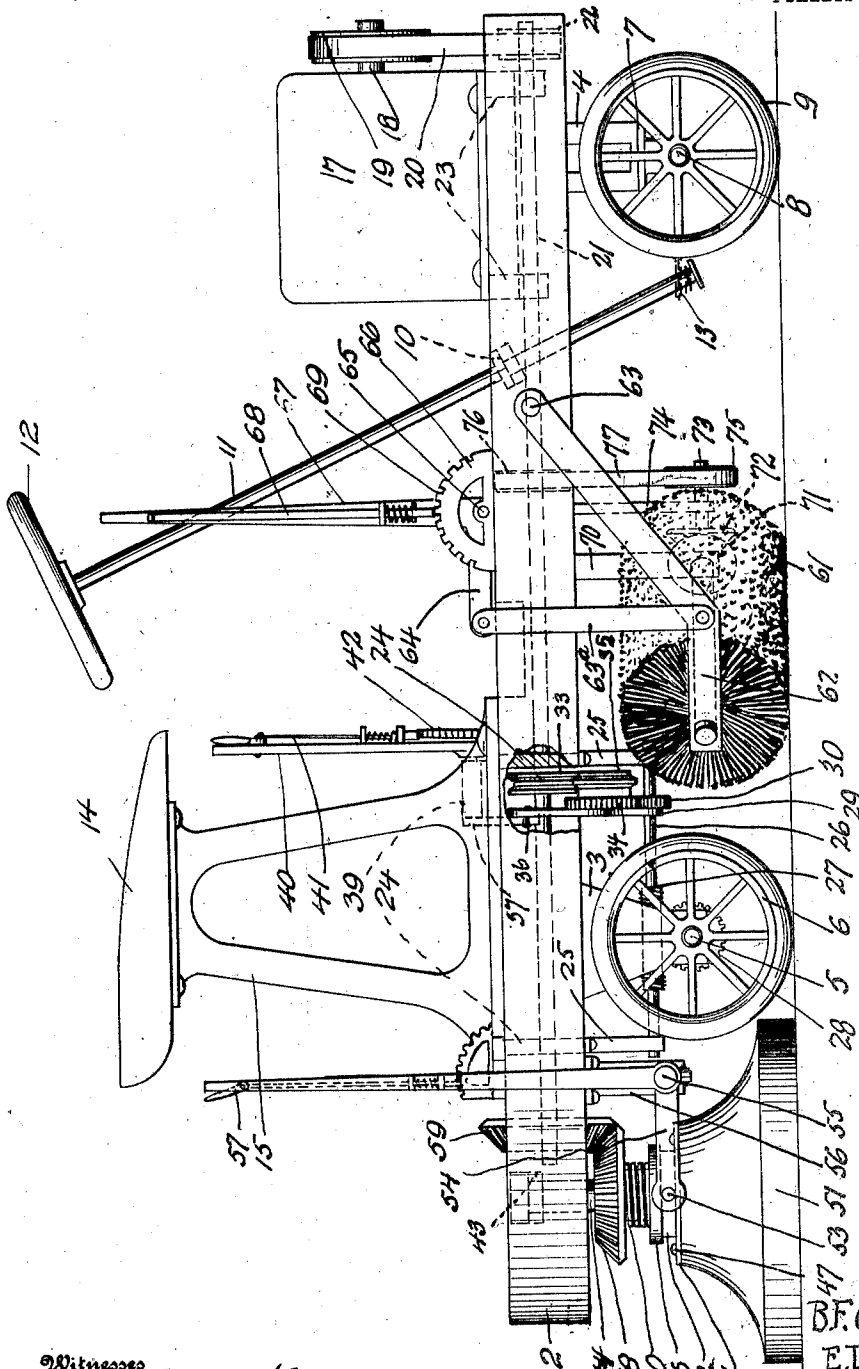


Fig. 1.

Witnesses
R. F. Farrington
R. H. Butler

Inventors
B. F. C. Jacobs.
E. L. Lindroth.
By A. C. Swartz & Co.
Attorneys

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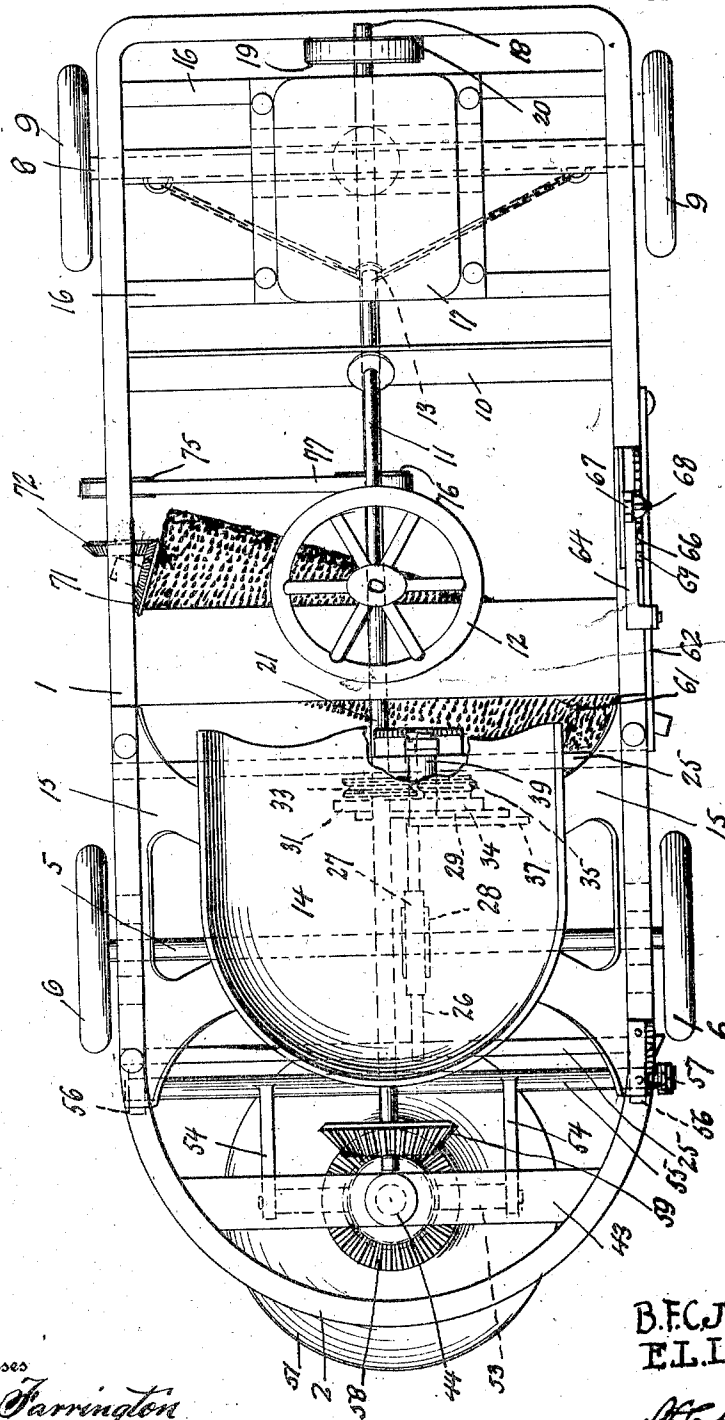


Fig. 2

Witnesses
L. Farrington
R. K. Butler

Inventors
B. F. C. Jacobs
E. L. Lindroth.

By *A. C. Evans & Co.*
Attorneys

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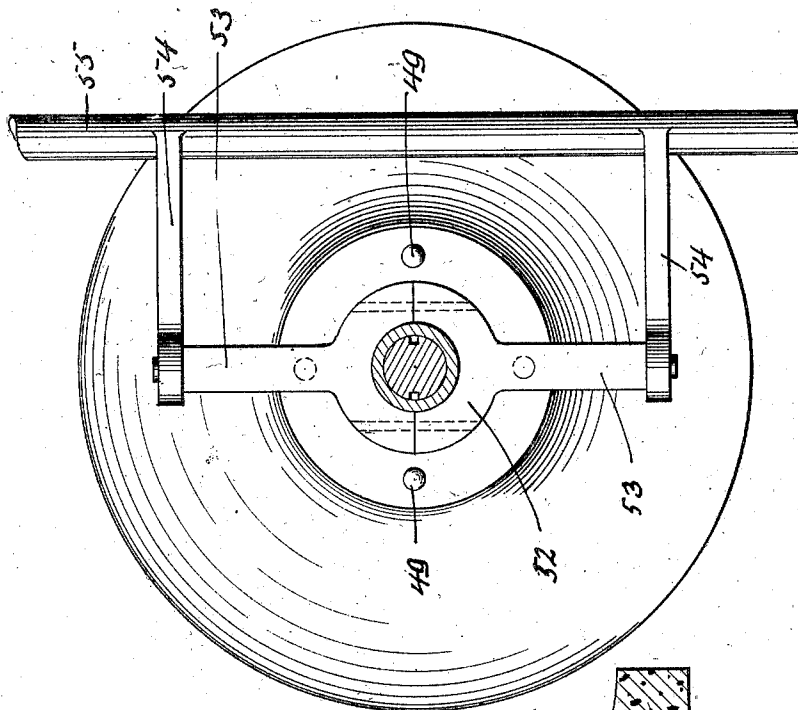


Fig. 4.

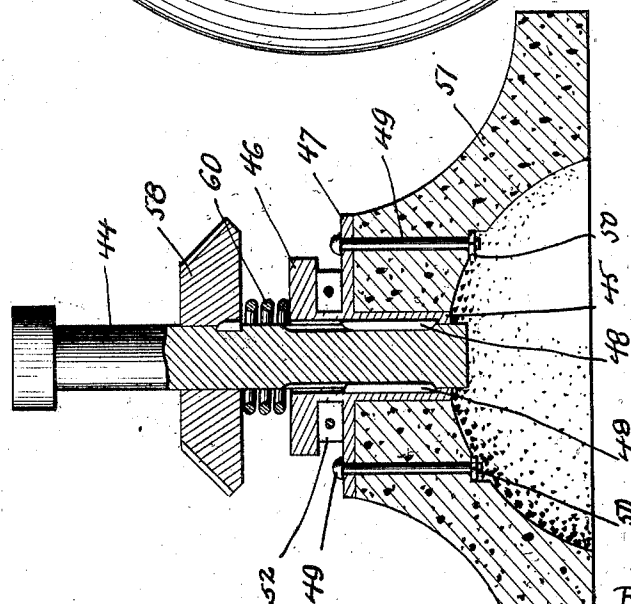


Fig. 3.

Witnesses
R. L. Farrington
W. S. Butler

Inventors
B. F. C. Jacobs.
E. L. Lindroth
By *A. C. Everett & Co.*
Attorney

B. F. C. JACOBS & E. L. LINDROTH.

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4 SHEETS—SHEET 4.

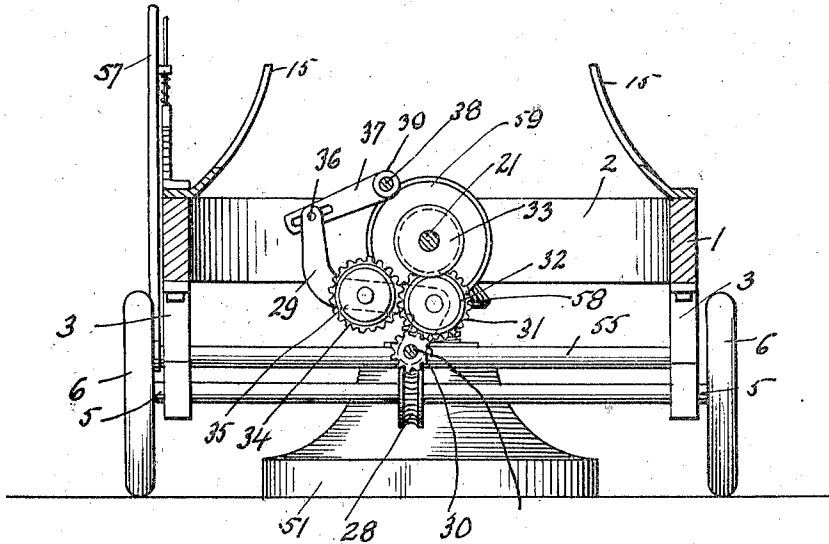


Fig. 5.

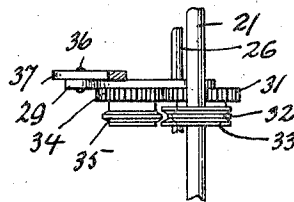


Fig. 6.

Inventors.

B. F. C. Jacobs
E. L. Lindroth

Witnesses

Samuel Jayne
N. H. Butler

By

H. C. Everett Co.
Attorneys.

UNITED STATES PATENT OFFICE.

BENJAMIN F. C. JACOBS, OF WEST ELIZABETH, AND EMANUEL L. LINDROTH, OF WILSON, PENNSYLVANIA.

FLOOR GRINDER AND POLISHER.

948,174.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed September 8, 1909. Serial No. 516,731.

To all whom it may concern:

Be it known that we, BENJAMIN F. C. JACOBS and EMANUEL L. LINDROTH, citizens of the United States of America, residing at 5 (1) West Elizabeth and (2) Wilson, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Floor Grinders and Polishers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to floor grinding and polishing machines, and the object of our invention is to provide a machine that 15 can be advantageously used in connection with large floor spaces for removing irregularities from the floor and for polishing and cleaning the same.

Our invention aims to provide a grinding 20 and polishing machine wherein a rotary adjustable polishing head is employed for operating upon a floor and a rotary brush used for polishing and cleaning the floor, both of these elements being driven from a suitable 25 source of power and controlled by an operator upon the machine.

Briefly described, our machine comprises a truck upon which is located an engine or motor adapted to drive the truck. Suspend- 30 ed from the truck is an adjustable rotary grinding and polishing head adapted to be driven from the source of power located upon the truck, also a polishing and cleaning brush which is driven from the same source 35 of power and controlled by the operator upon the machine.

The invention will be hereinafter described in detail and then claimed, and reference will now be had to the drawings forming a part of this specification, wherein there is illustrated a preferred embodiment of the invention, but it must be understood that the structural elements thereof can be varied or 40 changed, as to the shape, size and manner of assemblage without departing from the spirit of the invention.

In the drawings:—Figure 1 is a side elevation of our machine partly broken away and partly in section, Fig. 2 is a plan of the 50 machine, Fig. 3 is an enlarged vertical sectional view of the grinding and polishing head, Fig. 4 is a horizontal sectional view of the same, Fig. 5 is a cross sectional view of the machine, and Fig. 6 is a detail in plan 55 illustrating the driving gear mechanism.

In the accompanying drawings 1 denotes an oblong frame having the rear end thereof rounded, as at 2, whereby the frame can be moved very close to a wall or into the angle of two walls. The frame is constructed of 60 wood or metal and is mounted upon two trucks by providing the sides of the frame with depending bearings 3 and 4, the former supporting a revoluble axle 5 having wheels 6, while the latter are supported by a fifth 65 wheel 7, carried by an axle 8 having wheels 9. The wheels 6 and 9 are provided with pneumatic or solid rubber tires, whereby the wheels cannot injure the surface over which they move.

The frame 1 is provided with a transverse support 10 for a steering mechanism, said mechanism comprising an angularly disposed shaft 11 having the upper end thereof 70 provided with a hand wheel 12, while the lower end is attached to chains 13, these chains being fastened to the axle 8. When the shaft 11 is rotated, the chains are adapted to wind and unwind upon the lower end of the shaft to turn the axle 8 in a desired 80 direction.

14 denotes an operator's seat supported by frames 15 above the rear axle 5, this seat being convenient to the hand wheel 12 and other operating levers which will be herein- 85 after described.

16 denotes transverse supports for an engine or motor or suitable source of power 17, which has been conventionally illustrated as we do not care to confine ourselves to the 90 source of power used for operating our machine. Considering the source of power as a motor, the armature shaft 18 is provided with a transverse wheel 19 for a belt or chain 20 adapted to travel over a wheel 22 mount- 95 ed upon the forward end of a shaft 21 journaled in depending bearings 23 and transverse frames 24 all of which are supported in the frame 1.

25 denotes hangers carried by the supports 100 24 and journaled in said hangers is a longitudinal shaft 26 provided with a worm 27 adapted to mesh with a gear wheel 28 mounted upon the axle 5. Loosely mounted upon the shaft 26 is a bell crank lever 29 and adjacent to said lever is fixed a small gear 105 wheel 30. The small gear wheel 30 is adapted to mesh with a gear wheel 31 revolubly connected to the bell crank lever 29. The gear wheel 31 is provided with a friction 110

wheel 32 adapted to frictionally engage a wheel 33 mounted upon the shaft 21. The bell crank lever 29 is provided with a revoluble gear wheel 34 adapted to mesh with the gear wheel 31, the said gear wheel 34 having a friction wheel 35 adapted to be moved into engagement with the wheel 33. The upper end of the bell crank lever 29 is loosely connected, as at 36 to the crank 37 of a shaft 38, journaled in a bearing 39 arranged upon one of the supports 24 beneath the operator's seat 14. The opposite end of the shaft 38 is provided with an operating lever 40 and this lever is provided with a spring held locking mechanism 41 adapted to engage a rack 42 carried by the support 24.

43 denotes a transverse support at the rounded end of the frame 1, and revolubly mounted in said support is a depending vertical shaft 44. Upon the lower end of the shaft 44 is mounted the grinding and polishing head of our machine, said head comprising a collar 45 provided with peripheral flanges 46 and 47. The collar 45 is movably connected to the shaft 44 by keys 48, these keys preventing the head from becoming accidentally detached from the shaft 44, and allowing the collar to be elevated, as will presently appear. Connected to the flange 47 by bolts 49 and nuts 50 is a circular head 51 made of sandstone or a similar abrasive material. Arranged between the flanges 46 and 47 and loosely engaging the collar 45 is a two part yoke 52 having diametrically opposed arms 53 which are loosely connected to cranks 54 of a shaft 55. The shaft 55 is journaled in depending bearings 56 carried by opposite sides of the frame 1. One end of the shaft 56 is provided with an operating lever 57, and said operating lever is equipped with a spring pressed locking mechanism similar to the mechanism heretofore referred to.

58 denotes a beveled gear wheel mounted upon the shaft 44 and adapted to rotate therewith. This beveled gear wheel meshes with a beveled gear wheel 59 mounted upon the rear end of the shaft 21.

60 denotes a coil spring encircling the shaft 44 between the beveled gear wheel 58 and the flange 46, said spring normally maintaining the rotary, grinding and polishing head in a lowered position.

61 denotes a rotary brush or cleaner disposed at an angle beneath the frame 1 and in front of the rotary grinding and polishing head 51. One end of the brush 61 is revolubly mounted in a bearing 62 pivotally connected, as at 63 to the outer side of the frame 1. The bearing 62 adjacent to the brush 61 is pivotally connected by a link 63 to the crank 64 of a shaft 65, said shaft being journaled in suitable bearings 66 provided therefor on the frame 1. The shaft 65 has an operating lever 67 provided with a locking mechanism 68 adapted to coöperate

with a rack 69 in holding the pivoted bearing 62 in an adjusted position. 70 denotes a depending bearing carried by the opposite side of the frame 1 for the opposite end of the brush 61, said brush being loosely mounted in this bearing, whereby the opposite end of the brush can be raised by the bearing 62. The end of the brush is provided with a beveled gear wheel 71 adapted to mesh with a beveled gear wheel 72 mounted upon a shaft 73, journaled in a hanger 74 suspended from the frame 1. The shaft 73 is provided with a belt wheel 75, while the shaft 21 is provided with a belt wheel 76. Adapted to travel over the wheels 75 and 76 is a belt 77, this belt imparting a rotary movement to the brush 61 during the rotation of the shaft 21.

A machine constructed in accordance with our invention is operated in the following manner:—The operator upon the seat 14 steers the machine in any desired direction through the medium of the hand wheel 12, and upon placing the motor 17 in operation, the shaft 21 is revolved through the medium of the friction wheels 32 and 33, gear wheels 31 and 30, worm 27 and gear wheel 28, and the machine is moved forward. To move the machine rearward, the operator manipulates the lever 40 and through the medium of the crank 35 elevates the bell crank lever 29, placing the friction wheel 35 in engagement with the friction wheel 33, and through the medium of gear wheels 34, 31 and 30 drives the machine in the opposite direction from that just described. During the operation of the machine the grinding and polishing head 51 can be raised through the medium of the operating lever 57. By elevating the head 51 certain spaces upon the floor can be passed over by the machine without grinding or polishing the spaces.

The brush or cleaner 61 can be partially elevated by the operator through the medium of the lever 67, it being desirable to elevate the brush when certain portions of the floor are not to be swept or cleaned. It is in connection with this brush, that we can use felt or other material for polishing a floor that has been ground by the head 51.

From the foregoing description it will be observed that our machine has been designed for large floor spaces and that the truck permits of the machine being easily moved and does not necessitate any manual labor on the part of the operator other than guiding the machine and attending to the levers 40, 57 and 67.

Having now described our invention what we claim as new, is:—

1. A machine of the type described, comprising a frame, a suitable source of power located upon said frame for moving the frame back and forth, means carried by said frame for steering the frame in a desired direction, a rotary horizontal grinding and

polishing head carried by said frame and adapted to be operated from said source of power, and an adjustable angularly disposed rotary brush arranged beneath said frame and adapted to be revolved from said source of energy.

2. A machine of the type described, comprising trucks, a frame supported by said trucks, means arranged upon said frame for moving said trucks, a rotary horizontal grinding and polishing head arranged at the rear end of said trucks and adapted to be operated by the first mentioned means, a rotary angularly disposed brush arranged between said trucks and adapted to be operated by the first mentioned means, means carried by said frame for reversing the movement of said trucks, and means carried by said frame for raising the said grinding and polishing head.

3. A machine of the type described, com-

prising trucks, a frame supported by said trucks, means arranged upon said frame for moving said trucks, a rotary horizontal grinding and polishing head arranged at the rear end of said trucks and adapted to be operated by the first mentioned means, a rotary angularly disposed brush arranged between said trucks and adapted to be operated by the first mentioned means, means carried by said frame for reversing the movement of said trucks, means carried by said frame for raising the said grinding and polishing head, and means carried by said frame for raising said brush.

In testimony whereof we affix our signatures in the presence of two witnesses.

BENJAMIN F. C. JACOBS.
EMANUEL L. LINDROTH

Witnesses:

KARL H. BUTLER,
MAX H. SROLOVITZ.