

H. ALBERS & P. FRUEH.
FLOOR SURFACING MACHINE.
APPLICATION FILED APR. 12, 1909.

943,727.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

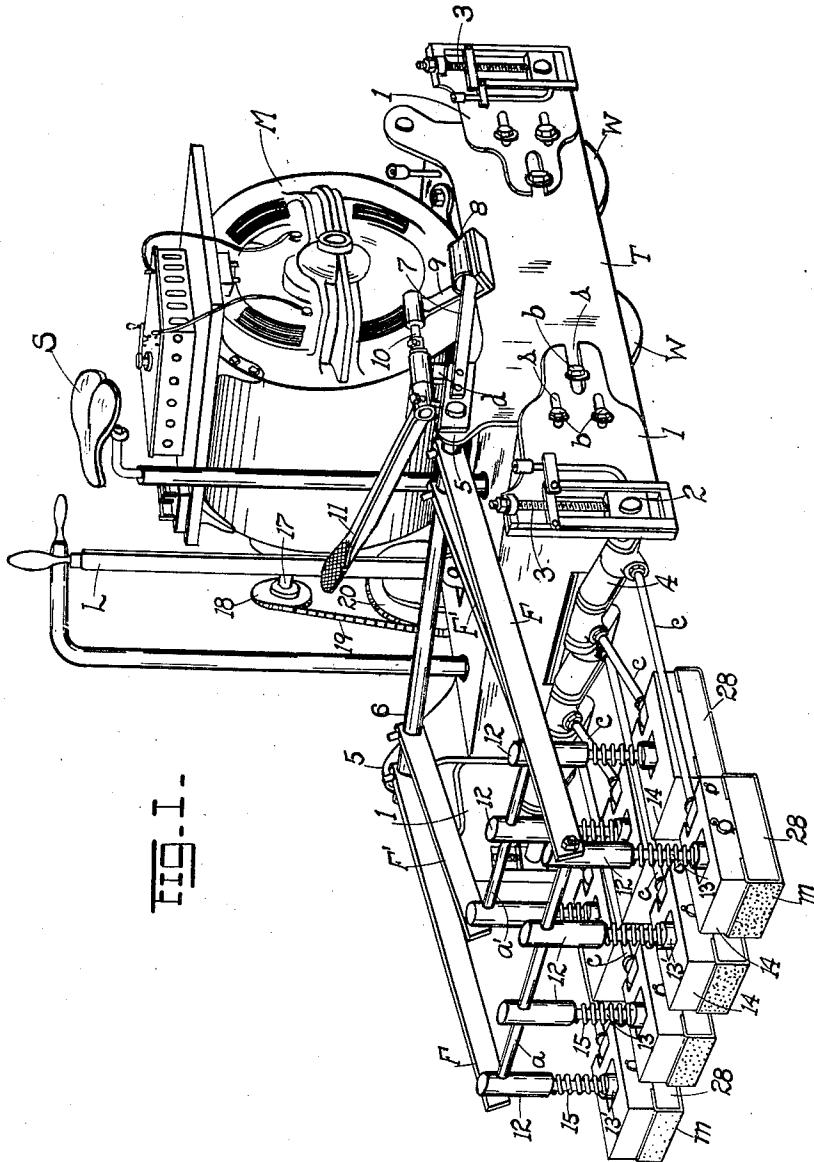


FIG. 1.

WITNESSES:
Harry A. Reimer.
Joseph Michel

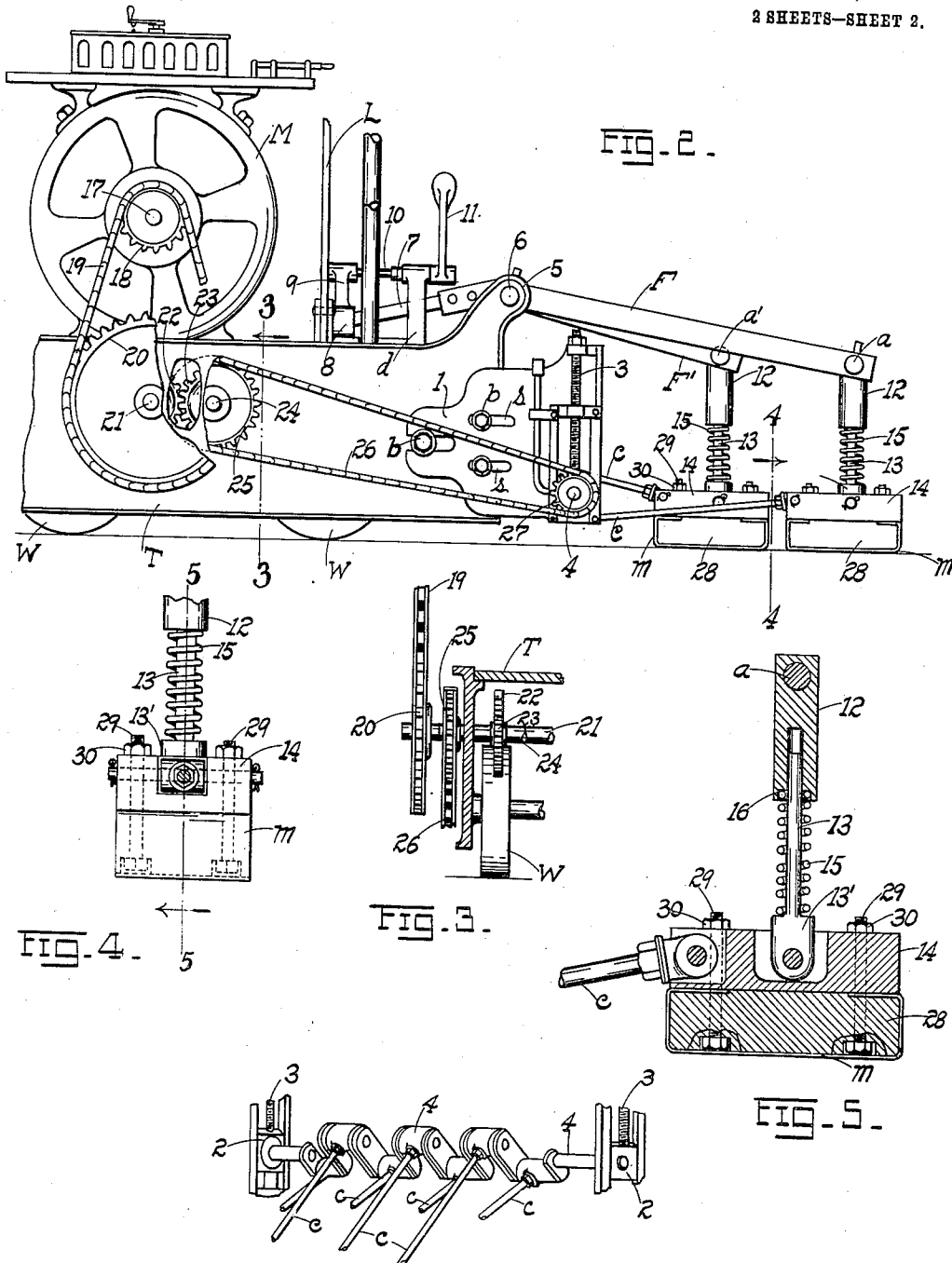
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2 SHEETS—SHEET 2.



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FIG. 6.

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HERMAN ALBERS AND PHILIP FRUEH, OF ST. LOUIS, MISSOURI.

FLOOR-SURFACING MACHINE.

943,727.

Specification of Letters Patent.

Patented Dec. 21, 1909.

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To all whom it may concern:

Be it known that we, HERMAN ALBERS and PHILIP FRUEH, citizens of the United States, residing at St. Louis, State of Missouri, have

invented certain new and useful Improvements in Floor-Surfacing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention has relation to improvements in floor surfacing and polishing machines; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the machine showing our improvements applied thereto; Fig. 2 is a side elevation thereof, parts being shown broken; Fig. 3 is a detail vertical section on the line 3—3 of Fig. 2; Fig. 4 is a detail vertical section on line 4—4 of Fig. 2; Fig. 5 is an enlarged vertical section on the line 5—5 of Fig. 4; and Fig. 6 is a perspective of the crank-shaft detached.

The object of our invention is to construct a machine for finishing, and polishing floors, which will leave a perfectly smooth and even surface upon the conclusion of the operation, all unevenness in the surface operated on being removed and obliterated.

A further object is to construct a machine in which the polishing and finishing tools will bear evenly against the surface to be polished or finished, all vibrations of the tools being eliminated.

A further object is to provide a machine in which different kinds of finishing and polishing tools may be utilized, the machine being eminently adapted for waxing floors for dance-halls, smoothing floors for bowling alleys, and imparting a superior finish and gloss to all floors generally, the machine presenting advantages better apparent from a detailed description of the invention which is as follows:—

Referring to the drawings, T represents a truck mounted on wheels W, W, to which rotation may be imparted from a suitable electric-motor M mounted on the truck, a clutch-lever L being within ready reach of the operator seated on the seat S, by which lever the motor is engaged or disengaged from the running gear of the truck, all as understood in the art, and for which no claim is made herein. Any kind of motor

and gearing may be employed, the same being herein shown conventionally since it has no bearing on the present invention.

Carried on either end of the truck are brackets 1, 1, whose position may be accurately adjusted by the securing bolts *b* passing through elongated slots *s* of the brackets, the brackets being provided with vertically adjustable bearings or bearing blocks 2, accurately positioned by the adjusting screws 3 as shown, a construction well understood in the art. Mounted between each pair of bearings 2, is a crank-shaft 4, the crank-arms of which are successively set 180 degrees apart as shown. Mounted between the ends of the arms 5 forming the upper outer terminals of the truck T, and overhanging the brackets 2 is a rock-shaft 6, to one end of which is rigidly connected an inwardly projecting arm 7, disposed at right angles to the rock-shaft, the free end of the arm operating loosely and freely in an enveloping socket 8, at the free end of an oscillating arm 9 projecting from the shaft 10 of a pedal lever 11, the shaft 10 being mounted on a staff or bearing *d* on the truck, the pedal-lever being within ready reach of the foot of the operator seated on the seat S.

Rigidly secured to the ends of the rock-shaft 6 are the lateral or side members of an outer oscillating frame F, and secured likewise to the rock-shaft are the side members of an inner oscillating frame F', the latter frame being narrower and shorter than the outer frame F and inclosed within such outer frame. The outer transverse member *a* of the frame F, and the corresponding transverse member *a'* of the frame F' are in the form of cylindrical bars or rods from each of which loosely depend the sockets or hollow plungers 12 loosely receiving the shanks or stems 13 of the tool-heads 14, the stems 13 being pivotally connected to the heads as shown. Encircling each stem 13 is an expanding spring 15, the upper end of which is received in a depression 16 of the socket 12, the lower end bearing against the basal head 13' of the stem (Fig. 5).

Any suitable mechanical means may be employed for imparting rotation to the crank-shaft 4, a simple construction being herein shown as follows:—At one end of the motor-shaft 17 is a sprocket wheel 18 from which runs a sprocket chain 19 to a sprocket wheel 20 mounted at the outer end of a transverse shaft 21, carried by the truck T.

On the shaft 21 is a gear wheel 22 meshing with a gear wheel 23 on a parallel shaft 24, one end of which is provided with a sprocket wheel 25 from which leads forward a sprocket chain 26 passing over a sprocket wheel 27 at the adjacent end of the crank-shaft. Of course, the motor M likewise serves to propel the truck-wheels W by suitable gearing (not shown), confined within the truck body and controlled by the clutch bar L, but as this is old, no attention need be paid to it in this connection. In fact, such features as may be illustrated in the drawings, but to which no reference is herein made are well known in the art and require no description.

Rotation being thus imparted to the crank-shaft, it follows that reciprocation will be imparted through the connecting rods *c* to the tool-heads depending from the respective frames F, F', one set of tools reciprocating in one direction while the other set is reciprocating in the opposite direction. As the truck is passed over the floor, every available portion of the floor surface may be thus finished by the tools. The character of finishing material or sheet by which the floor is treated will depend on the character of finish to be imparted to the floor. In the present instance is shown a sheet of sand paper *m* clamped to the heads 14 by means of shoes or blocks 28, the latter being clamped to the heads 14 by tightening bolts 29 and nuts 30, the ends of the abrading sheet *m* being folded over the block 28 and confined between it and the head 14. If a floor is to be finished with wax say for dancing purposes, the wax is first spread on the floor by hand promiscuously and then with a suitable finishing or polishing block from which the sand paper has been removed, the wax may be evenly spread over the floor and take on a high polish. With the reciprocations of the finishing and polishing tools over the floor, the frames F, F' will yield or oscillate owing to the yielding nature of the springs 15, so that the floor itself will partake of no perceptible tremor. This prevents the formation of wrinkles over the floor and results in an even and smooth finish over the entire surface. The stroke of the tool is very slight, averaging in the neighborhood of three or four inches. This permits the employment of short crank-arms on the crank-shaft and the entire mechanism is thus placed close to the floor. By pressing his foot on the lever 11 the operator may rock the shaft 6 (through the intermediate connections between said shaft and lever) in proper direction to cause the frames F, F', to oscillate downward and thus cause the tools to bear against the floor with any desired degree of pressure.

Having described our invention, what we claim is:—

1. In a floor surfacing machine, a vertically yielding frame, a series of oscillating tool-shank depending therefrom and terminating in tools for operating over the surface of the floor, a crank shaft, and connections between the tools and shaft for reciprocating the tools over the floor.

2. In a floor surfacing machine, a vertically oscillating frame, a series of tool-shanks depending from the free end thereof and oscillating in planes at right angles to the axis of oscillation of the frame, tools movably connected to the lower ends of the tool-shanks, a crank-shaft, and connections between the shaft and tools for reciprocating the latter over the surface of the floor engaged by the tools.

3. In a floor-surfacing machine, a vertically oscillating frame, a series of hollow plungers pivotally suspended from the free end thereof, tool-shanks loosely operating within the plungers, tool-heads hinged to the lower ends of the shanks, a crank-shaft, connections between the shaft and tool-heads for reciprocating the latter over the surface to be finished, and yielding connections between the plungers and tool-heads.

4. In a floor-surfacing machine, a vertically oscillating frame, a series of hollow plungers pivotally suspended from the free end thereof, tool-shanks loosely operating within the plungers, tool-heads hinged to the lower ends of the shanks, a crank-shaft, connecting rods between the shaft and tool-heads for reciprocating the latter over the floor surface, and springs encircling the shanks and bearing against the plungers and tool-heads respectively.

5. In a floor-surfacing machine, a truck, a rock-shaft at one end thereof, a pair of frames oscillating about the axis of the rock-shaft, the one frame being inclosed within the other, a series of hollow plungers pivotally suspended from the free ends of the respective frames, a tool-shank yieldingly operating in each plunger, a tool-head hinged to the bottom of each shank, a crank-shaft having series of crank-arms arranged 180 degrees apart, and intermediate connections between each set of crank-arms and the tool-heads of the respective frames, whereby the tool-heads of one frame reciprocate simultaneously in opposite directions to those of the other frame.

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

HERMAN ALBERS.
PHILIP FRUEH.

Witnesses:

EMIL STAREK,
JOS. A. MICHEL.