

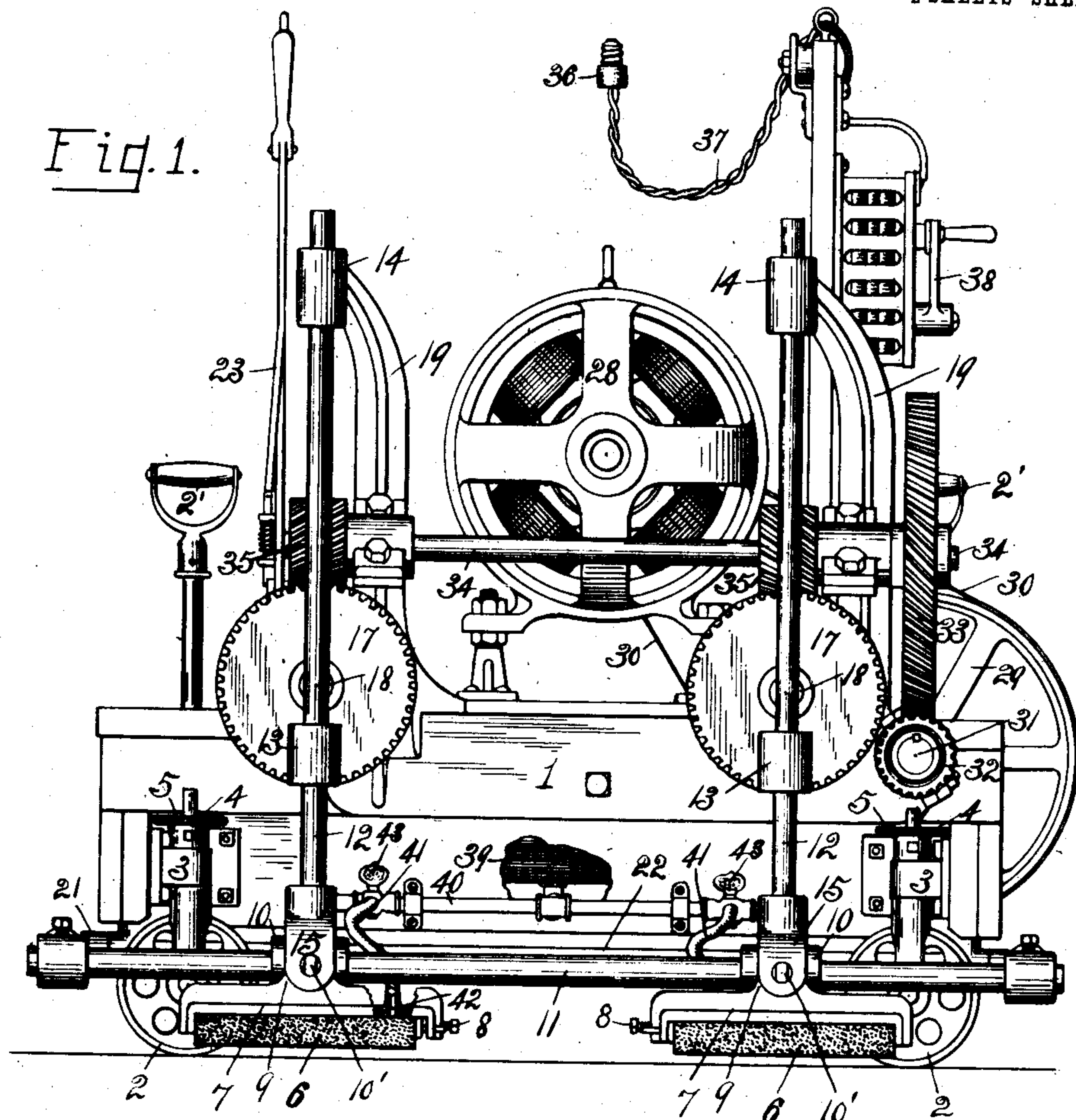
No. 871,143.

PATENTED NOV. 19, 1907.

J. H. PRUGH.
SURFACING AND POLISHING MACHINE.

APPLICATION FILED MAY 13, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

D. C. Walter
Hazel B. Hiett

INVENTOR.

John H. Prugh,
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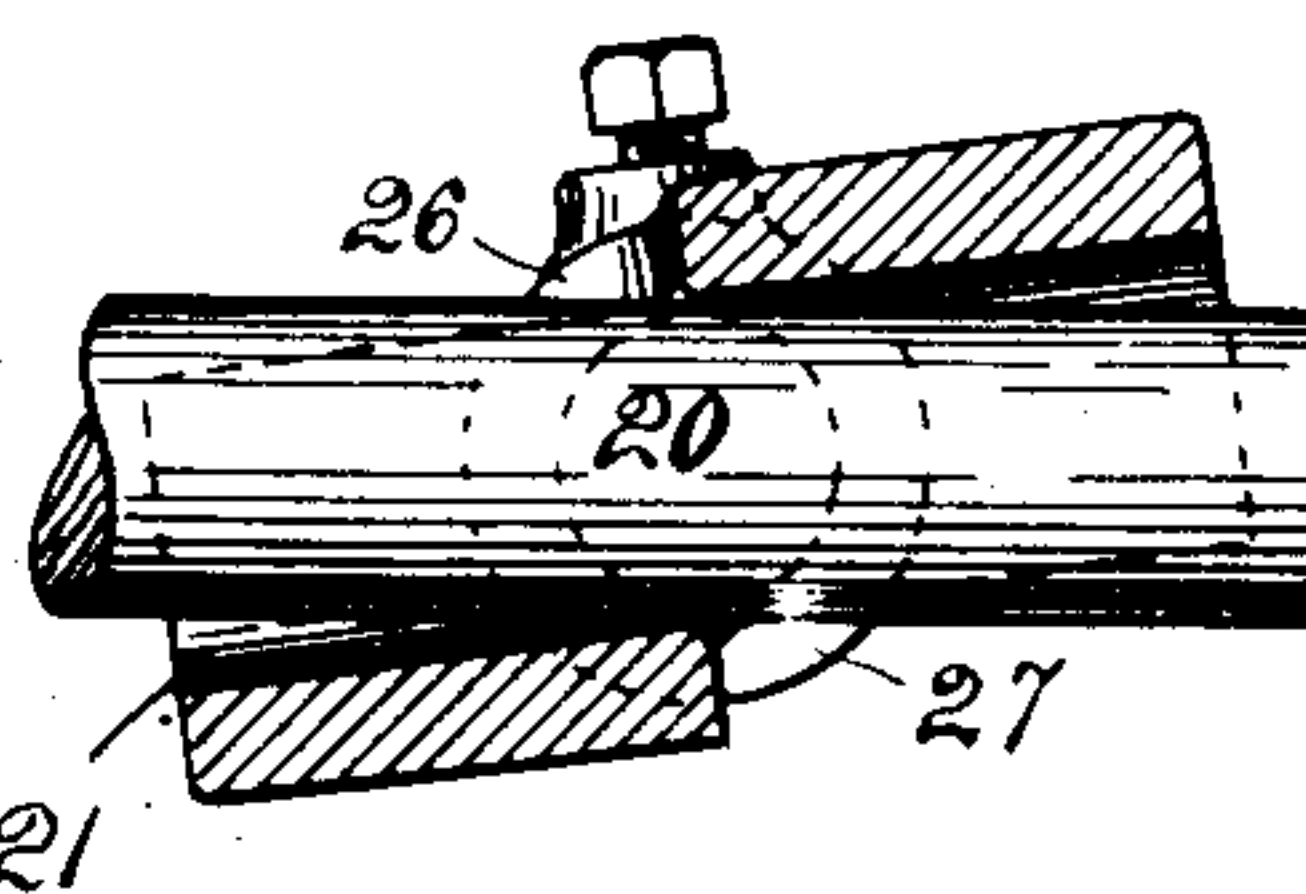
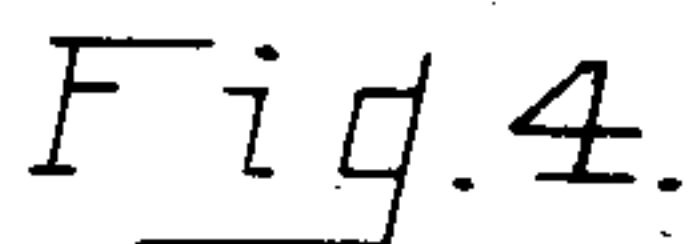
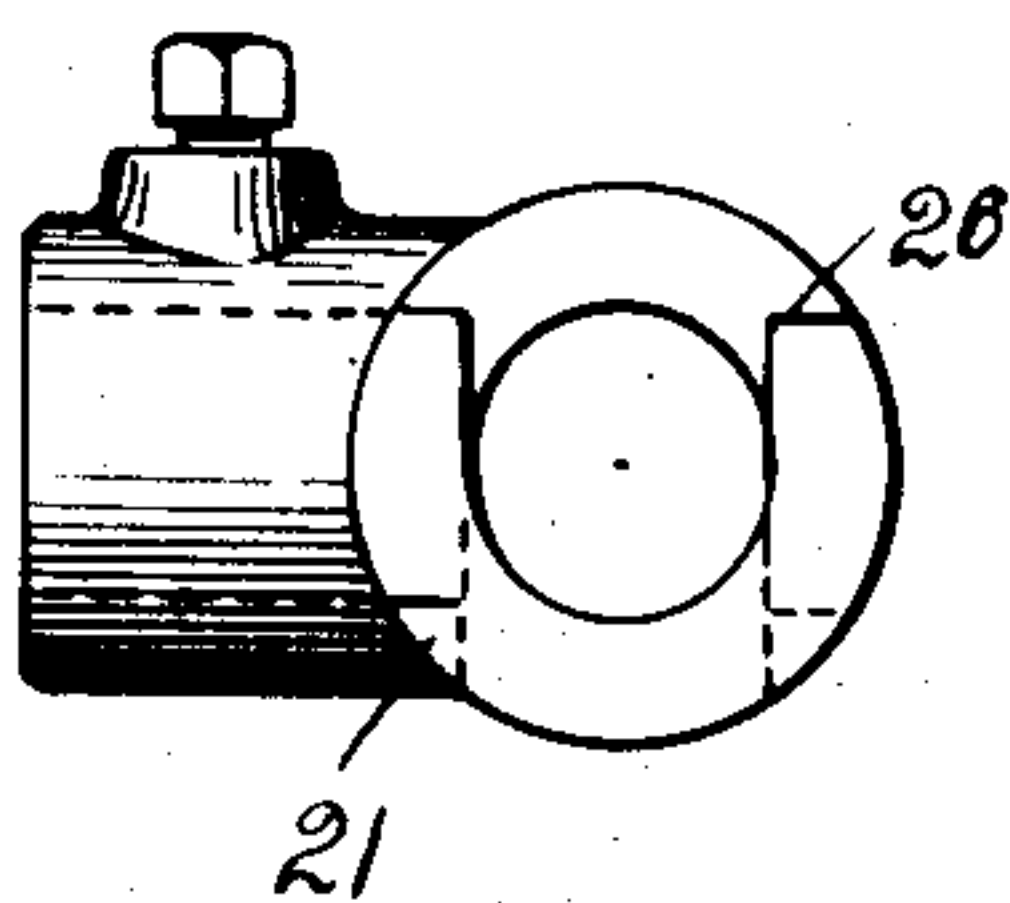
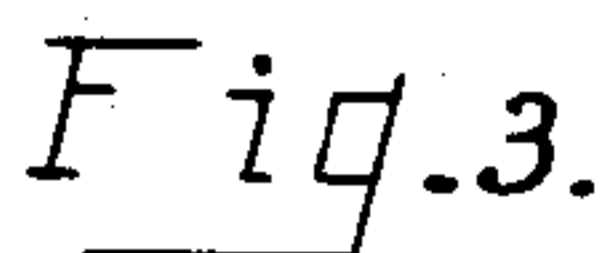
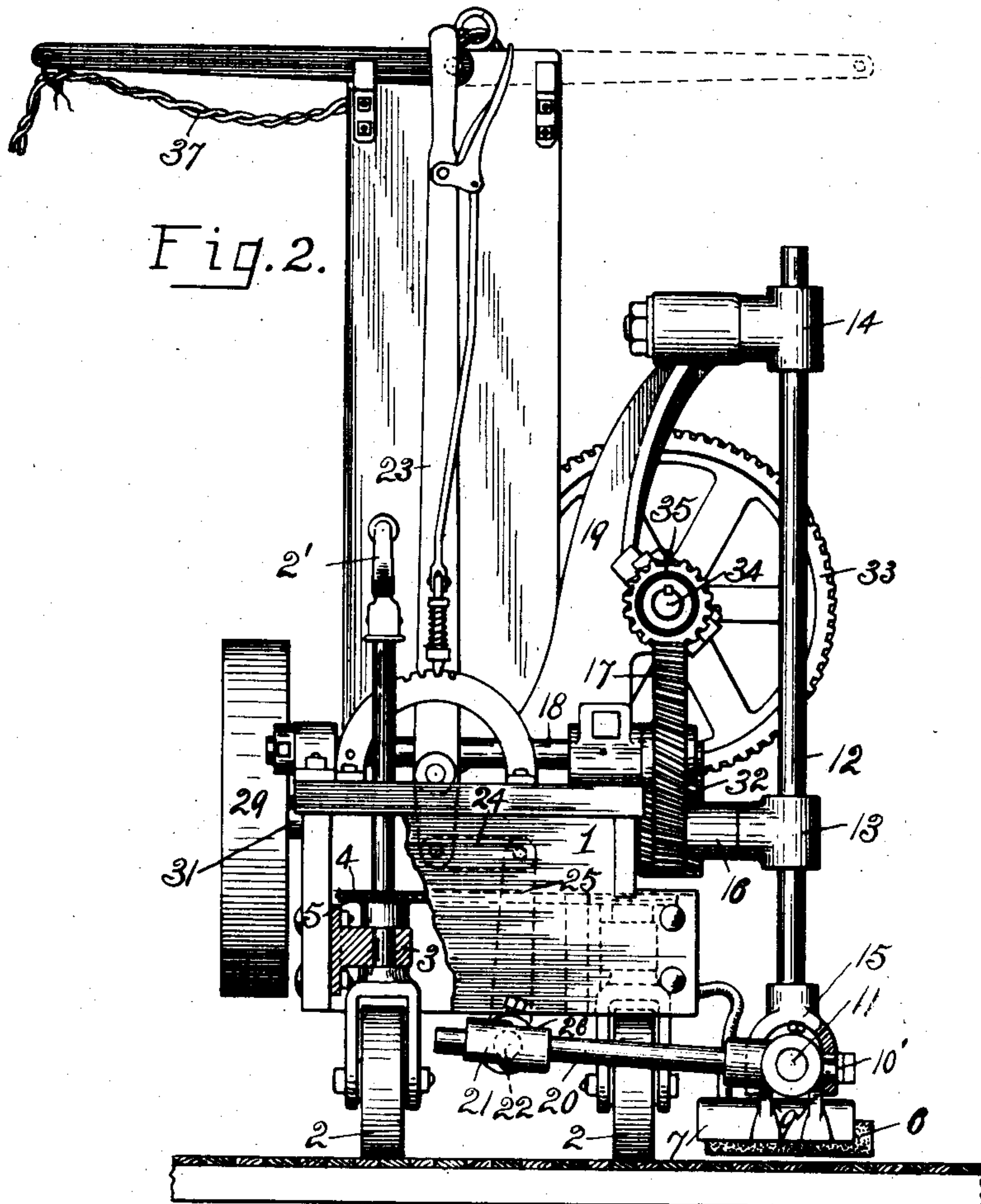
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UNITED STATES PATENT OFFICE.

JOHN H. PRUGH, OF TOLEDO, OHIO.

SURFACING AND POLISHING MACHINE.

No. 871,143.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed May 13, 1907. Serial No. 373,307.

To all whom it may concern:

Be it known that I, JOHN H. PRUGH, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Surfacing and Polishing Machine; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to floor-surfacing machines, and is particularly designed for the smoothing of mosaic, stone and other like floors, but is not restricted to such use.

The object of my invention is the provision of a highly efficient machine of this class, the polishing mediums of which have the requisite shuffling movements imparted thereto by simple and improved mechanism, and which have their vertical movements easily controlled by the manipulation of a suitable lever whereby they may be raised or lowered at the will of the operator, while at the same time they are permitted to have free vertical movements to accommodate themselves to the unevenness of the surface over which they are operating.

The operation, construction and arrangement of the parts of the invention are fully described in the following specification and a preferred embodiment thereof illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of the machine embodying my invention, with a portion of the frame broken away. Fig. 2 is an end elevation thereof with a portion of the frame broken away and the motor removed, and Figs. 3, 4 and 5 are details of a part of the mechanism controlling the vertical movements of the polishing mediums.

Referring to the drawings, 1 designates a suitable frame which is supported by fore and aft sets of caster-wheels 2, 2, the journal-heads of which are suitably mounted in bearing-bosses 3 carried by the frame. A sprocket-chain 4 connects the sprocket-wheels 5, 5 carried by the journal-heads of each set and one head of a set is projected above the frame and carries a steering-handle 2' by means of which the turning of the wheels is controlled.

The abrading-blocks 6, 6, which, when in operation, are intended to rest freely on the

surface to be polished, may be carborundum, sand-stone or other suitable abrading material and are carried by frames 7, 7, which have their under surfaces suitably shaped to receive the blocks and are provided with set-screws 8 or other suitable block-securing means. These blocks are formed on their upper surfaces with laterally-spaced bearing-bosses 9 between which are journaled the bearing-sleeves 10, which receive and are adapted to have reciprocatory movements on the horizontal shaft 11. A reciprocating shuffling movement is imparted to the blocks 6 by the vertically-disposed arms 12, which work freely through alining guide-sleeves or boxes 13 and 14 and have their lower ends provided with saddles 15, which straddle the sleeves 10 and are pivoted to the bosses 9 of the block-frames, as shown. The sleeves 13 are pivotally carried by crank-pins or bosses 16 projecting from the sides of the gear-wheels 17, which gears are mounted on transverse shafts 18 suitably journaled in the carriage frame 1, and the sleeves 14 are pivotally carried at the upper ends of standards or uprights 19, which rigidly rise from and overhang one side of the carriage-frame. It will thus be seen that a rotation of the gear-wheels 17 will cause the lower ends of the arms 12 to uniformly swing backward and forward with the pivots of the sleeves or boxes 14 as their fulcrums. The block-frames 7 are permitted to have universal rocking movements to accommodate themselves to any unevenness in the surface over which they are operating due to their rocking in one direction on the pivots 10' and in the other direction by reason of said pivots having slight vertical play in the bearings of the saddles 15.

The shaft 11 has an arm 20 projecting rigidly at right angles from each end thereof, which arms combine with the shaft 11 to form a U-shaped carrying frame for the frames 7 and have their free ends projecting freely through elongated bearing-heads 21, which are fixed to the ends of the rock-shaft 22. This shaft is suitably journaled beneath the frame 1 in parallelism with the shaft 11, and is rocked by an oscillation of the lever 23, which is fulcrumed to the frame and has its lower end connecting with the shaft 22 through the medium of the link 24 and crank-arm 25, which latter is fixed to the shaft. It is thus apparent that a raising or lowering of the shaft 11 and parts carried

thereby may be effected by an oscillation of the controlling lever 23. In order to enable the frames 7 to have free vertical movements independent of a rocking of the shaft 22 as the abrading-blocks move over uneven surfaces, the socketed portions of the bearing-heads 21 which receive the arms 20 have their upper surfaces cut away, as at 26, from approximately the centers thereof to the ends disposed toward the shaft 11 and the lower surfaces thereof reversely cut away, as at 27, or from approximately the centers of said socketed portions to the outer ends thereof, thus forming diagonally opposed solid portions and diagonally opposed cut away portions which enable the arms 20 to have free vertical oscillatory movements relative to said bearing-heads, with the shaft 22 as their axis. When the shaft 22 is rocked in the proper direction to raise the block-frames, the walls of the sockets opposing the cutaway portions thereof engage the arms 20 and cause the same to be oscillated therewith.

A suitable motor 28 is mounted on the frame 1 and is intended to communicate power to the pulley 29 through the medium of the belt 30, said pulley being carried by the shaft 31, which is journaled in suitable bearings transversely of the frame. Mounted on the opposite end of this shaft is a spiral gear 32, which meshes with a relatively larger spiral-gear 33. This gear is carried by the shaft 34, which extends longitudinally of the frame, being journaled in suitable bearings in the standards 19, and also carries the small right and left spiral-gears 35, 35 for meshing with and driving the gears 17 in reverse directions, which gears are also of spiral type. The plug 36, which is electrically connected to the motor by the cord 37, is intended to be threaded into an electric lamp socket or otherwise suitably connected to a source of electrical supply. A controller 38 regulates the running of the motor.

Carried beneath the frame 1 is a water-tank 39, having the distributing pipe 40 communicating with its bottom. This pipe is secured to and extends longitudinally of the side of the frame contiguous to the polishers and has the valve-controlled flexible branch tubes 41 leading therefrom and communicating with apertures 42 through the block-frames 7, thus permitting water to be slowly supplied to the tops of the abrading blocks 6 over the sides of which it flows to assist in the polishing.

The operation of my invention is as follows:—The machine being properly positioned, the abrading-blocks 6, 6 are lowered and permitted to rest freely on the floor by a throwing of the lever 23 to the left, and the electric current is cut into the motor 28 by a proper manipulation of the controller-lever

38, thus communicating rotation through the intermediate gearing to the cranked gear-wheels 17. As the gears 17 revolve the sleeves 13 carried thereby work up and down on the arms 12 of the block-frames and cause the abrading-blocks carried by said frames to have properly timed opposed reciprocatory movements on the surface to be polished. The blocks 6 rest on the floor by gravity and are permitted to have a free rocking movement relative to the shaft 11 or a free vertical movement with the shaft and arms 12, the latter moving freely through the sleeves 13 and 14, thus adapting the blocks to accommodate their positions to the surface over which they operate. The shaft 11 is also permitted to have a vertical movement independent of a movement of the bearing-heads 21 in which its arms 20 are mounted, due to the shaping of said heads in the manner above described, which shaping in such manner does not impair the lifting leverage of the heads relative to the blocks. When the machine is in operation the valves 43, controlling the water supply to the abrading-blocks, are opened to permit the water to flow over the blocks to assist in the polishing. The opposed movements of the blocks 6, which is occasioned by the reverse driving of the gears 17, causes a balanced action of said blocks so that no tractive force is supplied thereby to the machine. The placing of the polishing means at the side of the machine and the extending of the same beyond the outer sides of the frames 7, as shown, makes it possible to operate close to a wall and in corners, thus doing all by machine which has heretofore been done by hand and doing the same much more rapidly and efficiently and with greater uniformity. While I have not shown any means for driving the machine it is apparent that it may be either motor or hand driven, as may be desired, both being common in the art.

I wish it understood that I do not desire to restrict myself to the exact details of construction and arrangement of the parts shown and described, as obvious modifications will occur to a person skilled in the art.

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

1. The combination in a surfacing-machine, of a plurality of abrading-members mounted at one side of the machine, a member slidably carrying the abrading members and adapted to guide the movements thereof, and mechanism for imparting opposed unitary movements to the members.

2. The combination in a surfacing-machine, of a plurality of gravity abrading-members mounted at one side of the machine, said members being free to have rocking or vertical movements, an element guiding the reciprocatory movements of the abrading

members, and mechanism for imparting opposed simultaneous reciprocating movements to the members.

3. In a surfacing-machine, an abrading-member, an arm vertically rising from and having pivotal connection with said member, means forming a fulcrum for the upper end of said arm, a horizontal element guiding the movements of said members, and mechanism cooperating with the arm to impart a swinging movement to the arm and a reciprocating movement to the abrading-member.

4. In a surfacing-machine, a vertically-disposed arm mounted for swinging and free vertical movements, an abrading-member carried at the lower end of said arm, a guide-rod carrying the abrading-member to permit it to have sliding and universal movements relative thereto, and mechanism for imparting a swinging movement to the arm to effect a reciprocation of the abrading-member.

5. In a surfacing-machine, an abrading-member, an arm vertically rising from said member, fulcrum means for the upper end of the arm, a revoluble element slidingly embracing the arm intermediate its ends, and mechanism for revolving said element.

6. In a surfacing-machine, a gravity abrading-member, an arm rising therefrom, fulcrum means for the upper end of the arm, a revoluble element slidingly coacting with the arm below its fulcrum, and mechanism for revolving said element for imparting a shuffling movement to the abrading-member.

7. In a surfacing-machine, an abrading-member, a pivotal fulcrum member and a pivotal revolving member mounted above the abrading-member, an arm pivotally rising from the abrading-member and slidingly coacting with both the fulcrum and revolving members, and mechanism for revolving the latter of said members to impart a shuffling movement to the abrading-member.

8. The combination in a surfacing-machine, of a set of abrading-members, an arm pivotally rising from each of said members and mounted for swinging and free vertical movements, a guide-rod slidingly carrying said members, and mechanism cooperating with the arms to impart simultaneous shuffling movements to the abrading-members.

9. In a surfacing-machine, a set of abrading-members, an arm rising from each of said members, guiding means for the abrading members, fulcrum means for the upper end of each arm, a revolving element slidingly coacting with each arm below its fulcrum, and mechanism for revolving said elements to impart shuffling movements to the abrading-members.

10. In a surfacing-machine, a set of abrading-members working in tandem, an arm

pivotally rising from each of said members and mounted for swinging and free vertical movements, and mechanism cooperating with the arms to impart opposed simultaneous shuffling movements to the abrading-members.

11. In a surfacing-machine, a set of abrading-members, an arm pivotally rising from each of said members and mounted for swinging and vertical movements, a revolving element slidingly coacting with each arm, and mechanism for reversely driving said elements to impart opposed shuffling movements to the abrading-members.

12. In a surfacing-machine, a pair of abrading-members, a pivotal fulcrum member and a pivotal revolving member associated with each abrading-member, an arm pivotally projecting from each abrading-member and slidingly coacting with the associated fulcrum and revolving members, and mechanism for imparting movements to the revolving members to communicate opposed shuffling movements to the abrading-members.

13. In a surface machine, the combination with the shuffling abrading-member, and the holder therefor, of a water-supply, and a flexible tube having one end connected to the water supply and its other end attached to the holder whereby to follow the movement of said member and supply water to its top.

14. In a surfacing-machine, an abrading-member, an arm pivotally rising therefrom and mounted for swinging and free vertical movements, mechanism cooperating with the arm to impart a shuffling movement to the abrading-member, and means for raising or lowering the abrading-member.

15. In a surfacing-machine, a vertically oscillatory frame, an abrading-member slidingly carried by the frame, an arm pivotally projecting from the abrading-member and mounted for swinging and free longitudinal movements, mechanism cooperating with the arm to impart a shuffling movement to said member, and means for oscillating the frame to raise and lower the abrading-member.

16. In a surfacing-machine, a horizontal shaft, arms rigidly projecting from said shaft, a rock-shaft having connection with said arms, an abrading-member slidingly carried by said horizontal shaft, mechanism for imparting a shuffling movement to said member, and means for oscillating the rock-shaft to raise or lower the abrading-member.

17. In a surfacing-machine, a vertically oscillatory frame, a plurality of abrading-members slidingly carried by the frame, an arm pivotally projecting from each abrading-member and mounted for swinging and free vertical movements, mechanism cooperating with the arms to impart opposed shuffling movements to said members, and means for

oscillating the frame to raise and lower said members.

18. In a surfacing-machine, a horizontal shaft, arms rigidly projecting from said shaft, 5 a rock-shaft having connection with said arms, a plurality of abrading-members movable on said horizontal shaft, mechanism for imparting a shuffling movement to said members, and means for rocking the rock-shaft to 10 raise or lower said horizontal shaft.

19. In a surfacing-machine, the combination with an abrading-member, of a frame carrying said member, a rock-shaft having connection with the frame adapted to permit 15 a free oscillation of the frame relative to the rock-shaft and to rock the frame when the shaft is rocked.

20. In a surfacing-machine, the combina-

tion with the surfacing agent, of a U-shaped frame carrying said agent, a rock-shaft, and 20 bearing-members carried by said shaft and loosely receiving the arms of the frame, said members each having diagonally opposed solid portions and diagonally opposed cut-away portions to permit a free oscillatory 25 movement of the arms therein and also to effect a positive oscillation of the frame to raise or lower the surfacing agents.

In testimony whereof I have hereunto signed my name to this specification in the 30 presence of two subscribing witnesses.

JOHN H. PRUGH

Witnesses:

HAZEL B. HIETT,
C. W. OWEN.