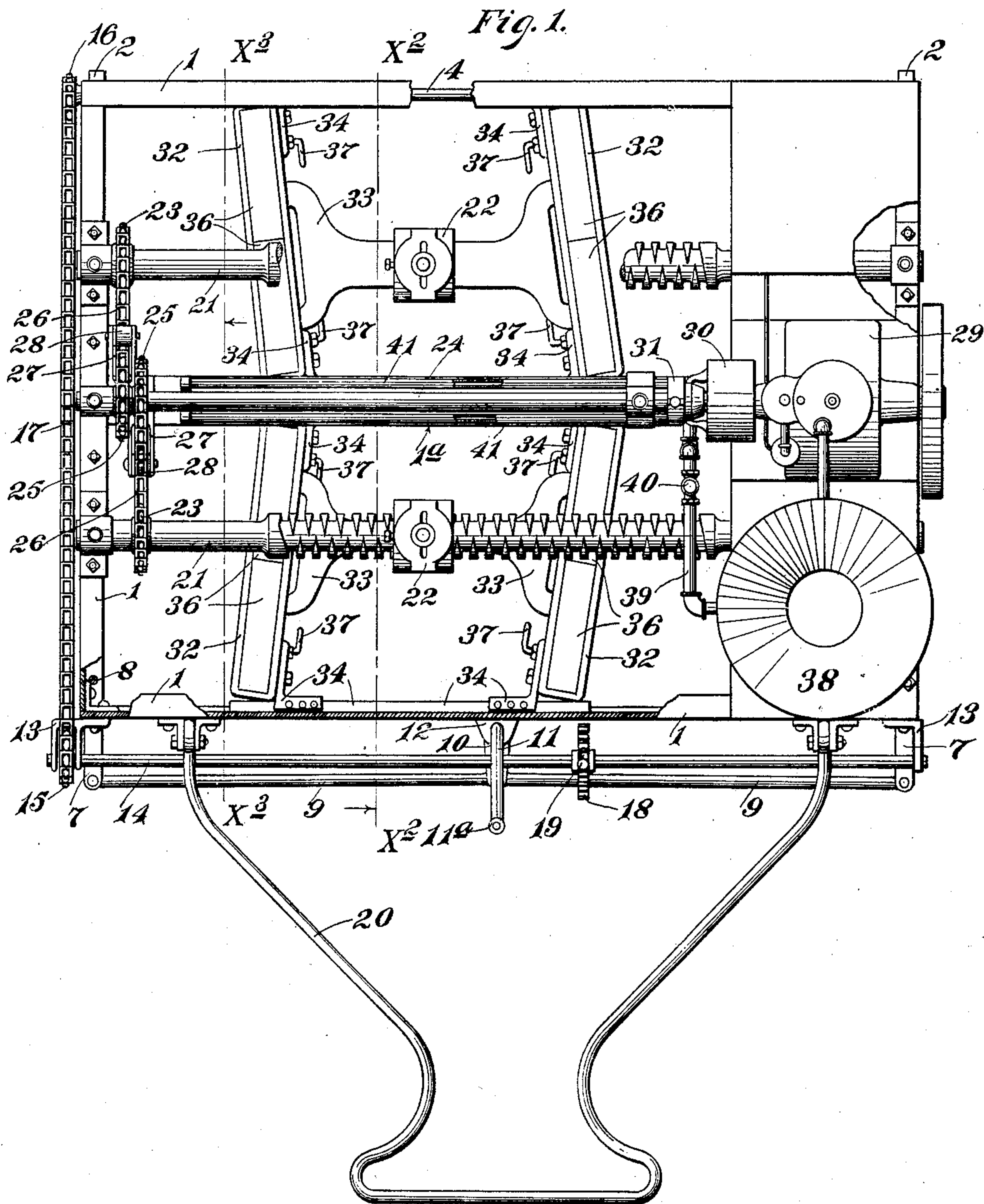


F. O. STREED & L. J. LARSON.
MACHINE FOR POLISHING STONE AND CONCRETE FLOORS.
APPLICATION FILED APR. 11, 1908.

924,704.

Patented June 15, 1909.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

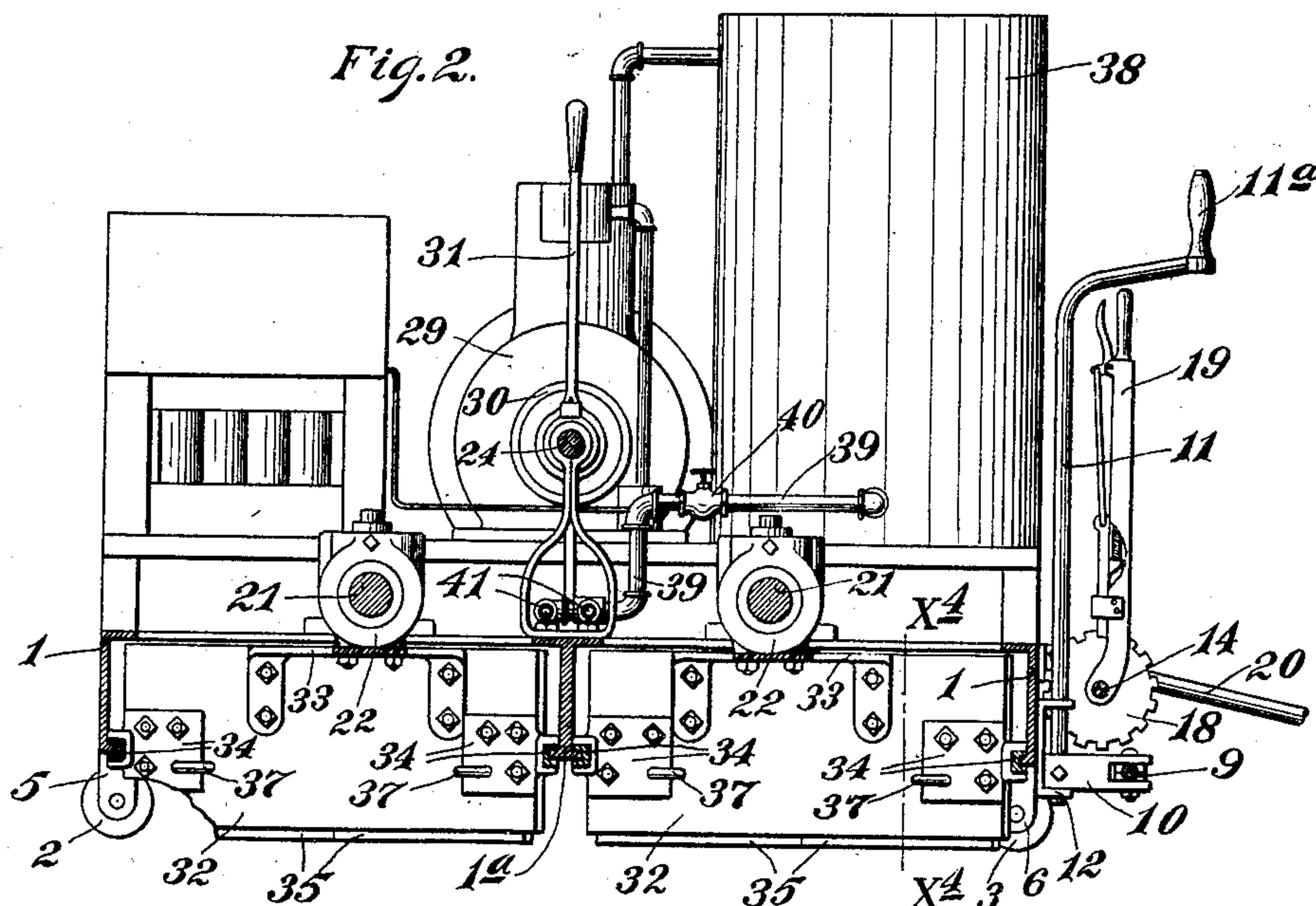


Fig. 3.

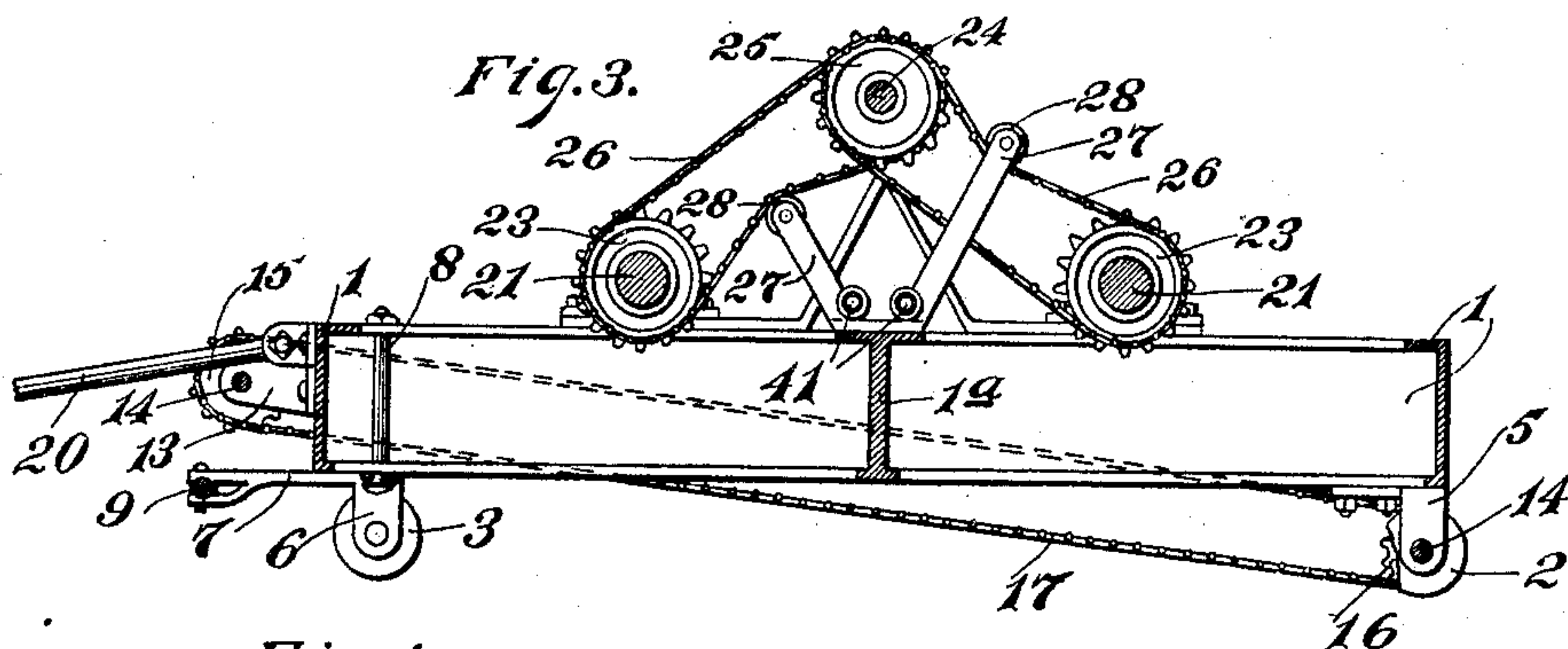
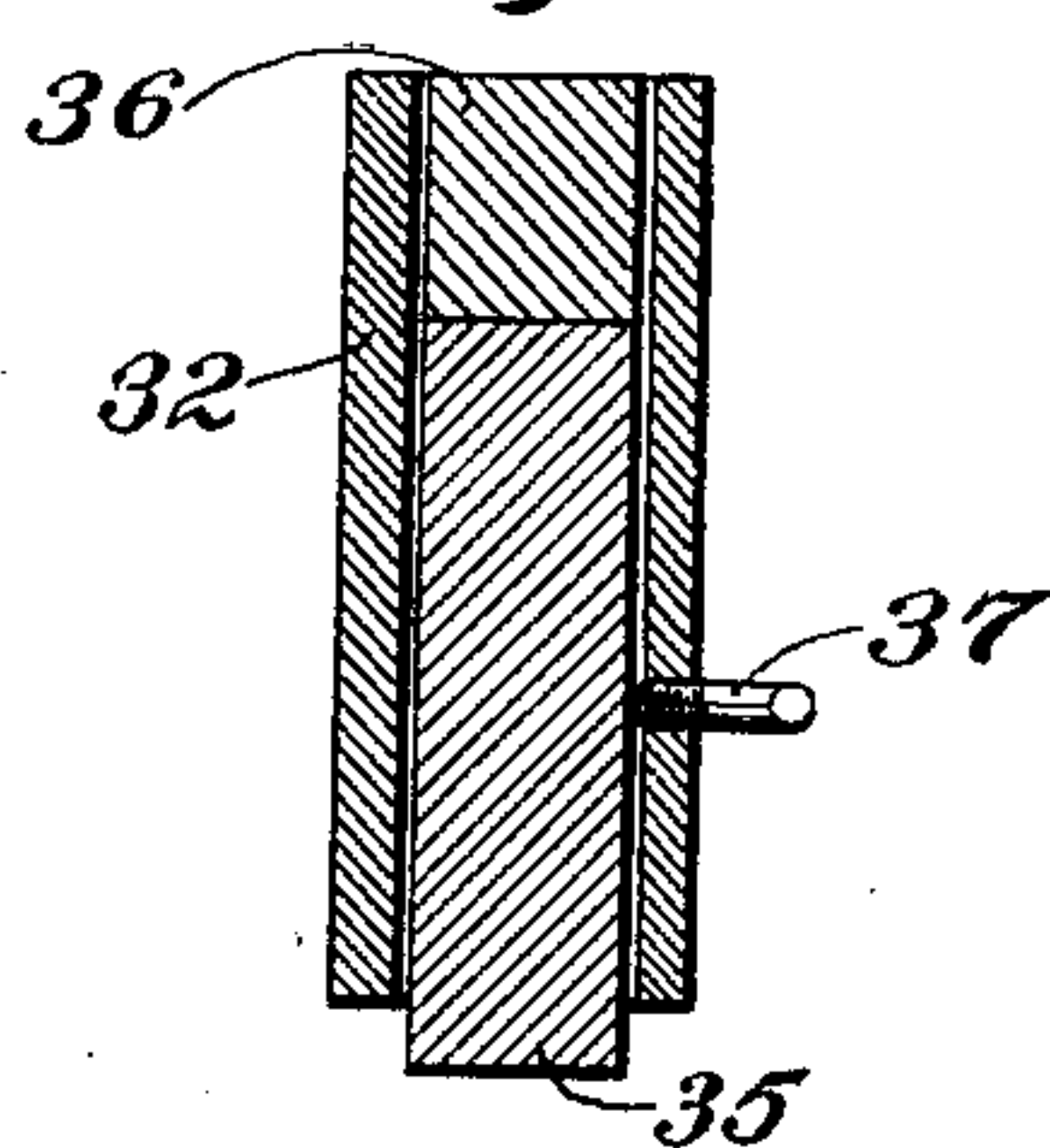


Fig. 4



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UNITED STATES PATENT OFFICE.

FRANK O. STREED AND LARS J. LARSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNORS OF
THREE-FOURTHS TO SAID STREED AND ONE-FOURTH TO SAID LARSON.

MACHINE FOR POLISHING STONE AND CONCRETE FLOORS.

No. 924,704.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed April 11, 1908. Serial No. 426,538.

To all whom it may concern:

Be it known that we, FRANK O. STREED and LARS J. LARSON, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Machines for Polishing Stone and Concrete Floors; and we 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.

Our invention has for its object to provide a simple and efficient machine especially adapted for use to smooth and polish the surfaces of marble, terazzo, concrete and other natural and artificial stone floors, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In our improved machine we provide one or more power-operated surfacing tools arranged to travel on a suitable frame. The power for operating these surfacing tools is preferably afforded by a small explosive engine carried on the frame of the machine. Also a water supply tank is carried by the machine and is provided with suitable water discharge pipes for delivering the water onto the floor surface that is subject to the action of the surfacing tools.

In the accompanying drawings which illustrate the machine in its preferred form, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a plan view of the improved machine, some parts being broken away and some parts being shown in section. Fig. 2 is a vertical section taken from front to rear of the machine on the line $x^2 x^2$ of Fig. 1. Fig. 3 is a vertical section taken from front to rear of the machine on the line $x^3 x^3$ of Fig. 1; and Fig. 4 is a detail showing one of the surfacing tools sectioned on the line $x^4 x^4$ of Fig. 2.

The frame-work of the machine is of rectangular form and, as shown, is made up of marginal channel beams 1 and a transverse central eye-beam 1^a. This frame is supported by the two front wheels 2 and two rear wheels 3. The front wheels 2 are rigidly secured to a transverse shaft 4 mounted

in suitable bearings 5 secured to and depending from the front portion of the machine frame. The rear wheels 3, which are the steering wheels, are journaled in bearings 6 that are provided with rearwardly extended arms 7 and are pivotally connected to the rear portion of the machine frame, by nutted bolts 8. The rearwardly extended arms 7 are connected, by rods 9, to the rearwardly extended end of an intermediate arm 10 that is secured to the lower end of an upright steering rod 11, which steering rod, at its lower end, is mounted in a bearing 12 on the intermediate portion of the transverse rear bar of the machine frame and is provided, at its upper end, with a steering crank or hand-piece 11^a.

Mounted in suitable bearings 13 on the rear portion of the machine frame and extending transversely of the machine, is a propelling shaft 14 provided, at one end, with a sprocket 15 over which and an aligned sprocket 16 on one end of the wheel-equipped shaft 4 runs a sprocket chain 17. A peripherally notched wheel 18 is secured to the intermediate portion of the propelling shaft 14; and loosely mounted on said shaft, for coöperation therewith, is a latch-equipped lever 19. By means of the latch lever 19, operating on the wheel 18, a slow intermittent traveling movement may be imparted to the entire machine. This lever and wheel will be used to move the machine while the surfacing tools, hereinafter described, are in action.

For propelling the machine from place to place, when not in operation, a bail 20 is shown as pivotally connected to the rear transverse bar of the machine frame. As is evident, the direction of travel of the machine may be controlled by lateral oscillatory movements of the hand-piece 11^a of the steering rod 11, which movements of said hand-piece imparts parallel oscillatory movement to the two rear wheels 3.

Mounted in suitable bearings on the machine frame and extending parallel to each other, one in front and the other at the rear of the central frame beam 1^a, is a pair of quite heavy feed screws 21, each of which has intersecting right and left threads, and on each of which works an automatically

reversible nut 22 of well known construction. Near one end, the shafts of the feed screws 21 are provided with sprockets 23. Mounted in suitable bearings on the central frame beam 1^a is a transversely extended counter-shaft 24, provided with sprockets 25 that align one with each of the sprockets 23. Sprocket chains 26 run over the aligned sprockets 23 and 25. As shown, the slack of the chains 26 is taken up by tighteners made up of arms 27 and rollers 28, which arms are suitably supported by the beam 1^a. Suitably mounted on the machine frame, as shown at the right hand side thereof, is a small explosive engine 29, the shaft of which is adapted to be coupled, at will, to the adjacent end of the counter-shaft 24, by a friction clutch 30, of the standard or any suitable construction, which is adapted to be opened and closed or actuated by a lever 31 shown as pivotally supported at its lower end on the frame beam 1^a.

The holders of the surfacing tools (of which, as shown, there are four) are afforded by rectangular metallic shells 32 of oblong form, that are bent both at the top and bottom and are set vertically but obliquely in respect to the feed screws 21. These holders 32 are rigidly connected in pairs by tie-plates 33, to the intermediate portions of which the cooperating automatically reversible nuts 22 are secured. To the outer and inner edges of the holders 32 are rigidly secured channeled guide brackets 34 that are arranged to slide on the lower flanges of the transverse front, rear and intermediate beams of the main frame. These brackets prevent the holders from being given a rotary motion by the frictional action of the feed screws, and hold the same for true lateral traveling motion under the action of the said screws.

Within the holders 32 are loosely placed rectangular blocks 35 of emery or other hard composition, or material suitable for smoothing the surface of the floor. The holders 32, being set obliquely in respect to the feed screws 21, prevent chattering of the blocks 35 as they are moved over the floor. In the construction illustrated, the screws 21 are located centrally over the holders 32 and, hence, to facilitate the insertion and removal of the grinding blocks 35, said blocks are each made in two sections, so that one section at a time may be inserted into the holder. Within the holders, on top of the grinding blocks 35, are placed weights 36, of lead or other heavy substance. These weights 36 keep the blocks 35 pressed downward into contact with the floor when the machine is in action. When the machine is not in action and it is desired to move the same from place to place, the blocks 35 may be raised

and held out of contact with the floor, by means of clamping screws 37 that are threaded through the holders and are adapted to impinge against said blocks 35.

The water tank 38 which, as shown, is supported by the right hand side portion of the machine frame, is provided with a water discharge pipe 39 having a valve 40. The pipe 39 is connected to a pair of spraying pipes 41 which, as shown, are supported by and extend over the central frame beam 1^a and are adapted to discharge water in opposite directions along the travel of the two pairs of surfacing tools, so as to thus supply an amount of water required in the surfacing action of the tools.

To neutralize the transverse crowding force on the machine produced by the transverse travel of the surfacing tools, the automatically reversible nuts 22 are set on the cooperating feed screws 21 so that the two pairs of tools will always be traveling in reverse directions in respect to each other.

For different kinds and grades of work, surfacing blocks of different coarseness or fineness will be used in the holders. In actual practice the machine above described has been found efficient for the purposes had in view.

What we claim is:

1. In a machine of the kind described, the combination with a suitable framework, of an upright surfacing tool mounted for reciprocatory movements on said framework and set obliquely to its line of travel, and means for reciprocating said tool, substantially as described.

2. In a machine of the kind described, the combination with a suitable framework, of a surfacing tool mounted for reciprocatory movements on said framework, and means for reciprocating said tool, comprising a reversely threaded screw and cooperating automatically reversible nut, substantially as described.

3. In a machine of the kind described, the combination with a suitable framework and wheels supporting the same, of a reversely threaded screw mounted on said framework, means for driving said screw, an upright casing set obliquely in respect to the screw and mounted on the framework for reciprocatory movements, a reversible nut secured to said shell, for cooperation with the screw, and a surfacing tool loosely mounted in said shell, substantially as described.

4. In a machine of the kind described, the combination with a suitable framework and wheels supporting the same, of a pair of laterally spaced reversely threaded screws mounted on said framework, a power driven shaft mounted between the screws, driving connections from said shaft to said screws,

vertical casings laterally spaced and set obliquely in respect to the screws and mounted on the framework for reciprocatory movements, brackets connecting said casings in
5 pairs, reversible nuts secured to the brackets for coöperation with the screws, and surfacing tools loosely mounted in said shells, substantially as described.

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

FRANK O. STREED.
LARS J. LARSON.

Witnesses:

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MALIE HOEL.