

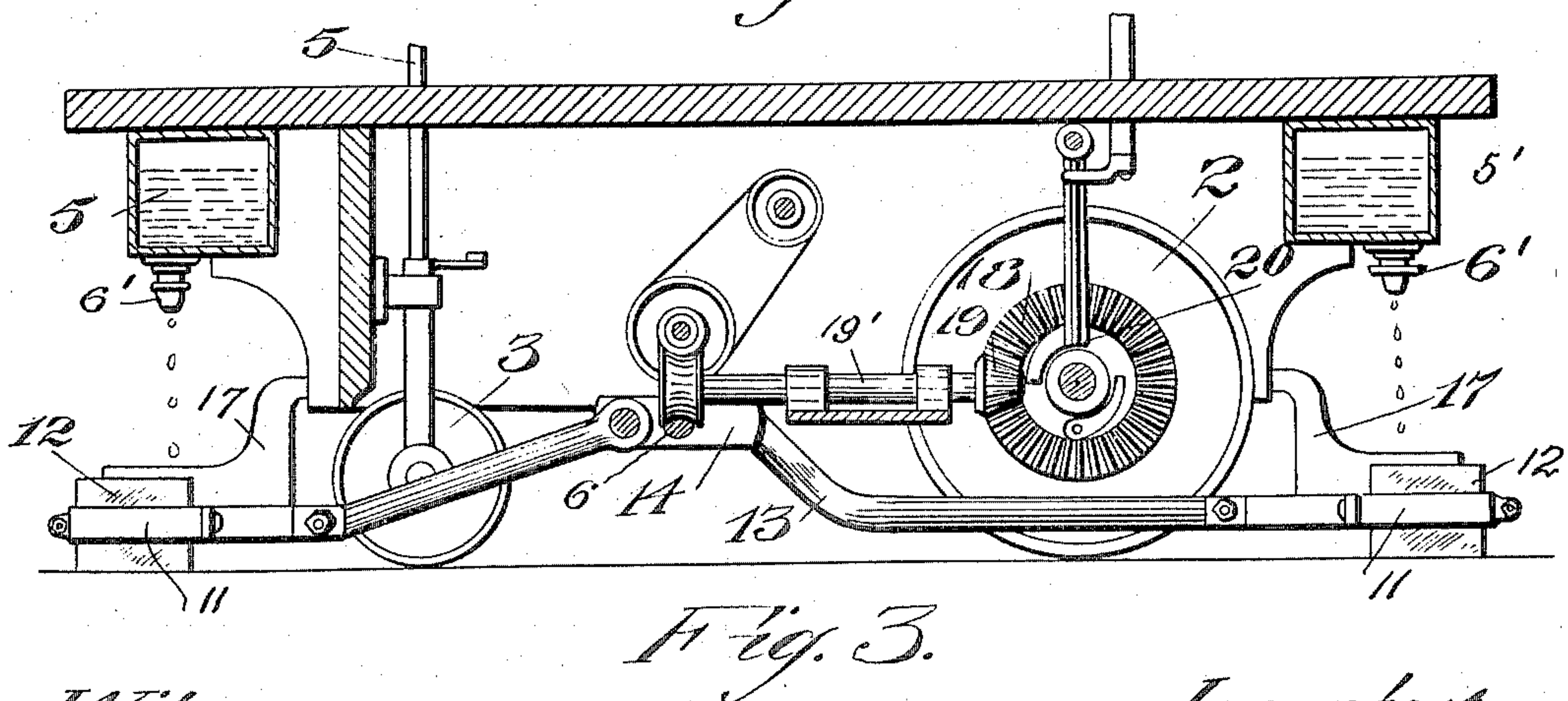
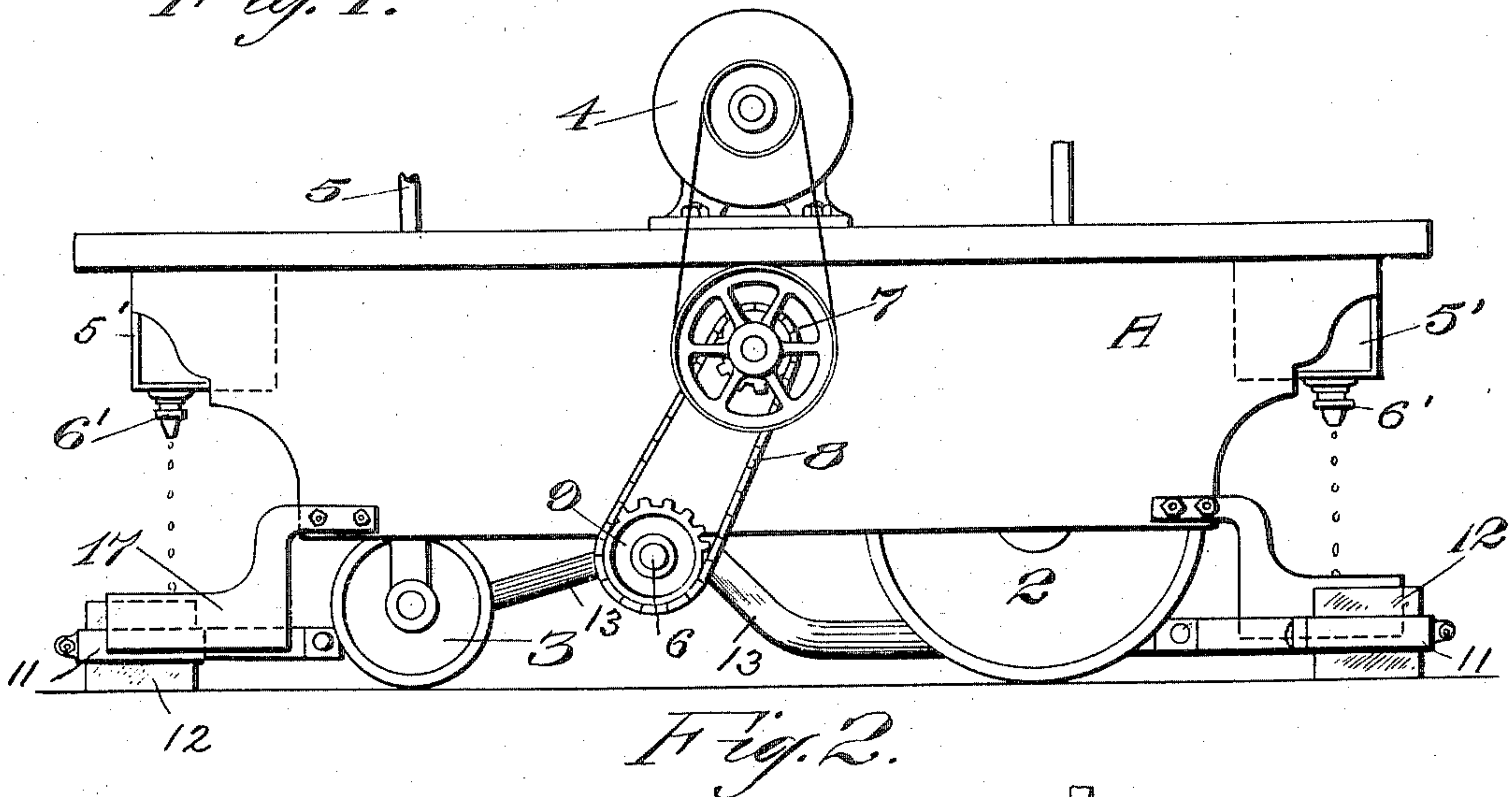
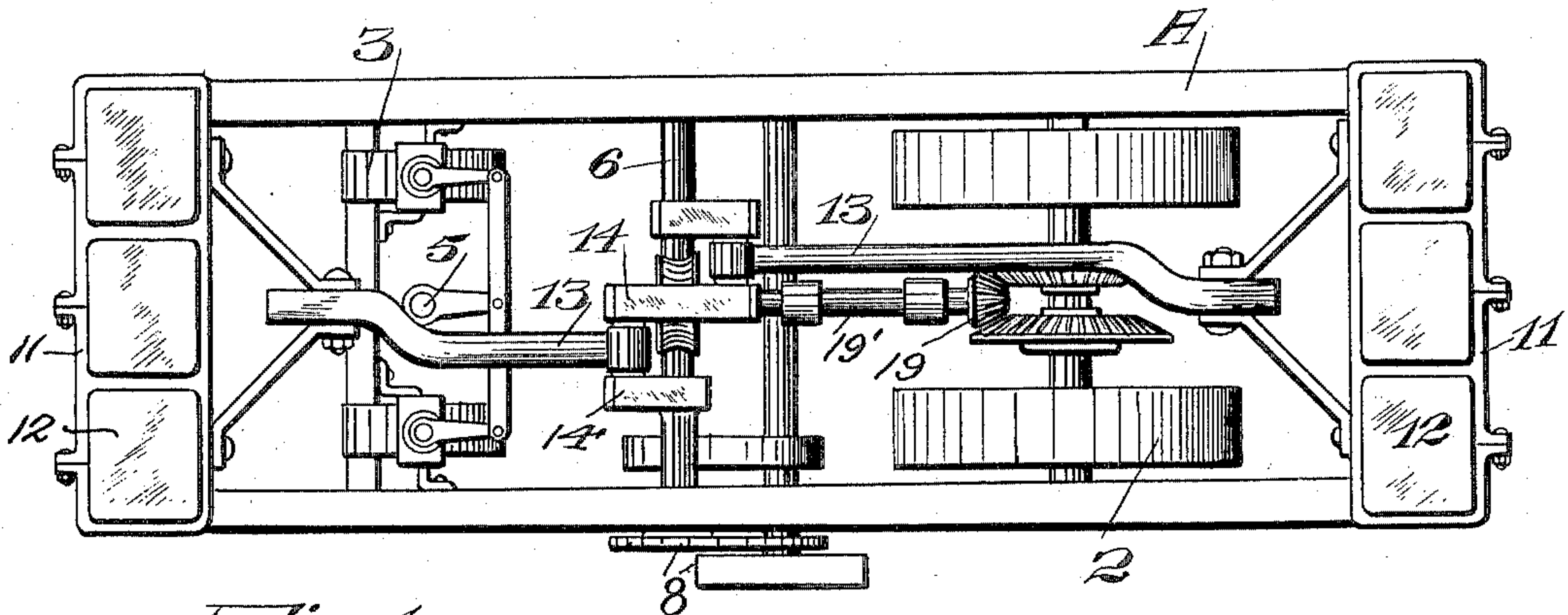
No. 817,013.

PATENTED APR. 3, 1906.

A. T. SPENCE, J. H. PRUGH & S. B. ZIMMER.

## SURFACING AND POLISHING MACHINE.

APPLICATION FILED AUG. 12, 1905.



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# UNITED STATES PATENT OFFICE.

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## SURFACING AND POLISHING MACHINE.

No. 817,013.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed August 12, 1905. Serial No. 273,942.

*To all whom it may concern:*

Be it known that we, AARON T. SPENCE, JOHN H. PRUGH, and SAMUEL B. ZIMMER, citizens of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Surfacing and Polishing Machines, of which the following is a specification.

Our invention relates to an apparatus especially designed for smoothing mosaic and other floors or surfaces.

It consists in the combination of mechanism whereby a smoothing or polishing surface is reciprocated over the surface to be acted upon, means for moving the polisher with relation to the surface, and in details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a bottom view of our apparatus. Fig. 2 is a side elevation. Fig. 3 is a central longitudinal section.

Our apparatus consists of a suitable frame or carriage A, having bearing-wheels 2, steering-wheels 3, with a suitable motor 4, from which power is derived to move the carriage and to actuate the polishing devices. The steering may be effected by means of a worm-gear shaft 5 and hand-wheel, through which motion may be transmitted to turn the steering-wheels to right or left by suitable connections such as are common to motor-propelled vehicles.

6 is a crank-shaft journaled across the frame or carriage and will be driven by means of a sprocket 7, fixed upon the shaft, a chain 8 passing around this sprocket and around a sprocket 9 upon a driving-shaft, to which shaft power may be transmitted from the motor, as at 4, by chain or other equivalent driving mechanism.

11 represents metal or other equivalent frames or boxes open at top and bottom and adapted to receive blocks of stone, as at 12. These blocks are locked in the frames by wedges, clamps, or other locking devices, so that they may at any time be removed and replaced by others when worn. The lower surfaces of these stones provide the polishing-surface. They are moved over the surfaces to be polished by means of connecting-rods 13, extending from the cranks 14 of the crank-shaft 6. These cranks are here shown placed

in pairs and closely together, and the connecting-rods 13 are so offset from each other that the extension from these connecting-rods to the boxes 11 stand substantially in line with the intermediate arm 14 of the two contiguous cranks. These cranks project in opposite direction from the crank-shaft, and it will thus be seen that as they are revolved the boxes 11 are alternately drawn toward each other and forced outwardly, sliding over the surface to be polished and having motion equal to the throw of the cranks. By this construction the movement of the polishers is opposed in such a manner as to be perfectly balanced, the thrust and pull being in line with the center arm of each two contiguous cranks, and as the cranks are moved in opposite direction the opposed movement of the polishers will be balanced. The weight being approximately the same, all strain upon the journal-boxes of the crank-shaft will be avoided.

Above the line of travel of the polishers and supported by the carriage are water-tanks, as at 5', and these tanks have drip-cocks, as at 6', by which a supply of water may be provided to assist in the polishing.

In order to insure the movement of the polishing-frames in proper alinement, guides 17 are fixed to the carriage-frame and project upon each side of the line of travel of the frames 11, thus insuring their moving in a desired direction and without undue side movement.

Any advance of the machine over the surface is effected by power applied to the driving-wheels 2. A suitable means for applying this power is derived from the motor and transmitted through gearing, as at 18, in which the pinion 19 upon the shaft 19' engages the two loose gears upon the wheel-shaft and revolves them in opposite directions. By means of any suitable clutch, as 20, traveling upon a feather on the shaft, either of the gears may be engaged with and revolved by the pinion, the engaged one acting to revolve the bearing-wheels 2 and move the car in one direction, while the other gears turn idly upon the shaft. To reverse the motion of the carriage, the clutch is disengaged from one gear-wheel and is engaged with the other, so that the continued motion of the pinion in one direction will reverse the movement of the wheel-shaft. In this manner and by aid



of the steering-gear the machine may be moved to any part of the surface to be acted on and may be caused to travel slowly over the surface during the polishing operation.

5 Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a surfacing and polishing machine, a frame supported with relation to the surface  
10 to be acted upon, a crank-shaft journaled transversely across said frame having contiguous cranks with opposite throw, a motor and connections by which the shaft is revolved, abrading-surfaces and containers  
15 therefor located at opposite ends of the frame or carriage, connecting-rods between said containers and the cranks, bearing-wheels for said frame, and driving connections between the motor and said wheels whereby the frame  
20 is advanced in either direction by the motor.

2. In a surfacing and polishing machine, a frame supported with relation to the surface to be acted on, wheels upon which the frame is supported, reciprocating polishers located  
25 at opposite ends of the frame, means for guiding the polishers, a shaft having contiguous cranks of opposite throw, connections between said cranks and the polishers whereby the reciprocating movements of the polishers  
30 are balanced, a motor and connections for driving the shaft, and connections between the motor and the wheels whereby the frame is advanced in either direction by the motor.

3. In a portable surfacing and polishing  
35 machine, a wheeled frame supported with relation to the surface to be acted upon, guided slidable polishers carried at opposite ends of the frame, a transversely-journaled shaft upon the frame having contiguous cranks of  
40 opposite throw, and the intermediate arm of said cranks common to both, connecting-rods extending from the cranks and communicating motion to the polishers, said connections being offset so that the portions connecting  
45 with the polishers are substantially in line with the central arm of the cranks.

4. In a portable surfacing and polishing machine, a wheeled frame supported with relation to the surface to be acted on, a motor-  
50 driven shaft journaled upon the frame having contiguous cranks with opposite throw, and the intermediate arm of said cranks common to both, guided slidable polishers located upon opposite sides of the crank-shaft, arms  
55 fixed centrally to said polishers extending in line with the central arm of the cranks from opposite sides, and connecting-rods from the cranks offset from said polisher-carrier arms.

5. In a portable surfacing and polishing  
60 machine, a wheeled frame supported with relation to the surface to be acted on, a motor-driven shaft journaled upon the frame having contiguous cranks of opposite throw with a common intermediate arm, means whereby  
65 the frame is advanced in either direction by

the motor, slidable polishers upon opposite sides of the crank-shaft, one connected with each of the cranks, said connections having an offset by which the opposite lines thrust and pull are substantially in line with the intermediate arm of the crank-shaft, and guides  
70 fixed upon the frame between which the ends of the polishers are movable.

6. In a portable surfacing and polishing machine, a wheeled frame supported with relation to the surface to be acted on, a motor and means whereby the frame is advanced in either direction thereby, polishers comprising open containing-frames having stones  
75 locked therein with their lower surfaces projecting to contact with the surface to be polished and extending transversely of the carriage, a shaft having cranks of opposite throw, and offset rods connecting said cranks with the center of inertia of the polishers, and  
80 guides between which the polishers are reciprocated.

7. In a portable surfacing and polishing machine, a wheeled frame supported with relation to the surface to be acted on, a motor and means whereby the frame is advanced in either direction thereby, guided polishers carried by the frame and means by which an opposed and balanced reciprocation of said polishers is effected.  
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8. In a portable surfacing and polishing machine, a wheeled frame having a double opposed crank-shaft journaled thereon, slidable polishers connected with the cranks of said shaft, bearing and steering wheels upon  
100 which the frame is mounted, a motor and driving connections between the same and the bearing-wheels whereby the frame may be moved in either direction over the surface being polished.  
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9. In a surfacing and polishing machine, guided slidable polishers resting upon the surface, a wheeled frame carrying a journaled shaft with double opposed cranks, connections between the polishers and the cranks, mechanism including a motor and connections therefrom by which the driving-wheels of the car are propelled in either direction, and a steering mechanism whereby the direction of the car and the travel of the polishers  
110 may be changed.  
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In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

AARON T. SPENCE.  
JOHN H. PRUGH.  
SAMUEL B. ZIMMER.

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