

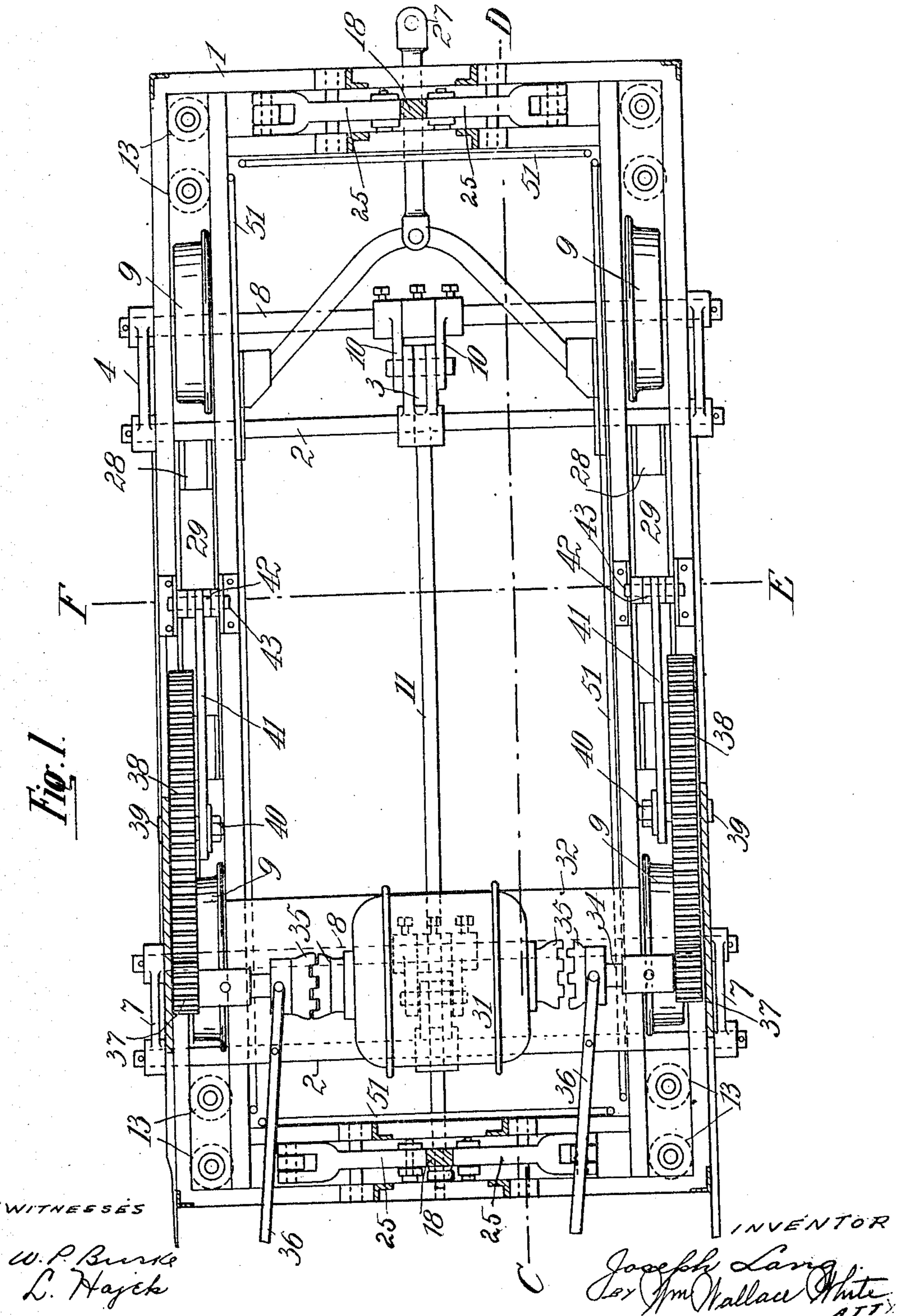
J. LANG.
RAIL CORRUGATION FILING-OFF MACHINE.
APPLICATION FILED AUG. 27, 1908.

916,332.

Patented Mar. 23, 1909.

4 SHEETS—SHEET 1.

Fig. 1.



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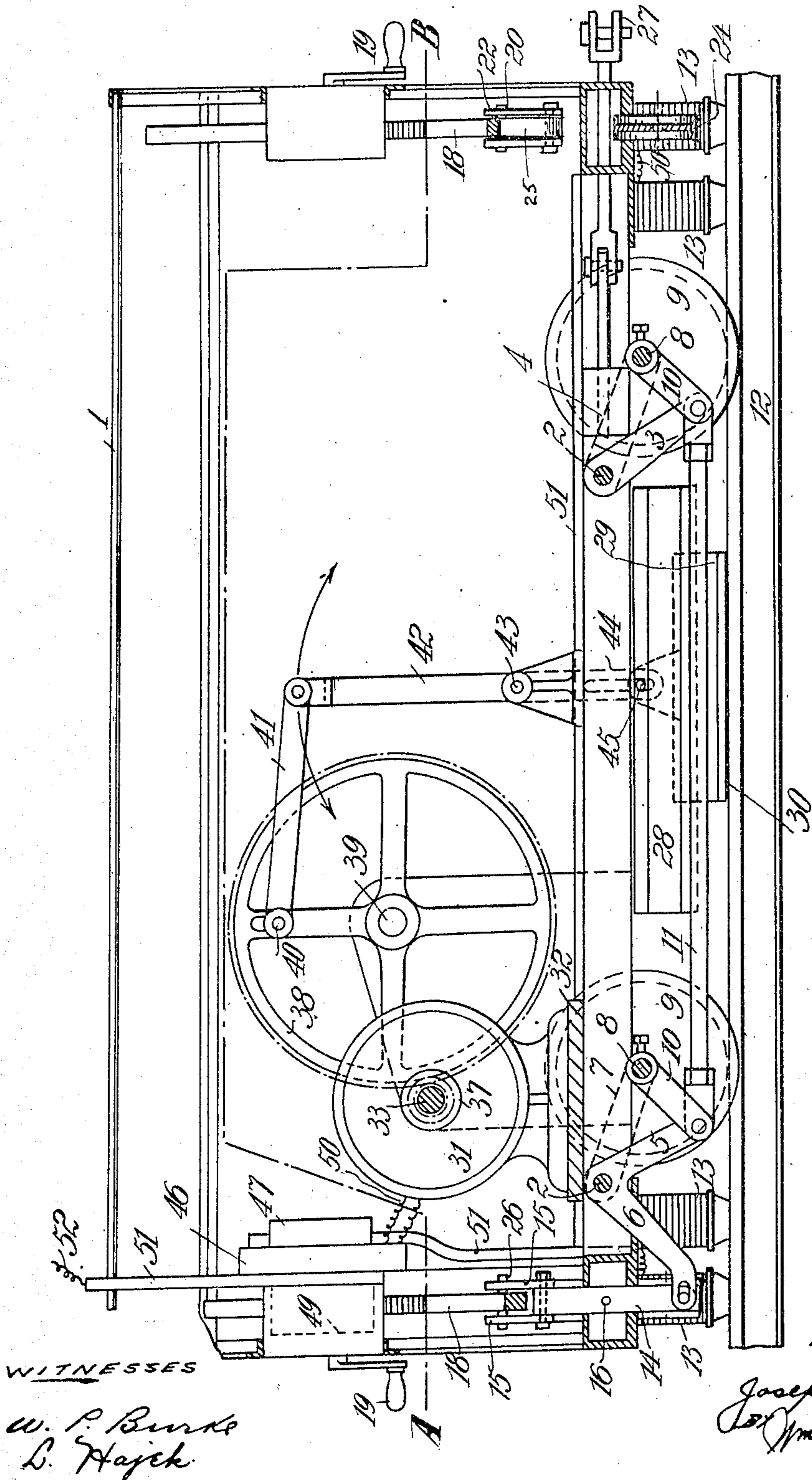


Fig. 2.

WITNESSES

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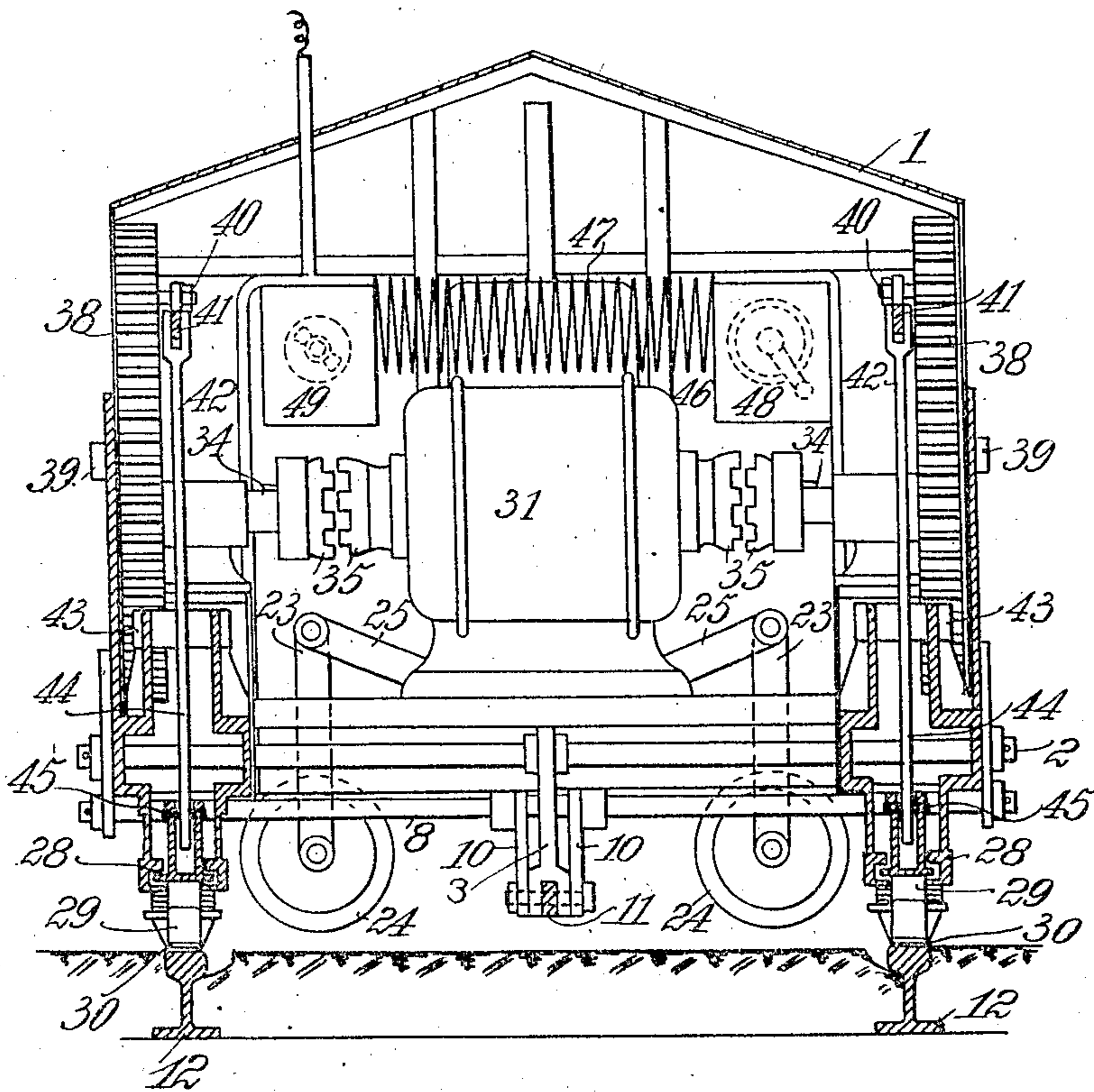


Fig. 3.

WITNESSES

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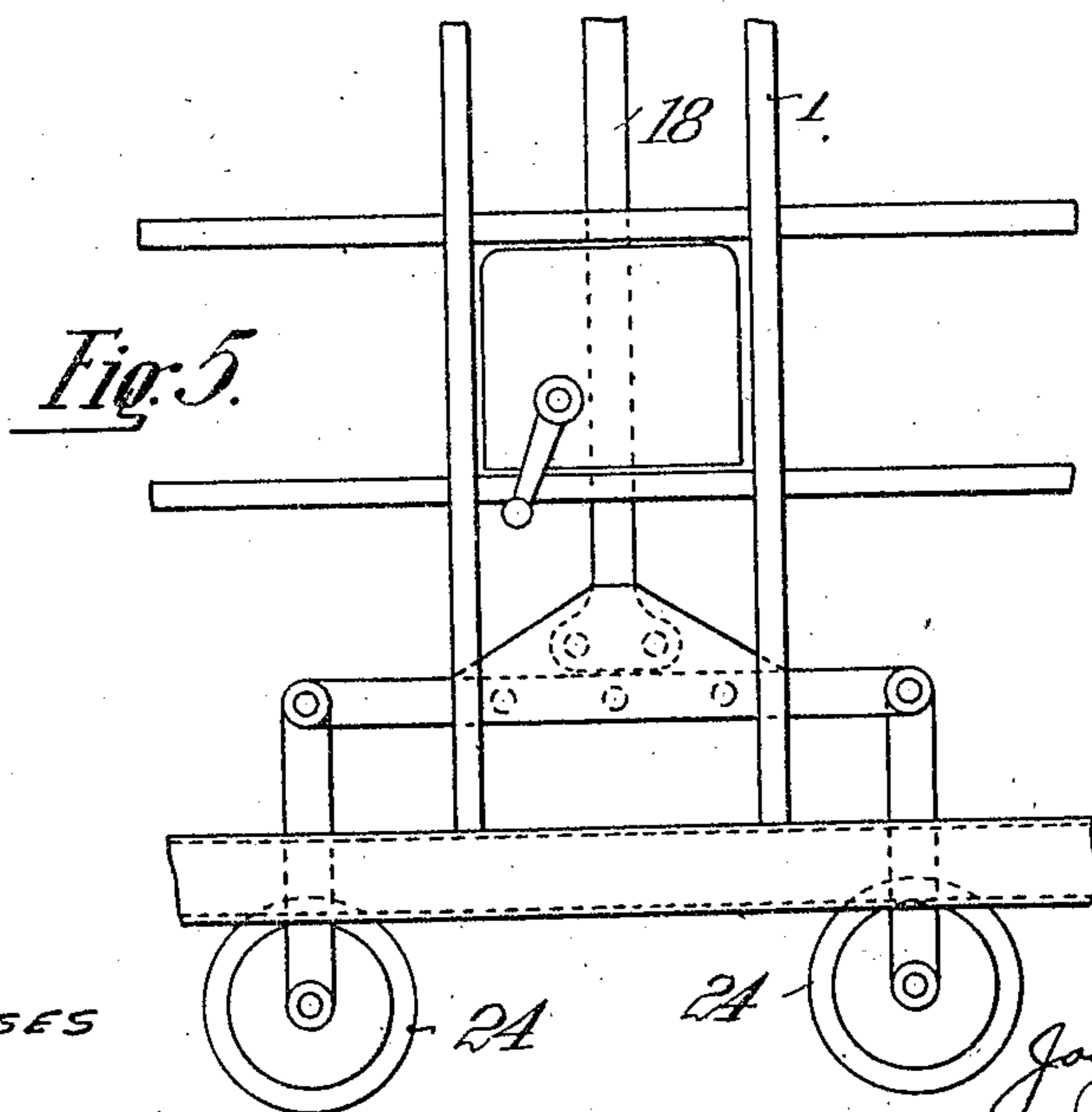
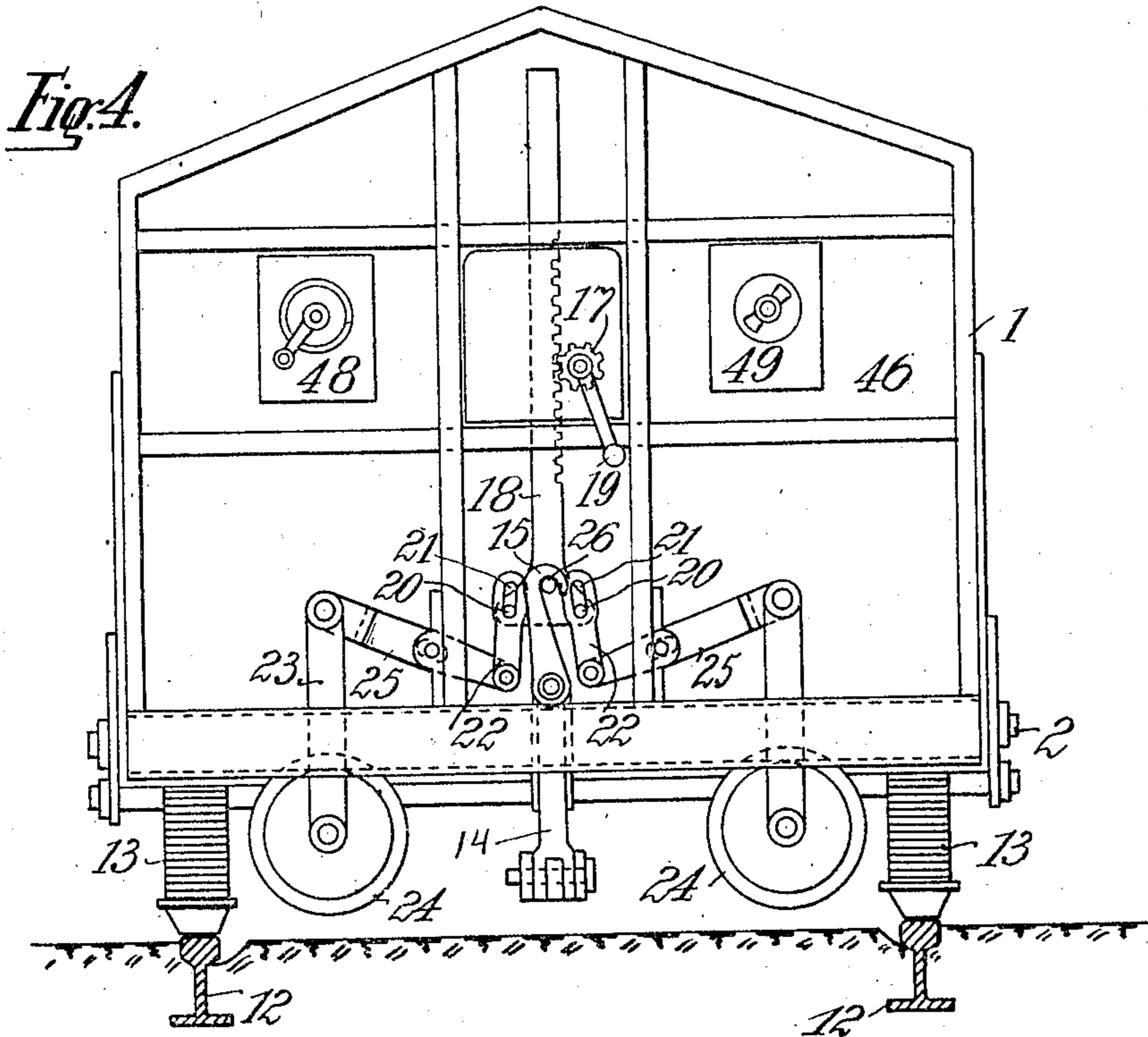
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WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH LANG, OF MANNHEIM, GERMANY.

RAIL-CORRUGATION-FILING-OFF MACHINE.

No. 916,332.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed August 27, 1908. Serial No. 450,548.

To all whom it may concern:

Be it known that I, JOSEPH LANG, a citizen of the Empire of Germany, residing at Mannheim, in the Empire of Germany, have invented a new and useful Rail-Corrugation-Filing-Off Machine, of which the following is a specification.

My invention consists of a machine adapted to file the upper surfaces of the rails in electric tramways or other railways so as to remove the known corrugations without disturbing the traffic on the railway and without tearing up the pavement. The machine is a vehicle which can be moved on the track in one direction and off the same in the cross direction at any moment and is provided with electromagnets which are adapted to bear on the rails and to attract them for securing the machine by turning on the current. The machine can be released at any moment by switching off the current from the electromagnets. Means are provided for lifting the wheels of the vehicle off the rails and thus increasing the load on the electromagnets whereby their adhering power is of course increased. An electromotor provided on the vehicle is adapted to take up the current from the overhead line and to drive a mechanism for reciprocating one or two files on one rail or the two rails. A set of cross wheels is provided for moving the vehicle to a side and thus permitting any tramcar to pass, and means are provided for normally holding these cross wheels above the pavement and for lowering them and thereby lifting the wheels proper of the vehicle off the rails, so that the vehicle can be moved off.

I will now proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a horizontal section through a rail corrugation filing-off machine on the broken line A—B in Fig. 2, Fig. 2 is a vertical longitudinal section through the same on the line C—D in Fig. 1, with one of the rear wheels 24 omitted, Fig. 3 is a vertical cross section through the same on the line E—F in Fig. 1, Fig. 4 is a rear end view of the same, seen from left to right in Fig. 1, the electromotor and other parts being omitted, and Fig. 5 corresponds to Fig. 4 and shows a modification of certain parts.

Similar characters of reference refer to similar parts throughout the several views.

The machine comprises a carriage frame 1

of any known and approved construction, in which two horizontal shafts 2, 2 are mounted to turn. On the front shaft 2 are fastened three arms 3, 4, 4 and on the rear shaft 2 one bell-crank lever 5, 6 and two arms 7, 7. In the free ends of the four arms 4, 4 and 7, 7 two axles 8, 8 are mounted to turn, on which the four wheels 9, 9 of the vehicle are fastened. The front axle 8 is moreover in its middle pivotally connected with the arm 3 by two links 10, 10 and in a similar manner the rear axle 8 is pivotally connected with the arm 5 of the bell-crank lever 5, 6 by two links 10, 10. The two arms 3 and 5 are pivotally connected together by a rod 11 and the arm 6 is pivotally connected with a rod 14 which is vertically guided in the frame 1 and is provided with two hooks 15, 15 and a cross hole 16. Four pairs of electromagnets 13, 13 are fastened on the bottom side of the frame 1 at its four corners and are adapted to bear on the two rails 12, 12 and to attract them on the current passing through them.

At each end of the frame is provided a rack 18 which is adapted to be reciprocated by a pinion 17 rotated by a handle 19. On the lower end of each rack 18 are two pins 20, 20, which engage in slots 21, 21 of four links 22, 22. Two forked rods 23 are vertically guided in each end side of the frame 1 and carry two cross wheels 24, 24. They are pivotally connected with two two-armed levers 25, 25 which are slotted in their middles and are on their other ends pivotally connected with the four links 22, 22 mentioned above. The rear rack 18 is provided with a pin 26 (Figs 2 and 4) over which the two hooks 15, 15 can snap. It will be understood, that by turning the handle 19 of the rear pinion 17 in one direction the two hooks 15, 15 engaging over the pin 26 will draw the rod 14 and therewith also the arm 6 upward, so that by means of the shafts 2, 2 and their arms 4, 4, 7, 7 also the coupling rod 11 and the links 10, 10 the two shafts 8, 8 will be lowered and their wheels 9, 9 pressed on the rails 12, 12, whereby the four pairs of electromagnets 13, 13 are lifted off the rails 12, 12. At this moment a pin is passed through the hole 16 of the rod 14 over the respective part of the frame 1, so as to secure the parts named in their position. Then the machine can be moved forward on the rails 12, 12 or the pavement without damaging the electromagnets 13, 13. A draft bar 27

of any known construction is shown in Figs. 1 and 2 as provided for this purpose. On the other hand, if the said pin is withdrawn from the hole 16 and the handle 19 of the rear pinion 17 is turned in the opposite direction, the rack 18 will be so much lowered as to permit the two hooks 15, 15 to be turned off, when the rod 14 with the bell-crank lever 5, 6 will be disconnected from the rack 18. However, if the handle 19 of the rear pinion 17 is further turned, the rack 18 will strike the rod 14 and push it downward, so that the bell-crank lever 6, 5 will by the parts 2, 2, 4, 4, 7, 7, 5, 10, 10, 11, 11, 8, 8 raise all the four wheels 9, 9 a little off the rails 12, 12, since the two axles 8, 8 bear from below against the frame 1. At this moment the said pin is passed through the hole 16 beneath the frame 1 for securing the rod 14. In this case the whole weight of the machine will bear on the four pairs of electromagnets 13, 13 and load them, so that their adhering power on the rails 12, 12 will be necessarily increased. In case the handles 19, 19 of the two pinions 17, 17 are turned for raising the racks 18, 18, the pins 20, 20 of the latter will at last strike the upper ends of the slots 21, 21 (Fig. 4) and will press the four cross wheels 24, 24 downward by the parts 22, 25 and 23, so that the whole frame with the four wheels proper 9, 9 and the four pairs of electromagnets 13, 13 will be lifted off the rails 12, 12 and the pavement. Then the whole machine can be pushed from the track in the cross direction for permitting any tramcar to pass, so that the traffic is not disturbed. The lateral movement of the machine on the four cross wheels 24—24 can be effected quickly either by hand or by means of some animal or animals, suitable drawing means of any known construction (not shown) being provided for this purpose on the side of the frame 1.

Fastened on the frame 1 are two suitable guides 28, 28 of any known construction, in which two slides 29, 29 carrying files 30, 30 are mounted to reciprocate. An electromotor 31 is mounted on a board 32 fastened on the frame 1 and its armature shaft 33 is adapted to be coupled at will with either of two short shafts 34, 34 or with both of them by means of clutch couplings 35, 35 and handles 36, 36. The said short shafts 34, 34 are mounted in the frame 1 to turn and have fastened on them two pinions 37, 37, which mesh with two gear wheels 38, 38, that are mounted to turn on pins 39, 39 fastened on the frame 1. The two gear wheels 38, 38 are provided with two crank pins 40, 40, which are connected by two connecting rods 41, 41 with the upper arms 42, 42 of two two-armed levers rocking on two pins 43, 43. The lower arms 44, 44 of these two levers are slotted and in their slots engage two pins 45, 45 fastened in the two slides 29, 29 mentioned

above. It will be understood, that the electromotor 33 on being supplied with current and coupled with either of the two shafts 34, 34 or with both of them will set the one or two slides 29, 29 in reciprocating motion, so that their files 30, 30 can work the upper surfaces of the rails 12, 12 for removing the corrugations.

A suitable board 46 disposed on the frame 1 carries a resistance 47, a starting commutator 48 and a switch 49. Suitable lines 50 covered with protecting tubes 51 are disposed for supplying current through the said devices to the electromotor 31 and the four pairs of electromagnets 13, 13 and for leading it off through the four wheels 9, 9 and the rails 12, 12 which serve as returns.

Some known device (not shown) is disposed for taking up the current from the overhead line through the supplying wire 52.

The machine operates as follows: The two hooks 15, 15 having been put over the pin 26 for connecting the bell-crank lever 5, 6 with the rack 18, the handle 19 of the rear pinion 17 is turned for raising the rack 18 until the hole 16 in the rod 14 is above the top side of the respective frame part, after which a pin is introduced into this hole for locking the rod 14, when the handle 19 is released. Then all the four pairs of electromagnets 13, 13 will be above the ground, so that the machine can be transported with safety over the pavement without damaging the electromagnets. After putting an animal to the draft-bar 27, the vehicle is driven to the respective place on the track. The handle 19 of the rear pinion 17 is then so turned as to move the rack 18 with the two hooks 15, 15 and the rod 14 a little upward, so that the pin can be withdrawn from the hole 16. Afterward the handle 19 is turned in the opposite direction for moving the rack 18 downward, until it strikes the rod 14 and pushes it so much downward that the hole 16 appears beneath the bottom side of the frame 1, when a pin is passed through it for checking the rod 14. Thereby the four wheels 9, 9 are lifted off the rails 12, 12 and the machine will load the four pairs of electromagnets 13, 13 with its whole weight. Next the line 52 is connected with the overhead line and the current is passed through the four pairs of electromagnets 13, 13 by switching on the switch 49. Thereby the machine is secured on the rails 12, 12. The electromotor 31 is coupled up with one or two shafts 34, 34, as may be required. By turning the starting commutator 48 the current is passed through the electromotor 31, the pressure of this current being regulated by means of the resistance 47 in proportion to the work of one for two files 30, 30 which the electromotor is required to reciprocate. After the files have performed their duty, the current is turned off from the electromotor 31 and the four

pairs of electromagnets 13, 13, the handle 19 of the rear pinion 17 is turned for pushing the rod 14 a little downward until the pin can be withdrawn from the hole 16, after which the handle 19 is turned in the opposite direction for raising the rod 14 until the pin can be pushed into its hole 16 for locking it. Thereupon the machine is moved forward through the distance of the parts of the rails 12, 12, which have been filed, or the machine may be moved to some other place on the track, next to the handle 19 of the rear pinion 17 is again turned for raising the two axles 8, 8 and loading the four pairs of electromagnets with the weight of the machine and the remaining operations described above are repeated.

Should the machine during its work be required to be moved off the track for permitting some tramcar or other vehicle to pass, the current is turned off from the electromotor 31 and the four pairs of electromagnets 13, 13, the handle 19 of the rear pinion 17 is turned first for lowering the four wheels 9, 9 on the rails 12, 12 and afterward for lifting the four pairs of electromagnets 13, 13 off the rails 12, 12. After the rod 14 has been secured by passing the pin through its hole 16 above the top face of the frame part, the two hooks 15, 15 are turned off from the pin 26 and the handles 19, 19 of the two pinions 17, 17 are turned for raising the two racks 18, 18. Then the two pins 21, 21 on each rack 18 will strike the upper ends of the slots 21, 21 in the links 22 and will by the parts 22, 25 and 23 press the four cross wheels 24, 24 on the pavement, so that the whole machine with the four wheels 9, 9 will be lifted off the rails and can be now pushed to a side, either by hand or by means of the animal. After the tramcar or other vehicle has passed by, the machine is returned to its initial position and is permitted to resume

its work. Thus the corrugations on the rails can be removed in an easy manner without disturbing the traffic or tearing up the pavement.

Of course the manner of operating the machine as described above may be modified.

The rail corrugation filing-off machine can be varied in many respects without departing from the spirit of my invention. The connection between the four cross wheels 24, 24 and the two racks 18 may be modified in a manner clearly illustrated at Fig. 5 which requires no further explanations. The two axles 8, 8 may be mounted to turn in four bearings which are in any known manner vertically guided in the frame 1 and are pivotally connected with the four arms 4, 4 and 7, 7.

I claim:

1. A machine for the purpose specified, comprising a frame, wheels for supporting said frame, electromagnets on said frame and adapted to bear on the rails for attracting them, files guided on said frame and adapted to file the upper surfaces of the rails, means for lifting said wheels off the rails and thus loading said electromagnets or lifting said electromagnets off the rails, and means for passing current through said electromagnets and for reciprocating said files.

2. A machine for the purpose specified, comprising a frame, wheels for supporting said frame, files guided on said frame and adapted to file the upper surfaces of the rails, means for lifting said wheels to lower the frame to bring the files in contact with the rails and means for reciprocating the files.

JOS. LANG.

Witnesses:

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RAY A. SIGSBEE.