W. D. GHERKY.

TRACK GRINDING MACHINE.

APPLICATION FILED FEB. 2, 1910. RENEWED OCT. 13, 1911.

1,031,640.

Patented July 2, 1912.

2 SHEETS—SHEET 1.

FIG. I.

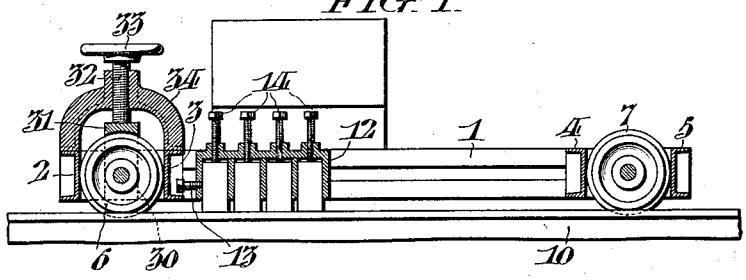

FIG. II.

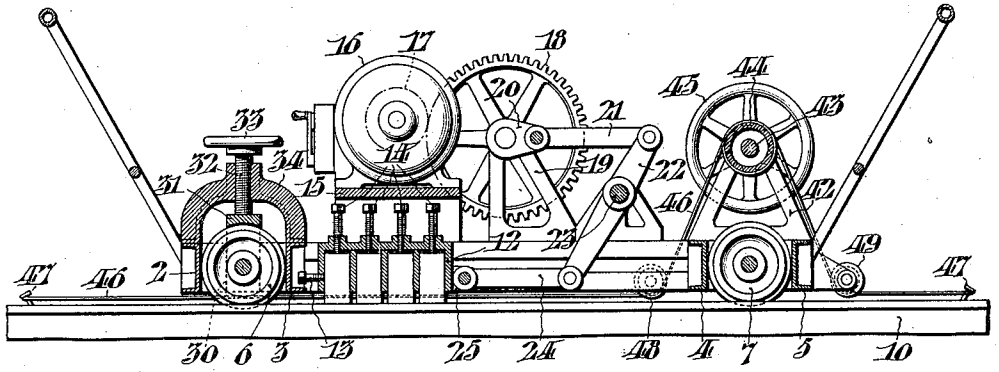

FIG. III.

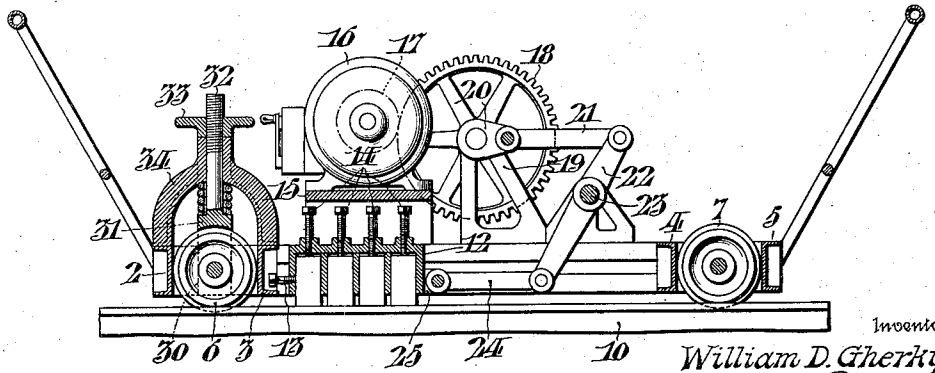

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FIG. IV.

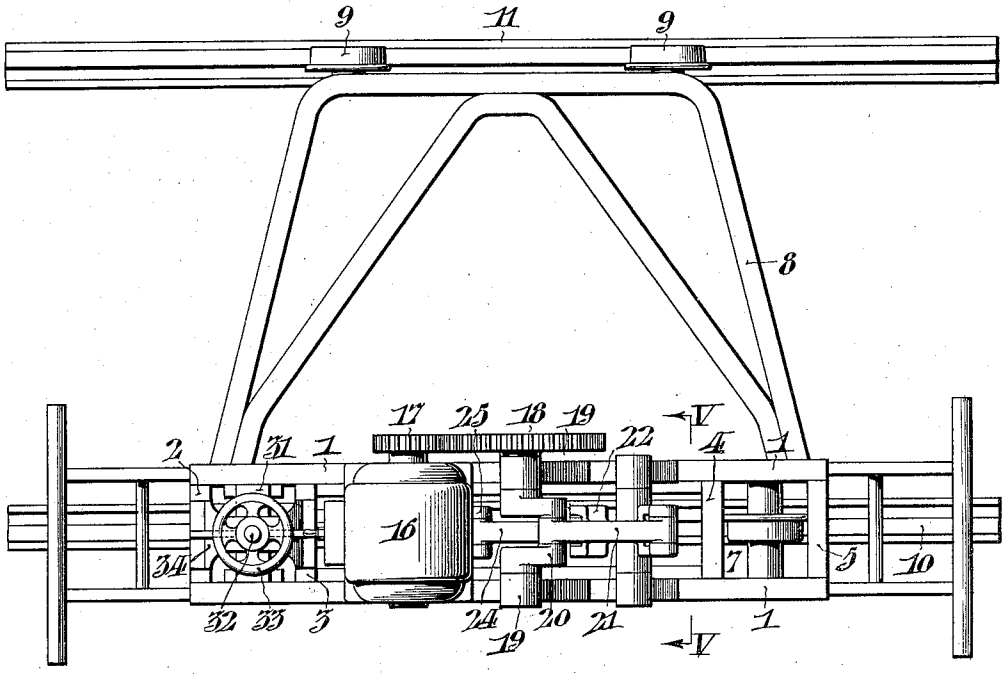
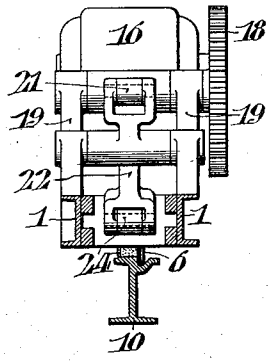


FIG. V.



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TRACK-GRINDING MACHINE.

1,031,640. Specification of Letters Patent. Patented July 2, 1912.

Application filed February 2, 1910, Serial No. 541,422. Renewed October 13, 1911. Serial No. 654,539.

To all whom it may concern:

Be it known that I, WILLIAM D. GHERKY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Track-Grinding Machines, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to a machine for grinding track rails in place by the reciprocation of an abrasive block in contact therewith.

It is an object of my invention to so construct and proportion my device as to obtain sufficient pressure upon the abrasive block during its reciprocation, without unduly weighting the entire machine. It is very desirable that such a machine shall be sufficiently light for the man or men operating it to quickly remove it temporarily from its position upon the rails to allow the passage of a car, thus avoiding blocking of the track. In machines of this character previously constructed, the abrasive block has been made large and massive, and has been heavily weighted. This has required a corresponding increase in the weight of the entire machine, in order to afford a sufficiently stable point of reaction from which to impart reciprocatory motion to the heavy abrasive block.

According to my invention, the reciprocating part which carries the abrasive block or blocks, is made no larger or heavier than is required by its structural capacity to hold and guide the grinding surfaces, and the necessary downward pressure to force this part against the rail is obtained by shifting, during the grinding operation, the weight of a large part of the machine upon the guide ways within which the abrasive part reciprocates and which therefore exert the required pressure upon it. To permit this shifting of the weight of the machine, anchorage means are employed as will be described.

In the accompanying drawings, Figure I, is a diagrammatic view showing in section an elementary form of my invention. Fig. II, is a similar view of a device illustrating the mechanism by which the reciprocation of the abrasive block is accomplished and also means for temporarily anchoring the device. Fig. III, is a longitudinal section illustrating a construction similar to the last, with a cushioning spring. Fig. IV, is a plan view of the form of the device shown in Fig. II. Fig. V, is a cross section indicated by the arrows V, V, in Fig. IV.

Referring to the said figures, the truck of the machine comprises a pair of parallel side channels 1, 1, which are united and spaced at their extremities by cross channels 2, 3, 4, and 5, between which are respectively journaled the wheels 6, and 7, which rest upon the rail 10. The truck of the device is also provided with a laterally extending frame 8, wherein are journaled the wheels 9, which rest upon the rail 11. The paired channels 1, 1, form a slide-way, within which is slidably supported a cross-head, which carries the grinder box 12. This grinder box is open on its lower side and contains a series of abrasive blocks suitably spaced therein, and all clamped and adjusted therein by means of the screw bolts 13, and 14.

The side channels are bridged in the region of the grinder box by a table 15, upon which is mounted a suitable electric motor 16, with its accompanying parts, the shaft of which carries a pinion 17, gearing with a wheel 18, the shaft of which is journaled in upright brackets 19, and includes the crank 20, connecting by link 21, with the lever 22, pivoted at 23, and united at its lower end by the pivoted link 24, to the lug 25, formed upon the side of the grinder box. By applying electricity derived from a convenient source, (as for example, an overhead trolley wire), to the motor, reciprocation of the grinder box between the side channels is secured.

It will be noted that the heavy parts which have thus been described are all mounted in close proximity to the region within which the grinder box reciprocates.

The wheel 6, which is nearest the grinder box, is mounted in journal boxes 30, united by a yoke 31, which is suitably supported with capacity of vertical motion by the side channels. Vertical motion and adjustment is imparted to this yoke with its journal boxes by the screw 32, turned by the hand wheel 33, at the top, and carried within the threaded interior of the supporting yoke 34, mounted on cross channels 2, and 3. By manipulating the screw to sufficiently raise the bearings of the wheel 6, this wheel may be lifted entirely from the track beneath it so that the weight of nearly the whole machine is thrown directly upon the grinder

box. In practice, this is done during the operation of the machine for grinding purposes, but when the grinding operation has been completed the bearings of the wheel 6, are again lowered, so that the weight of the machine rests upon its wheels.

In Fig. III, I have shown a coiled spring interposed between the yoke 31, and the yoke 34, so that a cushioning effect can be secured where it is not desired to take the entire weight off of the wheel 6, but only a limited portion of it.

The machine may be temporarily anchored by any well known means, such as shown in Fig. II, where the cross channels 4, and 5, are surmounted by a standard 42, supporting a shaft 43, which carries a rotating drum 44, and also a hand wheel 45, whereby the latter may be rotated. A cable 46, whose ends are secured to spikes 47, driven into the road bed in close proximity to rail 10, passes over guide rollers 48, and 49, and also around the drum 44. By manipulation of the hand wheel 45, rotating the drum, the anchored position of the truck may be varied and adjusted between the limits formed by the position of the spikes securing the ends of the cable.

It will be understood that other anchorage means may be employed, and also that the detailed parts of the apparatus may be varied without departing from my invention. My plan has been, instead of overweighting the grinder box, to so arrange and group all the necessarily heavy parts of the apparatus that by altering the vertical position of one of the supports of the frame, the weight of these parts may be superadded to that of the grinder box during the grinding operation, thus getting the necessary pressure upon the box without unduly increasing the weight of the machine. Other arrangements of apparatus or different groupings which accomplish this end, are within the scope of my invention.

It is to be observed that the claims herein are directed to the machine elements and combinations only. No claim is made herein to the method of grinding disclosed, since that forms the subject matter of a copending application, Serial No. 607,545, filed February 9, 1911.

Having thus described my invention, I claim:—

1. A machine for grinding track rails comprising a truck frame, supporting wheels journaled in bearings carried in said frame, means for effecting vertical adjustment of one of said bearings with respect to the frame, longitudinal guiding means on the frame, a grinding element fitted thereto and adapted to reciprocate thereon, and means carried on the frame for reciprocating said element, whereby the grinding element may be reduced in mass to that required for its special function, without regard to pressure in grinding, and the necessary pressure may be obtained by manipulation of the adjustable wheel bearing, so as to divide the weight of the frame between one or both wheels and the grinding element.

2. A machine for grinding railway rails comprising a truck frame, longitudinal guides thereon, a grinding element fitted to said guides, a motor mounted on the frame and connected to said element so as to reciprocate the same, a fixed supporting wheel for said frame, and a vertically adjustable supporting wheel for the same, said wheels and the grinding element being spaced apart longitudinally, whereby the adjustable wheel may be set so as to impose a portion of the weight of the frame and motor through the guides upon the grinding surface and the surface to be ground.

3. In a machine for grinding railway rails, the combination of a truck frame with supporting wheels, slide ways on said truck frame, a grinding element fitted to said ways, means carried on the frame for reciprocating said grinding element on the ways, supporting wheels on the frame, a vertically adjustable bearing carrying one of said wheels, means for adjusting said bearing vertically, and a spring interposed between the said adjustable bearing and a point of resistance fixed in relation to the frame, whereby downward pressure due to the weight of the truck frame and its superimposed parts may be communicated through the slides to the grinding element throughout its path of travel.

4. A grinding machine comprising the following instrumentalities: a truck frame having a pair of tandem wheels journaled in bearings at its opposite ends, a vertically adjustable connection between one of said wheel bearings and the frame, a grinding element fitted to slide on the frame between the wheels, and a motor mounted on the frame, connected to the grinding element so as to reciprocate the same.

5. A machine for grinding railway rails comprising the following instrumentalities: a truck frame, a pair of supporting wheels journaled in bearings at opposite ends of said frame, a rigid connection between one of said wheel bearings and the frame, and an adjustable resilient connection between the other wheel bearing and the frame, a holder fitted to reciprocate on the frame between the wheels, grinding means fitted to said holder, a motor mounted on the frame intermediate of the supporting wheels, and connections from said motor to said holder to reciprocate the same, whereby a grinding element may be employed of small mass relatively to the total mass of the machine, and a graduated pressure exerted thereon throughout its entire travel.

6. A machine for grinding railway rails having an extended supporting surface resting on the rail to maintain uniformity of cut, said surface having a length greater than the wave length of any corrugation or any localized depression to be ground out, a second support also resting on the rail, and means to regulate the depth of cut by varying the weight carried on said supporting surface.

7. A machine for grinding railway rails having an extended supporting surface resting on the rail to be ground, to maintain uniformity of cut with respect to the average surface line, said surface having a length greater than the wave length of any corrugation or any localized depression to be ground out, an independent support for the machine also resting on the rail, and means to regulate the depth of cut by varying the weight carried on said supporting surface.

8. A machine for grinding railway rails having a frame carrying a grinding element and supported in part on an extended supporting surface traveling on the rail to be ground, said surface having a length greater than the wave length of any corrugation or any localized depression to be ground out, an independent support for the frame, and means to determine the depth of cut by raising and lowering the frame with respect to the extended surface.

9. A machine for grinding railway rails comprising the following instrumentalities: a frame, a grinding element carried thereby, a fixed support for the frame adapted to travel on the rail to be ground, and a movable support also traveling on the rail and adapted to be raised and lowered with respect to the frame so as to vary the depth of cut, the proportions and arrangements of the parts being such that the frame is at all times supported upon, and the depth of cut determined with respect to an extended contact surface traveling on the rail, and of a length greater than the wave length of any corrugation or of a localized depression to be ground out.

10. A machine for grinding railway rails comprising the following instrumentalities: a frame, a plurality of supporting means carried thereon and adapted to engage the rails, a grinding element on the frame and adapted to be reciprocated thereon over the rail, and means for effecting vertical adjustment of one of said supporting means with respect to the frame, whereby variable pressure may be obtained on the grinding element by manipulation of the adjustable support, so as to divide the weight of the frame between one or both supports and the grinding element.

11. In a machine for grinding railway rails, the combination of a truck frame with supporting wheels, bearings on said truck frame, a grinding element supported in said bearings, means carried on the frame for operating said grinding element, and a vertically adjustable resilient supporting means for a portion of said frame separate from and operable independently of said grinding element to vary the weight of the frame imposed on said grinding element.

In testimony whereof, I have hereunto signed my name, at Philadelphia, Pennsylvania, this thirty-first day of January, 1910.

WILLIAM D. GHERKY.

Witnesses:
JAMES H. BELL,
E. L. FULLERTON.