W. D. GHERKY.

METHOD OF GRINDING.

APPLICATION FILED FEB. 9, 1911.

1,207,159.

Patented Dec. 5, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

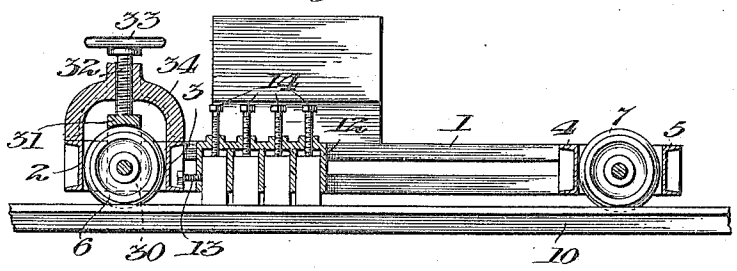


Fig. 2.

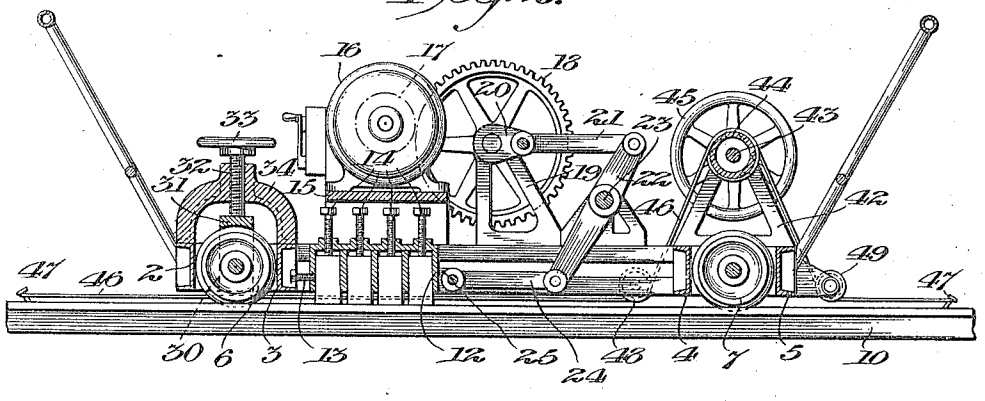
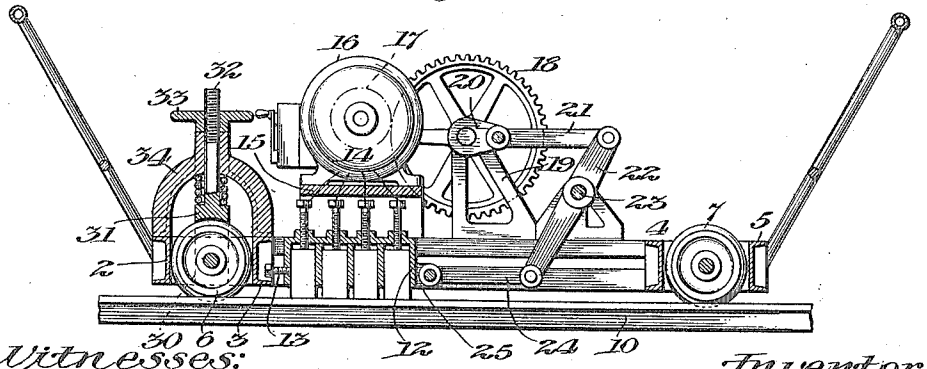


Fig. 3.



Witnesses:
H. S. Lowenstein.
James A. Marr

Inventor:
William D. Gherky.
by Edward E. Owen
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 4.

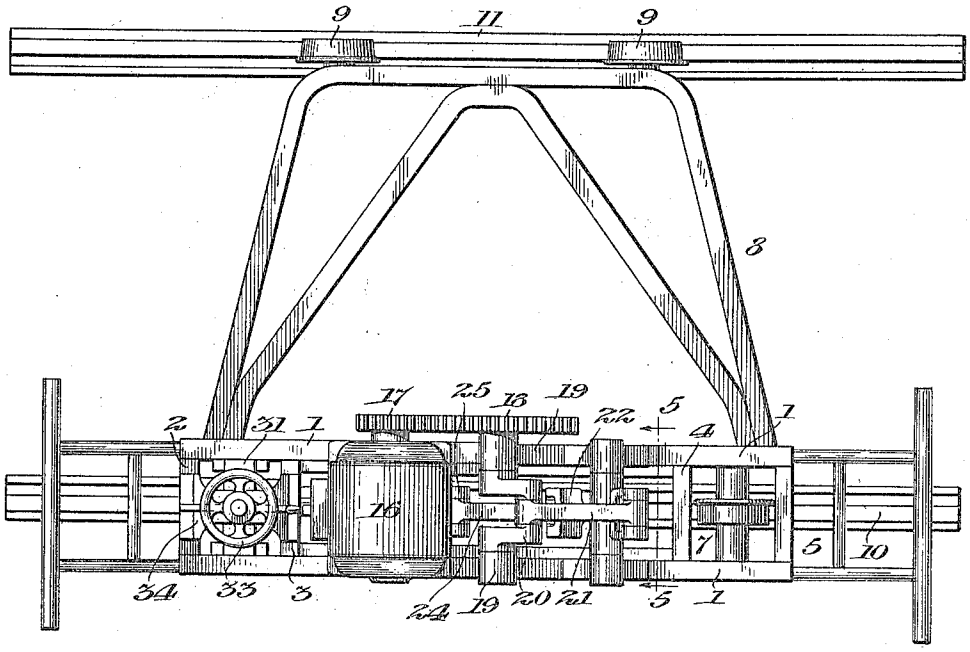
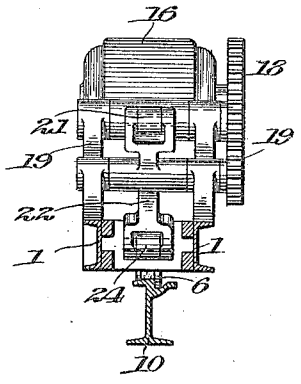


Fig. 5.



Witnesses:
H. F. Lowenstein
James A. Marr.

Inventor:
William D. Gherky
by Edward E. Clemens
Atty

THE NOHR'S PETERS CO., PHOTO LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM D. GHERKY, OF PHILADELPHIA, PENNSYLVANIA.

METHOD OF GRINDING.

1,207,159. Specification of Letters Patent. Patented Dec. 5, 1916.

Original application filed February 2, 1910, Serial No. 541,422. Divided and this application filed February 9, 1911. Serial No. 607,545.

To all whom it may concern:

Be it known that I, WILLIAM D. GHERKY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Grinding, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to the art of grinding and has for its object the improvement of methods heretofore practised, more especially in connection with the grinding of railway rails.

The essential and characteristic features of the present method are disclosed in my prior application Serial No. 541,422, filed February 2, 1910, and this present application is filed as a division thereof. In the former case however, the invention claimed being a machine, no other means than this machine is disclosed for practising the method. It will be apparent after reading the present specification, that the method may be practised with a variety of apparatuses, operated either by power or by hand.

Briefly stated, my improved method consists in grinding an extended surface by successive steps, using a body having large mass for producing progression and imparting pressure to the grinding surfaces, but regulating this pressure by dividing the imposition of the mass referred to between the surface grinding and the surface to be ground, providing also for a variable or resilient relation between the three, whereby the moving grinder may be of such small mass or weight as to require much less energy than heretofore for successful operation without any corresponding reduction in efficiency.

This being a divisional application, the means for practising my method herein described and illustrated must necessarily be identical with those disclosed in the parent application; and such means are illustrated in the accompanying drawings in which—

Figure 1 is a side view with parts in section showing only the essential features of the machine, Fig. 2 is a similar view of a complete machine, Fig. 3 is a similar view of a modification having a cushioning device, Fig. 4 is a plan view of the machine shown in Fig. 2, and Fig. 5 is a cross sectional view on the line 5—5 of Fig. 4, looking in the direction of the arrows.

Referring to the drawings, the machine comprises a truck with tandem wheels flanged to run upon one rail of a pair, an out-rigger carrying similar wheels to run upon the mate-rail, a grinder mounted to reciprocate on the truck, with its grinding surface in contact with that of the first rail, and being alined thereon by the tandem wheels, a motor on the truck for reciprocating the grinder, a resilient connection between the truck and the grinder, with adjustable means for dividing the weight of the entire machine between the rail and the grinder, that is to say the surface grinding and the surface to be ground. More specifically stated, the truck has a pair of side members 1—1, connected at their ends by cross members 2—3—4—5, and carrying journal bearings for the axles of the tandem wheels 6—7, which run upon the rail 10. The outrigger is indicated at 8, and is provided with wheels 9, running upon the mate-rail 11. The sides of the truck form parallel guides, upon which the grinding element 12 is fitted to reciprocate. This element comprises a box open on its lower side to receive a tandem set of abradent bricks clamped together and adjusted by means of bolts 13, 14. The motor 16 is mounted upon a platform 15 bridging the members 1—1, and its pinion 17 meshes with a wheel 18, the shaft of which is journaled in brackets 19 and carries a crank 20 connected through links 21 and 24 and a lever 22, pivoted at 23, to the grinder 12. Power developed in the motor is thus transmitted to the grinder the resultant motion being transformed from rotary into reciprocating during transmission. When grinding railway rails power is derived from the overhead trolley wire. All the heavy parts thus mentioned are mounted in close proximity to the path of travel of the grinder. The wheel 6 is journaled in box 30 connected by yoke 31 moving in vertical slides on the side members 1—1 of the truck frame. Vertical adjustment of the yoke is produced by the screw 32 connected to hand wheel 33 and threaded into the yoke 34 mounted on cross members 2 and 3 of the frame. By operating this screw so as to raise the yoke carrying the bearing of the wheel 6, the weight of the

entire machine may be divided between the track and the grinder, and as the heaviest parts are mounted in proximity to the grinder, nearly the entire weight may be thus communicated to the grinding surface.

In Fig. 3 a coil spring is shown interposed between the yoke 31 and the yoke 34, so as to produce a cushioned or resilient connection between the superimposed mass and the grinder. This not only enables a finer division of the weight referred to, but it prevents any shock to or strain of the mechanism due to unexpected inequalities or obstructions on the rail surface. According to this method, the extended surface of the rail is ground in successive operations, and at each stage or step, an anchorage is provided for the truck, the superimposed mass being thus maintained stationary while the relatively attenuated grinder is moving. The anchorage means illustrated herein comprise a pair of spikes 47 driven into the road bed, with a rope or cable 46 passing therefrom over rollers 48 and 49 and a drum 44. The machine is shifted by rotating the drum through the agency of the hand wheel 45.

For my present purpose, the essential features of this apparatus are the frame and connected parts having relatively large mass, and provided with means for moving the mass; a grinder relatively attenuated as to mass, and a variable connection (through the screw 32 and the spring 50) between the frame and the grinder. It will be quite evident after reading this description that the mechanism specifically illustrated and described may be varied at will without affecting the principle involved in my method. For example, the grinder may be reciprocated by hand, and the superimposed mass may be controlled and moved by hand. The saving thus effected is very considerable both in time and in power, because, while the frictional resistance remains unaltered of necessity, the much greater resistance and loss of power involved in reversing the motion of a heavy body are saved. The mass in the present case is superimposed upon the grinding surface as heretofore, but as it remains stationary while the grinder moves, its great inertia may be disregarded.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

The method of variably dressing rail heads by means of an abrasive or grinding element of relatively small mass, which consists in reciprocating said element so as to cause a primary abrasive surface of greater extent than any single corrugation or depression to travel back and forth through a determinate and limited path over and in constant contact with the surface of the rail, and exposing said element throughout its entire travel to weight or pressure through an interposed resilient medium adjustable as to its resiliency, whereby with a light and invariable mass the rate of cut and the degree of abrasion may be closely and efficiently regulated, and successive cuts with overlapping ends may be effectively tapered off.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. GHERKY.

Witnesses:

JAMES S. CLIFFORD,

EDWARD E. CLEMENT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."