

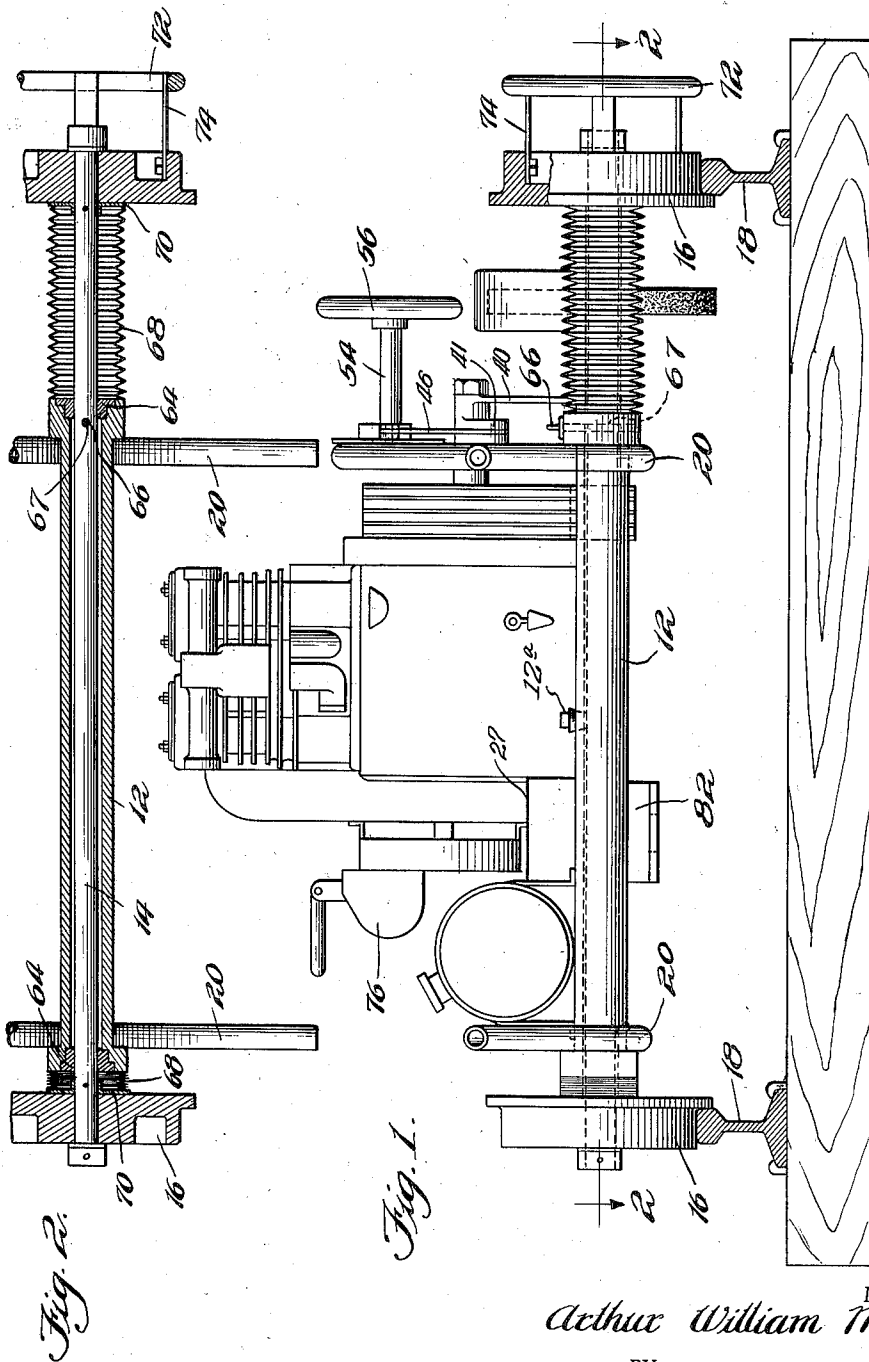
July 14, 1936.

A. W. MALL
RAIL SURFACE GRINDER

2,047,591

Filed May 9, 1935

3 Sheets-Sheet 1



INVENTOR.
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BY
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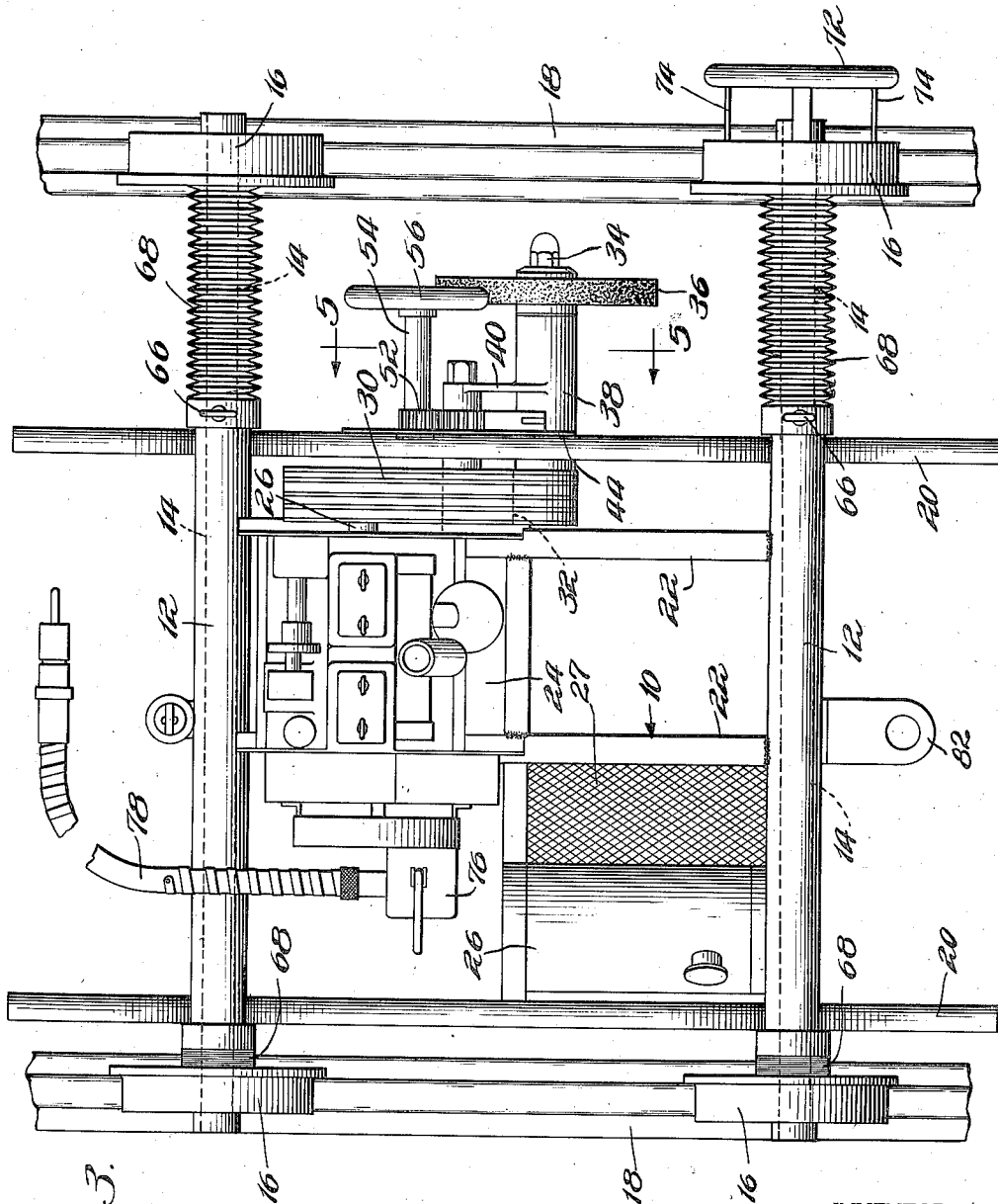
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RAIL SURFACE GRINDER

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3 Sheets-Sheet 2



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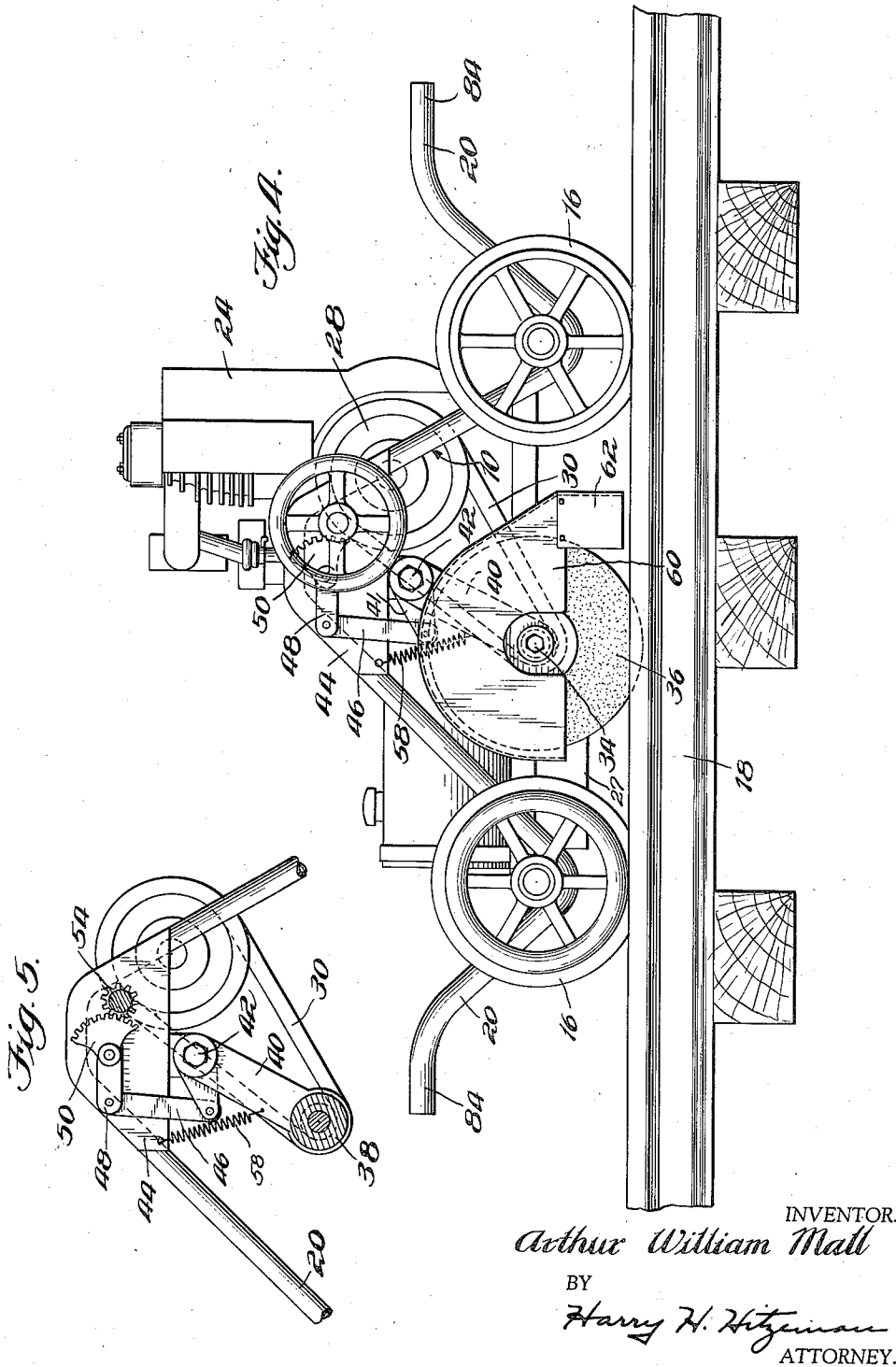
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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,047,591

RAIL SURFACE GRINDER

Arthur William Mall, Chicago, Ill.

Application May 9, 1935, Serial No. 20,650

13 Claims. (Cl. 51-178)

My invention relates to improvements in apparatus for surfacing or grinding rails of railway tracks.

The electrical arc method of welding rails has now come into general use on both electrical and steam railroads. An electrical weld however, leaves a roughened surface, thus necessitating the use of suitable apparatus for resurfacing the rails. For this purpose it has been proposed to employ a portable grinding machine mounted upon a truck.

These machines generally comprise a frame supporting a motor and an adjustable grinding wheel mounted thereon and driven by the motor.

The principal object of my invention is to provide an improved high speed track grinder of the portable type having a single abrasive or grinding wheel.

A further object of the invention is to provide an improved structure whereby the grinding wheel and associated parts may be laterally adjusted.

A further object of the invention is to provide improved apparatus of the type described having novel means for adjusting the vertical feed of the grinding wheel.

A further object of my invention is to provide an improved apparatus of the class described having a single abrasive wheel suitably disposed and adjustably mounted for movement in both a lateral and vertical direction with respect to the track rail.

A further object of my invention is to provide improved means associated with said frame for locking the same in an in-operative position.

Other objects and advantages will be more apparent by the following description wherein reference is had to the accompanying three sheets of drawings, upon which one embodiment of my invention is illustrated:

Fig. 1 is a front elevational view of my improved apparatus;

Fig. 2 is a plan sectional view taken on the lines 2-2 of Fig. 1;

Fig. 3 is a plan view of my improved apparatus;

Fig. 4 is a side elevational view thereof with the grinding wheel shown in an operative position; and

Fig. 5 is a fragmentary sectional view showing the mechanism for vertically adjusting the grinding wheel and is taken on the lines 5-5 of Fig. 3.

The type of grinding machine herein described is adapted for use by steam or electric railroads in removing surplus metal deposited on the rails,

for the purpose of leveling cupped joints, and any other special track work affected by arc welding and the like. The machine generally comprises a frame 10 adapted to be mounted upon a pair of axle housings 12 which are supported upon the cross-axes 14. Standard track wheels 16 are journaled upon the axles 14 and so positioned that they can be trained upon the rails 18 which are to be worked upon.

The frame 10 may be provided with the longitudinal frame members 20 at the sides thereof which are welded or otherwise rigidly secured to the axle housings 12. A pair of horizontal members 22 are provided between the axle housing 12 to support a suitable gasoline motor 24. A gasoline tank 25 and cooling apparatus 27 may be supported upon suitable additional frame members between the longitudinal rails 20 and the axle housings 12. The motor 24 may have a drive shaft 26 extending from one side thereof and drive a pulley 28 upon which a multiple V belt member 30 is trained. The belt 30 may be trained over a pulley 32 mounted upon a shaft 34 upon which the grinding wheel 36 is secured. In this manner, a drive is secured from the motor to the grinding wheel 36. The shaft 34 may be mounted in a spindle member 38 which has an arm 40 extending upwardly therefrom and is pivotally supported from a bolt member 42. The bolt member 42 is journaled in a portion of the plate 44 which is welded or otherwise suitably connected to one side of one of the longitudinal bar members 20.

Means for raising or lowering the spindle 38 and grinding wheel 36 are provided and may comprise a link member 46 pivotally secured to a bar member 41 rigidly connected to the arm 40 at one end and pivotally connected at the other end to an extension 48 on a segmental gear member 50 that is pivoted in the plate 44 and meshes with the face gear 52 secured to the spindle 54 of a hand wheel 56. With the arrangement as shown, by rotating the hand wheel in one direction, the grinding wheel will be raised from the rails and by rotating the hand wheel in the opposite direction the grinding wheel will be lowered into engagement with the rails.

In order to assist the operator in operating the mechanism I have provided a strong spring member 58 connected between the plate 44 and the arm 40 of the grinding wheel spindle 38. Thus when an operator is not holding the grinding wheel down against the rail being ground the spring operates to raise the grinding wheel out of an operative position and into an inoperative

position. In order to prevent sparks which are produced in a grinding operation from flying at random, I provide a spark breaker or grinding wheel guard 60 over the grinding wheel. This may include a vertically suspended member 62 adjacent the rear lower side of the grinding wheel.

One of the important features of my improved construction is the provision of a frame which is capable of being moved as a unit laterally of the rails. Accordingly, as shown in Fig. 2, I provide the housings 12 with suitable bronze bearings 64 that are adapted to ride on the axles 14. A locking device is also provided comprising a bolt member 66 capable of being dropped through suitable openings 67 in the axles 14 to lock the frame in an inoperative position upon the axles 14. I also provide extensible guards in the form of accordion type protection jackets 68 between the ends of axle housings 12 and the hubs of the wheels 16. These jackets may be fastened to the ends of axle housings 12 and at the wheels to suitable collar members 70 pinned to the axles 14.

In order to move the grinding wheel 36 lengthwise of a rail being ground, I provide a hand wheel 72 connected by suitable straps 74 to one of the wheels 16. Thus when an operator is grinding on the side or top of a rail and desires to move the grinder longitudinally thereof, it is only necessary to move the entire apparatus by turning on the hand wheel 72.

A friction clutch 76 and a flexible shaft member 78 may be connected to one side of the motor 24 so that a rail slot grinder or other suitable grinding or working device may be driven from the motor of the rail grinder. Means for towing the apparatus along the track may be provided and comprises a bracket 82 that is welded or otherwise secured to the forward end of the front axle housing 12. The longitudinal frame members 20 are formed with the raised handle portions 84 so that the same may be easily grasped for pushing the apparatus from place to place on a track being operated upon.

While I have shown the axle 14 as being stationary with respect to the frame so that the wheels are journaled thereon, I also contemplate that a revolving axle may be used, in which case jackets 68 would be provided with suitable shield members 70 at their outer ends that would be rotatably held against the wheels 16. It will further be apparent that with the above described construction of axle and axle housing, the space provided about the axle may form a suitable oil reservoir so that a smooth and easy movement may be obtained in shifting the frame upon the axle. For this purpose, a suitable inlet plug 12A may be provided.

While I have illustrated and described a specific embodiment of my invention, it will be understood by those skilled in the art that changes and modifications may be made in the specific details shown and I do not wish to limit myself in any particular. Rather, what I desire to secure and protect by Letters Patent of the United States is:

1. Apparatus of the class described comprising a frame formed from a pair of spaced W-shaped members, a pair of horizontal axle housings secured thereto, a pair of axles in said housings, wheels secured to the ends of said axles and a motor driven grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

2. Apparatus of the class described comprising a frame formed from a pair of parallel spaced W-shaped members, a pair of horizontal axle housings rigidly secured thereto, a pair of axles in said housings, means for securing said frame in a fixed position on said axles, wheels secured to the ends of said axles, a motor driven grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

3. Apparatus of the class described comprising a frame formed from a pair of parallel longitudinally directed spaced W-shaped members, a pair of horizontal axle housings rigidly secured thereto, a pair of cross axles in said housings, wheels secured to the ends of said axles, a motor and an adjustable grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel and means for locking said frame in a fixed position.

4. A portable railway track grinding machine comprising a frame having longitudinal frame members, cross members forming axle housing and motor support members, a motor on said frame, a vertically positioned grinding wheel driven thereby, axles mounted in said axle housings, traction wheels supporting said frame and arranged to travel on the rails to be ground, said frame and parts associated therewith being slidably mounted on said axles whereby said grinding wheel is adapted to be moved into and out of engagement with a rail.

5. A portable railway track grinding machine comprising a frame having longitudinal frame members, cross members forming axle housing and motor support members, a motor on said frame, a vertically positioned grinding wheel driven thereby, axles mounted in said axle housings, traction wheels supporting said frame and arranged to travel on the rails to be ground, said frame and parts associated therewith being slidably mounted on said axles whereby said grinding wheel is adapted to be moved laterally into and out of engagement with a rail and means for vertically adjusting said grinding wheel.

6. A portable railway track grinding machine comprising a frame having longitudinal frame members, cross members forming axle housing and motor support members, a motor on said frame, a vertically positioned grinding wheel driven thereby, axles mounted in said axle housings, traction wheels supporting said frame and arranged to travel on the rails to be ground, said frame and parts associated therewith being slidably mounted on said axles whereby said grinding wheel is adapted to be moved laterally into and out of engagement with a rail and means for vertically adjusting said grinding wheel, said means including a pivotally mounted bracket for supporting said grinding wheel and a chain drive member between said motor and said grinding wheel.

7. A rail grinder comprising a wheeled frame adapted to operate upon a railed track, said frame including a pair of axle housings, a pair of axles, wheels on said axles adapted to ride on said rails, said axle housings being shorter than said axles, extensible guards on both sides of said axle housings extending to said wheels, a motor on said frame and a grinding wheel driven thereby, said frame being capable of being shifted transversely on said axles.

8. A rail grinder comprising a wheeled frame

adapted to operate upon a railed track, said frame including a pair of spaced parallel frame members, a pair of axle housings secured thereto, a pair of axles, wheels on said axles adapted to ride on said rails, said axle housings being shorter than said axles, extensible closure guards on both sides of said axle housings extending to said wheels, a motor on said frame and a grinding wheel driven thereby, said frame being capable of being shifted transversely on said axles and said grinding wheel being adapted to be vertically adjusted.

9. Apparatus of the class described comprising a frame including a pair of horizontal axle housings, a pair of axles in said housings, wheels secured to the ends of said axles and a motor driven grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

10. A portable railway track grinding machine comprising a frame having cross members forming axle housing and motor support members, a motor on said frame, a vertically positioned grinding wheel driven thereby, axles mounted in said axle housings and traction wheels supporting said frame and arranged to travel on the rails to be ground, said frame and parts associated therewith being slidably mounted on said axles.

11. Apparatus of the class described comprising

a frame formed from a pair of spaced support members, a pair of horizontal axle housings secured thereto, a pair of axles in said housings, wheels secured to the ends of said axles and a motor driven grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

12. Apparatus of the class described comprising a frame formed from a pair of parallel spaced support members, a pair of horizontal axle housings rigidly secured thereto, a pair of axles in said housings, means for securing said frame in a fixed position on said axles, wheels secured to the ends of said axles, a motor driven grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel.

13. Apparatus of the class described comprising a frame formed from a pair of parallel longitudinally directed spaced support members, a pair of horizontal axle housings rigidly secured thereto, a pair of cross axles in said housings, wheels secured to the ends of said axles, a motor and an adjustable grinding wheel carried by said frame, said frame being capable of horizontal movement on said axles to provide a lateral adjustment for said grinding wheel and means for locking said frame in a fixed position.

ARTHUR WILLIAM MALL.