F. E. DAMRON.

RAILROAD TRACK DRILL.

APPLICATION FILED NOV. 30, 1908.

970,312.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.

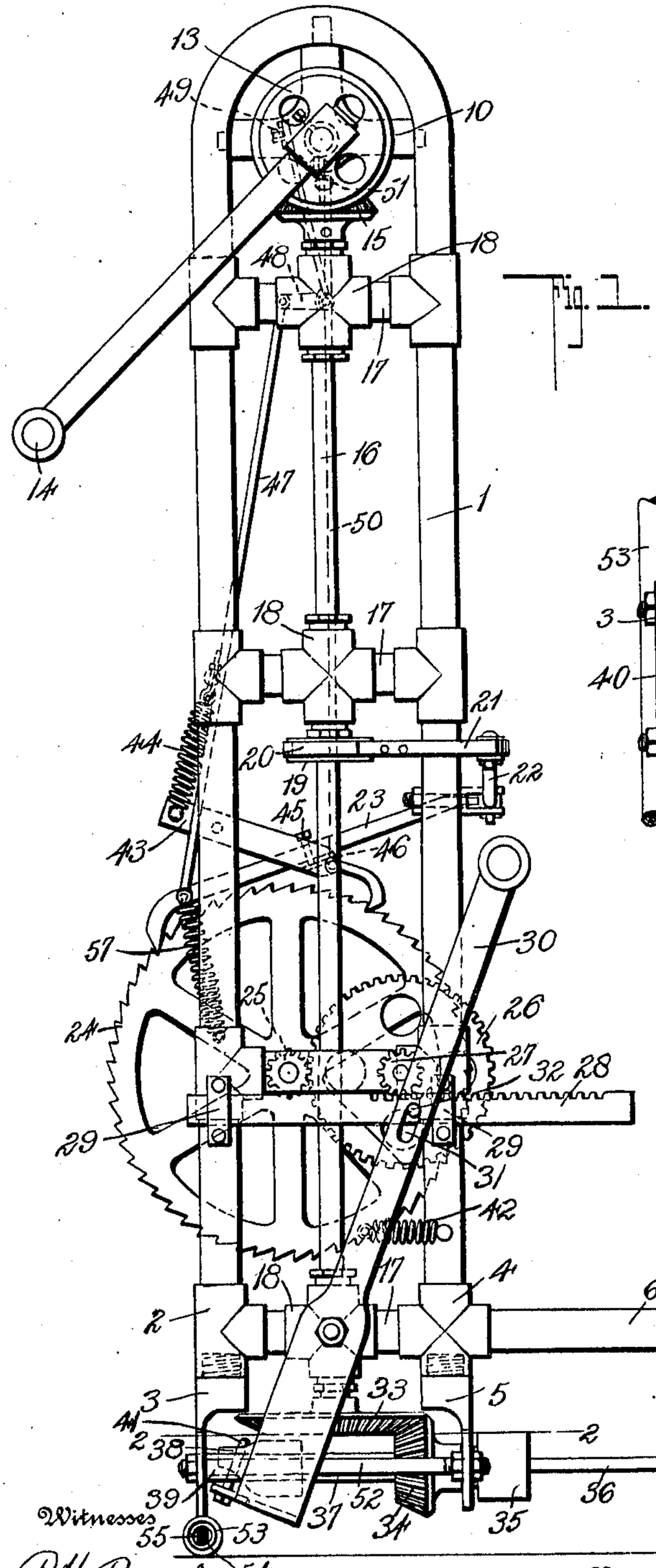


Fig. 1.

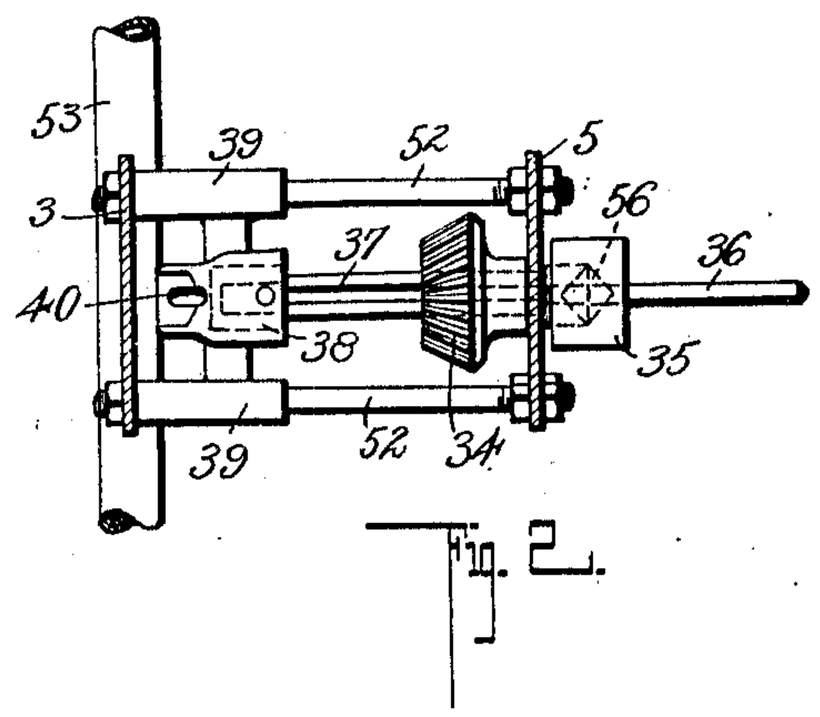
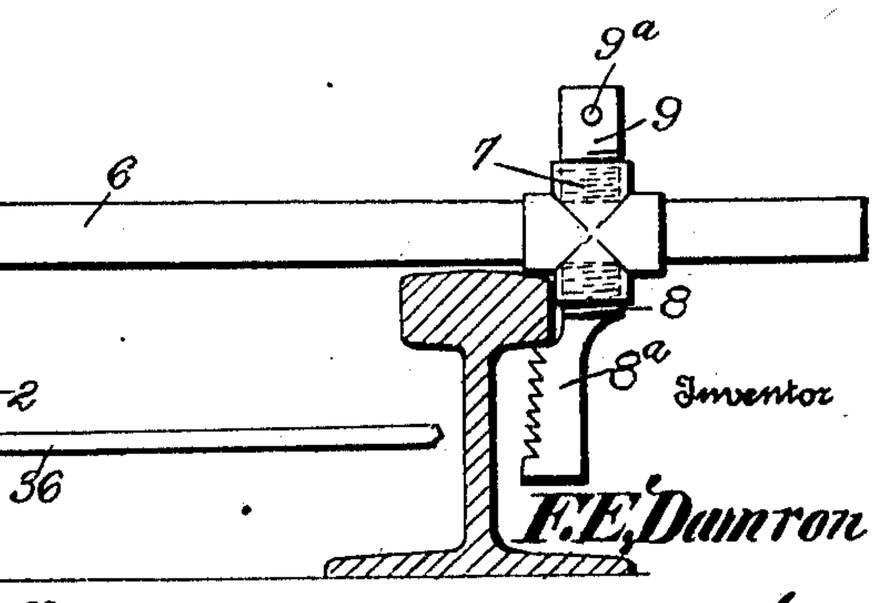


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

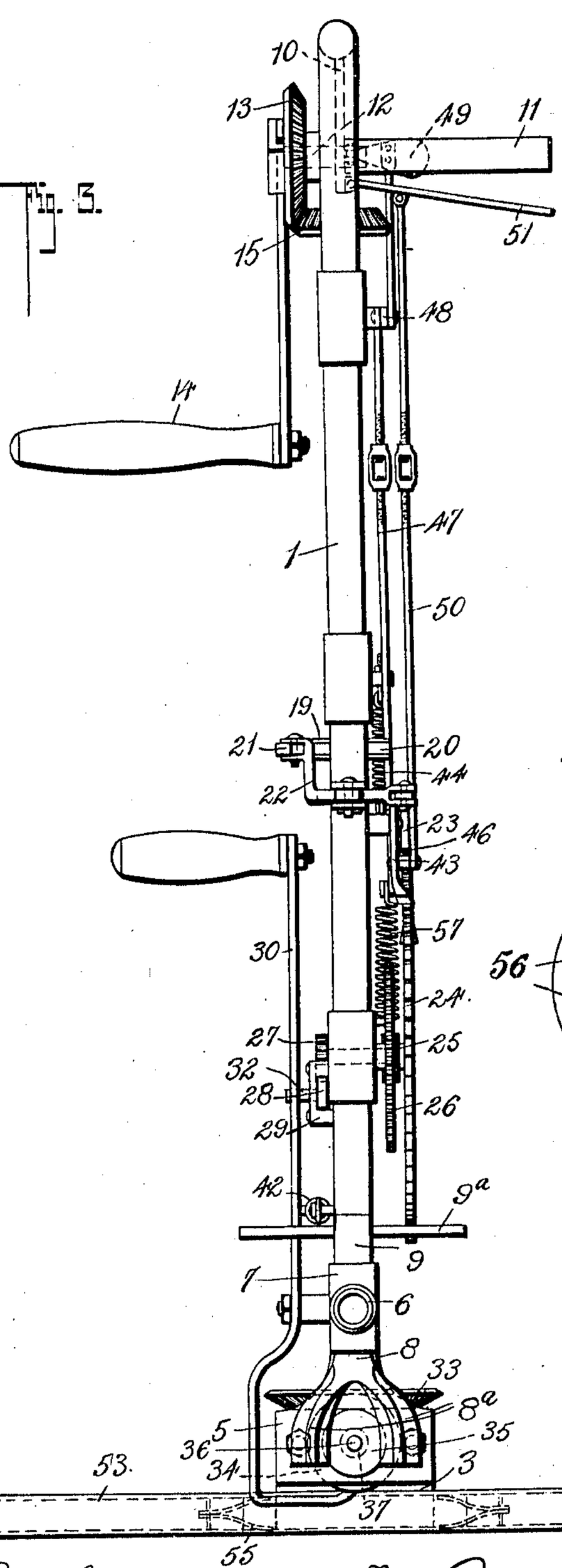


Fig. 4.

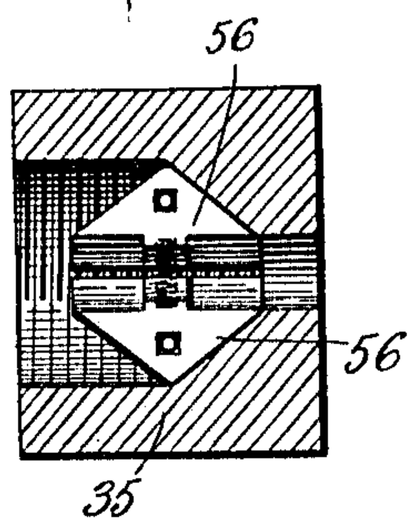
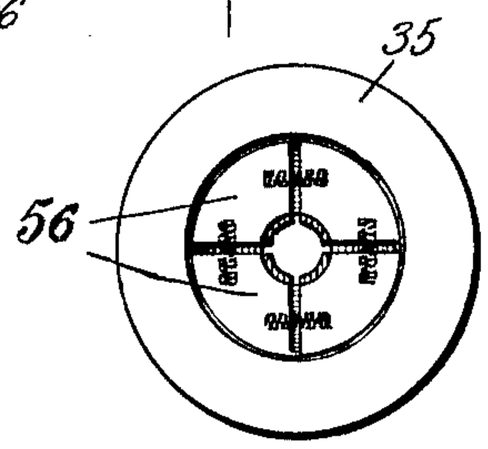


Fig. 5.



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RAILROAD-TRACK DRILL.

970,312. Specification of Letters Patent. **Patented Sept. 13, 1910.**

Application filed November 30, 1908. Serial No. 465,142.

To all whom it may concern:

Be it known that I, FRANK E. DAMRON, a citizen of the United States, and residing at Roanoke, in the county of Roanoke and State of Virginia, have invented a new and useful Improvement in Railroad-Track Drills, of which the following is a specification.

This invention is an adjustable hand operated track drill, and the object of the invention is a drill of this kind which can be easily transported from place to place, readily set into position for use, and which is provided with an automatic feed, said feed being also under control of the operator, and means for automatically withdrawing the bit upon completion of the drilling.

The invention consists of certain novel features of construction especially designed to attain the above set forth objects, and which are described in the specification, pointed out in the claims and shown in the accompanying drawings, in which,

Figure 1 is a side elevation of the device, a track rail being shown in cross section. Fig. 2 is a section on the line 2—2 of Fig. 1, an operating lever being omitted. Fig. 3 is a front elevation. Fig. 4 is a detail sectional view through a clutch. Fig. 5 is an end view of said clutch.

In constructing the device I employ a U-shaped tubular frame 1 and upon the lower free end of the rear member of said frame is secured a T-coupling 2 into which is threaded a supporting member 3. Upon the other member of the frame 1 is secured a 4-way coupling or union 4 to which is secured a front member 5 which forms a support for the drilling mechanism to be hereafter described. The frame 1 is further supported by a horizontally extending tubular piece 6 which passes through the coupling 4 and is threaded into the T-coupling 2. This piece 6 forms a brace which extends transversely across the track rail, and slidably mounted upon the same is a 4-way coupling 7 which carries a shank 8 bifurcated and notched to form holding members 8^a which engage the inner side of the rail. These holding members are locked in position by a set screw 9 which threads with the upper portion of the coupling 7 and bears upon the brace 6, said set screw being operated by a suitable hand rod 9^a. In the bow portion of the frame 1 I secure a bearing plate 10 from one side of which projects a suitable stationary handle 11 to be gripped by the left hand of the operator and by which the device is steadied while in use, and by means of which it may also be conveniently moved from place to place. The plate 10 also provides a suitable bearing for a shaft 12 upon which is mounted a bevel gear wheel 13 rotated by the right hand of the operator by means of a suitable handle 14. This gear meshes with and drives a bevel gear 15 fixed upon the upper end of a vertical shaft 16 which passes vertically and centrally through the frame 1. To brace the frame and also to provide suitable bearings for the shaft 16 I place suitable T-couplings upon the frame 1 which carry cross bars 17 which in turn support 4-way couplings 18 through which the shaft 16 loosely passes. Upon the shaft 16 and about midway the length of the frame 1 is fixed an eccentric 19 provided with an eccentric strap 20 and arm 21, which arm is pivotally connected to a crank shaft 22 to which is pivotally connected a feed pawl 23 which engages and rotates step by step a ratchet wheel 24, the pawl being operated back and forth by the eccentric 19 and the connecting parts above mentioned. Turning with said ratchet wheel and upon the same shaft is a small pinion 25, which meshes with a gear wheel 26 upon the shaft on which is a small pinion 27 which engages the teeth of a rack bar 28, said bar being mounted to slide in suitable brackets 29 carried by the side members of the frame.

It will be understood that the train gearing above referred to and shown in the drawings may be changed without in any way altering my invention, as this gearing is intended mainly for the purpose of regulating the speed of feed of the bit.

A lever 30 is pivotally mounted upon one side of the lowermost coupling 18 and is provided with a slot 31 into which projects a pin 32 carried by the rack bar 28 and it will be obvious that as the rack bar travels rearwardly, being driven by the pinion 27, the lever 30 will be swung upon its pivotal point, this will cause the lower end of the lever to swing toward the track rail and will serve to feed the bit as will appear

hereinafter. Upon the lower end of the shaft 16 is fixed a bevel gear wheel 33, which meshes with a gear wheel 34 which rotates a chuck 35 in which is held a bit 36 of any desired kind. The gear wheel 34 is keyed upon a slidable shaft 37 which is fixed to the chuck 35, the outer end of the said shaft having a suitable threaded head upon which said chuck is threaded. The rear end of the shaft 37 rotates within a sleeve 38 supported between slidable tubes 39, said tubes sliding upon rods 52, said rods being carried respectively by the front piece 5 and the rear supporting leg 3. The rear end portion of this sleeve is cut out and slotted as shown at 40 and a pin 41 is carried by the lower inwardly turned end portion of a lever 30 which projects into said slot 40, and as the lower end of the lever swings forwardly the tubes 39 slide upon the rods 52, and the shaft 37 is moved forwardly through the gear wheel 34, thus advancing the chuck 35, and bit 36. This forward feed is automatic and is due to the swinging of the lever 30 by reason of its engagement with the pin 32.

A spring 42 is connected to the front member of the frame 1 and also to the lever 30 and draws said lever and connected parts back to their normal positions upon release of certain ratchet mechanism, which mechanism is as follows:—A locking pawl 43 is pivoted to the rear member of the frame 1 and engages the ratchet 24, thus preventing reverse rotation of said ratchet. A spring 44 connected to the frame 1 and to the pawl 43 normally holds said pawl in locking engagement with the ratchet. An adjustable screw 45 working through the feed ratchet 23 bears at its lower end upon a lug 46 carried by the locking pawl 43 so that the lifting of the locking pawls will also lift the pawl 23 thus disengaging both pawls from the ratchet. The lifting of the feed pawl 23 however simply lifts the screw 45 away from the lug 46 thus stopping the feed but leaving the ratchet 24 locked against reverse rotation. To lift these pawls I pivot a rod 47 to the feed pawl 23 and also to an arm of a bell crank 48 which bell crank is pivoted to the upper coupling 18. One arm of this bell crank is carried upwardly to a point adjacent the handle 11 and is secured to a suitable thumb piece 49. The operator by pressing said thumb piece to the handle 11 will lock the bell crank, lift the rod 47, and thus lift the feed pawl 23 against the tension of a spring 57. A rod 50 is pivotally connected at one end to the locking pawl 43 and at the other end to a hand lever 51, pivoted adjacent the handle 11, and by pressing said lever to said handle the rod 50 will be lifted vertically, thus lifting both the pawls from engagement with the ratchet.

As the device when in use will ordinarily rest upon cross ties the supporting leg 3 is connected to a pipe section 53 adapted to rest across two ties and as railroad ties are irregularly placed and are some times more than the average distance apart I provide for such displacement by inserting smaller slidable tubular extensions 54 in the pipe member 53, locked against accidental movement by suitable springs 55. The pipe 53 and the telescoping tubes 54 form an extensible base for the rear member of the frame 1.

In Fig. 4 I have shown at 56 the spring pressed movable sections carried by the interior of the chuck for the purpose of gripping the bit, but I do not claim as a part of this invention any particular form of chuck or bit, as any suitable chuck and bit can be employed in connection with my device.

What I claim is:—

1. A device of the kind described comprising a frame, a ratchet wheel mounted upon the frame, a slidable shaft, a drill chuck carried by such shaft, means for rotating the shaft, a feed pawl engaging said ratchet wheel, and adapted to rotate the same step by step, means for locking the ratchet wheel against reverse rotation, a rack bar, means operated by rotation of the ratchet wheel for moving the rack bar, a pivoted lever loosely connected to said rack bar, and means connecting the lever to the shaft, thereby sliding the shaft as the lever is moved.

2. A device of the kind described comprising an upright frame, a drilling mechanism carried by the lower portion of the frame, a feed mechanism carried by said frame, said feed mechanism including a pawl, a bell crank, a thumb piece for operating said bell crank, a rod pivotally connected to said bell crank and to the said pawl, and adapted to lift said pawl into inoperative position, thereby stopping the feed mechanism, a locking pawl preventing reverse movement of the feed mechanism, a lever operatively connected to said locking pawl and adapted to lift the same, and means carried by said pawl whereby lifting of the locking pawl will also lift the feed pawl.

3. A device of the kind described comprising a frame, means for supporting said frame, means for holding one of said supporting means to a rail, a drill operating mechanism carried by said frame, a feed mechanism for feeding the drill operating means toward a rail, said feed mechanism including a rack bar, the rack bar being slidable, a pivoted lever, the said lever being loosely connected to the rack bar, means for locking said feed mechanism against reverse rotation, a spring connected to the frame and to the lever, and means for disengaging the locking means thereby permitting the

spring to return the drill operating mechanism, lever and rack bar to normal position.

4. A track drill comprising a chuck and bit, a pivoted lever adapted to move said chuck and bit longitudinally, a ratchet, means for moving said ratchet step by step, means operable by the ratchet for moving the lever, means for releasing said ratchet, and means for drawing the lever back to its normal position upon release of the ratchet.

5. A track drill comprising a bit presentable to the side of a rail, means for rotating said bit, a lever for moving said bit to cutting position, feed mechanism operated in unison with the rotation of the drill, said feed mechanism operating through said lever, means for locking said feed mechanism against reverse movement, means for rendering said feed mechanism in-operative said means being independent of the rotation of the bit, and means for withdrawing the bit when said feed mechanism is in an inoperative position.

6. A track drill comprising a frame, a clutch and bit slidably carried by said frame, a lever pivotally connected to the frame, movement of said lever moving the bit longitudinally, a spring holding said lever in normal position a longitudinally movable rack bar, said rack bar being loosely connected to said lever, means for moving the rack bar step by step, locking means for preventing reverse movement of said rack bar and lever, and means for releasing said locking means thereby permitting the spring to return said lever and rack bar to normal position, thereby withdrawing the bit.

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Witnesses:
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