July 17, 1934. H. H. TALBOYS 1,966,836

RAIL DRILLING MACHINE

Filed Aug. 23, 1930 5 Sheets-Sheet 1

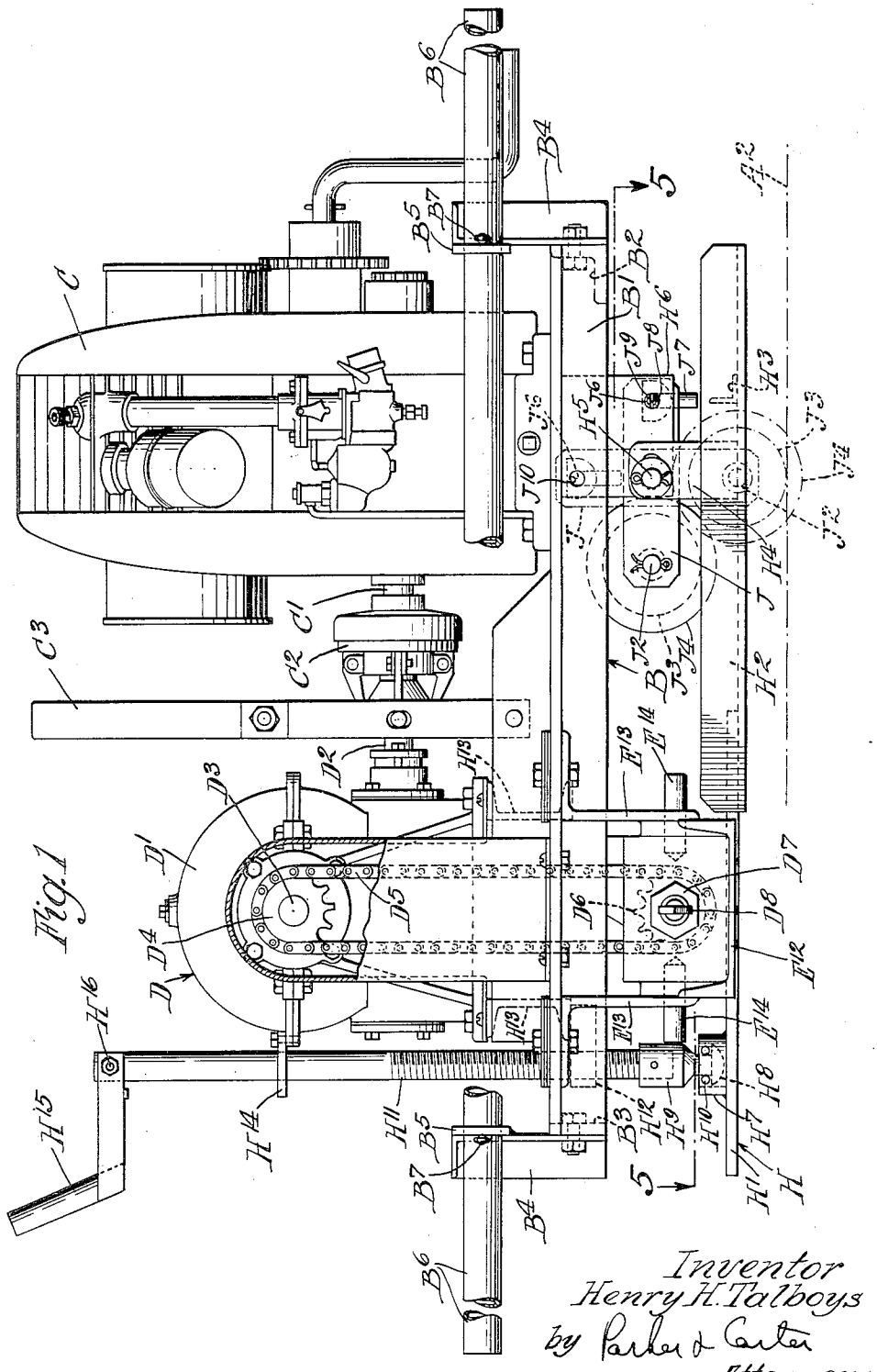


Fig. 1

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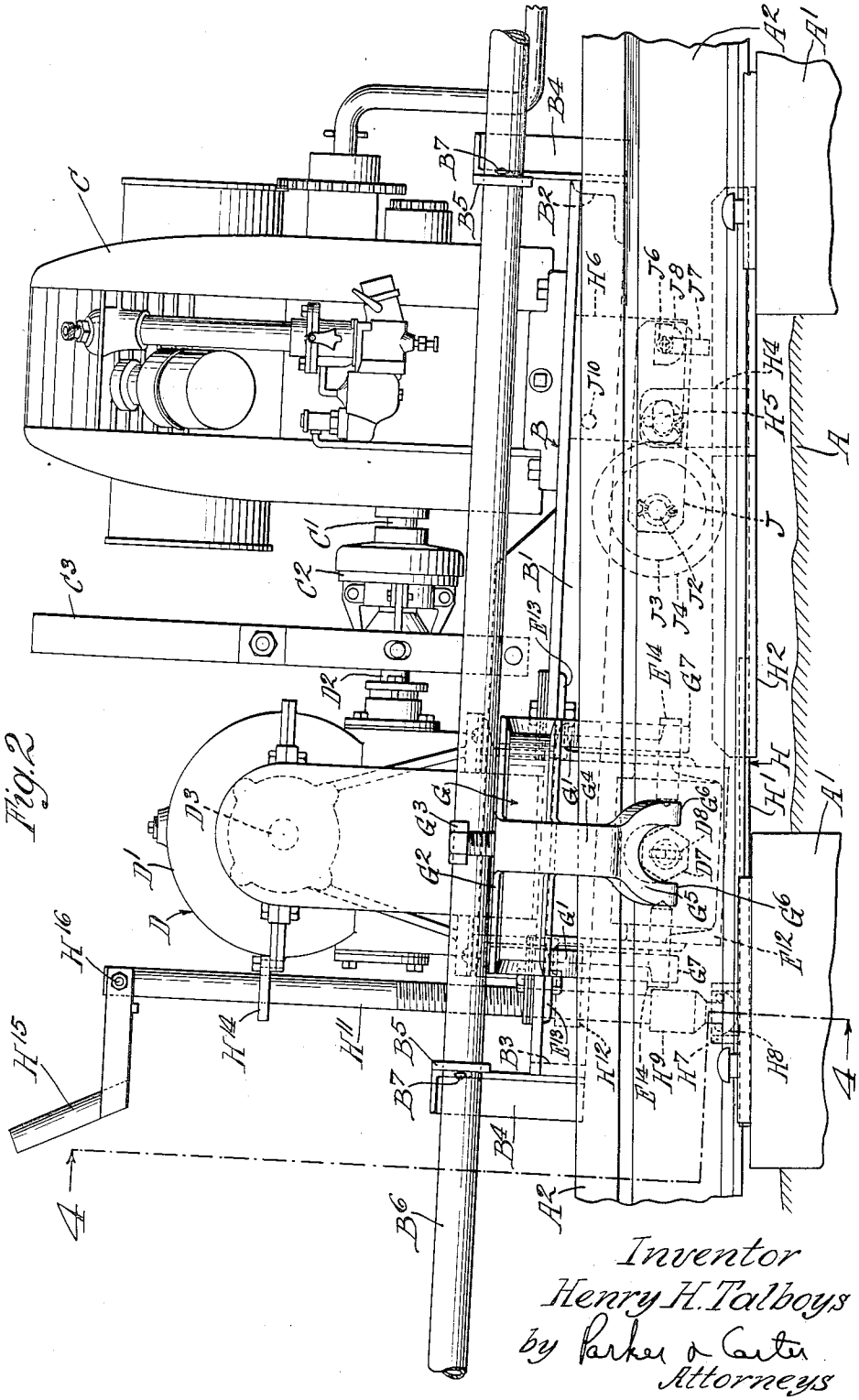


Fig. 2

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RAIL DRILLING MACHINE

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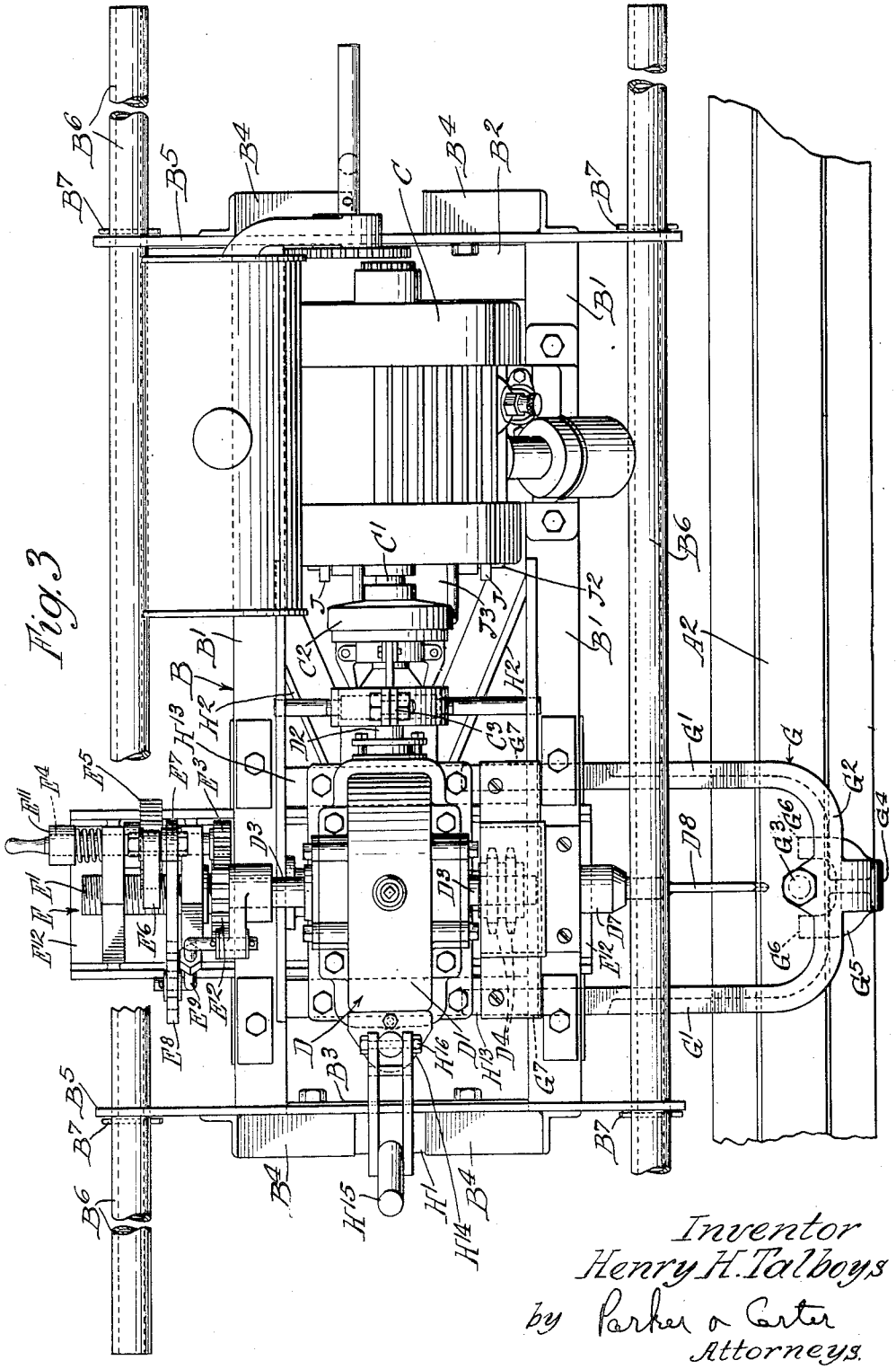


Fig. 3

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RAIL DRILLING MACHINE

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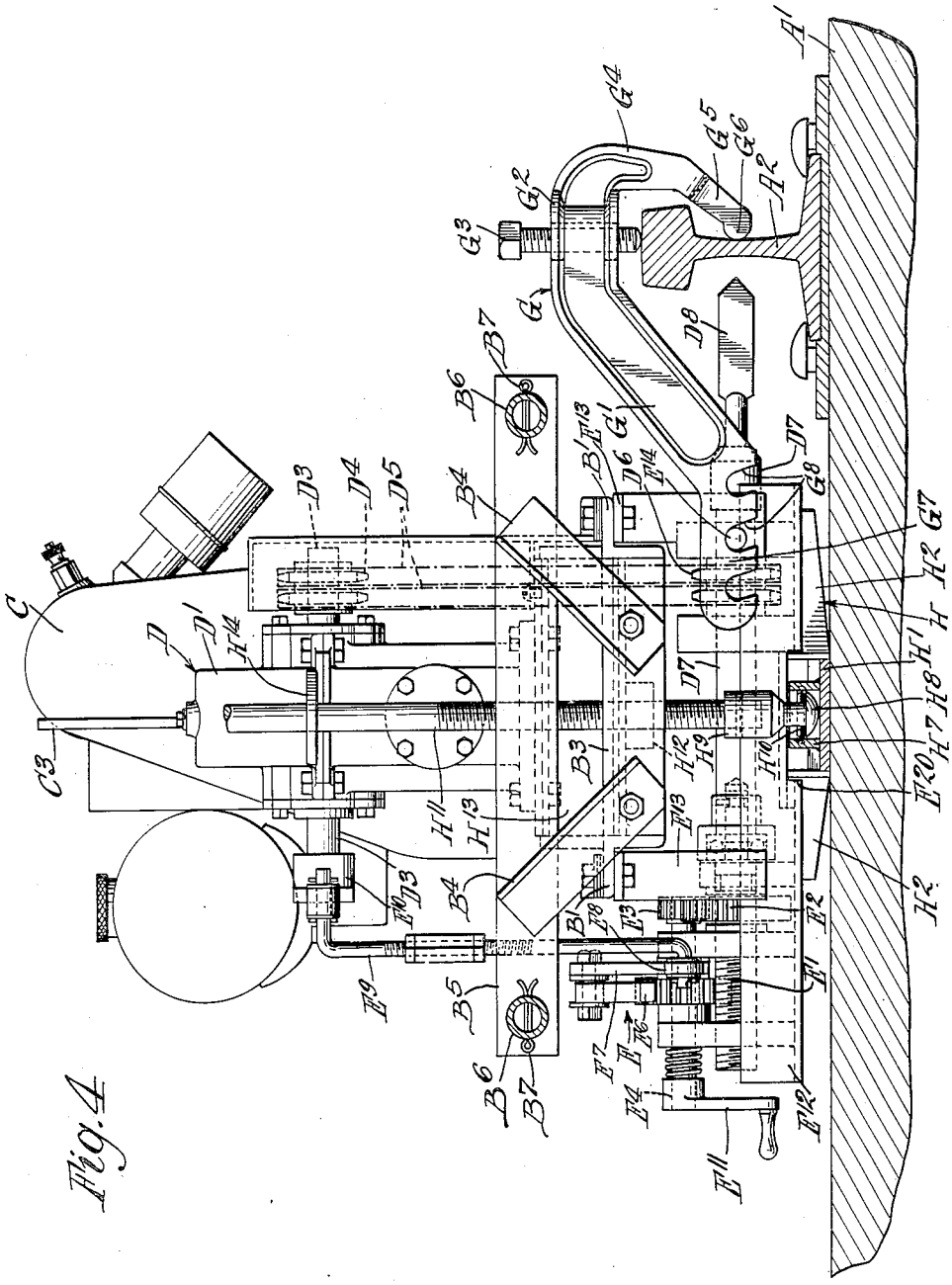


Fig. 4

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RAIL DRILLING MACHINE

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Fig. 5

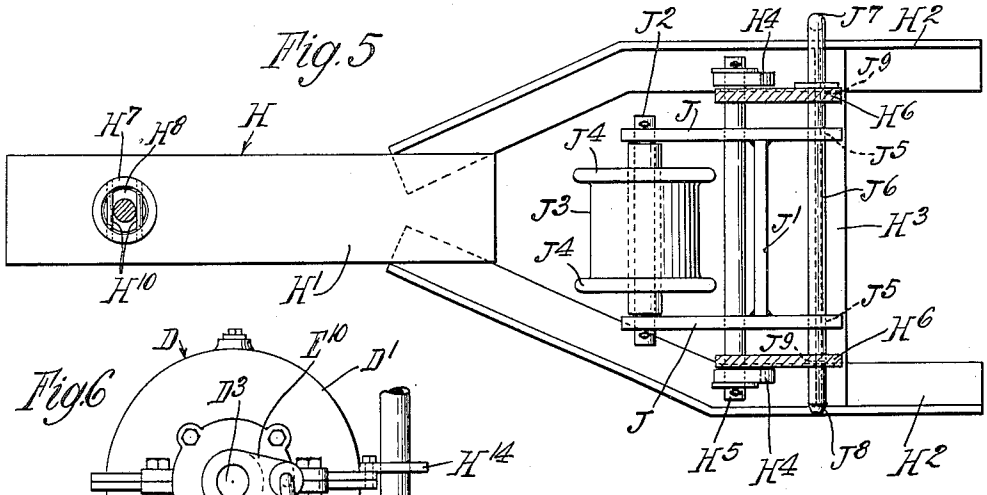


Fig. 6

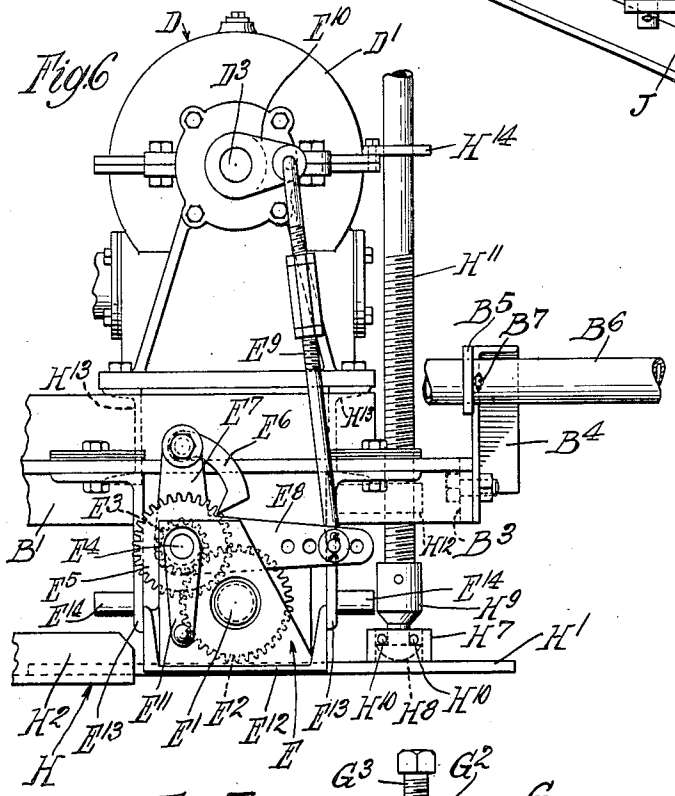
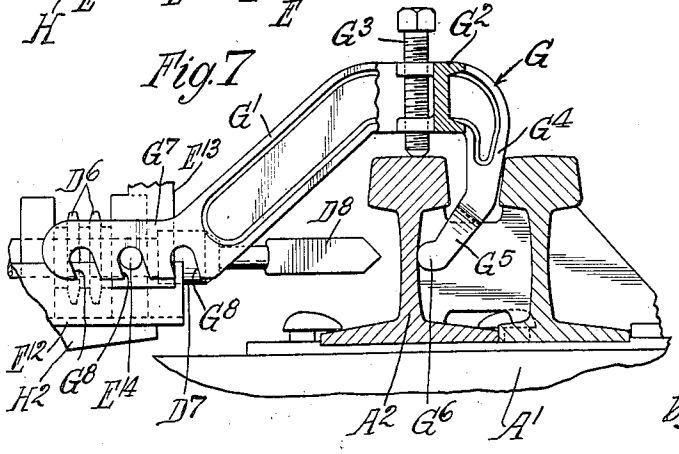


Fig. 7



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Patented July 17, 1934 1,966,836

UNITED STATES PATENT OFFICE

1,966,836

RAIL DRILLING MACHINE

Henry H. Talboys, Milwaukee, Wis., assignor to Nordberg Manufacturing Company, Milwaukee, Wis., a corporation of Wisconsin

Application August 23, 1930, Serial No. 477,283

4 Claims. (Cl. 77—8)

My invention relates to an improvement in drills and has for one purpose the provision of a drill and drill structure applicable to drilling rails of railroad tracks. Another object is the provision, in such a structure, of means for readily and easily adjusting the height of the drill. Another object is the provision of adjustable abutment means, removably mounted in relation to the drill supporting structure, for engaging the side of the rail opposite to the drill. Another object is the provision of a light and easily movable drill structure which may, for example, be manually transported along a rail. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation illustrating the structure in transporting position;

Figure 2 is a side elevation illustrating the structure in operating position;

Figure 3 is a plan view;

Figure 4 is a section on the line 4—4 of Figure 2;

Figure 5 is a section on the line 5—5 of Figure 1;

Figure 6 is a partial side elevation; and

Figure 7 is a section illustrating the rail engaging abutment and its connection with the drill structure.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings, A generally indicates the roadbed of a railroad track, upon which are mounted ties A^1 carrying rails A^2.

B generally indicates the main frame which includes angle irons B^1 forming sides to a longitudinally extending end. The angles B^1 are connected at one end by the transverse angle B^2 and at the other by a cross piece or plate B^3. At each end of the frame, secured respectively to the angle B^2 and the plate B^3 are the upwardly extending angles B^4 B^4 to which may be welded or otherwise secured transverse plates or strips B^5, through the outwardly extending ends of which are inserted the supporting or carrying shafts B^6. They may be held in position for example by cotters B^7. It will be seen for example from Figures 1 and 3 that the ends of the shafts B^6 project sufficiently outwardly at each end of the drill structure to permit an operator to stand between the shafts and engage each shaft with one hand in the manner of the carrier of a sedan chair.

Mounted upon the above described frame in any suitable fashion is a motor structure indicated as C, the details of which form no part of the present invention and therefore are not herein described in detail. C^1 indicates a motor shaft and C^2 generally indicates a clutch structure controlled for example by the manual lever C^3.

D generally indicates the transmission structure which may for example include the transmission housing D^1 in which may be positioned any suitable gear reduction. D^2 indicates a shaft extending from the clutch structure C^2 which is in driving relation with the gear reduction. D^3 indicates a shaft from the gear reduction which carries the sprockets D^4 about which pass the sprocket chains D^5 to the lower sprockets D^6 which drive the drill head or shaft D^7, in which may be removably positioned any suitable drill or bit member D^8.

E generally indicates any suitable feed mechanism for feeding the shaft and head D^7 toward the work, the work being herein shown for example as the rail A^2. This feed mechanism may include the feed screw or worm E^1 driven by a concentrically threaded gear E^2 in mesh with the pinion E^3 upon the shaft E^4 which in turn is driven through the gear E^5 which in turn is driven by the pawl E^6 on the rock lever E^7 which is oscillated by the arm E^8 and the link E^9 rotatably mounted upon the arm E^{10} on the shaft D^3. It will be understood that the work may be forwardly fed manually, when the machine is not in operation, by employment of the manual crank E^{11} upon the shaft E^4. This manual feed may be employed to move the drill forwardly into contact with the rail and may also be employed to withdraw it from contact with the rail after the drilling operation is completed. During the drilling operation proper the feed is in response to rotation of the crank E^{10}. The feed mechanism and the shaft D^7 are mounted in a channel member E^{12} supported by angles E^{13} from the main frame members B^1. Pins E^{14} project outwardly from the sides in the structure so formed, being for example welded thereto.

G generally indicates an abutment member for engaging the opposite side of the rail from that which is being drilled. It includes for example the upwardly inclined fork members G^1, the transverse connecting structure G^2 with the adjusting set screw or bolt G^3 and the downwardly extending arm G^4. The arm G^4 forks at its lower end as at G^5, the tines of the fork G^5 inclining inwardly as well as downwardly and terminating

in rail engaging studs or enlargements G^6. G^7 G^7 indicate securing ends on the forks G^1, which are notched on their lower edges as at G^8, to seat upon the pins E^{14}. By employing a plurality of notches it will be seen that a longitudinal adjustment of the drill structure in relation to the fork or abutment member is permitted. By the employment of open notches a ready removability of the abutment from the drill structure is also provided. The screw G^3 serves to adjust the height of the fork in relation to the rail and permits lining up of the members G^6 in line with the axis of the drill. The fork in the members G^5 permits the drill to pass entirely through the rail without interruption from the abutment.

H indicates a base structure which includes the plate H^1 and the angles H^2 H^2 extending from one end thereof, the members H^2 being connected by the transverse brace or angle H^3. H^4 H^4 are brackets upwardly extending from the members H^2, having slots through which may pass the pivot pin H^5. This pivot pin passes also through brackets H^6, the upper ends of which are secured to the side frame members B^1. It will thus be seen that the drill supporting structure above de- that the drill supporting structure above described is pivotally mounted upon the base members H^1 H^2. In order to effect an adjustment of the drill supporting structure in relation to the base I employ the following mechanism. Mounted at the outer end of the member H is a cup H^7 adapted to receive the head H^8 of the socket H^9, the head being held against escape from the cup for example by the pins H^{10}. Pinned to the socket H^9 is the screwthreaded shaft H^{11} which passes through the screwthreaded member or nut H^{12}. This screwthreaded member H^{12} may be mounted upon or welded to one of the transverse channel members H^{13} which serve as supports from the gear reduction housing D^1 previously described. H^{14} is an aligning bearing for the upper portion of the shaft H^{11} and H^{15} is a manual handle pivoted as at H^{16}, to the upper end of the shaft H^{11}. It will be understood that rotation of the shaft H^{11} will cause the main frame and the drill structure mounted thereon to be tilted upwardly or downwardly in relation to the base members H^1, H^2. Inasmuch as the drill structure is removed from the pivot pin H^5 this tilting of the drill supporting structure causes an upward or downward adjustment of the drill in relation to the base member H. In order to permit the drill to reach the lowest possible adjustment the channel member E^{12} is cut away as at E^{20}, as shown for example in Figure 4, to permit the passage therethrough of the member H^1 when the device is at its lowest adjustment.

Pivoted for rotation about the pin H^5 are the arms J connected by the transverse member J^1 the whole forming an H-shaped structure. At one end of the H is a pivot pin J^2, mounted upon which is the track engaging roller J^3, flanged at each side as at J^4. The opposite ends of the arms J are apertured as at J^5 to receive the passage therethrough of the locking pin J^6 having the offset end or handle J^7. One end may be split as at J^8 to give a frictional or gripping engagement with the apertures through which it passes. Each of the brackets H^6 is apertured as at J^9 to permit the passage of the pin J^6. The side frame members B^1 are similarly apertured as at J^{10}. It will be understood that by employment of the pin J^6, passing through the said apertures, the arms J, and thus the wheel J^3, may be secured selectively in the operative position in which they are shown in dotted line in Figure 1, or in the inoperative position in which they are shown in full line in the same figure.

It will be realized that whereas I have shown and described a practical and operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to my specific showing. In particular it will be understood that although I have shown my drill and abutment structure as adapted for and applied to use with railroad rails, I do not wish to be so limited, since the same structure may be employed for other purposes and in other connections.

The use and operation of my invention are as follows:

I have provided a drilling structure which is particularly adapted to use upon railroad tracks, rails and the like, although I do not wish to limit it to such use. It includes the base structure H^1 H^2 which may rest for example upon the roadbed or upon the ties and which serves as a support or base for the whole structure when in use. The main frame or drill supporting structure, including the side frame members B^1, is pivoted as a unit for rotation about the pivot pin H^5. The drill proper is at the end of the main frame remote from the said pivot and therefore rotation of the main frame imparts a substantially vertical movement to the drill, upwardly or downwardly in relation to the track. This adjustment may be obtained by rotation of the screwthreaded shaft H^{11} which seats in the cup H^7 on the member H^1. Referring for example to the position of the parts in Figure 4, rotation of the shaft H^{11} will lift the drill shaft and head D^7 to any desired height in relation to the object being drilled, in this instance a rail. In order to permit the employment of a light drill and drill supporting structure, of insufficient weight to hold itself in position, and not fastened down, I employ the abutment structure generally indicated as G. The forks G^1 are hooked over the pins E^{14}, the slots G^8 providing a longitudinal adjustment, depending upon which slots engage the pins E^{14}. The ready removability of the abutment member G is an advantage, since the end may be hooked into restricted spaces, such as the space between the two rails shown in Figure 7, which it will be unable to penetrate were it fixed in relation to the heavy and relatively immobile drill structure. For example the hook may be slid in between two rails or tilted into position to penetrate between two rails. When positioned in the restricted space it may then be hooked to the pins E^{14}. Preferably the abutment members G^6 of the fork arms G^5 are horizontally aligned with the axis of rotation of the drill. This alignment may be obtained by rotation of the screw G^3. Thus I may compensate for rails of different height, and for different adjustments in height of the drill. The drill member may pass entirely through the web of the rail, since it will pass between the fork tines G^5.

In transporting the device as a whole from place to place, two operators may carry it like an old fashioned sedan chair, each operator grasping adjacent ends of the supporting bars B^6. The wheel J^3 may, if desired, be positioned in the dotted line position of Figure 1, to engage

one of the rails and to support a part or substantially all of the weight. In such a case one man may wheel the device like a wheelbarrow along the rail, or two men, one at each end, may guide the device, the weight being supported by the wheel. When the device is in operative position the wheel is swung into the full line position in which it is shown in Figure 1.

I claim:

1. In a track drill, a base presenting a flat supporting surface normally engaging and resting upon the road bed, and extending substantially parallel with the rail, a frame pivoted to said base, a drill, mechanism for actuating said drill and driving means for the actuating mechanism, all carried by said frame over the base and in longitudinal alignment therewith, whereby all of the weight is transmitted to the base, and means for actuating the pivoted frame to raise or lower the drill, said base and surface being substantially coextensive with the length of the frame.

2. In a track drill, a drill supporting structure, a drill therein, an abutment member having one portion engaging the rail opposite the drill and in horizontal alignment therewith and having another portion removably attached to the drill supporting structure, said attaching connection including projections on the drill support, said abutment having a shank provided with a plurality of notches in pairs on the lower edge thereof, any pair of which is engageable with the projections whereby the abutment is quickly removable from the drill supporting structure, and is adjustable both longitudinally and angularly.

3. In a track drill, a base presenting a flat supporting surface normally engaging and resting upon the road bed and extending substantially parallel with the rail, a drill and driving mechanism therefor mounted on the base, said base lying along substantially the medial longitudinal plane of the machine, said base and surface being substantially coextensive with the length of the machine whereby all the weight is transmitted through the base to the road bed.

4. In a track drill, a drill supporting structure, a drill thereon, an abutment member having one portion engaging the web of the rail on the side opposite from that of the drill and in horizontal alignment therewith, and having another portion removably attached to the drill supporting structure, said attaching connection including projections on the drill support, said abutment having a shank provided with a plurality of notches in pairs on the lower edge thereof, any pair of which is engageable with the projections whereby the abutment is quickly removable from the drill supporting structure and is adjustable both longitudinally and angularly, and means engaging the rail and operable to move the abutment angularly about its point of attachment.

HENRY H. TALBOYS.