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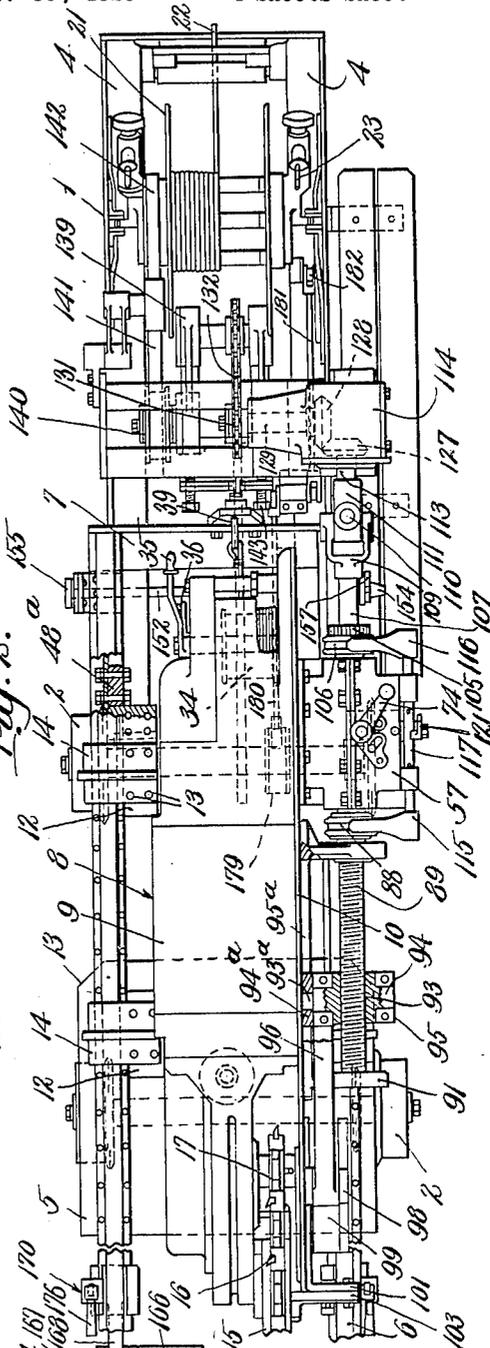
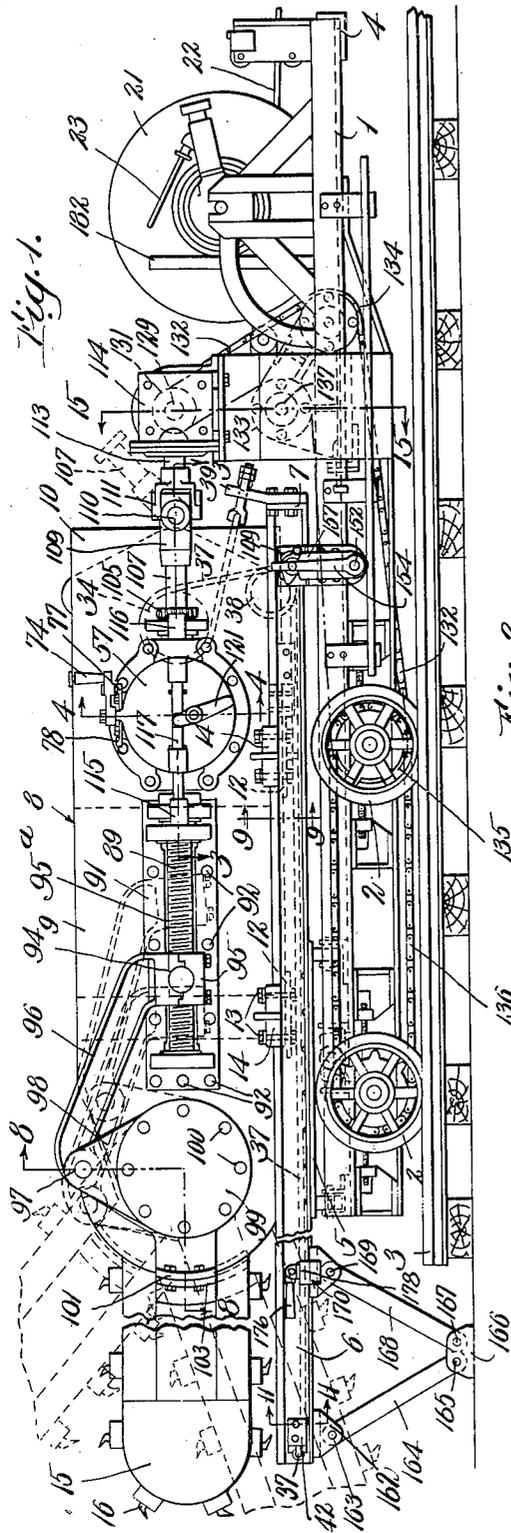
M. P. HOLMES

1,979,265

MINING APPARATUS

Filed Sept. 30, 1926

4 Sheets-Sheet 1



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Nov. 6, 1934.

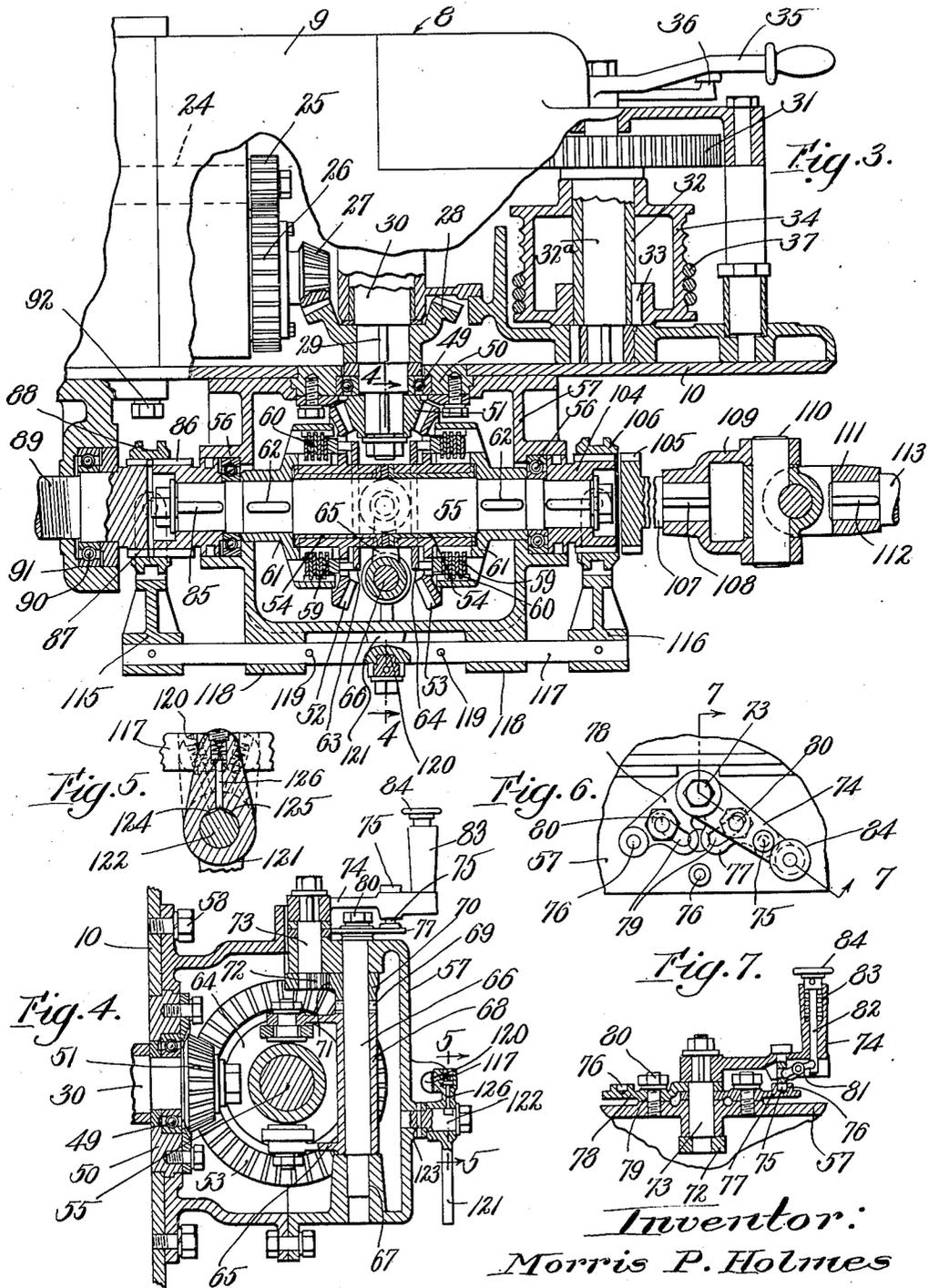
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MINING APPARATUS

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4 Sheets-Sheet 2



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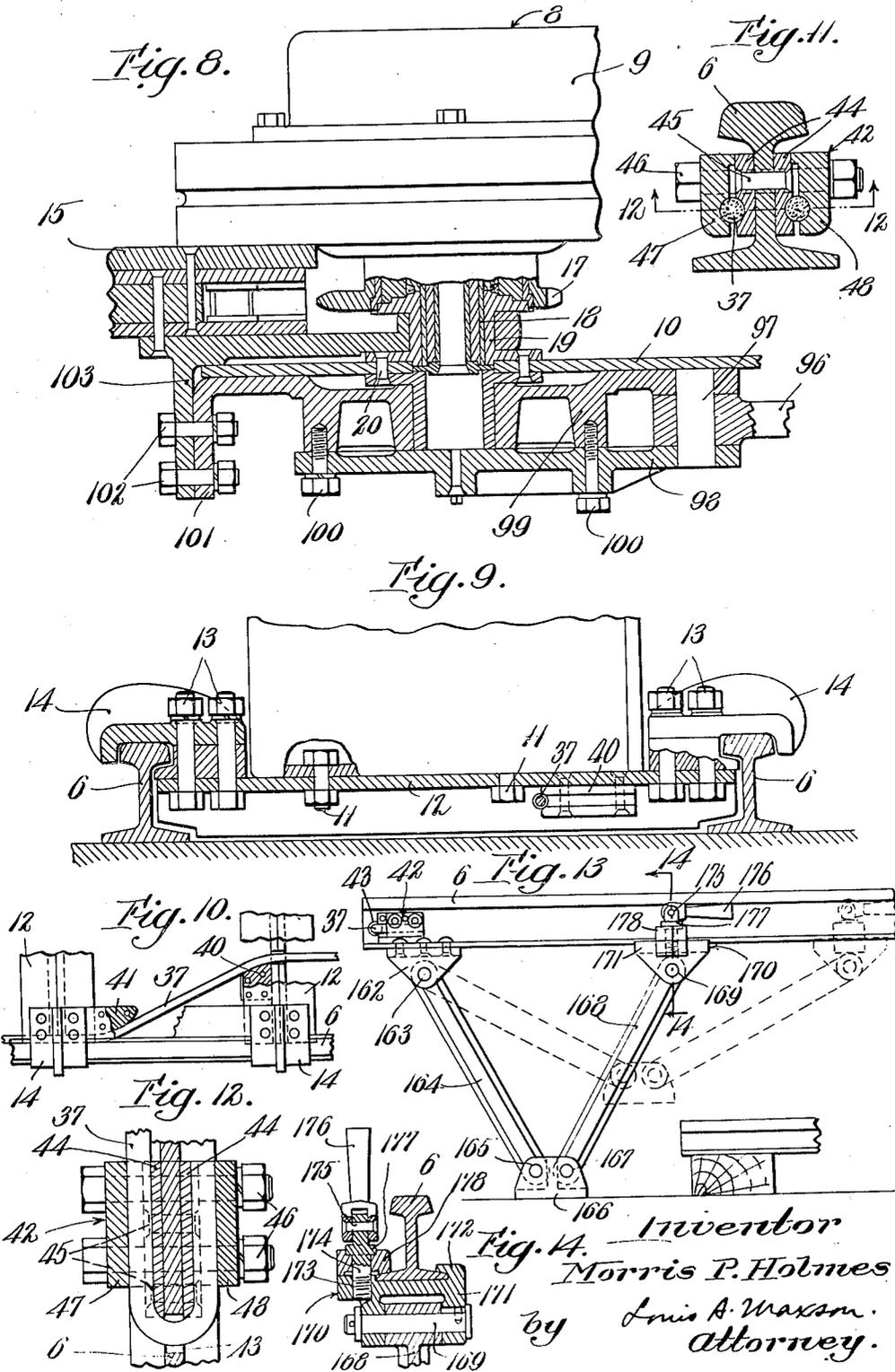
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MINING APPARATUS

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4 Sheets-Sheet 3



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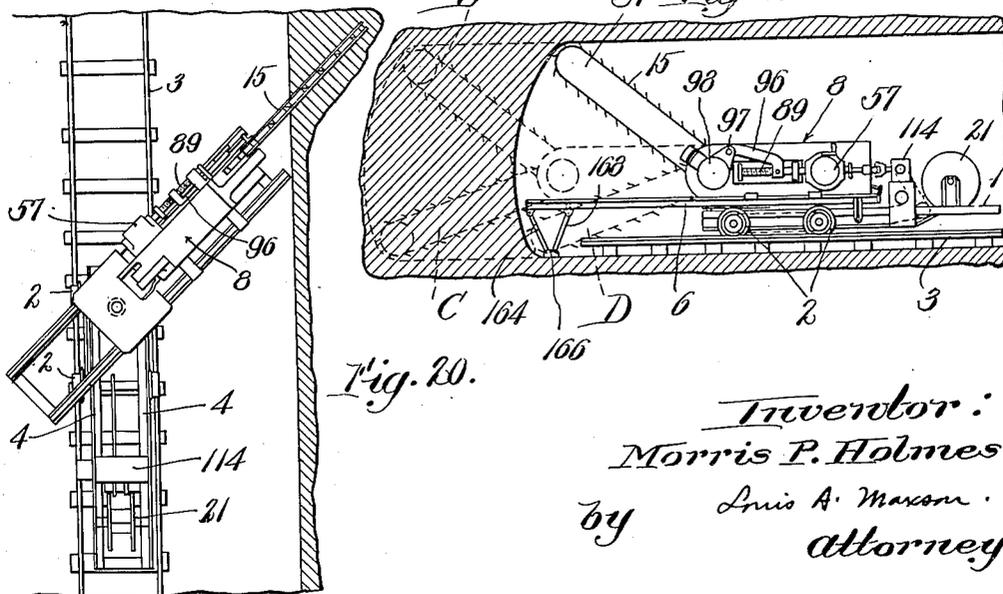
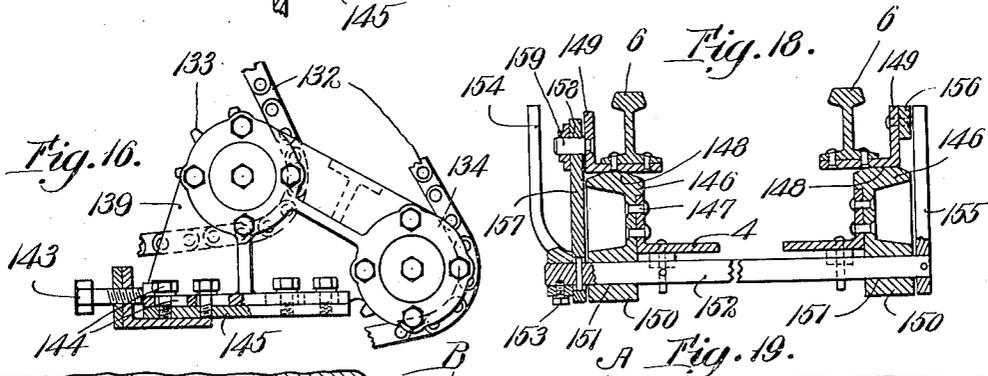
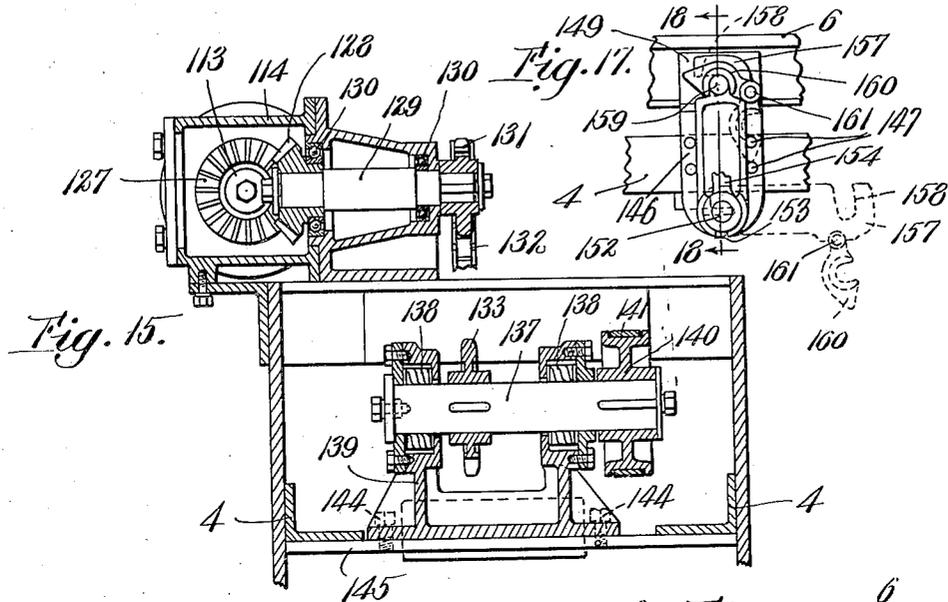
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MINING APPARATUS

Filed Sept. 30, 1926

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

1,979,265

Mining Apparatus

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Application September 30, 1926, Serial No. 138,661

60 Claims. (Cl. 262—28)

This invention relates to mining apparatus and more particularly to mining machines of the so-called shear or vertical cutter type adapted to operate from the mine trackway.

An object of this invention is to provide an improved mining machine of the wheel mounted type wherein the mining machine is adapted to insert a shear or vertical cut in the coal face while mounted on the mine trackway. Still another object of this invention is to provide an improved shearing machine adapted to cut kerfs in a vertical plane in the face of the coal. Still another object of this invention is to provide an improved wheel mounted shearing machine of the pivoted cutter-bar type having improved means for swinging the bar, for guiding the cutting mechanism on the truck during cutting, and for propelling the truck about the mine. A still further object of this invention is to provide an improved shearing machine of the self-propelled truck mounted type wherein improved means are provided for moving the cutting mechanism relative to the truck during cutting and for propelling the truck along the mine trackway during transport. These and other objects of my invention will, however, hereinafter more fully appear.

The invention is exemplified in the novel combinations and arrangement of parts shown in the accompanying drawings and described in the following specification and is more particularly pointed out in the appended claims.

In the accompanying drawings I have shown for purposes of illustration one form which my invention may assume in practice.

In these drawings,—

Fig. 1 is a side elevation of the improved mining apparatus, the front supporting jack being shown in operative position and the cutter bar being shown in a plurality of positions.

Fig. 2 is a plan view of the mining apparatus shown in Fig. 1, parts being broken away to facilitate illustration.

Fig. 3 is a transverse horizontal sectional view taken substantially on line 3—3 of Fig. 1, parts being shown in plan.

Fig. 4 is a vertical transverse sectional view taken substantially on line 4—4 of Figs. 1 and 3.

Fig. 5 is a detail sectional view taken on line 5—5 of Fig. 4, the controlling handle being shown in a plurality of positions.

Fig. 6 is a detail plan view illustrating the clutch-lever and locking means therefor.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 6.

Fig. 8 is a developed sectional view taken substantially on line 8—8 of Fig. 1.

Fig. 9 is a detail sectional view taken on line 9—9 of Fig. 1, illustrating the guiding frame.

Fig. 10 is a detail view illustrating the guides for the feed cable.

Fig. 11 is a detail sectional view of the clamp for the forward end of the feed cable, the view being taken on line 11—11 of Fig. 1.

Fig. 12 is a sectional view taken on line 12—12 of Fig. 11, illustrating details of the cable clamp.

Fig. 13 is a detail view illustrating the supporting jack for the forward end of the guide rails, the raised position of the support being indicated by dotted lines.

Fig. 14 is a transverse vertical sectional view taken on line 14—14 of Fig. 13, the view illustrating the clamp for maintaining the supporting jack in its different adjusted positions.

Fig. 15 is a transverse vertical sectional view taken substantially on line 15—15 of Fig. 1.

Fig. 16 is a detail view partially in section illustrating the mechanism for varying the tension of the truck driving chain.

Fig. 17 is a detail view of the locking mechanism for preventing tilting and lateral movement of the guiding frame.

Fig. 18 is a transverse vertical sectional view taken substantially on line 18—18 of Fig. 17.

Figs. 19 and 20 are diagrammatic views illustrating different operations of the machine during cutting.

In this illustrative embodiment of my invention I have shown a truck frame 1 mounted on wheels 2 adapted to move relative to a mine trackway 3 in the usual manner. The truck frame 1 comprises parallel longitudinally-extending angle members 4 which support at their forward ends a roller mounted swivel plate 5 movable in a horizontal plane about a vertical axis. The plate 5 has fixed thereto parallel guiding members or guide rails 6 extending longitudinally of the truck frame and projecting at a substantial distance from the forward end of the latter. The guide rails 6 form a guiding frame for the machine and are rigidly held in lateral spaced relation by means of the plate 5 and a transverse angle member 7 connected at the rear end to the guide rails 6. As shown a cutting mechanism generally designated 8, having a general rectangular elongated frame 9 including a plate 10 disposed in the vertical plane is rigidly secured as by bolts 11 (see Fig. 9) to longitudinally spaced plate members 12 extending transversely of the apparatus and these plate members in turn are

secured at their opposite ends by bolts 13 to guide members 14 which slidably engage the guide rails 6 as clearly shown in Fig. 9. The plates 12 and the guide members 14 when united form brackets or supports for the cutting mechanism. Further, the cutting mechanism includes an elongated plane cutter bar 15 about the outer edges of which a cutter bit carrying cutter chain 16 is adapted to be circulated. The cutter chain is adapted to be driven by means of a usual drive sprocket 17 as clearly shown in Fig. 8. The cutter chain drive sprocket 17 is disposed at the front end of the frame 9 of the cutting mechanism and is rotatable about a horizontal axis extending transversely of the frame in a well known manner. As shown, the elongated cutter bar 15 is pivoted, as at 18, on an axis coincident with the axis of the cutter chain sprocket 17 and is journaled on the machine frame on a bearing member 19 secured, as by rivets 20, to the vertical plate 10. A usual electric cable reel 21 is suitably supported on the rear end of the truck frame 1 and power medium is adapted to be transmitted to the motor of the mining machine through conductor cables 22 and 23 leading respectively to the reel and to the cutting mechanism driving motor, not shown. The cable reel is adapted to reel in or pay out the conductor cable 22 as the truck moves in opposite directions along the mine trackway. The motor is horizontally disposed and extends longitudinally of the machine and is herein preferably of the usual reversible electric type. This motor is adapted to drive from its forward end the cutter chain sprocket 17 to circulate the cutter chain about the cutter bar, and from its rear end the improved means for swinging the bar about its pivot, the improved means for moving the cutting mechanism relative to the truck guiding frame, and the improved means for driving the truck wheels as hereinafter more fully described.

In specifically describing the improved mechanism for moving the cutting mechanism relative to the guiding frame, it will herein be observed that the rear end of the horizontally disposed longitudinally extending armature shaft 24 of the driving motor (see Fig. 3) has suitably secured thereto a spur pinion 25 which meshes with a larger spur gear 26 rotatable on a parallel axis and disposed in the same horizontal plane as the axis of the pinion 25. As shown, this gear 26 in turn has suitably secured thereto a bevel pinion 27 which meshes with a larger bevel gear 28 rotatable in a vertical plane. The gear 28 is suitably secured as by a key 29 to a main driving shaft 30 disposed on a horizontal axis extending transversely of the cutting mechanism. The shaft 30 is adapted to drive suitable gearing substantially similar to that described in my prior Patent No. 1,470,570 patented October 9, 1923 and which includes a suitable friction clutch, not shown, and fast and slow speed transmission gearing including a final spur gear 31 suitably secured to a sleeve 32 journaled upon a stud 32^a, the latter being disposed parallel with and in the rear of the main driving shaft 30. In accordance with this invention the sleeve 32 has secured thereto as by a key 33, a feed drum 34 rotatable in a vertical plane, and this feed drum is adapted to be driven through the transmission gearing clearly described in the patent mentioned above at a fast speed in one direction or at a slow speed in the opposite direction without reversing the motor and under the control of means including suitable manually operable levers 35 and 36 in the usual

manner as is likewise described in the above mentioned patent. In this instance the feed drum 34 cooperates with a flexible feeding element 37 herein preferably in the form of a cable or wire rope. A suitable guide roll or sheave 38 is provided and is rotatable on the frame of the cutting mechanism on an axis parallel with and below the feed drum 34 and this sheave guides the cable 37 relative to the feed drum. As illustrated the cable 37 is wound or coiled about the feed drum 34 and extends from beneath the drum as clearly shown in Fig. 1 and is fixed at this end to an adjustable abutment 39 secured as by bolts to the transverse bracing member 7 for the guide rails 6. The other end of the cable 37 extends from the top of the feed drum downwardly around the guide roll 38 and forwardly around guide members 40 and 41, respectively secured to the rear and front plates 12 on which the cutting mechanism is supported. The guide members 40 and 41 have arcuate guiding surfaces and the cable extends from the member 41 forwardly alongside one of the guide rails 6 and is secured at its forward end by a clamping device generally designated 42 to the adjacent guide rail, an opening 43 being formed in the web of the latter to permit the cable to pass therethrough. As shown in Figs. 11 and 12 the clamp 42 specifically comprises plate members 44 secured, as by rivets 45, to the opposite sides of the web of the guide rail 6. Extending transversely through these plates 44 and the web of the rail are parallel bolts 46 and these bolts when tightened force the clamping elements 47 and 48 into clamping engagement with the bent end of the cable 37. From the foregoing description it will be evident that when the feed drum 34 is rotated in one direction the cutting mechanism may be slid longitudinally relative to the guide rails 6 in one direction at a slow or cutting speed and when the rotation of the feed drum is reversed the cutting mechanism may be slid longitudinally in an opposite direction at a fast speed, the cutting mechanism moving bodily relative to the feed cable. A stop member 48^a is provided for limiting the rearward movement of the cutting mechanism relative to the guide rails (see Fig. 2).

In specifically describing the improved bar swinging means, it will be observed that the outer reduced end of the main driving shaft 30 is journaled in ball bearings 49 carried within a detachable retaining plate 50 suitably secured to the vertical plate 10 of the cutting mechanism frame. The shaft 30 has keyed thereto a bevel pinion 51 which constantly meshes with larger bevel gears 52 and 53, these gears being rotatable in opposite directions and constituting a reversing mechanism. The bevel gears 52 and 53 are journaled on bearing sleeves 54 carried by a horizontal shaft 55 disposed longitudinally of the machine and at one side of the latter. The shaft 55 in turn is journaled at its opposite ends in ball bearings 56 suitably carried by a gear casing or housing 57 secured by screws 58 to the vertical plate 10 of the cutting mechanism frame. Carried within each of the bevel gears 52 and 53 is a series of clutch disks 59 which are interleaved with a series of clutch disks 60 carried by each of the clutch housing members 61 keyed as at 62 adjacent the opposite ends of the shaft 55. Interposed between the gears 52 and 53 and encircling the hubs thereof are axially movable clutch applying members 63 and 64 each having fingers projecting within the gears into engagement with certain of the series of clutch disks 59 and 60. As shown, a roller equipped shipper yoke 65 is provided, the

rollers of which engage plane surfaces of the clutch applying members 63 and 64 and this shipper yoke rotates on a vertically disposed shaft 66 having a drive fit with the bores 67 formed in the housing 57 as shown in Fig. 4. The sleeve portion 68 of the shipper yoke 65 has connected thereto at its upper end by means of a semi-permanent clutch 69 a member 70 having gear teeth 71 formed thereon and these gear teeth mesh with teeth formed on a gear segment 72 secured at the lower end of a vertically disposed shaft 73 rotatably mounted on the gear housing 57. The shaft 73 has secured thereto, at its upper end, an operating lever 74. The lever 74 is adapted to be locked in its different operative positions by means of a vertically movable locking pin 75 (see Fig. 7) adapted to cooperate with apertures 76 formed within locking members 77 and 78 respectively, the latter being pivotally mounted on the shaft 73. These locking members 77 and 78 are each slotted, as at 79, and are adapted to be swung about the shaft 73 to vary the position of the locking apertures. The members 77 and 78 are held in their different adjusted positions by clamping bolts 80. The locking pin 75 is adapted to be raised from its cooperating locking aperture by means of a pivoted lever 81 respectively engaging at its opposite ends the pin 75 and a spring pressed operating member or rod 82 slidably mounted in the grasping portion 83 of the lever 74. The rod 82 has an operating member or button 84 secured at its upper end. It will thus be evident that when the operator pushes downwardly on the button 84 the lever 81 swings about its pivot and the locking pin is forced upwardly from its locking aperture. The lever 74 may then be swung consequently moving the shipper yoke about its pivot and the desired clutch 59 and 60 applied, thereby connecting one or the other of the bevel gears 52, 53 in operative driving relation with the shaft 55, rotating the latter selectively in opposite directions. Secured, as by a key 85, to the forward end of the shaft 55 is a clutch member 86 which is adapted to be connected in driving relation with a clutch member 87 by means of an axially movable clutch member 88. The shifting mechanism for the clutch member 88 is to be hereinafter fully described. In this instance the clutch member 87 is suitably secured to a longitudinally extending screw member 89 journaled at its opposite ends in ball bearings 90 carried by a bracket member 91 secured as by screws 92 to the vertical plate 10. Cooperating with the screw member 89 is a threaded nut 93 pivotally mounted, as at 94, on a transverse axis in a bracket member 95 carried at the rear end of a connecting arm or link 96. The nut 93 is also pivotally connected as at 93^a to a sliding block 94^a guided in an elongated horizontal slot 95^a formed in the bracket 91. As shown, the arm 96 is pivotally connected at its forward end as at 97 to a radially extending arm 98 (see Fig. 8) carried by a member 99. The member 99 is preferably composed of two parts rigidly secured together by screws 100 and one of these parts is bent outwardly as at 101 at its forward end and is secured as by bolts 102 to a lateral projection 103 rigidly secured to the cutter bar 15. From the foregoing description it will be evident that when the shaft 55 is connected to one of the bevel gears 52 and 53 and when the gears 86 and 87 are connected by the shipper clutch members 88, as shown in Fig. 3, the screw 89 may be rotated in one direction, consequently effecting axial movement of the nut 93 relative thereto and causing the cutter bar 15 to be swung at a cutting speed in one direction about its pivot 18. When the shaft 55 is connected to the other of the bevel gears 52 and 53 the screw 89 is rotated in an opposite direction and consequently the bar is swung about its pivot at a cutting speed in the opposite direction. The worm or screw 89 is self-locking.

In specifically describing the improved means for driving the truck wheels from the motor of the cutting mechanism 8 it will be observed that secured to the rear end of the shaft 55 (see Fig. 3) is a clutch member 104 which is adapted to be connected to a clutch member 105 by means of an axially movable clutch member 106. As shown the clutch member 105 is formed integral with a longitudinally extending shaft 107 arranged coaxially with the shaft 55 supported in its operative position in alignment with the shaft 55 by the clutch member 106 and having secured thereto at its rear end, as by a key 108, an element 109 of a universal joint 110 of a well known form, another element 111 of the universal joint being keyed, as at 112, to a shaft 113. The shaft 113 is suitably journaled in a gear housing or casing 114 suitably supported on the rear end of the truck frame 1 (see Figs. 1, 2 and 15). The clutch members 88 and 106 are adapted to be axially shifted by means of shipper yokes 115 and 116 respectively suitably secured at the opposite ends of an actuating shaft or rod 117 slidably mounted within lateral lugs 118 formed on the gear housing 57. As shown, longitudinally spaced stop pins 119 are carried by the rod 117 and are adapted to alternatively engage the inner sides of the lugs 118, thereby preventing excessive movement of the shipper gears. The rod 117 is vertically slotted, as at 120, intermediate its ends, and cooperating with this slot is a shipper lever 121 rotatably mounted on a stud 122 secured, as by a transverse pin 123, to the gear housing 57. The stud 122 is flattened, as at 124 and 125, and a spring pressed plunger 126 is carried by the shipper lever and is adapted to cooperate with these flattened surfaces to maintain the stop pins 119 against one or the other of the lugs 118. It will thus be evident that when the lever 121 is grasped by the operator and swung about its pivot to effect forward axial movement of the rod 117 the clutch members 86, 87 are connected by the clutch member 88, while the clutch members 104, 105 are disconnected by the clutch member 106. When the shipper rod 117 is slid axially in an opposite direction the clutch members 86, 87 are released and the clutch members 104, 105 are connected. It will further be evident that the clutch members 87 and 105 may only be alternatively driven. In again referring to the truck wheel driving mechanism it is noted that the shaft 113 has secured thereto, at its rear end, a bevel gear 127 (see Figs. 2 and 15) which is meshed with a bevel gear 128 secured to a horizontal transversely extending truck driving shaft 129 suitably journaled at its opposite ends in ball bearings 130 carried by the gear housing 114. Secured to the end of the shaft 129 opposite from the gear 130 is a chain sprocket 131 which is adapted to drive a chain connection 132. The chain 132 passes around guide sprockets 133 and 134 (see Fig. 1) and extends forwardly about a chain sprocket 135 suitably secured to the rear truck axle. The front and rear truck axes are connected by means of a suitable chain and sprocket connection 136. It will also be noted that the guide sprocket 133 is suitably secured to a transversely extending horizontal shaft 137 journaled

at its opposite ends in roller bearings 138 carried by a slidable frame member 139, the sprocket 134 also being carried by this member. The shaft 137 also has secured thereto a driving pulley 140 which is connected by a belt connection 141 to a pulley 142 suitably secured to the cable reel 21. The tension of the chain 132 is adapted to be adjusted by means of a set screw 143 carried by a portion of the truck frame and engaging the sliding frame 139 by which the sprockets 133, 134 are carried. The sliding frame 139 is adapted to be rigidly secured in its adjusted positions by means of bolt and slot connections 144, the bolts threadedly engaging a transverse horizontal plate 145 secured at its opposite ends to the angle members 4 of the truck frame 1 (see also Fig. 15).

Improved means are provided for maintaining the guide rails 6 against tilting and lateral movement and such means comprises, as clearly shown in Figs. 1, 17 and 18, supporting members 146 riveted, as at 147, to the outer surfaces of the angle members 4 of the truck frame. As shown, the members 146 have plane horizontal upper surfaces 148 upon which angle members 149 riveted to the guide rails 6 are adapted to rest. In accordance with this invention, the members 146 have formed integral therewith depending bosses or lugs 150 having transverse bores 151 within which a rod 152 is journaled, the rod 152 being horizontal and disposed transversely of the truck. One end of the rod 152 has secured thereto, as by a set screw 153, an operating lever 154. Secured to the rod 152 at the end thereof opposite from the lever 154 is a vertical stop plate 155 which is adapted to engage an abutment element 156 riveted to the upstanding flange of the adjacent angle member 149. The abutment member 156 and the stop plate 155 prevent lateral movement of the guide rails relative to the supporting members 146. Also secured to the shaft 152, between the hub of the lever 154 and the adjacent supporting member 146, is a locking plate 157 having an arcuate open ended slot 158 which is adapted to embrace a locking pin 159 secured to the adjacent angle member 149. This slotted stop plate 157 is adapted to be locked in engagement with the pin 159 by means of a latch 160 pivotally connected, as at 161, to the stop plate 157. When it is desired to swing the guide rails about the axis of the swivel plate 5 the operator may grasp the lever 154 and after release of the latch 160 the slotted stop plate 157 and the stop plate 155 may be swung downwardly to the position indicated by dotted lines in Fig. 17, thereby releasing the guide rails.

It will also be observed that improved means are provided for supporting the forward end of the guide rails 6 during operation of the machine. This improved supporting means comprises bracket members 162 riveted to the outer end of each of the guide rails 6 and these brackets 162 each have pivotally connected thereto, as at 163, a supporting link 164, the links in turn being pivotally connected, as at 165, to the opposite ends of a shoe 166. As shown, also pivotally connected, as at 167, to the ends of the shoe 166 are other supporting links 168, the latter in turn each being pivotally connected, as at 169, to a clamping device generally designated 170 engageable with the rails 6. The clamping devices 170 each comprise, as shown in Fig. 14, a bracket member 171 having an inwardly projecting lip portion 172 engaging one side of the bottom flange of the guide rail. Threadedly connected, as at

173, to the member 171 is a screw 174 having pivotally connected thereto, as at 175, an operating lever 176. The screw 174 is provided with an enlarged head portion 177 which is adapted to engage a clamp member 178 which in turn engages the opposite side of the bottom flange of the guide rail. Referring to Fig. 13 it will be observed that when it is desired to lift the shoe 166 from the mine bottom to a position above the top of the mine trackway as indicated by dotted lines, the operator grasps the levers 176 and releases the clamps 178. It is then possible to slide the clamps bodily rearwardly along the flanges of the guide rails until the shoe assumes the dotted line position shown in Fig. 13. The clamp 178 is then again tightened and the supporting means is consequently secured in its inoperative position.

Suitably secured to the rear truck axle is a frictional braking device 179 (see Fig. 2) and this braking device is adapted to be operated through connections 180 and 181, the rear end of the latter connection being connected to an operating lever 182. This frictional braking device is adapted to control rotation of the truck wheels when the mining apparatus is moving over a trackway having a steep gradient and is also adapted to lock the truck wheels in position during the cutting operation.

In the operation of my improved mining apparatus, it will be noted that when the latter is moving rapidly about the mine the clutch 59, 60 is applied, the bevel gear 52 is connected to drive the shaft 55, and clutch members 104, 105 are connected by the clutch member 106, it being understood that the motor and consequently the shaft 113 are rotating. The shaft 113 drives through the bevel gears 127, 128 the shaft 129, the chain sprocket connection 131, 132 and 135, the latter being connected to the truck wheels. It is obvious that when it is desired to drive the mining apparatus rearwardly the gear 52 is reconnected from the shaft 55 and the gear 53 is connected by means of its controlling clutch 59, 60 to the shaft. When the machine is disposed adjacent the working face as shown in Fig. 19 the operator disconnects the gear 52 from the shaft, disconnects the clutch members 104, 105, and locks the truck wheels 2 in position by means of the frictional braking device 179. The clamp shoe 166 is then suitably adjusted and the supporting shoe 166 is lowered to the mine bottom, the clamp 170 then again being tightened. The operator then connects the clutch members 86 and 87 by means of the clutch member 88 and the clutch 59, 60 is again applied, connecting the gear 52 to the shaft 55 and the screw 89 is rotated, effecting axial movement of the nut 93 and consequently swinging the cutter bar 15 upwardly about its pivot to the position indicated at A in Fig. 19, thereafter the gear 52 being released from the shaft 55 and rotation of the screw 89 is of course discontinued. The operator then suitably connects the cutter chain drive sprocket 17 to the motor and the cutter chain 16 is rapidly circulated about the outer edges of the cutter bar. The levers 35 and 36 are then suitably manipulated and the feed drum 34 is rotated at a slow speed, the cutting mechanism being fed relative to the cable 37 bodily along the guide frame, consequently moving the cutting mechanism outwardly at a slow speed along the guide rails 6 to the position indicated by B in Fig. 19, thereby effecting a sumping cut. After the cutter bar assumes the position B, rotation of the feed drum 34 is discontinued. The clutch 59, 60 is then

applied, connecting the bevel gear 53 with the shaft 55 and the screw 89 is then rotated in the opposite direction, effecting forward axial movement of the nut 93 and consequently causing the cutter bar to be swung downwardly at a cutting speed about its pivot to the position indicated by C in Fig. 19, the gear 53 thereafter being disconnected from the shaft 55. The operator then again suitably manipulates the levers 35, 36 and the feed drum 34 is rotated at a fast speed in the opposite direction, thereby effecting movement of the cutting mechanism rapidly rearwardly along the guide rails 6, consequently moving the cutter bar rearwardly until it assumes the position indicated at D in Fig. 19. After the cutting mechanism is retracted from the face and has engaged the stop 48^a rotation of the winding drum 34 is discontinued. The operator then applies the clutch 59, 60, connecting the bevel gear 52 to the shaft 55 and the cutter bar is swung upwardly to the full line position shown in Fig. 1, the clutch thereafter being disconnected. The operator then raises the forward supporting means for the guide rails and the machine is moved rearwardly along the trackway, the cable reel 21 reeling in the conductor cable at this time in the usual manner. When it is desired to make a cut at one side of the trackway 3 the shaft 107 is swung upwardly to the dotted line position shown in Fig. 1, the locking plates 155, 157 are swung downwardly, and the guiding rails may then be swung laterally until they assume the position similar to that shown in Fig. 20. The front guide rail supporting jack is then adjusted and upon suitable manipulation of the clutches the bar is sumped into the coal, is then swung downwardly, and is retracted from the face in a manner substantially similar to that described in connection with the cut described above. These and other operations of the improved mining apparatus will be clearly apparent to those skilled in the art.

While I have in this application specifically described one form which my invention may assume in practice, it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a mining apparatus, a wheeled truck, a guiding frame on said truck, cutting mechanism on said guiding frame and movable therealong during cutting and including a cutter bar movable relative to said guiding frame and a driving motor, and means driven by said motor for driving the truck wheels and for moving said cutter bar in its plane including a reversing mechanism common to the drive of both said truck wheel driving means and said cutter bar moving means to effect drive thereof in either of opposite directions at the same speeds and while said motor runs continuously in the same direction.

2. In a mining apparatus, a wheeled truck, a guiding frame on said truck, cutting mechanism on said guiding frame including a cutter bar movable relative to said guiding frame and a driving motor, means driven by said motor for driving the truck wheels and for moving said cutter bar in its plane including a reversing mechanism common to the drive of both said truck wheel driving means and said cutter bar moving means to effect drive thereof in either of opposite direc-

tions while said motor runs continuously in the same direction, and means driven by said motor for moving said cutting mechanism bodily longitudinally relative to said guiding frame.

3. In a mining apparatus, a wheeled truck, a guiding frame thereon, cutting mechanism slidably mounted on said guiding frame and including a driving element, a feed operating member, and a driving motor for said element and member, said cutting mechanism being driven by said motor, feeding means operatively connected to said feed operating member for effecting movement of said cutting mechanism relative to said guiding frame to effect rectilinear movement of said cutter bar during cutting while the latter remains at a fixed angle relative to said guiding frame and including relatively rotatable mechanically engaged feeding elements having relative movement to effect feed, and means connectible to said driving element for driving the wheels of said truck.

4. In a mining apparatus, a wheeled truck, a guiding frame thereon, cutting mechanism slidably mounted on said guiding frame and including a driving element, a feed operating member, and a driving motor for said element and member, said cutting mechanism also including a pivoted cutter bar driven by said motor and including feeding means operatively connected to said feed operating member for effecting movement of said cutting mechanism relative to said guiding frame to effect rectilinear movement of said cutter bar during cutting and including relatively rotatable mechanically engaged feeding elements having relative movement to effect feed, means connectible to said driving element for driving the wheels of said truck, and means driven by said motor for swinging said cutter bar about its pivot while said cutting mechanism remains stationary relative to said guiding frame.

5. In a mining apparatus, a wheeled truck, cutting mechanism thereon including an elongated pivoted plane cutter bar carrying an orbitally movable cutter chain and pivotally mounted to swing about an axis lying within the orbit of said cutter chain, and a power driven element, and means connectible to said element for alternately swinging said cutter bar about its said pivot and for driving the wheels of said truck including means precluding simultaneous swinging of said bar and driving of said truck wheels.

6. In a mining apparatus, a wheeled truck, a guiding frame on said truck, cutting mechanism mounted on said guiding frame and movable therealong during cutting and including a pivoted cutter bar movable in a vertical plane and a driving motor, and means driven by said motor for swinging said bar and driving the truck wheels and including reversing mechanism common to said bar swinging and wheel driving means for effecting drive thereof in opposite directions at the same speed while said motor runs continuously in the same direction.

7. In a mining apparatus, a wheeled truck, a guiding frame on said truck, cutting mechanism mounted on said guiding frame and movable therealong during cutting and including a movable cutter bar movable in a vertical plane and a driving motor, and means driven by said motor for moving said bar and driving the truck wheels and including reversing mechanism common to said bar moving and wheel driving means for effecting drive thereof in opposite directions at the same speed while said motor runs continuously in the same direction.

8. In a mining apparatus, a wheeled truck having a machine guiding frame and supplemental supporting means for the forward end of said frame comprising a shoe engageable with the mine bottom, and links pivotally connecting said shoe to said frame, certain of said links having a sliding connection with said frame whereby the position of said shoe relative to said frame may be adjusted.
9. In a mining apparatus, a wheeled truck having a machine guiding frame and supplemental supporting means for the forward end of said frame comprising a shoe engageable with the mine bottom, and links pivotally connecting said shoe to said frame, and means for adjusting the position of said shoe relative to said frame including additional links pivotally connected to said shoe and having sliding engagement with said frame.
10. In a mining apparatus, a wheeled truck having a machine guiding frame and supplemental supporting means for the forward end of said frame comprising a shoe engageable with the mine bottom, and links pivotally connecting said shoe to said frame, and means for adjusting the position of said shoe relative to said frame including additional links pivotally connected to said shoe and having sliding engagement with said frame and clamping means engageable with the latter frame for clamping the last mentioned links to said frame in their different adjusted positions.
11. In a mining apparatus, a wheeled truck, a horizontally extending guiding frame swiveled thereon, and supplemental supporting means for the forward end of said guiding frame including a bottom engaging shoe extending transversely of the truck upon the front end thereof, and means engaging the opposite ends of said shoe and adjustably connected to opposite sides of said guiding frame for vertically adjusting said shoe relative to said frame.
12. In a mining apparatus, a wheeled truck, a guiding frame swiveled thereon, and supplemental supporting means for the forward end of said frame including a bottom engaging shoe and elements connected to said shoe and having sliding engagement with said frame.
13. In a mining apparatus, a wheeled truck frame, a guiding frame swiveled thereon, a machine body slidably mounted on said guiding frame and cutting mechanism carried by said body, and means carried by said truck frame and engageable with said guiding frame for holding said guiding frame against lateral and vertical movement.
14. In a mining apparatus, a wheeled truck frame, a guiding frame swiveled thereon, a machine body slidably mounted on said guiding frame and carrying cutting mechanism, and means carried by said truck frame and engageable with said guiding frame for holding said guiding frame against lateral and vertical movement including a swingable stop member and a cooperating locking member.
15. In a mining apparatus, a wheeled truck frame, a guiding frame swiveled thereon, a machine body slidably mounted on said guiding frame and carrying cutting mechanism, and means carried by said truck frame for holding said guiding frame against lateral and vertical movement including a plurality of simultaneously swingable locking members.
16. In a mining apparatus, a wheeled truck frame, a guiding frame swiveled thereon, a machine body slidably mounted on said guiding frame and carrying cutting mechanism, and means carried by said truck frame for holding said guiding frame against lateral and vertical movement including a swingable slotted stop member engageable with a locking pin carried by said guiding frame.
17. In a mining apparatus, a wheeled truck frame, a guiding frame swiveled thereon, a machine body slidably mounted on said guiding frame and carrying cutting mechanism, and means carried by said truck frame for holding said guiding frame against lateral and vertical movement including a plurality of locking members, and manually operable means for simultaneously releasing said members.
18. In a mining apparatus, cutting mechanism including an elongated pivoted cutter bar mounted for swinging movement in a vertical plane and carrying an orbitally movable cutter chain, and a driving motor, and means driven by said motor for swinging said cutter bar about its pivot comprising a rotatable screw disposed on an axis parallel with the longitudinal axis of the apparatus and rotatable in opposite directions to effect bar swing in opposite directions while said cutter chain moves in its orbit continuously in the same direction, and selectively operable reversing clutches arranged coaxially with said screw for controlling the direction of rotation thereof, and a nut cooperating with said screw, said screw and nut having relative rectilinear movement.
19. In a mining apparatus, a portable support having a horizontally extending guideway thereon, cutting mechanism slidably mounted on said guideway including an elongated cutter bit carrying cutter bar swingable in a vertical plane relative to said guideway to cut a vertical kerf, mechanism for effecting sliding movement of said cutting mechanism along said guideway including a rotatable power driven feeding element disposed on a horizontal axis and carried by and movable with said cutting mechanism, and a cooperating flexible feeding element engaging said rotatable feeding element and connected to said guideway, and mechanism driven from the same power source as said rotatable feeding element for bodily propelling the apparatus.
20. In a mining apparatus, a portable support having a horizontally extending guideway thereon, cutting mechanism slidably mounted on said guideway including an elongated cutter bit carrying cutter bar swingable in a vertical plane relative to said guideway to cut a vertical kerf, mechanism for effecting sliding movement of said cutting mechanism along said guideway including a rotatable power driven winding element disposed on a horizontal axis and carried by and movable with said cutting mechanism, and a cooperating flexible feeding element engaging between its ends said winding element and connected at its opposite ends to the opposite ends of said guideway, and mechanism driven from the same power source as said winding element for bodily propelling the apparatus.
21. In a mining apparatus, a portable support having a horizontally extending guideway thereon, cutting mechanism slidably mounted on said guideway including an elongated cutter bit carrying cutter bar swingable in a vertical plane relative to said guideway to cut a vertical kerf, a driving motor for said cutting mechanism, mechanism for effecting sliding movement of said cutting mechanism along said guideway including a rotatable power driven winding element

- driven by said motor and carried by and movable with said cutting mechanism, and a cooperating flexible feeding element engaging between its ends said winding element and connected at its opposite ends to the opposite ends of said guideway, and mechanism driven by said motor for bodily propelling the apparatus.
22. In a mining apparatus, a portable support having a horizontally extending guideway thereon swingable laterally relative to said support, cutting mechanism slidably mounted on said guideway including an elongated cutter bit carrying cutter bar swingable in a vertical plane relative to said guideway to cut a vertical kerf, mechanism for effecting sliding movement of said cutting mechanism along said guideway including a rotatable power driven feeding element carried by and movable with said cutting mechanism, and a cooperating flexible feeding element engaging said rotatable feeding element and connected to said guideway, and mechanism driven from the same power source as said rotatable feeding element for bodily propelling the apparatus.
23. In a mining apparatus, a portable support having a horizontally swingable guideway thereon, cutting mechanism slidably mounted on said guideway and including an elongated cutter bar swingable in a vertical plane relative to said guideway to cut a vertical kerf and a driving motor having its axis extending longitudinally of the apparatus and driving from its forward end said cutting mechanism, mechanism driven from the rear end of said motor for effecting sliding movement of said cutting mechanism along said guideway and for swinging said cutter bar in its plane, and mechanism driven by said motor for bodily propelling the apparatus.
24. In a mining apparatus, a wheeled support having a horizontally swingable guideway thereon, cutting mechanism slidably mounted on said guideway and including an elongated cutter bar swingable in a vertical plane relative to said guideway to cut a vertical kerf and a driving motor having its axis extending longitudinally of the apparatus and driving from its forward end said cutting mechanism, and mechanism driven from the rear end of said motor for effecting sliding movement of said cutting mechanism along said guideway and for swinging said cutter bar in its plane and for driving the wheels of said support.
25. In a mining apparatus, a wheeled support adapted to run along a trackway, cutting mechanism thereon including a swingable cutter bar, a motor, and mechanism driven by said motor for swinging said cutter bar and for driving the support wheels including shafting extending longitudinally of the apparatus at one side of the longitudinal axis thereof and connected to said cutter bar and said truck wheels, said shafting including three alined shafts and means for effecting rotation of said central shaft in either of opposite directions while said motor runs continuously in the same direction and for connecting either of said other two shafts independently to said central shaft.
26. In a mining apparatus, a wheeled support adapted to run along a trackway, cutting mechanism thereon including a swingable cutter bar, a motor, and mechanism driven by said motor for swinging said cutter bar and for driving the support wheels including three alined shafts extending longitudinally of the apparatus at one side of the longitudinal axis thereof, one shaft being connected at its forward end to said cutter bar and the other at its rearward end to the truck wheels and clutches for selectively connecting two of said shafts to said third shaft.
27. In a mining apparatus, a wheeled support adapted to run along a trackway, cutting mechanism thereon including a swingable cutter bar, a motor, and mechanism driven by said motor for swinging said cutter bar and for driving the support wheels including alined shafts extending longitudinally of the apparatus at one side of the longitudinal axis thereof, one shaft being connected at its forward end to said cutter bar and the other at its rearward end to the truck wheels, and a reversing mechanism coaxial with said shafts for effecting reversal of said shafts while the motor runs continuously in the same direction.
28. In a mining apparatus, a wheeled support adapted to run along a mine trackway, cutting mechanism thereon including a frame and a swingable cutter bar pivotally mounted thereon, a motor carried by said frame, a transverse shaft driven by said motor and projecting laterally from said frame, and mechanism for swinging said cutter bar relative to said frame and driving the support wheels including bar swinging and support wheel driving connections extending longitudinally of the apparatus and operatively connected independently of each other to said transverse shaft.
29. In a mining apparatus, a wheeled support adapted to run along a mine trackway, cutting mechanism thereon including a frame and a swingable cutter bar pivotally mounted thereon, a motor carried by said frame, a transverse shaft driven by said motor and projecting laterally from said frame, and mechanism for swinging said cutter bar relative to said frame and driving the support wheels including bar swinging and support wheel driving connections extending longitudinally of the apparatus at one side thereof and operatively connected independently of each other to said transverse shaft.
30. In a mining apparatus, a wheeled support adapted to run along a mine trackway, cutting mechanism thereon including a frame and a swingable cutter bar pivotally mounted thereon, a motor carried by said frame, a transverse shaft driven by said motor and projecting laterally from said frame, and mechanism for swinging said cutter bar relative to said frame and driving the support wheels including bar swinging and support wheel driving shafting extending longitudinally of the apparatus at one side thereof and operatively connected independently of each other to said transverse shaft.
31. In a mining apparatus, a wheeled support adapted to run along a mine trackway, cutting mechanism thereon including a frame and a swingable cutter bar pivotally mounted thereon, a motor carried by said frame, a transverse shaft driven by said motor and projecting laterally from said frame, and mechanism for swinging said cutter bar relative to said frame and driving the support wheels including bar swinging and support wheel driving alined shafts extending longitudinally of the apparatus at one side thereof and operatively connected independently of each other to said transverse shaft, the forward end of one shaft being operatively connected to said cutter bar and the rearward end of the other being operatively connected to said truck wheels.
32. In a mining apparatus, a wheeled truck

- having a guiding frame, a machine frame slidably mounted on said guiding frame and having a driving motor and cutting mechanism thereon including a cutter bar swingable in a vertical plane, and means driven by said motor for moving said machine frame relative to said guiding frame to effect rectilinear movement of said cutter bar during cutting comprising a feed operating member carried by the machine frame and a cooperating flexible element having its ends connected to the opposite ends of said frame, and means driven by said motor for driving the wheels of said truck.
33. In a mining apparatus, a wheeled truck, a machine frame thereon having a pivoted plane cutter bar thereon and a driving motor carried by said machine frame, and means driven by said motor for driving the wheels of said truck and for swinging said bar in its plane comprising a driving shaft, a bevel gear thereon, reverse bevels meshing with said gear, a driven shaft, and means for alternatively connecting said reverse bevels to said driven shaft to effect drive of said truck wheel driving means and said bar swinging means in either of opposite directions while said motor runs continuously in the same direction.
34. In a mining apparatus, a wheeled truck, a machine frame thereon having a pivoted plane cutter bar thereon and a driving motor carried by said machine frame, and means driven by said motor for driving the wheels of said truck and for swinging said bar in its plane comprising a driving shaft, a bevel gear thereon, reverse bevels meshing with said gear, a driven shaft, and means for alternatively connecting said reverse bevels to said driven shaft to effect drive of said truck wheel driving means and said bar swinging means in either of opposite directions while said motor runs continuously in the same direction, and operative connections between the truck wheels and the bar moving means and said latter shaft.
35. In a mining apparatus, a wheeled truck, a machine frame mounted thereon having a cutter bar thereon mounted for swinging movement in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for only alternatively swinging said bar about its pivot in such vertical plane and for driving the wheels of said truck and including common transmission mechanism.
36. In a mining apparatus, a wheeled truck having a guiding frame, a machine frame mounted thereon for bodily movement relative thereto, said machine frame having a pivoted cutter bar thereon and a driving motor carried by said machine frame, means driven by said motor for moving said machine frame relative to said guiding frame during cutting with said cutter bar fixed against movement relative thereto including a feed drum carried by the machine frame and a flexible cable cooperating with said drum and connectible at its ends to the opposite ends of said guiding frame, and mechanism driven by said motor for driving the truck wheels bodily to propel the apparatus.
37. In a mining apparatus, a wheeled truck, a machine frame mounted thereon having an elongated pivoted cutter bar thereon mounted for swinging movement relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar about its pivot comprising a driven shaft rotatable on a horizontal axis and projecting laterally from the machine frame, a bevel gear carried by said shaft, reverse bevels meshing with said bevel gear and rotatable on an axis parallel with the longitudinal axis of the machine frame, a driven shaft drivable in opposite directions by said reverse bevels, and means connectible to said latter shaft for alternatively moving said bar and for driving the wheels of said truck.
38. In a mining apparatus, a machine frame having an elongated pivoted cutter bar thereon mounted for swinging movement relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar about its pivot while the latter remains stationary comprising a driven shaft rotatable on a horizontal axis and projecting laterally from the machine frame, a bevel gear carried by said shaft, reverse bevels meshing with said bevel gear and rotatable on an axis parallel with the longitudinal axis of the machine frame, a driven shaft drivable in opposite directions by said reverse bevels, relatively rotatable screw and nut elements, means for connecting one of said elements to said latter shaft, and connections between the other of said elements and said cutter bar.
39. In a mining apparatus, a machine frame having an elongated pivoted cutter bar thereon mounted for swinging movement relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar about its pivot comprising a driven shaft rotatable on a horizontal axis and projecting laterally from the machine frame, a bevel gear carried by said shaft, reverse bevels meshing with said bevel gear and rotatable on an axis parallel with the longitudinal axis of the machine frame, a driven shaft drivable in opposite directions by said reverse bevels, relatively rotatable screw and nut elements, means for connecting one of said elements to said latter shaft, and a pivoted link connection between the other of said elements and said cutter bar.
40. In a mining apparatus, a wheeled truck having a guiding frame, a machine frame slidably mounted thereon and having a cutter bar thereon movable relative thereto in a vertical plane and a driving motor carried by said machine frame, means driven by said motor for moving said bar and driving the wheels of said truck, and independent means for moving said machine frame relative to said guiding frame including a power driven drum, and a cooperating feed cable connected to said frame.
41. In a mining apparatus, a wheeled truck, truck wheel driving means therefor, a machine frame on said truck having a cutter bar thereon movable relative thereto in a vertical plane and a driving motor carried by said machine frame, means for moving said bar in a vertical plane, means driven by said motor including a reversing mechanism, and means for only alternatively connecting the means for moving said bar in a vertical plane and the driving means for the truck wheels to said reversing mechanism.
42. In a mining apparatus, a wheeled truck having a guiding frame, a machine frame slidably mounted thereon and having a cutter bar thereon mounted for swinging movement relative thereto in a vertical plane and a driving motor carried by said machine frame, means driven by said motor for moving said machine

- frame slidingly relative to said guiding frame to effect rectilinear movement of said cutter bar during cutting, and means driven by said motor for driving the wheels of said truck in opposite directions including a reversing mechanism carried by said machine frame.
43. In a mining apparatus, a wheeled truck having a guiding frame, a machine frame slidably mounted thereon and having a cutter bar thereon mounted for swinging movement relative thereto in a vertical plane and a driving motor carried by said machine frame, means driven by said motor for moving said machine frame slidingly relative to said guiding frame to effect rectilinear movement of said cutter bar during cutting, and means driven by said motor for driving the wheels of said truck in opposite directions including selectively operable reversing clutches carried by said machine frame.
44. In a mining apparatus, a wheeled truck, a machine frame mounted thereon and having a cutter bar thereon swingable relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar about its pivot in opposite directions comprising selectively operable reversing clutches, and a sliding clutch coaxial therewith.
45. In a mining apparatus, a wheeled truck, a machine frame mounted thereon and having a cutter bar thereon swingable relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar in a vertical plane during cutting and for driving the wheels of said truck comprising a shaft, selectively operable reversing clutches for controlling the direction of rotation of said shaft, and means for alternatively connecting said wheel driving and said bar swinging means to said shaft.
46. In a mining apparatus, a wheeled truck, a machine frame mounted thereon and having a cutter bar thereon swingable relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar in its plane and for driving the wheels of said truck comprising a shaft, selectively operable reversing clutches for controlling the direction of rotation of said shaft, and means for alternatively connecting said wheel driving and said bar swinging means to said shaft including sliding gear clutches coaxial with said shaft.
47. In a mining apparatus, a wheeled truck, a machine frame mounted thereon and having a cutter bar thereon swingable relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for driving the wheels of said truck in opposite directions comprising selectively operable reversing clutches, and a sliding gear clutch coaxial therewith and disposed in the driving connections between the truck wheels and said reversing clutches.
48. In a mining apparatus, a wheeled truck having a guiding frame, a machine frame slidably mounted on said guiding frame and having a cutting mechanism thereon swingable relative thereto in a vertical plane, and a driving motor carried by said machine frame, means driven from the forward end of said motor for driving said cutting mechanism, and means driven from the rear end of said motor for swinging said cutting mechanism, for moving said machine frame relative to said guiding frame to effect rectilinear movement of said cutter bar during cutting, and for driving the wheels of said truck.
49. In a mining apparatus, a wheeled truck, a machine frame mounted thereon having a cutter bar thereon swingable relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar in its plane and for driving the wheels of said truck comprising coaxially arranged relatively rotatable truck driving and bar swinging shafts connectible only alternatively with said driving motor and constantly operative positive operating connections between said bar swinging shaft and said cutter bar.
50. In a mining apparatus, a wheeled truck, a machine frame mounted thereon having a cutter bar thereon swingable relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar in its plane during cutting and for driving the wheels of said truck comprising coaxially arranged truck driving and bar swinging shafts each individual to its own function and disposed on axes parallel with the longitudinal axis of the machine and positive operating connections between said bar swinging shaft and said cutter bar.
51. In a mining apparatus, a wheeled truck, a machine frame mounted thereon having a cutter bar thereon swingable relative thereto in a vertical plane and a driving motor carried by said machine frame, and means driven by said motor for swinging said bar in its plane and for driving the wheels of said truck comprising coaxially arranged truck driving and bar swinging shafts, and means for alternatively connecting said shafts in driving relation with said motor.
52. In a mining apparatus, a wheeled truck, a machine frame thereon having a horizontal shaft disposed on an axis extending transversely of the apparatus and projecting laterally from said machine frame and a driving motor therefor carried by said machine frame, and means driven by said motor for driving the wheels of said truck comprising a shaft disposed on an axis extending longitudinally of and outside the machine frame and connected to said shaft, a shaft driven by said longitudinally extending shaft and disposed on an axis parallel with said first mentioned shaft, and connections between said last mentioned shaft and the truck wheels.
53. In a mining apparatus, a portable base, a horizontal guiding frame swiveled on said base on a vertical axis and having longitudinal guideways, a support mounted on said guiding frame for movement longitudinally of said guideways, a kerf cutter pivotally mounted on said support to swing vertically relative thereto about a horizontal axis extending transversely of said support, a motor on said support for driving said kerf cutter, means driven by said motor for swinging said kerf cutter about its pivot, means driven by said motor for moving said support longitudinally of said guiding frame, and means driven by said motor for propelling said base, said cutter swinging means and said base propelling means including common control means whereby when one is operative the other is always inoperative.
54. In a mining apparatus, a portable base, a horizontal guiding frame swiveled on said base on a vertical axis and having longitudinal guideways, a support mounted on said guiding frame for movement longitudinally of said guideways, a kerf cutter pivotally mounted on said support

to swing vertically relative thereto about a horizontal axis extending transversely of said support, a motor on said support for driving said kerf cutter, means driven by said motor for swinging said kerf cutter about its pivot, means driven by said motor for moving said support longitudinally of said guiding frame, and means driven by said motor for propelling said base, said cutter swinging means and said base propelling means including common control means whereby when one is operative the other is always inoperative, said control means including a common reverse mechanism whereby said cutter swinging and base propelling means may be operated in either of opposite directions.

55. In a mining apparatus, a portable base, a support on said base, a kerf cutter pivotally mounted on said support for swinging movement to cut a plane kerf, a motor on said support, means driven by said motor for actuating the kerf cutter, a horizontal shaft driven by said motor and journaled on said support on an axis extending transversely of said support, aligned horizontal shafts extending longitudinally of said support, means for connecting said transverse shaft in driving relation with said longitudinal shafts, means driven by one longitudinal shaft for swinging said kerf cutter about its pivot, and means driven by said other longitudinal shaft for propelling said base.

56. In a mining apparatus, a portable base, a support on said base, a kerf cutter pivotally mounted on said support, a motor on said support, means driven by said motor for actuating the kerf cutter, a horizontal shaft driven by said motor and journaled on said support on an axis extending transversely of said support, aligned horizontal shafts extending longitudinally of said support, means for connecting said transverse shaft in driving relation with said longitudinal shafts, means driven by one longitudinal shaft for swinging said kerf cutter about its pivot, and means driven by said other longitudinal shaft for propelling said base, said connecting means including a reverse mechanism driven by said transverse shaft whereby said longitudinal shafts may be driven from said transverse shaft in either of opposite directions thereby to effect drive of said cutter swinging and base propelling means in either of opposite directions.

57. In a mining apparatus, a portable base, a horizontal guiding frame swiveled on said base on a vertical axis, a support mounted on said guiding frame for longitudinal movement therealong, a kerf cutter pivotally mounted on said support, a motor on said support for actuating said kerf cutter, a horizontal shaft driven by said

motor and extending transversely of said support, means driven by said shaft for moving said support longitudinally of said guiding frame, means driven by said shaft for swinging said kerf cutter about its pivot, and means driven by said shaft for propelling said base.

58. In a mining apparatus, a portable base, a horizontal guiding frame swiveled on said base on a vertical axis, a support mounted on said guiding frame for longitudinal movement therealong, a kerf cutter pivotally mounted on said support, a motor on said support for actuating said kerf cutter, a horizontal shaft driven by said motor and extending transversely of said support, horizontal shafts extending longitudinally of said support, means for connecting said longitudinal shafts in driving relation with said transverse shaft, means driven by one of said longitudinal shafts for swinging said kerf cutter about its pivot, and means driven by the other of said longitudinal shafts for propelling said base.

59. In a mining apparatus, a portable base, a horizontal guiding frame swiveled on said base on a vertical axis, a support mounted on said guiding frame for longitudinal movement therealong, a kerf cutter pivotally mounted on said support, a motor on said support for actuating said kerf cutter, a horizontal shaft driven by said motor and extending transversely of said support, horizontal shafts extending longitudinally of said support, means for connecting said longitudinal shafts in driving relation with said transverse shaft, means driven by one of said longitudinal shafts for swinging said kerf cutter about its pivot, and means driven by the other of said longitudinal shafts for propelling said base, said connecting means including a reverse mechanism between said transverse shaft and said longitudinal shafts for effecting rotation of the latter in either of opposite directions thereby to effect drive of said kerf cutter swinging and base propelling means in either of opposite directions.

60. In a mining apparatus, a support, a kerf cutter pivotally mounted on said support, and motor operated means for swinging said kerf cutter about its pivot comprising a power driven screw shaft extending longitudinally of said support at one side thereof, a guideway on said support at the inner side of said screw shaft and extending coextensively with the latter, a nut threadedly engaged with said screw shaft and slidably guided in said guideway, an arm rigid with said kerf cutter and arranged on said support at the same side thereof as said screw shaft, and a link pivotally connected to said nut and arm.

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CERTIFICATE OF CORRECTION.

Patent No. 1,979,265.

November 6, 1934.

MORRIS P. HOLMES.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, line 71, for "gears" read clutch members; and line 72, for "members" read member; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of February, A. D. 1935.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.