Jan. 13, 1925. 1,522,693

E. C. MORGAN

MINING AND LOADING MACHINE

Original Filed May 5, 1916 6 Sheets-Sheet 1

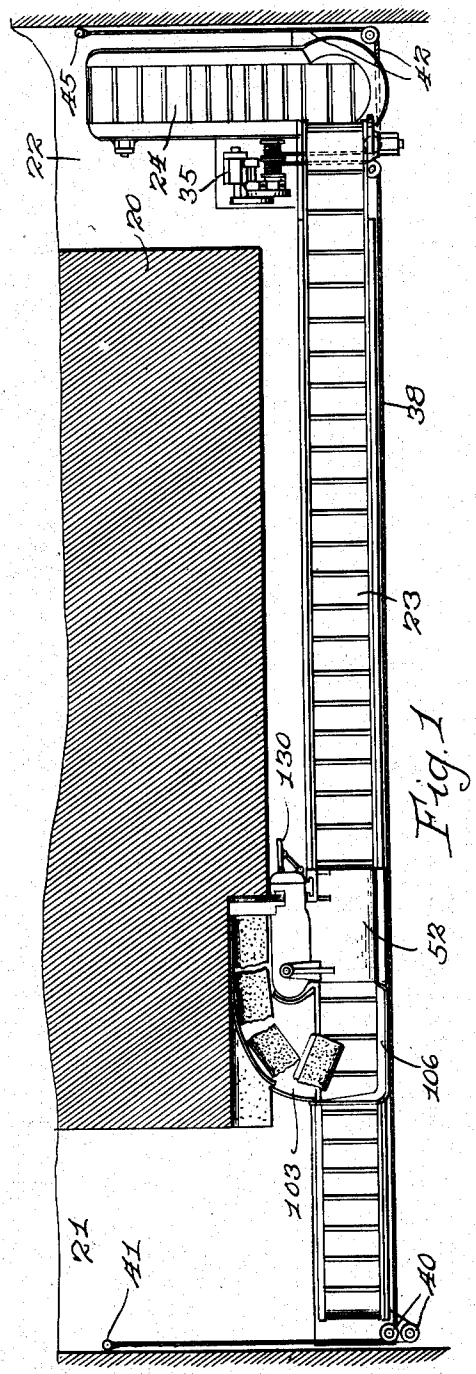

Fig. 1

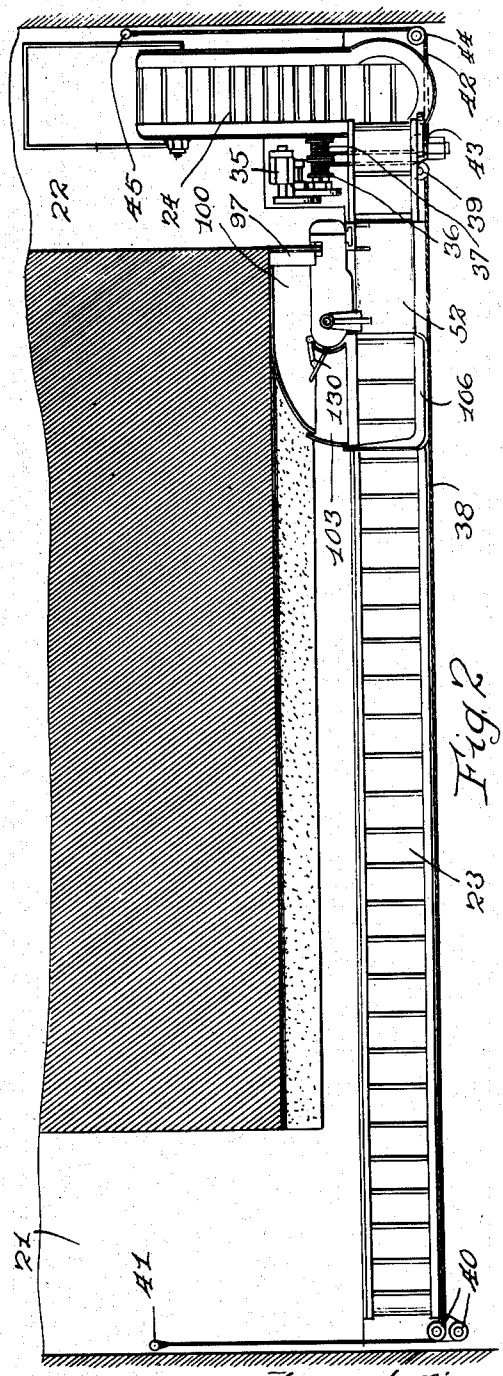

Fig. 2

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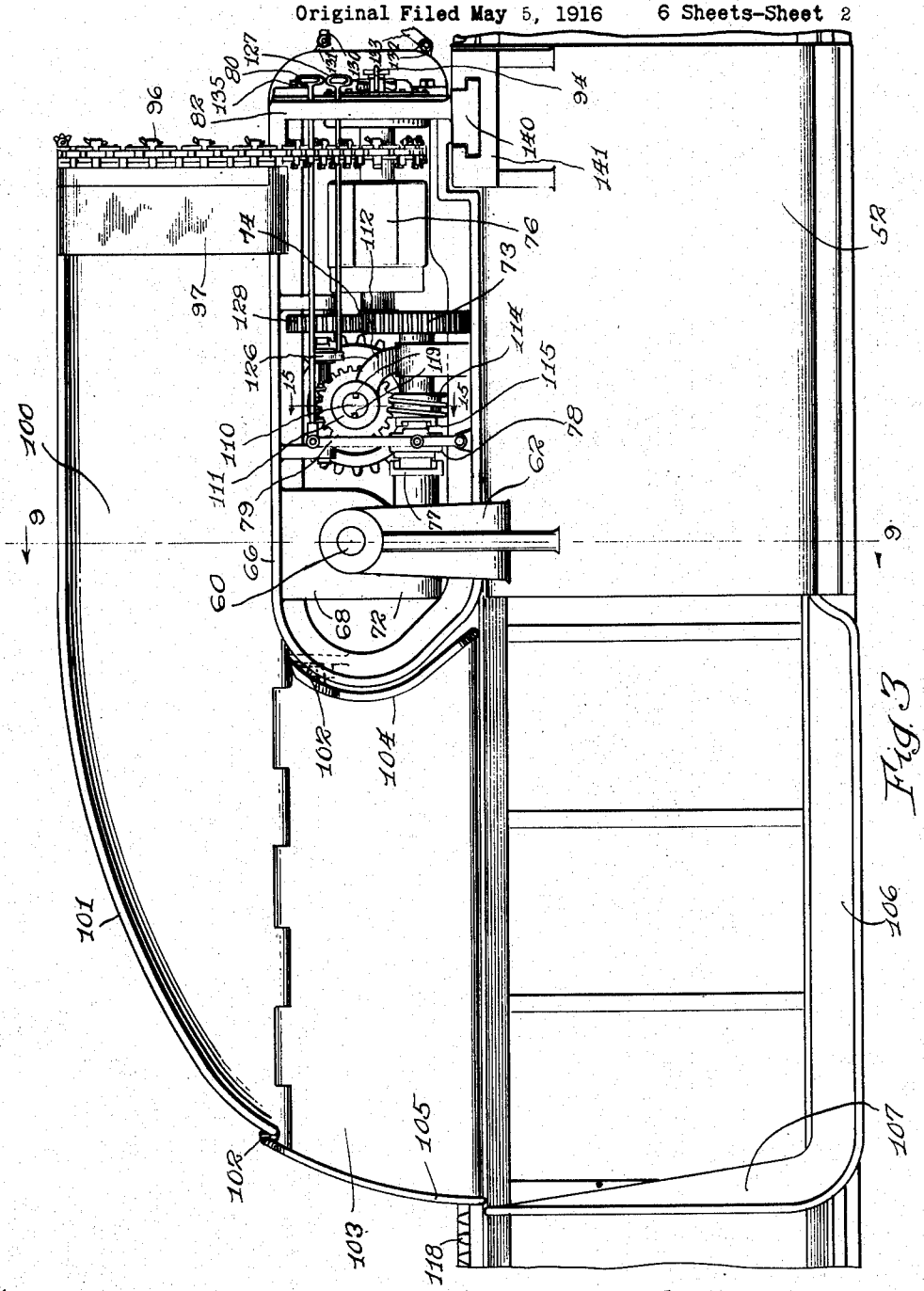

Fig. 3

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MINING AND LOADING MACHINE

Original Filed May 5, 1916 6 Sheets-Sheet 3

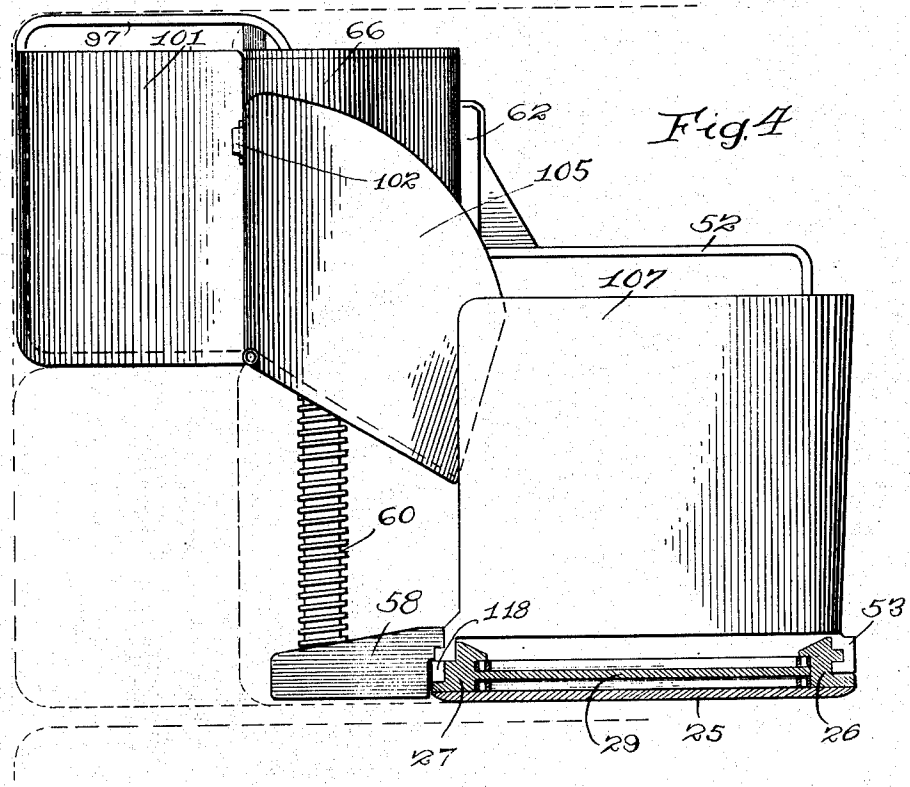

Fig. 4

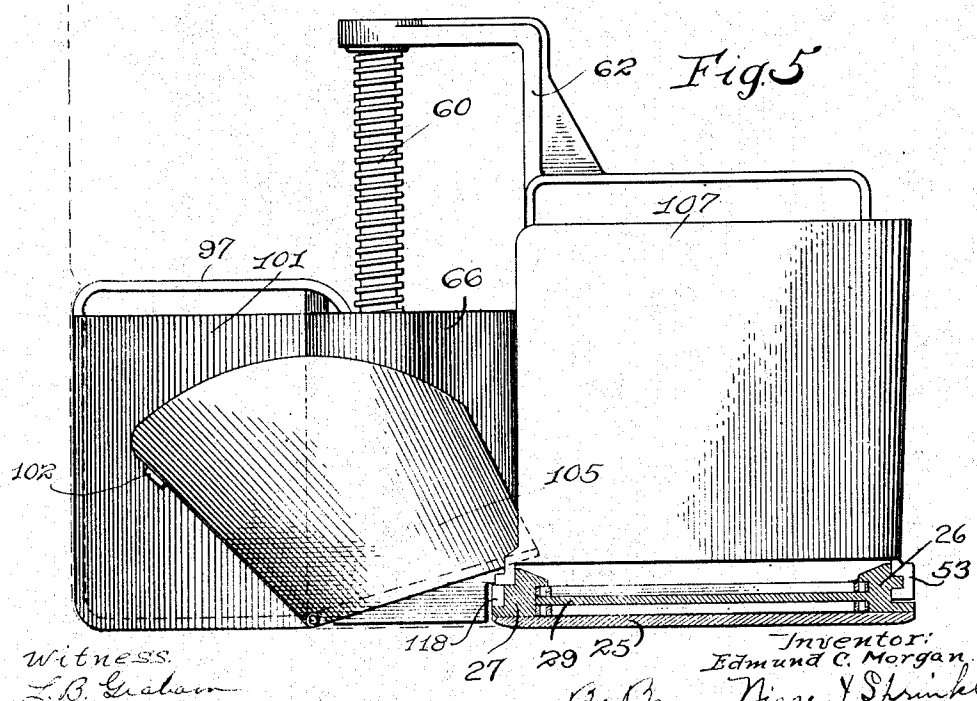

Fig. 5

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MINING AND LOADING MACHINE

Original Filed May 5, 1916 6 Sheets-Sheet 4

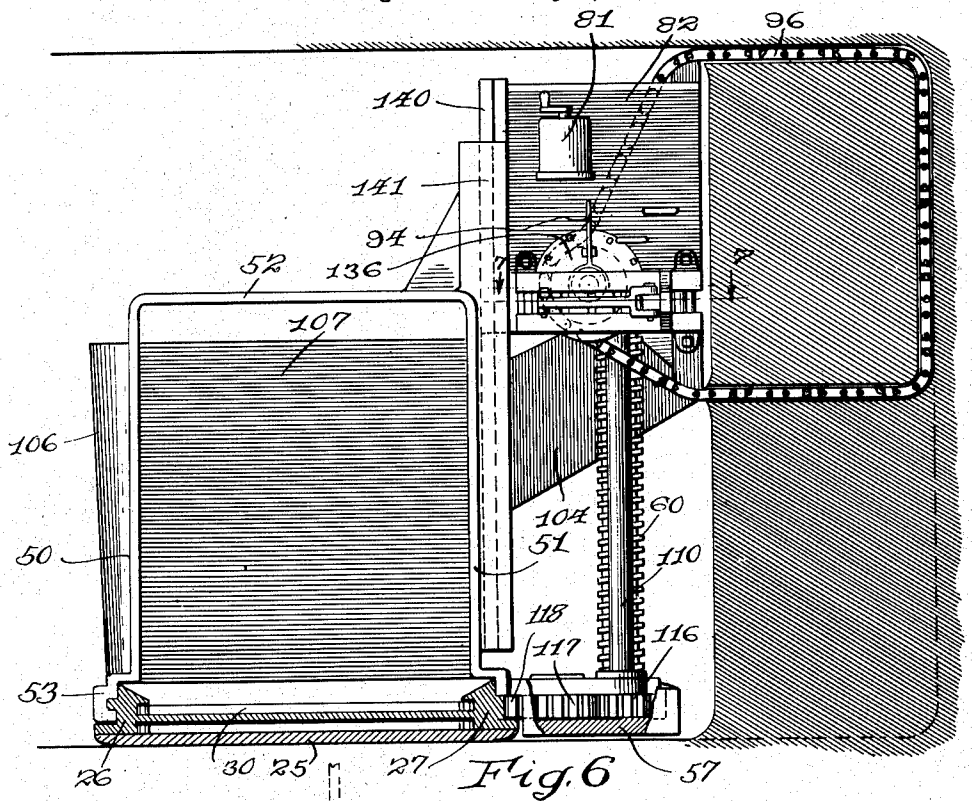

Fig. 6

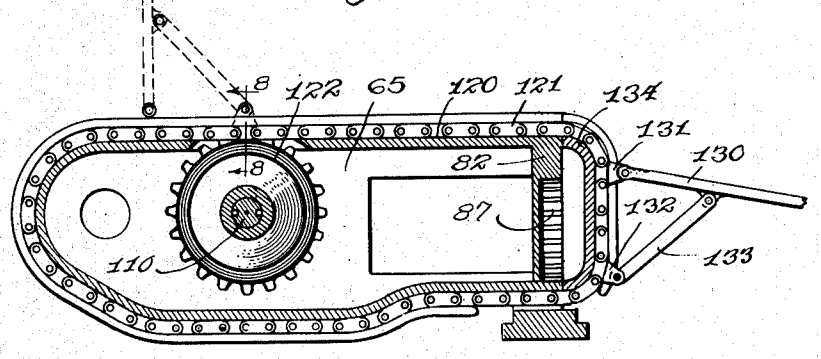

Fig. 7

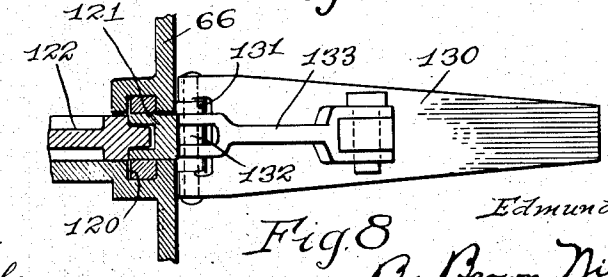

Fig. 8

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Jan. 13, 1925. 1,522,693

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MINING AND LOADING MACHINE

Original Filed May 5, 1916 6 Sheets-Sheet 5

Fig. 9

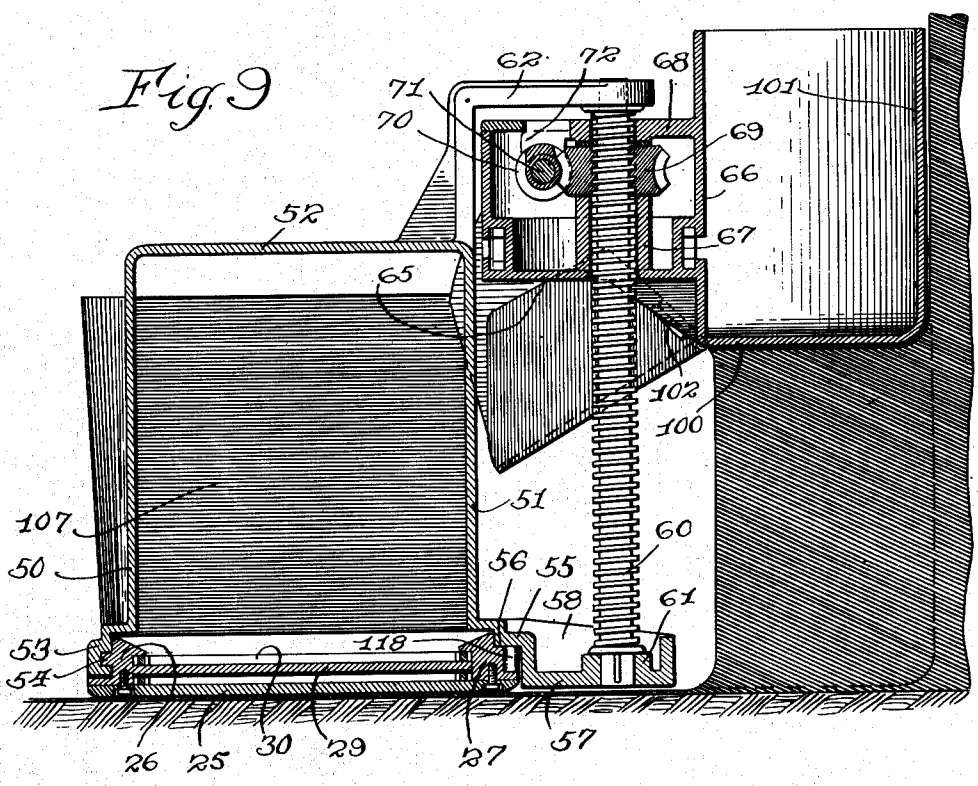


Fig. 10

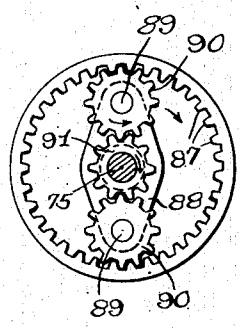
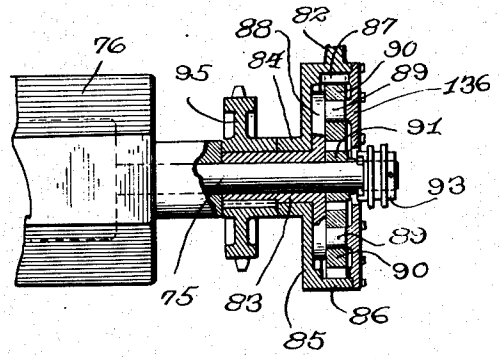


Fig. 11



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MINING AND LOADING MACHINE

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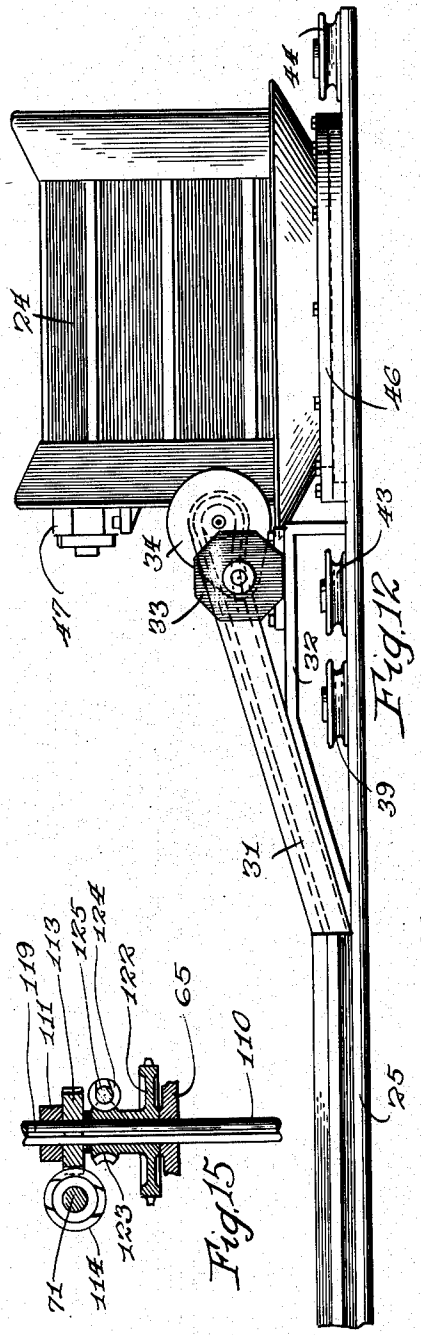

Fig. 12

Fig. 15

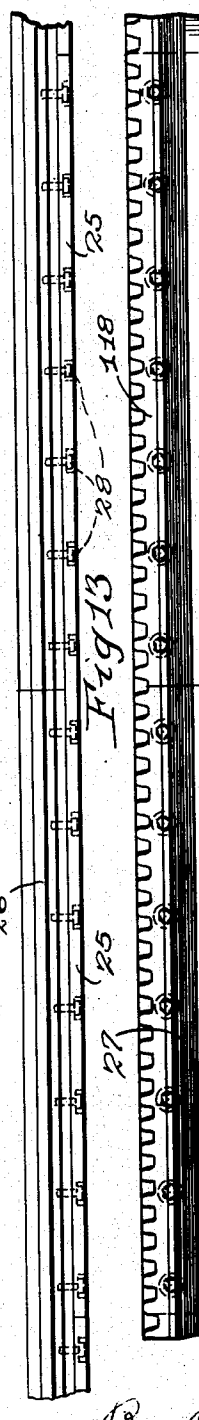

Fig. 13

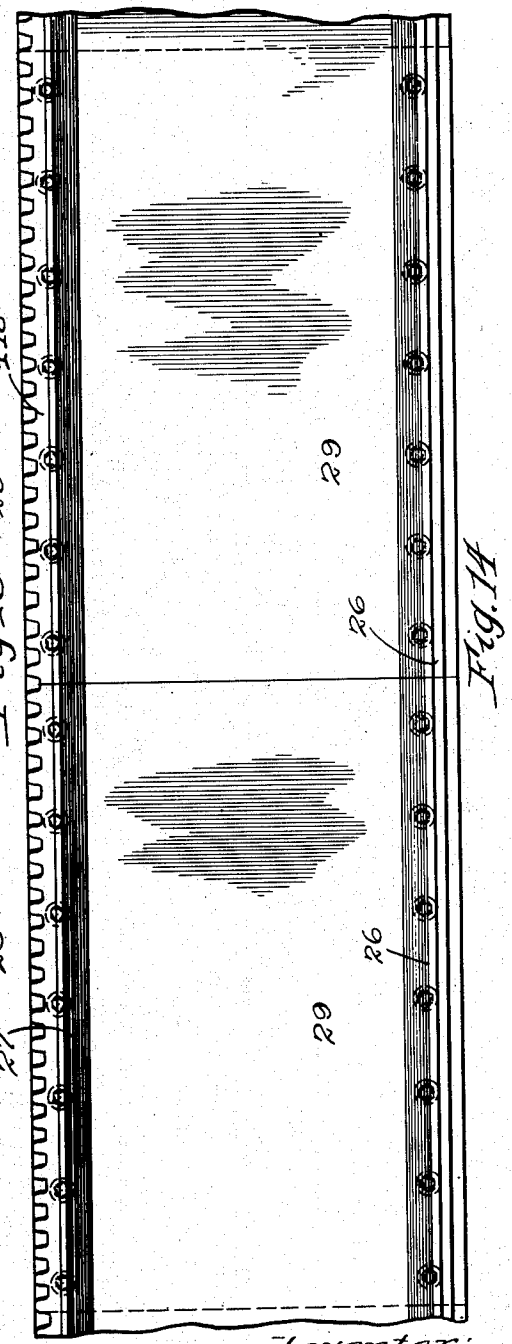

Fig. 14

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Patented Jan. 13, 1925. 1,522,693

UNITED STATES PATENT OFFICE.

EDMUND C. MORGAN, OF NEW YORK, N. Y.; OLIVE EUGENIE MORGAN EXECUTRIX OF SAID EDMUND C. MORGAN, DECEASED.

MINING AND LOADING MACHINE.

Application filed May 5, 1916, Serial No. 95,529. Renewed January 13, 1920. Serial No. 350,937.

To all whom it may concern:

Be it known that I, EDMUND C. MORGAN, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Mining and Loading Machines, of which the following is a specification.

This invention relates to machines for mining and loading coal and similar material, and has for its object the provision of a machine of the character named which shall be of improved construction and which shall be more efficient in operation than similar machines previously known. The invention consists in the combination and arrangement of parts shown in the accompanying drawings and described in the following specification, and it is more particularly pointed out in the appended claims.

In the drawings—

Fig. 1 is a horizontal sectional view through a portion of a coal mine showing the machine in operative position;

Fig. 2 is a view similar to Fig. 1 but showing the parts of the machine in a different relation to one another from that shown in Fig. 1;

Fig. 3 is a fragmentary top plan view of the machine with part of the main frame broken away;

Fig. 4 is a vertical sectional view of the machine with the severing mechanism in its upper position;

Fig. 5 is a view similar to Fig. 4 showing the severing mechanism in its lower position;

Fig. 6 is a vertical sectional view of the machine showing the front portion of the severing and dislodging mechanism in elevation;

Fig. 7 is a fragmentary horizontal sectional view of a portion of the machine showing part of the operating mechanism;

Fig. 8 is a sectional view on line 8—8 of Fig. 7;

Fig. 9 is a vertical sectional view on line 9—9 of Fig. 3;

Figs. 10 and 11 are details showing gear arrangement;

Fig. 12 is a side elevation of one end of the main frame of the machine;

Fig. 13 is a fragmentary elevational view of a portion of the main frame showing the method of assembling;

Fig. 14 is a top plan view of a portion of the frame shown in Fig. 13; and

Fig. 15 is a detail view showing gearing arrangement.

The machine shown in the drawings, which embodies one form of the invention, is especially designed for use in connection with that system of mining in which a series of parallel entries are driven leading away from the mine shaft, leaving intermediate pillars between the entries, such entries being shown at 21 and 22 in Figs. 1 and 2 of the drawing. The pillar 20 intermediate the entries, is removed by making a series of cuts lengthwise of the material of across the face of the mine vein, which constitutes the pillar between the entries. As shown in these views, of the drawings, the main frame of the machine consists of two sections 23 and 24, the section 23 being arranged along the face of the pillar being worked, and the section 24 being positioned in the entry 22 at one side of the pillar 20. In order to position the section 23 of the main frame it is necessary first to drive an entry at right angles to the entries 21 and 22 and the frame is made in sections, as shown in Figs. 13 and 14, in order that it may be placed in position in this entry. The section 23 is made up of a series of base plate sections 25 which carry at the edges of their upper surfaces a plurality of rails or beams 26 and 27. The plates 25 and the beams 26 and 27 are arranged to lap joints, as shown in Figs. 13 and 14, in order that a continuous rigid structure may be formed when the parts of the frame are all assembled. The parts of the frame are held together by a series of cap screws 28. A second plate 29 is carried by the beams 26 and 27 and is spaced a short distance above the base plate 25 (Figs. 4 and 5). The plate 29 forms a bed plate for an endless conveyer 30 (Fig. 6) which extends longitudinally approximately the full length of the main frame of the mining machine. At the end of the frame shown in Fig. 12, the beams 26 and 27 are inclined upwardly, as shown at 31, and this section is supported in its inclined position by the bracket member 32. The conveyer 30 follows this inclined section of the frame. A motor 33 is carried on the bracket 32 and drives the conveyer 30 through gearing enclosed in the gear casing 34. The base plate

25 is continued on a horizontal plane beneath the inclined section 31 and carries, as shown in Fig. 2, a motor 35 and drums 36 and 37 driven thereby. A cable 38 is wound on the drum 36 and extends over pulleys 39 and 40 to an anchor 41 located in the entry 21. A similar cable 42 is arranged to be wound on the drum 37 and extends over pulleys 43 and 44 to an anchor 45 in the entry 22. By winding the cables 38 and 42 on the drums 36 and 37 the entire frame will be moved, as will be readily understood, toward the face of the pillar 20 to move the machine into a new operating position after the completion of a cut lengthwise of the material or across the face of a mine vein. The section 24 of the frame is supported on the extended portion of the base plate 25 by means of a securing plate 46 and its construction is similar to the construction of the section 23 and carries a conveyer similar to the conveyer 30. The conveyer is driven by a motor 47 (Fig. 12) secured to the discharge end of the section 24 and discharges into a car which travels in the entry 22.

Mounted on the longitudinal beams 26 and 27 of the main frame 23, is an upstanding arch-shaped frame work including upright walls 50 and 51 connected at their upper edges by a top section 52. At the bottom edge of the wall 51 is a foot or bearing member 53 which is provided with a notch on its inner side arranged to cooperate with a flange or way 54 which extends longitudinally along the outer edge of the beam 26 (Fig. 9). The wall 51 carries a similar bearing foot 55 (Fig. 9) resting on a shoulder 56 extending longitudinally along the beam 27. The foot 55 carries at its lower edge a bracket plate 57 extending along the lower edge of the wall 51 and reinforced by an upstanding flange 58 extending around the periphery of the bracket plate.

The bracket plate 57 carries near one end thereof, as shown in Figs. 3 and 9, a screw-threaded standard 60 which is rigidly held in a bearing 61 formed in the bracket plate. Secured to the upper plate 52 of the arch-shaped supplementary frame, is a second bracket 62 which rigidly holds the upper end of the standard 60. The brackets 57 and 62 together with the standard 60 constitute a support for the cutter-head by means of which the entire operating mechanism is supported from the main frame 23, the weight being carried by the arch-shaped supplementary frame and thus transferred to the main frame.

The cutter-head comprises a horizontal plate 65 provided with a peripheral wall 66 (see Figs. 3, 7, and 9). The plate 65 carries an upstanding boss or bearing 67 through which the standard 60 passes and which fits closely the outer periphery of the threads formed on the standard. A bearing bracket 68 is secured to the wall 66 and is provided with an opening alining with the opening in the boss 67 through which the standard 60 also passes. The bracket 68 is made sufficiently strong to support the entire weight of the cutter-head, together with the weight of coal which is supported by a receiving plate carried by the head, as will be explained. The bracket 68 rests on an internally threaded worm wheel 69 positioned between the upper surface of the boss 67 and the lower surface of the bracket. The worm wheel 69 meshes with a worm 70 rotatably mounted on a shaft 71. The shaft 71 has one end journalled in a bearing 72 carried by the bracket 68 and said shaft 71 carries a gear wheel 73 on the opposite end thereof (Fig. 3). The gear wheel 73 meshes with a pinion 74 secured to the armature shaft 75 of the motor 76. The worm 70 is provided with a clutch member 77 arranged to cooperate with one face of the movable clutch 78. The clutch 78 is operated by a clutch lever 79 and an operating handle 80. By this mechanism the worm wheel 69 may be rotated in either direction to raise or lower the cutter-head on the standard 60, the direction of rotation of the worm wheel being controlled by reversing the direction of movement of the motor 76 by a controller 81 mounted on the front plate 82 of the cutter-head, as shown in Fig. 6. The electric motor used is preferably a two-speed, reversible motor.

As shown in Fig. 11, the end of the shaft 75 opposite the worm 70, has a sleeve 83 mounted for rotation thereon, which is journalled in a bearing 84 carried on a recessed casing 85 formed in the front plate 82. The casing 85 has a peripheral flange 86 provided with internal gear teeth 87. Secured to the end of the sleeve 83 within the casing 85, is a cross-arm 88 provided with stud shafts 89 on which are mounted a pair of pinions 90 arranged in position to mesh with the teeth 87 of the flange 86. The shaft 75 carries a pinion 91 in position to mesh with the pinions 90 and mounted for free rotation on the shaft 75. The pinion 91 may be clutched to the shaft 75 by a slide clutch 93 operated by a handle 94 (Fig. 6) carried on the front plate 82 of the cutter-head. The outer face of the casing 85 is closed by a plate 136 secured to the front plate 82 by cap screws. The end of the sleeve 83 opposite the casing 85 has keyed thereto a sprocket wheel 95 arranged to drive a cutter-chain 96. The gearing described constitutes a well-known system of planetary gearing by which the sprocket 95 may be driven from the shaft 75 at a greatly reduced speed. The cutter-chain 96 is mounted to slide on the forward edge of a loop-shaped cutter frame 97 having an un-

obstructed core opening therethrough, and which extends laterally from the cutter-head at the side opposite the main frame of the machine, and which is carried by the wall 66 of the core-cutter-head frame. The loop cutter thus formed is extended above and below the frame-work of the cutter-head, to give a sufficient vertical extent to the loop cutter. The chain is provided with suitable guides to direct it around the loop of the cutter frame and over the driving sprocket 95.

Extending rearwardly in alinement with the rear edge of the lower bar of the cutter frame, is a receiving plate or table 100, provided with an upstanding wall 101 located at the edge of the plate opposite the cutter-head frame, and curved toward the frame at the rear end thereof, as shown in Fig. 3. The receiving table 100 is properly strengthened by a series of angle braces secured to the base plate 65 of the cutter-head. Pivotally carried on the edge of the receiving table 100 in the rear of the cutter-head, is a discharge plate or chute 103 having guard walls 104 and 105 at the opposite ends thereof. The chute 103 bridges the space between the edge of the receiving table and the main frame, so that material discharged from the receiving table passes over the chute and is directed onto the conveyer carried by the main frame. When the cutter-head is in its upper position, as shown in Figs. 4 and 9, the chute 103 is inclined downwardly, the amount of downward movement being limited by a stop 102. When the cutter-head is in its lower position, the edge of the chute rests on the beam 27 of the main frame and is inclined slightly upwardly to direct material from the receiving platform over the beam onto the conveyer. To prevent displacement of any of the coal thus discharged onto the conveyer, a guard plate 106 is secured to the rear edge of the upright wall 50 of the supplementary frame and has a transversely bent portion 107 arranged to aline with the guard plate 105 carried by the pivoted chute.

In order to move the cutting and dislodging mechanism along the main frame to feed it into the work, an upright shaft 110 is journalled in the bracket plate 57 (Fig. 6) slightly in advance of the standard 60, and has its upper end journalled in a bearing 111 carried by a bracket 112 (Fig. 3). The upper end of the shaft 110 below the bearing 111, as shown in Fig. 15, is provided with a worm wheel 113 arranged to slide longitudinally along the shaft but prevented from rotation thereon by keys carried by the worm wheel and arranged to slide in keyways 119 extending throughout the full length of the shaft. The worm wheel 113 meshes with a worm 114 mounted for rotation on the shaft 71 and provided with a clutch face 115 (Fig. 3) arranged to cooperate with the face of the clutch 78 opposite that which cooperates with the worm 70. The clutch 78 may be moved to fasten either the worm 70 or the worm 114 with the shaft 71, or it may be moved to an intermediate position to permit the shaft to rotate freely without moving either worm. The lower end of the shaft 110 has a gear 116 (Fig. 6) secured thereto which meshes with an idler 117 carried by the plate 57 and arranged to mesh with rack teeth 118 (Fig. 4) carried on the outer edge of the beam 27 of the main frame. When the shaft 110 is driven by the motor 76 through the mechanism described, it will be clear that the supplementary frame carrying the severing and dislodging mechanism will be fed along the main frame to perform the cutting operation lengthwise of the material. When a cut across the face of a mine vein has been completed, the motor is reversed and driven at its highest speed to return the cutting mechanism to the end of the frame adjacent the entry 21, so that it may be moved into the entry when the frame is moved forwardly to begin a new cut. In order that the entry 21 may be clear to receive the severing mechanism when the frame is moved into its new position, it is necessary that the section 24 of the frame shall be located in the entry toward which the severing mechanism is moved during the cutting operation. This makes it necessary to drive the conveyer carried by the main frame in the same direction in which the machine is moved to feed it into the work. The severed coal is discharged onto the conveyer in the rear of the severing mechanism and is carried forwardly along the main frame through the arch-shaped portion of the supplementary frame and discharged into the section 24 toward which the severing mechanism is moved. It will be evident that the arch-shaped section, although shown as made up of solid plates, may be of skeleton formation if desired, the only condition being that it shall be strong enough to support the operating mechanism and shall be formed with an arch through which the coal may be carried past the operating mechanism of the machine.

As the cutter frame and receiving table are moved along the face of the mine vein in the manner described, the material severed from the mine vein passes through the loop of the enclosing cutter frame and is deposited on the receiving table, from which it is forced by the forward movement of the receiving table and the curvature of the upstanding wall 101. When the supplementary frame reaches the end of the cut, it will be apparent, however, that a certain amount of coal will remain on the receiving table. For the purpose of removing this coal be-

fore the supplementary frame is returned to its starting position, a clearing device for the receiving table is provided, best shown in Figs. 1, 2, 7 and 8. The outer edge of the peripheral wall 66 of the cutter-head is provided with a slide or guideway 120 in which an endless chain 121 is mounted to travel. The chain 121 is driven by a sprocket wheel 122 freely mounted on the shaft 110 between the plate 65 and the bearing 111 (see Fig. 15). The sprocket wheel 122 is provided with a worm wheel 123 meshing with a worm 124 mounted for rotation on the shaft 125 but arranged to be clutched thereto by a clutch 126 and an operating handle 127 (see also Fig. 3). The shaft 125 is driven by a gear 128 arranged to mesh with the pinion 74 on the motor shaft 75. The chain 121 is provided with a single flight 130 pivotally mounted on a projection 131 secured to one of the links of the chain. Pivoted to a similar projection 132 is a brace member 133 arranged to hold the flight 130 in a position normal to the chain when the chain is moving along a straight section of the chain guide. To clear the receiving table of material, at the end of a cut, the worm 124 is clutched to the gear 128 and the motor 76 operated in the direction to move the flight 130 from right to left in Figs. 1, 2 and 7. The flight begins its movement from the position shown in Fig. 1 and the movement is ended in the position shown in Fig. 2. By this movement all of the coal on the receiving table is discharged from the table onto the main frame 23 from whence it is carried to the car and transported from the mine in the same way as other coal discharged from the receiving table. The motor 76 is then reversed and the flight returned to its initial position, where it remains during the next cut made by the machine. A detachable guide 134 secured in place by cap screws 135 (Fig. 3) is provided at the forward end of the cutter head to guide the chain 120 around this portion of the machine, as shown in Figs. 3 and 7.

During the forward movement of the cutting mechanism, the pressure of the cutter chain against the material being severed as the chain is being fed into the work, tends to rotate the cutter-head about the supporting standard 60. To overcome this tendency, the forward end of the cutter-head is provided with a T-shaped vertical bar 140 which cooperates with a guide 141 formed on the forward portion of the upright wall 51 of the arch-shaped supplementary frame. The bar 140 fits loosely in the slot of the guide 141 in order that it may not bind when the cutter-head is moved vertically.

In operation, a series of parallel entries 21 and 22 are first driven leading away from the mouth of the mine. At the extremity of these entries farthest from the mine shaft, a cross entry is driven to connect two of the main entries, leaving a pillar 20 to be worked. The main frame sections 23 and 24 are then assembled in the position shown in Figs. 1 and 2, the supplementary frame, carrying the severing and dislodging mechanism, being secured in position on the section 23. To begin operation, the supplementary frame is positioned in the entry 21 with its loop cutter overlapping the edge of the pillar a sufficient amount to sever a core section from the pillar as the loop cutter moves along lengthwise of the face of the mine vein. The first cut is preferably made with the loop cutter in its upper position, as shown in Figs. 1 and 6, and as the cutter moves along the pillar the severed material is forced over the receiving table and is deflected by the plate 101 over the pivoted chute 103 onto the main frame, where it is carried by the conveyer 30 through the arch-shaped portion of the supplementary frame in the direction of movement of the cutter along the mine vein. The material is moved in this direction in order that it may be discharged into the transport cars by the supplementary section 24 located in the entry 22 toward which the cutting mechanism is moved in operation, thus leaving the entry away from which the cutting mechanism moves, free to receive the cutting mechanism at the beginning of the cutting operation. When the upper cut has been completed, the supplementary frame is returned to its starting position, the cutter head is lowered and a second cut is made across the face of the mine vein. This operation is repeated a sufficient number of times to remove a section from the entire face of the vein of the same vertical extent as the thickness of the vein of material being mined. The entire machine is then moved forwardly by the drums 36 and 37 into a new operating position, and the process as described is repeated. This operation may be continued until the entire pillar has been removed. During the operation the roof above the machine may be supported in any well-known manner, the props being removed in the rear of the machine as the machine advances and the roof allowed to fall.

From the foregoing it will be seen that the cutter frame 97, as shown in Fig. 3, is rigidly connected to the table 100 and the upright wall 101 and therefore provides a tubular receiver having an inlet opening at the right-hand end around which the chain-cutter 96 moves. Mechanism is provided for moving the receiver and cutting means as a unit lengthwise of the material to be cut above and below and at a horizontal plane. That is to say, the receiver and cutting means as a unit are adjustable in ele-

vation to cut an uppermost section and a lowermost section and also an intermediate section along horizontal planes. The receiver and its cutting means are provided with conveying mechanism cooperating therewith for carrying the material away therefrom when the receiver and cutting means are in their lowermost position or uppermost position or when in an intermediate position.

It should also be noted that since the chain-cutter has an unobstructed core-opening extending therethrough it constitutes a fully open cutting component carried by and operable around the inlet end of the tubular receiver. The chain-cutter also has a continuous close association with this inlet end. Mechanism is also provided for supporting and operating the receiver and cutting component to unitedly enter and move lengthwise of and through the material cut and for adjustment of the receiver to various elevations between the floor and roof of the mine chamber to receive and carry away the cut material passed into the receiver and component at adjusted elevation.

It should also be noted that the framework mounted on the beams 26 and 27 extends from the conveyer 23 toward the coal face, as shown in Fig. 1, and therefore the combined receiver and cutting component for cutting and accumulating material therein, as shown in Fig. 1, are fixed to the outer end of the supporting frame which is mounted on the beams 26 and 27. The traveling frame and the beams 26 and 27 thus constitute a support into which the accumulated material is discharged, as shown at the left-hand portion of Fig. 1. This support has a conveyer 23 movable at an angle to the receiver and cutting component for conveying the material cut and gathered, away from the receiver and cutting component.

It should be noted that the weight of the material discharged onto the conveyer in the manner shown in Fig. 1, assists in balancing the overhanging portion of the supplemental frame and the core-cutting apparatus carried thereby. That is to say, the weight of the dislodged material when on the conveyer adds to the weight of the main frame and of the conveyer mechanism in keeping the cutting apparatus upright and preventing it from tilting downwardly.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of my invention as defined by the claims hereto appended, and I desire therefore not be restricted to the precise construction herein disclosed.

I claim:

1. In a system of mining, the combination with an elongated endless conveyer spaced a short distance from the face of a mine wall and located in fixed relation thereto, of apparatus comprising an endless loop-chain core-cutter for dislodging material from the face of the mine wall, means for sliding said apparatus in a predetermined direction along said conveyer along the mine wall while directing the dislodged material onto said conveyer, and means for continuously operating said conveyer to transfer the dislodged material in approximately the same direction as the direction of feed of said dislodging apparatus.

2. In a mining machine, the combination with core-cutting mechanism comprising an endless loop-chain having an unobstructed core-opening therethrough, of means for operating said core-cutting mechanism including feed thereof along the mine wall working face, an elongated endless conveyer spaced a short distance from said mine wall working face, the space between said conveyer and said working face being free and unobstructed for movement of said core-cutting mechanism, means movable with said core-cutting mechanism for gradually and continuously moving portions of the cut core onto said conveyer, and means for operating said coneveyer in the direction of feeding movement of said core-cutting mechanism for transferring the dislodged material toward loading position.

3. In a mining machine, the combination with an elongated frame spaced back a short distance from the face of a mine wall and substantially parallel thereto while occupying a stationary position, of an endless conveyer mounted on said frame, a mining machine comprising an endless loop-chain core-cutter adapted to travel along the floor of the mine chamber between said frame and said mine wall while connected to said frame to slide along the same, means for operating said mining machine including feed thereof along the space between said frame and said mine wall, means movable with said mining machine for directing dislodged material onto said conveyer, and means for operating said conveyer in substantially the same direction as the feeding path of travel of said mining machine.

4. In a mining machine, a stationary main frame, a core cutter mounted on said frame, means for moving said cutter bodily along said frame to cause said cutter to sever a core section from a mine vein, and means carried by said frame for transporting the material so severed.

5. In a mining and loading machine, the combination with an elongated stationary frame adapted to rest on the floor of a mine chamber spaced a short distance from the working face, of a mining machine supported by said frame in sliding relation there-

with and extending laterally therefrom in position for operation on the mine wall spaced a short distance from said frame, means for operating said mining machine including feed thereof along said frame, endless conveyer mechanism mounted on said frame, and means for operating said conveyer mechanism to convey the dislodged material in the direction of feeding movement of said mining machine.

6. In a mining machine, the combination with a main frame, of a supplemental frame connected to opposite sides of said main frame to provide a passageway for the transfer of material along said main frame, means carried by said supplemental frame for severing material from the face of a mine vein, and means for transferring the material so severed through said passageway and along said main frame toward loading position.

7. In a mining machine, the combination with a main frame adapted to occupy a stationary position with a free and unobstructed space between the same and a mine wall, of a mining machine mounted on said frame and extending laterally therefrom for movement along said free and unobstructed space, means for operating said mining machine including feeding movement thereof along said frame to dislodge material from the mine wall, means movable with said mining machine for deflecting the dislodged material away from the mine wall across said space and above said frame, conveyer mechanism mounted on said frame, and means for operating said conveyer mechanism to transfer the dislodged material in the direction of feeding movement of said mining machine.

8. In a mining machine, the combination with an elongated frame adapted to rest in a stationary position on the floor of a mine chamber a short distance from the face of the mine wall, of a mining machine comprising an arch-shaped frame connected to lateral spaced-apart portions of said main frame and guided along the same, means for operating said mining machine including longitudinal feeding movement thereof along said main frame while said arch-shaped frame spans said main frame, conveying mechanism extending longitudinally of said main frame, means for directing dislodged material onto said conveying mechanism, and means for operating said conveying mechanism to convey the dislodged material in the direction of feed of said mining machine and through said arch-shaped frame between the lateral walls thereof.

9. In a mining and loading machine, the combination with an elongated frame adapted to rest on the floor of a mine chamber in a stationary position with a free and unobstructed space between the same and the face of the mine wall, of a mining machine having supporting connections between the same and the lateral edges on opposite sides of said elongated frame, an endless conveyer having superposed portions traveling in opposite directions along said elongated frame, means for operating said mining machine including rectilinear feeding movement along said elongated frame to dislodge material from the mine wall and direct it onto said conveyer, and means for operating said conveyer for conveying the dislodged material along said elongated frame toward loading position.

10. In a mining machine, a main frame arranged to be positioned along the face of a mine vein, a supplementary frame mounted on said main frame and movable longitudinally thereof, core-cutting mechanism carried by said supplementary frame, means for moving said supplementary frame along said main frame to cause said core-cutting mechanism to disconnect a core section from the face of the vein, means for directing the material so severed onto said main frame, and means carried by said main frame for transporting the material received thereby in the direction of the feeding movement of said supplementary frame.

11. A mining and loading machine comprising an elongated main frame adapted to be located substantially parallel to the working face of a mine wall and spaced a short distance therefrom, of a core-cutting mining machine comprising endless chain kerf-cutting mechanism extending around an unobstructed core-opening, means for guiding the core-cutting mining machine along said frame while extending laterally therefrom across the space between said frame and said mine walls, means for feeding said mining machine along said frame, mechanism for deflecting the core material away from the mine wall, and an endless traveling conveyer extending along said frame in position to continuously receive pieces of core material extending through said unobstructed core-opening during the operation of said mining machine.

12. A mining and loading machine comprising an elongated main frame adapted to occupy a stationary position parallel to the face of a mine wall, of an endless traveling conveyer mounted on said frame, a supplemental frame connected to said main frame for guidance along the same, core-cutting mechanism having an unobstructed core-opening therethrough and mounted on said supplemental frame for adjustment in elevation and in position to cut a single core of material along said mine wall at each elevated position, means for operating said core-cutting mechanism including feeding movement of said supplemental frame along

said main frame, and means for directing pieces of the single core of material from the mine wall onto said endless traveling conveyer.

13. In a mining and loading machine, the combination with a supporting frame adapted to occupy a stationary position substantially parallel with the upright face of a mine wall, a supplemental frame carried wholly by said supporting frame and connected thereto for guidance along the same, core-cutting mechanism having an unobstructed core-opening therethrough and mounted on said supplemental frame in position to cut a single core of material along the upright mine wall, an endless traveling conveyer carried wholly by said supporting frame, means for operating said core-cutting mechanism including feed of said supplemental frame along said supporting frame while the latter remains stationary, means for directing the core of material onto said conveyer continuously during the operation of said core-cutting mechanism, and means for operating said conveyer to convey the material in the direction of feed of the core-cutting mechanism and toward loading position.

14. In a mining machine, a main frame having a conveyer movable thereon, a supplementary frame mounted on and supported by said main frame and movable longitudinally thereof, said supplementary frame being arranged to span the lateral edges of said conveyer to permit material to move on said conveyer beneath said supplementary frame, and cutting apparatus carried by said supplementary frame and projecting at one side of said main frame.

15. In a mining machine, the combination with an elongated main frame adapted to rest on a mine floor in stationary position with a free and unobstructed space between said frame and the upright face of a mine wall, of a supplemental frame having guiding connections with the lateral edges of said main frame, the guiding connection with the outer lateral edge being interlocking, an endless traveling conveyer mounted on said elongated frame, and apparatus mounted on said supplemental frame to dislodge material from the mine wall and direct it onto said conveyer while traveling along said main frame and said unobstructed space.

16. In a mining and loading machine, the combination with a flat main frame, of an endless traveling conveyer mounted on said frame in an approximately horizontal operating plane, a supplemental frame connected to the lateral edges of said flat frame and spanning said conveyer, core-cutting mechanism mounted on said supplemental frame and projecting laterally from said main frame, means for operating said core-cutting mechanism including feeding movement thereof by moving said supplemental frame along said main frame, means for directing core material onto said conveyer, and means for operating said conveyer to convey the dislodged material toward loading position without interference from said supplemental frame.

17. In a mining and loading machine, the combination with a main frame, of an endless traveling conveyer mounted on said main frame, a core-cutting mining machine having a single endless chain kerf-cutter with an unobstructed core-opening extending therethrough, means for guiding said core-cutting mining machine along said main frame intermediate the ends thereof and along an unobstructed space between said main frame and an upright mine wall to affect rectilinear feed of said kerf-cutter, means in fixed relation to said mining machine for directing dislodged material from said unobstructed core-opening of said core-cutting mining machine onto said conveyer, and means for operating said conveyer to convey dislodged material toward loading position while such mining machine occupies various positions intermediate the ends of said conveyer.

18. In a mining and loading machine, the combination with a main frame having a conveyer thereon composed of superposed portions traveling in opposite directions with the upper traveling portion exposed and adapted to carry large blocks of dislodged material, of a supplemental frame mounted for longitudinal movement along said main frame and comprising an inverted U-shaped extension to span said conveyer but leaving a large passageway for the said large blocks of material, cutting mechanism carried by said supplemental frame at one side of said conveyer, means for directing severed material from said cutting mechanism onto said conveyer back of said U-shaped extension, and means for operating said conveyer to carry the material thereon through said U-shaped extension toward loading position.

19. In a mining machine, a main frame having a conveyer thereon, a supplementary frame mounted on said main frame for movement longitudinally thereof and having an inverted U-shaped extension to span said conveyer, a loop core-cutter carried by said supplementary frame at one side of said conveyer and having its cutting plane at right angles to said main frame, and means for directing material severed by said cutter onto said conveyer.

20. In a mining machine, a main frame having a conveyer thereon, a supplementary frame having an inverted U-shaped extension to span said conveyer and mounted for movement longitudinally along said main

frame, a loop core-cutter arranged at one side of said main frame with its cutting plane at right angles thereto, means for directing material severed by said cutter onto said conveyer, and means for causing said conveyer to move material carried thereby through the span of said frame.

21. In a mining machine, a flat main frame having a conveyer movable longitudinally thereof, a supplementary frame mounted on said main frame and connected to the lateral edges of said flat frame to span said conveyer, a cutter carried by said supplementary frame at one side of said conveyer, means for moving said supplementary frame along said main frame to feed said cutter into material to be mined, means for directing material severed by said cutter onto said conveyer, and means for moving material deposited on said conveyer through the span of said supplementary frame in the direction of the feeding movement of said supplementary frame along said main frame.

22. In a mining machine, the combination with a supporting frame, of a core-cutter having an unobstructed core-opening therethrough and having upper and lower runs rectilinear in elevation in position to cut plane kerfs, means for feeding said core-cutter rectilinearly and means for adjusting said core-cutter as a whole rectilinearly and vertically relatively to said frame to effect the cutting of a plane floor kerf at one elevation and the cutting of a plane roof kerf at another elevation.

23. In a mining machine, the combination with a supporting frame, of a core-cutter having upper and lower runs rectilinear in elevation, means for holding said core-cutter in all positions thereof relative to said supporting frame, means for feeding said core-cutter bodily along said frame and means for adjusting the entire cutter rectilinearly and vertically relative to said frame to secure the cutting of a plane kerf at the floor of the mine chamber in one operation and the cutting of a plane roof kerf in another operation.

24. In a mining machine, the combination with a supporting frame, of an upright loop chain core-cutter having an unobstructed core-opening therethrough and mounted on said frame in position to cut spaced-apart horizontal kerfs, and a communicating back kerf to cut a core extending in a general horizontal direction, means for operating said core-cutter including rectilinear feed of said frame, and means for adjusting said core-cutter rectilinearly and vertically relatively to said supporting frame while the latter remains stationary to secure the cutting of a plane kerf at the floor of the mine chamber in one operation and the cutting of a plane kerf at the roof of the mine chamber in another operation.

25. In a mining machine, the combination with a main frame, of a conveyer mounted on said main frame, a supplemental frame connected to said main frame and movable longitudinally thereof, an upright core-cutter having a single loop-chain core-cutter carried by said supplemental frame and extending transversely from said main frame, means for adjusting bodily the entire core-cutter vertically relative to said supplemental frame, means for feeding said core-cutter rectilinearly and mechanism for transferring cut material to said conveyer.

26. In a mining machine, a main frame, a supplementary frame carried by said main frame and movable longitudinally thereof, an upright loop cutter carried by said supplementary frame at one side of said main frame and having its cutting plane arranged at right angles to said main frame, means for directing material severed by said cutter onto said main frame, and means for adjusting said cutter vertically on said frame.

27. In a mining machine, a main frame, a conveyer carried by said frame and movable longitudinally thereof, a supplementary frame mounted for longitudinal movement along said main frame, an upright loop cutter carried by said supplementary frame at one side of said conveyer and having its cutting plane arranged at right angles to said main frame, means for directing material severed by said cutter onto said conveyer, and means for adjusting said cutter as a whole vertically relative to said main frame.

28. In a mining machine, the combination with a supporting frame, of an upright standard carried by said frame, loop chain core-cutting mechanism having an unobstructed core-opening therethrough and mounted on said standard for vertical rectilinear adjustment thereon into a position to cut a core along the roof or into a position to cut a core along the floor, and means for preventing movement of said core-cutter in an arc about said standard.

29. In a mining machine, a frame, an upright standard carried by said frame, a cutter-head carried by said standard, means for adjusting said cutter-head in its entirety vertically on said standard, an upright loop cutter carried by said cutter-head at one side of said frame, and means for maintaining the cutting plane of said cutter in fixed position relative to said frame.

30. A mining and loading machine comprising a main supporting frame adapted to occupy a stationary position near a mine wall, an endless traveling conveyer mounted on said main supporting frame, a supplemental frame mounted on said main

frame and deriving its sole support therefrom, said supplemental frame projecting laterally from said main frame toward the mine wall, cutting mechanism mounted on said supplemental frame, means for operating said cutting mechanism including movement of said supplemental frame along said main frame while being supported by the latter, and means for directing cut material onto said conveyer.

31. In a mining and loading machine, the combination with a main frame, of a conveyer mounted thereon, a supplemental frame mounted for longitudinal movement along said main frame, core-cutting mechanism having a single loop-chain kerf-cutter mounted on said supplemental frame and projecting laterally from one side of said main frame, means for adjusting the elevation of said core-cutting mechanism relatively to said supplemental frame, means for feeding said core-cutter rectilinearly and means for directing cut material from said cutting mechanism onto said conveyer at the various elevations to which said cutting mechanism is adjusted.

32. In a mining and loading machine, the combination with a main frame, a conveyer movable along said main frame, a supplemental frame mounted for longitudinal movement along said main frame, core-cutting mechanism having a single loop-chain kerf-cutter mounted on said supplemental frame in rigid relation thereto and extending laterally from said main frame, means for adjusting said core-cutting mechanism relative to said supplemental frame while being held in rigid relation therewith for bodily movement therewith to cut a core along the roof at one elevation and another core along the floor at another elevation, means for operating said core-cutting mechanism including rectilinear movement of said supplemental frame along said main frame, and means for directing the cut material from said core-cutting mechanism onto said conveyer at the various elevations of said core-cutting mechanism and during the operation thereof including the feed of said supplemental frame along said main frame.

33. In a mining machine, a main frame having a conveyer thereon, a supplementary frame carried by said main frame and movable longitudinally thereof, brackets carried by said supplementary frame at one side of said main frame, an upright standard mounted on said brackets, a cutter-head carried by said standard and adjustable vertically thereon, a loop cutter carried by said cutter-head, and means for directing material severed by said loop cutter onto said conveyer.

34. In a mining machine, a main frame having a conveyer movable longitudinally thereof, a supplementary frame arranged to bridge said conveyer and mounted for longitudinal movement on said main frame, brackets carried by said supplementary frame at one side of said main frame, an upright standard secured to said brackets, a cutter-head mounted on said standard and adjustable longitudinally thereof, an upright loop cutter carried by said cutter-head on the side thereof opposite said conveyer, and means for directing material severed by said cutter past said cutter-head onto said conveyer.

35. In a mining machine, a main frame having a conveyer thereon, a supplementary frame arranged to span said conveyer and mounted for longitudinal movement on said main frame while being supported thereby, a cutter-head carried by said supplementary frame at one side of said conveyer, severing mechanism carried by said cutter-head at the side thereof opposite said conveyer, means for directing material disconnected by said severing mechanism onto said conveyer, and means for moving the material so directed along said conveyer beneath the span of said frame.

36. In a mining and loading machine, the combination with a main supporting frame, of a conveyer mounted thereon, an arch-shaped supplemental frame mounted for support on said main frame by spanning said conveyer and having connections with said frame on both sides of said conveyer, said supplemental frame being also mounted on said main frame for longitudinal movement along the same and along said conveyer, and mining mechanism mounted on said supplemental frame for dislodging material from the mine wall onto said conveyer at various positions along said main frame.

37. In a mining machine, a main frame having a conveyer movable thereon, an arch-shaped supplementary frame mounted on said main frame and connected to the lateral edges thereof at the sides of said conveyer, means for moving said supplementary frame along said main frame, severing mechanism carried by said supplementary frame at one side of said conveyer, means for directing material disconnected by said severing mechanism onto said conveyer in the rear of said arch-shaped frame, and means for moving material on said conveyer through the arch-shaped portion of said supplementary frame in the direction of movement of said frame along said conveyer.

38. In a mining machine, a main frame having a conveyer thereon, an arch shaped supplementary frame mounted on said main frame, means for moving said supplementary frame along said main frame and conveyer, severing mechanism carried by said supplementary frame at one side of said

conveyer, means for directing material disconnected by said severing mechanism onto said conveyer in the rear of said supplementary frame, and a guard carried by said supplementary frame at the rear portion thereof for preventing displacement of material as it is directed onto said conveyer.

39. In a mining machine, a main frame having a conveyer thereon, an arch-shaped supplementary frame mounted on said main frame, severing mechanism carried by said supplementary frame at one side of said conveyer, means for directing material disconnected by said severing mechanism onto said conveyer in the rear of said supplementary frame, and a guard plate secured to the rear of said supplementary frame and arranged to extend along said conveyer at the side thereof opposite that from which the material is directed onto said conveyer and to extend across said conveyer in the rear of the portion of said conveyer which receives material from said severing mechanism.

40. In a mining machine, a main frame having a conveyer thereon, an arch-shaped supplementary frame mounted on said main frame and arranged to span said conveyer so that material may pass along said conveyer beneath said frame, means for moving said supplementary frame longitudinally along said main frame and conveyer, severing mechanism carried by said supplementary frame at one side thereof, means for directing material disconnected by said severing mechanism onto said conveyer in the rear of said supplementary frame as said supplementary frame is moved along said conveyer, and means for driving said conveyer to transport the material deposited thereon beneath said arch-shaped supplementary frame in the direction of movement of said supplementary frame along said conveyer.

41. In a mining machine, a main frame having a conveyer thereon, an arch-shaped supplementary frame mounted on said main frame and spanning said conveyer, means for moving said supplementary frame longitudinally along said main frame, brackets carried by said supplementary frame at one side of said main frame, an upright standard secured to said brackets, a cutter-head mounted on said standard, means for adjusting said cutter-head vertically on said standard, a loop cutter carried by said cutter-head at the side thereof opposite said conveyer, means for directing material severed by said cutter-head onto said conveyer in the rear of said supplementary frame as said supplementary frame is moved along said main frame, means for driving said conveyer to move the material deposited thereon beneath the arch-shaped portion of said supplementary frame in the direction of movement of said supplementary frame along said main frame, and means for adjusting said cutter-head vertically on said standard.

42. In a mining machine, the combination with a core-cutter having an unobstructed core-opening therethrough, of a receiving table extending rearwardly from said core-cutter, a supporting frame for said core-cutter and said receiving table, means for adjusting the elevation of said core-cutter and said receiving table relatively to said supporting frame, and means for operating said core-cutter at its adjusted elevation including rectilinear feeding movement of said supporting frame while said receiving table remains in receiving position back of said core-cutter.

43. In a mining machine, the combination with a supporting frame adapted to have a rectilinear path of travel in a horizontal direction, of a core-cutter mounted on said supporting frame for vertical rectilinear adjustment relatively thereto, a receiving table connected to said core-cutter and movable up and down therewith, means for operating said core-cutter including rectilinear travel of said supporting frame to secure feeding movement of said cutter, means for adjusting the elevation of said core-cutter and said receiving table relatively to said supporting frame, and means for deflecting cut sections of the core from said table.

44. In a mining machine, the combination with a supporting frame, of a receiving table carried by said frame at one side thereof, a core-cutter having an unobstructed core-opening therethrough and carried by said frame at one end of said table, means for operating said core-cutter including movement of said supporting frame along the face of a mine vein to secure feeding movement of said cutter to cut a core section from said vein, and means for adjusting the elevation of said table relatively to said frame.

45. In a mining machine, the combination with a supporting frame, of a trough-shaped receiver carried by said frame for vertical adjustment, means for adjusting the elevation of said receiver relatively to said supporting frame, a core-cutter having an unobstructed core-opening therethrough for the passage of a core of material in said receiver, and means for operating said core-cutter including movement of said frame and said receiver along the face of a mine vein to effect the severing of a core section from said vein and the passage of said core section into said receiver.

46. In a mining machine, the combination with a supporting frame, of a core-cutter mounted thereon for vertical adjustment, a receiver also mounted on said frame for vertical adjustment and in position to re-

ceive the core of material extending through said core-cutter, means for adjusting the elevation of said core-cutter and said receiver relatively to said supporting frame, and means for operating said core-cutter at its various elevations including bodily movement of said core-cutter, said receiver and said supporting frame to secure feeding movement of said cutter at its adjusted elevation while said receiver is in position to receive the core at said adjusted elevation.

47. In a mining machine, the combination with a main supporting frame, of a supplemental frame carried by said main frame, a core-cutter having an unobstructed core-opening therethrough and mounted on said supplemental frame for vertical adjustment relatively thereto and to extend laterally from said main frame, means for adjusting the elevation of said core-cutter relatively to said supplemental frame, a core-receiver mounted on said supplemental frame in position to receive the core from said core-cutter, means for operating said core-cutter including feed thereof by movement of said supplemental frame longitudinally along said main frame, and means for deflecting material from said core receiver toward said main frame.

48. In a mining machine, a main frame having a conveyer thereon, a supplementary frame mounted on said main frame and movable longitudinally thereof, a cutter-head carried by said supplemetary frame at one side of said main frame, means for adjusting said cutter head vertically on said supplementary frame, a trough-shaped receiving table carried by said cutter-head at the side thereof opposite said conveyer, a loop cutter carried by said cutter-head at the forward end of said receiving table, means for moving said supplementary frame along said main frame and conveyer to cause said cutter to sever material from the face of a mine vein and to deposit the material so severed on said receiving table, and a deflector at the rear end of said receiving table arranged to direct the material disconnected by said cutter from said table past the rear of said cutter-head onto said conveyor.

49. In a mining machine, a loop chain core-cutter, means for maintaining the cutting plane of said cutter in an upright position, a receiving table arranged in the rear of said cutter to receive material severed thereby, and a ram for removing the material from said table.

50. In a mining machine, the combination with a supporting frame, of a core-cutter mounted on said frame for cutting a single core of material along a mine wall, means for adjusting the elevation of said core-cutter relatively to said supporting frame, means for maintaining the cutting plane of said cutter in an upright position at its various elevations, means for operating said core-cutter in a direction extending transversely of said cutting plane, a receiver mounted on said supporting frame back of said core-cutter in position to receive the cut core therefrom, and means for effecting the discharge of cut material from said receiver.

51. In a mining machine, the combination with a supporting frame, of a core-cutter having an unobstructed core-opening therethrough and mounted at one end of said frame, means for maintaining said core-cutter in fixed upright relation to said supporting frame, a receiving table mounted on said supporting frame in the rear of said core-cutter in position to receive the cut core extending through said core-cutter, a flight mounted on said supporting frame for movement through said unobstructed core-opening, and means for operating said flight to force the core material along said receiving table toward the discharge end thereof.

52. In combination, a mining machine frame, a loop core-cutter carried by said frame at one side thereof, means for maintaining the cutting plane of said cutter in a fixed upright position relative to said frame, a receiving table arranged in the rear of said loop cutter for receiving the material severed thereby, and means carried by said frame and projecting over said table for forcing material from said table at the end thereof opposite said cutter.

53. In a mining machine, a main frame, a conveyer thereon, a supplementary frame carried by said main frame, a loop core-cutter secured to said supplementary frame at the side thereof opposite said main frame, means for holding said loop cutter in an upright position with its cutting plane arranged at right angles to said main frame, a receiving table arranged at the rear of said loop core-cutter, means for moving said supplementary frame along said main frame to cause said cutter to sever material from the face of a mine vein and to deposit the material so severed on said receiving table, and a movable member for forcing material so deposited from said table and for discharging said material onto said conveyer.

54. In a mining machine, the combination with a supporting frame, of core-cutting mechanism having an unobstructed core-opening therethrough and mounted on said frame to extend transversely of the path of travel of said frame, means for operating said core-cutting mechanism including bodily movement of said frame together with said core-cutting mechanism to secure feeding movement of the latter, a core receiver associated with said core-cutting mechanism in position to receive the core cut by said core-cutting mechanism, and mechanism comprising an endless chain and a

flight connected thereto for engaging the core material left on the receiver after the core-cutting mechanism has completed its stroke across the mine wall to an entry, to effect the removal of such remaining core material from said receiver.

55. In a mining machine, a main frame having a conveyer thereon, a supplementary frame mounted on said main frame and spanning said conveyer, a cutter head carried by said supplementary frame at one side of said main frame, means for adjusting said cutter-head vertically relative to said supplementary frame, a loop cutter carried by said cutter-head at the side thereof opposite said main frame, a receiving table arranged in the rear of said loop cutter for receiving material severed thereby, means for moving said frame and cutter along said main frame to cause said cutter to sever a core section of material from the face of a mine vein and to deposit said material on said receiving table, means carried by said cutter-head for discharging the material so severed from said table onto said conveyer, and means for driving said conveyer to move the material so discharged beneath the span of said supplementary frame in the direction of movement of said supplementary frame along said main frame.

56. In a mining machine, a cutter-head, a loop cutter carried by said cutter-head in an upright position at one side thereof, a receiving table arranged in the rear of said cutter for receiving the material severed thereby, means for adjusting said cutter-head and table vertically, and a discharge chute pivotally carried by said receiving table.

57. In a mining machine, the combination with a main frame, of an endless traveling conveyer mounted thereon, a supplemental frame having guiding connections to said main frame and being movable along said main frame while the latter remains stationary, severing mechanism mounted on said supplemental frame and extending laterally therefrom in position to operate on an upright mine wall spaced from said main frame, a table mounted on said supplemental frame in position for receiving material dislodged by said severing mechanism, and a discharge chute extending from said receiving table to said conveyer to direct dislodged material from said table onto said conveyer for the various positions of said supplemental frame along said main frame intermediate the ends of said conveyer.

58. In a mining machine, a main frame having a conveyer thereon, a supplementary frame mounted on said main frame and movable longitudinally thereof, a cutter-head carried by said supplementary frame at one side of said main frame, means for adjusting said cutter-head vertically on said supplementary frame, a loop cutter carried by said cutter head at the side thereof opposite said main frame, means for holding said loop cutter in fixed position in an upright plane at right angles to said main frame, a receiving table arranged in the rear of said loop cutter, means for moving said supplementary frame along said main frame to cause said cutter to sever a core section from the face of a mine vein, and to deposit the material so severed on said receiving table, a discharge chute pivotally secured to said table at the end thereof opposite said cutter, and an endless chain carried by said cutter-head and provided with a flight arranged to move material from said receiving table over said chute onto said conveyer.

59. In a mining machine, the combination with a supporting frame, of a cutter frame extending from one side of said supporting frame transversely of the path of movement of said supporting frame, said cutter frame having an unobstructed core-opening therethrough, an endless chain cutter mounted on said cutter frame to travel around said unobstructed core-opening, means for feeding said cutter rectilinearly, means for adjusting the elevation of said cutter frame rectilinearly, a motor mounted on said cutter frame to move rectilinearly up and down therewith, and driving mechanism between said motor and said chain cutter mounted to move up and down with said motor and said cutter frame.

60. In a mining machine, a main frame having a conveyer thereon, a supplementary frame mounted on said main frame and movable longitudinally thereof, an upright standard carried by said supplementary frame at one side of said conveyer, a cutter head mounted on said standard and adjustable longitudinally thereof, gearing for moving said cutter-head along said standard and for moving said frame along said conveyer, and a motor carried by said cutter-head for operating said gearing.

61. In a mining machine, the combination with an elongated main frame adapted to rest in stationary position on the floor of a mine chamber spaced a short distance from a mine wall, of a supplemental frame mounted for movement along said main frame, a core-cutter mounted on said supplemental frame and extending laterally from said main frame to the mine wall, means for adjusting said core-cutter vertically rectilinearly on said supplemental frame, a motor mounted on said supplemental frame for driving said adjusting means and for driving said core-cutter, and means for moving said supplemental frame along said main frame to effect feeding movement of said core-cutter at its adjusted elevation.

62. In a mining machine, a main frame having a conveyer thereon, an arch shaped

supplementary frame mounted on said main frame and spanning said conveyer, brackets projecting from said supplementary frame at one side of said main frame, an upright screw-threaded standard carried by said brackets, a cutter-head mounted on said standard, a nut threaded on said standard for moving said cutter-head vertically thereon, severing mechanism carried by said cutter-head at the side thereof opposite said main frame, means for moving said supplementary frame longitudinally along said main frame, means for directing material severed by said cutter onto said conveyer, and a motor carried by said cutter-head for operating said nut and frame-moving means.

63. In a mining machine, the combination with a frame, of core-cutting mechanism carried by said frame and having an unobstructed core-opening therethrough, means for operating said core-cutting mechanism including feeding movement thereof by bodily movement of said frame to cause said core-cutting mechanism to sever a core section from a mine vein, and means mounted on said frame and movable relative thereto for discharging the severed material therefrom independently of bodily movement of said frame.

64. In a mining machine, a frame, a core-cutter carried by said frame, means for moving said frame and cutter along a mine vein for severing a core section from said vein, and for forcing the material so severed from said frame by the resistance offered by the unremoved portion of the mine vein, and means movable on said frame for discharging therefrom material remaining on said frame at the end of a cut.

65. In a mining machine, the combination with core-cutting mechanism having an unobstructed core-opening therethrough, of means for operating said core-cutting mechanism to cut a core from the face of a mine vein, a receiving table in position adjacent said core-cutting mechanism to receive and carry the core material, and mechanism movable relatively to said receiving table for moving the material along said table and off therefrom.

66. In a mining machine, the combination with a supporting frame, of a core-cutter having an unobstructed core-opening and carried by said frame at one side thereof for the passage of a core of material therethrough substantially parallel to the path of travel of said supporting frame, a receiving table arranged at the rear of said core-cutter and movable with said frame beneath the core of material, means connected to said frame and movable therewith for deflecting the core from said receiving table, and a device for removing from the receiving table the material that remains thereon when a cut is completed and no unmined mass remains immediately ahead of said core-cutter.

67. In a mining machine, a frame, a core cutter carried by said frame at one side thereof, means for moving said frame along the face of a mine vein to cause said cutter to sever a core section of material from said vein, a receiving table positioned in the rear of said core cutter and movable beneath the material severed by said cutter, a deflector for directing the severed material from said table during the movement of said frame, and means for discharging the material from said table when said frame is at rest at the end of a cut.

68. In a mining machine, a frame, a core cutter carried by said frame, means for moving said frame and cutter along the face of a mine vein to sever a core section of material from said vein between spaced apart entries, a receiving table positioned in the rear of said cutter for receiving the material severed thereby, a deflector arranged to direct the severed material from said receiving table as said material is forced by the movement of said frame and the resistance of the unsevered portion of said vein against said deflector, and a device for discharging material from said receiving table when said frame has been brought to rest at the end of a cut at one of said entries.

69. In a mining machine, the combination with a supporting frame, of core-cutting mechanism having an unobstructed core-opening therethrough and carried by said supporting frame to extend laterally therefrom transversely of the path of travel of said frame, means for operating said core-cutting mechanism including feeding movement thereof by movement of said frame along a mine wall substantially parallel thereto to cut a core along the mine wall between spaced apart entries, a platform mounted on said frame for receiving the cut material, and mechanism movable over said platform longitudinally of the same to engage the remaining core at the finishing entry and move such remaining core from said platform.

70. In a mining machine, the combination with a supporting frame, of a core-cutter frame extending laterally from said supporting frame and having an unobstructed core-opening therethrough, a chain-cutter carried by said cutter frame, means for driving said chain-cutter, means for moving said supporting frame and said cutter frame rectilinearly along a mine wall between spaced-apart entries to effect feeding movement of said chain-cutter while being driven to cause the cutting of a core of material between said entries, a table mounted on said supporting frame back of said core-cutter frame in position to receive the core extending

through said unobstructed core-opening, a deflector at the rear portion of said supporting frame in position to engage the core of material and move it from said receiving table toward that side of said supporting frame opposite the mine wall, and mechanism mounted on said supporting frame in position for engaging the core remaining on the table after reaching the finishing entry and moving such remaining core from said receiving table.

71. In a mining machine, a frame, a cutter carried by said frame, a table positioned in the rear of said cutter for receiving material severed thereby, a deflector mounted on said table at the end thereof opposite said cutter, a contact member, and means for moving said contact member over said table to slide the material thereover against said deflector to discharge the material from said table.

72. In a mining machine, the combination with a supporting frame, of a cutter head carried by said frame and having an unobstructed core-opening therethrough, severing mechanism carried by said cutter head, a table carried by said frame in position to receive the core of material extending through said unobstructed core-opening, a movable flight mounted on said frame in position for engaging the forward end of the core of material, and means for operating said flight to engage the core of material and slide the same over said table and off from the same.

73. In a mining machine, a frame, a cutter-head carried by said frame, core-cutting mechanism carried by said cutter-head, a table carried by said cutter-head in the rear of said core-cutting mechanism and arranged to receive the material disconnected thereby, a deflector positioned on said table at the end thereof opposite said core-cutting mechanism, a flight carried by said cutter-head, and means for moving said flight to force material along said table and against said deflector to discharge said material from said table.

74. In combination, a mining machine frame, a loop core-cutter arranged in a vertical plane at one side of said frame, a receiving table positioned in the rear of said loop core-cutter, a deflector mounted on said table at the rear end thereof, means for moving said frame and cutter along the face of a mine vein to cause said cutter to sever a core section from said vein and to force the material so severed against said deflector to cause said material to be discharged from said table, and means carried by said frame for discharging material from said table independently of the movement of said frame.

75. In a mining machine, a frame, a cutter-head carried by said frame, a loop core-cutter carried by said cutter-head at one side thereof, a receiving table carried by said cutter-head in the rear of said loop cutter, a deflector mounted on said receiving table at the rear end thereof, means for moving said frame along the face of a mine vein to cause said loop cutter to sever a core section from said vein and to force the severed material against said deflector to discharge said material from said table, a movable flight carried by said cutter-head, an endless chain for operating said flight, and means for driving said chain to cause said flight to discharge material from said receiving table independently of the movement of said frame.

76. In a mining machine, the combination with a main frame, of an arc-shaped supplemental frame mounted on said main frame and movable along the lateral edges thereof, and core-cutting mechanism carried by said arch-shaped frame at one side of said main frame.

77. In a mining machine, the combination with an elongated main frame adapted to be mounted in stationary position on the floor of a mine chamber, of a conveyer carried by said elongated main frame and movable longitudinally thereof, an arch-shaped supplemental frame mounted on said main frame and arranged to span said conveyer to be guided along the lateral edges of said main frame, and dislodging mechanism carried by said supplemental frame at one side of said main frame.

78. In a mining machine, the combination with an elongated main frame adapted to occupy a stationary position adjacent a mine wall, of an endless conveyer mounted on said elongated frame, an arch-shaped supplemental frame spanning said conveyer and guided along the lateral portions of said elongated frame, and dislodging mechanism carried by said supplemental frame and movable along said main frame to direct material onto said conveyer.

79. In a mining machine, the combination with a main frame, of an arch-shaped supplemental frame connected to said main frame to span the same and be guided longitudinally thereof, core-cutting mechanism carried by said supplemental frame at one side of said main frame and adjustable vertically of said supplemental frame, and means directing severed material onto said main frame.

80. In a mining machine, a main frame, a conveyer carried by said main frame and movable longitudinally thereof, an arch-shaped supplementary frame spanning said main frame and conveyer, and movable longitudinally thereof, core-cutting mechanism carried by said supplementary frame at one side of said main frame and adjustable vertically relative thereto, means for directing material from said cutter-head onto said

main frame, and means for driving said conveyer to transfer the material so directed beneath the arch of said supplementary frame.

81. In a mining machine, the combination with an elongated main frame, of a supplemental frame having an inverted U-shaped portion spanning said main frame and guided along the lateral edges thereof, core-cutting mechanism mounted on said supplemental frame and extending from one side of said main frame, an interlocking guiding connection between said U-shaped frame and the other side of said main frame, means for operating said core-cutting mechanism including movement of said supplemental frame along said main frame to effect feeding movement, mechanism movable with said supplemental frame for deflecting core-material onto said main frame back of said U-shaped frame, an endless conveyer mechanism for receiving the dislodged material and conveying it in the direction of feeding movement through said arch-shaped frame.

82. In a mining machine, the combination with an elongated main frame, of an endless conveyer mounted on said elongated frame, an inverted U-shaped frame guided along said main frame and spanning said conveyer, core-cutting mechanism connected to said U-shaped frame, means for operating said core-cutting mechanism including movement of said U-shaped frame along said main frame to secure feed of said core-cutting mechanism, a deflector for breaking off portions of the core and directing said dislodged material onto said conveyer back of said U-shaped frame, and means for operating said conveyor to move the dislodged material forward through said U-shaped frame in the direction of feeding travel of said core-cutting mechanism.

83. In a mining machine, the combination with a main frame, of a supplemental frame mounted on said main frame and movable longitudinally thereof, chain core-cutting mechanism carried by said supplemental frame at one side of said main frame in position to cut spaced-apart plane kerfs and a communicating back kerf, and rack and pinion mechanism connected between said main and supplemental frames on the same side of said main frame for moving said supplemental frame along said main frame to secure feed of said chain core-cutting mechanism to produce said kerfs for the formation of a core extending through an unobstructed core-opening.

84. In a mining machine, the combination with a main frame having a conveyer thereon, of a supplemental frame mounted on said main frame and movable longitudinally thereof, kerf-cutting mechanism adapted to extend laterally from said supplemental and main frames into the mine wall transversely of the latter for severing material from the face of the mine vein, means directing the material so severed onto said conveyer, and gearing connected between the main and supplemental frames for moving the supplemental frame together with said cutting mechanism longitudinally of said main frame and conveyer to secure feeding movement of said cutting mechanism while extending into the mine wall transversely thereof.

85. In a mining machine, the combination with a stationary elongated main frame adapted to be located near a mine wall, of a supplemental frame guided along said main frame, loop-chain core-cutting mechanism having an unobstructed core-opening therethrough and carried by said supplemental frame and extending laterally from said main frame to the mine wall in position to cut spaced-apart plane kerfs and a communicating back kerf, rack and pinion mechanism between said supplemental frame and that side of said main frame adjacent the mine wall, and means for driving said rack and pinion mechanism to feed said loop chain core-cutting mechanism along the mine wall.

86. In a mining machine, the combination with a comparatively narrow elongated frame, of an endless conveyer on said frame, an arch-shaped frame looped over said conveyer to span the same and be guided along the lateral portions of said first-named frame on opposite sides of said conveyer, dislodging mechanism carried by said arch-shaped frame to extend laterally from one side of said elongated frame, means for directing dislodged material onto said conveyer, and rack and pinion mechanism between said arch-shaped frame and that side of said elongated frame adjacent said dislodging mechanism for moving said dislodging mechanism and said directing means along said elongated frame.

87. In a mining machine, the combination with a loop-chain core-cutting mechanism having an unobstructed core-opening therethrough, of means for operating the same including feeding movement bodily along a mine wall, apparatus movable with said core-cutting mechanism for dislodging the core, and means arranged along the path of travel of said core-cutting mechanism and said dislodging mechanism in position for receiving material from the latter and transferring the same in the direction of feeding movement toward loading position.

88. In a mining and loading machine, the combination with a main frame, of cutting apparatus mounted on said main frame and extending to one side thereof in position for operating on the mine wall, a conveyor extending along said main frame means for directing dislodged material from said cut-

ting apparatus to said conveyor, and means for moving the cutting apparatus and directing means along said main frame in the direction of the operation of said conveyor to cause the weight of the conveyed material to assist the weight of the main frame in balancing the overhanging weight of the cutting apparatus and directing means.

89. In a mining and loading machine, the combination with a stationary main frame, of a conveyor mounted thereon, a supplemental frame guided along said main frame and supported by opposite sides thereof, cutting apparatus mounted on said supplemental frame and extending laterally therefrom, and means for directing material from said cutting apparatus to said conveyor whereby the weight of said material assists the weight of the main frame and conveyor in balancing the supplemental frame and cutting apparatus.

90. In a mining machine, the combination with a frame having spaced-apart upright supporting members connected across the tops thereof, of core-cutting apparatus connected to said frame and extending to one side thereof, means for operating said core-cutting apparatus including the feed thereof by movement of said frame along a mine wall, and means for directing material dislodged by said cutting apparatus to the space between the line of travel of said upright supporting members.

91. In a mining machine, the combination with a frame having upright spaced-apart supporting members, of spaced-apart guides engaged respectively by said spaced-apart supporting members, dislodging apparatus extending off to one side of said frame, means for actuating said dislodging apparatus, means for feeding said cutting mechanism by moving said frame along said guides, and means for directing material dislodged by said dislodging apparatus into the space between said guides.

92. In a mining machine, the combination with a stationary elongated main frame, of a supplemental frame carried by said main frame and movable along the same and along a mine wall, cutting mechanism carried by said supplemental frame and extending off to one side of said main frame to the mine wall, means for actuating said cutting mechanism, means for feeding said cutting mechanism by moving the same rectilinearly along said main frame and along the mine wall, and means for directing severed material onto said main frame.

93. In a mining machine, the combination with a loop chain core cutter having an upper straight run and a lower straight run, of means for operating said loop chain core cutter including rectilinear feed thereof, and means for adjusting the elevation of said core cutter as a whole whereby at the uppermost elevation a substantially horizontal kerf can be cut at the roof of the mine chamber, and at the lowermost position a substantially horizontal kerf can be cut at the floor of the mine chamber.

94. In a mining machine, the combination with a supporting frame, of cutting mechanism comprising means for cutting simultaneously spaced-apart horizontal parallel kerfs, means for operating said cutting mechanism including rectilinear feed thereof, and means for vertically and simultaneously adjusting said cutting mechanism as a whole rectilinearly and relatively to said frame to effect the cutting of such spaced-apart kerfs at various elevations.

95. In a mining machine, the combination with a supporting frame, of a loop chain core-cutter having an upper straight run and a lower straight run, means for operating said cutter including rectilinear feed thereof, and means for adjusting the elevation of the core-cutter as a whole relatively to said supporting frame while maintaining the said upper and lower runs in the same relative positions, to effect the cutting of the uppermost and lowermost kerfs in substantially horizontal planes at the floor and roof.

96. In a mining machine, the combination with a supporting frame, of an upright standard thereon, core-cutting mechanism adjustable vertically on said standard relatively to said frame, means for guiding said core-cutting mechanism along said standard while confining said core-cutting mechanism to a rectilinear up and down movement on said standard, and means for operating said core-cutting mechanism including rectilinear movement of said frame together with said core-cutting mechanism to secure feeding movement of the latter.

97. In a mining and loading machine, the combination with a mechanical conveyer with the space above the same free and unobstructed for the transfer of comparatively large blocks of dislodged material, of cutting apparatus extending off to one side of said conveyer and movable in feeding direction along the same, means for directing the large blocks of material from said cutting apparatus onto said conveyer, and a guard co-acting with said directing means to confine the dislodged material to said conveyer.

98. A mining and loading machine comprising a main frame, an endless conveyer mounted thereon with the space above the same free and unobstructed for the transfer of comparatively large blocks of dislodged material, a supplemental frame mounted on said main frame and movable along the latter, cutting apparatus mounted on said supplemental frame and extending off to one side of said main frame, means for di-

recting material from said cutting apparatus onto said conveyer, and guard mechanism carried by said supplemental frame in position to coact with said directing means to confine the dislodged material to said conveyer.

99. A mining and loading machine comprising a mechanical conveyer having the space above the same free and unobstructed for the transfer of large blocks of material, cutting apparatus extending off to one side of said conveyer, a frame for supporting said cutting apparatus, means for directing material from said cutting apparatus onto said conveyer, and a guard plate connected to said frame and arranged to extend along said conveyer at the side thereof opposite that from which the material is directed onto said conveyer and to extend across the conveyer to co-act with said directing means to confine dislodged material to said conveyer.

100. In a mining machine, the combination with a receiving platform, of cutting mechanism at one end of said platform comprising means for cutting spaced apart kerfs, means for moving said cutting mechanism and said platform bodily along a mine wall, a frame for supporting said receiving platform and said cutting apparatus, and means for adjusting the combined platform and cutting mechanism relatively to said main frame.

101. In a mining machine, the combination with a main frame, of a receiving platform mounted thereon, a loop core cutter located at one end of said platform, means for feeding said core cutter and platform rectilinearly to dislodge a core section from a mine vein, and means for adjusting the position of said receiving platform and said core cutter together relatively to said main frame.

102. In a mining machine, the combination with a supporting frame, of a movable receiving platform mounted thereon for vertical adjustment, a loop core cutter positioned at one end of said platform, means for moving said platform and said core cutter horizontally for severing a core section from the face of a mine vein, means for deflecting the section so severed from said platform, and means for adjusting the position of both said receiving platform and said core cutter vertically relatively to said supporting frame.

103. In a mining machine, the combination with a main frame, of a receiving platform carried by said main frame and extending off to one side thereof, a loop core cutter carried by said platform at one end thereof, means for moving said core cutter together with said platform along the face of the mine vein to cause said cutter to cut a core section from said vein, and means for adjusting the core cutter together with said platform vertically on said main frame.

104. In a mining machine, the combination with a main frame, of a receiving chute carried by said main frame and extending off to one side thereof, a loop core cutter carried at one end of said chute, means for feeding said core cutter along the face of a mine vein to cut a core section from said vein and receive it in said chute, and means for adjusting vertically on said main frame the said core cutter together with said chute.

105. In a mining machine, the combination with a loop chain core cutter, of a frame for guiding the same in a predetermined cutting plane of operation, a main frame, means for holding said guide frame on said main frame in an upright position, a receiving table arranged in the rear of said core cutter to receive material cut thereby, and means for removing the material from said table.

106. In a mining machine, the combination with a core cutter, of a guide frame for directing said core cutter in an upright plane of movement, a main frame, means for holding said guide frame on said main frame in an upright position, a receiving platform mounted in the rear of said core cutter to receive material cut thereby, and means for removing material from said table.

107. In a mining machine, the combination with a loop chain core cutter, of an upright guide frame having an unobstructed core opening therethrough, means for operating said chain-cutter in its guide frame in an upright position at various elevations, means for adjusting the elevation of said guide frame together with said core cutter, a receiving table in the rear of said cutter for receiving material projecting through said guide frame, and means for effecting the removal of material along said table and the discharge of the said material from said table.

108. In a mining machine, the combination with a core cutter having an unobstructed core opening therethrough and comprising mechanism for cutting spaced-apart kerfs and a communicating kerf spaced back from the face of the mine wall, of a receiving platform back of said core cutter in horizontal position, and means movable along said horizontal platform to eject cut material therefrom.

109. In a mining machine, the combination with a core cutter having an unobstructed core opening therethrough, of a receiving platform back of said core cutter, and means operable through the core opening of said core cutter and along said platform to eject cut material therefrom.

110. In a mining machine, the combination with a frame, of a loop chain core cutter mounted on said frame and having

an unobstructed core-opening therethrough, a receiving platform, means for operating said core cutter, a flight movable rectilinearly along said platform, and means for operating said flight to eject material from said platform.

111. In a mining machine, the combination with a frame, of loop chain core cutting mechanism mounted on said frame, means for operating said core cutting mechanism including the feed thereof in a direction substantially at right angles to the plane of operation of said core cutting mechanism, a platform for receiving the cut material, a deflector carried by said frame for directing the material off one side of said platform, a pushing device, and means for operating said pushing device at the end of a feeding movement along a section of a mine wall to eject from said platform the remaining material left thereon after such feeding movement.

112. In a mining machine, the combination with a frame, of a core cutter carried by said frame in an upright position, a receiving platform arranged at the rear of said core cutter for receiving material therefrom, means for adjusting said core cutter and platform vertically, and a discharge chute pivotally connected to said receiving platform.

113. In a mining machine, the combination with a supporting frame, of a core cutter mounted thereon, means for actuating said core cutter, a receiving platform in the rear of said core cutter, a deflector at the rear end of said platform in position to engage the projecting end of the core while still integral with the unmined mass, means for moving said core cutter along the face of a mine vein to cause said cutter to cut a core section from said vein and to force the material so severed against said deflector to cause said material to be discharged from said platform, and means for discharging material from said platform independently of the movement of said core cutter along the face of the mine vein.

114. In a mining and loading machine, the combination with a main frame, of a conveyer mounted thereon, a loop chain core-cutter guided along said main frame and having a continuous cutting stroke around the core from the place where the cutting mechanism enters the mine wall to the place where it emerges therefrom, a curved chute in position to direct the cut core of material onto said conveyer, and means for moving said core-cutting mechanism along said main frame.

115. In a mining and loading machine, the combination with a main frame having straight sides, of an endless mechanical conveyor on said main frame between said straight sides, a supplemental frame supported by said main frame and guided along the sides thereof, cutting mechanism mounted on said supplemental frame, means for actuating said cutting mechanism, means for feeding said cutting mechanism by moving said main frame, and means for directing cut material onto said conveyor.

116. In a mining and loading machine, the combination with a flat main frame adapted to rest on the floor of a mine chamber, of an endless conveyor carried by said frame between the sides thereof, a supplemental frame supported by said main frame and guided along the sides thereof, core cutting mechanism extending laterally from said supplemental frame, means for actuating said core cutting mechanism, mechanism for moving said supplemental frame along said main frame to effect the feed of said core cutting mechanism to cut a core substantially parallel to said main frame, and means for directing the cut material from said core cutter onto said conveyor.

117. In a mining and loading machine, the combination with a stationary main frame, of a conveyor thereon, a supplemental frame extending over said conveyer and movable longitudinally of said main frame, core-cutting mechanism comprising means for cutting communicating kerfs extending into and emerging from an upright mine wall at spaced-apart positions, said core-cutting mechanism extending from one side of said supplemental frame, means for operating said core-cutting mechanism including the feed thereof longitudinally of said main frame, and means for directing dislodged material onto said conveyer.

118. In a mining and loading machine, the combination with a stationary frame, of a conveyer thereon, a supplemental frame movable longitudinally of said main frame, core-cuttitng mechanism mounted on said supplemental frame and having a single loop-chain kerf-cutter with an unobstructed core-opening therethrough, means for operating said core-cutting mechanism to cut a core parallel to said stationary frame, means for directing dislodged material from said unobstructed core-opening onto said conveyer, and means for moving the main frame and supplemental frame together with the parts mounted thereon, to a new initial position preparatory for another cut across the mine wall.

119. In a system of mining, the combination with a conveyer having a stationary frame, of core-cutting mechanism having a single loop-chain core-cutter for cutting a core of material parallel to said conveyer, means for directing dislodged material onto said conveyer at various positions of said core cutting apparatus along said conveyer,

and rope gearing for moving said conveyer and said core-cutting apparatus to a new initial position.

120. In a system of mining, the combination with a conveyer frame, of a loading conveyer pivoted at one end of said frame, a hopper at the pivotal end of said loading conveyer, an additional conveyer emptying into said hopper, said additional conveyer having a stationary frame, core cutting apparatus for cutting a core substantially parallel to said additional conveyor, and means for directing dislodged material from said core cutting apparatus onto said conveyer.

121. In a system of mining, the combination with a pivoted loading conveyer, of a hopper at the pivotal end of said loading conveyer, an additional conveyer emptying into said hopper, core cutting apparatus for cutting a core substantially parallel to said additional conveyer, means for directing dislodged material onto said additional conveyer, and rope gearing for moving both of said conveyers and said core cutting apparatus toward the material to be mined in preparation for a new cut.

122. In a system of mining, the combination with a main frame, of a loading conveyer pivoted at one end of said main frame, a hopper at the pivotal end of said loading conveyer, a receiving conveyer on said main frame and emptying into said hopper, core cutting apparatus comprising a frame supported on and guided along said main frame, means for operating said core cutting apparatus including the feed thereof to cut a core of material substantially parallel to said receiving conveyer, a chute back of said core cutting apparatus for deflecting the core and directing the dislodged material onto said receiving conveyer, and rope gearing apparatus mounted on said main frame and comprising ropes guided thereon with their free ends adapted to be anchored in the mine to effect the movement of said main frame together with the conveyers and the core cutting apparatus mounted thereon, to a new location.

123. In a mining machine, the combination with cutting mechanism, of a chute directly back of said cutting mechanism, means for adjusting the elevation of said cutting mechanism and said chute while maintaining their relative positions, a pivoted extension laterally at one end of said chute, and means for limiting the downward inclination of said extension when said cutting mechanism and said chute are elevated.

124. In a mining machine, the combination with cutting apparatus, of a chute directly back of said cutting apparatus, means for adjusting the elevation of said cutting apparatus and said chute, a frame for receiving material from said chute, and a pivoted extension between said chute and said receiving frame for maintaining communication between said chute and said receiving frame for various elevations of said cutting apparatus and said chute.

125. In a mining machine, the combination with a conveyor having a frame, of a supplemental frame mounted on said conveyer frame, a tertiary frame movable vertically relatively to said supplemental frame, core cutting mechanism mounted on said tertiary frame, a chute on said tertiary frame extending back from said core cutting mechanism, means for adjusting the elevation of said core cutting mechanism and said chute, and a pivoted extension between a lateral side of the rear portion of said chute and said conveyer to maintain communication between said chute and said conveyor for the various elevations of said core cutting mechanism and said chute.

126. In a mining machine, the combination with a main frame, of a conveyor mounted on said main frame, a supplemental frame spanning said conveyor and locked to one side of said main frame and movable along the same, a tertiary frame locked to said supplemental frame and guided vertically thereon, a loop chain core cutter mounted on said tertiary frame, a chute extending back from said loop chain core cutter to one side of said main and supplemental frames, means comprising a screw-threaded post mounted on said supplemental frame, gearing mounted on said tertiary frame for adjusting the elevation of said loop chain core cutter and said chute, and an extension pivoted at one side of the rear portion of said chute and connecting the curved rear end thereof with said conveyor when said loop chain core cutter and said chute are in their lowermost positions and various positions above the same, and for maintaining communication with said conveyor when said loop chain core cutter is in its uppermost position and in various positions below the same.

127. In a mining and loading machine, the combination with a track having spaced-apart rails, of a traveling conveyer mounted between said rails, a frame supported by said track and movable along the same, dislodging mechanism carried by said frame, and means for directing dislodged material onto said conveyer.

128. In a mining and loading machine, the combination with a main frame, of spaced-apart guide-ways thereon, a traveling conveyer mounted between said guide-ways on said main frame, a supplemental frame mounted on said main frame and movable along said guideways, dislodging mechanism carried by said supplemental frame, and means for directing dislodged material onto said conveyer.

129. In a mining and loading machine, the combination with a stationary elongated main frame, of a supplemental frame, interlocking guideways between said main frame and said supplemental frame for guiding the latter along said main frame while preventing tilting movements relatively thereto, loop chain core cutting mechanism having an unobstructed core opening therethrough and mounted in fixed relation to said supplemental frame to occupy a cutting plane substantially at right angles to the path of travel of said supplemental frame along said main frame, means for driving said loop chain core cutting mechanism, and means for moving said supplemental frame along said main frame to effect feeding of said core cutting mechanism.

130. In a mining and loading machine, the combination with a track, of a frame mounted on said track and movable along the same, loop chain core cutting mechanism having an unobstructed core opening therethrough and mounted in fixed relation to said supplemental frame to permanently occupy a cutting plane substantially at right angles to the path of travel of said frame along said track, means for driving said loop chain core cutting mechanism, and means for moving said frame along said track to effect feeding of said core cutting mechanism while occupying such permanent position or fixed relation to said frame.

131. In a mining machine, the combination with an elongated frame adapted to rest on the floor of a mine chamber in a stationary position with a free and unobstructed space between the same and the face of the mine wall, of a supplemental frame having supporting connections between the same and lateral portions of said elongated frame, a traveling conveyer mounted on said elongated frame, dislodging mechanism mounted on said supplemental frame in position to dislodge material from an upright mine wall spaced from said elongated frame and extending substantially parallel thereto, and means carried by said supplemental frame for directing dislodged material onto said traveling conveyer.

132. A mining and loading machine comprising an elongated main frame adapted to be located substantially parallel to the working face of a mine wall and spaced therefrom, of a supplemental frame guided along said main frame, core cutting mechanism having a single loop-chain kerf-cutter with an unobstructed core opening therethrough and mounted on said supplemental frame to extend laterally therefrom across the space between said main frame and said mine wall, means for moving said supplemental frame along said main frame to effect feeding movement of said core cutting mechanism, mechanism for deflecting the core material away from the mine wall, and an endless traveling conveyer extending along said main frame in position to continuously receive pieces of core material during the operation of the core cutting mechanism.

133. In a mining and loading machine, the combination with a main frame, of an endless traveling conveyer mounted on said main frame, a supplemental frame guided along said main frame intermediate the ends thereof and along an unobstructed space between said main frame and an upright mine wall, core cutting having a single loop-chain kerf-cutter with an unobstructed core opening therethrough and mounted on said supplemental frame in permanent relation thereto to always extend laterally from said main frame throughout the path of travel of said supplemental frame along said main frame, means for feeding said core-cutting mechanism rectilinearly, means for directing dislodged material from the core cutting mechanism onto said conveyer, and means for operating said conveyer to convey dislodged material toward loading position while said core cutting mechanism occupies various positions intermediate the ends of said conveyer.

134. In a mining machine, the combination with a main frame, of a supplemental frame guided bodily along said main frame, a core cutter having an unobstructed core opening therethrough, means for supporting said core cutter on said supplemental frame to always occupy a position to cut a core parallel to the path of travel of said supplemental frame along said main frame, and means for adjusting said core cutter to various elevations while confined to positions for cutting cores which shall always be substantially parallel to such path of travel.

135. In a mining machine, the combination with a supporting frame, of a supplemental frame guided along said supporting frame, a core cutter having an unobstructed core opening therethrough, means for supporting said core cutter on said supplemental frame while confining said core cutter to positions for cutting cores parallel to the path of travel of said supplemental frame along said supporting frame, and means for adjusting the entire core cutter rectilinearly and vertically relative to said supplemental frame while being confined to positions for cutting such parallel cores.

136. In a mining machine, the combination with a supporting frame, of a supplemental frame movable rectilinearly along said supporting frame, an upright core cutter having an unobstructed core opening therethough, means for supporting said core cutter on said supplemental frame and confining said core cutter to positions for cutting cores

extending in horizontal directions parallel to the path of travel of said supplemental frame along said main frame, and means for adjusting said core cutter rectilinearly and vertically relative to said supplemental frame while said core cutter is confined to positions for cutting such parallel cores.

137. In a mining machine, the combination with a main frame, of a supplemental frame, means for guiding said supplemental frame along said main frame, core cutting mechanism having an unobstructed core opening therethrough, means for supporting said core cutting mechanism on said supplemental frame to move bodily therewith to partake of the path of travel as determined by said guiding means, and rack and pinion mechanism between the main and supplemental frames to secure feeding movement of said core cutting mechanism along said main frame.

138. In a mining machine, the combination with a main frame, of a supplemental frame, means for guiding said supplemental frame along said main frame, loop chain core cutting mechanism carried by said supplemental frame and adjustable in elevation thereon, means mounted on said supplemental frame for driving said loop chain core cutting mechanism, and means comprising rack and pinion mechanism between said main and supplemental frames co-acting with said driving means to move the supplemental frame along the main frame to secure feeding movement of the loop chain core cutting mechanism at its adjusted elevation and while it is being driven.

139. In a mining machine, the combination with an elongated main frame adapted to be positioned along the face of a mine vein, of a supplemental frame mounted on said main frame and movable rectilinearly longitudinally thereof, core-cutting mechanism carried by said supplemental frame, means for moving said supplemental frame rectilinearly along said main frame to cause said core-cutting mechanism to cut a core in the face of the vein, means for directing the core material onto said main frame, and a conveyer carried by said main frame for transferring material received thereby toward loading position.

140. In a mining machine, the combination with a main frame adapted to be positioned along the face of a mine vein, of a supplemental frame mounted on said main frame and movable longitudinally thereof, kerf-cutting mechanism carried by said supplemental frame, means for moving said supplemental frame rectilinearly along said main frame to effect feeding movement of said kerf-cutting mechanism, means for directing dislodged material onto the said main frame, and a conveyer carried by said main frame for transferring the material received thereby toward loading position.

141. In a mining machine, the combination with a supporting frame, of a core-cutter having an unobstructed core opening therethrough and carried by said frame at one side thereof in position to cut a core along a mine wall adjacent the path of travel of said frame, means for maintaining the cutting plane of said core-cutter in a fixed upright position relative to said frame, a receiving table arranged in the rear of said core-cutter to travel with the latter during the feeding movement thereof for receiving the material severed thereby, and means carried by said frame for effecting movement of the material from the said table at the end thereof opposite said cutter.

142. In a mining machine, the combination with a portable supporting frame, of core-cutting mechanism carried by said frame to extend from one side thereof in position to cut a core along a mine wall parallel to the path of travel of said frame and spaced therefrom, a receiving table at the rear of the core-cutting mechanism in position to receive the cut material, and means for directing the core material from the mine wall transversely of the path of travel of said frame.

143. In a mining machine, the combination with a core cutter having an unobstructed core opening therethrough and comprising mechanism for spaced-apart kerfs and a communicating kerf spaced back from the face of the mine wall, of a horizontal receiving platform back of said core cutter, and means movable along said platform to eject cut material therefrom.

144. In a mining machine, the combination with a core cutter having an unobstructed core opening therethrough and comprising mechanism for cutting spaced-apart kerfs and a communicating kerf spaced back from the face of the mine wall, of a receiving platform back of said core cutter, means for moving said core cutter and said receiving platform bodily along the mine wall to effect feeding of said core cutter while said platform remains in fixed relation therewith, and means movable along said platform to eject cut material therefrom.

145. In a mining machine, the combination with a supporting frame, of a core cutter mounted on said frame and having an unobstructed core opening therethrough, a receiving platform, means for operating said core cutter, and means comprising an endless chain and a flight connected thereto in position to move along said platform to eject material therefrom.

146. In a mining machine, the combination with a supporting frame, of a loop

chain core cutter mounted on said frame and having an unobstructed core opening therethrough, a receiving platform, means for operating said core cutter, an endless chain mounted to interloop said loop chain core cutter, and a flight connected to said endless chain to move along said platform to eject material therefrom.

147. In a mining machine, the combination with a supporting frame, of a loop chain core cutter having an upper straight run and a lower straight run, means for operating said cutter including the rectilinear feed thereof to cut upper and lower spaced-apart kerfs and a communicating back kerf, and means for adjustably supporting the core cutter to effect the cutting of the roof and floor kerfs in substantially horizontal planes in accordance with the said upper and lower straight runs of said loop chain core cutter.

148. In a mining machine, the combination with a supporting frame, of a loop chain core cutter having an upper straight run and a lower straight run in horizontal spaced-apart parallel planes, means for operating said cutter including the rectilinear feed thereof at adjusted elevation along a mine wall, and means for adjusting the elevation of the core cutter rectilinearly as a whole relatively to said supporting frame while maintaining the said upper and lower runs in spaced-apart parallel horizontal planes to effect the cutting of the roof and floor in substantially horizontal planes.

149. In a mining machine, the combination with mechanism for dislodging a section of material from a mine wall, of a receiver for the dislodged material, means for moving such receiver into position beneath said material, a contact member in position to engage an upright surface of a mass of dislodged material, and means for moving said contact member relatively to said receiver for sliding the dislodged material over said receiver away from the position it occupied when dislodged.

150. In a mining and loading machine, the combination with loop chain core-cutting mechanism having an unobstructed core-opening therethrough, of a main supporting frame for said core-cutting mechanism, means for adjusting the elevation of said core-cutting mechanism, means for operating said core-cutting mechanism to cut a single core of material during each feeding movement at adjusted elevation, a breaking-down device comprising a chute fixed to said frame back of the core-cutting mechanism in position to act on the core extending through said unobstructed core-opening and direct such core laterally and endless conveyer mechanism connected to said supporting frame and extending into position to receive the material broken down by said breaking-down device and transferring such material toward loading position.

151. A machine of the class specified, comprising a receiver having an inlet opening at one end and cutting means movable around the said end, and means for moving the receiver and cutting means as a unit lengthwise of the material to be cut above and below and at a horizontal plane, the receiver and its cutting means also having conveying mechanism cooperating therewith for carrying the material away therefrom when the receiver and cutting means are below, at or above a horizontal plane.

152. A machine of the class specified, comprising a receiver with a forward fully open inlet end having a fully open cutting component carried by and operable around said inlet end and having a continuous close association with the latter, and mechanism for supporting and operating said receiver and cutting component to unitedly enter and move lengthwise of and through the material cut and for adjustment of the receiver above, below and in a horizontal plane and to receive and carry away the cut material passed into the receiver and component from the latter when below, above and in a horizontal plane.

153. A machine of the class specified, comprising a support mounted to move lengthwise relatively to a wall of material, the support also being adjustable to elevations below, above and in a horizontal plane, and a receiver with cutting mechanism associated therewith for cutting and accumulating material therein fixed to the outer end of the support and operating to discharge the contents thereof into the latter, the support having devices movable at an angle to the receiver and cutting component for conveying the material cut and gathered away from the receiver and cutting component.

154. A machine of the class specified, comprising an enclosing receiver open at its front end and provided with cutting mechanism at said open front end in fixed relation to said receiver and the receiver being closed at its rear end, and means for moving the received and cutting means in a rectilinear path for cutting material from the face of a vein in a straight line throughout the length of the vein, the cut material being injected into and carried by the receiver in charges and expelled from the latter by subsequent incoming charges.

155. A machine of the class specified comprising a receiver with an outer portion having a core-opening extending therethrough with cutting means at such outer portion in fixed relation to said receiver and in position to surround said core-opening and cut the

material for passage through said core-opening to said receiver, and means for moving the receiver in a straight line throughout the length of the material cut while at the same time operating the cutting means and similarly moving the latter to cause the same to have a straight line feeding movement throughout the length of the wall of material cut.

156. A machine of the class specified comprising a receiver having an outer side wall portion to move through the material cut and a cutting end having a core-opening extending therethrough and provided with cutting means in fixed relation to said receiver and in position to travel around said core-opening, and means for causing the receiver to travel in a rectilinear path the full length of the wall of material cut and continue to cut and have the cut material delivered therefrom during its progress in a straight line throughout the extent of the wall of material engaged thereby.

157. A machine of the class specified comprising a receiver having its forward end surrounding a core-opening, a discharge passageway extending backwardly from said opening between upright spaced-apart sides, cutting mechanism in position to travel around said core-opening at the forward end of said receiver and in fixed relation with the latter, and means for causing the receiver and its cutting mechanism to move lengthwise of and cut material from the wall in a straight line throughout the extent of said wall engaged thereby.

158. A machine of the class specified comprising a receiver having a forward end extending around a core-opening therethrough, a passageway having a straight side extending from the forward end of said receiver, cutting mechanism at the open end of said receiver and in fixed relation therewith in position to operate around said core-opening, and means for causing the receiver and its cutting mechanism to move and cut material from the wall in a straight line and at the same horizontal level throughout the extent of said wall engaged by the receiver and cutting mechanism.

159. A machine of the class specified comprising a receiver having spaced-apart upright walls connected by a bottom to form a passageway extending from the forward end of said receiver to a discharge end at one side of the rear end of said receiver, means connecting the spaced walls above the passageway at the forward end of said receiver to form a core-opening to said receiver, cutting mechanism mounted at the forward end of said receiver in position to travel around said core-opening to cut a core for passage into said receiver between said walls and for movement to the discharge end of said receiver, and means for regularly moving said receiver and its cutting mechanism as a unit in a straight line in a horizontal plane relatively to and in the face of a mine vein and having the cut material injected through said core-opening into said passageway and discharged from the receiver at one side of the rear end thereof.

160. A machine of the class specified comprising a receiver having one end surrounding a core-opening and provided at such core-opening with cutting mechanism for operation around said core-opening, means for moving said receiver and its cutting mechanism as a unit in a rectilinear path along horizontal lines, and means for vertically adjusting the receiver and its cutting mechanism as a unit to different elevations to similarly operate relatively to the material to be cut.

In testimony whereof I have signed my name to this specification, on this 3rd day of May, A. D. 1916.

EDMUND C. MORGAN.