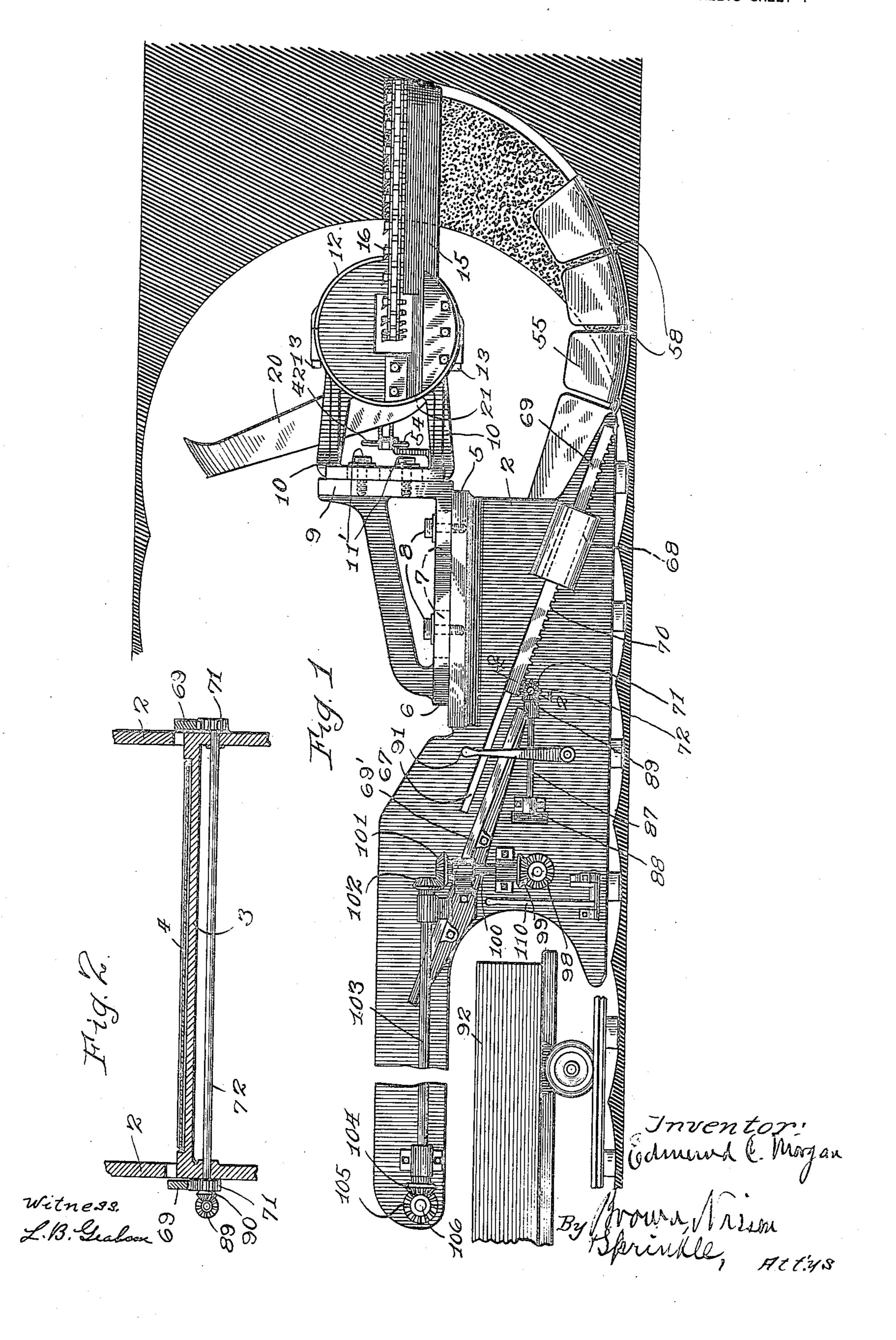
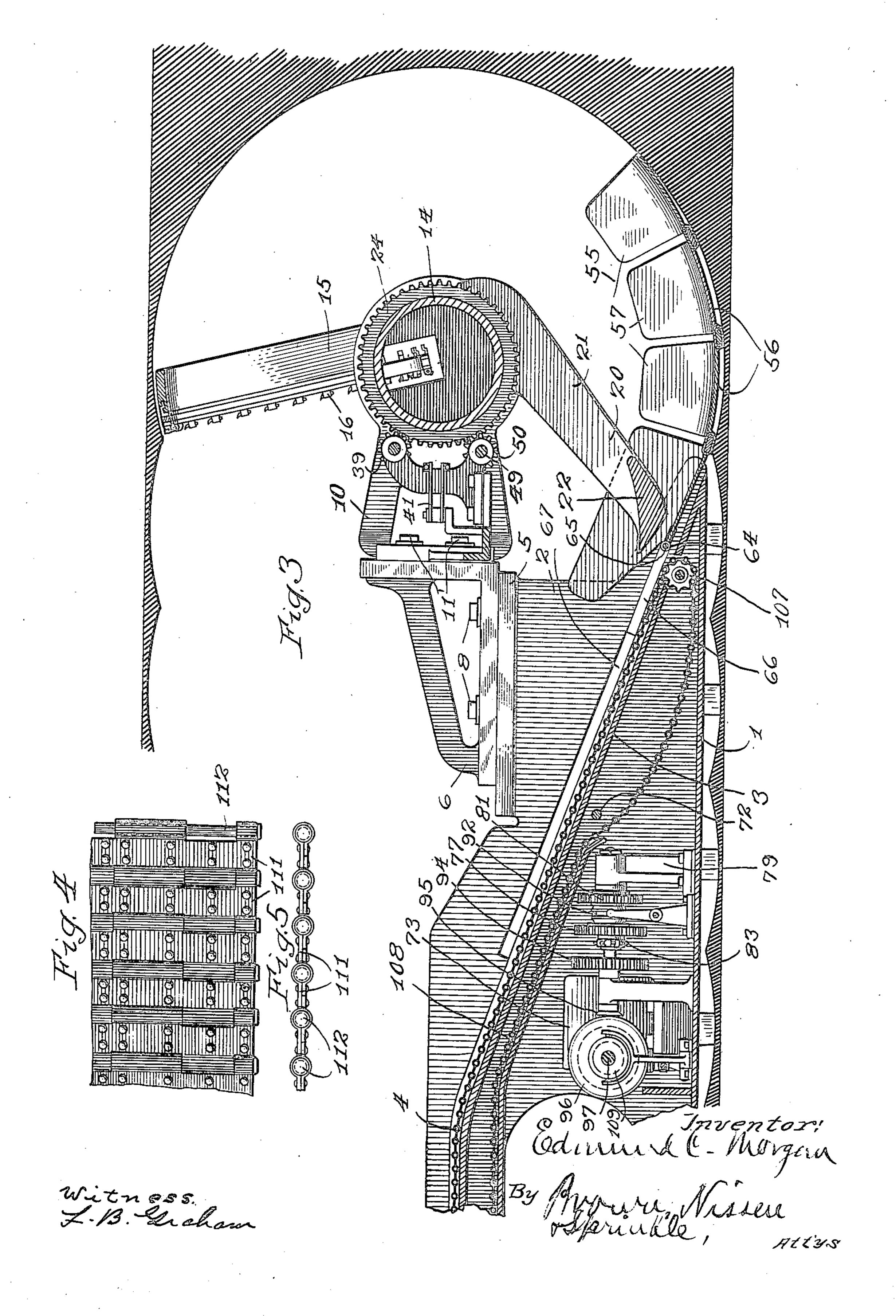
E. C. MORGAN.

MINING AND LOADING MACHINE.

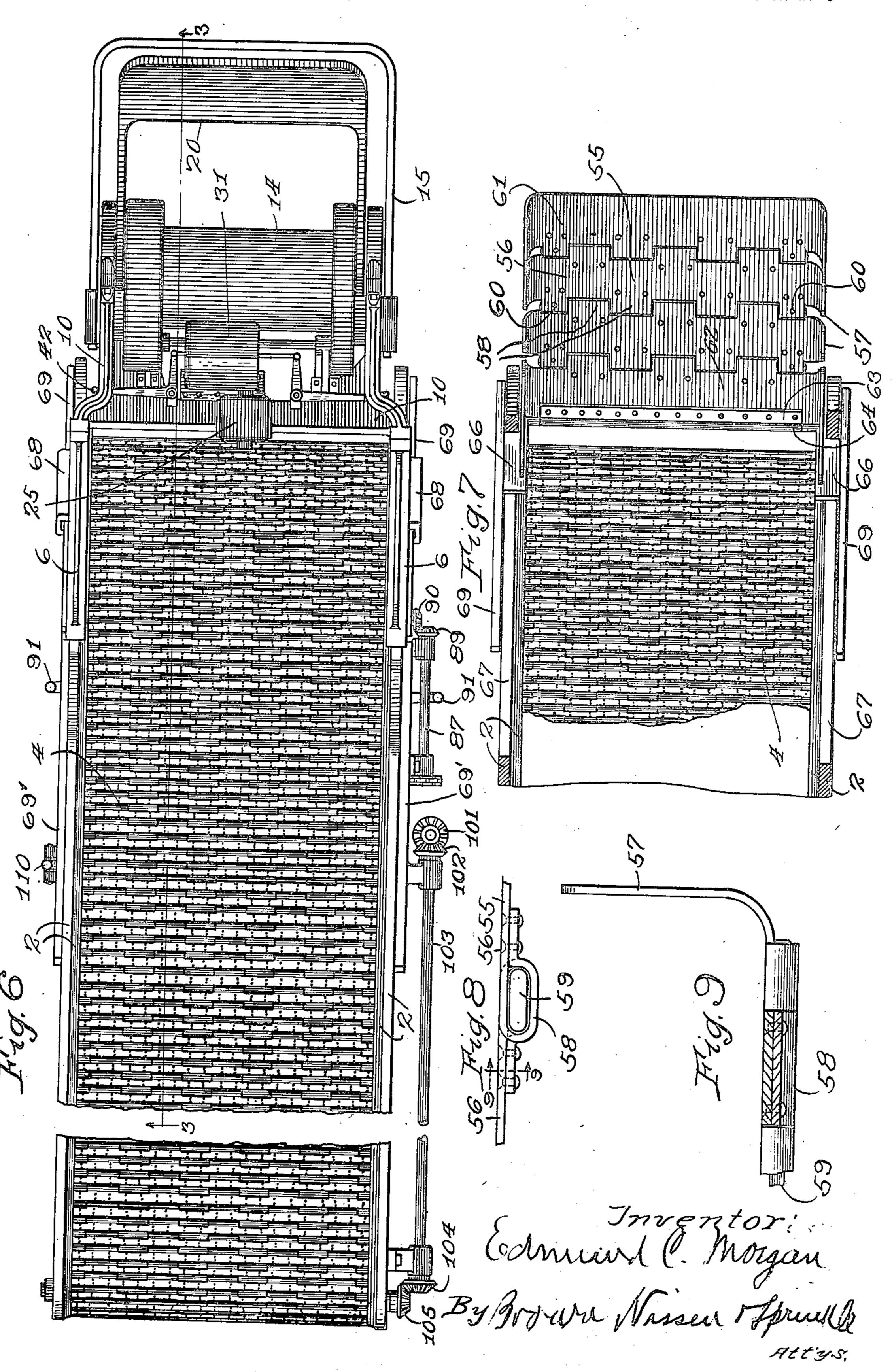
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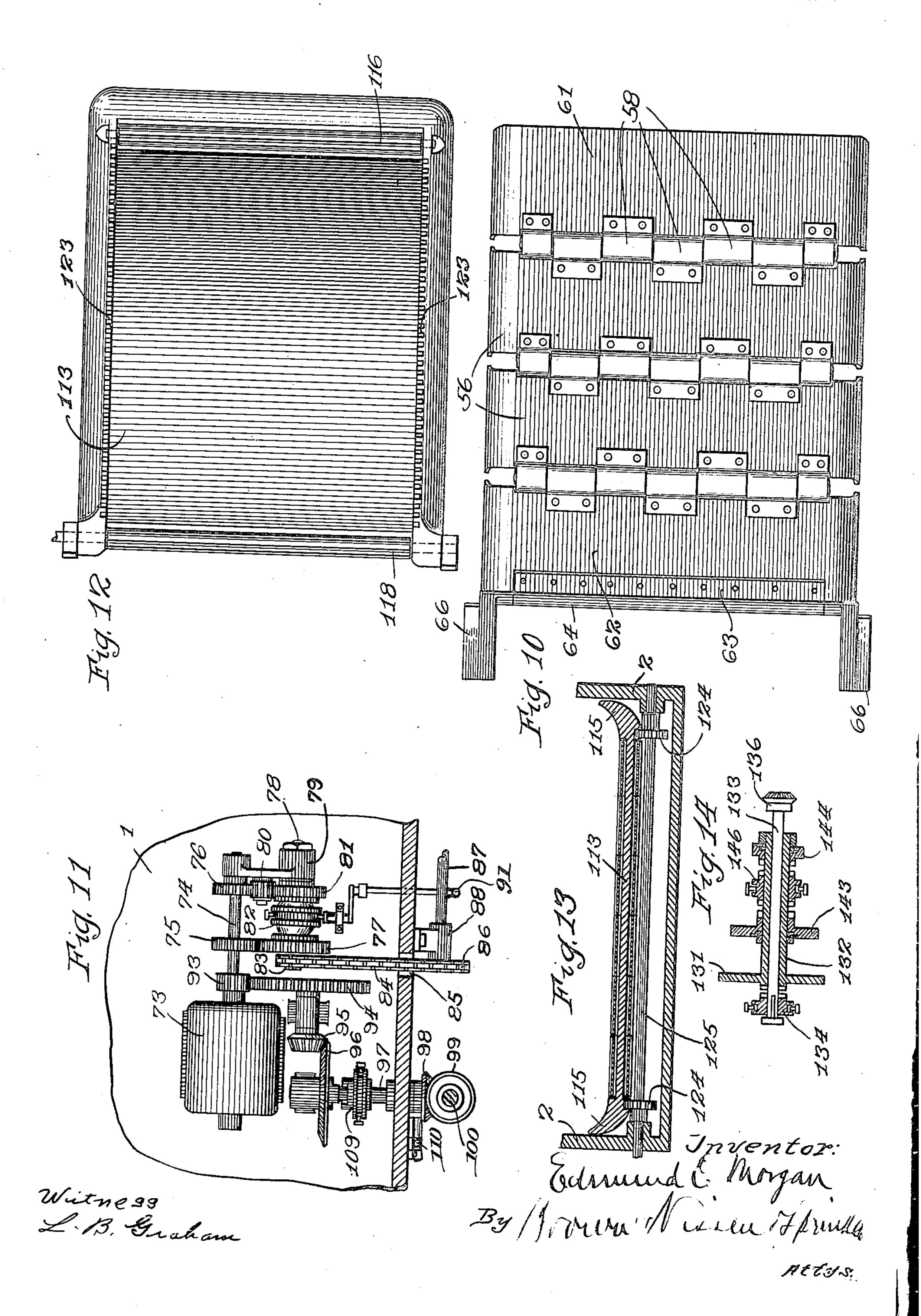
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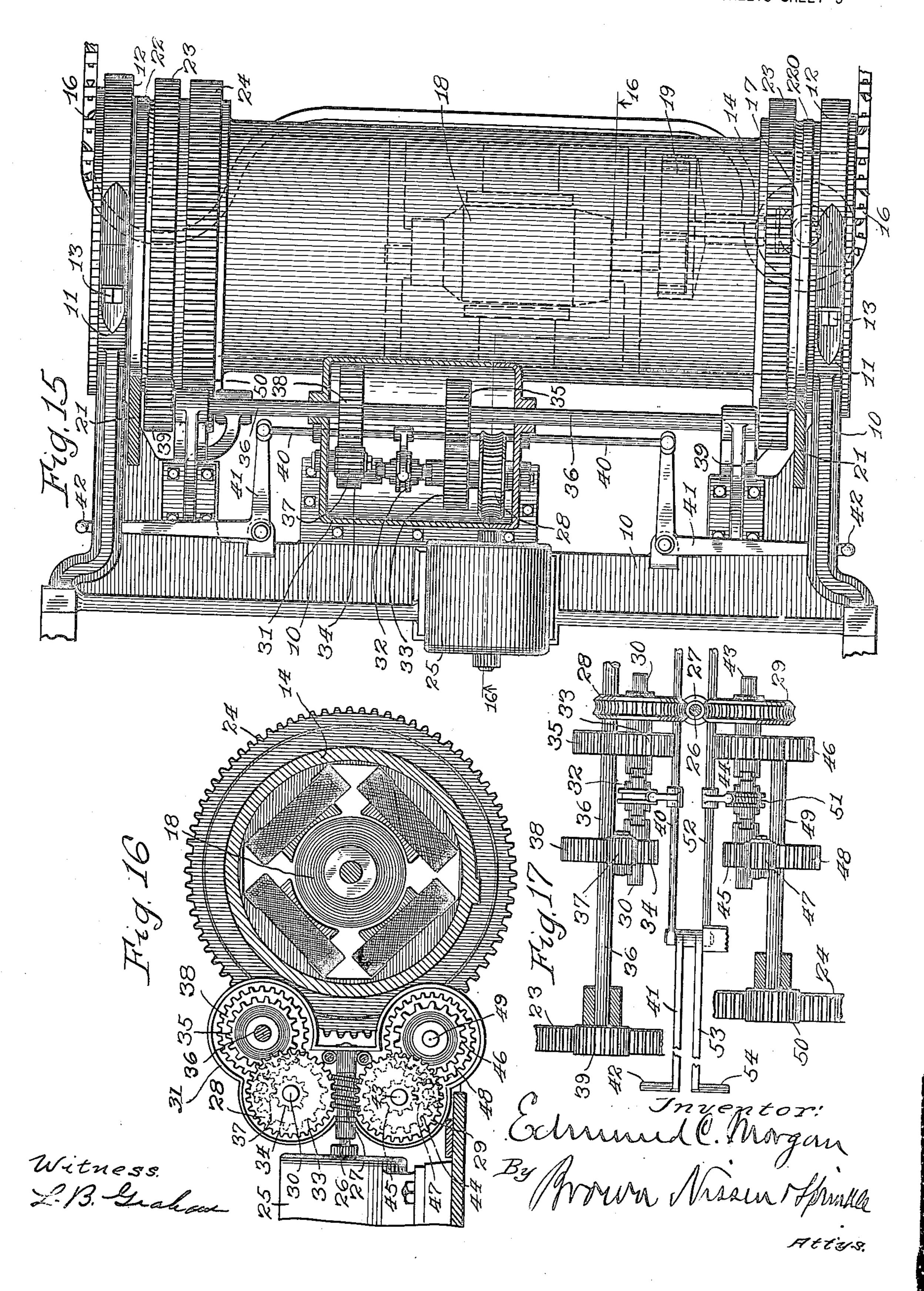
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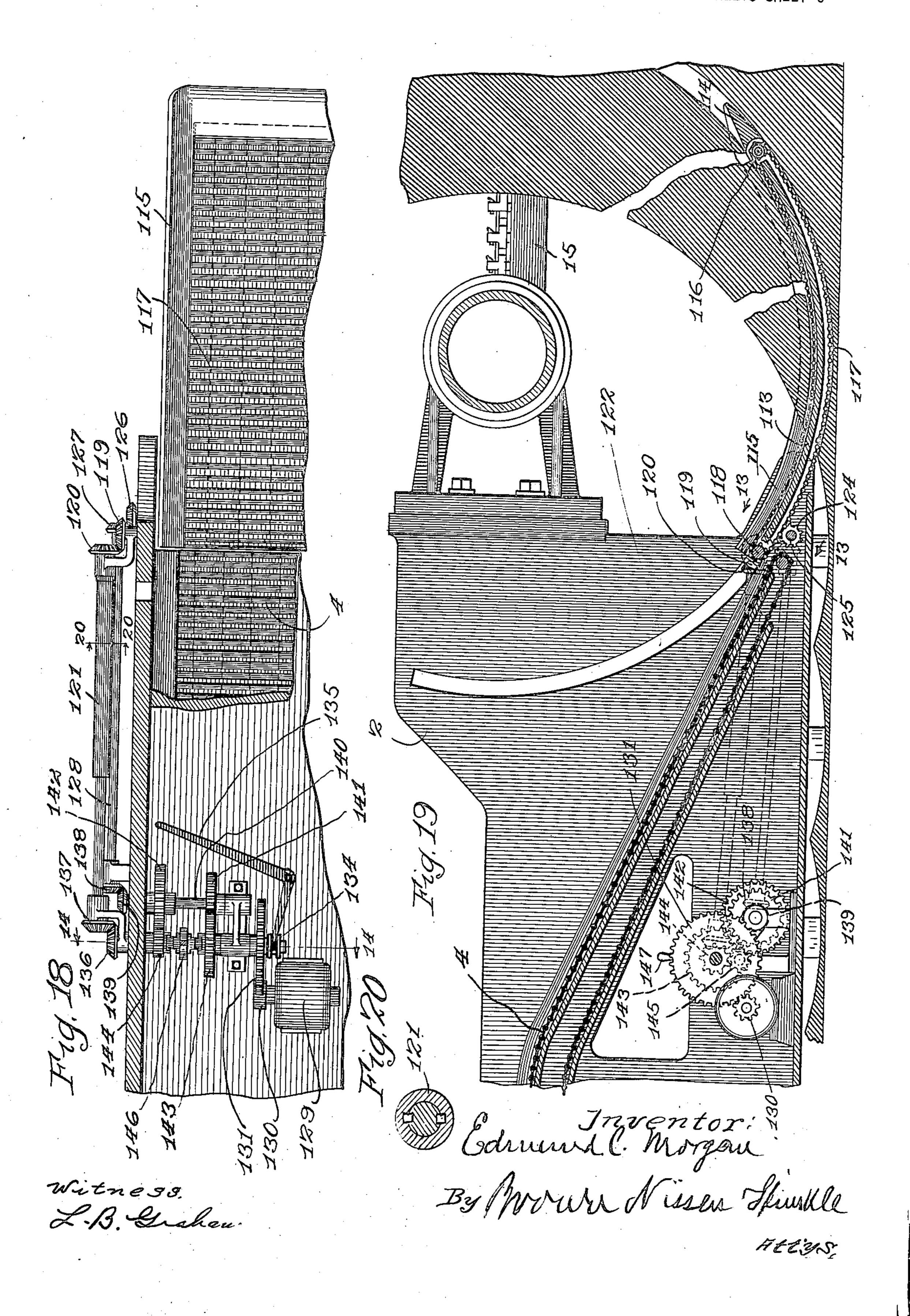
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ORIGINAL FILED SEPT. 18, 1915.



UNITED STATES PATENT OFFICE.

EDMUND C. MORGAN, OF NEW YORK, N. Y.

MINING AND LOADING MACHINE.

Application filed September 18, 1915, Serial No. 51,332. Renewed October 15, 1919. Serial No. 330,854.

To all whom it may concern:

Be it known that I, Edmund C. Morgan, line 14-14 of Fig. 18. a citizen of the United States, residing at Fig. 15 is a top plan view with parts in New York, in the county of New York and section, showing the operating head for the 5 State of New York, have invented certain cutter frame and connected parts. new and useful Improvements in Mining Fig. 16 is a vertical sectional view on line 60 and Loading Machines, of which the follow- 16—16 of Fig. 15.

10 ing apparatus, whereby material is com- cutter frame and co-operating parts. pletely severed from a mine wall, and then Fig. 18 is a fragmentary horizontal sec- 65 of my invention is to provide improvements material receiver shown in Figs. 12 and 13. 15 in the mining and loading machines dis- Fig. 19 is a fragmentary vertical sectional December 16, 1919; 1,427,118, dated August receiver. 29, 1922; 1,427,119, dated August 29, 1922; Fig. 20 is a detail cross section of the shaft and 1,430,669, dated October 3, 1922. Other for driving the modified form of receiver. 20 objects of the invention will appear herein. The mining machine shown in the accomafter.

pointed out in the appended claims.

In the drawings—

30 shown in position in a mine chamber.

Fig. 2 is a fragmentary sectional detail

view on line 2-2 of Fig. 1.

Fig. 3 is a longitudinal sectional view on line 3—3 of Fig. 6.

Figs. 4 and 5 are details of the conveyer

chain. Fig. 6 is a top plan view partly broken away, of the complete machine.

Fig. 7 is a fragmentary top plan view 40 with parts broken away to show a part of the larged bearing portions 5, having flat upper lower portion of the machine.

ceiver for the severed material.

Fig. 10 is a bottom plan view of the 45 flexible material receiver.

Fig. 11 is a fragmentary horizontal secfor operating the conveyer and material receiver.

Fig. 12 is a top plan view of the bed plate for a modified form of receiver.

modified form of receiver taken on line and by which any combination of these two 13—13 of Fig. 19.

Fig. 14 is a longitudinal sectional view on 55

ing is a specification.

Fig. 17 is a detail view showing the ar-This invention relates to mining and load-rangement of the gearing for moving the

moved backwardly from the mine wall into 'tional view showing the application to the position to be loaded. One of the objects mining machine of the modified form of

closed in my Patents Nos. 1,325,031, dated view showing the same modified form of 70

panying drawings, which includes one em- 75 The invention comprises the combination bodiment of the present invention, belongs and arrangement of parts described in the to that type of machines which sever matefollowing specification, shown in the accom- rial to be mined by repeated arcuate cuts in 25 panying drawings, and more particularly the mine wall made by a loop cutter having an unobstructed core opening therethrough. 80 In the drawings a mining machine frame is Fig. 1 is a side elevation of a mining ma- provided, having a base plate 1 and side chine embodying the present invention members 2 extending upwardly from each side of the base plate, An inclined cross plate 3 extends from one side of the machine 85 to the other, and connects the side plates 2, thus bracing these side plates to form a rigid structure, and at the same time providing a bed plate for the conveyer chain 4, by means of which the material is carried 90 upwardly and rearwardly to a loading position. At the forward end of the machine the side plates 2 are provided with ensurfaces on which are mounted angle 95 Figs. 8 and 9 are details of the flexible re- brackets 6, having slots 7 therein, through which extend set screws 8 for adjustably holding the brackets 6 to the bearing portions 5. The brackets 6 are provided at their forward ends with uprights 9, to which is ad- 100 tional view showing the motor and gearing justably secured the cutter head frame 10 by means of screws 11'. In this way an adjustable mounting is provided, by means of which the cutter head frame 10 is capable of adjustment horizontally and verti- 105 Fig. 13 is a vertical sectional view of the cally relative to the mining machine frame,

adjustments may, of course, be secured.

5 provided for a cutter head drum 14, one 42 positioned one on each side of the ma- 70 bearing at each end of the drum. The drum chine. 14 is mounted for rotation in the bearings 11 The gear 24 secured to the drum 14 is 10 above. This drum has a cutter frame 15 and The worm wheel 29 is mounted on a shaft 43, 75 15 with, and arranged to drive the chain 16 in a shaft 49, which shaft also rigidly carries 80 20 with, is an ejector frame 20, comprising two ing a slow and powerful movement to the 85 25 and may be termed a material follower movement of the frame is controlled by 90 30 the follower frame is rotated upon the drum. chine directly beneath the handles 42 for 95 Rigidly secured to the drum 14, at one end controlling the follower frame. 35 the cutter head frame 16 near the central por- tate about a common axis. Each frame is 100 40 which meshes with a pair of worm wheels practice, the follower frame 20 will be in the 105 45 mounted for free rotation on the shaft 30, in a clockwise direction, and will carry with 110 meshes with an idle pinion 37, which in turn way by the follower frame, the cutter frame 115 meshes with a gear 38 secured to the shaft 36. and the follower frame will be returned by In this way the motor 25 may be opera- the rapid return mechanism previously detively connected by means of the clutch 32 scribed, to their original positions, preparato drive the shaft 36 in either direction, and tory for a second operation. Since, how-55 it is apparent that the motion in one directiver, the movements of the two frames are 120 tion will be more rapid that the motion in independent of one another, this cycle of the opposite direction. The shaft 36 car- operations may be varied at the will of the ries pinions 39 at the ends thereof, which operator to suit any exigencies that may mesh with the gears 23, which rotate the arise. follower frame 20 by means of the chain of The mechanism for receiving the coal as 125 20 may be given a slow and powerful ro- frame 20 is best shown in Figs. 1, 3, 7, 8, 9 tation in a clockwise direction, as viewed and 10. As shown in these views, a flexi-65 the opposite direction. This movement of consists of a series of cross plates 56, each 130

Secured to the front portion of the cutter the follower frame 20 is under control of the head frame 10 are two bearings 11, having clutch 32, which may be operated from detachable portions 12 held in place by bolts either side of the machine by a clutch rod 13. By this means circular bearings are 40 and bell crank levers 41, having handles

in a manner similar to that shown in my co-driven from the worm wheel 29 by a chain pending application No. 49,689 referred to of gears similar to that described above. a chain cutter 16 mounted for rotation with which carries gears 44 and 45 mounted for the drum 14, and provided with a sprocket rotation thereon, and which mesh with gear wheel 17, motor 18 and gearing 19, all lo-46 and pinion 47 respectively. The pinion cated within the drum 14 and rotatable there- 47 meshes with a gear 48 rigidly secured to a manner fully disclosed in the above men- the gear 46. Secured to the end of the shaft tioned co-pending application Serial No. 46,- 49 is a pinion 50, which meshes with the gear 689. Carried by the drum 14 for independent 24 on the drum 14. By means of this chain rotation thereon about a common axis there- of gearing means is provided for impartarms 21 and a cross bar 22, Figs. 3 and 15. cutter frame 15 in a counter-clockwise di-This frame is for the purpose of forcing the rection, as viewed in Fig. 3, and for impartcoal backwardly from the position it occu- ing a rapid return movement in the oppopies after it has been severed by the cutter, site direction to the cutter frame. The frame. The ends of the arms 21 next to means of a clutch 51 co-operating with the the drum 14 are provided with bearing rings gears 44 and 45, and operated in turn by 220, which surround the drum and have clutch rod 52, bell crank levers 53 and gears 23 secured thereto, by means of which handles 54 located at each side of the ma-

thereof, adjacent one of the gears 23, is a The movements of the cutter frame and third gear 24 for rotating the drum itself in the follower frame are entirely independent the bearings 11. A motor 25 is mounted on of one another, although the two frames rotion thereof, and is operatively connected provided with an independent controller, with the gears 23 and 24 by a chain of gear- and movement may be imparted to either at ing best shown in Figs. 15, 16 and 17. Se- the will of the operator independently of cured to the motor shaft 26 is a worm 27, the movement of the other. Ordinarily in 28 and 29. The upper worm wheel 28 is position shown in Fig. 1 during the cutting rigidly secured to a shaft 30 mounted in the movement of the frame 15, and immediwalls of the casing 31, and provided with a ately after the frame 15 has completed its sliding clutch 32. Gears 33 and 34 are cut the follower 20 will be started to rotate but are adapted to be clutched to the shaft it the coal severed by the cutter, and force by clutch 32. Gear 33 is of larger diameter it onto a device to be described, by means than the gear 34, and meshes directly with a of which it is removed from the mine. As gear 35 carried on a shaft 36. The gear 34 soon as the coal has been forced out of the

gearing just described. The follower frame it is forced backwardly by the follower in Fig. 3, and a rapid return movement in ble receiver or trough 55 is provided, which 1,440,791

having up-turned ends 57 to form the sides chain of gearing the shaft 72 may be roof the trough. Extending from the edges tated in either direction, and thereby move of the plates 56 are a series of projections the rack bars 69 and flexible receiver or 58, which are bent backwardly in the form trough 55 forwardly or rearwardly relative 5 of loops, as shown in Fig. 8. The projectoto the mining machine frame. A lever 91 70 tions 58 of adjacent plates are arranged to is connected with the clutch 82 for controlalternate with one another, as clearly shown ling the forward and rearward movement in Fig. 7, and a flattened bar 59 is extended of the flexible receiver. In operation the through the alternating loops and fits receiver is driven by the mechanism just de-10 loosely therein, thus forming a somewhat scribed, into the kerf formed by the cutter 75 flexible joint between the edges of adjacent frame 15, the receiver being preferably plates. The bar is rigidly secured to one of caused to follow closely after the cutter the plates by rieans of rivets 60 near the frame until it reaches a position approxiends of the plate, as shown in Fig. 7. By mately that shown in Fig. 1. In this posi-15 this means a continuous trough having a tion the receiving trough is so located that 80 limited amount of flexibility is provided. the severed coal will either fall into it or be The forward cross plate 61 may have its forced therein by the follower 20. The front edge beveled or sharpened if this is movement of the follower frame 20 to force found to be desirable. A rear plate 62 has the coal from the position it assumes after 20 a plate 63 bent around its rear edge to form it has been severed from the wall, slides 85 an elongated eye 64, through which a rod the coal rearwardly over the receiver 55 65 passes, which has slide blocks 66 secured onto the conveyer chain 4, where the rearat each end thereof. The blocks 66 are ward movement is continued, by the operamounted for sliding movement in slots 67 tion of this chain. The receiver 55 forms 25 formed in the sides 2 of the mining machine a guide or chute for directing the coal onto 90 frame, and arranged slightly above the bed the conveyer chain. After all the coal has plate 3 of the conveyer 4 and extending in been forced from the receiver onto the cona direction parallel with the bed plate. veyer, and thence moved backwardly into Slidably mounted in extensions or casings loading position, the lever 91 is operated to 30 68 at each end of the mining machine frame move the receiver into retracted position, 95 is a pair of rack bars 69, each bar being after which the machine may be moved forrigidly secured at its lower end to one of wardly into position for another cut. As the slide blocks 66. A guide bar 69' is bolt- will be seen from the proportion of the ed to each of the side members 2 of the gearing shown in Fig. 11, a rapid return 35 mining machine frame in position to sup- movement of the receiver is provided for. 100 port the rack bars 69 when these bars are The conveyer chain 4 which travels over drawn upwardly and rearwardly. The rack the bed plate 3, and carries the material disbars 69 have teeth 70 along their lower charged from the receiver 55 to the rear of edges, which mesh with pinions 71 secured the machine, where it is discharged into a 40 to a shaft 72 at each end thereof, Figs. 1 car 92 or other means of transportation, is 105 and 2. The shaft 72 is driven by a motor also driven by the motor 73. The conveyer 73 through a chain of gearing, best shown is connected to the motor 73 through a chain in Figs. 3 and 11. The motor 73 is mounted of gearing, which comprises pinion 93 on the base plate 1 of the mining machine, mounted on shaft 74, gear 94, beveled gears and is provided with a shaft 74, which car- 95 and 96, shaft 97, beveled gears 98 and 99, 110 ries rigidly therewith gears 75 and 76. Gear shaft 100, beveled gears 101 and 102, shaft 75 meshes with a gear 77 loosely mounted 103, beveled gears 104 and 105, and shaft on a counter shaft 78 supported by a bear- 106. The shaft 106 carries a roller over ing pedestal 79. Gear 76 meshes with an which the conveyer chain 4 passes, and by 50 idle pinion 80, which in turn meshes with a which it is driven. The lower end of the 115 gear 81 loosely carried by the shaft 78. The conveyer chain passes over a roller 107 loshaft 78 is free to rotate in the bearing 79, cated near the lower front portion of the and has a clutch 82 splined thereon, by machine. A plate 108 is provided for guidmeans of which the gears 77 and 81 may be 55 secured to the shaft for rotation therewith. The movement of the chain is controlled by 120 Rigidly secured to the end of the shaft 78 a clutch 109 operated by a lever 110, shown is a sprocket wheel 83, which is provided in Fig. 1. The conveyer belt itself may be with a sprocket chain 84 extending through of any suitable construction, one form being an opening 85 in the side of the mining shown in Figs. 4 and 5. This form consists 60 machine frame to a sprocket wheel 86 rigid of a series of cross plates 111 hinged to- 125 with a shaft 87 mounted in bearings 88 se- gether by rods 112 extending from one side The shaft 87 carries a beveled pinion 89, ble belt may be substituted for that shown which meshes with a pinion 90 secured to in the drawing. 65 the end of the shaft 72. By means of this

ing the lower run of the conveyer chain. cured to the outer surface of the frame wall. of the belt to the other. Any form of flexi-

In Figs. 12, 13, 14, 18, 19 and 20 is shown 130

5 transferring the coal which falls upon the receiver. receiver rearwardly to the elevating con- The movement of the receiver into and 10 ward end for guiding it into the kerf formed The shaft 125 is in turn rotated by the 75 15 A roller 116 is located near the front edge cured to the shaft 140 are two gears 141 and 80 20 has a beveled pinion 119 secured in one end the gears 141 and 143 mesh directly. The 85 25 the mining machine frame, and are guided parted to the shaft 125 for moving the re- 90 lower surface of the bed plate 113 is pro-30 vided with a series of teeth 123 forming the machine forward preparatory to making 95 racks, one at each side of the receiver. a new cut. These racks are arranged to mesh with pin- In operating this form of the device a 35 frame, as shown in Figs. 13 and 19. The other form, and after the cutter frame has 100 40 of the mining machine frame, and is ar- operative position the driving connection be- 105 ranged to drive through intermediate gear- tween the motor and the belt 117 may be 45 to a sleeve 132, which is in turn free to ro- by operation of the clutch 134, and any ma- 110 operated by a lever 135 (Fig. 18). A to the discharge position in the manner pre-50 beveled pinion 136 is carried on the end of viously described. When the material is 115 the shaft 133, and meshes with a beveled completely severed by the cutter 15 it will pinion 137 secured to the telescoping shaft all move by gravity onto the receiver, break-121. The shaft 121 consists of two parts, ing up to a greater or less extent into smaller as shown in Fig. 20, splined together for divisions and will thence be carried to the movement longitudinally relative to one an- rear part of the mining machine. After 120 other, but held for rotation together. By the discharge in this manner of all of the means of the mechanism described, when the severed material, the shaft 125 will be roshaft 133 is clutched to the gear 131 by tated to retract the receiver, after which means of the clutch 134, the pinion 119 and the mining machine is moved forwardly roller 118 will be caused to rotate, and the into position to make a second cut. conveyer belt 117 will be driven in a direction to move the material thereon rearwardly onto the conveyer belt 4. As the receiver 113, together with its conveyer 117, 65 are moved into and out of operative posi-

a modification of the invention. In the tion, the roller 118 travels in the curved form shown in these views the follower slots 122 and the shaft 121 telescopes, thus frame is dispensed with, and the receiving maintaining the pinions 119 and 120 always trough is provided with a conveyer belt for in mesh regardless of the position of the

veyer. The receiver employed in this form out of operative position is accomplished of the invention includes a bed plate 113, by the rotation of the shaft 125 and the which has a beveled portion 114 at the for- pinions 124 meshing with the racks 123. by the cutter frame, and which has up- gears 126 and 127 and the shaft 128, which turned portions 115 at each of its lateral last named shaft carries a beveled pinion edges for preventing the material being 138. The beveled pinion 138 meshes with a mined from leaving the receiver at its sides. pinion 139 carried by counter shaft 140. Seof the receiver, and a conveyer belt 117 is 142, which are driven by gears 143 and 144 guided over this roller and over a similar respectively mounted for free rotation on roller 118 at the rear end of the receiver. the sleeve 132. An idle pinion 145 is im-The roller 118 as shown in Figs. 18 and 19, posed between the gears 142 and 144, while thereof, which meshes with the beveled pin- gears 143 and 144 may be clutched to the ion 120 carried on a telescoping shaft 121. sleeve 132 by a clutch 146 operated by a The ends of the roller 118 protrude through lever 147. By means of this mechanism a arcuate slots 122 in the side members 2 of comparatively slow rotation may be imby these slots as the receiver is moved into ceiver 113 into inoperative position, and a and out of operative position in a manner quick return movement may be imparted to to be described. As shown in Fig. 12, the the shaft for retracting the receiver into operative position when it is desired to shift

ions 124 carried on a shaft 125 journaled kerf is made by the cutter frame 15 in the in the side members 2 of the mining machine manner described in connection with the shaft 125 has secured to one end thereof a entered the material a sufficient distance the pinion 126, Fig. 18, which meshes with a receiver 113 is moved forwardly into posisecond pinion 127 secured to a shaft 128. tion to receive the severed material. Dur-A motor 129 is mounted on the base plate 1 ing the movement of the receiving frame into ing the shaft 125 and the roller 118. A broken, the belt 117 remaining at rest until pinion 130 carried on the shaft of the motor the receiver is in operative position. Mo-129, meshes with a gear 131 rigidly secured tion is then imparted to the conveyer chain tate on a shaft 133, see Figs. 14 and 18. terial which falls upon the receiver is car-The gear 131 and sleeve 132 may be clutched ried backwardly and deposited on the conto the shaft 133 by a clutch 134 (Fig. 14) veyer belt 4, which transfers the material

The form shown in Fig. 19 is covered by claims in my co-pending application, Serial No. 85,243, filed March 20, 1916, for an improvement in mining machines.

It will be understood by those skilled in 130

without departing from the spirit thereof. feeding movement relative to said supportthe United States, is:

and means for positioning said flexible cutting mechanism.

forwardly therefrom, and means for mov-core cutting mechanism. ly by gravity.

with a supporting frame, of means mounted including arcuate feed thereof on such horia receiving trough for said material and frame, and means independent of said kerf position, and means for exerting pressure into the kerf formed by said kerf cutting on the rear portion of said trough to force mechanism.

40 from a lower position in advance of said formed by said cutter for receiving the ma- 105 frame, means for operating said kerf cut- terial severed by said cutter. ting mechanism including arcuate feeding 10. In a mining machine, an arcuate core 45 frame, a receiving trough mounted on said the rear portion of said receiver for moving 110 frame and extending in advance thereof said receiver in an arc into position to refrom its forward end in position to enter ceive material severed by said cutter. means for exerting pressure on the rear be mined, a flexible receiver having an un-115 rial.

by with a supporting frame, of means mounted said kerf. frame and extending therefrom along a severed material, said trough having a forward edge thereof entirely free and unobstructed, and means for moving said material.

the art that many changes may be made in with a supporting frame, of kerf cutting minor details of the invention as described mechanism mounted thereon for arcuate I therefore do not wish to restrict myself ing frame, a flexible receiving trough 5 to exact details, but what I claim as new, mounted on said supporting frame in posi- 70 and desire to secure by Letters Patent of tion to receive severed material directly from the mine wall, and means for exerting 1. In a mining machine, in combination, force on the rear portion of said trough for means for severing material to be mined, a moving the flexible forward portions thereof 10 flexible receiving trough for said material, along the arcuate kerf made by said kerf 75

trough beneath the severed material.
7. In a mining machine, the combination 2. In a mining machine, the combination with a supporting frame, of core cutting with a supporting frame, of cutting mech- mechanism mounted thereon, means for anism mounted on said frame in position operating said core cutting mechanism, 80 for feeding movement relatively thereto to means mounted on said supporting frame in cut a curved kerf in the material to be position to receive cut material, and means mined, means for operating said cutting independent of said core cutting mechanism mechanism including feeding movement and its operating means for moving said re-²⁰ thereof relative to said supporting frame ceiving means forwardly in advance of said 85 to cut such curved kerf, a receiving trough supporting frame and relatively thereto mounted on said frame in position to extend into position to receive material cut by said

ing said trough relatively to said frame into 8. In a mining machine, the combination 25 the curved kerf under the cut material to with a supporting frame, of kerf cutting 90 receive the latter and support the same free-mechanism mounted on said supporting frame to swing on a horizontal axis, means 3. In a mining machine, the combination for operating said kerf cutting mechanism 30 thereon for severing material to be mined, zontal axis, a receiver mounted on said 95 connected to said frame to occupy a curved cutting mechanism for moving said receiver

35 said trough along a curved path to receive 9. In a mining machine, a U-shaped cut-100 the severed material. ter arranged to form an arcuate kerf in the 4. In a mining machine, the combination material to be mined, a flexible receiver, with a supporting frame, of mechanism for and means independent of said cutter for cutting an arcuate kerf extending upwardly moving said receiver into the arcuate kerf

movement thereof on an approximately cutter, a flexible receiver for the severed horizontal axis at the forward end of said material, and means for exerting force on

said arcuate kerf, the forward edge of said 11. In a mining machine, a device for receiving trough being unobstructed, and forming an arcuate kerf in the material to portion of said trough for moving the latter obstructed forward edge, and means indeinto said arcuate kerf below the cut mate- pendent of said kerf-forming means for exerting pressure on the rear portion of said 5. In a mining machine, the combination receiver for moving said receiver into the

thereon in position to dislodge an arcuate 12. In a mining machine, a cutter bar core of material, a trough connected to said arranged to move about a pivotal axis for forming an arcuate kerf in the material to curved path in position for receiving the be mined, a flexible receiving trough having an unobstructed forward edge, and means 125 independent of said cutter for exerting pressure on the rear portion of said trough to trough into position to receive the severed force said trough into the kerf formed by said cutter.

6. In a mining machine, the combination 13. In a mining machine, the combination 130

with a supporting frame, of a cutter mount- receiver relatively to said supporting frame ed thereon in position for forming an arcu- to move said receiver along the first portion ate kerf in the material to be mined, a re- of the path of said kerf-cutting mechanism ceiver connected to said frame and extend- to move said receiver part way into the kerf 5 ing therefrom in a curved position, and cut by said kerf-cutting mechanism, and 70 means for imparting movement to said re- means for operating said kerf-cutting ceiver along the arcuate kerf formed by said mechanism including feeding movement cutter and independently of movement of thereof relatively to said supporting frame the latter.

14. In a mining machine, a U-shaped cut-tion.
ter bar arranged for pivotal movement 19. In a mining machine, the combination 15 ceiver, and means for moving said receiver material to be mined to sever said material 80 cutter.

25 cutting mechanism including arcuate feed relatively to said frame while said receiver 90 thereof on such horizontal axis, a receiver remains in such projected receiving position. connected to said supporting frame, and 20. A mining machine comprising a sup-30 the kerf cut by said kerf cutting mech- tively thereto in advance of said frame to ex- 95 mechanism.

in the material to be mined to sever said ing said forcing means to cause the same to material from the mine wall, a receiver con- engage dislodged material and positively 40 nected to said frame and extending there- move the same downwardly from the mine 105 from to occupy an arcuate position, and wall into said trough while the latter exmeans for causing said receiver to move tends forwardly in advance of said frame along a portion of the way into said arcu- in its adjusted position. ate kerf, said means being arranged to 21. A mining machine comprising a sup-45 permit said receiver to remain in the arcu-porting frame, a flexible material receiving 110 ate position thus assumed while the cut- trough adapted to extend into an arcuate

50 forming an arcuate kerf in the material to be mine wall into said trough. mined to sever said material from the mine 22. A mining machine comprising a supwall, a flexible receiver, actuating means for said receiver arranged to move said receiver a portion of the way into the kerf formed by 55 said cutter and to permit said receiver to remain in the position thus assumed independently of the movement of said cutter.

18. In a mining machine, the combination with a supporting frame, of kerf-cutting mechanism mounted thereon for feeding movement relatively thereto, a receiver mounted on said frame for movement relatively thereto and adapted to follow said kerfcutting mechanism along the first portion of 65 the kerf cut thereby, means for actuating said

while said receiver remains in receiving posi-

about an axis for forming an arcuate kerf with a supporting frame, of a kerf-cutter in the material to be mined to sever said mounted thereon for movement about a material from the mine wall, a flexible re- pivotal axis to form an arcuate kerf in the into the kerf formed by said cutter, the from the mine wall, a receiver for the sevmovement of said receiver in said kerf be- ered material, said receiver being connected ing independent of the movement of said to said frame, means for moving said receiver relatively to said frame into the lower 15. In a mining machine, the combination portion only of the arcuate kerf in arcuate 85 with a supporting frame, of kerf cutting alinement with the path of said kerf-cutter mechanism mounted on said frame for in position for receiving the severed maswinging movement on a substantially hori-terial, and means for operating said kerfzontal axis, means for operating said kerf cutter including arcuate feeding thereof

means for actuating said receiver to move porting frame, a material-receiving trough the same partially into the mine wall along mounted on said frame for movement relaanism, and permit said receiver to remain tend forwardly from said frame in position to in such position independently of the arcu- receive material from an upright mine wall, ate feeding movement of said kerf cutting means independent of the forward movement of said trough in advance of said frame 16. In a mining machine, the combination but mounted on said frame in position for 100 with a supporting frame, of a cutter mount- forcing material from an upright mine wall ed thereon in position to cut an arcuate kerf into said trough, and mechanism for operat-

ter continues its feeding movement. upwardly extending kerf in an upright mine 17. In a mining machine, a cutter mount-wall, and a follower mounted on said frame ed for pivotal movement about an axis for in position for forcing material from the

> porting frame, a material-receiving trough mounted on said frame and extending forwardly therefrom into position for receiving material directly from an upright mine wall, 120 and a device mounted on the forward end of said frame to swing on a transverse axis from an upright position toward said trough to positively force material from the upright mine wall into said trough.

> 23. In a mining machine, the combination with a supporting frame, of a material-receiving trough adapted to enter an arcuate kerf in a mine wall, means for moving said trough forwardly into such arcuate kerf in 130

115

trough.

5 porting frame, a flexible material-receiving unobstructed core opening independently of 70 trough, means for exerting pressure on the movement of said core cutting mechanism. rear portion of said trough for forcing the 29. In a mining machine, the combination same forwardly relatively to said supporting with a loop core-cutter having an unobframe into position to receive material to structed core-opening therethrough, of 10 be mined, a follower mounted on said frame means for operating said loop core-cutter 75 in position to act on an upright mine wall, wall, a follower for removing the core mate-

on said frame for completely cutting a sec-core-cutter to occupy a position on either tion of material from a mine wall, a push-side of said core-cutter. ing follower mounted on said frame for 30. In a mining machine, a pivotally 85

such position.

anism mounted thereon for feeding move- of the movement of said cutter. 30 ment relatively to said supporting frame 31. In a mining machine, the combination 95 35 axis independently of said cutting mecha- above and pushing it downwardly and rear- 100 verse axis to cause it to engage the cut material and positively move it downwardly and 40 backwardly from the unmined mass.

27. In a mining machine, the combination mechanism having an unobstructed coreopening therethrough and mounted on the 45 forward end of said frame for swinging operating said core-cutting mechanism in-50 cluding swinging feeding movement thereof sliding the severed material from its posi-115 on such transverse axis, a follower mounted tion in the mine wall onto said receiver. on said frame for swinging movement rela- 33. In a mining machine, a pivoted Umaterial downwardly and backwardly from rial onto and over said receiver. 60 the unmined mass.

65 follower mounted on said frame in position same over said trough onto said conveyer.

position to receive material, and a swing- for engaging the cut core of material, and ing device for forcing the material into said means for operating said follower to force the core of material from its cut position 24. A mining machine comprising a sup- while moving said follower through said

for pivotal movement about a horizontal axis to cut a core of material in an upright mine and means for swinging said follower about rial, and means for supporting said follower said axis for forcing material from an up- and said loop core-cutter for independent 15 right mine wall onto said trough. pivoted movement about a common axis, 80 25. A mining machine comprising a sup- with the follower adapted to pass through porting frame, cutting mechanism mounted the unobstructed core-opening of said loop

movement relatively thereto, and means for mounted U-shaped cutter frame, a loop cutoperating said follower to cause the same to ter carried by said cutter frame, a follower engage the cut-out body of material in the for removing material severed by said cutposition assumed thereby after being cut, ter, said cutter and follower being arranged 25 and pushing such cut material away from for pivotal movement about a common axis, 90 means for rotating said cutter about said 26. In a mining machine, the combination axis, and means for imparting movement to with a supporting frame, of cutting mech-said follower about said axis independent

about a transverse axis for severing material with a supporting frame, of core-cutting from an upright mine wall, a follower mechanism mounted thereon and having an mounted on said supporting frame for piv- unobstructed core opening therethrough, a otal movement about the said transverse device for engaging the cut material from nism, and means for operating said follower wardly from the mine wall, and mechanism by swinging it downwardly on said trans- in position for receiving the dislodged material.

32. In a mining machine, the combination with a supporting frame, of kerf-cutting 105 mechanism mounted thereon for feeding with a supporting frame, of core-cutting movement relatively thereto on a transverse axis, a receiver connected to said frame for movement relatively thereto to positions in advance thereof, means for moving said re- 110 feeding movement on a transverse axis to cut ceiver relatively to said frame into the kerf out completely from an upright mine wall a formed by said kerf-cutting mechanism increscent-shaped core of material, means for dependently of movement of the latter, and a device mounted on said frame in position for

tively thereto independently of the swinging shaped cutter for forming a kerf in material feeding movement of said core-cutting to be mined, a flexible receiver, means for 55 mechanism, and means for operating said moving said receiver into the kerf formed by 120 follower to cause the same to engage the said cutter, and a pivotally mounted follower upper end of said crescent-shaped core of arranged to contact with the material sevmaterial and positively move such core of ered by said cutter and to force said mate-

34. In a mining machine, the combination 125 28. In a mining machine, the combination with a cutter for severing material to be with a supporting frame, of core cutting mined, of a receiving trough for the sevmechanism mounted thereon and having an ered material, a conveyer, and a device conunobstructed core opening therethrough, a tacting with the severed material to push the

35. In a mining machine, a U-shaped cutter frame, a loop cutter carried by said cutter frame, means for moving said cutter and cutter frame about a pivotal axis to form 5 a kerf in the material to be mined for severing said material from the mine wall, a re-10 said cutter, and a follower for contacting edges of adjacent plates and fitting loosely 75 for forcing said material onto said receiving trough.

36. In a mining machine, a pivotally 41. A mining machine comprising a supaxis of said cutter frame, and means for kerf. moving said follower independently of the 42. In a mining and loading machine, the movement of said cutter frame for contact- combination with a supporting frame, of a 90 trough.

30 mounted U-shaped cutter frame, a loop cut- forward portion of said frame and adapted 95 35 independent of said cutter frame for mov- curved path and for moving said receiver 100 ter frame, and means for moving said fol- said conveyer. 40 lower about said axis independently of the 43. In a mining and loading machine. 105

onto said conveyer.

porting frame, a receiving trough connected of a mine chamber at the base of an upto said frame in position to enter an arcu-right mine wall in advance of said frame, ate upwardly extending kerf in a mine wall, 50 plates pivotally connected to render said ward receiving position adjacent said re- 115 trough flexible for entering such kerf, and ceiving device, and means for moving said means at the lateral edges of said plates for receiving device bodily forward and rearlimiting pivotal movement relatively to one ward relatively to said supporting frame another without interfering with free move- and longitudinally thereof to cause the for-

porting frame, a receiving trough connected dislodged material at the base of a mine to said frame and extending in advance wall to gather a load of such dislodged thereof in position for entering an arcuate material and move it rearwardly along said oupwardly extending kerf in a mine wall, said frame into position for delivery to said con- 125 trough comprising a series of transverse veyer. plates having upturned ends to form the 44. In a mining machine, the combination sides of said trough, and means connecting with a supporting frame, of a receiving the adjacent lateral edges of said plates for trough, guideways on said frame for guid-

another to render said trough flexible for movement along such arcuate kerf.

40. A receiving trough for a mining machine, comprising a plurality of plates extending transversely of said trough and hav- 70 ing upturned ends for forming sides to said ceiving trough for the severed material, trough, elongated loops secured to the latmeans independent of said cutter frame for eral edges of said plates and flattened bars moving said trough into the kerf formed by extending through the loops of contiguous with the material severed by said cutter and therein to provide a limited pivotal movement of adjacent plates relative to one another.

15 mounted U-shaped frame, a loop cutter car- porting frame, a flexible receiving device 80 ried by said frame, means for rotating said positioned at one end of said frame for enframe and cutter about their axis to form a trance freely into an arcuate kerf in a mine kerf in the material to be mined, a flexible wall, and means for exerting pressure on receiving trough, means independent of said the rear portion of said receiving device to 20 cutter frame for moving said trough into the force the same forwardly relatively to said 85 kerf formed by said cutter, a follower frame into such arcuate kerf in position to mounted for pivotal movement about the receive dislodged material adjacent such

ing with the material severed by said cutter conveyer mounted thereon and extending to force said material onto said receiving longitudinally thereof from a forward receiving position rearwardly toward loading 37. In a mining machine, a pivotally position, a flexible receiver carried at the ter carried by said cutter frame, means for to extend beyond said conveyer along a moving said cutter frame and cutter about curved path, and means for moving said their axis to form a kerf in the material to flexible receiver bodily forwardly longitudibe mined, a flexible receiving trough, means nally of said frame and arcuately along said ing said trough into the kerf formed by said. rearwardly longitudinally of said frame, to cutter, a conveyor, a follower mounted for effect the gathering of a load and the movepivotal movement about the axis of said cut- ment thereof into position for delivery onto

movement of said cutter frame for contact- the combination with a supporting frame, ing with the material severed by said cut- of a receiving device connected at its rear ter to force said material over said receiver end to the forward portion of said frame, the forward portion of said receiving de-38. A mining machine comprising a sup- vice being adapted to move over the floor 110 a conveyer mounted on said frame and exsaid trough comprising a series of transverse tending longitudinally thereof from a forment of said trough along said arcuate kerf. ward projecting portion of said receiving 120 39. A mining machine comprising a sup- device to move freely over said floor under

65 limited pivotal movement relatively to one ing said receiving trough along said frame 130

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forward end of said frame in advance with a supporting frame having a pair of thereof, said trough being adapted to be re- spaced apart longitudinal upper bearing tracted rearwardly along said frame to oc- surfaces near the forward portion thereof, 5 cupy a position above the forward portion of a pair of angle brackets adjustably sereceiving trough adjacent the forward end faces, said angle brackets having spaced of said frame and extending rearwardly apart vertical supporting bars at the for-10 tor mounted on said frame, and connections tending bearing surfaces, loop chain core 15 forward end of said frame, and to move cutting mechanism on said vertical supportsaid frame.

frame, guideways in said frame, a flexible supporting frame. receiving trough, guides carried by the rear 49. In a mining machine, the combination tion.

bracket carried by the upper forward por- nisms. 35 tion of said supporting frame and adjustable horizontally thereon, a cutter head car- with a supporting frame, of an axle jour- 100 ried by said angle bracket and adjustable nalled on said frame, a cutter frame convertically and rectilinearly relatively to said nected to said axle to rotate bodily therebracket while the latter and said supporting 40 frame remain stationary, and mechanism on said supporting frame and associated carried by said cutter head for cutting a core with said cutter frame in position to eject 105 of material in an upright mine wall in ac- material cut by said cutter, and means for cordance with the adjustment in elevation of effecting the rotation of said cutter frame said cutter head relatively to said angle and said ejector frame relatively to said 45 bracket and in accordance with the adjust- supporting frame and independently of each ment of said angle bracket horizontally rela- other.

50 upper horizontal bearing surface of an angle axle, means for rotating said axle and cuta vertical supporting bar with a bearing sur- of said frames. 55 face facing forward, a cutter head carried 52. In a mining machine, an axle, a cutter 60 core of material in accordance with the ad-relatively rapid movement of said cutter relatively to said bracket.

into a position extending from the lower 48. In a mining machine, the combination 65 of said frame with the forward end of said cured longitudinally of said bearing sur- 70 from the forward end of said frame, a mo- ward portions thereof with forwardly exbetween said motor and said trough for cutting mechanism having an unobstructed 75 transmitting power to the latter to move core opening therethrough for the passage the same along said guideways into a re- of an upright crescent-shaped core, and ceiving position in advance of the lower means for adjustably mounting said core said trough rearwardly along said guide- ing bars, whereby the horizontal axis of ro- 80 ways into a retracted position with the for- tation of said loop chain core cutting mechward end of said trough adjacent the lower anism may be held at adjusted elevations forward end of said frame and extending approximately midway between the floor 20 rearwardly from said lower forward end of and the roof of a mine chamber, and whereby said horizontal axis of rotation may be 85 45. In combination, a mining machine held in adjusted position forward of said

25 end of said receiving trough for coopera- with a cutter frame, of an axle on which tion with said guideways, rack bars secured said cutter frame is mounted for pivotal 90 to said guides, and means for moving said movement, a gear rigidly secured to said rack bars to exert pressure on the rear end axle, an additional gear mounted for rotaof said receiving trough to move said receiv- tion relatively to said axle, an ejector con-30 ing trough forwardly into operating posi- nected to said additional gear, separate power transmission mechanisms connected 95 46. In a mining machine, the combination to said gears, and means for independently with a supporting frame, of an angle controlling said power transmission mecha-

> 50. In a mining machine, the combination with, a cutter, an ejector frame journalled

110 tively to said supporting frame.

51. In a mining machine, an axle, a cutter 47. In a mining machine, the combination frame rigidly secured to said axle, a material with a supporting frame having a forward moving frame pivotally mounted on said bracket having a horizontal bearing surface ter frame, means for rotating said material 115 adjustably supported on the first named moving frame about said axle, and means bearing surface, said angle bracket having for independently controlling the movement

by said vertical supporting bar for recti- frame mounted on said axle, a material mov- 120 linear adjustment vertically, and core cut- ing frame mounted on said axle, means for ting mechanism mounted on said cutter producing a relatively slow movement of head for cutting an upright crescent-shaped said cutter frame in one direction and a justment of said bracket relatively to said frame in the opposite direction, means for 125 supporting frame and in accordance with producing a relatively slow movement of the vertical adjustment of said cutter head said material moving frame in one direction and a relatively rapid movement of said material moving frame in the opposite directioned within said axle for driving said cut- 65

5 a cutter frame carried by said axle, a cutter lower for rotating said follower relative to

cutter frame and said material moving directions. frame.

20 frame rigidly secured to said axle, a gear mechanism mounted thereon, means for op-

30 ably mounted on said axle, a gear secured receiver relatively to said frame into and ed on said axle and secured to said follower moving dislodged material toward loading for rotating said follower about said axle, a position. 35 motor, means for connecting said gears to 61. In a mining machine, the combination said motor, and means for independently with a supporting frame, of means for dis- 10d controlling the movement imparted by said lodging material to be mined, a device for motor to said gears.

40 and a material moving follower frame hav- tending longitudinally thereof rearwardly ing a common axis of rotation, means for from a forward receiving position near said 105 independently imparting relatively slow receiving device, mechanism for moving said movement to said frames in opposite direc- receiving device from above the forward end

50 carried by said axle for rotation thereon, a said conveyer and of said receiving device motor, two sets of gearing driven by said moving means independently of each other. 115 motor each set of gearing being arranged for 62. In a mining machine, the combination 55 rotary axle with one of said sets of gear- vance thereof along an upwardly extending 60 ling said sets of gearing.

tion, and means for independently control- ter chain, a gear rigidly secured to said axle, ling the movements of said frames. a material moving follower rotatably mount-53. In a mining machine, a hollow axle, ed on said axle, a gear secured to said folcarried by said cutter frame, means located said axle, a motor located exteriorly of said 70 within said axle for operating said cutter, axle, a train of gearing connecting said and means located exteriorly of said axle motor with said first mentioned gear and for rotating said cutter frame. provided with mechanism for driving said 54. In a mining machine, a hollow axle, a gear at different rates of speed in opposite cutter frame carried by said axle, a cutter directions, and a second set of gearing for 75 mounted on said cutter frame, means lo- connecting said second mentioned gear and cated within said axle for operating said material moving follower with said motor, cutter, a material moving frame carried by and provided with mechanism for driving 15 said axle, and mechanism located exteriorly said second gear independently of the first of said axle for independently rotating said gear at different rates of speed in opposite 80

60. In a mining machine, the combination 55. In a mining machine, an axle, a cutter with a supporting frame, of kerf cutting rigidly secured to said axle, a second gear erating said kerf cutting mechanism to form 85 rotatably mounted on said axle, a material an arcuate kerf in the material to be mined, moving follower rotatably mounted on said a receiver adapted to occupy a position havaxle and secured to said second-mentioned ing a radius of curvature substantially equal 25 gear, and mechanism for rotating said gears to the radius of curvature of the kerf independently of one another. formed by said kerf cutting mechanism, 90 56. In a mining machine, a cutter frame, guides for said receiver arranged to direct a rotary axle on which said cutter frame is said receiver relatively to said frame into carried, a material moving follower rotat- the said arcuate kerf, means for moving said to said axle for rotating said axle and said out of receiving position, and conveyer 95 cutter frame, a second gear rotatably mount- mechanism associated with said receiver for

receiving severed material, a conveyer 57. In a mining machine, a cutter frame mounted on said supporting frame and extions, and means for independently impart- of said supporting frame into operative posi-45 ing rapid return movement to said frames. tion in advance of the lower forward end 58. In a mining machine, a cutter head, of said supporting frame over the floor of 110 an axle mounted for rotation in said head, the mine chamber, driving mechanism for a cutter frame carried by said axle for ro- said conveyer, and means for controlling the tation therewith, a material moving follower operation of said dislodging means and of

producing different speeds of rotation in op- with a supporting frame, of a receiver conposite directions, means for connecting said nected thereto and adapted to extend in ading to be driven thereby, means for con- curved kerf, upturned portions at the sides 120 necting said material moving follower with of said receiver to form an arcuate trough the other of said sets of gearing to be driven when said receiver extends in advance of thereby, and independent means for control-said frame into said curved kerf, means for moving the receiver into and out of oper-59. In a mining machine, a U-shaped cut- ative position, mechanism mounted on said 125 ter frame, a hollow axle on which said frame frame for dislodging material from an upis mounted for rotation therewith, a cutter right mine wall into said trough, and a conchain carried by said frame, a motor posi- veyer extending longitudinally of said sup-

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from said trough.

mechanism mounted on said frame and hav-kerf into receiving position. 10 frame for movement relatively thereto mechanism mounted thereon in position for 75 at the mine wall.

64. In a mining machine, the combination 15 with a supporting frame, of core cutting feeding movement thereof relatively to said 80 mechanism mounted thereon, an ejector pivoted to said frame on a substantially horizontal axis for movement relatively to said 20 erating said ejector to move the cut material forward end of said frame, means for con- 85 wall.

25 with a supporting frame, of loop chain core material to receive the latter. cutting mechanism mounted on said frame and having an unobstructed core opening therethrough, of means for operating said core cutting mechanism, ejector mechanism mounted on said supporting frame in position to extend along the entire mass of cut material in the position assumed thereby immediately after being cut, and means for operating said ejector mechanism independently of the operation of said core cutting mechanism to move the severed material back from the mine wall by acting on the same in the position assumed thereby after being cut.

66. 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 to cut an upright crescent shaped section of 45 material from its native bed, and ejector mechanism mounted on said frame for engaging the cut section of material and pushing it from its position assumed after be-

ing severed.

50 67. In a mining machine, the combination with a supporting frame, of kerf-cutting mechanism mounted on said frame for swinging feeding movement relatively thereto, means for operating said kerf-cutting 55 mechanism, and a receiver mounted on said frame for movement relatively thereto independently of movement of said kerf-cutting mechanism and adapted to extend forwardly in advance of said frame in position to move 60 along the kerf cut by said kerf-cutting mechanism and in position to receive ma- base toward the roof, a receiver connected to terial dislodged above such kerf.

68. In a mining machine, the combination with a supporting frame, of kerf cutting 65 mechanism mounted thereon, means for op-

porting frame in approximate alinement erating said kerf cutting mechanism to cut with said trough and in position to transfer an arcuate kerf, a receiver connected to said toward loading position material received frame and adapted to extend therefrom along such arcuate kerf, and means for ex-63. In a mining machine, the combination erting pressure on the rear portion of said 70 with a supporting frame, of core cutting receiver to force the same along said arcuate

ing an unobstructed core opening there- 69. In a mining machine, the combination through, and an ejector mounted on said with a supporting frame, of kerf-cutting through such unobstructed core opening to feeding movement relatively thereto to cut move the core of material from its position an upwardly extending curved kerf in the material to be mined, means for supporting said cutting mechanism including upward supporting frame to cut such curved kerf while said supporting frame remains stationary, a receiver mounted on said frame in frame in an upright arc, and means for op-position to extend forwardly from the lower from the position assumed thereby immedi-fining said receiver to positions adjacent the ately after being entirely cut from the mine lower forward end of said frame, and means for moving said receiver relatively to said 65. In a mining machine, the combination frame into said curved kerf under the cut

> 70. In a mining machine, the combination with a supporting frame, of mechanism for cutting an arcuate kerf extending upwardly from a lower position in advance of said frame, means for operating said kerf 95 cutting mechanism including arcuate feed thereof, a receiver mounted on said frame and extending in advance thereof from its forward lower portion in position to enter said arcuate kerf, and means for exerting 100 pressure on the rear portion of said receiver for moving the latter longitudinally of itself

> into said arcuate kerf below the cut material. 71. In a mining machine, the combination with a supporting frame, of kerf-cutting 105 mechanism mounted thereon for feeding movement relatively thereto and in position to cut a kerf in a mine wall extending forwardly from a position substantially at the base of the mine wall, means for operating 110 said kerf-cutting mechanism while said supporting frame remains stationary, and means mounted on said supporting frame separately from said kerf-cutting mechanism in position to extend along the kerf 115 cut by said kerf-cutting mechanism below the cut material to receive the latter as soon as dislodged.

72. In a mining machine, the combination with a supporting frame, of kerf-cutting 120 mechanism mounted for swinging feeding movement on a horizontal transverse axis on the upper forward end of said frame in position for cutting an arcuate kerf extending forwardly into a mine wall from the 125 said frame and movable relatively thereto to extend forwardly in advance of the lower forward end of said frame into such kerf, and means for actuating said receiver inde- 130

pendently of said kerf-cutting mechanism to extend said receiver into such kerf by causing said receiver to follow said kerfcutting mechanism into receiving position 5 under the material already cut by said kerf-

cutting mechanism.

73. In a mining machine, the combination with a supporting frame, of kerf cutting mechanism mounted thereon, means for op-10 erating said kerf cutting mechanism includ- advance of said frame and to retracted posi- 75 ing arcuate feed thereof to cut an arcuate tion on the forward portion of said frame, kerf in the material to be mined, a receiver connected to said frame and having an unobstructed forward edge and adapted to 15 assume an arcuate shape, and means for operating said receiver to move the same into said arcuate kerf in arcuate position to receive cut material when dislodged.

74. In a mining machine, the combination 20 with a supporting frame, of kerf cutting mechanism pivotally mounted on said frame, means for operating said kerf cutting mechanism including arcuate feed thereof, to cut an arcuate kerf in the material to be mined, 25 a flexible receiver connected to said frame and having an unobstructed forward edge, and means for exerting pressure on the rear portion of said receiver to force the same into arcuate position in the kerf formed by

30 said kerf cutting mechanism.

75. In a mining machine, the combination mechanism mounted thereon, means for operating said kerf cutting mechanism in-35 cluding arcuate feed thereof to cut an arcuate kerf in the material to be mined, a receiver mounted on said frame in position to extend arcuately into such arcuate kerf under the cut material while the latter remains 40 integral with the unmined mass, and a conveyer mounted on said supporting frame with its forward portion in receiving position at the rear end of said receiver.

76. In a mining machine, the combination 45 with a supporting frame, of kerf-cutting mechanism mounted thereon for feeding movement relatively thereto, means for operating said kerf-cutting mechanism to cut a wall, a receiver mounted on said frame for ed to extend in advance thereof in an arc 115 movement relatively thereto independently under the lower portion of said core during of any movement of said kerf-cutting mechanism and adapted to occupy a position to receive cut material, and a conveyer mounted 55 on said supporting frame in position to receive dislodged material from said receiver.

77. In a mining machine, the combination with a supporting frame, of kerf cutting. mechanism mounted thereon, means for op-60 erating said kerf cutting mechanism, a receiver connected to said supporting frame, inclined guides for said receiver arranged to direct said receiver into the kerf formed by said kerf cutting mechanism, means for 65 moving the receiver into and out of receiv-

ing position, and conveyer mechanism in position on said frame to receive dislodged material from said receiver and move such dislodged material toward loading position.

78. In a mining and loading machine, the 70 combination with a supporting frame, of kerf-cutting mechanism mounted thereon, a receiver connected to said frame and movable relatively thereto to receive position in a conveyer mounted on said supporting frame and extending from a forwardly receiving position adjacent said receiver toward the rear end of said supporting frame, 80 and means for guiding said receiver toward its retracted position above the forward por-

tion of said conveyer.

79. In a mining machine, the combination with a supporting frame, of cutting mech- 85 anism mounted thereon, a receiver connected to said frame and movable relatively thereto so as to extend beyond said frame into receiving position in advance of said frame, a conveyer extending longitudinally 90 of said supporting frame from a forward receiving position adjacent the rear end of said receiver when the latter is in its forward receiving position, and guideways on said supporting frame for guiding said re- 95 ceiver relatively to said supporting frame to with a supporting frame, of kerf-cutting a retracted position above said conveyer while the rear end of said receiver remains in communication with said conveyer back of the forward end of the latter.

80. In a mining machine, the combination with a supporting frame, of an endless conveyer having superposed portions travelling in opposité directions and adapted to convey material from the forward portion of said 105 frame toward the rear end thereof, core cutting mechanism having an unobstructed core opening therethrough and mounted to swing on a horizontal axis on the forward end of said frame, means for operating said 110 core cutting mechanism to cut an upright crescent-shaped core in a mine wall in advance of said frame, a flexible receiving kerf extending forwardly into the mine trough connected to said frame and adaptcontinuation of feeding movement of said core cutting mechanism, means for advancing and retracting said receiving trough relatively to said supporting frame, substan- 120 tially straight guideways on said frame for guiding the rear end of said receiving trough along said frame while confining such rear end of said receiving trough to positions above said conveyer and closely 125 adjacent thereto for continual communication between said receiving trough and said conveyer, an ejector frame mounted on the horizontal axis to move in an arc through the unobstructed core opening of said core 139

move the same along said receiving trough of said frame into an arcuate kerf extending said ejector frame independently of the op-

tion with a supporting frame, of a materialreceiving device connected to said frame and adapted to extend forwardly therefrom) into a previously cut upwardly extending mass and means for dislodging such core cation with the said conveyer. onto said receiving device and moving said 87. A mining machine comprising a sup-5 core along said receiving device away from the mine wall.

82. A mining machine comprising a supporting frame, a flexible receiving device connected to said frame and adapted to exo tend into an arcuate upwardly extending forcing material from a mine wall along said

receiving device.

5 83. A mining machine comprising a supon said frame and adapted to extend for- position for entering an arcuate upwardly wardly therefrom into position for receiv- extending kerf in a mine wall, said receiver ing material directly from an upright mine comprising a plurality of plates pivotally o wall, and mechanism mounted on said frame connected at their transverse edges for limswinging axis to move in an arc from such render said receiver flexible for movement position forwardly and downwardly to force material from the mine wall into said receiver.

84. A mining machine comprising a supporting frame, a material-receiving device adapted to occupy an arcuate position, means for exerting a pressure on the rear o portion of said device for forcing the same forwardly relatively to said supporting frame into position to receive material to be mined, a follower pivoted on a horizontal axis at the forward end of said frame for 5 movement from a position above said axis forwardly and downwardly along an arc to act on material at an upright mine wall, and from the mine wall into said receiving device and along the same.

ing said receiving device forwardly rela- from said receiver onto said conveyer. tively to said frame into such arcuate kerf 90. In a mining machine, the combinain position to receive material, and means tion with a supporting frame, of an axle 30 mounted on said frame to move material journalled on said frame, a cutter frame downwardly from the mine wall into said rigidly connected to said axle to rotate bod- 125

receiving device.

with a supporting frame, of a flexible re- cutter mounted on said cutter-frame, means

cutting mechanism to engage the core and ceiving device adapted to extend in advance 65 onto said conveyer, and means for operating upwardly from the base of a mine wall, a conveyer extending longitudinally of said 5 eration of said core cutting mechanism. frame from a forward receiving position ad-81. In a mining machine, the combina- jacent the rear end of said receiving device 70 when the latter is extended forward into receiving position in said kerf, and means for guiding the rear end of said receiving device along said frame to rearcuate kerf below a core of material still tracted position with the rear end of said 75 intact and still integral with the unmined receiving device continually in communi-

porting frame, a receiver connected to said frame in position to enter an arcuate up- 80 wardly extending kerf in a mine wall, said receiver comprising a series of transverse plates, and means at the lateral transverse edges of said plates for pivotally connecting kerf in an upright mine wall, and a fol- them together for relative limited movement 85 lower mounted on said frame in position for without interfering with the free movement of said receiver along said arcuate kerf.

88. A mining machine comprising a supporting frame, a receiver connected to said porting frame, a material-receiver mounted frame and extending in advance thereof in 90. and adapted to occupy a position above its ited movement relatively to one another to 95 along said arcuate kerf, and means for dislodging material from a mine wall onto such receiver.

89. In a mining and loading machine, the 100 combination with a supporting frame, of a conveyer comprising superposed portions traveling in opposite directions and extending longitudinally of said frame from a forward receiving position at the lower for 105 ward portion of said frame on an upward incline toward the rear end of said frame, a receiver connected to said frame for bodily movement relatively thereto to positions extending over the floor of the mine chamber 110 in advance of said frame in approximate means for swinging such follower about said longitudinal alinement with said conveyer, axis and along said arc for forcing material and means for moving said receiver bodily forward longitudinually of said frame and relatively thereto in advance thereof over 115 85. In a mining machine, the combination such mine floor under dislodged material with a supporting frame, of a material-re- for receiving a load of such material, said ceiving device adapted to extend in advance moving means being also capable of movof said supporting frame and along an ing said receiver rearwardly along said conarcuate kerf in a mine wall, means for mov-vever into position for delivery of such load 120

ily therewith and having an unobstructed 86. In a mining machine, the combination core opening therethrough, an endless chain

carried wholly by said axle for actuating frame journalled for swinging movement 6 said chain cutter, an ejector frame mounted between said arms on the axis of said axle to swing on the axis of said axle and asso- and in position to move through the unobciated with said cutter-frame in position to structed core opening of said cutter frame, 5 move through the same to eject material gearing connected to said ejector frame concut by said chain cutter, means for swing- centrically with the axis of said axle, and 7 ing said cutter-frame to effect arcuate feed- means mounted between said arms for transing movement of said chain cutter during mitting power to said gearing independthe actuation of the latter, and means for ently of the feeding movement of said cut-10 independently swinging said ejector frame ter to effect movement of said ejector frame

91. In a mining machine, the combina-15 forwardly extending spaced-apart arms, of being cut. a hollow axle drum journalled at its end 93. In a mining machine, the combina- 80 20 with, a chain cutter mounted on said cutter swinging movement on a substantially horidriving said chain cutter, a gear mounted frame, means for permitting the adjuston said axle concentrically therewith, means ment of said horizontal axis in a direction mounted on said supporting frame for longitudinal of the supporting frame and transmitting rotary feeding movement to to and from the forward lower end thereof, said gear and said axle to secure arcuate means for permitting the adjustment of said 90 feeding movement of said chain cutter to horizontal axis in elevation, and means for cut an upright crescent-shaped core of ma- adjusting the radial length of said core cutterial in a mine wall, an ejector frame ting mechanism in accordance with the hori-30 mounted for swinging movement between zontal and vertical adjustments of said axis. said arms on the axis of said axle and in 94. In a mining machine, the combina- s position for movement through the unob- tion with a supporting frame, of core cutstructed core opening of said cutter frame, ting mechanism comprising a U-shaped spaced apart gears connected to said ejector cutter frame having an unobstructed core 35 frame concentrically with said axle, and opening therethrough, a supplemental frame means mounted on said supporting frame mounted on said supporting frame for hori- 10 for transmitting power to said spaced apart zontal forward and rearward adjustment gears to effect arcuate movement of said longitudinally of said supporting frame, a ejector frame to cause the latter to engage cutter-head mounted on said supplemental such crescent-shaped core of material and frame for vertical adjustment in elevation move the same away from the mine wall and supporting said core cutting mechanism 10 after the completion of the feeding stroke for swinging feeding movement on a subof said chain cutter.

45 tion with a supporting frame having spaced frame in accordance with the position of apart forwardly projecting arms at the up-50 zontal transverse axis, a chain cutter frame from a forward receiving position near the core opening therethrough, a chain cutter an endless conveyer having superposed pormounted on said cutter frame, means tions travelling in opposite directions, core 55 mounted within said axle for driving said cutting mechanism mounted on the upper chain cutter, a gear concentric with said forward end of said frame for swinging 126 axle and connected thereto to rotate there- movement on a substantially horizontal axis, with, means mounted on said supporting means for operating said core cutting mechframe intermediate said arms for transmit- anism to cut an upright crescent-shaped core 60 ting power to said gear to effect arcuate of material in a mine wall in advance of the feeding movement of said chain cutter from forward end of said frame, ejector mecha- 12 the base of a mine wall in an upward direc- nism operable independently of said core

to act on the core cut by said cutter to move in a downward direction after the comple-7 the core away from the mine wall.

tion of said core, to engage the latter and move the same away from the mine wall tion with a supporting frame having two and from the position which it assumes after

portions in said arms, a cutter frame hav- tion with a supporting frame, of core cuting an unobstructed core opening and con-ting mechanism having an unobstructed nected to said axle to rotate bodily there- core opening therethrough and mounted for frame, means located within said axle for zontal transverse axis in advance of said 8:

stantially horizontal axis, and means for 92. In a mining machine, the combina- permitting adjustment of said U-shaped said horizontal axis.

per forward portion thereof, of a hollow 95. In a mining machine, the combination axle drum journalled in said arms for with an elongated supporting frame, of a swinging movement on a substantially hori- chute extending longitudinally of said frame connected to said axle to move bodily there- lower forward end of said frame on an up- 11; with, said frame having an unobstructed ward incline toward the rear of said frame. tion to effect the cutting of an upright cutting mechanism to act in a downwardly crescent-shaped core of material, an ejector extending arc on the cut material to move

veyer, and means for operating said con- and independently of each other.

with a supporting frame, of a chute extend- movement relatively thereto, means for driving longitudinally thereof, a conveyer ex- ing said cutting mechanism, an ejector frame tending along said chute, core cutting mech- mounted on said supporting frame for 10 anism mounted for swinging movement on a swinging movement relatively thereto in po- 75 substantially horizontal axis at the upper sition to act on the material cut by said cutating said core cutting mechanism to cut an said supporting frame, power transmission upright crescent-shaped core of material in mechanism connected to said cutting mecha-15 a mine wall, and ejector mechanism compris- nism, a clutch for connecting said motor to 80 structed core opening of said core cutting ditional power transmitting mechanism con-20 for transfer by the latter to the rear end said additional power transmission mecha- 85 of said frame.

naled on said frame, loop chain core-cutting nism.

each other. 40 movement relatively thereto, means for driv-the swinging movements of said core-cutter, 105 45 for connecting said motor to said power sion gearing to control the swinging move- 110 transmitting mechanism to effect swinging ments of said ejector frame. feeding movement of said cutting mecha- 102. In a mining machine, the combinanism relatively to said supporting frame, an tion with a supporting frame, of an axle ejector mounted for swinging movement on journaled on said frame, cutting mechanism 50 said supporting frame, power transmitting comprising a cutter frame connected to said 115 mechanism connected to said ejector, and an axle to rotate bodily therewith, an ejector additional clutch connecting said motor to frame journaled on said supporting frame said last-named power transmitting mecha- and associated with said cutter frame in ponism to effect the swinging movement of said sition to eject material cut by said cutting 55 ejector.

with a supporting frame, of cutting mecha- effecting slow feeding movement of said cutnism mounted thereon for swinging feeding ting mechanism in one direction and a quick movement relatively to said supporting restoring movement in the opposite direc-60 frame, means for driving said cutting mech-tion, a clutch for controlling said power 125 anism, an ejector frame mounted on said transmission gearing, additional power supporting frame for swinging movement transmission gearing connected to said ejecrelatively thereto in position to act on the tor frame for moving the same slowly in one material cut by said cutting mechanism, and direction and quickly in the opposite direc-65 means for effecting swinging movement of tion, an additional clutch for controlling 130

the same from the mine wall into the for- said cutting mechanism and said ejector ward end of said chute and onto said con- frame relatively to said supporting frame

15

veyer to move the material rearwardly along 100. In a mining machine, the combina-5 said inclined chute toward loading position. tion with a supporting frame, of cutting 70 96. In a mining machine, the combination mechanism mounted thereon for swinging forward end of said frame, means for oper-ting mechanism, a single motor mounted on ing a frame movable through the unob- said power transmission mechanism, admechanism to engage the core and move the nected to said ejector frame, and an adsame from the mine wall onto said conveyer ditional clutch for connecting said motor to nism to effect swinging movement of said 97. In a mining machine, the combination ejector frame independently of the swinging with a supporting frame, of an axle jour- feeding movement of said cutting mecha-

25 mechanism having an unobstructed core- 101. In a mining machine, the combina- 90 opening therethrough and connected to said tion with a supporting frame, of an axle axle to rotate bodily therewith, an ejector journaled on said frame, a loop chain coreframe journaled on said supporting frame cutter having an unobstructed core-opening and associated with said core-cutting mech- therethrough and mounted on said axle to 30 anism in position to eject core material cut rotate therewith relatively to said support- 95 by said core-cutting mechanism, means for ing frame, means comprising a motor on driving the cutter chain, and means for ef- said axle for driving said loop chain corefecting rotation of said core-cutting mech- cutter, an ejector frame journaled on said anism and said ejector frame relatively to supporting frame for swinging movement 35 said supporting frame and independently of on the axis of said axle, a single motor 100 mounted on said supporting frame, power 98. In a mining machine, the combination transmission gearing connected between said with a supporting frame, of cutting mecha- motor and said axle, a clutch for controlling nism mounted on said frame for swinging said power transmission gearing to control ing said cutting mechanism, a motor mount- additional power transmission gearing coned on said supporting frame, power trans- nected between said single motor and said mitting mechanism connected between said ejector frame, and an additional clutch for motor and said cutting mechanism, a clutch controlling said additional power transmis-

mechanism, means for driving said cutting 120 99. In a mining machine, the combination mechanism, power transmission gearing for

said additional power transmission gearing, the lower forward end of said frame and in

5 tion with a supporting frame having for over the same path traveled thereby during 70 wardly extending spaced-apart bracket arms, its advancing movement. of a hollow axle journaled in said arms for 107. In a mining machine, the combina-10 nism having an unobstructed core-opening thereto to a receiving position extending in 75 15 driving said core-cutting mechanism, power of travel into retracted position as taken by 80 supporting frame and the ends of said axle receiving position. for effecting slow upward feeding move- 108. In a mining machine, the combina-20 quick downward restoring movement there- receiver mounted on said frame for move- 85 of, a clutch for controlling said power trans- ment relatively thereto and in advance theremission gearing, an ejector frame journaled of into receiving position while accommofor arcuate movement on said axis in posi- dating itself to the shape of the surface on tion to act on the core material cut by said which supported while in such advanced po-25 core-cutting mechanism to move the same from the unmined mass, additional power transmission gearing between said support- the forward portion of said frame to faciliing frame and said ejector frame for effect- tate transportation of the machine. ing slow downward movement of said ejec- 109. In a mining and loading machine, the 30 tor frame and a quick upward restoring combination with a supporting frame, of a 95 movement thereof, an additional clutch for conveyer mounted thereon and extending controlling said additional power transmis- longitudinally thereof from a forward resion gearing, and means for operating said ceiving position rearwardly toward loading power transmission gearings.

tion with a supporting frame, of core-cut- to extend beyond said conveyer and beyond ting mechanism mounted thereon and hav- the forward end of said supporting frame ing an unobstructed core-opening there- over a mine floor in advance of said frame; through, and a rigid ejector plate mounted and means for moving said flexible receiver on said frame for movement relatively there-bodily forward longitudinally of said frame 105 to along a path substantially parallel to the and along the surface of the mine floor in path of said core-cutting mechanism in posi- advance of said frame and for moving such tion to act on the cut material to move the receiver rearwardly along substantially the

105. In a mining machine, the combina- ing movement. tion with a supporting frame, of core-cut- 110. In a mining and loading machine, the having an unobstructed core-opening there-50 said frame for movement relatively thereto portion of said receiving device being free 115 in position to act on the core material to and unobstructed and adapted to move over move the same from its position at the mine the floor of a mine chamber at the base of wall, and means for operating said ejector by moving the same relatively to said sup-55 porting frame against the core material to move the latter from its position at the mine wall relatively to said supporting frame.

106. In a mining machine, the combination with a supporting frame, of dislodging 60 mechanism mounted on the upper forward end of said supporting frame, a receiver mounted to be confined to the lower forward end of said frame for movement relatively to said frame in advance thereof, 65 means for projecting said receiver beyond

and a single motor connected to both of said advance thereof in position to receive mapower transmission gearings. terial dislodged by said dislodging mecha-103. In a mining machine, the combina- nism, and means for retracting said receiver

swinging movement on a substantially hori- tion with a supporting frame, of a receiver zontal axis, loop chain core-cutting mecha- mounted thereon for movement relatively therethrough and comprising a cutter frame advance of said frame and to a retracted poconnected to said axle to move bodily there- sition on the forward portion of said frame with on said horizontal axis, means compris- for transportation, and means for confining ing a motor within said hollow axle for said receiver to substantially the same path transmission gearing connected between said said receiver during movement to advanced

ment of said core-cutting mechanism and a tion with a supporting frame, of a flexible sition, and means for directing said receiver 90 along said frame to retracted position on

position, a flexible receiver carried at the 104. In a mining machine, the combina- forward portion of said frame and adapted 100 same from its position at the mine wall. same path taken thereby during its advanc-

ting mechanism mounted on said frame and combination with a supporting frame, of a receiving device mounted on said frame through, a rigid ejector plate mounted on for movement relatively thereto, the forward an upright mine wall in advance of said frame, a conveyer mounted on said frame and extending longitudinally thereof from a 120 forward receiving position adjacent said receiving device, means for moving said receiving device bodily forward and rearward relatively to said supporting frame and longitudinally thereof to cause the forward pro- 125 jecting portion of said receiving device to move freely over said floor under dislodged material at the base of a mine wall to gather a load of such dislodged material and move it rearwardly along said frame into posi- 130

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tion for delivery to said conveyer, and means for guiding said receiving device along said frame to cause said receiving device to move over substantially the same path of travel sition separated from said supplemental 5 on said frame both forwardly and rear-

wardly.

111. A mining machine comprising a sup-10 tively thereto, means for exerting pressure maintaining said block intact. 15 gather a load of material, means for retract- shaped block of material, of a curved chute 80 ceiving device over substantially the same of material to enter the receiving end of 20 path of travel during its forward and rear- said chute.

porting frame, a material-receiving device chute mounted thereon in stationary posimounted on said frame for movement rela- tion for receiving large solid blocks of ma-25 tively thereto along arcuate paths, means for terial directly from their positions in the 90 cuate position to receive dislodged material, movement along the latter over a direct 30 tion to act on the material on said receiving chute remains stationary. device and move such material along said re- 118. In a mining machine, the combina-

frame.

113. A mining machine comprising a sup-35 porting frame, a material-receiving device mounted on said frame for movement relatively thereto, means for moving said receiving device forwardly and rearwardly over substantially the same path of travel. 40 the forward movement being to a receiving position in advance of said frame and the rearward movement being to a retracted position on the forward portion of said frame, an ejector mounted on said frame in position 45 to act on the material on said device and move such material rearwardly along said device toward said frame, and a conveyer mounted on said frame in position to receive the material moved by such ejector along 50 said device.

combination with a supporting frame, of a tion with a supporting frame, of core-cut-55 tion in advance of said frame and to re- through, and an ejector mounted on said 120 tracted position on the forward portion of frame for movement relatively thereto along said frame, a conveyer on said frame in de-60 and means mounted on said frame in posi- from its position at the mine wall. tion to act on the material on said frame to 121. In a mining machine, the combinaconveyer.

65 tion with a main frame, of a supplemental through, an ejector mounted on said frame 130

frame pivoted thereto and adapted to engage one end of a solid block of material, a chute mounted on said main frame in a poframe but having a receiving opening fac- 70 ing said supplemental frame, and means for moving said supplemental frame toward the porting frame, a flexible material-receiving receiving opening of said chute to force said device mounted thereon for movement rela- block of material into said chute while

on the rear portion of said receiving device 116. In a mining machine, the combinafor forcing the same forwardly relatively to tion with a main frame, of a supplemental said supporting frame and in advance there- frame movable relatively thereto and adaptof over the floor in advance of said frame to ed to engage one end of a large arcuate ing said receiving device back onto said in arcuate alinement with said block of maframe with the load, and guiding mecha-terial, and means for moving said supplenism on said frame for directing said re- mental frame in an arc to cause said block

ward movements along said frame.

117. In a mining machine, the combination with a supporting frame, of an arcuate projecting said material-receiving device for- mine wall, and means for delivering said wardly in advance of said frame into an ar- blocks of material intact into said chute for and means mounted on said frame in posi- path to the delivery end thereof while said

ceiving device rearwardly toward said tion with a frame, of a receiving chute disposed on an arc and extending substantially from the forward to the rear end of said frame, core-cutting mechanism operable ad- 100 jacent the forward end of said chute and bodily movable in an arc the center of which is coincident with the center of the arc of said chute, means for operating said corecutting mechanism to cut a core on its for- 105 ward stroke in the mass of material being mined, and means for delivering the dislodged core into said chute.

119. In a mining machine, the combination of an arcuate chute mounted in position 110 for receiving blocks of material directly from their positions in the mine wall, and means for cutting an arcuate core of material in the mine wall in arcuate alinement with said chute.

114. In a mining and loading machine, the 120. In a mining machine, the combinareceiver mounted on said frame for move- ting mechanism mounted thereon and havment relatively thereto into receiving posi- ing an unobstructed core-opening therea path substantially parallel to the path of livery communication with said receiver said core-cutting mechanism in position to when the latter is in its advanced position. act on the cut material to move the same

push the same along said receiver onto said tion with a supporting frame, of core-cutting mechanism mounted on said frame and 115. In a mining machine, the combina- having an unobstructed core opening there-

for movement relatively thereto in position native position, and means for confining the to act on the core material to move the same bottom and opposite sides of said core to dimeans for operating said ejector by moving tion when moved by said contact member 5 the same relatively to said supporting frame relatively to said frame. against the core material to move the latter 127. In a mining machine, the combinato said supporting frame.

122. In a mining machine, the combina-. 10 tion with a supporting frame, of a chute in

15 ting a core of material in the mine wall ing both the material-moving means and the 80

spaced from the open receiving end of said severing mechanism. chute but in alinement with said chute and 128. In a mining machine, the combina-

said chute.

25 core-cutting mechanism along a path of terial directly into such pocket from the 90 said chute, and means for operating said wall. 30 core of material in one feeding operation in ting mechanism mounted thereon, means for 95

35 mechanism, means for guiding said core-rial, said apron comprising a plurality of 100 a core of material in a mine wall in aline- from the mine wall. ment with said chute, and means for bodily 130. In a mining machine, the combinamoving said core-cutting mechanism relatively to said receiving structure in a direction opposite to the feeding direction.

125. In a mining machine, the combination with a supporting frame, of cutting apparatus mounted thereon, a material-movmovement in close proximity to the path of comprising sections consisting of narrow 115 movement of said cutting apparatus, said metallic plates extending transversely of material-moving frame extending radially said apron and having their adjacent edges from its axis of arcuate movement at all pivoted together and their ends upturned to times, and means for operating said mate- form upturned edges on said apron to adapt 55 rial-moving frame to move the cut material said apron for arcuate movement along the 120 from the mine wall.

tion with a supporting frame, of a loop chain such upturned ends confine the material on core-cutter mounted thereon for movement said apron. 60 relatively thereto, of means for operating 131. In a mining and loading machine, 125 said loop chain core-cutter, a contact mem- the combination with a supporting frame ber movable relatively to said loop chain having a conveyer bed plate thereon extendcore-cutter and relatively to said frame, ing on an incline frowardly toward the floor means for moving said contact member to of a mine chamber in advance of said frame,

from its position at the mine wall, and rect the core toward a predetermined posi-

from its position at the mine wall relatively tion with a supporting frame, of two relatively movable supplemental frames concentrically mounted on said supporting frame, severing mechanism carried by one of said 75 position on said frame to receive a solid supplemental frames, material - moving block of material directly from its position means carried by the other of said supplein the mine wall, and cutting mechanism mental frames, and means within the conmounted on said frame in position for cut- fine of said supplemental frames for operat-

directly in front of such receiving end of tion of mechanism for cutting an upright core in a mine wall, said core-cutting mecha-20 123. In a mining machine, the combina- nism having an unobstructed core opening 85 tion with a supporting frame, of a receiving therethrough, and means associated with structure mounted thereon, core-cutting said core-cutter and comprising a pocket in mechanism mounted at one end of said re- position adjacent the mine wall where the ceiving structure, means for guiding said core is cut for receiving the dislodged matravel enclosing a space in alinement with native position of such material in the mine

core-cutting mechanism including the feed 129. In a mining machine, the combinathereof along such path of travel to cut a tion with a supporting frame, of kerf-cuta mine wall in alinement with said chute. operating said kerf-cutting mechanism in 124. In a mining machine, the combina- cluding arcuate feed thereof, and a flexible tion with a supporting frame, of a receiving apron adapted to move in an arc along the structure mounted thereon, core-cutting space originally occupied by the cut matecutting mechanism back and forth in ap- movably connected apron sections having proximate alinement with said receiving upturned ends for forming upturned edges structure, means for operating said core- on said apron to confine the dislodged macutting mechanism to cut in one operation terial to said apron when received thereby

tion with a supporting frame, of a core-cutter mounted on said frame for operation in advance thereof to cut a core of material in an upright mine wall in advance of said 110 frame, and a flexible apron mounted on said. frame and extending from a receiving posiing frame mounted on said supporting tion adjacent said core-cutter along said frame and confined to an arcuate path of frame toward loading position, said apron core space in the mine wall to receive dis-126. In a mining machine, the combina- lodged material directly therefrom while

65 force the core of material away from its of an adjustable extension for said bed plate 130

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and longitudinally thereof into a receiving cutting mechanism to cut a core entirely position substantially at the floor of the from a mine wall, and loading apparatus 5 tension to permit free transportation of the forward portion of said frame, and conveyer mechanism extending along said bed plate

0 by said cutting mechanism.

132. In a mining and loading machine, the combination with a supporting frame, of a permit free transportation of said machine tion.

means for moving said extension longitudi- able bodily therewith, an auxiliary frame 95 35 mounted on the forward portion of said movement bodily therewith, and means car- 100 from a receiving position at the forward por- nism and said material-moving means. tion of said frame adjacent the cutting 138. In a mining machine, the combina-10 mechanism longitudinally along said in- tion with a supporting frame, of cutting 105 clined bed plate toward loading position, apparatus having a predetermined path of of to move the material cut by said cutting to completely cut out from a mine wall a 45 mechanism toward loading position, the body of material from a predetermined 110 out of operating position.

tion with loop chain core-cutting mechanism rial moving device to engage the cut material having an unobstructed core opening there- by movement along such space to move the through, of a frame for supporting said cut material from the mine wall. core-cutting mechanism, means for operat- 139. In a mining machine, the combina-55 ing said core-cutting mechanism to cut an tion with a supporting frame, of core-cut- 120 upright core in a mine wall, and means as-ting mechanism having an unobstructed sociated with said loop chain core-cutting core-opening therethrough and mounted on mechanism and comprising a pocket in position below the same for receiving dislodged relatively thereto, means for operating said 60 material from its native position in the mine core-cutting mechanism to cut a core in a 125

wall.

combination with a supporting frame, of versely of the path of said core-cutting core-cutting mechanism mounted thereon mechanism to abut against one end of said and having an unobstructed core-opening core, and means for operating said mate- 130

adapted to move relatively to said bed plate therethrough, means for operating said coremine chamber, means for retracting said ex- for moving the core through such unobstructed core-opening toward loading posi- 70 machine, cutting mechanism mounted on the tion after said core has been completely severed.

136. In a mining and loading machine, the into position for receiving the material cut combination with a supporting frame, of loop chain core-cutting mechanism having 75 an unobstructed core-opening therethrough and suspended from the forward end of said bed plate carried by said frame, cutting frame for upright movement on a substanmechanism mounted on said frame, an apron tially horizontal axis, means for operating 5 movable over said bed plate for transferring said core-cutting mechanism to cut an up- 80 material from the position where cut by said right crescent-shaped core in a mine wall in cutting mechanism toward loading position, advance of said frame, and loading apparaan adjustable extension for said bed plate tus for moving the dislodged material from movable relatively to said bed plate and lon- the space originally occupied thereby in its o gitudinally thereof into receiving position native bed through said core-cutting mecha- 85 during the operation of the machine, and nism when the latter is in its upper posimeans for retracting said bed plate exten- tion to effect the transfer of the dislodged sion relatively to said supporting frame to material rearwardly toward loading posi-

into and out of operating position. 137. In a mining machine, the combina- 90 133. In a mining and loading machine, tion with a supporting frame, of a supplethe combination with a supporting frame, of mental frame mounted for rotation on said an inclined bed plate mounted on said frame, supporting frame, cutting mechanism caran adjustable extension for said bed plate, ried by said supplemental frame and movnally of said inclined bed plate and rela-journaled on said supplemental frame for tively thereto to bring the forward portion rotation relatively thereto on the axis of thereof substantially into contact with the said supplemental frame, a material-moving base of a mine chamber, cutting mechanism device carried by said auxiliary frame for supporting frame, means for operating said ried by said supplemental frame for indecutting mechanism, a conveyer extending pendently operating said cutting mecha-

and means for operating said conveyer over travel relatively to said supporting frame, said bed plate including the extension there- means for operating said cutting apparatus moving means for said extension being also space, a material-moving device mounted on capable of retracting said extension to per- said supporting frame in position to have a mit transportation of the machine into and path of travel along substantially the entire space occupied by the completely cut out ma-134. In a mining machine, the combina-terial, and means for operating said mate-115

said frame for arcuate feeding movement mine wall, a material-moving device mount-135. In a mining and loading machine, the ed on said frame in position to extend trans-

rial-moving device to engage one end of on, a motor connected to said cutter frame said core and push the latter to slide the to effect feeding movement of said kerf-same from its native position in the mine cutting mechanism relatively to said supwall.

140. In a mining machine, the combination with a kerf-cutter, of a receiver, means for moving said receiver into the kerf nism, said additional motor being connected formed by said kerf-cutter, a device in position to engage one end of the mass of dis-10 lodged material and slide the latter along ing motor independently of the operation 6 said receiver away from the position it oc- of said driving motor. cupied before dislodged by said kerf-cutter, and means for operating said device.

141. In a mining machine, a loop chain 15 core-cutter, means for moving said cutter to and a cutter frame having an unobstructed sever a section of material from a mine vein, core-opening therethrough mounted on said a contact member, means for moving said supporting frame for swinging movement member in the path of movement of said relatively thereto, a motor for swinging said cutter to force the material severed thereby cutter frame relatively to said supporting

enclosing the material on a plurality of said chain cutter, a motor for driving said sides during the movement thereof caused cutter chain, said driving motor being sepaby said contact member.

25 means for moving said cutter in an arc to ing motor independently of the operation 84 sever a section of material from a mine vein, of said driving motor. 30 rial severed thereby away from its native prising a cutter arm with a cutter chain re- 8;

position, and a supporting plate arranged movably mounted thereon, a motor for drivto be positioned beneath said material during said cutter chain, a separate motor for

35 tion with a supporting frame, of mechanism of the driving thereof, and means for con- 90 mine vein, a support movable relatively to of the operation of said driving motor. said frame in position beneath the dislodged 147. In a mining machine, the combina-40 frame for contacting the dislodged material mechanism comprising a cutter chain and a 95 to said frame to transfer the dislodged ma- feeding movement of said core-cutting 45 spaced-apart upright members co-acting said cutter chain, and means for controlling 10 with said support for directing the dis-said feeding motor independently of the op-

lodged material toward a predetermined po- eration of said driving motor. sition on said frame when moved thereto In testimony whereof I have signed my by said contacting means.

tion with a supporting frame, of kerf-cut-day of September, A. D. 1915. ting mechanism mounted thereon for feeding movement relatively thereto, said kerfcutting mechanism comprising a cutter 55 frame and an endless chain mounted there-

porting frame, an additional motor separate from and independent of said feeding mo- 6 tor for driving said kerf-cutting mechato said cutter frame to move bodily therewith, and means for controlling said feed-

145. In a mining machine, the combination with a supporting frame, of core-cutting mechanism comprising a cutter chain 20 away from its native position, and means for frame to effect arcuate feeding movement of 7 rate from and independent of said feeding 142. In a mining machine, a loop cutter, motor, and means for controlling said feed-

a contact member, means for moving said 146. In a mining machine, the combinacontact member in an arc in the path of tion with a supporting frame, of kerf-cutmovement of said cutter to force the mate- ting mechanism mounted thereon and coming the movement thereof.

giving said cutter arm an angular move-143. In a mining machine, the combina- ment to feed the cutter chain independently for dislodging a section of material from a trolling said feeding motor independently

material, means movable relatively to said tion with a supporting frame, of core-cutting at one end of the mass thereof, mechanism cutter frame having an unobstructed corefor moving said contacting means relatively opening therethrough, a motor for effecting terial away from its native position, and mechanism, a separate motor for driving

name to this specification, in the presence 144. In a mining machine, the combina- of two subscribing witnesses, on this 16th 10

EDMUND C. MORGAN.

Witnesses:

A. J. CRANE, CHARLES H. SEEM.