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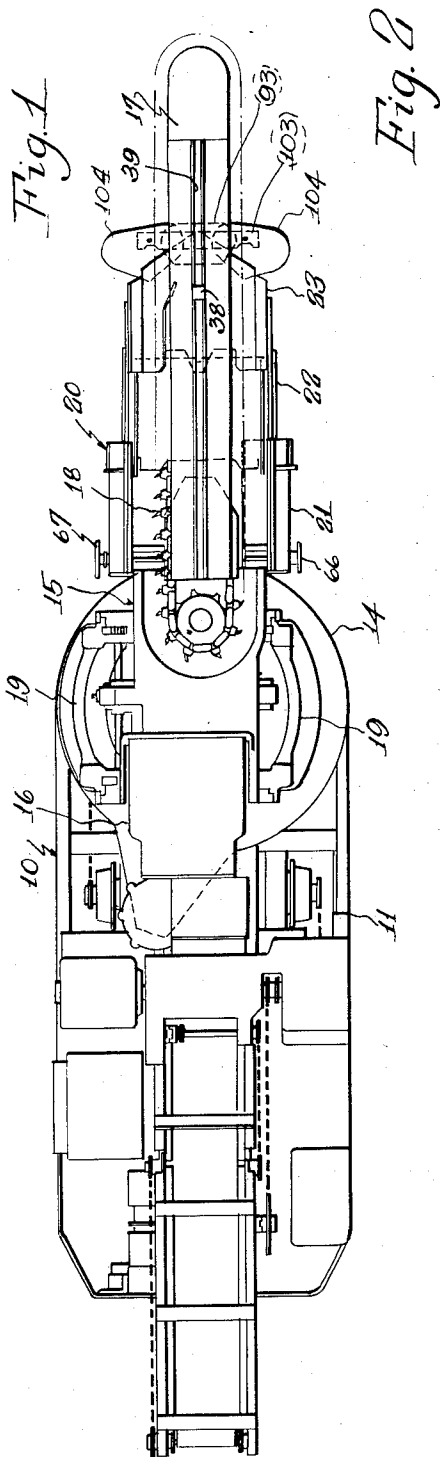
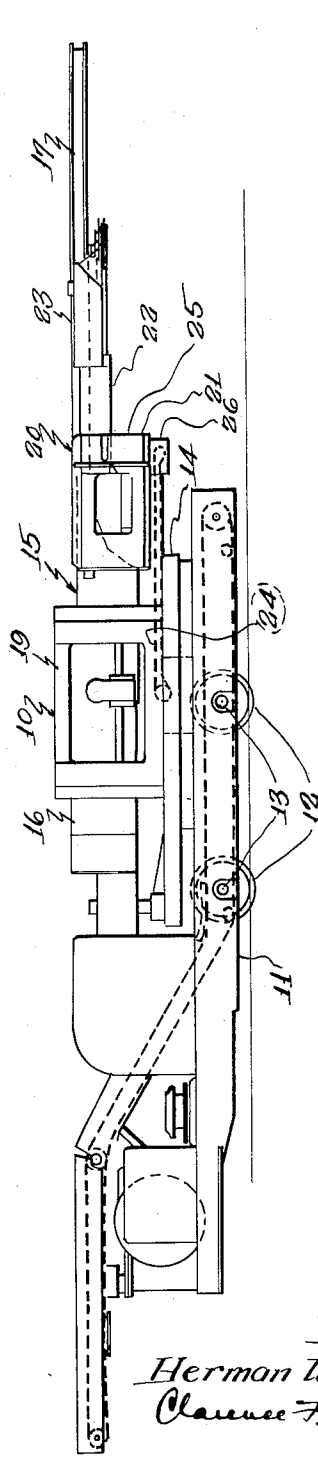
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1,939,673

MINING MACHINE

Filed July 29, 1932

5 Sheets-Sheet 1



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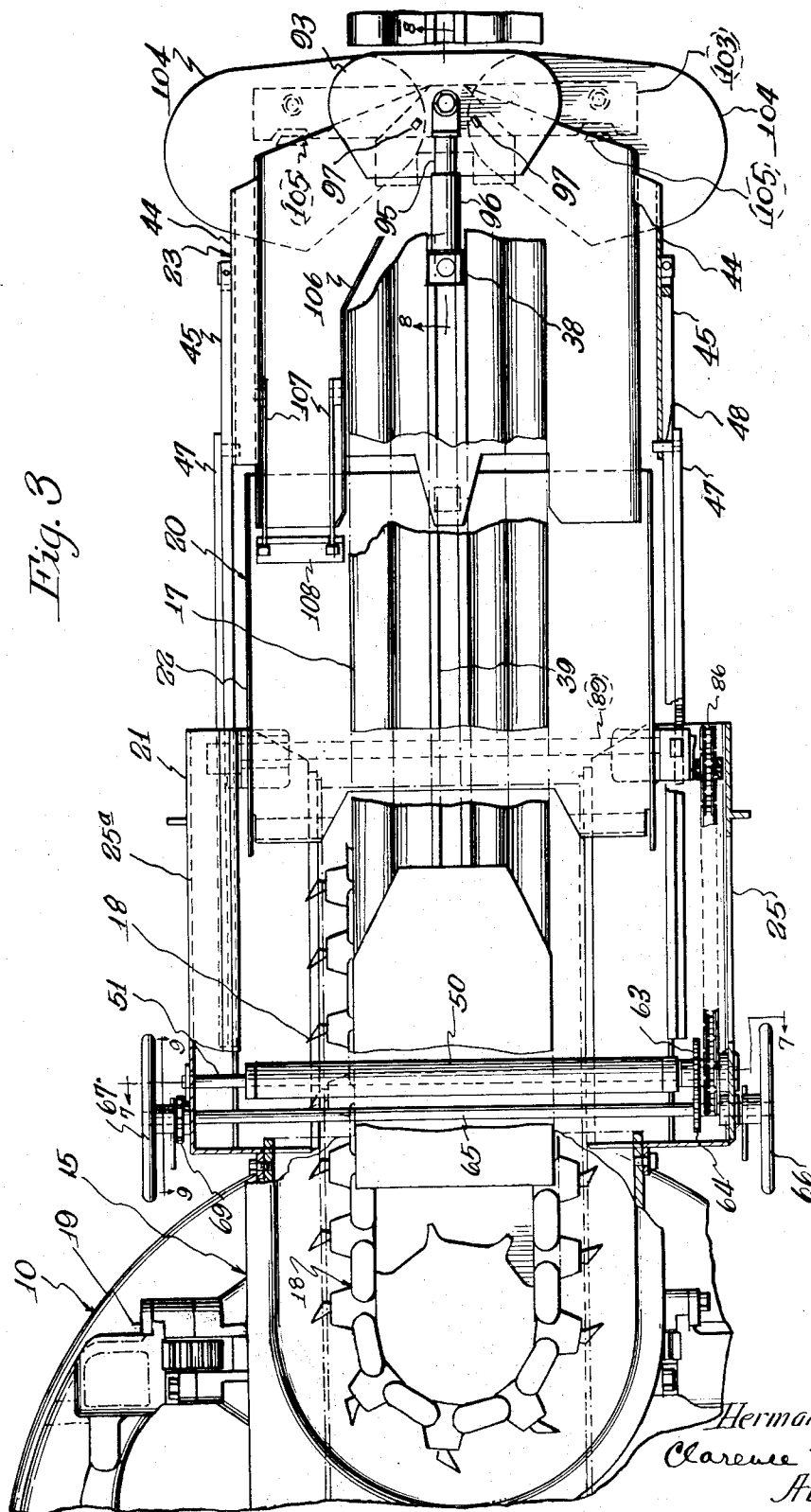
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5 Sheets-Sheet 2



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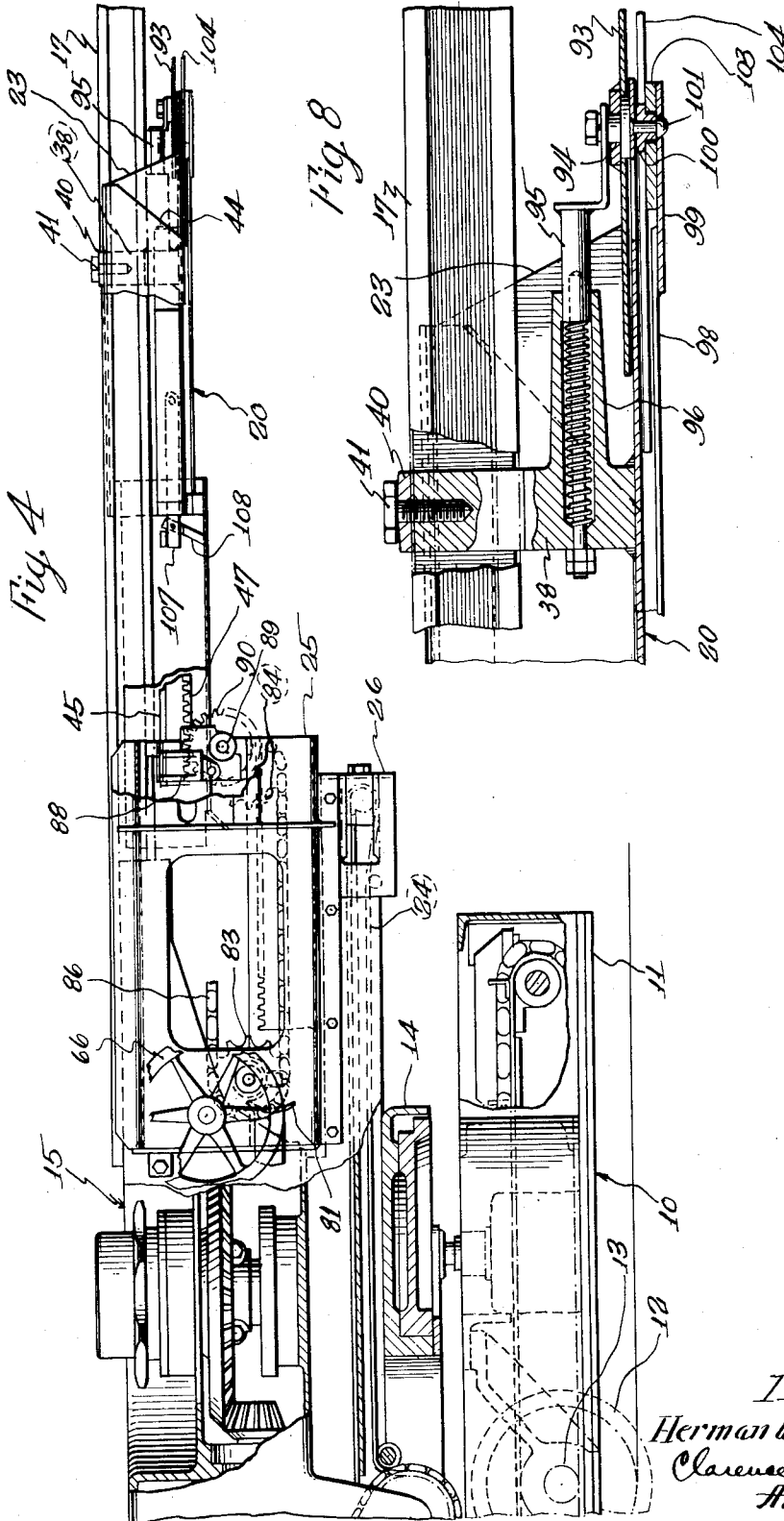
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5 Sheets-Sheet 3



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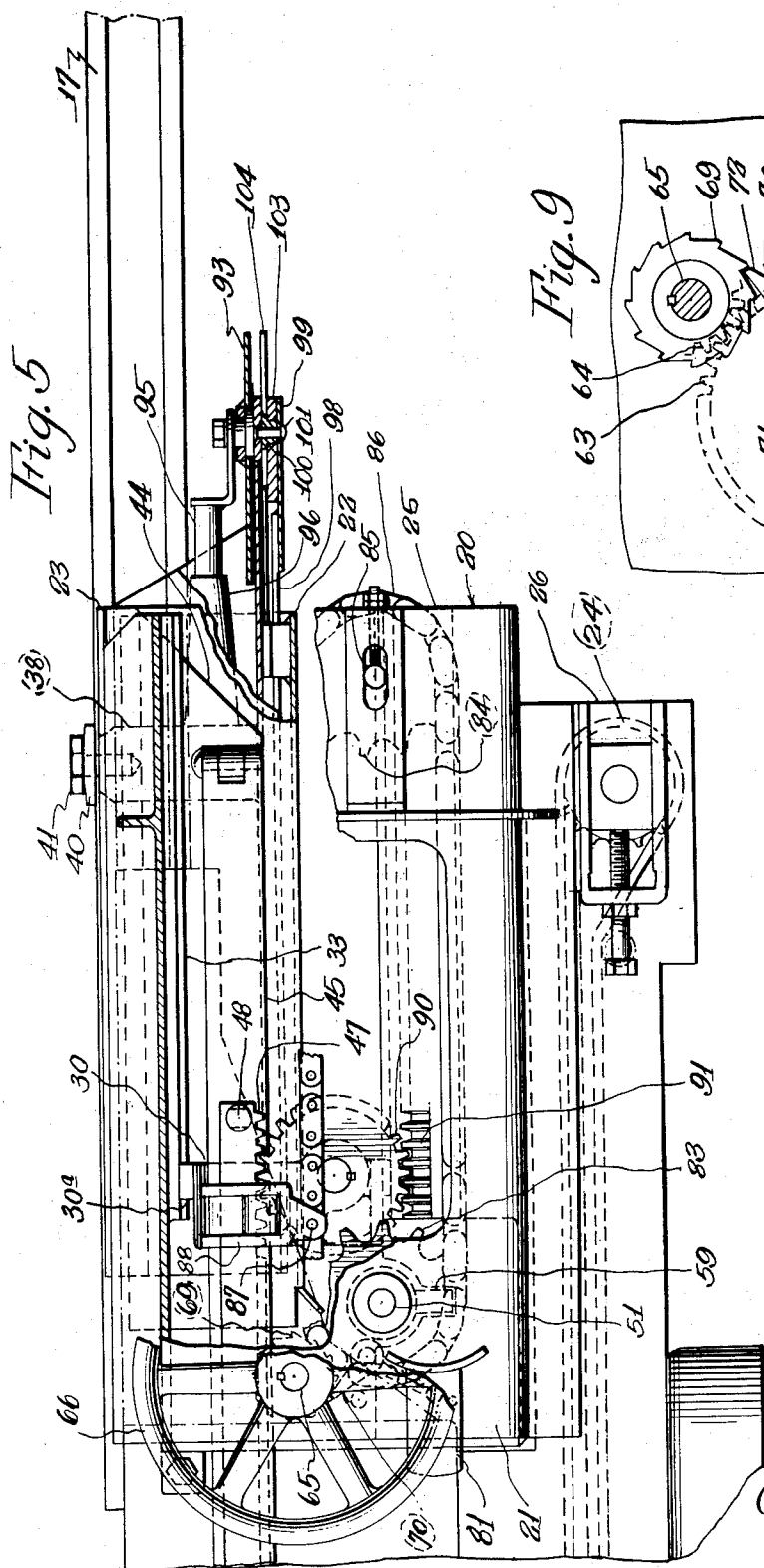
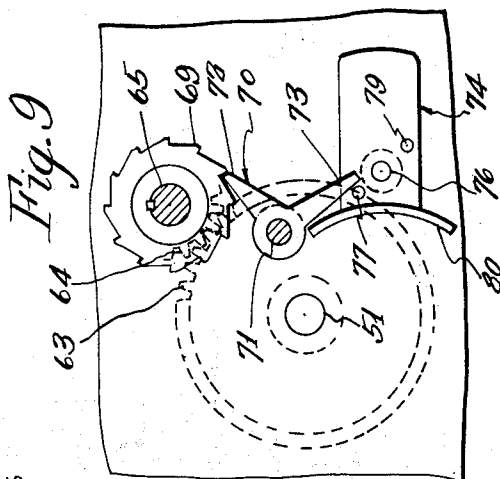
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MINING MACHINE

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5 Sheets-Sheet 4



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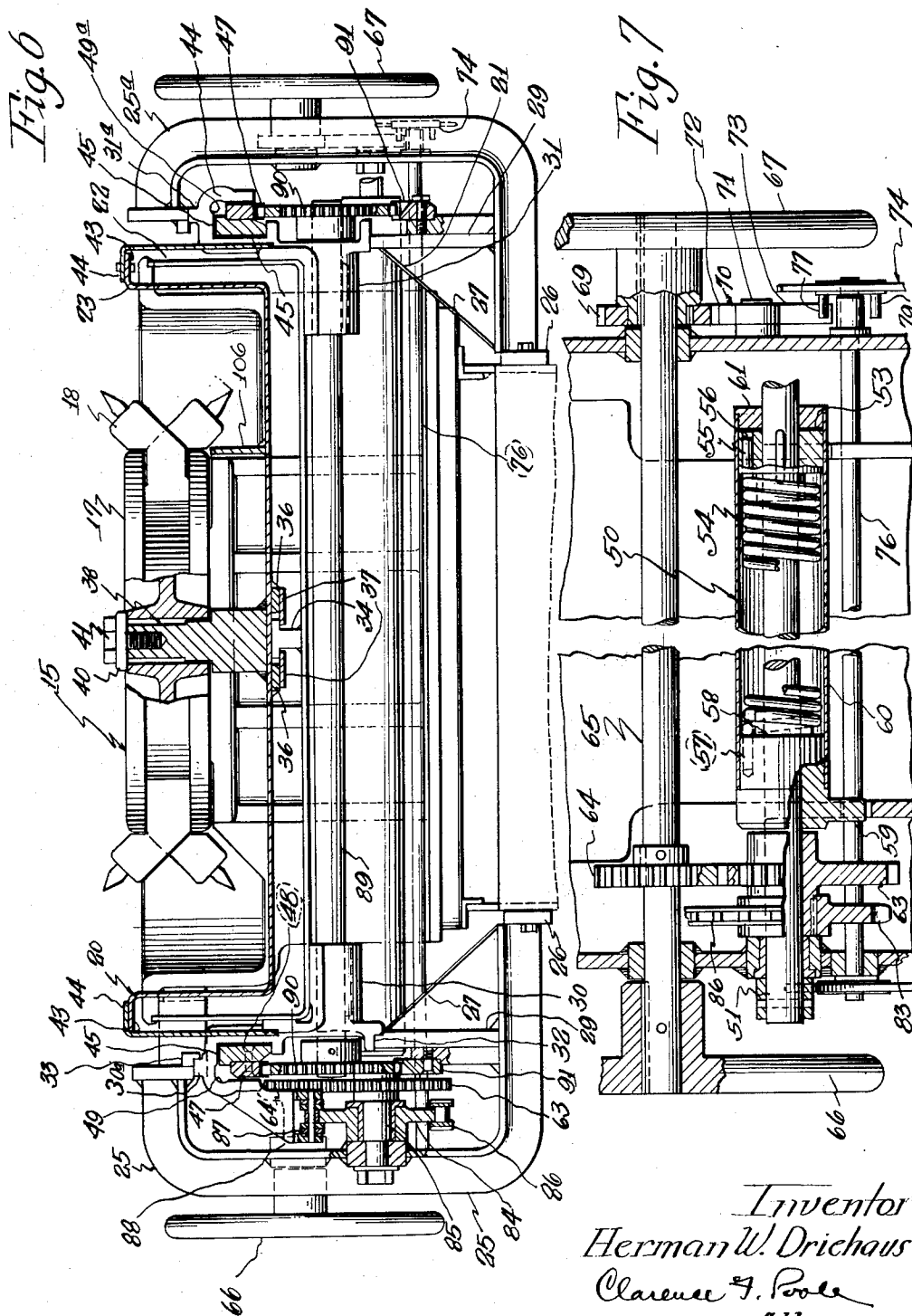
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5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

1,939,673

MINING MACHINE

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Application July 29, 1932. Serial No. 625,854

27 Claims. (Cl. 262—28)

This invention relates to improvements in mining machines, and more particularly to mining machines of the track mounted type adapted to cut a horizontal kerf in the mine wall above the mine rails, equipped with means for collecting the cuttings and permitting them to be delivered beyond the machine into the gob or a suitable receptacle.

This invention has, as one of its principal objects, to provide a new and improved means for collecting the cuttings removed from the kerf cut in the mine wall by the cutter bar which will more readily follow an uneven surface including an improved construction of telescopic cuttings collector and means for maintaining said cuttings collector in engagement with the mine wall while clutting across the face.

The general type of machine disclosed was fully described in a patent application filed May 24, 1930, by William T. McCullough, Serial Number 455,218, and entitled Improvements in mining machines, so will only herein be described insofar as is necessary to clearly set forth the improvements in my present invention.

My invention may be more clearly understood with reference to the accompanying drawings wherein:

Figure 1 is a top plan view of the device embodying my invention;

Figure 2 is a side elevation of the device shown in Figure 1;

Figure 3 is an enlarged plan view of the cuttings collecting means with parts broken away and in section to more clearly show the details of my invention;

Figure 4 is an enlarged side elevation of the cuttings collecting means in an extended position with respect to the cutter bar, with parts broken away and in section to more clearly show the details of my invention;

Figure 5 is an enlarged side elevation of the cuttings collecting means showing the cuttings collecting means in a retracted position with respect to the cutter bar, with parts broken away and in section to more clearly show the details of my invention;

Figure 6 is an enlarged front end view of the cuttings collecting means with parts broken away and in section to more clearly show the details of my invention;

Figure 7 is an enlarged sectional view taken substantially on line 7—7 of Figure 3;

Figure 8 is an enlarged sectional view taken substantially on line 8—8 of Figure 3; and

Figure 9 is an enlarged sectional view taken substantially on line 9—9 of Figure 3.

Like numerals refer to like parts throughout the various figures.

Referring now in particular to the drawings, the device embodying my invention comprises a mining machine generally indicated at 10. The mining machine 10 is of the track mounted type adapted to cut an arcuate kerf in the face of the coal in front of and to each side of the track above the mine bottom, and includes a truck frame 11 mounted on track wheels 12 and axles 13, and provided with a turntable 14 for supporting a cutting element generally indicated at 15.

The cutting element 15 includes a motor 16 and a projecting cutter bar 17 having a cutter chain 18 guided for movement thereabout in a closed path. The cutter chain 18 is driven from the motor 16 in a usual manner, clearly shown in the aforementioned prior McCullough application, and the cutting element 15 is supported in parallel spaced guides, generally indicated at 19, for vertical adjustment with respect to the turntable 14. The guides 19 are provided with suitable racks therein which are adapted to be engaged by pinions supported on suitable drive shafts journaled in the cutting element 15 for vertically moving and adjusting said cutting element so a kerf may be cut at various elevations with respect to the mine bottom. These racks and pinions, and the method of vertically adjusting the cutting element, are not herein shown nor described since they are not a portion of my present invention and are clearly shown in the aforementioned prior McCullough application.

Referring now in particular to the cuttings collecting device associated with the cutter bar 17 for collecting the cuttings cut out by the cutter chain 18, said cuttings collecting device comprises a telescopic cuttings collecting chute 20 extensible along the cutter bar 17 and retractable with respect to said cutter bar which is in three sections herein shown as comprising a fixed section 21, an intermediate extensible section 22, and a forward extensible section 23.

The fixed section 21 of the cuttings collecting chute 20 is supported forwardly of the cutting element 15 and includes a suitable cuttings conveyor 24 for conveying the cuttings discharged by the cuttings collecting chute 20 through a suitable opening in the central portion of the machine for discharge in a suitable manner as is clearly indicated in the aforementioned prior McCullough application.

The fixed section 21 includes parallel spaced

side members 25 and 25a tied together in a suitable manner and secured to the forward end of the cutting element 15 and extending forwardly therefrom. The parallel spaced side members 25 and 25a are formed substantially in the shape of a U having legs of unequal length and are of substantially the same construction with the exception that the length of the legs of each member differ due to the fact that the side member 25 supports more mechanism than the side member 25a.

The closed portions of the side members 25 and 25a extend vertically upward from opposite sides of a frame 26 for supporting the conveyor 24, and said side members are secured to the frame 26 and spaced outwardly therefrom by means of the longer legs of the U in a usual manner.

Deflecting members 27 extend upwardly and angularly outwardly from the inner ends of the lower legs of the U shaped side members 25 and 25a, respectively, and extend therealong for deflecting material into the conveyor 24.

The upper ends of the deflecting members 27 abut the inner sides of suitable parallel spaced support members 29 secured to and extending upwardly from the lower legs of the U shaped side members 25 and 25a, respectively, and forming a support for the intermediate extensible section 22 of the cuttings collecting chute 20 so said intermediate extensible section may be slidably moved therealong in a suitable manner (see Fig. 6).

The intermediate extensible section 22 of the cuttings collecting chute 20 is of a trough shaped formation and has a suitable support member 30 secured to one side thereof and another support member 31 secured to the opposite side thereof. The support members 30 and 31 are disposed directly opposite each other adjacent the rearward end of the intermediate extensible section 22 and extend beneath the bottom of the trough of the intermediate extensible section 22 for a portion of the width thereof and upwardly along the sides of said intermediate extensible section and outwardly therefrom.

The support members 30 and 31 are each provided with a bottom supporting portion which is adapted to engage and be supported on the top portion of the upstanding support members 29, 29 so the intermediate extensible section 22 may be slidably moved therealong and the support member 30 is provided with a suitable shouldered portion 32 which is adapted to abut a corresponding shouldered portion on the associated upstanding support member 29.

The support member 30 has an upstanding portion 30a adapted to engage the underside of the upper leg of the side member 25 and a shouldered guide 33 extending longitudinally of the side member 25. Likewise, the support member 31 has an upstanding portion 31a adapted to slidably engage the underside of the upper leg of the side member 25a.

It should herein be noted that the lower portion of the support member 30 is shouldered and engages a shouldered top portion of the upstanding support member 29 and that the upstanding portion 30a of said support member is engaged by the shouldered guide 33 while the opposite support member 31 is neither shouldered nor is the upstanding portion 31a engaged by a shouldered guide. This construction aligns the intermediate extensible section 22 with the fixed section 21 and prevents binding of said sections during movement of the section 22 with

respect to the section 21 effected by the extending and retracting mechanism in a manner which will hereinafter be more fully described.

The forward end of the intermediate extensible section 22 of the cuttings collecting chute 20 is supported by a T shaped supporting member 34 secured to the upper side of the central portion of said intermediate extensible section and extending upwardly therefrom. The cross of the T of the T shaped supporting member 34 is adapted to slide in a suitable guide formed by suitable parallel spaced strips 36, 36 secured to and depending from the bottom side of the forward extensible section 23 having suitable gibs 37, 37 secured to their underside and adapted to engage the underside of the cross of the T shaped supporting member 34.

Referring now in particular to the construction of the forward extensible section 23 of the cuttings collecting chute 20, said forward extensible section is of a trough like construction and is supported adjacent its forward end on the cutter bar 17 for movement therealong by a member 38 secured thereto and extending upwardly from the forward central portion of said forward extensible section. The member 38 is supported by and is adapted to slide within a slot 39 extending longitudinally of the cutter bar 17. The means for supporting the member 38 on the cutter bar 17 comprises a retaining piece 40 secured to the top side of said member by means of a suitable cap screw 41 and resting on the top surface of the cutter bar 17 adjacent opposite sides of the slot 39.

The sides of the forward extensible section 23 of the cuttings collecting chute 20 have outwardly extending horizontal top portions 43 formed integral therewith. L shaped support members 44 are secured to the top portion of the outwardly extending top portion 43 of the forward extensible section 23 and their legs depend therefrom so as to be spaced from the sides of said forward extensible section and be parallel therewith. The L shaped support members 44 are spaced from opposite sides of the sides of the intermediate extensible section 22 of the cuttings collecting chute 20 so the forward extensible section 23 may be telescoped with respect thereto and forms a support for the mechanism for extending and retracting said forward extensible section.

Rearwardly extending arms 45, 45 are pivotally supported on the outer side of the legs of the support members 44 for pivotal movement with respect thereto about a vertical axis. The rearwardly extending arms 45 have suitable racks 47 secured thereto in a suitable manner; as, for instance, a pin 48. The racks 47 extend rearwardly from the forward extensible section 23 along the sides of the intermediate extensible section 22. The rearwardly extending arms 45 and racks 47 are adapted to be slidably supported in suitable guides 49 and 49a formed integral with the support members 30 and 31, respectively, for guiding said arms and racks during extension and retraction of the cuttings collecting chute 20. It should herein be noted that the pivotal support for the rearwardly extending arms 45 permits limited pivotal movement of the racks 47 and minimizes the possibility of binding of said racks and the pinions meshing therewith which will hereinafter be referred to.

Referring now in particular to the details of the drive mechanism for extending and retracting the cuttings collecting chute 20 and for en-

gaging the forward end of said cuttings collecting chute with the face of the coal, a spring actuated device 50 is provided. The spring actuated device 50 is supported in the fixed section

21 of the cuttings collecting chute 20 and comprises a transversely extending shaft 51 journaled adjacent its ends in the side members 25 and 25a of said fixed section. A collar 53 is keyed adjacent one side of the transversely extending shaft 51. A coiled spring member 54 encircles the transversely extending shaft 51 and one of its ends 55 is adapted to fit into a suitable bore 56 in the collar 53. An opposite end 57 of the coiled spring member 54 is adapted to fit into a suitable bore formed in a member 58 freely mounted on the transversely extending shaft 51 adjacent its opposite side. The member 58 is provided with a depending ear 59 which is adapted to engage a suitable notch formed in the fixed section 21 to prevent rotation of said member. A cylindrical member 60 encloses the coiled spring member 54 and one of its ends is adapted to engage a suitable shouldered portion on the member 58, while its opposite end is adapted to engage a suitable shouldered portion on a collar 61 freely mounted on the transversely extending shaft 51 adjacent the outer end of the collar 53.

A spur gear 63 is keyed on the transversely extending shaft 51 adjacent the outer end of the member 58. The spur gear 63 meshes with a spur pinion 64 secured to a transversely extending shaft 65. A hand wheel 66 is keyed on one end of the transversely extending shaft 65 adjacent the spur pinion 64 but spaced outwardly therefrom on the outer side of the side members 25 and 25a, while another hand wheel 67 is keyed on the opposite end of said transversely extending shaft.

The hand wheel 67 is provided with a shouldered hub having a ratchet 69 keyed thereto. The ratchet 69 is adapted to be engaged by a suitable pawl 70 pivotally supported on the outer side of the side member 25 on a pin 71. The pawl 70 is provided with an engaging arm 72 and a tripping arm 73.

Suitable means are provided for operating the pawl 70, which means herein comprise a tripping member 74. The tripping member 74 is pivotally supported adjacent one of its ends on an outer end of a transversely extending shaft 76. It should be noted with reference to Figure 9 that the tripping member 74 is elongated and that a portion thereof projects from the transversely extending shaft 76 to form in effect a counter-weight for engaging a pin 77 with one side of the engaging arm 72 to hold the pawl 70 in engagement with the ratchet 69, or to hold a pin 79 in engagement with the opposite side of the tripping arm 73 to disengage said pawl from the ratchet 69. The tripping member 74 may be manually operated in any suitable manner; as, for instance, a gripping member 80 secured to one end thereof.

Suitable operating means for the pawl 70 are provided on the opposite end of the transversely extending shaft 76, which herein comprise an operating member 81 counter-weighted in a manner similar to the tripping member 74.

Thus when the transversely extending shaft 76 is rotated in such a manner that the pin 77 engages the tripping arm 73 of the pawl 70, the engaging arm 72 of said pawl engages the teeth of the ratchet 69 and holds the hand wheels 66 and 67 from rotation in one direction. When the pawl 70 is so positioned, rotation of either of

the hand wheels 66 or 67 will wind up the coiled spring member 54, said pawl holding said coiled spring member in tension. When the tripping member 74 is so positioned that the pin 79 engages the tripping arm 73, the pawl 70 will be disengaged from the ratchet 69 which will permit rotation of the transversely extending shaft 65 and hand wheels 66 and 67 actuated by the coiled spring member 54.

A sprocket 83 is keyed on the hub of the spur gear 63 adjacent the outer side thereof. Another sprocket 84 is spaced forwardly from the sprocket 83 and supported on a suitable shaft 85 supported in the side member 25 of the fixed section 21 in a suitable manner. An endless drive chain 86 is trained around the sprockets 83 and 84.

The drive chain 86 is adapted to be operatively connected with the intermediate extensible section 22 for moving said section with respect to the fixed section 21 upon movement of said drive chain in the following manner:

A pin 87 connects a pair of links of the drive chain 86 together and extends outwardly from said drive chain. The outer ends of the pin 87 engage a forked portion 88 extending outwardly of and depending from the support member 30. Thus when the coiled spring member 54 is wound to a suitable tension and the pawl 70 is disengaged from the ratchet 69, said spring will drive the sprocket 83 which in turn will drive the drive chain 86 and move the intermediate extensible section 22 forwardly along the fixed section 21.

Referring now in particular to the means for moving the forward extensible section 23 with respect to the intermediate extensible section 22, a transversely extending shaft 89 is disposed beneath the intermediate extensible section 22 and is journaled adjacent its opposite ends in the support members 30 and 31. Pinions 90 are secured to opposite ends of the transversely extending shaft 89 for rotation therewith and mesh with the racks 47, 47 disposed thereabove. Racks 91, 91 are disposed beneath the pinions 90 and are meshed therewith and are secured to the outer sides of the upstanding support members 29, 29 secured to the side members 25 and 25a of the fixed section 21.

Thus when the drive chain 86 moves the support members 30 and intermediate extensible section 22 of the cuttings collecting chute 20, the pinions 90 are bodily moved therewith. Due to the fact that the pinions 90 are meshed with the stationary racks 91 and the racks 47 are connected to the forward extensible section 23, movement of the intermediate extensible section 22 will cause simultaneous bodily movement and rotation of the pinions 90 which will extend the forward extensible section 23 at a higher rate of speed than the speed of extension of said intermediate extensible section. The shaft 89 being journaled in the support members 30 and 31, which are secured to the intermediate extensible section 22, the pinions 90, besides extending or retracting the forward extensible section 23, aid in extending or retracting the intermediate extensible section 22.

Thus it may be seen that the cuttings collecting chute 20 is extended and held in engagement with the face of the coal by means of a single spring actuated device which is so arranged as to extend the intermediate extensible section 22 of said cuttings collecting chute at one rate of speed and extend the forward extensible section of said cuttings collecting chute at a higher rate of speed, which rate of speed is herein shown as being

twice the speed of extension of said intermediate extensible section.

Inasmuch as the rearwardly extending arms 45, 45 are pivotally connected to outer sides of the forward extensible section 23, said section may be twisted one way or the other without binding of the racks 47, 47 with the pinions 90, 90, and due to the fact that shouldered guides are provided on one side only of the intermediate extensible section 22, said section may be more readily extended or retracted without binding. This permits extension of the cuttings collecting chute 20 when engaged with the face of the coal and relieves all strains from the driving mechanism therefor.

When it is desired to extend the cuttings gathering chute 20 to engage the forward end thereof with the face of the coal, the coiled spring member 54 being wound to the required tension, it is only necessary to release the pawl 70 from the ratchet 69 by means of the tripping device 74 in an obvious manner. The cuttings collecting chute 20 is telescoped by disengaging the pawl 70 from the ratchet 69 and rotating either the hand wheel 66 or 67 in a direction to move the intermediate and forward extensible sections 22 and 23, respectively, toward and within each other and within the fixed section 21 of said cuttings collecting chute.

Means are provided on the forward end of the cuttings collecting chute 20 to yieldably engage the face of the coal during the cutting operation and permit the forward end of the forward extensible section 23 of said cuttings collecting chute to have adjustable contact with the face of the mine wall which herein comprise a central material engaging member 93 pivotally supported on a stud 94 extending downwardly from and forwardly of a spring operated plunger 95. The spring operated plunger 95 is supported in a bored supporting member 96 extending forwardly of and formed integral with the member 38 and is adapted to engage the forward end of the material engaging member 93 with the face of the coal. Stops 97, 97 are provided on the top surface of the material engaging member 93 and are adapted to engage a portion of the spring operated plunger 95 to limit pivotal movement of said material engaging member with respect to said plunger.

A plate 98 is spaced downwardly from the undersurface of the forward extensible section 23 and is secured thereto in a suitable manner. A support member 99 is secured to the underside of the plate 98 adjacent the forward end thereof and extends forwardly therefrom. A flanged bushing 100 is interposed between the undersurface of the forward end of the forward extensible section 23 and the top surface of the support member 99 and secured thereto by means of a suitable rivet, indicated by reference character 101. The flanged bushing 100 serves to pivotally support a transversely extending bar 103 adjacent its center for pivotal movement with respect thereto. A wing 104 is pivotally supported adjacent each end of the transversely extending bar 103 for pivotal movement with respect thereto. The wings 104 extend outwardly from each side of the forward extensible section 23 of the cuttings collecting chute 20 and are adapted to engage the face of the mine wall as the cutter bar is moved therealong. Stops 105 depend downwardly from each wing 104 and are adapted to engage suitable grooves formed in the transversely extending bar 103 to limit pivotal movement thereof. Pivotal movement of the transversely extending bar 103

is in turn limited by the forward end of the plate 98.

It may thus be seen that the yieldable engaging member 93 is independent of the wings 104 pivoted on opposite ends of the transversely extending bar 103, and that said transversely extending bar serves as an equalizing support for the wings 104, 104 to hold both of said wings in engagement with the coal face. Thus when an obstruction is encountered in the face of the coal it is first engaged by one wing 104, which pivots the bar 103, and said wing so said wing may ride over said rough spot or obstruction. As one wing 104 engages an obstruction, the opposite wing 104 is engaged with the face of the coal by the transversely extending bar 103. It is thus apparent that the yieldable material engaging means is so constructed that a maximum surface may be in engagement with the face of the coal during the entire cutting operation to permit the cutter chain to propel a maximum amount of cuttings onto the cuttings collecting chute 20 and to prevent said cuttings from falling to the ground.

Suitable means are provided to clear the path of the forward extensible section 23 of the cuttings collecting chute 20 as it is being telescoped within the intermediate extensible section 22 of said cuttings collecting chute and prevent fouling thereof, which means herein comprises a guide member 106 extending upwardly from the bottom of the trough of the forward extensible section 23 of the cuttings collecting chute 20 and spaced inwardly from the advance side wall thereof a distance sufficient to clear the cutter chain 18. The guide member 106 conforms substantially to the path of the cutter chain 18 and is adapted to guide material along the forward extensible section 23 to permit its discharge into the intermediate extensible section 22 by the action of said cutter chain. A pair of parallel spaced arms 107 are pivotally supported adjacent the inner sides of the forward extensible section 23 and guide member 106 and extend rearwardly therefrom (see Figs. 3 and 4). A scraper device 108 is pivotally supported between the parallel spaced arms 107 and is adapted to engage the top surface of the intermediate extensible section 22 of the cuttings collecting chute 20. When the forward extensible section 22 is moved rearwardly with respect to the intermediate extensible section 22 and telescoped therein, the scraper device 108 is moved along the top surface of said intermediate extensible section. As the scraper device 108 engages an obstruction, said scraper device is pivoted about its axis of pivotal connection to the parallel spaced arms 107 and said arms are pivotally moved about their axis of pivotal connection to the forward extensible section 23 and guide member 106 so said scraper device may scrape material from the path of the forward extensible section 23 of the cuttings collecting chute 20 onto the intermediate extensible section 22 and prevent fouling of the section 23 as it is telescoped within the section 22. It should be noted that the scraper device is provided on one side only of the forward extensible section 23, which side is the advance side of the cuttings collecting chute 20 when the machine is cutting from right to left. The reason for providing one scraper device 108 only is that the cuttings are discharged from the advance side of the cutter bar only and that it is not necessary to provide two of such scraper devices unless the machine is of the reversible type and is adapted to cut in opposite directions along the coal face. It is readily apparent that where the mining ma-

chine is of the reversible type a scraper device may be provided on each side of the cuttings collecting chute 20.

It may thus be seen that a new and improved cuttings collecting device has been provided for a mining machine which is compactly arranged and is of the utmost simplicity, and that said cuttings collecting device includes a new and novel equalized material engaging means adapted to engage the face of the coal during the cutting operation and a new and novel means for extending and retracting said cuttings collecting device and engaging the forward end of said cuttings collecting device with the mine wall wherein a single spring actuated device may extend a plurality of sections of the cuttings collecting chute 20 simultaneously, the forward section being extended at a greater rate of speed than the rearward sections. This forms an efficient and simple means for extending or retracting the chute during the cutting operation and engaging the forward end of said chute with the coal face during the entire cutting operation.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the arrangement of the various parts and the construction thereof may be altered or changed without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting myself to the specific embodiment illustrated, excepting as it may be limited by the appended claims.

I claim as my invention:

1. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a plurality of longitudinally extensible sections and a single tension actuated rotatable member connectible with each of said sections for shifting the same relative to each other.

2. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a plurality of longitudinally extensible sections, a tension actuated member for shifting one of said sections relative to another, and a gear member associated with the means for shifting said section for shifting another section relative to said first mentioned section.

3. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar and comprising a plurality of longitudinally extensible sections, a spring actuated device, drive means associated therewith and connectible with one of said sections for shifting said section relative to another of said sections, and other drive means connected to said first mentioned drive means for shifting another section relative to said first mentioned section.

4. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar and comprising a plurality of longitudinally extensible sections, a spring actuated device, drive means associated therewith and connectible with one of said sections for shifting said section relative to another of said sections, and a gear member connected with said drive means for shifting another section relative to said first mentioned section.

5. In a mining machine, the combination of cutting mechanism including a cutter bar and a

cuttings collecting device associated with said cutter bar and comprising a plurality of longitudinally extensible sections, a spring actuated device, a flexible drive member associated therewith and actuated thereby, means connecting said flexible drive member with one of said sections for shifting said section relative to another of said sections, and a gear member connected with said flexible drive member for shifting another section relative to said first mentioned section.

6. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar and comprising a plurality of longitudinally extensible sections, a spring actuated device, a flexible drive member associated therewith and actuated thereby, means connecting said flexible drive member with one of said sections for shifting said section relative to another of said sections, and means actuated by said means for shifting said first mentioned section relative to another of said sections for shifting another of said sections relative to said first mentioned section comprising a rack on said last mentioned section and a gear member connected with said flexible drive member and engageable with said rack.

7. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a plurality of longitudinally extensible sections and means for shifting said sections relative to each other comprising a spring actuated device, an endless flexible drive member associated therewith and driven thereby, a connection from said drive member to one of said sections, a rack on another of said sections and a gear member meshing with said rack and connected with said flexible drive member and bodily movable therewith for moving said section relative to said first mentioned section.

8. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed sections comprising a spring actuated device, an endless flexible drive member driven thereby, a connection from said drive member to one of said extensible sections, a rack on another of said movable sections, another rack on said fixed section and a gear meshing with said first and second mentioned racks and actuated by said flexible drive member for extending said second mentioned section relative to said first mentioned section.

9. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed section comprising a spring actuated device, an endless flexible drive member driven thereby, a connection from said drive member to one of said extensible sections, a rack, another rack on another of said movable sections, and a gear member connected with said flexible drive member and bodily movable therewith and meshing with said first and second mentioned racks for extending said second men-

tioned section relative to said first mentioned section.

10. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed section comprising a spring actuated device supported on said fixed section, an endless drive member driven thereby, a connection from said drive member to one of said extensible sections, a rack on said fixed section, another rack on another of said movable sections, a gear meshing with each of said racks and a connection between said gear and flexible drive member for bodily moving said gear thereby whereby said second mentioned section is moved relative to said first mentioned section upon movement of said first mentioned section relative to said fixed section.

11. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a plurality of telescopic chute sections extensible longitudinally of said cutter bar, a power transmission device having operative connection with one of said chute sections and a single spring actuated device associated with said power transmission device for shifting said sections relative to each other in one direction.

12. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a stationary section, a plurality of chute sections extensible longitudinally of said cutter bar and telescopic within said stationary section and a single spring actuated device supported in said stationary section for shifting said extensible sections relative to each other.

13. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a plurality of telescopic chute sections extensible longitudinally of said cutter bar, a single spring actuated device and an endless power transmission device associated with said spring actuated device for shifting said sections relative to each other.

14. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a plurality of telescopic chute sections extensible longitudinally of said cutter bar, a single spring actuated device, an endless power transmission device associated with said spring actuated device and a gear device connected with said endless power transmission device and bodily movable thereby for shifting said sections relative to each other.

15. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a plurality of telescopic chute sections extensible longitudinally of said cutter bar, a single spring actuated device, an endless power transmission device associated with said spring actuated device, a rack connected with one of said sections, another rack connected with another of said sections, and a gear device meshing with both of said racks and connected with said endless power transmission

device for bodily movement therewith for shifting said sections relative to each other.

16. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a plurality of telescopic chute sections extensible longitudinally of said cutter bar, a single spring actuated device, an endless power transmission device associated with said spring actuated device and having driving connection with one of said telescopic sections and a gear device connected with said endless power transmission device for bodily movement therewith and having driving connection with another of said sections for shifting said sections relative to each other.

17. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a plurality of telescopic chute sections extensible longitudinally of said cutter bar, a single spring actuated device, an endless power transmission device associated with said spring actuated device and having driving connection with one of said telescopic sections, a rack connectible with another of said telescopic sections, and a gear device meshing with said rack and connected with said endless power transmission device for shifting said sections relative to each other.

18. In a mining machine, cutting mechanism therefor including a chain carrying cutter bar, and cuttings collecting means associated with said cutter bar comprising a plurality of telescopic chute sections extensible longitudinally of said cutter bar, a single spring actuated device, an endless power transmission device associated with said spring actuated device and having driving connection with one of said telescopic sections, a rack connectible with another of said telescopic sections, another rack adapted to be held in a relatively fixed position with respect to said last mentioned movable section and a gear device meshing with said racks and having connection with said endless power transmission device for shifting said last mentioned section with respect to said first mentioned section.

19. In a track mounted mining machine, the combination of cutting mechanism including a projecting cutter bar adapted to cut an arcuate kerf in the mine wall, a cuttings collecting device associated with said cutter bar comprising a chute member and means extending forwardly of said chute member and engageable with the mine wall comprising a transversely extending bar having wings pivotally supported on opposite ends thereof and a yieldable material engaging member intermediate said wings and operable independently thereof.

20. In a track mounted mining machine, the combination of cutting mechanism including a projecting chain carrying cutter bar adapted to cut an arcuate kerf in the mine wall, a cuttings collecting chute associated with said cutter bar and extensible longitudinally thereof, a plate mounted centrally of said chute for pivotal movement with respect thereto and projecting beyond the forward end thereof, and a transversely extending bar supported centrally of the forward end of said cuttings collecting chute for pivotal movement with respect thereto independently of said plate, said transversely extending bar having wings pivotally supported on opposite sides thereof having curvilinear portions projecting beyond

the front and side edges of the forward portion of said chute.

21. In a track mounted mining machine, the combination of cutting mechanism including a projecting chain carrying cutter bar adapted to cut an arcuate kerf in the mine wall, a cuttings collecting chute associated with said cutter bar and extensible longitudinally thereof, a plate yieldably mounted centrally of said chute for pivotal movement with respect thereto and extensible beyond the forward end thereof, and a transversely extending bar supported independently of said plate centrally of the forward end of said cuttings collecting chute for pivotal movement with respect thereto, said transversely extending bar having wings pivotally supported on opposite sides thereof having curvilinear portions projecting beyond the front and side edges of the forward portion of said chute.

22. In a track mounted mining machine, the combination of cutting mechanism including a projecting chain carrying cutter bar adapted to cut an arcuate kerf in the mine wall, a cuttings collecting chute associated with said cutter bar and extensible longitudinally thereof, a plate yieldably mounted centrally of said chute for yieldable movement longitudinally of said chute and for pivotal movement with respect thereto and extensible beyond the forward end thereof, and a transversely extending bar supported independently of said plate centrally of the forward end of said cuttings collecting chute for pivotal movement with respect thereto, said transversely extending bar having wings pivotally supported on opposite sides thereof having curvilinear portions projecting beyond the front and side edges of the forward portion of said chute.

23. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed section comprising a spring actuated device supported in said fixed section rearwardly of said extensible sections comprising a fixed member, a rotatable member, a spring associated with said fixed and rotatable members, means connectible with said rotatable member for adjusting the tension of said springs, means for releasing said rotatable member or holding said rotatable member from movement in one direction, a sprocket driven by said rotatable member, an endless chain having connection with one of said extensible sections and driven by said sprocket, a gear connected with said endless chain for bodily movement therewith, means for rotating said gear as it is bodily moved with said endless chain and a drive connection from said gear to another of said extensible sections for extending or retracting said section at a higher rate of speed than said first mentioned section.

24. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed section comprising a rotatable member, means for rotating said rotatable mem-

ber, a sprocket driven by said rotatable member, an endless chain having connection with one of said extensible sections and driven by said sprocket, a gear connected with said endless chain for bodily movement therewith, means for rotating said gear as it is bodily moved with said endless chain and a drive connection from said gear to another of said extensible sections for extending or retracting said section at a higher rate of speed than said first mentioned section.

25. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed section comprising a rotatable member, means for manually rotating said rotatable member, a sprocket driven by said rotatable member, an endless chain having connection with one of said extensible sections and driven by said sprocket, a gear connected with said endless chain for bodily movement therewith, means for rotating said gear as it is bodily moved with said endless chain and a drive connection from said gear to another of said extensible sections for extending or retracting said section at a higher rate of speed than said first mentioned section.

26. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed section comprising a rotatable member, spring actuated means for rotating said rotatable member in one direction, a sprocket driven by said rotatable member, an endless chain having connection with one of said extensible sections and driven by said sprocket, a gear connected with said endless chain for bodily movement therewith, means for rotating said gear as it is bodily moved with said endless chain and a drive connection from said gear to another of said extensible sections for extending or retracting said section at a higher rate of speed than said first mentioned section.

27. In a mining machine, the combination of cutting mechanism including a cutter bar and a cuttings collecting device associated with said cutter bar comprising a fixed section and a plurality of longitudinally extensible sections, and means for shifting said extensible sections relative to said fixed section comprising a rotatable member, spring actuated means operatively connectible with said rotatable member, means whereby said rotatable member may be actuated by said spring actuated means or manually, an endless chain driven by said rotatable member, a connection between said endless chain and one of said extensible sections for moving said extensible section upon movement of said endless chain, a gear connected with said endless chain for bodily movement therewith, means for rotating said gear as it is bodily moved with said endless chain, and a drive connection from said gear to another of said extensible sections for extending or retracting said section at a higher rate of speed than said first mentioned section.

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