

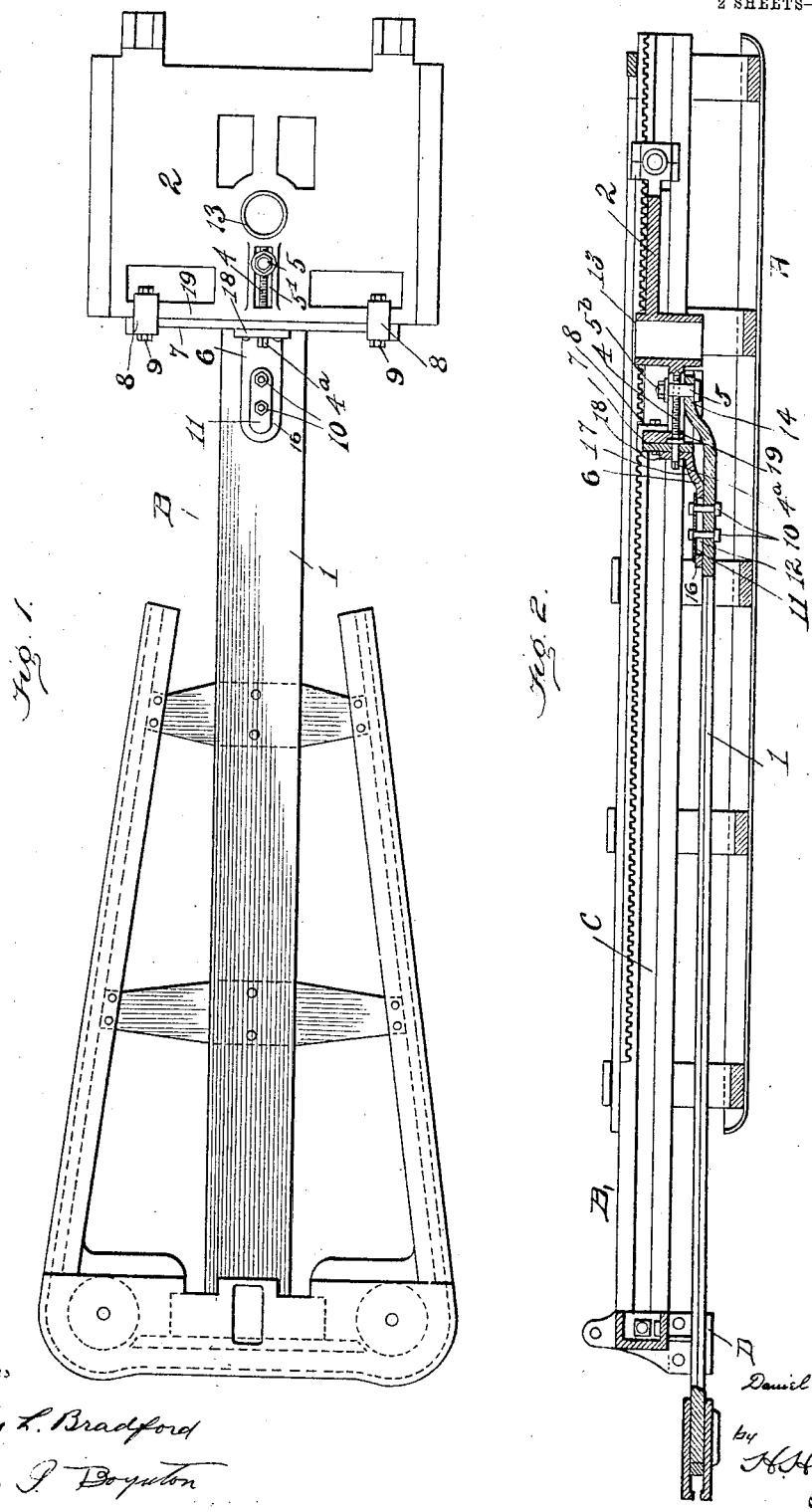
No. 809,206.

PATENTED JAN. 2, 1906.

D. R. MURPHY.
MINING MACHINE.

APPLICATION FILED FEB. 20, 1904.

2 SHEETS—SHEET 1.



Witnesses

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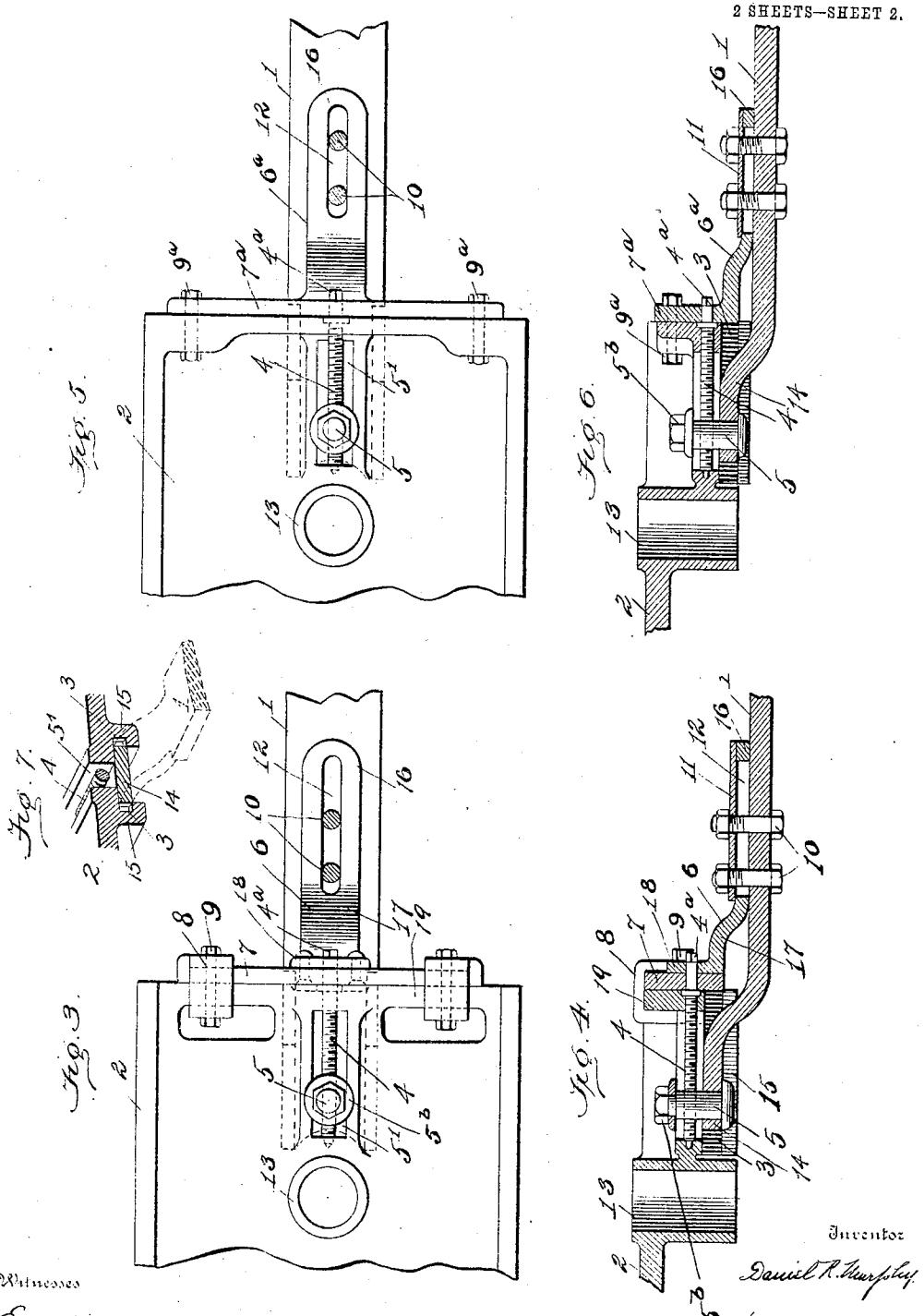
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References

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MINING-MACHINE.

No. 809,206.

Specification of Letters Patent.

Patented Jan. 2, 1906.

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To all whom it may concern:

Be it known that I, DANIEL R. MURPHY, a citizen of the United States, residing at Scenery Hill, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Mining-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in mining-machines, pertaining more particularly to improvements in machines of the class in which laterally-acting cutters are employed—that is to say, cutters which act 15 while moving on lines transverse to their path of advance into the material that they are operating on. The cutting device commonly used in such machines is usually an endless chain provided at intervals with cutters, this chain being mounted upon a horizontally-arranged frame forming part of a carriage which is fitted to a bed and is adapted to move bodily forward and back while the chain is moving around it. It has been well 20 known for a long time that to the cutting apparatus of this sort there is incident a severe lateral reaction, resulting in strains in a direction opposite to that followed by the working cutters. This reactionary thrust 25 and the strains therefrom have been experienced principally by the devices which connect together the chain-frame and the engine or motor support.

The object of the present invention is to 30 provide an improved construction and arrangement of parts for joining and bracing together the parts referred to.

Figure 1 is a plan view of the carriage of a mining-machine to which my improvements 35 can be applied. Fig. 2 is a longitudinal section of the bed-frame and carriage. Fig. 3 is a plan view, on a larger scale, of the rear end of the center rail of the chain-frame and the front part of the engine or motor platform. Fig. 4 is a longitudinal central section of the parts in Fig. 3. Fig. 5 is a plan view corresponding to that in Fig. 3, but showing a modified form of the connecting 45 and bracing device. Fig. 6 is a central vertical section of the parts in Fig. 5.

In the drawings, A indicates the bed-frame of a mining-machine of this class, and B indicates the carriage for the cutting apparatus and power device. With respect to these

there can be modification in many respects, 55 although at present I prefer to employ a bed and carriage such as is illustrated in Patent No. 684,357, H. B. Dierdorf, dated October 8, 1901, among others, and reference can be made thereto for an understanding of the 60 well-known details of these machines. It is sufficient here to state that the carriage B when the machine is in operation moves forward longitudinally on the bed A, the latter having guideways at C along its sides for the 65 engine or motor platform and a guide at D for the central rail or main thrust-bar of the carriage. This center rail or thrust-bar is indicated by 1, and 2 indicates the platform for the motor or engine and for the gearing 70 which transmits power for the cutters and for moving the carriage forward and back. In machines having parts of the sort illustrated in the drawings the power for the cutters is transmitted through a shaft mounted 75 in the bearing at 13, this shaft having at its lower end a sprocket-wheel in the horizontal plane of the major part of the thrust-bar or central rail. The center rail 1 is at the rear end provided with a connecting device for joining 80 it to the engine or motor frame, this being formed integrally with the rail 1 and by bending the latter upward, as shown in Fig. 4. The platform 2 is formed with downwardly-extending ribs 15, which have grooves or ways at 85 3, and in these are fitted the side edges of the rear end of the center rail. The chain passes around the driving-sprocket wheel above referred to, thence outward along one side of the chain-frame, around the front cross-head, 90 and back to the driving-sprocket. It is frequently necessary to vary the tension of the chain—that is, to increase or decrease its slack. This is accomplished by moving the chain-frame (including the center rail) backward or forward relatively to the engine-platform. Such movement has been generally effected by means of an adjusting screw-rod 4 and a nut 5. The nut 5 is a bolt or cylindrical body of relatively large diameter, 95 mounted vertically in the engine-platform. It passes through an aperture in the rear end of the center rail 1 and through a slot 5' in the engine-plate. If the nut 4 be turned, (as it can be by a wrench applied to its head 4^a,) 100 it will, through its thread engagement with the nut 5, cause the thrust-rail 1 to move backward or forward relatively to the plat- 105

form 2. When it is moved forward, it tends to tighten the chain, and to loosen it when it is moved backward. If desired, the nut 5 can be fastened tightly in place after adjustment by clamping devices at 5^b.

Heretofore it has been generally customary to rely upon devices substantially such as I have above described for adjusting the chain-frame and the motor-platform in relation to each other and for fastening them after adjustment; but it will be seen that the horizontal base area of connection and union between the two elements of the carriage is comparatively limited. Consequently the leverage of the strains exerted by the cutting apparatus at the front end of the carriage is relatively increased. To more firmly bind or brace together these two parts of the carriage, I have devised the following parts: 6 is a bracing and connecting bar having a forward-projecting plate-like part 16 an upwardly-bent part 17, and a head part 18. The forwardly-projecting part 16 is fastened to the center rail. The head part 18 is fastened to the motor-platform. In order to give this connecting and bracing bar a wide base of attachment to the motor-platform, I secure it to or form integrally with it a bar 7, which is placed against the flange 19 at the front of the motor-platform and secured thereto by strong U-shaped clamps 8, which are held by bolts 9, and to provide a similarly-elongated base of attachment with the thrust-rail 1 I employ a series of two or more abutments, as at 10, these passing through the rail and through the plate 16 of the bar 6. Preferably these abutments are bolts passing through a slot 12 in the plate 16. The slot permits a backward or forward adjustment of the chain-frame, and the bolts and nuts at 10 provide for firmly fastening the two parts together after adjustment.

In Figs. 5 and 6 I have shown a modification with respect to the brace and cross bar, the former in these figures being indicated by 6^a and the latter by 7^a. The cross-bar and brace here are integral, being preferably forged from one piece of metal. The cross-bar is fastened by bolts 9^a to the front flange 5c of the motor-platform. In other respects the details of the mechanism in Figs. 5 and 6 are or may be the same as those in Figs. 3 and 4.

11 indicates a clamping or covering plate, 55 it resting upon the front part of the brace-bar 6 and covering the slot 12.

When the machine is provided with joining and connecting bracing devices of the character described, the ways or grooves at 60 3 may be dispensed with, and, as these have generally required machine-work, the cost of the mechanism is considerably reduced. Where, however, great strength is necessary, the older plan can be followed. In either case 65 the rear end at 14 of the center rail should be

braced laterally by means of ribs or their equivalent, such as shown at 15. In some cases also the adjusting-screw 4 can be dispensed with when a bracing and connecting bar like that at 6 is present, although in others I prefer to use such screw as a power device for effecting the adjustment.

What I claim is—

1. In a mining-machine of the class described, the combination with the motor 75 platform or carrier having a guideway formed therein and a cutter-frame adjustable relatively to the motor-carrier and having its rear end fitted into said guideway of a connecting and bracing bar extending forward from the motor-carrier, and means for adjustably securing the said bar to the cutter-frame, substantially as set forth.

2. In a mining-machine, of the class described, the combination of a motor platform or carrier, a cutter-frame having a central thrust-rail adjustable relatively to the motor-carrier and having its rear end loosely braced, and a connecting and bracing bar projecting forward from the motor-carrier 90 and adjustably clamped to the said center rail of the cutter-carriage, substantially as set forth.

3. In a mining-machine of the class described, the combination of a cutting apparatus having a center thrust-rail, an engine or motor platform or carrier having abutments for the rear end of the center rail to hold it laterally in relation to the motor-carrier, and a connecting and bracing bar extending forward from the engine-carrier, and means for securing said bar to the center rail at either of several positions, substantially as described.

4. In a mining-machine of the class described, the combination of a cutter-carrier having a central thrust-rail, an engine or motor platform or carrier having a guideway for the rear end of the center rail, a screw-rod and nut interposed between the motor-carrier and the cutting apparatus for adjusting them relatively to each other, and a bracing and connecting bar supplemental to the aforesaid parts and interposed between the motor-carrier and the cutter-carrier, and means for securing said bar in either of several positions relatively to the cutter-carrier, substantially as set forth.

5. In a mining-machine of the class described, the combination of a cutter-carrier 120 having a longitudinally-adjustable thrust-bar, an engine or motor platform or carrier having laterally-acting abutments for the rear end of the bar, a clamping device situated near the rear end of the said thrust-bar 125 for connecting the motor-carrier and the cutter-carrier, and a supplemental clamping device for connecting together the said parts and situated at points in front of the motor-carrier, substantially as set forth.

6. In a mining-machine of the class described, the combination of a cutter-carrier having a longitudinally-arranged thrust-bar, an engine-platform or motor-carrier, a clamping-bolt at the rear end of the said cutter-carrier and supported by one of the said carriers, the other of said carriers having a slot for the movement of the bolt, and a supplemental clamping-bolt supported by one of said carriers at points in front of the motor-carrier, and a slotted bar for the said bolt supported by the other carrier, substantially as set forth.

7. In a mining-machine, the combination of the cutter-carrying frame, the motor-platform having a guideway into which the rear end of said cutter-carrying frame is fitted, the adjusting means interposed between the said frame and the said platform, the bracing-bar extending forward from said platform, and means for adjustably connecting said bracing-bar to the said cutter-carrying frame.

8. In a mining-machine, the combination

of the motor-platform, the cutter-carrying frame adjustably connected to said platform, the bracing-bar extending forward from and detachably connected to said motor-platform, and the adjustable clamp between the said bracing-bar and the cutter-carrying frame.

9. In a mining-machine, the combination of the cutter-carrier, the engine-platform or motor-carrier the adjustable connecting means between the said carriers, the bracing-plate extending forward from said motor-carrier and having a longitudinal slot there-through, and a clamping-bolt extending through said slot and adapted to clamp the cutter-carrier to the said bracing-plate in various positions of adjustment.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL R. MURPHY.

Witnesses:

CLIFFORD PATTERSON,
GEO. T. LINN.