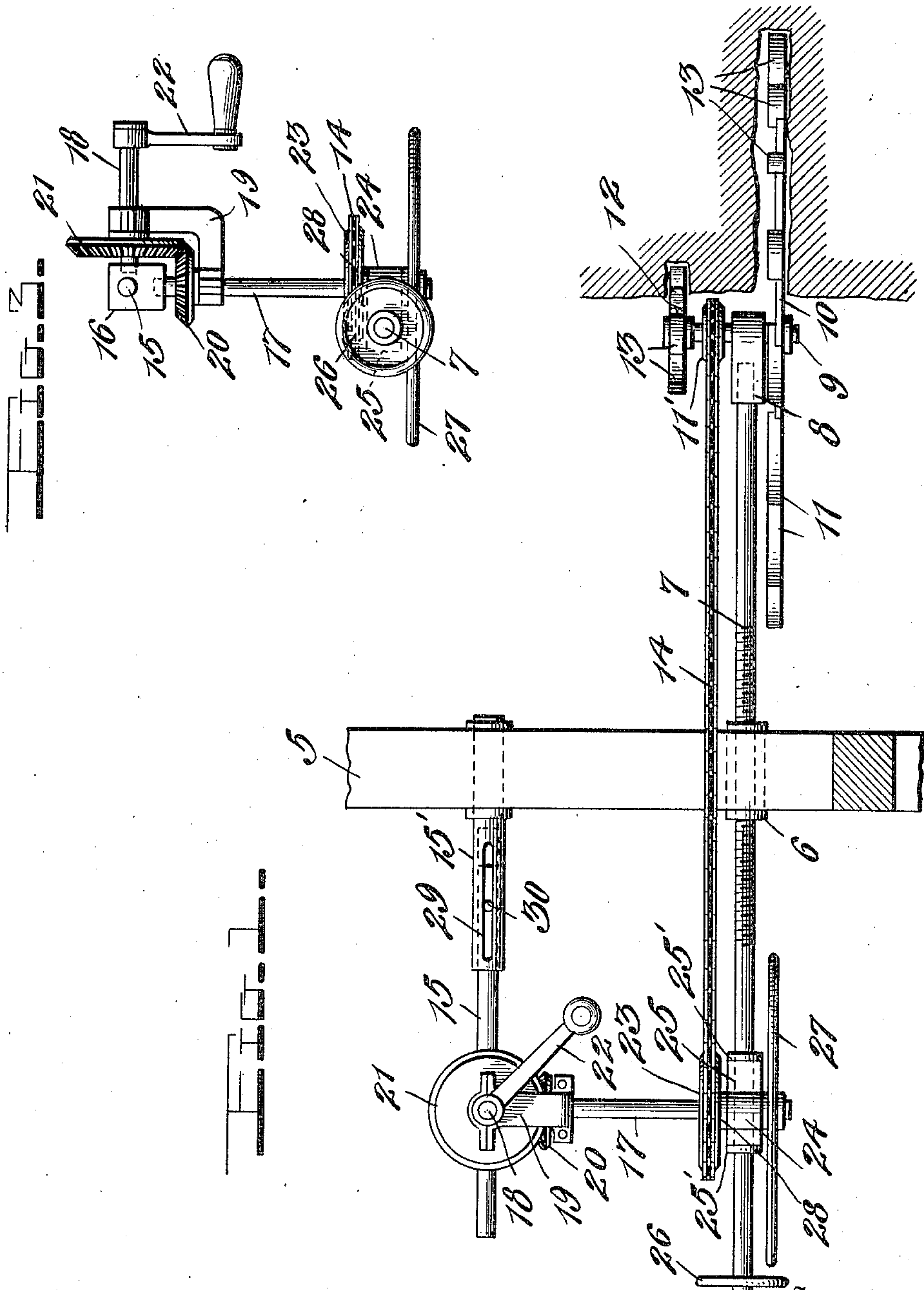


J. SUTCH & W. M. CLARK.
 COAL MINING MACHINE.
 APPLICATION FILED JAN. 30, 1911.

998,654.

Patented July 25, 1911.

2 SHEETS-SHEET 1.



Witnesses

Chas. L. Griebauer.
 W. L. McQuay.

Inventors
 John Sutch and
 Wm. M. Clark,

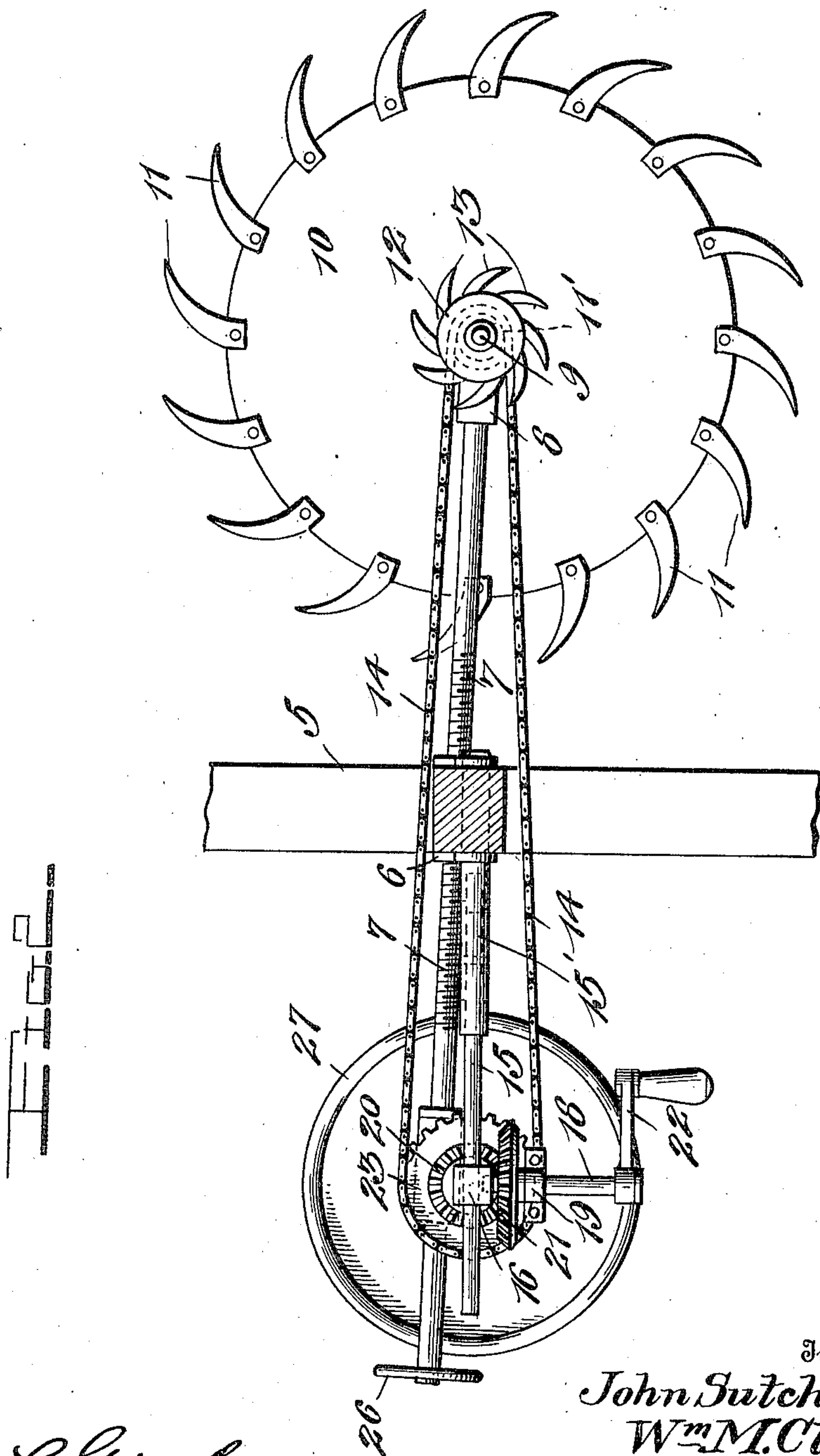
By Watson E. Coleman.
 Attorney

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Attorney

UNITED STATES PATENT OFFICE.

JOHN SUTCH AND WILLIAM M. CLARK, OF SOMERSET, COLORADO.

COAL-MINING MACHINE.

998,654.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed January 30, 1911. Serial No. 605,495.

To all whom it may concern:

Be it known that we, JOHN SUTCH and WILLIAM M. CLARK, citizens of Great Britain and of the United States, respectively, residing at Somerset, in the county of Gunnison and State of Colorado, have invented certain new and useful Improvements in Coal-Mining Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to coal mining machines and has for its primary object to provide a simple, novel and efficient hand operated mining machine whereby coal or other minerals may be inexpensively mined.

Another object of the invention resides in the provision of a device of the above specified character which may be easily and quickly set up into position for use and which may also be operated with a minimum expenditure of manual labor.

The invention has for another object to provide a manually operable mining machine consisting of a few simply constructed parts which are not liable to derangement in the operation of the machine and which may be constructed at a low cost.

With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a mining machine embodying our invention showing the same in operative position; Fig. 2 is a top plan view of the machine; and Fig. 3 is an end elevation thereof.

Referring in detail to the drawing 5 designates a supporting block or standard which is adapted to be arranged between the floor and ceiling walls of the mine and secured thereto in any desired manner. This standard has arranged centrally in its lower end portion, a sleeve 6 which is rigidly fixed therein. This sleeve is provided with a threaded bore in which the adjusting rod 7 is engaged. Upon one end of the adjusting rod 7, a block 8 is fixed. A shaft 9 is rotatably mounted in the block 8 and to one end of said shaft the cutting wheel 10 is secured. This wheel has fixed to its periphery a plurality of cutting teeth 11 which are preferably curved as shown and are adapted to engage the wall of coal to be mined as the machine is operated. Upon the other

end of the shaft 9, a sprocket wheel 11' is fixed, and a second cutting wheel 12 of smaller diameter than the wheel 10 is also fixed upon the shaft 9 adjacent to the sprocket 11. This latter cutting wheel carries teeth 13 which are similar to the teeth 11 and extend in the same general direction as said latter teeth. The cutting wheel 12 is of slightly greater diameter than the sprocket wheel 11' and is provided for the protection of the driving chain 14 which passes around said sprocket. As the larger wheel 10 performs the major portion of the cutting operation and gradually cuts its way into the wall of coal, the teeth 13 carried by the smaller wheel 12 will prevent contact of the chain 14 with the side wall of the kerf which is left by the cutting action of the wheel 10.

In the upper end of the standard 5 one end of a longitudinally extending rod 15 is rigidly fixed. This rod is formed in two sections for a purpose to be later explained. Upon the other end of this rod a bearing block 16 is secured. In the under side of this block, the upper end of a vertically positioned shaft 17 is rotatably mounted. The transversely disposed shaft 18 is also supported at one of its ends in the block 16. The ends of these shafts 17 and 18 may be held in the block 16 by any suitable retaining means, and an arm or bar 19 connects said shafts and serves as a mutual support for the same to retain the transmission gears 20 and 21 respectively in engagement with each other. Upon the other end of the shaft 18 a crank handle 22 is fixed whereby said shaft is rotated and power transmitted to the vertically positioned shaft 17. On this latter shaft a sprocket 23 is fixed around which the drive chain 14 extends. A bearing 24 is provided for the lower end of the shaft 17, and said bearing has integrally formed there-with a sleeve 25. The rod 7 is held in the sleeve 25 against longitudinal movement by means of the collars 25'. Upon the end of the adjusting rod a hand wheel 26 is arranged whereby said rod may be conveniently turned to force the teeth of the cutting wheel 10 into engagement with the coal wall. A fly wheel 27 is also secured on the lower end of the shaft 17 and a collar 28 is fixed upon said shaft and engages the upper surface of the bearing 24. This collar supports the shaft 17 in position in

its bearing 24 and relieves the upper bearing block 16 of the weight of the fly wheel 27. The arm 19 which connects the shafts 17 and 18 also relieves the strain upon said bearing and prevents any turning movement of the sleeve 25 on the adjusting rod.

From the foregoing description it is thought that the construction and manner of operation of our improved machine will be readily understood.

The device is arranged in position in the room or chamber of the mine as previously explained and the operator rotates the shaft 18 by turning the crank handle 22 whereby the cutting wheel 10 is rotated to cause the cutting teeth or picks 11 to cut into the wall of coal. The pressure of the teeth upon the coal wall is regulated by means of the adjusting rod 7. In order to permit of the movement of the cutting disks 10 and 12 and the operating connections with relation to the supporting standard 5, the rod 15 is formed in two sections, one of which is telescopically engaged in the other. The outer rod section 15' is provided with longitudinal slots 29 at diametrically opposite points to receive the ends of a pin 30 which is disposed through the inner solid rod section 15. In this manner, when the adjusting rod 7 is rotated, the driving chain and the shafts 17 and 9 together with the parts arranged thereon will all move forwardly to maintain the cutting teeth in engagement with the coal wall in the rotation of the wheel 10.

In the above manner large quantities of coal may be easily and quickly cut or mined without requiring an extraordinary expenditure of manual labor.

The machine may be easily and quickly set up into position for use and as the parts are all of simple form and may be readily assembled, it will also be obvious that the machine can be manufactured at a nominal cost. It is furthermore very durable and highly efficient in practical use.

While we have shown and described the preferred construction and arrangement of the various parts, it will be understood that the device is susceptible of many modifications without departing from the essential feature or sacrificing any of the advantages of the invention.

Having thus described the invention what is claimed is:—

1. In a machine of the character described, the combination with a support, of a rod mounted for longitudinal movement in the support, a rotatable cutting wheel mounted

upon one end of the rod, manually operable means for rotating said wheel mounted on the rod, and means for supporting said operating means whereby the same and the cutting wheel may be bodily moved with relation to the support in the movement of said rod.

2. In a machine of the character described, the combination with a support, of a longitudinally movable rod having threaded engagement therein, a cutting wheel rotatably mounted upon one end of the rod, operating means mounted upon the other end of said rod, and means for supporting said operating means for movement with said rod in relation to the standard.

3. In a machine of the character described, the combination with a supporting standard, of a rod threaded in said standard for longitudinal movement, a bearing block on the end of said rod, a shaft mounted therein, a cutting wheel fixed on one end of the shaft, a bearing mounted on said rod adjacent to its other end, a vertical shaft mounted in said bearing, a flexible operating connection between said shaft and the first named shaft, a bearing for the upper end of said vertical shaft, means for movably supporting said bearing with relation to the standard, and an operating shaft mounted in the latter bearing and geared to said vertical shaft to transmit power to the latter.

4. In a machine of the character described, the combination with a support, of a sleeve fixed in said support, of a longitudinally movable rod having threaded engagement in said sleeve, a cutting wheel rotatably mounted upon one end of said rod, manually actuable operating means mounted upon the other end of the rod and movable therewith, and a support for said operating means comprising a rod formed in two telescopically engaged sections one of which is rigidly fixed in the upper end of the support, said latter section having oppositely disposed longitudinal slots therein, and a pin fixed in the other section having its ends engaged in said slots, said last named section supporting the operating means for movement with relation to the support.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

JOHN SUTCH.
WILLIAM M. CLARK.

Witnesses:

WM. LANGFORD,
EARL V. HILLS.