No. 755,291. PATENTED MAR. 22, 1904.

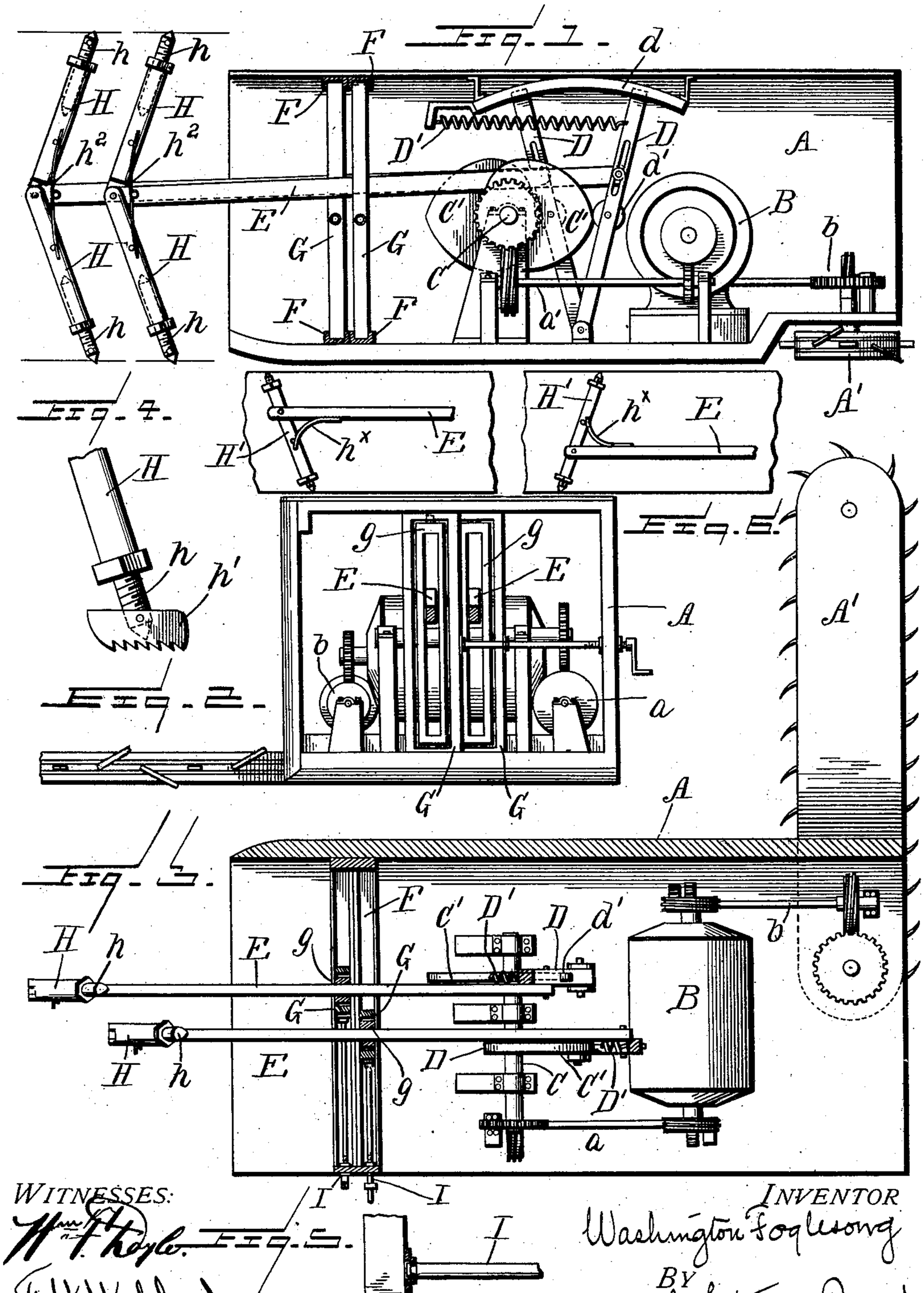
W. FOGLESONG.

COAL MINING MACHINE.

APPLICATION FILED AUG. 26, 1903.

NO MODEL.

Fig. 1.



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No. 755,291. Patented March 22, 1904.

UNITED STATES PATENT OFFICE.

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COAL-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 755,291, dated March 22, 1904.

Application filed August 26, 1903. Serial No. 170,874. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON FOGLESONG, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Coal-Mining Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to coal-mining machines, and more particularly to the mechanism for moving such machines when in operation; and it consists in certain new constructions and combinations of parts whereby the movement of such machines is effected in a simple and effective manner and whereby the direction of said movement can be more readily controlled.

In the accompanying drawings I have illustrated one form in which I have contemplated embodying my invention, and my said invention is disclosed in the following description and claims.

In the drawings, Figure 1 is a view in elevation of my improved mining-machine with one side of the casing removed. Fig. 2 is a front view of the same with parts removed. Fig. 3 is a view with the casing in horizontal section. Fig. 4 is a detail view of a modification, and Fig. 5 is a detail view of a part of the construction. Fig. 6 is a view of a modified form of anchor-arms.

My improvement is designed for and is shown applied to a mining-machine which is moved bodily along a long wall and during such movement cuts a kerf in the coal at the bottom of such wall. Like many machines of this class, the movement of the different parts is effected by an electric motor, mounted and contained in the casing, the current being supplied by suitable wire connections. In my drawings these connections are not shown, as they are well known and form no part of my invention. Many of these machines are moved as the cutter makes way beneath the coal by draft devices connecting the machine with a fixed anchorage separated from the machine and requiring to be placed in position in one or more places for every traverse of the machine along the wall of coal. In my construction I secure the forward movement of the machine by devices connected with and carried by the machine and which are always ready and in position whenever the machine is in position for operation. Such devices engage the top and bottom of the gallery in such a manner as to form an anchorage in advance of the machine and enables the motor to draw the machine forward a certain distance, when the anchorage devices are again moved forward for a fresh engagement with the top and bottom of the gallery for a fresh anchorage in advance of the former position. By employing these devices in duplicate and having them so related that one advances for a fresh engagement while the other is sustaining the pull from the machine to move the same I secure a constant forward movement of the machine during the operation of cutting the kerf. It will thus be seen that I employ a progressively advancing or shifting anchorage and that all parts necessary to effect the forward movement of the machine are connected to the machine and carried thereby.

In the said drawings, A indicates the casing in which the main operative mechanism is mounted, and A′ indicates the cutter extending at right angles to the casing A. This cutter may be of any preferred form.

In the casing A is mounted the electric motor, conventionally shown at B. Suitable gearing, such as shown at *b*, gives the motion to the endless-chain cutter. Suitable gearing, by preference worm-gearing, such as shown at *a′*, is employed to give a slow revolution to a shaft C, mounted transversely in the casing A. Between this shaft and the motor are pivoted two levers D D, the upper ends of each of which engages a slotted guide *d*. To each of these levers is pivoted one end of a bar E, the other end of which extends outwardly beyond the casing. Between the shaft C and the forward end of the casing the bottom and top of the casing are provided with guideways F. In these guideways are mounted two sliding frames G G. In each of these sliding frames is a pivoted or swiveled frame *g*. The interior of the frame constitutes an opening

of just sufficient width to permit the free passage therethrough of the bars E E. This opening is of sufficient extent vertically to accommodate such rising and falling motion of said bars as may be incident to the proper operation of the bars E E. To the outer end of each of the bars E are pivoted two arms H H, which I term "anchor-arms." These arms are each provided with an adjustable extension *h*, by which the arms can be shortened or lengthened to suit the height of the gallery in which the machine is to work. The arms *h* must be of such length that they will when in engagement with the top and bottom of the mine always maintain an angle less than a right-angle to the bar E on the side next to the machine. The outer ends of the extension *h h* are pointed to insure their engagement with the bottom and top of the gallery in such wise as to prevent slipping. In case the top or bottom is too soft to enable the extensions to obtain a sufficiently firm hold I pivot to each a shoe *h'*, the extensions being each provided with an opening to enable this to be done at any time when it is found necessary or desirable. A spring h^2, secured to each bar E, engages each of the arms H, which tends to force them into a position at right angles to the bar E, and this serves to maintain the extensions in contact with the top and bottom of the gallery. It will be seen that the arms H *h* offer no obstacle to the movement of the bars E forward, but that they will form an anchor to resist the backward movement of the bars.

On the shaft C, in line with each of the levers D, is mounted a heart-shaped cam C', and each of said levers is provided with a friction-roll *d'* to engage its appropriate cam. The bars E are pivoted to the levers through a slot which permits of the adjustment of the rearward ends of such bars vertically to regulate the extent of movement of the bars and the speed of the advance of the machine. A spring D' has one end secured to the casing and its opposite end connected to one of the levers D to move the lever forward and keep the friction-roll in contact with its cam.

The operation of the device is as follows: The machine being in the proper position to cut a kerf at the bottom of the wall of coal in the mine the current is supplied to the motor and the cutter is put in motion. At the same time the shaft C' is given a slow revolving motion, causing one of the cams C' to move the lever D, with which it is in alinement, backward. This draws the bar E, connected therewith, in the same direction, which causes the arms H *h* to firmly engage the top and bottom of the gallery and become an anchor, and the further revolution of the shaft and cam draws the casing and cutter forward. While the movement of one of the bars E is taking place, the spring D', connected to the other lever D, moves another lever and its bar E forward. When the rearward movement of one lever is completed, the other is engaged by its cam, and it in turn begins a backward movement, drawing the casing and cutter forward in like manner. The direction in which the casing is moved can be regulated by moving the sliding frames G G to the right or left, as may be desired. In this instance I have shown a screw-threaded rod I, secured to each frame G, as shown in Fig. 5, the opposite end being provided with a squared projection to which a crank can be attached to turn the screws to secure the variation in movement found necessary. The frames *g g* being pivoted at top and bottom conform to the direction given the bars E E by the sliding frames G G, so as to avoid any cramping of the bars E E by changing the position of the sliding frames.

In Fig. 6 I have shown a modified form of anchoring device. In this instance I employ but a single arm H' instead of two, as shown in the other figures. The arm H' is pivoted to the bar E near one end of the arm. This may be nearer the upper or lower end of the arm, as may be preferred. A spring $h^\times$ tends to throw the longer end of the arm forward. The operation is similar to that of the double-anchoring arms. When the bar E moves forward, the short end of the arm H' is easily moved to the extent of the movement of the bar E, and on the return movement the short end of the arm is drawn backward, and as the opposite end is in contact with one of the walls of the gallery (the upper or lower) the arm becomes rigidly fixed immediately and serves the same purpose as the other construction.

What I claim, and desire to secure by Letters Patent, is—

1. A mining-machine having mechanism for moving the same including anchors in constant contact with the top and bottom of the gallery but free to move up and down independently of the machine, and means for advancing said anchors and for drawing the machine toward said anchors, substantially as described.

2. A mining-machine having mechanism to move the same including pivoted arms, a spring construction to maintain said arms in constant contact with the top and bottom of the gallery, said arms being free to move vertically independently of the said machine and means for alternately operating said anchors, substantially as described.

3. A mining-machine having propelling means including alternately-advancing anchors for engaging the top and bottom of the gallery-operating means and means for varying the direction of movement, substantially as described.

4. In a mining-machine the combination with the bars provided with the anchor-arms for engaging top and bottom of the gallery, guiding-frames for such bars and means for

operating said bars in alternation, substantially as described.

5. In a mining-machine the combination with the bars having anchor-arms for engaging top and bottom of the gallery, of the sliding frames, the swiveled frames and means for operating said bars, substantially as described.

6. In a mining-machine, the combination with the main frame, of bars having a pivotal connection with the said machine but free to move vertically independently of the said main frame, anchor-arms pivoted to said bars, a spring construction for maintaining said arms in constant contact with the top and bottom of the gallery and operative means for said arms, substantially as described.

7. In a mining-machine, the combination with the bars and their attached anchor-arms of the swiveled frames and the sliding frames for guiding the same and actuating mechanism for said bars, substantially as described.

In testimony whereof I have affixed my signature in the presence of two witnesses.

WASHINGTON FOGLESONG.

Witnesses:
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W. B. IDDINGS.