

No. 658,435.

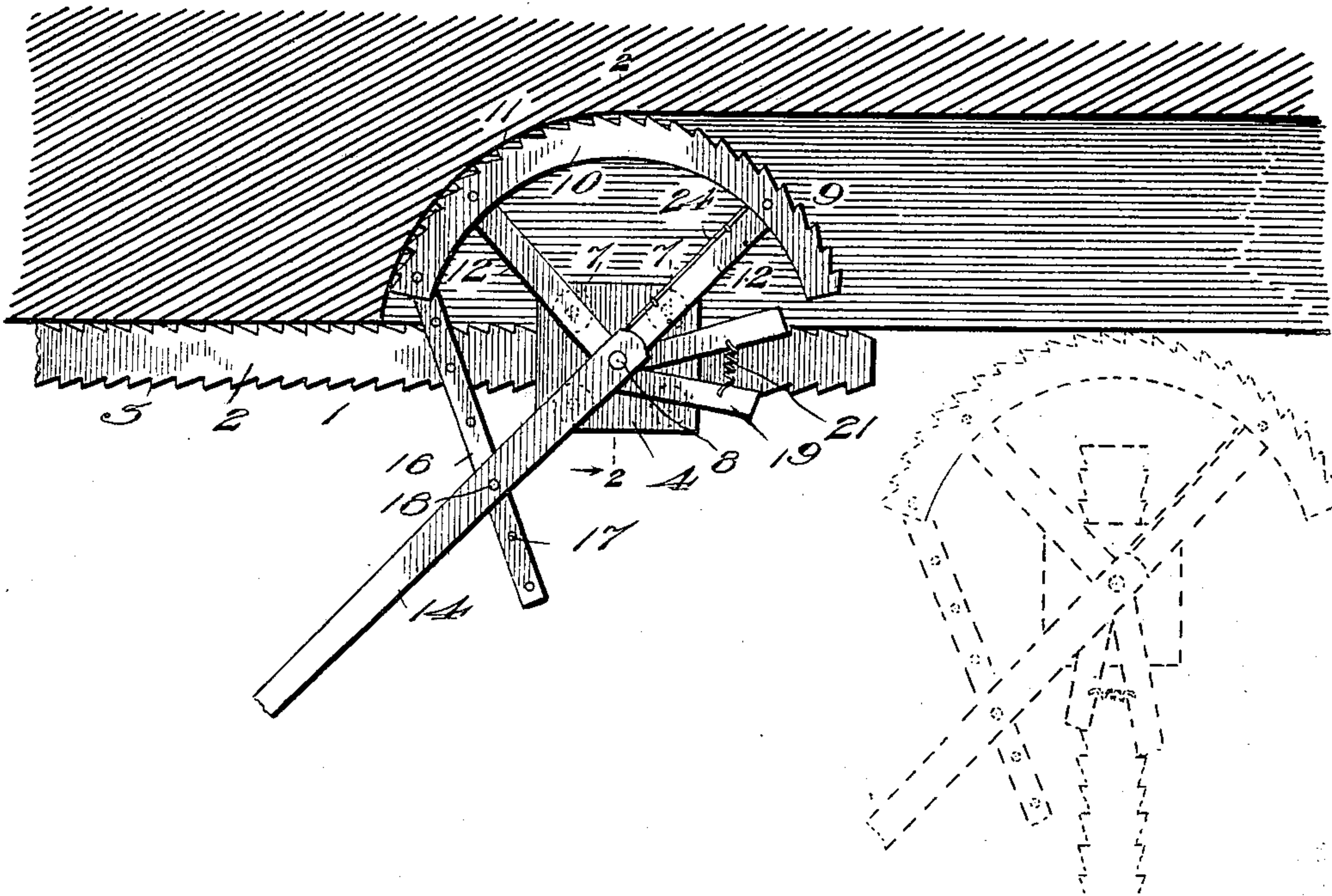
Patented Sept. 25, 1900.

W. T. GINN.  
COAL DIGGER.

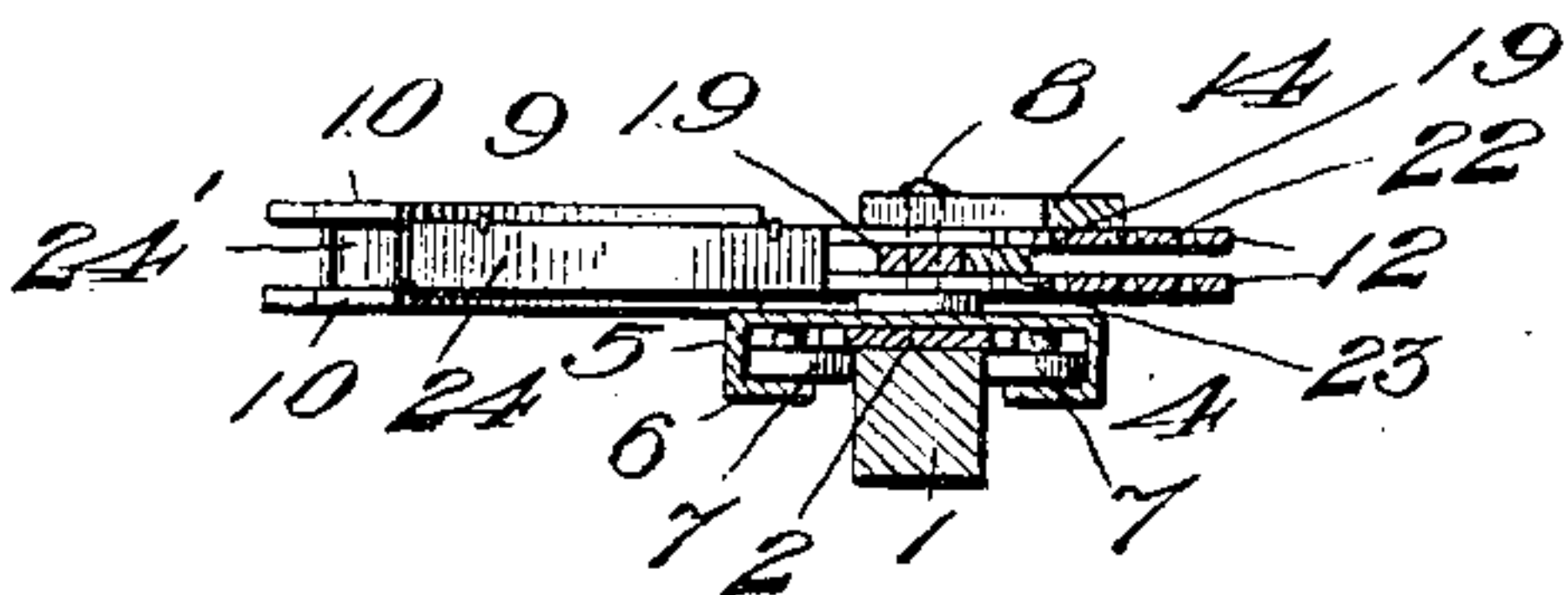
(Application filed Mar. 22, 1900.)

(No Model.)

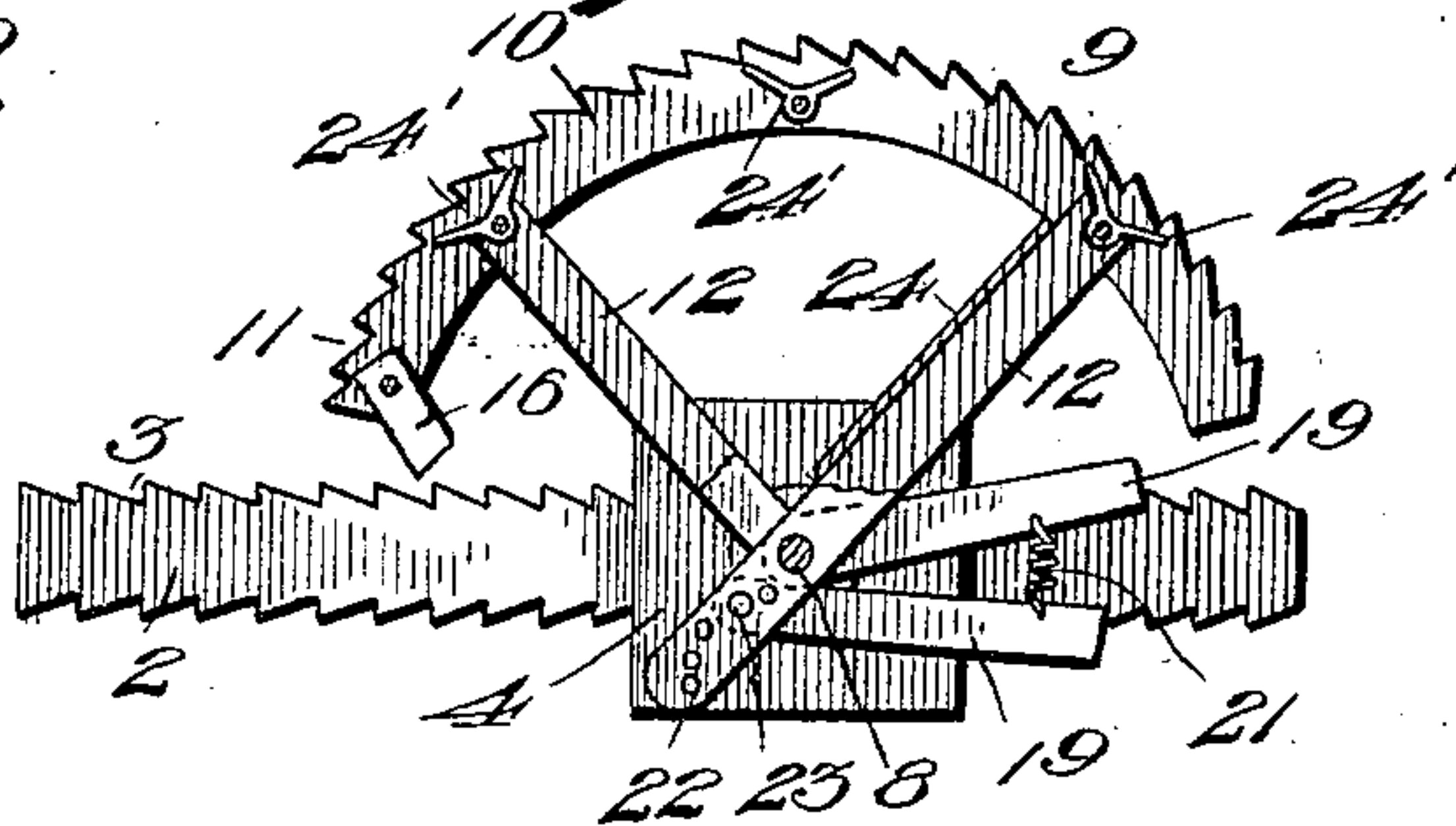
*Fig. 1*



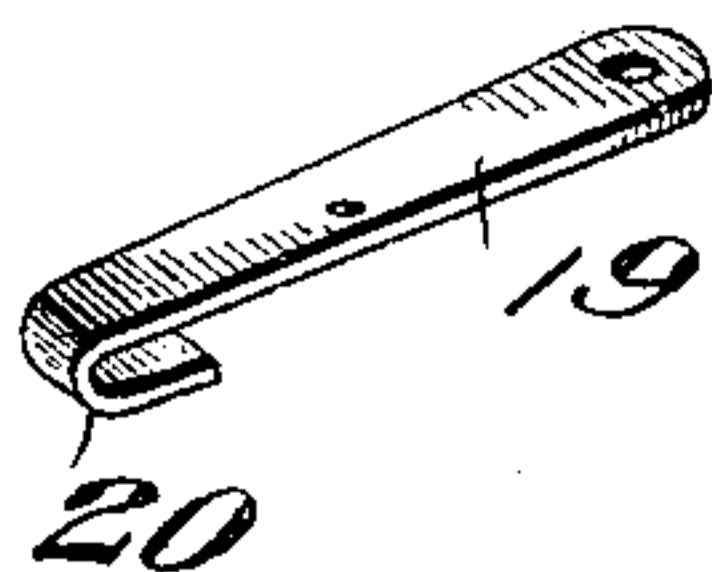
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE,

WILLIAM T. GINN, OF WHITESIDE, TENNESSEE.

## COAL-DIGGER.

SPECIFICATION forming part of Letters Patent No. 658,435, dated September 25, 1900.

Application filed March 22, 1900. Serial No. 9,792. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM T. GINN, a citizen of the United States, residing at Whiteside, in the county of Marion and State of Tennessee, have invented new and useful Improvements in Coal-Diggers, of which the following is a specification.

This invention relates to improvements in coal-diggers.

One object of the present invention is to provide a device of simple and durable construction which is adapted for undermining and to incorporate in such device efficient means whereby the coal may be expeditiously cut without the employment of picks and similar tools, as is the usual custom.

A further object of the invention is the provision of an implement of the character stated which may be readily entered into the coal and after being so entered adapted to be automatically fed along the face of the coal in order that the latter may be quickly mined.

With these and other objects in view, which will appear as the nature of the improvements is better understood, the invention consists, substantially, in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of the herein-described digger, showing the same applied to the face of the coal, the dotted lines indicating the initial position in which the digger is placed prior to entering into the coal-bed. Fig. 2 is a vertical transverse sectional view on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal sectional view of the cutter proper. Fig. 4 is a detail perspective view of one of the feed-pawls.

Referring to the drawings, the numeral 1 designates a guide-beam, which guide-beam is preferably formed of wood, and arranged upon one side of said beam is a longitudinally-extending rack-bar 2. The rack-bar 2 is formed of metal and is provided at its edges with a series of teeth 3.

Mounted upon the guide-beam 1 is a carrier 4, which carrier comprises a boxing or casing 5, having the extremity of its edges bent over and lying parallel with its body to form sleeves 6, and journaled in said sleeves at the ends

thereof are bearing-wheels 7, which are adapted to embrace the toothed edges of the rack-bar 2 and work upon the sides of the guide-beam 1. An outwardly-projecting spindle 8 is carried by the sleeve 4 at approximately its center, and loosely journaled upon said spindle 8 is the cutter proper, 9. The latter comprises a pair of segmentally-curved blades 10, having at their outer edges serrated teeth 11, adapted to enter the coal for loosening the same, and said blades 11 are connected to the spindle 8 by means of attaching-arms 12. The arms 12 are fitted upon the spindle 8 so as to loosely work thereon, and for the purpose of swinging the cutter 9 upon said spindle an operating-lever 14 is employed. The lever 14 has one of its ends fitted upon the spindle 8, and extending from the lever 14 to one end of the cutter 9 is a connecting-link 15, comprising a pair of parallel blades 16, provided with coincident apertures 17. A pin 18 passes through the lever 14 and the apertures 18, whereby the connecting-link is attached to said lever, and through the medium of which latter the cutter proper, 9, is adapted to follow the movements of said lever. By reason of the apertures 18 being arranged in series it will be seen that the lever 14 may be connected at different points along said link, and thereby provide for different lengths of stroke.

In order that the carrier 14 may be automatically fed along the guide-beam, and thereby advance the cutter into the coal as occasion demands, a pair of engaging pawls 19 is employed, and one end of each of said pawls is loosely fitted upon the spindle 8, so as to freely work thereon. The other ends of said pawls are curved, as at 20, in order to engage the teeth 3 of the rack-bar 2, and it will be observed that said ends are arranged at the opposite toothed edges of said rack-bar and normally held in engagement therewith by means of a connecting-spring 21. It is desirable that the extent of movement of the carrier 4 along the guide-beam 1 should be varied at times in order to provide for longer and shorter strokes incident to the working of the lever 14, and to the accomplishment of this end the rear attaching-arm 10 at a point immediately adjacent the spindle 8 is elongated and provided with a series of apertures



22, through which a pin 23 passes, and said pin also passes through one of the engaging pawls 19. The apertures 22 are arranged on the arc of a circle, and by adjusting the pin 23 in said apertures it will be seen that the number of teeth traversed by the engaging portions of said pawls may be varied in order to provide for a longer or shorter extent of movement of the carrier 8, as may be desired.

Suitably secured to the rear attaching-arm 10 and at the forward side thereof is a drag-plate 24, which plate is adapted to engage the cuttings for the purpose of removing the same, and, if desired, said plate may be secured to the rear side of said arm, and thereby be adapted to engage the cuttings on the backward stroke of the cutter proper in lieu of engaging said cuttings on the forward stroke, as is the case in the construction disclosed.

Drag-teeth 24 are also arranged between the blades 11 of the cutter 9 at suitable intervals, which teeth are also designed to remove the cuttings after the coal has been acted on by the teeth of said blades.

In use the beam 1 is placed at right angles to the face of the coal-bed, as indicated by dotted lines in Fig. 1, and the cutter proper inserted into the coal-bed to the desired extent. The beam 1 is then turned to the position shown by full lines in Fig. 1, in which position the cutter may be readily moved along said beam. This is accomplished by oscillating the cutter 9 upon the spindle 8 through the medium of the lever 14, and by reason of the teeth 12 of the blades 11 engaging the coal it will be seen that the latter is loosened, such engagement taking place on the forward movement of the cutter proper. At each forward movement of said cutter proper the engaging pawl 19 adjacent thereto glides along the edge of the rack-bar immediately adjacent thereto, the other pawl acting in the capacity of a stop, and thereby causing the advancement of the carrier 4 along the guide-beam 1. On the rear movement, however, of said cutter proper the pawl immediately adjacent thereto acts in the capacity of a stop, while the other pawl glides over its adjacent edge of the rack-bar and thereby secures a new position thereon in order to provide for further advancement of the carrier on the next forward movement of the cutter. During the oscillation of the

cutter proper the drag-plate 24 engages the cuttings, whereby the latter are removed, and in conjunction with said drag-plate the drag-teeth 24 coact therewith to insure a more positive removal of the cuttings. After the carrier 4 has reached the limit of its movement along the guide-beam 1 the same may be returned to its original position thereon by moving the engaging pawls from each other, so as to free the same from engagement with the teeth of the rack-bar, after which the carrier may be moved to its original position referred to.

Having thus fully described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a cutter of the class described, the combination with a guide-beam provided with a rack-bar extending longitudinally thereof, of a carrier slidably mounted on said guide-beam, bearing-wheels journaled in said carrier and adapted to travel along the guide-beam, a cutter mounted upon said carrier and adapted to be oscillated thereon, a lever for oscillating said cutter, a connecting-link extending from said lever to the cutter, whereby the stroke of the latter may be varied, and pawls connected to the carrier and engaging the rack-bar for advancing the cutter at each forward stroke thereof.

2. In a cutter of the class described, the combination with a guide-beam provided with a rack-bar extending longitudinally thereof, of a carrier slidably mounted on said guide-beam, bearing-wheels journaled in said carrier and adapted to travel along the guide-beam, a cutter mounted upon said carrier and adapted to be oscillated thereon, a lever for oscillating said cutter, a connecting-link extending from said lever to the cutter, whereby the stroke of the latter may be varied, pawls connected to the carrier and engaging the rack-bar for advancing the cutter at each forward stroke thereof, drag-teeth carried by the cutter, and a drag-plate also carried by the cutter, whereby the cuttings are removed.

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

WILLIAM T. GINN.

Witnesses:

J. W. PRICE,  
J. P. HOWARD.