

E. HOUGH.
COAL MINING MACHINE.
APPLICATION FILED MAR. 11, 1910.

991,508.

Patented May 9, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

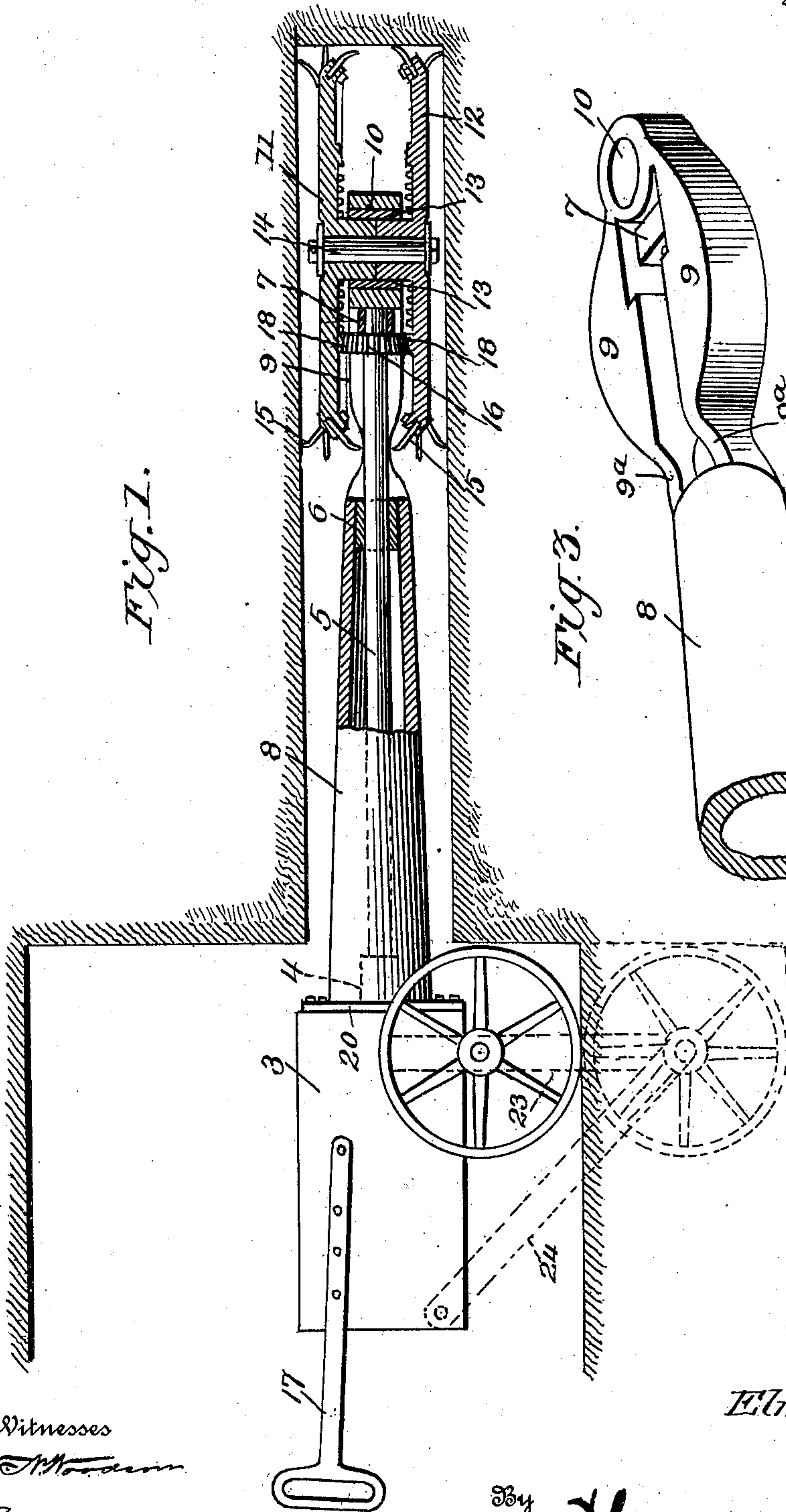
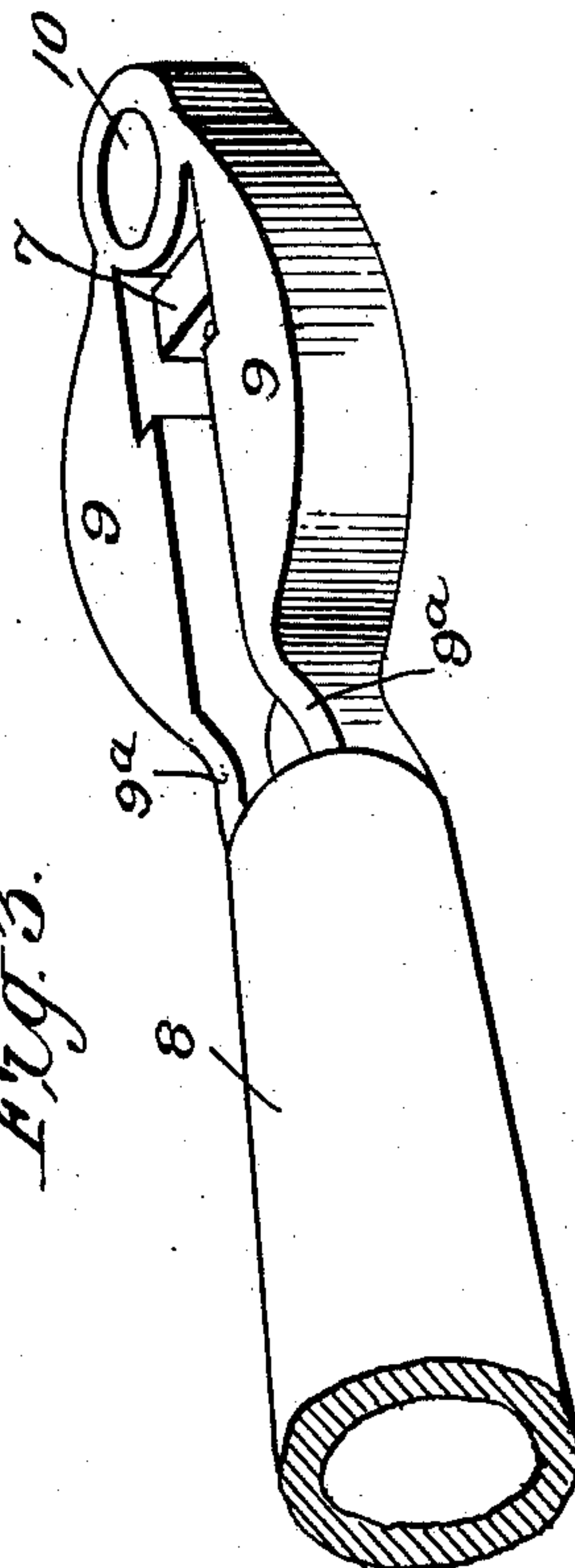


Fig. 2.



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2 SHEETS—SHEET 2.

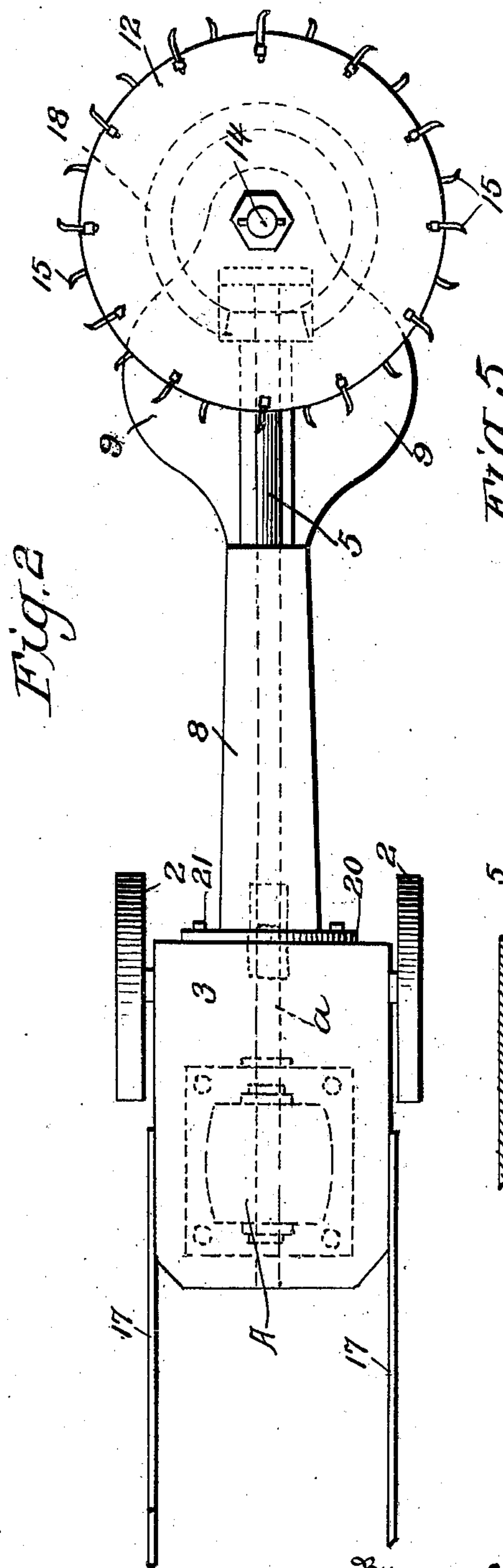


Fig. 2

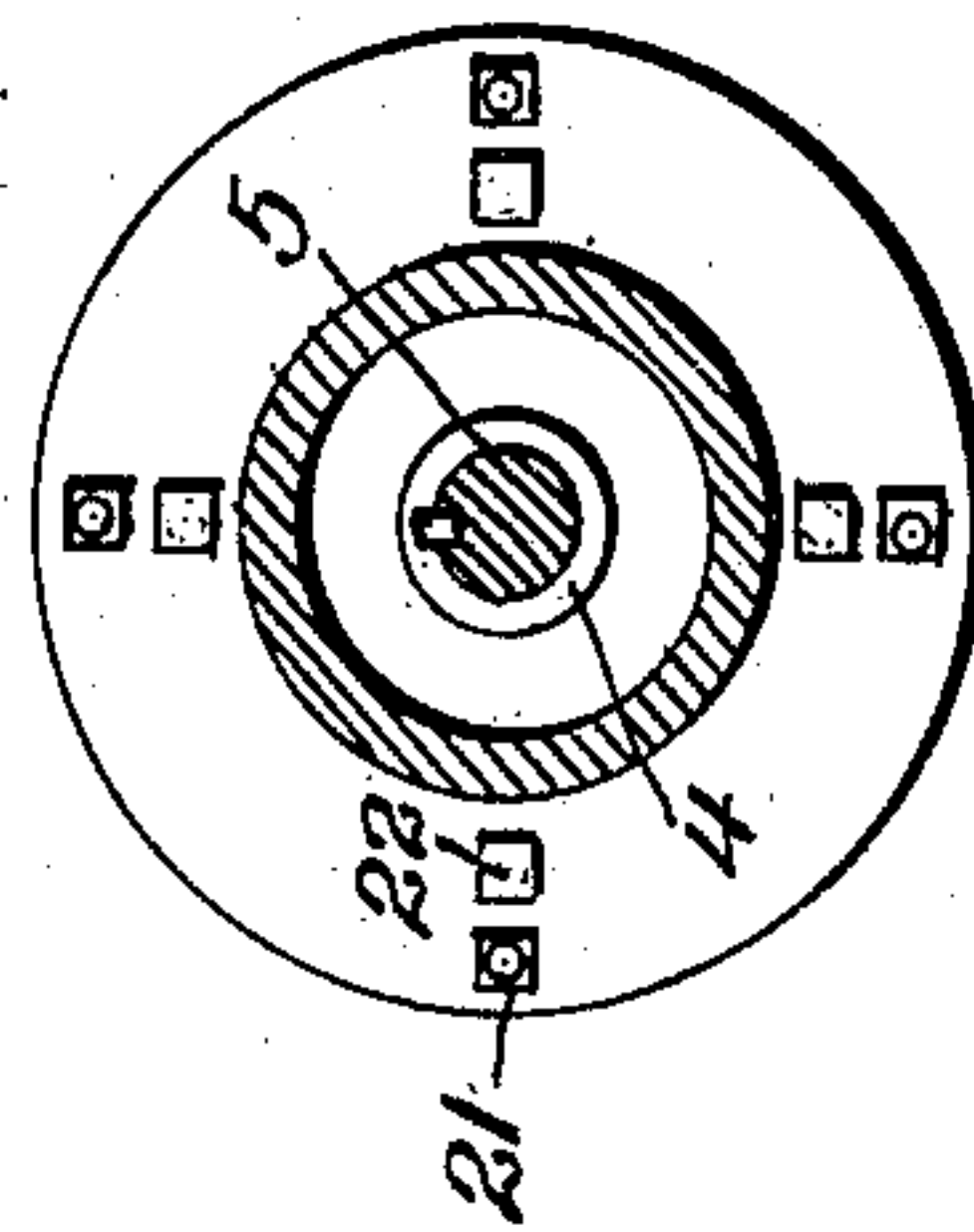


Fig. 5

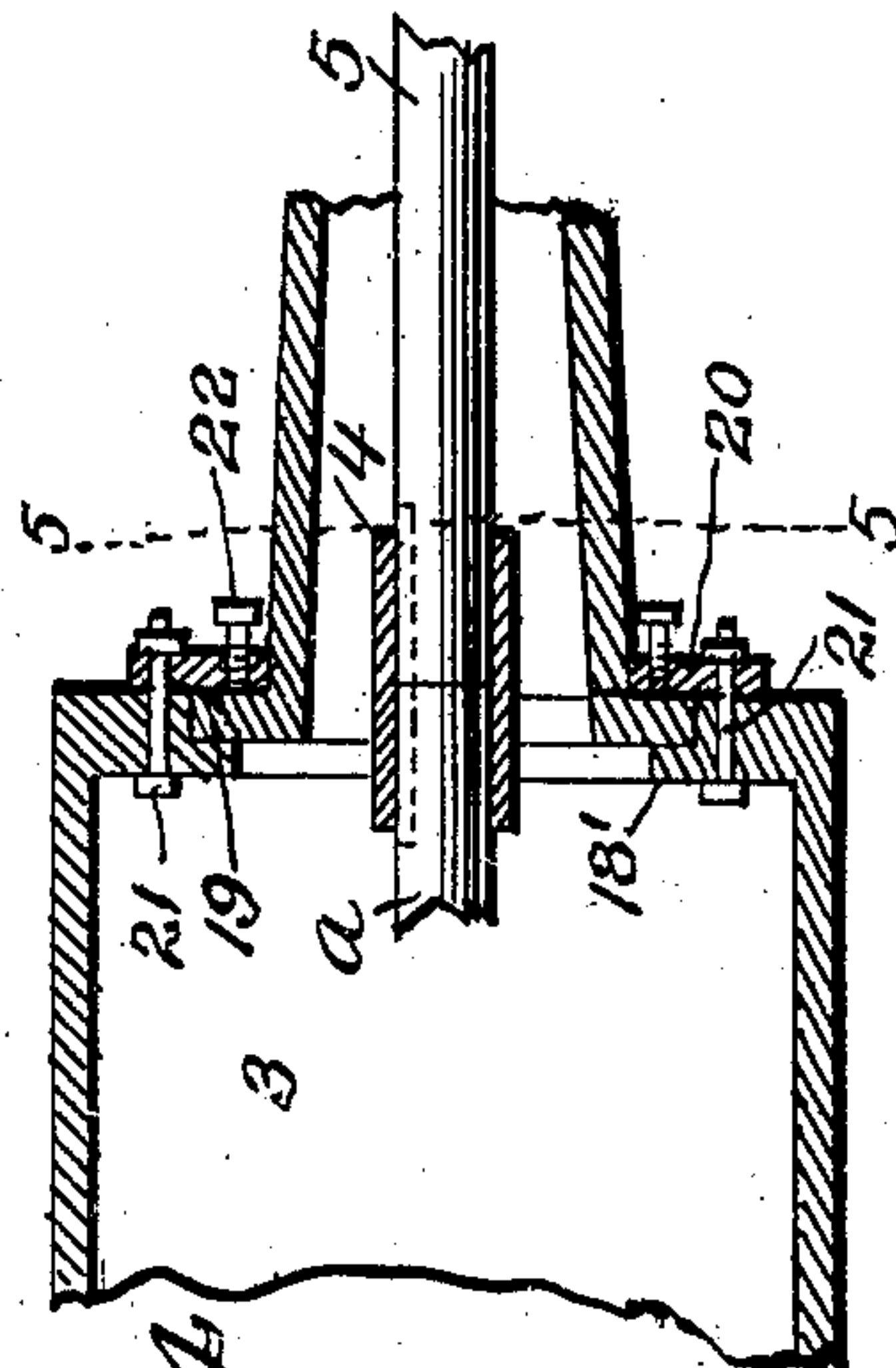


Fig. 4

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UNITED STATES PATENT OFFICE.

ELMER HOUGH, OF WELLSBURG, WEST VIRGINIA.

COAL-MINING MACHINE.

991,508.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed March 11, 1910. Serial No. 548,683.

To all whom it may concern:

Be it known that I, ELMER HOUGH, a citizen of the United States, residing at Wellsburg, in the county of Brooke and State of West Virginia, have invented certain new and useful Improvements in Coal-Mining Machines, of which the following is a specification.

My invention relates to mining machinery, and particularly to machinery designed for the purpose of mining coal, the object of the invention being to provide a portable cutter mounted upon wheels and adapted to be moved to any portion of the mine desired, the machine being provided with a motor, a shaft operated by the motor, and a cutter adapted to be forced against the breast of the coal in any direction desired, the construction being such that the cutters are adapted to be operated at a high speed, and the device being so simple and portable that one man may operate it and hold it up to the coal.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a view showing the machine in operation, the cutting mechanism being shown in section; Fig. 2 is a plan view of my device; Fig. 3 is a perspective view of the frame upon which the cutters and drive shaft are supported. Fig. 4 is a vertical section through the motor casing and the tubular support. Fig. 5 is a section on the line 5—5 of Fig. 4.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to these drawings, 2 designates supporting wheels of any desired construction and supporting a motor casing 3 in which is disposed an electric motor A. The shaft *a* of this motor extends out through the front of the motor casing and is connected by a coupling 4 of any desired character with a shaft 5. This shaft 5 is supported in bearings 6 and 7 formed upon a tubular supporting member 8. The form of this supporting member is shown in Fig. 3, which consists of a tubular body having at its end the two side portions 9 spaced from each other to permit passage of the shaft 5.

These side portions are formed in part with a bearing 10 which extends at right angles to the bearing 7 for the shaft 5. The side portions 9 are cut away upon their opposite faces, as at 9^a, to accommodate the inwardly projecting bits upon the cutting wheels. The bearing 10 is for the support of the two oppositely disposed cutting disks 11. Both of these disks are of the same character and both are provided with the inwardly projecting hubs 13 which are inserted through the bearing formed in the extremity of the supporting member, as shown in Fig. 1 and are held together by the transverse bolt 14. These cutting disks are oppositely rotatable with regard to each other and are provided on their peripheries with the projecting knives or bits 15. These knives or bits are bolted or otherwise attached in any suitable manner to the peripheries of the cutting disks, the knives being held in place by set screws, the circumference of the cutting disks being so formed that the knives on each disk are set at various angles, some inclined in one direction, some inclined in the opposite direction, and some extending out in alinement with the cutting disks themselves. The interior face of each of the disks is formed with a toothed gear 18 which is engaged by a pinion 16 mounted on the extremity of the shaft 5, just inward of the bearing 7. It will be seen that both of the cutting disks engage with the pinion 16, and hence that the cutting disks will be rotated in opposite directions. While it is preferable to have these disks run in opposite directions to each other, I do not wish to limit myself to this arrangement, as it is obvious that I may use gearing in connection with my machine, whereby the disks may be run in the same direction. Preferably, these disks run at a speed of three to four thousand feet per minute at the point of the cutting bit.

When the motor is in operation, the shaft 5 will be rotated, which in turn will rotate the cutting disks, and the apparatus is forced against the breast or face of the coal by means of the handles 17 attached to the supporting frame of the machine in any desired manner. Preferably, the motor casing 3 is so connected to the supporting member 8 that the supporting member may be rotated relative to the motor casing so that the cutters may be set at any angle desired for the purpose of shearing or cutting at

right angles to the floor, or at any other angle which may be necessary. One means of securing this result is illustrated by me, which consists in providing the motor casing 3 with an annular shoulder 18 at its open end. The inner extremity of the tubular member 8 is outwardly flanged, as at 19, this flange fitting upon said shoulder and being rotatable thereon. Surrounding the base of the tubular member 8 is the clamping ring 20 which is bolted by bolts 21 to the end walls of the motor casing 3 and is provided with a plurality of set screws or like devices 22 which engage the flange 19. By this means it will be seen that the tubular supporting member 8 may be rotated relative to the motor casing and that such rotation will act to rotate the plane of the cutters.

It is further desirable to provide means for elevating the motor casing above the floor of the tunnel or draft. To that end the wheels 2 upon which the motor casing is mounted are provided with a frame 23 upon which the motor casing may be elevated. A brace 24 will hold the frame in its elevated position.

I do not wish to limit myself to any special means for elevating the motor casing upon the wheels as it is obvious that many different constructions might be used for this purpose without departing from the spirit of the invention.

Having thus described the invention, what I claim is:—

1. A mining machine including a wheeled frame, a motor casing, a motor inclosed within the casing, a tubular support rotatably engaged at its base with the motor casing for rotation around its horizontal axis, the extremity of said support being flattened and longitudinally recessed in line with the hollow interior of the support, the extremity of the flattened portion of the support being formed with a transversely extending bearing, opposed parallel cutting disks each having an inwardly directed hub extending into said bearing, the inner ends of said hubs contacting with each other, a bolt passing through both of said cutting disks and holding them in place upon the bearing but per-

mitting the cutting disks to be removed, a shaft connected to the motor extending through the motor casing and through the tubular support, the outer extremity of the shaft being supported in a bearing formed in the end wall of the recess in the flattened portion of the support said shaft being positively housed between the walls of said recess, a bevel gear wheel mounted on said shaft and engaging the inner faces of the disks to rotate them in opposite directions, and cutting knives mounted upon the circumference of the disks, certain of said knives extending radially outward, certain other of said knives projecting laterally, and certain other of the knives projecting toward the opposite cutting disk in an opposite direction to the second named knives.

2. In a mining machine, an axially rotatable cutter support having a transverse bearing at its extremity, opposed cutting disks, each having an inwardly directed hub extending into said bearing, the inner ends of said hubs contacting with each other, a bolt passing through both of said cutting disks and holding them in place upon the bearing but permitting the cutting disks to be removed, a plurality of knives projecting from the periphery of each of the cutting disks, and means operatively engaged with the cutting disks for rotating the same.

3. A mining machine, including a motor casing, a motor within the casing, a tubular rotatable support having a flanged base, an annular ring bolted to the end wall of the casing and projecting over the flanged base of the support and holding it in place but permitting it to have rotative movement, clamping means on the ring engaging the base to permit the rotatable support to be adjusted and held in its adjusted position oppositely disposed cutting disks mounted on the extremity of the support, and means contained within the support for rotating said cutting disks.

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

ELMER HOUGH. [L. s.]

Witnesses:

M. E. BOYD,

JOHN C. POENNET.