J. S. WALLACE.

COAL MINING MACHINE.

APPLICATION FILED AUG. 5, 1915.

1,159,302.

Patented Nov. 2, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

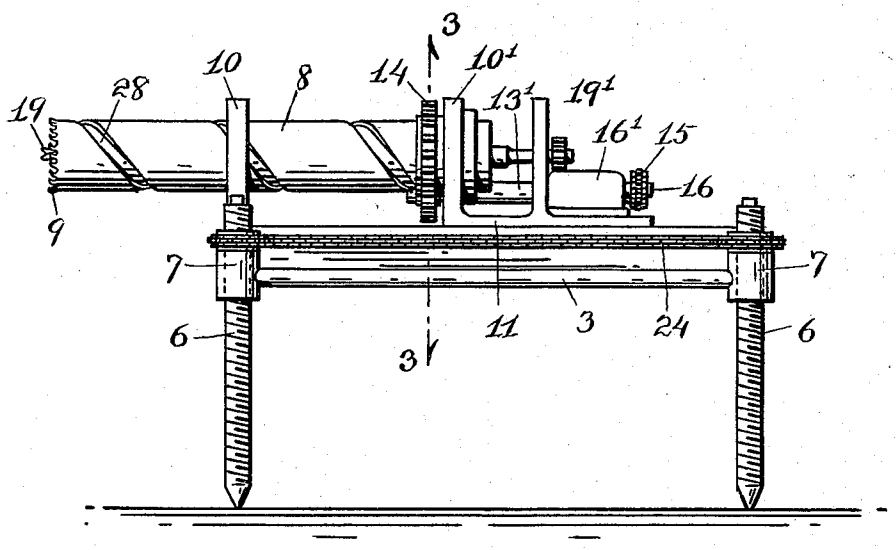


Fig. 2.

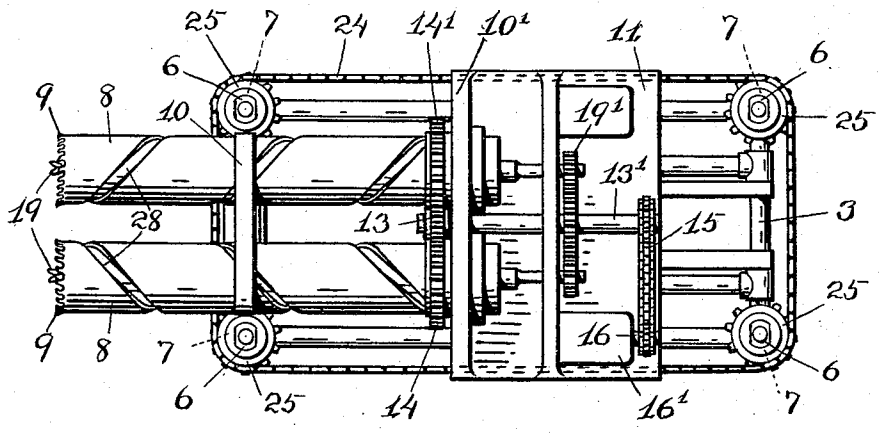


Fig. 5.

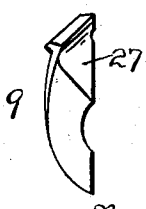
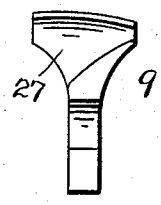


Fig. 6.



Witness

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2 SHEETS—SHEET 2.

Fig. 3.

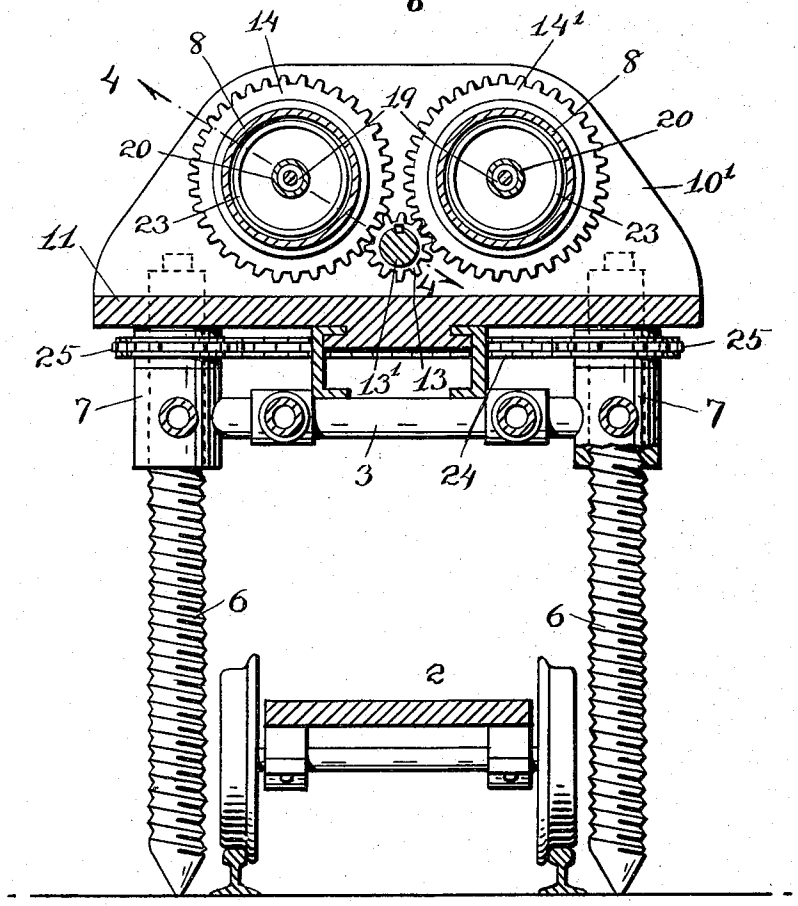
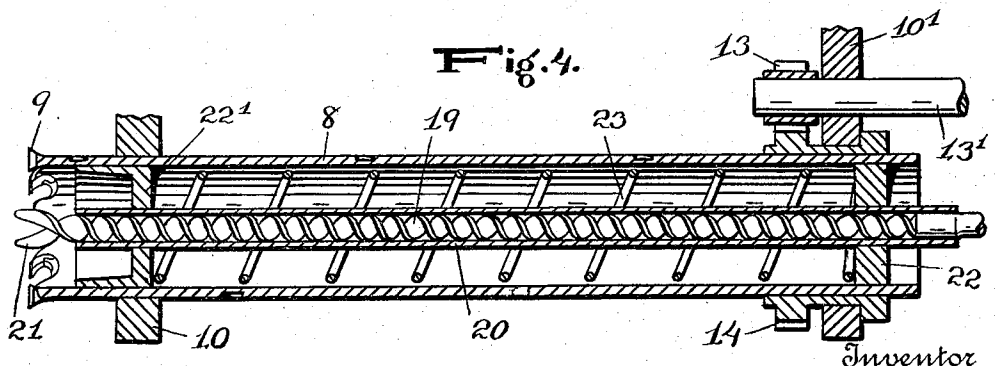


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES S. WALLACE, OF IAEGER, WEST VIRGINIA.

COAL-MINING MACHINE.

1,159,302. Specification of Letters Patent. Patented Nov. 2, 1915.

Application filed August 5, 1915. Serial No. 43,856.

To all whom it may concern:

Be it known that I, JAMES S. WALLACE, a citizen of the United States, resident of Iaeger, in the county of McDowell and State of West Virginia, have made a certain new and useful Invention in Coal-Mining Machines; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a side view of the invention. Fig. 2 is a plan view of the same. Fig. 3 is a section on the line 3—3, Fig. 1. Fig. 4 is a section on the line 4—4, Fig. 3. Fig. 5 is a detail perspective view of one of the saw teeth. Fig. 6 is a detail front view of the same.

The invention has relation to coal mining machines, designed particularly for use in the mining of the richer and softer grades of bituminous coal, having for its object, in so far as possible, to avoid breaking the coal and to produce a high percentage of coarse lump coal.

The invention consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings, illustrating the invention, the numeral 2 designates a coal mining car, and 3 is a platform, usually of heavy piping in skeleton form, carried by four steel posts or standards 6, 6, threaded elbows or corners 7, 7 of said platform engaging threads of said standards.

Located upon the platform are a plurality of tubular drills 8, 8, usually two in number and having at their outer or cutting ends each an annular series of saw teeth 9, acting in the rotation of the drill to cut a cylindrical core in the seam of coal. The drills have rotary bearings in extensions 10, 10′, the rear extension 10′ forming part of a carriage 11, slidable in guides of the platform and carrying therewith the tubular drills, which are moved forward and back, usually by the operator. As the tubular drills are moved forward they are turned by means of a pinion 13, engaging spur gears 14, 14′ of the drills, the shaft 13′ of said pinion being mounted upon the carriage and turned by a driving connection 15 with the shaft 16 of a suitable motor 16′, also mounted upon the carriage.

In order to maintain the core in a horizontal position until the core is cut completely and the drill withdrawn, a center auger 19, having a driving connection 19′ with the shaft 13′, is provided for each drill, said auger being surrounded by a smooth cylindrical sleeve 20, except at its outer or bit end 21, to avoid frictional contact of the twist of the auger with the coal. The sleeve is carried by inner and outer disks 22, 22′, the inner disk being stationary within the drill, and a spiral spring 23 being located within the drill, between the disks. In this way, as the drill is fed to the coal and the center auger bores its hole, which is of about the diameter of the sleeve, the outer movable disk will move back and the spiral spring will be compressed or put under tension. The outer movable disk is preferably cup-shaped, to engage and cover the rear end of the core of coal, the spring holding the cup disk securely over the core end and protecting the same against disintegration. Then, when the core is completely cut, and the drill withdrawn, the spring, pressing against the outer end of the core, will prevent its withdrawal with the drill. The drill being now completely withdrawn, the core will fall at its outer end the width of the saw kerf, about ¾ of one inch, and break from the coal mass or seam at its inner end. The expansion of the spring will expel all loose material from the drill. The tubular drills, the center augers and the driving connections all move together forward and back with the carriage as the drills and augers are fed to the work and away therefrom.

An endless sprocket chain 24 engages sprocket wheels 25, having openings engaging the four standards, said wheels being supported usually upon the platform 3, between the same and the carriage. These wheels rotate with the standards, which slide within the same, the standards being flattened at opposite sides and the wheels having their openings shaped to correspond. The chain is turned usually by hand, and will thereby turn the sprocket wheels and cause the screw standards to first move downwardly until they strike the ground, wherein they will become seated at their pointed

lower ends, after which the platform 3 will move upwardly upon said standards, owing to the threaded elbows or corners 7 of said platform engaging the standards. The platform and the drills are in this way elevated to the desired degree, to accord with the thickness of the coal seam, when the movement of the chain is stopped and the platform comes to rest. The platform may be lowered by movement of the chain reversely.

The saw teeth 9 are designed to be made removable in any suitable way, and are provided with flaring or tapered channels 27, to throw the coal saw dust to the outside of the tubular drill, exterior spiral grooves 28 of the tubular drills carrying said dust backwardly, out of the way.

I claim:

1. A coal mining machine, comprising a tubular drill having an annular series of saw teeth, a center auger for said drill, and a tubular casing for said auger.

2. A coal mining machine, comprising a tubular drill having an annular series of saw teeth, and a center auger for said drill, said teeth being adapted to throw the coal dust outwardly and said drill having an exterior dust-conveying groove.

3. A coal mining machine, comprising a tubular drill having an annular series of saw teeth, a center auger for said drill, a tubular casing for said auger, an outer movable disk in said drill, and a coiled spring in said drill between said movable disk and the rear end of the drill.

4. A coal mining machine, comprising a tubular drill having an annular series of saw teeth, a center auger for said drill, a tubular casing for said auger, an outer movable cup-shaped disk in said drill, a rear stationary disk, and a coiled spring between the disks.

5. A coal mining machine, comprising a tubular drill having an annular series of saw teeth, and a center auger for said drill, said teeth having flaring channels designed to throw the coal dust outwardly, and said drill having an exterior spiral dust-conveying groove.

6. A coal mining machine, comprising a platform having an upward extension, a carriage movable in guides of said platform and having an upward extension, tubular drills having rotary bearings in the extension of said carriage and slidably engaging the extension of said platform, a center auger for each drill, and driving means upon the carriage for said drills and for said augers.

7. A coal mining machine, comprising a platform having an upward extension, a carriage movable in guides of said platform and having an upward extension, tubular drills carried by and having rotary bearings in the extension of said carriage and slidably engaging the extension of said platform, a center auger for each drill, driving means upon the carriage for said drills and for said augers, and means for adjusting the platform and carriage vertically, comprising four corner posts having threaded engagement with said platform, sprocket wheels resting upon said platform and having a rotatably fast slidable engagement with said posts, and an endless sprocket chain engaging said wheels.

8. In a coal mining machine, a platform having an upward extension, a carriage movable in guides of said platform and having an upward extension, tubular drills carried by and having rotary bearings in the extension of said carriage and slidably engaging the extension of said platform, a center auger for each drill, driving means upon the carriage for said drills and for said augers, and means for adjusting the platform and carriage vertically.

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

JAMES S. WALLACE.

Witnesses:
J. S. McKINNY,
J. B. SNYDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."