(No Model.) 2 Sheets—Sheet 1.

A. BALL.

STEAM MINING DRILL.

No. 457,506. Patented Aug. 11, 1891.

Fig. 1.

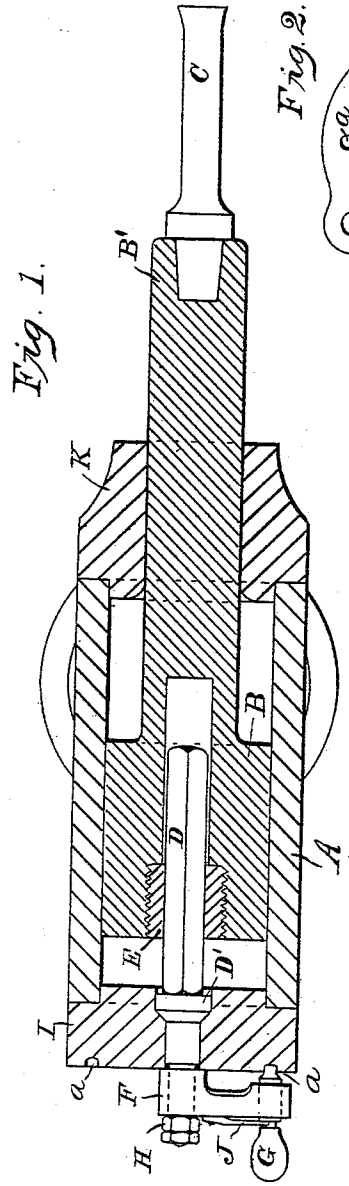
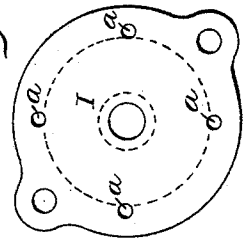


Fig. 2.



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Geo C Head

INVENTOR:
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

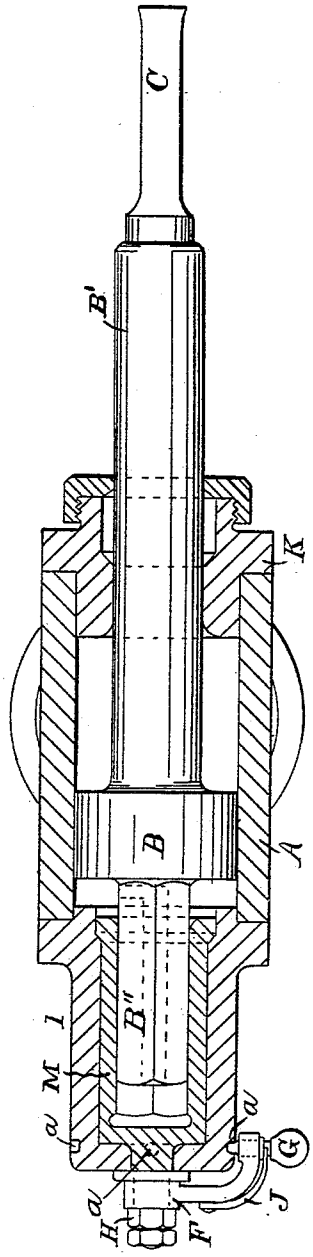


Fig. 5.

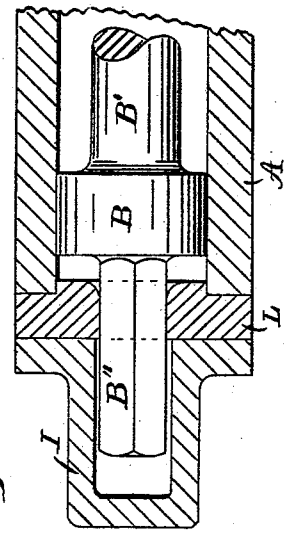
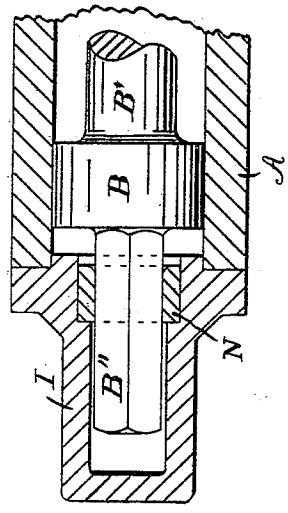


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALBERT BALL, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO THE SULLIVAN MACHINE COMPANY, OF SAME PLACE.

STEAM MINING-DRILL.

SPECIFICATION forming part of Letters Patent No. 457,506, dated August 11, 1891.

Application filed March 24, 1891. Serial No. 386,257. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BALL, a resident of Claremont, in the county of Sullivan and State of New Hampshire, have invented certain new and useful Improvements in Steam Mining-Drills; 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 pertains to make and use the same.

The object of the invention is to provide in a steam mining-drill suitable for cutting coal and for like purposes means for holding the piston and drill against rotation, that will also permit them to be turned a definite distance, as desired, and then secured in their new position; and the invention consists in the matters hereinafter described and particularly pointed out.

In the accompanying drawings, Figure 1 is a longitudinal central section. Fig. 2 is a plan of a cylinder-head. Fig. 3 is a longitudinal central section of a modified form. Figs. 4 and 5 are partial central sections of modification.

The letter A denotes a steam-cylinder, B a piston, and B′ a piston-rod in which is secured a tool C.

K indicates the front, and I the rear cylinder-head.

D is a bar, angular in cross-section and fitted to an angular passage or opening in the bushing E, made fast in the piston. This bar D is fitted to a cylindrical opening in the cylinder-head and can be turned therein, the piston and tool being turned at the same time. The piston is provided with a recess to receive the bar D, whereby the former is permitted to move back and forth on the bar.

D′ is a head or plug to prevent escape of steam.

F is an arm or handle fast on the bar D, provided with a spring-pin G. The spring J engages a recess in said pin and normally holds the latter in engagement with one of the recesses *a* in the cylinder-head.

H is a nut for securing arm F upon the bar and forcing the head or plug D to its seat. The holes *a* may be of any desired number.

As shown in Fig. 3, the pin G is made to engage with recesses in the circumference of the cylinder-head, and the crank-arm which carries the pin is made fast on an extension of a bushing or thimble M, which has an angular recess to receive a similarly-shaped bar B″, the latter being a rearward extension from the piston. As illustrated in Fig. 4, the bar B″ is fitted to a bushing N, made fast in the cylinder-head, which has a recess, as shown, to permit the movement of the bar. Fig. 5 represents a similar construction, except that an intermediate head L, provided with an angular recess to receive the similarly-shaped bar, is substituted for the bushing shown in Fig. 4. In the construction indicated in the last three figures the cylinder must be revolved to turn the tool.

In each form of the device illustrated in Figs. 1 to 5 there is at the rear of the piston a guide or bar equivalent to a rearward extension of the piston-rod, which is angular in cross-section and fits a similar-shaped way or female guide, whereby the tool is firmly held against rotation, and whereby it and the piston-rod in which it is secured are guided and held to their work, a forwardly-extended guiding-arm being dispensed with.

I am aware that in rock-drills a rearward extension from the piston has been used to turn the same, and I do not broadly claim such device. My invention is independent of any particular means of mounting the cylinder, though it is adapted to be used on the two-wheeled vehicle now in common use. The rear guide may be made of various forms in cross-section, it being only important that it be closely fitted in an angular way or socket. The parts or bushings in which these ways are formed are detachably secured in place and can be easily renewed when worn.

It will be noted that the construction is such that the tool can be operated for any desired time without turning, and then can be turned a desired distance and remain in such position indefinitely until again turned, and that the operation can be effected from the rear of the drill.

Having thus described my invention, what I desire to secure by Letters Patent is—

1. In a rock-drill, the cylinder, the piston, and piston-rod, the latter supporting a tool, the rearward extension of the piston or its equivalent having an angular form in cross-

section, and a bushing or the like having a way or opening for said extension and closely fitting the same, substantially as set forth.

2. In a rock-drill, the cylinder, the piston, and piston-rod, the latter supporting a tool, the rearward extension of the revoluble piston or its equivalent having an angular form in cross-section, and a bushing or the like having a way or opening for said extension and closely fitting the same, and a locking device adapted to secure the piston and tool in different positions, substantially as set forth.

3. In a rock-drill, the cylinder, the piston, and piston-rod, the latter supporting a tool, the rearward extension of the revoluble piston or its equivalent having an angular form in cross-section, and a bushing or the like having a way or opening for said extension and closely fitting the same, and a locking device consisting of a crank-arm provided with a pin adapted to secure the piston and tool in different positions, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALBERT BALL.

Witnesses:
FRANK A. BALL,
GEO. O. BALL.