Feb. 21, 1933. L. W. GREVE 1,898,772

ROCK DRILL

Filed Aug. 21, 1928

Fig. 1.

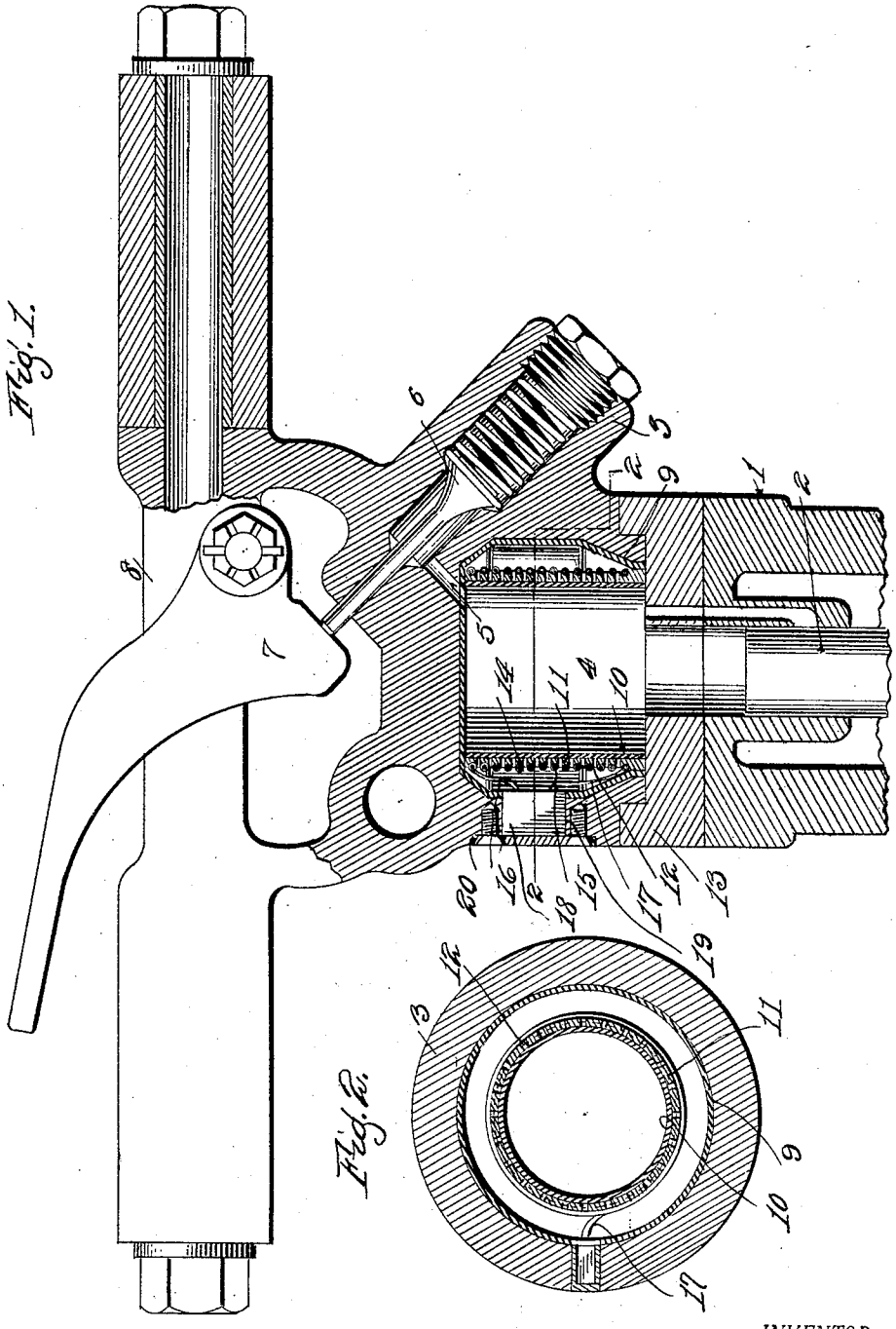


Fig. 2.

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ROCK DRILL

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The present invention is directed to improvements in rock drills, and has for its primary object to provide a drill constructed in such manner that the motive fluid flowing from the line will be subjected to heat, to increase the expansibility of the compressed air before it is allowed to expand.

A further object of the invention is to provide a device of this kind which will be particularly desirable at locations where air pressure is comparatively low, and will prove especially advantageous when used in connection with portable compressors of the type used for operating tools for street and road work.

With these and other objects in view, as will appear as the description proceeds, the invention consists in the novel features of construction, combination of elements, and arrangement of parts hereinafter to be fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:—

Figure 1 is a sectional view taken through the device.

Figure 2 is a sectional view on line 2—2 of Figure 1.

Referring to the drawing, 1 designates the drill cylinder in which is movable the piston hammer 2, said cylinder and hammer being of any conventional type.

The back head 3 is formed with a relatively large air receiving chamber 4, motive fluid being led thereto through a port 5, the inflow of fluid being controlled by a valve 6, operable in this instance, by a trigger 7 carried by the handle structure 8. The chamber is preferably provided with a lining 9 of suitable material having low heat conducting qualities. A lining of refractory material such as asbestos or fire brick will suffice for this purpose.

The heating unit per se consists of a cylinder 10 formed from moisture resisting material, for example, stainless steel, as well as having great heat conductivity. Fitting snugly upon the cylinder is a sleeve 11 of suitable insulating material for example, porcelain, and in which is formed a plurality of perforations 12. This sleeve is of the same length as the cylinder 10, and both have their lower ends resting upon the spacing member 13 which serves to maintain the same firmly in the chamber 4, and spaced from the side wall thereof. The outer surface of the sleeve is grooved, as at 14, for retaining the wire 15 properly wound, the terminals 16 and 17 thereof being connected in the receptacle 18, said receptacle being of conventional form and is mounted in the recess 19 formed in the wall of the chamber. This receptacle is retained in place by the plate 20, and it will be obvious that when a plug, connected in circuit with a source of electrical energy is engaged in the receptacle, the wire 15 will be heated. Obviously the heat from the wire 15 will radiate through the perforations of the sleeve, thus heating the cylinder 10 in order that the motive fluid passing through the cylinder will be heated thereby increasing the potential expansive power of the motive fluid just prior to the time it enters the piston chamber to act upon the piston and thus greatly increasing the efficiency thereof.

What is claimed is:—

1. In combination with a drill cylinder having a hammer piston reciprocatively mounted therein, a back head, a heating chamber disposed within said back head having heat insulating walls, a heating unit disposed within said heating chamber, said unit being coextensive with said chamber and having walls parallel and spaced from said chamber walls, a spacer disposed between said back head and said drill cylinder, said spacer adapted to maintain said heating unit in position within said heating chamber with its ends in engagement with said back head and said spacer, and means for conducting motive fluid from a source of supply through said heating chamber and unit to said drill cylinder.

2. In combination with a drill cylinder having a hammer piston reciprocatively mounted therein, a back head, a spacer member disposed between said drill cylinder and said back head, an enlarged chamber within said back head having a lining of heat insulating material, a cylinder of high heat

conducting material, disposed within said chamber and in abutting relation with said spacer member and back head, a sleeve of electrical insulating material disposed about said cylinder, heating coils supported by said cylinder, and means for conducting motive fluid from a source of supply through said heating chamber and cylinder to said drill cylinder.

3. In combination with a drill cylinder having a hammer piston reciprocatively mounted therein, a back head, a spacer member disposed between said drill cylinder and said back head, an enlarged heating chamber within said back head having a lining of heat insulating material, a heating unit disposed within said chamber, said heating unit being in the form of a metal cylinder having walls of relatively high heat conductivity, a porous electrical insulating member surrounding said metal cylinder, a resistance coil wound on said porous member, said unit being spaced from the walls of said heating chamber and having its ends abutting said back head and said spacer member and being held in position by said back head and member, and means for conducting motive fluid from a source of fluid supply through said heating chamber and unit to said drill cylinder.

In testimony whereof I affix my signature.

LOUIS W. GREVE.