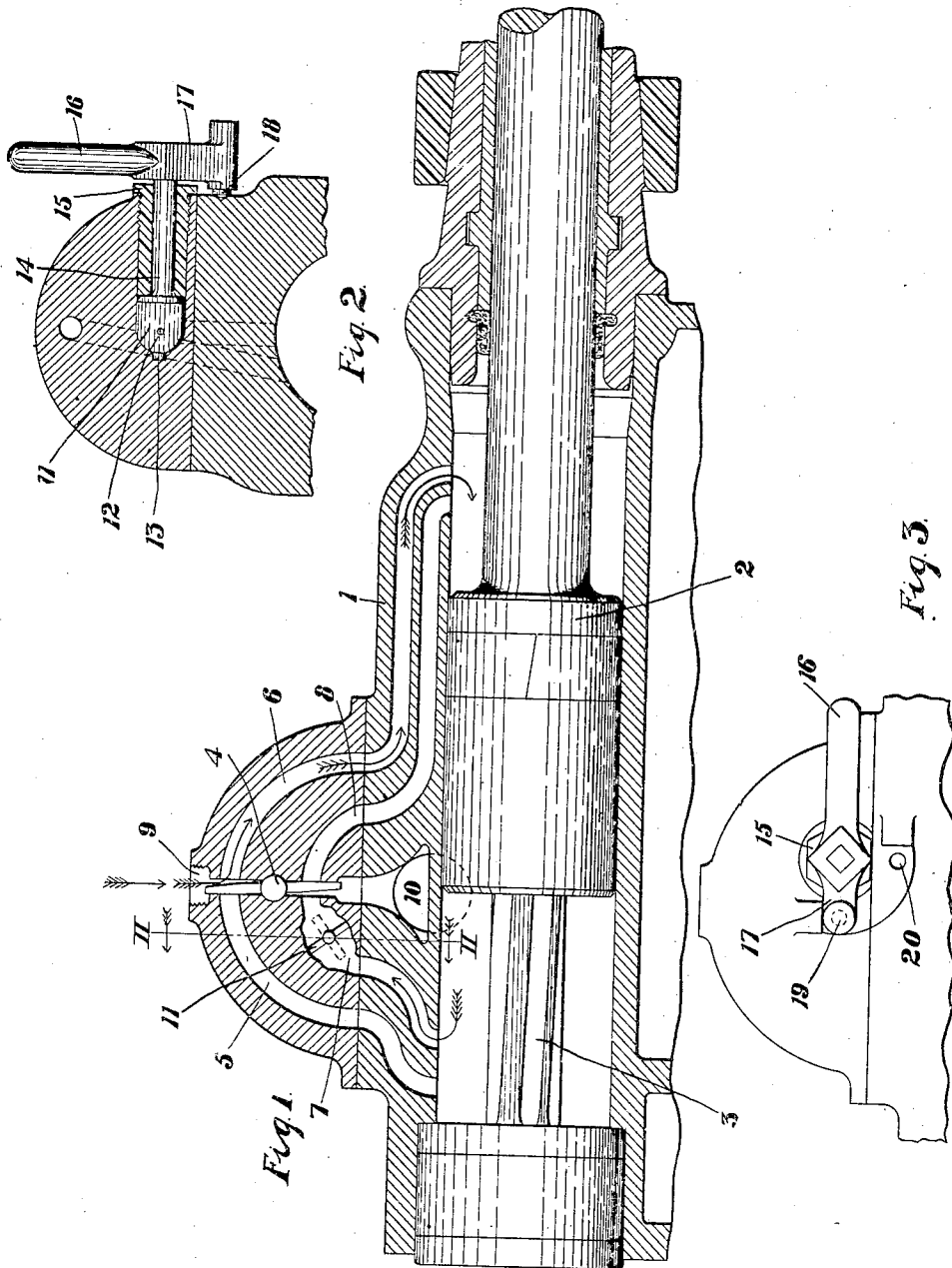


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STROKE SHORTENING DEVICE FOR PERCUSSIVE TOOLS.
APPLICATION FILED MAY 31, 1912.

1,056,170.

Patented Mar. 18. 1913.



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STROKE-SHORTENING DEVICE FOR PERCUSSIVE TOOLS.

1,056,170.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed May 31, 1912. Serial No. 700,634.

To all whom it may concern:

Be it known that I, CHARLES C. HANSEN, a citizen of the United States, residing in Easton, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Stroke-Shortening Devices for Percussive Tools, of which the following is a specification.

This invention relates to percussive tools and more particularly to a stroke shortening or cushioning device for such tools.

The object of this invention is to provide a simple and effective means for shortening the stroke of percussive tools, especially drills, under conditions which require short stroking such as in starting oblique holes in rock faces and in drilling in soft rock.

With this object in view I have devised a mechanism a practical embodiment of which is shown in the accompanying drawings in which—

Figure 1 is a longitudinal section through the drill embodying the device. Fig. 2 is a transverse section on the line II—II of Fig. 1 and Fig. 3 is a side elevation showing the handle for operating the stroke shortening mechanism.

The device as shown is embodied in a rock drill of ordinary construction which comprises a cylinder 1 in which reciprocates a piston 2 rotated by a rifle bar 3. The valve 4 is of the balanced wing type, one of its wings controlling the inlet passages 5 and 6 leading respectively to the back and front end of the cylinder and the other of its wings controlling the corresponding exhaust passages 7 and 8. Operating fluid is admitted by the inlet opening 9 and exhausts through the outlet 10, the valve being thrown by compression in the inlet passages produced by the piston after it has overrun the exhaust ports.

In the exhaust passage 7 is the stroke shortening valve which consists of plate 11 so shaped as to closely fit the passage 7 when turned in a position transversely across the passage as shown in Fig. 1. Through the plate is an aperture 12 which is of small area in comparison to the size of the passage. One edge of the plate 11 is provided with a cylindrical lug 13 seated for rotation in a depression in the face of the passage while on the opposite edge of the plate 11 is a

shank 14 which rotates in bushing 15 threaded into the valve chest casting. Secured to the outer end of the shank 14 is a handle 16 provided with a rearwardly extended lug 17 in which slides a spring pressed pin 18 adapted to be seated at will in either of the depressions 19 and 20.

The operation of the device is evident from the description. When the plate 11 is in the position shown by the dotted lines in Fig. 1 the fluid from the back end of the cylinder will exhaust freely through the passage 7 and outlet 10. When however the plate 11 is in the position shown by the full lines of Fig. 1 the fluid from the back end of the cylinder will exhaust only through the aperture 12 which will cushion the back stroke of the piston to a considerable extent thus causing the valve to be thrown sooner and hence shortening the effective stroke of the piston.

Although the device as shown is applied to a rock drill it is adapted for use with any type of percussive tool. It is however particularly adapted to valves of the type shown wherein the valve is thrown by piston compression transmitted to the valve by the inlet passage.

It is to be understood that the device as shown and described discloses only one modification of the tool and other changed and modified forms are included within the spirit and scope of my invention as expressed in the claims.

What I claim is:

1. In a percussive tool, a cylinder, a piston therein, a valve, an inlet passage controlled by said valve, a separate exhaust passage controlled by said valve and an apertured plate mounted for rotation in said exhaust passage.

2. In a percussive tool, a cylinder, a piston therein, a valve, an inlet passage controlled by said valve, a separate exhaust passage controlled by said valve, a plate rotatably mounted in said passage and fitting said passage when transversely across it, an aperture in said plate, and means to rotate said plate.

3. In a percussive tool, a cylinder, a piston therein, a valve, an inlet passage controlled by said valve, a separate exhaust passage controlled by said valve so placed as to allow piston compression in said inlet pas-

sage for throwing said valve, and means for decreasing the area of said exhaust passage.

4. In a percussive tool, a cylinder, a piston therein, a valve, an inlet passage controlled by said valve, an exhaust passage controlled by said valve, said exhaust passage opening into said cylinder farther from

its end than said inlet passage, and an apertured plate mounted for rotation in said exhaust passage.

CHARLES C. HANSEN.

Witnesses:

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