

1,298,078.

E. H. MOLE.
BUFFER.

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Patented Mar. 25, 1919.

Fig. 1.

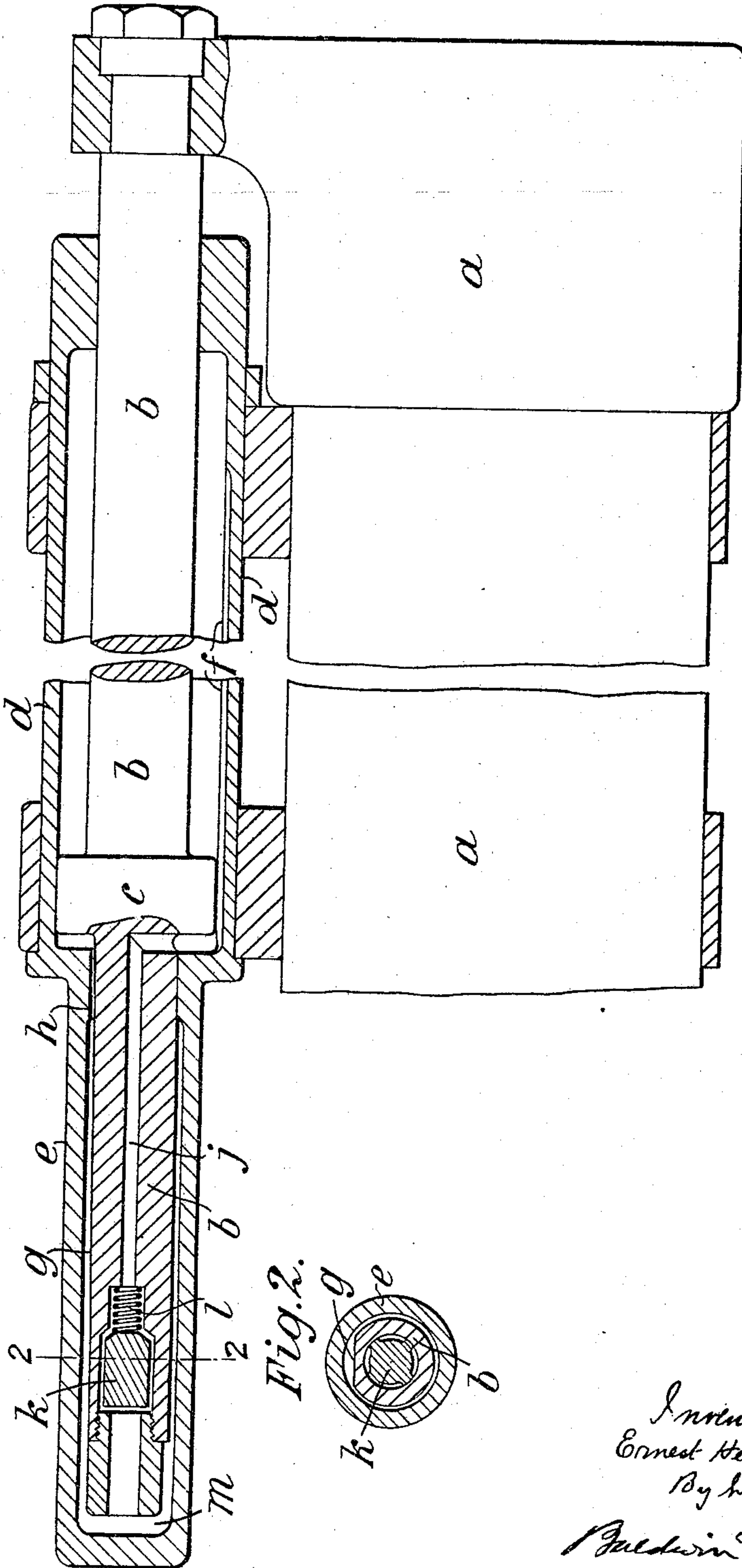
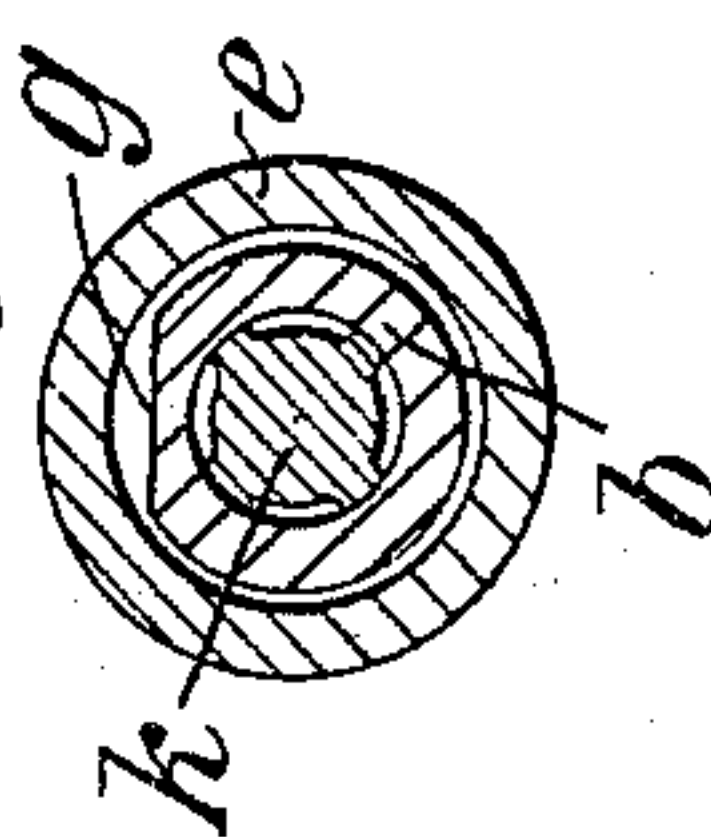


Fig. 2.



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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

Patented Mar. 25, 1919.

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To all whom it may concern:

Be it known that I, ERNEST HENRY MOLE, a subject of the King of Great Britain, residing at Elswick Works, Newcastle-upon-Tyne, England, have invented a new and useful Improvement in Buffers, of which the following is a specification.

This invention relates to hydraulic buffers for controlling the movements of guns in their mountings, and its object is to provide a buffer in which the resistance to run out shall be less at high angles of elevation than at low angles.

According to this invention I provide in the front of the piston rod, which is attached to the gun, a valve, behind which is a spring so arranged that at high angles of elevation the valve will be kept off its seat and will permit the liquid to pass from the front of the cylinder through a passage bored longitudinally in the piston rod to the rear, as well as through the ordinary tapered passage. At low angles of elevation, however, the pressure of the liquid in front of the cylinder is sufficient to keep the valve closed so that the liquid can only pass to the rear through the tapered passage.

The annexed drawing shows a buffer made in accordance with this invention. Figure 1 is a longitudinal section and Fig. 2 is a section on the line 2—2 of Fig. 1.

a is a gun to which is attached a piston rod *b* having a piston *c* working in a cylinder *d* and a forward part working in another cylinder *e*. The cylinder *d* is cut away at *f* in the usual manner to allow of the passage of liquid, and the forward part of the piston rod *b* is cylindrical with a part cut away at *g* which allows the escape of

fluid through the passage formed between the piston rod *b* and the cylinder *e* at *h*. A passage *j* is bored in the front part of the piston rod *b* and in it is a valve *k* held off its seat by a spring *l*.

When the gun is fired at low angles of elevation the pressure in the chamber *m* in front of the piston rod *b* is greater than when firing at high angles of elevation, and the strength of the spring *l* is so adjusted that when firing at low angles of elevation the pressure of the liquid in the chamber *m* is sufficient to close the valve *k*.

During the run out of the gun the liquid is forced into the chamber *m* and the size of the passage *h* through which it escapes controls the speed of the run out, but when the gun is fired at high angles of elevation the spring *l* overcomes the pressure in the chamber *m* and the liquid is allowed to escape through the passage *j*, thus offering less resistance to the running out springs.

What I claim is:—

1. In combination with a gun, a piston rod attached to the gun, two cylinders, a passage between the cylinders, a piston on the piston rod working in one cylinder and the front part of the piston rod working in the other cylinder, a passage in the front part and a spring controlled valve in the passage.

2. In combination with a gun, a piston rod attached to the gun, two cylinders, a piston on the piston rod working in one cylinder and the front part of the piston rod working in the other cylinder, a flat on the front part of the piston rod, a passage in the front part and a spring controlled valve in the passage.

ERNEST HENRY MOLE.

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