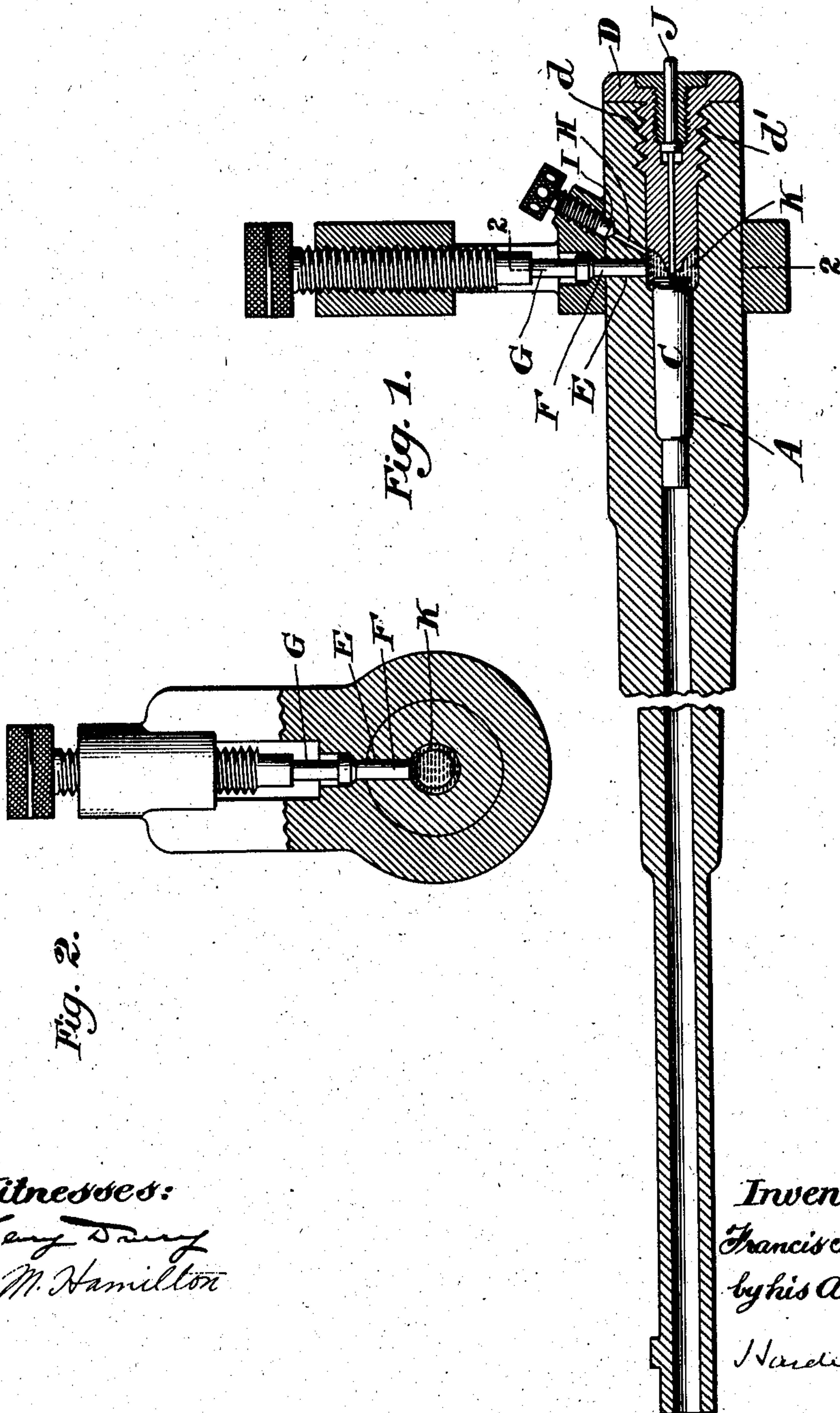


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F. I. DU PONT.
BALLISTIC GUN.
APPLICATION FILED NOV. 4, 1905.



Witnesses:
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UNITED STATES PATENT OFFICE.

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BALLISTIC GUN.

No. 815,468.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed November 4, 1905. Serial No. 285,815.

To all whom it may concern:

Be it known that I, FRANCIS I. DU PONT, a citizen of the United States, residing at Wilmington, county of Newcastle, and State of Delaware, have invented a new and useful Improvement in Ballistic Guns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My improvement relates to that class of guns which are used to ascertain the pressure developed by the powder and in which the pressure of the powder is delivered upon a piston which acts upon a copper cylinder, compressing or shortening, or tending to compress or shorten, this cylinder. The amount of such compression or shortening is measured and the pressure is determined thereby. In the ordinary construction an orifice is made through the cartridge-case near the breech and the piston is supported or secured just above this orifice. The disadvantage in this construction is that the gas escapes not only around the piston, but back and out of the breech, thus tending to make the result uncertain.

The object of my invention is to avoid these defects and render the result more certain. I will first describe the embodiment of my invention whereby I obtain these results, disclosed in the accompanying drawings, and then point out the invention in the claims.

In the drawings, Figure 1 is a longitudinal sectional view of the gun. Fig. 2 is a transverse sectional view on the line 2 2, Fig. 1.

A is the gun-chamber in which is the cartridge C.

D is the breech, which is secured to the gun, and removed therefrom by the threads d on the breech coacting with threads d' on the gun. Between the cartridge and the inner end of the breech when in position is the space K, which is filled with oil.

E is a passage through the gun-casing communicating with the space K, in which passage is the piston F, the upper end being connected with the compressible copper cylinder G. H is another passage through the gun-casing communicating with the space K. This passage may be closed or opened by the valve I.

In practice I first remove the breech and

insert the loaded cartridge. The gun is then inclined and oil sufficient in quantity to fill space K is poured in. The valve is then moved to open passage H and the breech D is screwed in, the gun still being held in an inclined position. As the breech is screwed in first the air escapes out through passage H and then any excess of oil escapes in the same manner. After the breech has been screwed to the proper position the valve I is closed. The gun is then fired by tapping the firing-pin J with a hammer. The cartridge comes back, compressing the oil in space K, thus transmitting the pressure to the piston F, which in turn compresses or shortens the copper cylinder G. The amount of the compression or shortening of the copper cylinder is carefully measured, and in the customary manner this is used to indicate the pressure developed in the chamber of the gun.

By my improved construction there is no necessity to make a hole in the cartridge-case, and all openings which might otherwise leak are oil-sealed. In other words, before any gas can escape from anything it would be necessary for more oil to flow out of them than could possibly happen in the very short interval of time such as that during which the pressure exists.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. An improved ballistic gun comprising a chamber containing oil between the cartridge-head and the breech when closed, a piston in operative communication with said chamber and a pressure-indicating device operated by said piston.

2. An improved ballistic gun comprising a chamber between the cartridge-head and the breech when closed, a piston in operative communication with said chamber and pressure-indicating device operated by said piston.

3. An improved ballistic gun comprising a chamber containing oil between the cartridge-head and the breech when closed, a piston in operative communication with said chamber and a pressure-indicating device operated by said piston, and a passage controlled by a valve connecting said chamber and the exterior of the gun.

4. An improved ballistic gun comprising a

chamber between the cartridge-head and the breech when closed, a piston in operative communication with said chamber and pressure-indicating device operated by said piston, and a passage controlled by a valve connecting said chamber and the exterior of the gun.

5. In a ballistic gun, in combination, a chamber adapted to receive the cartridge, a breech adapted to close the end of said gun, a chamber adapted to receive oil between the cartridge-chamber and the inner end of the breech, a piston in connection with said oil-chamber and a measuring device operated by said piston.

6. In a ballistic gun in combination, a chamber adapted to receive the cartridge, a breech adapted to close the end of said gun, a chamber adapted to receive oil between the cartridge-chamber and the inner end of the breech, a piston in connection with said oil-chamber and a compression or shortening cylinder operated by said piston.

7. In a ballistic gun, in combination, a chamber adapted to receive the cartridge, a breech adapted to close the end of said gun, a

chamber adapted to receive oil between the cartridge-chamber and the inner end of the breech, a piston in connection with said oil-chamber and a measuring device operated by said piston, a passage from said oil-chamber to the exterior of the gun and a valve controlling said passage.

8. In a ballistic gun, in combination, a chamber adapted to receive the cartridge, a breech adapted to close the end of said gun, a chamber adapted to receive oil between the cartridge-chamber and the inner end of the breech, a piston in connection with said oil-chamber and a compression or shortening cylinder operated by said piston, a passage from said oil-chamber to the exterior of the gun and a valve controlling said passage.

In testimony of which invention I have hereunto set my hand, at Wilmington, Delaware, on this 31st day of October, 1905.

FRANCIS I. DU PONT.

Witnesses:

IRVING EYER,
ROY SHARPE.