

1 Aug 1862

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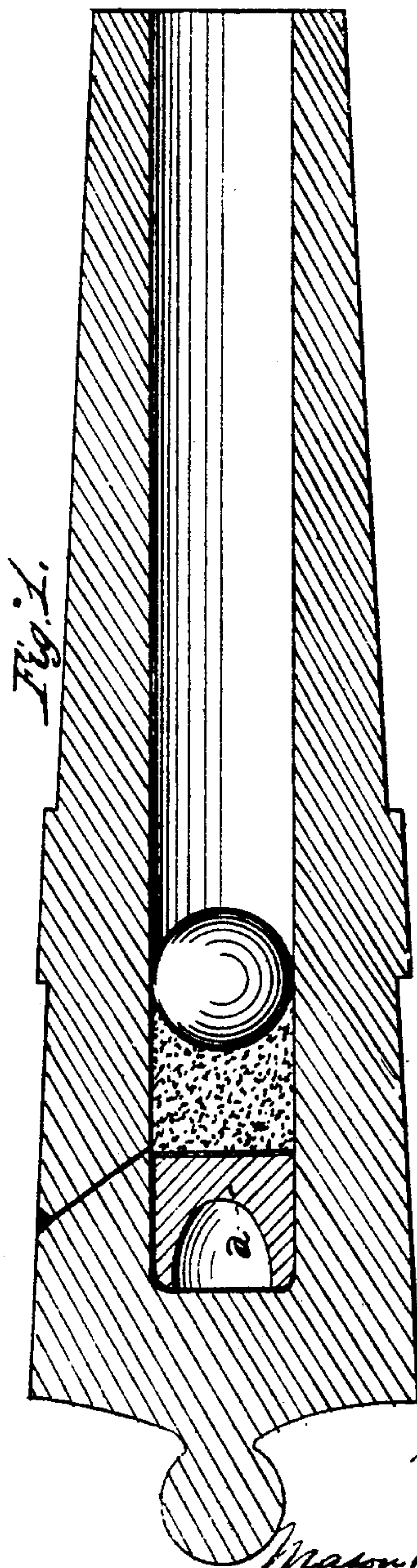
2 Sheets—Sheet 1.

H. H. DAY.
Muzzle-loading Ordnance.

No. 37,035.

Patented Dec. 2. 1862.

M. Riner
June 10 62



Witnesses.
Gustave D. Dierich
Edwin J. Jacob

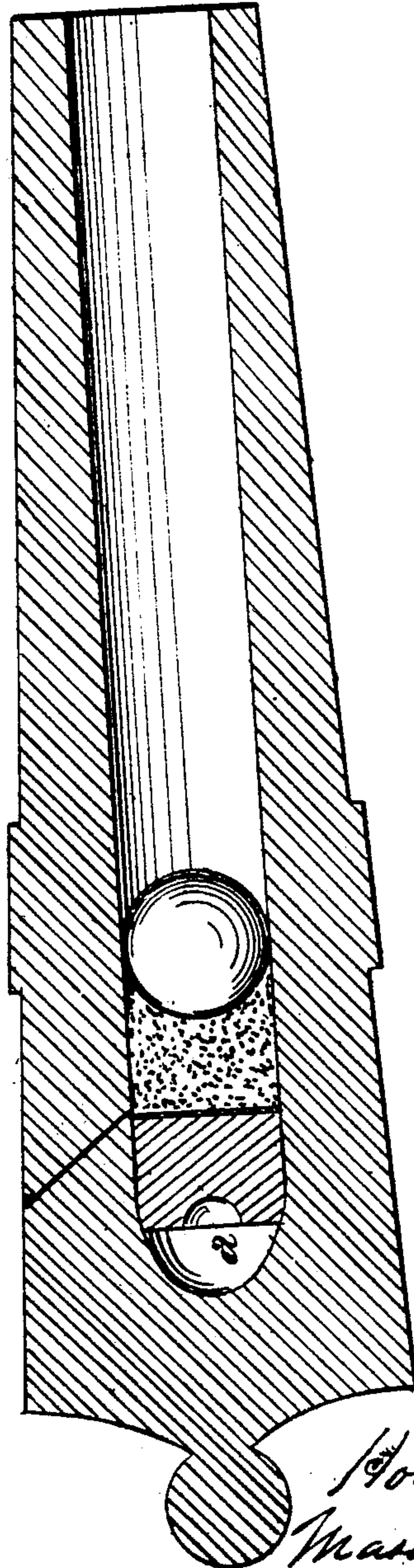
Inventor.
Horace H. Day
by
Mason P. Smith & Hammer
Attys

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Fig. 2.



Witnesses.
Guilford D. Smith
Edwin J. Jacob

Inventor.
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Mason Fenwick & Lamm
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UNITED STATES PATENT OFFICE.

HORACE H. DAY, OF NEW YORK, N. Y.

IMPROVEMENT IN ELASTIC BREECHES FOR ORDNANCE.

Specification forming part of Letters Patent No. 37,035, dated December 2, 1862.

To all whom it may concern:

Be it known that I, HORACE HOLLISTER DAY, of the city, county, and State of New York, have invented a new and useful contrivance for augmenting the efficiency of a cannon or other fire-arms; and I do hereby declare the following to be a true and exact description of my invention, which will be more fully understood by reference to the accompanying drawings.

The principal cause of the bursting of guns is the enormous pressure caused by the gases created at the moment of the explosion of the powder. This danger is so great as to render it necessary to use limited charges of powder, and this powder so constituted as not to explode instantaneously, by which the efficacy of the cannon is considerably affected.

My invention consists in providing an elastic breech to be inserted into the bore of the cannon beneath the powder. This elastic breech I propose to construct of vulcanized india-rubber or gutta-percha, though it may be constructed of other elastic materials. It should be so constructed as to confine a considerable volume of air in such a manner that it will be compressed without escaping when the discharge takes place, the purpose being to permit the breech to yield readily, so as to increase the space in which the gases caused by the explosion may have room to expand, thereby diminishing the intensity of the pressure in the same proportion.

In the drawings, *a*, Figure 1, represents a cylinder of rubber or gutta-percha, which forms the elastic breech. It is hollowed out at its rear extremity, by which means a volume of air contained in this recess is compressed by the explosion, and is made to contribute its elastic force to aid in the general result which is sought to be obtained.

Where the bottom of the bore of the cannon is hollowed out or tapered, as shown in Fig. 2, a solid cylinder of rubber will secure the result above contemplated; or in any case the elastic breech may be left solid at the center, and rings or grooves or cavities of various shapes may be made in the exterior surface thereof, which is in contact with the internal surface or bore or breech of the gun. These elastic breech-pieces, instead of being cylin-

drical in their external forms, may be globular, ellipsoidal, or in any other convenient form, and instead of the internal hollow being left open at the rear end, that hollow may be entirely closed in on all sides. To increase the effect sought, the space occupied by the cylinder of rubber may be made of a greater diameter than the bore of the gun, in which case the elastic breech may be vulcanized after it is inserted in the chamber it is to occupy. The effect of this elastic breech will be in proportion to the amount of its compression, and this will be in proportion to its bore and the air-spaces contained in the same. All other things being equal, I propose to construct this plug or cylinder of a length about equal to its diameter; but that length may be either increased or diminished without affecting the principle on which it acts.

To prevent the firing of the powder from burning the rubber or other material of which this elastic breech is composed, I apply a face or disk of metal or other incombustible material, to protect the rubber from contact with the powder. This disk should be of sufficient strength to retain its shape during the explosion. Where the elastic breech is cylindrical and solid, or nearly so, as shown in Fig. 2, this disk may be made very thin; but where this breech is hollowed out, as shown in Fig. 1, it must be constructed much stronger.

I am aware that by a patent issued to Michael Ritner, dated June 10, 1862, an effect like that above contemplated is secured to some extent; but in that case the elastic substance is placed between the powder and the projectile, and is thrown from the gun and lost at every discharge. It may, besides, produce mischief by flying in a direction very different from that of the shot and doing injury to friends, instead of foes.

I am aware, also, that disks or plugs of solid rubber have been used in connection with breech-loading fire-arms, to prevent the escape of gas at the moment of the discharge, and make no claim to such solid disk or plug for that purpose, nor for any other purpose, unless the same is so arranged as to act in combination with air which is confined between the rubber and the internal surface or breech of the gun in the rear of the charge, for the purpose of

increasing the elasticity of such disk or plug, as above specified; but

What I do claim as new, and desire to secure by Letters Patent, is—

An elastic breech-piece composed of rubber or its equivalent, acting in combination with confined air, the whole being placed in rear of the charge, constructed substantially as above set forth, for the purpose of lessening

the pressure upon that part of the gun against which the gases press with greatest power in the act of explosion.

HORACE H. DAY.

Witnesses:

M. RITNER,
CHARLES W. ROBINSON,
M. J. BREEN.