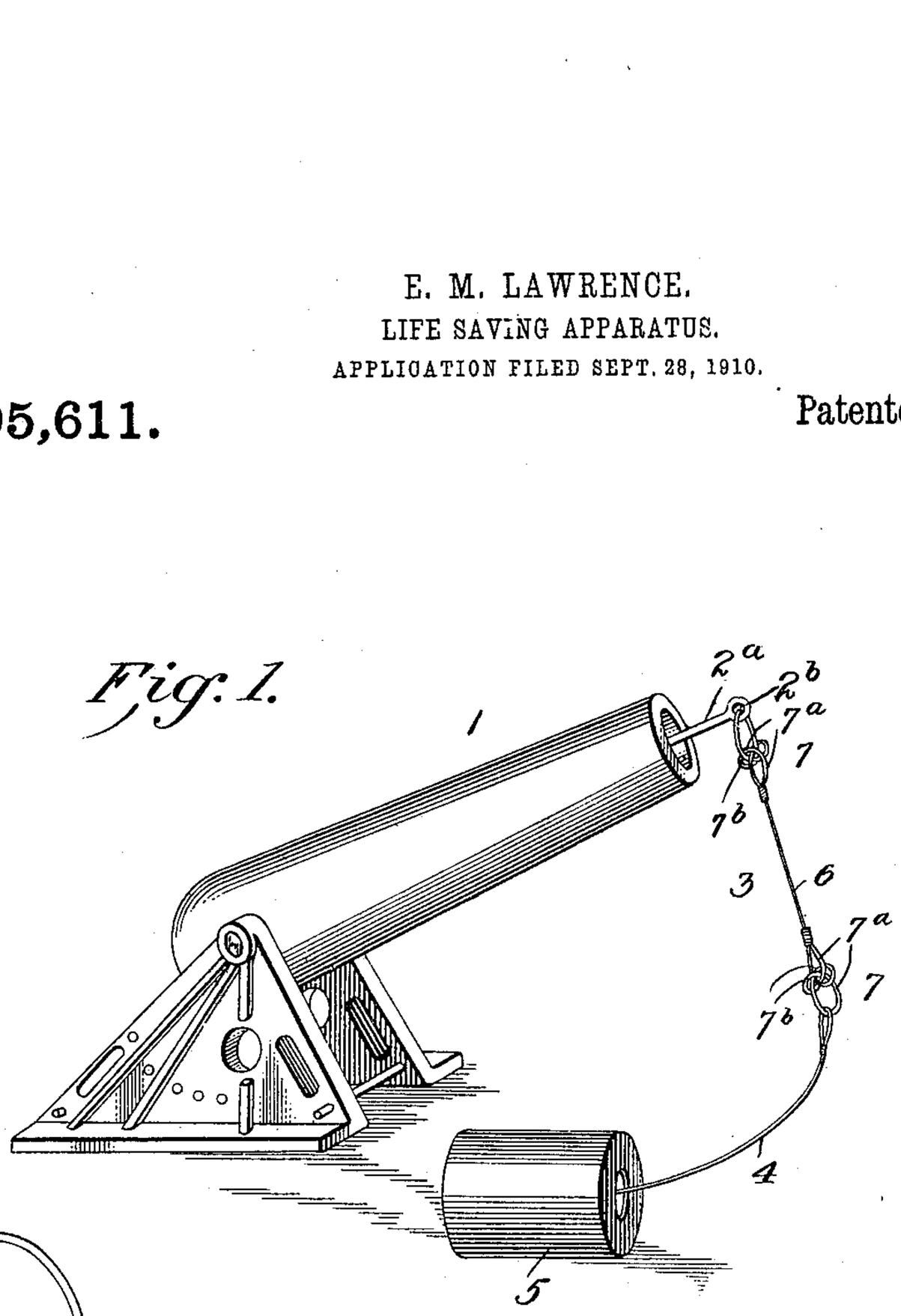
E. M. LAWRENCE.

LIFE SAVING APPARATUS.

APPLICATION FILED SEPT. 28, 1910.

995,611. Patented June 20, 1911.

Fig. 1.



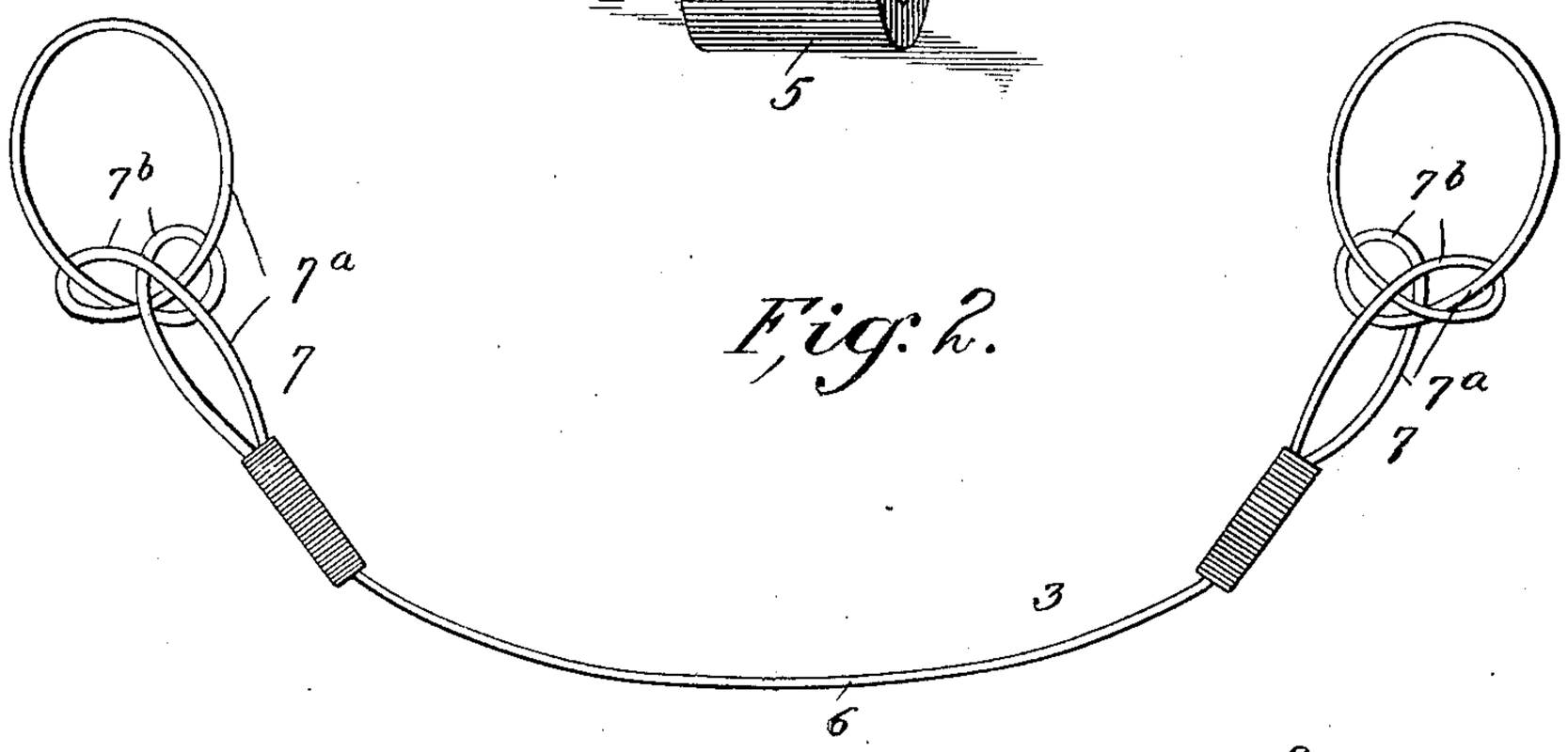
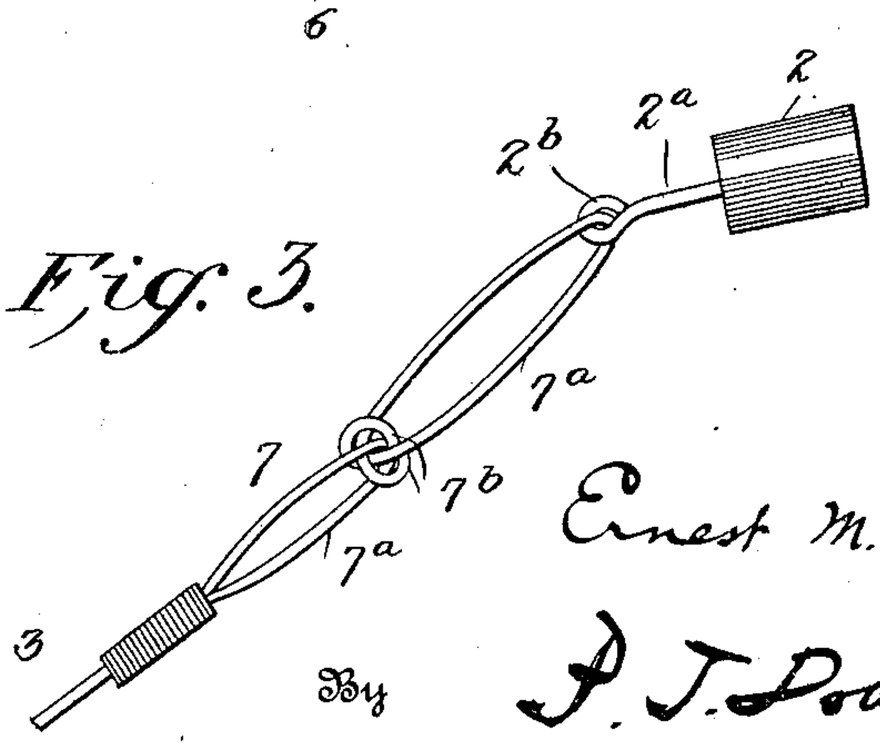


Fig. 2.

Fig. 3.



Witnesses

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LIFE-SAVING APPARATUS.

995,611. Specification of Letters Patent. **Patented June 20, 1911.**

Application filed September 28, 1910. Serial No. 584,272.

To all whom it may concern:

Be it known that I, ERNEST M. LAWRENCE, of New York, county of New York, and State of New York, have invented a new and useful Improvement in Life-Saving Apparatus, of which the following is a specification.

This invention relates to life-saving apparatus, and resides principally in a bridle or device for connecting the line with the projectile, and whereby any sudden strain produced on said line at the moment of firing is reduced to a minimum to prevent its being broken.

In practice, the bridle-device is, preferably, formed of wire, wire-rope, or other appropriate material, to give it the required strength and to prevent its burning or charring when the gun is fired. At one or both of its ends, the bridle is formed with a plurality of interlaced loops formed of the wire and arranged to co-act one with the other, whereby, when any strain is imposed on the line (as by the same becoming stretched after the firing of the gun), said loops will tend to close and interlink with each other and constitute a shock and strain absorbing structure between the projectile and line. As the material of which the bridle is formed is more or less stiff, a certain degree of resilience is permitted, and this characteristic tends to allow some movement of the parts but in such manner that no sudden strain can be imposed on the bridle, nor upon any of its parts, so that danger of breaking of the line and the attached parts is practically prevented.

Heretofore, where the line or element has been connected directly to the projectile and has not been provided with means for affording a certain degree of play or resilience, said line or element would break when suddenly drawn taut. Moreover, when the part of the line or element which extended into the gun was of combustible material, it frequently would be burned or charred at the moment of firing the gun. By the device of this invention, both of these dangers are avoided.

In the accompanying drawings: Figure 1 is a view in perspective illustrating my invention as it appears before the gun is fired; Fig. 2 is an enlarged detail view of the bridle, the loops thereof appearing as open; Fig. 3 is a similar view, the loops in this instance appearing in the form they assume immediately after the gun is fired and after the wire has been drawn taut by the projectile as it leaves the gun and pulls the line forward with it.

In these drawings, the numeral 1 designates a suitably trunnioned gun or cannon, such as those in use at life-saving stations. For convenience, I have herein illustrated my invention as being employed with the well-known form of Lyle gun. It is fired in the customary manner, and is adapted to fire a projectile 2 of any preferred form. Attached to the projectile is a stem 2^a provided with an eye 2^b. Connecting with this eye is my improved device or bridle 3, and to this is attached a line 4 of usual form and length adapted to be fed out of a box, casing, or housing 5, as shown.

The bridle 3 is preferably of wire or other suitable material having, as a characteristic feature, a certain degree of stiffness, whereby, when stretched, it will afford some resilience to absorb the shock and strain imposed on the line when the projectile leaves the gun and begins to draw the line taut. By making the bridle of wire or other suitable non-combustible or non-inflammable material, the likelihood of its being burned or charred by the flash of the powder when the gun is fired, is obviated, and the line will, in consequence, be protected.

As shown, the bridle comprises a body-portion 6 of any desired length, and a plurality of loops or portions 7 at one or both of its ends. These loops are formed by intertwining the wire so that there are formed primary loops 7^a and secondary loops 7^b, these several loops being interlaced and interlinked so that they co-act one with another to open or close the loops, as the case may be. One of the primary loops at one end is suitably connected with the eye 2^b, and the secondary loops and the other primary loop will be between said first-mentioned primary loop and the body-portion of the bridle. One of the primary loops at the opposite end of the bridle affords a convenient means for attachment thereto of the line.

The loops may be formed in any desirable way: Preferably, I intertwine the wire in such manner that the two primary loops are produced at opposite sides of the two side or secondary loops. The end of the wire or rope may be then extended alongside of a

portion of the body-portion and be secured thereto in any suitable manner. It will be seen that, where the bridle is formed of looped wire or wire-rope, a strong and strain-reducing medium is interposed between the projectile and the line and whereby the tension and sudden strain on the line, at the moment of firing, is greatly reduced, and danger of the line burning or breaking is obviated.

While I have herein described my invention in detail, it is nevertheless to be understood that I do not limit myself to such details except in so far as they may be specified in the claims.

Having now particularly described and ascertained the nature of my invention, what I claim and desire to secure by Letters Patent is:

1. A bridle for life-saving guns and the like, comprising an elongated fire-proof body-portion and end-portions comprising a plurality of elastic side-loops and end-loops at opposite sides of said first-mentioned loops and interlaced therewith.

2. A bridle for life-saving guns and the like, comprising an elongated fire-proof body-portion and end-portions formed of yielding primary loops and secondary loops, said secondary loops normally occupying a position intermediate of said primary loops and interlinked therewith and with each other.

3. As an article of manufacture, a bridle for life-saving guns, and the like, including a body-portion and a plurality of elastic interlaced loops normally expanded and interacting with each other to contract said loops upon one another.

4. As an article of manufacture, a bridle for life-saving guns, and the like, comprising a metallic body-portion and a plurality of metallic interlaced yielding loops at each end of said body-portion, said loops being normally open and adapted to interact with each other to draw them toward closing position.

5. The combination with a line-carrying projectile, of a line-connecting device comprising a body-portion having at its ends a plurality of looped portions yieldingly intercrossing each other and co-acting to draw them taut.

In testimony whereof I hereunto set my hand this 24th day of September, 1910, in the presence of two attesting witnesses.

ERNEST M. LAWRENCE.

Witnesses:

P. J. FEARON,

J. H. BUCHEREE.