(No Model.)

T. G. BENNETT.

PERCUSSION FUSE FOR PROJECTILES.

No. 320,210. Patented June 16, 1885.

Fig. 1.

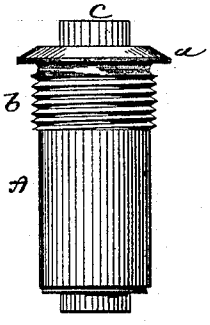


Fig. 2.

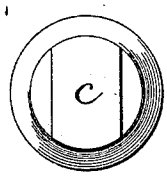


Fig. 3.

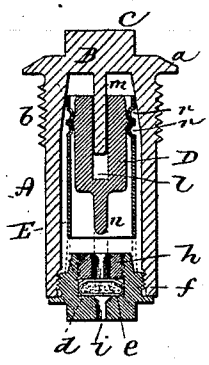


Fig. 5.

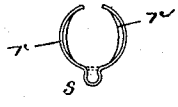


Fig. 6.

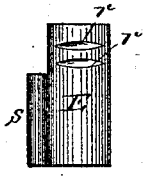
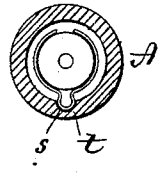


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS G. BENNETT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE WINCHESTER REPEATING ARMS COMPANY, OF SAME PLACE.

PERCUSSION-FUSE FOR PROJECTILES.

SPECIFICATION forming part of Letters Patent No. 320,210, dated June 16, 1885.

Application filed March 30, 1885. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. BENNETT, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Percussion-Fuses for Projectiles; and I do hereby declare the following, when taken in connection with accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view; Fig. 2, a head end view; Fig. 3, a longitudinal or vertical central section; Fig. 4, a transverse section; Fig. 5, a top view of the elastic sleeve; Fig. 6, a side view of the sleeve.

This invention relates to the fuse or percussion attachment constructed to be applied to explosive projectiles, and whereby as the projectile strikes, thereby suddenly reducing the velocity, a movable hammer will strike the primer and produce explosion, the object being a simple device, complete in itself, and which may be produced as an article of manufacture, for attachment to the projectile, and one in which accidental explosion in transportation or otherwise is prevented; and the invention consists in a casing constructed to be applied through an aperture in the projectile one end of said casing provided with a primer-seat adapted to securely hold the primer, but with an aperture through the seat, through which the spark from the primer will enter the projectile, and a hammer held suspended within the casing from possible contact with the primer, except in sudden interruption in the flight of the projectile, and as more fully hereinafter described, and particularly recited in the claim.

A is the casing, closed at one end by a head, B, from which an annular flange, *a*, extends, and the outside of the head constructed with a projection, C, to which a wrench or other instrument may be applied for screwing the casing into the projectile. The outer surface of the casing, beneath the head, is provided with a screw-thread, *b*, to fit a corresponding female thread made in the projectile. At the opposite or open end of the casing the anvil *d* is introduced and fixed, preferably by a screw-thread, as shown. The anvil is constructed with a seat, *e*, upon which the primer F is laid. This seat opens upward, and is internally screw-threaded, and so that after the primer has been placed upon its seat a corresponding screw-threaded ring, *h*, is introduced to bear upon the primer, and so as to hold it firmly upon its seat, the opening through the ring being in a central or concentric position. Through the anvil below the primer-seat one or more apertures, *i*, are made, through which the fire from the primer may enter the projectile. Within the casing the hammer D is arranged. As here represented, the hammer is constructed with a vertical central recess, *l*, corresponding to a vertical central spindle, *m*, formed on or made a part of the head of the casing, the said spindle *m* serving as a guide upon which the hammer may be moved up and down. The hammer terminates in a nose, *n*, adapted to pass through the ring *h*, and so as to strike the primer. Around the hammer a split elastic sleeve, E, is applied. This sleeve is constructed as seen in Figs. 5 and 6. It is of nearly-cylindrical form, open at one side, its internal diameter somewhat larger than that of the body of the hammer. Near the upper end it is constructed to embrace the body of the hammer with a friction sufficient to prevent accidental movement one upon the other. This is best done by making in opposite sides of the sleeve one or more depressions, *r*, which form corresponding ribs on the inner surface of the sleeve, and so that these ribs will bear directly upon the body of the hammer. The sleeve extends down and so that its lower end may come to a bearing at the anvil before the nose of the hammer shall strike the primer, and as seen in broken lines, Fig. 3. On the sleeve E a projecting or vertical rib, *s*, is made at one point, preferably directly opposite the opening, and in the casing is a corresponding groove, *t*, which prevents any rotatary movement of the hammer. The chamber in the casing diminishes in diameter at its upper end, and so that as the hammer is raised, as seen in Fig. 3, the sleeve will take a

bearing upon the inner wall or casing, and the sleeve being elastic will yield until it shall have so far entered the reduced diameter as to create sufficient friction to retain the hammer and sleeve in that suspended position; but when the hammer is not so supported the opposite end of the sleeve will rest upon the anvil, as indicated in broken lines, Fig. 3, and so support the hammer that its nose cannot come into contact with the primer. This completes the construction.

The fuse is introduced into the rear end of the projectile; hence on the first start of the projectile from the gun the hammer will be thrown to the rear, and there caught by the sleeve and held in position, as seen in Fig. 3, until such time as the movement of the flying projectile will be interrupted; then under the momentum the hammer will fly forward toward the anvil. The sleeve will first strike the anvil, but the momentum of the hammer is sufficient to throw it from the grasp of the sleeve, and so that its nose will come into forcible contact with the primer and produce explosion. In order to insure such movement of the hammer independent of the sleeve, the upper face of the anvil is made of conical shape, and so that as the hammer and sleeve approach the anvil the sleeve will surround the conical projection, which will act like a wedge within the sleeve to open or spread it, and so as to relieve the hammer from the natural pressure of the elastic sleeve. The conical shape of the anvil may be omitted; but I prefer to employ it for the object specified.

While I prefer to form the sleeve with the longitudinal or vertical rib *s* in one side, and the casing with a corresponding groove, *d*, for the reason that it will prevent any rotation of the hammer or casing independent the one of the other, this rib may be omitted, and the sleeve simply made of cylindrical shape, as indicated in broken lines, Fig. 5.

The spindle *m* may be omitted; but I prefer to employ it as a guide for the hammer.

I have represented the elastic sleeve as being of nearly complete tubular shape—that is, as a split tube—but it will be understood that a greater or less portion of it may be cut away, it only being essential that it shall embrace the hammer with frictional contact, and also serve as a stop to hold the hammer from accidental contact with the primer.

I am aware that hammers have been suspended upon the interior of the fuse-case by springs arranged in the casing to embrace the hammer, and therefore do not claim, broadly, such a support for the hammer.

I claim—

1. The herein-described percussion-fuse for projectiles, consisting of the casing A, constructed for attachment to the projectile, the head end closed, the anvil *d* in the opposite end of the casing, adapted to receive and hold the primer, with a hammer arranged within the casing and an elastic sleeve surrounding said hammer, unconnected with the casing and free to move with the hammer toward and from the anvil and in yielding frictional contact therewith, substantially as and for the purpose specified.

2. The combination of the casing A, closed at one end and adapted to be secured in the projectile, the anvil *d*, fixed at the open end of the case, constructed with a recess adapted to receive and support the primer, the ring *h*, introduced into said recess upon the primer and so as to secure the primer upon its seat, with a hammer arranged within the casing and an elastic sleeve surrounding said hammer and in yielding frictional contact therewith, substantially as described.

3. The combination of the casing A, one end closed and adapted for attachment to the projectile, and also constructed with the concentric spindle *m*, extending from the head inward, the anvil *d* at the open end of the casing, adapted to receive and support the primer, the hammer D, constructed to slide upon said spindle as a guide, and the elastic sleeve E, adapted to embrace the hammer with a yielding frictional contact, substantially as described.

4. The combination of the casing A, closed at one end and constructed to be secured to the projectile, the anvil *d*, fixed at the open end of the casing and constructed to receive and support the primer, also constructed with a conical projection upon its inner surface to extend into said chamber, a hammer arranged to move longitudinally in said casing, with an elastic sleeve, E, constructed to embrace said hammer with frictional contact, substantially as described, and whereby as the sleeve passes on to said conical projection on the anvil it will be opened to release its frictional hold upon the hammer, substantially as described.

5. The combination of the casing A, closed at one end and constructed for attachment to the projectile, its internal diameter gradually reduced at the closed end, an anvil, *d*, at the opposite end, constructed to receive and support the primer, a hammer within said casing and arranged for longitudinal movement, an elastic sleeve, E, constructed to embrace said hammer with frictional contact, and also to bear upon the inner surface of the casing at the reduced portion, substantially as described, and whereby said hammer will be held suspended.

6. The combination of the casing A, closed at one end and constructed for attachment to the projectile, and also constructed with a longitudinal groove, *t*, an anvil, *d*, fixed at the open end of the casing and constructed to receive and support the primer, the hammer D, arranged within the casing, and the elastic sleeve E, constructed to embrace said hammer with frictional contact, and also constructed with a rib, *s*, corresponding to the groove *t* in the casing, substantially as described.

7. The combination of the casing A, closed

at one end and constructed for attachment to the projectile, the anvil *d*, fixed at the opposite end and constructed to receive and support the primer, a hammer arranged within the casing for longitudinal movement, elastic sleeve E, constructed to partially surround said hammer, unconnected with the casing, and free to move with the hammer toward and from the anvil, and with ribs upon its inner surface to bear upon said hammer with frictional contact, substantially as described.

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Witnesses:
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