

E. SCHNEIDER.

SAFETY APPARATUS FOR PREVENTING UNTIMELY EXTINGUISHMENTS IN THE FUSE RINGS OF TIME FUSES.
APPLICATION FILED FEB. 14, 1918.

1,310,892.

Patented July 22, 1919.

3 SHEETS—SHEET 1.

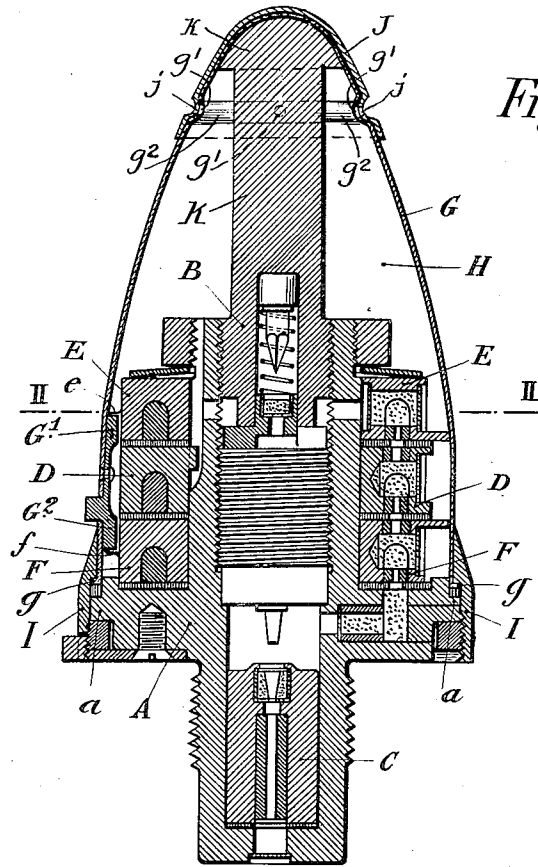


Fig. 1.

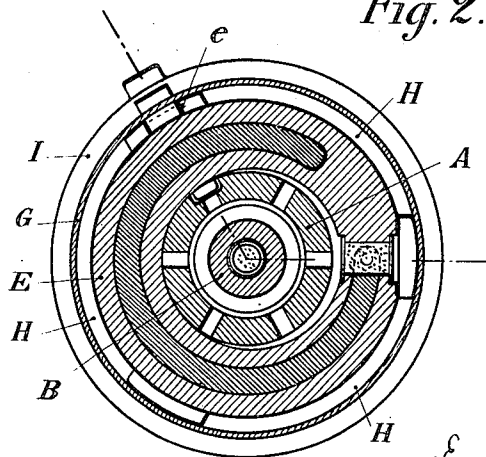


Fig. 2.

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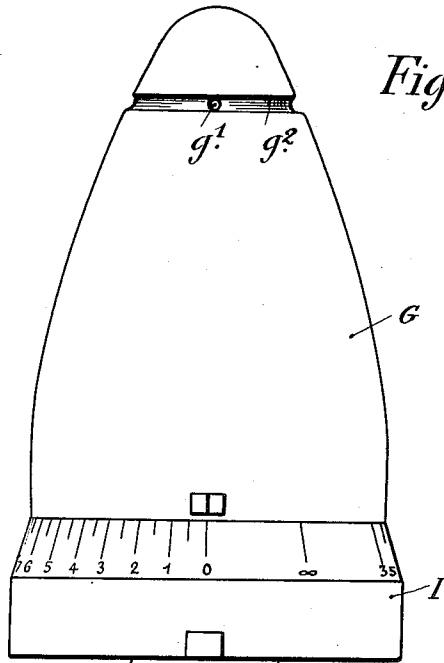


Fig. 3.

Fig. 4.

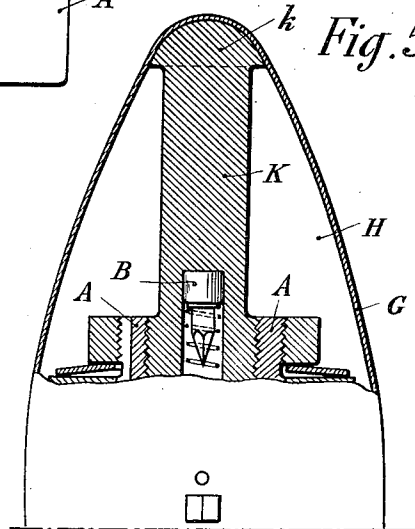
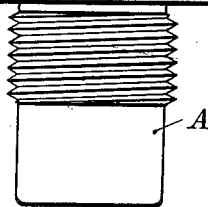
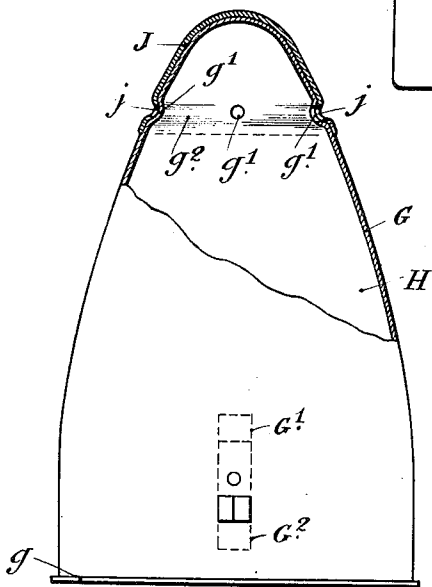


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 6.

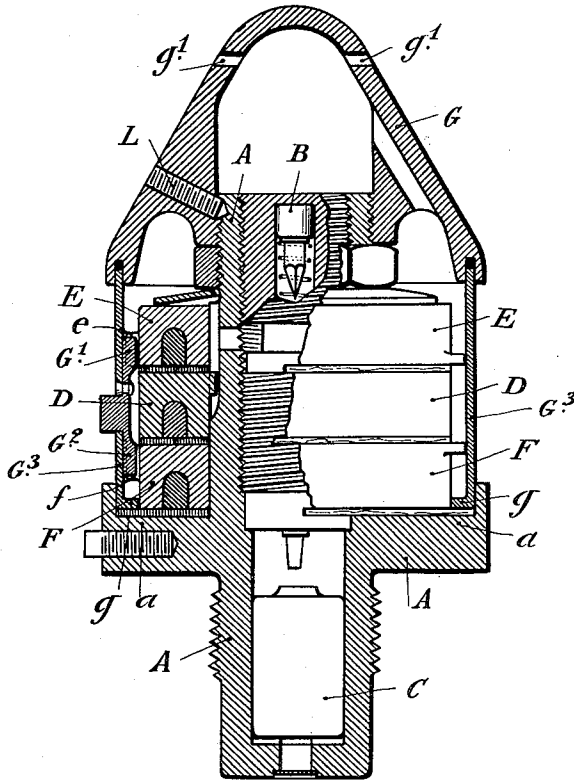
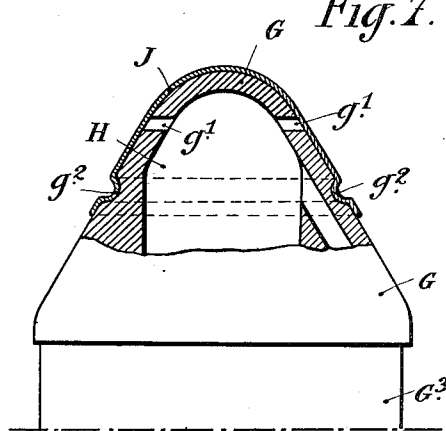


Fig. 7.



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UNITED STATES PATENT OFFICE.

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SAFETY APPARATUS FOR PREVENTING UNTIMELY EXTINGUISHMENTS IN THE FUSE-RINGS OF TIME-FUSES.

1,310,892.

Specification of Letters Patent.

Patented July 22, 1919.

Application filed February 14, 1918. Serial No. 217,187.

To all whom it may concern:

Be it known that I, EUGÈNE SCHNEIDER, a citizen of the French Republic, and a resident of 42 Rue d'Anjou, Paris, France, have
5 invented new and useful Improvements in Safety Apparatus for Preventing Untimely Extinguishments in the Fuse-Rings of Time-Fuses, which invention is fully set forth in the following specification.

10 In firing guns at high angles of elevation, untimely extinctions frequently occur in the fuse rings of time fuses owing to the variations of atmospheric action due to the diminution of pressure at high altitudes, and to
15 the effects of initial velocities or rotations exceeding certain limits.

The present invention has for its object to provide an improved apparatus which is applicable to all types of time fuses, and which
20 on one hand obviates the above stated drawbacks and on the other hand allows of modifying according to requirement at will the ballistic characteristics of the projectile to which the fuse is fitted.

25 The improved apparatus consists, in principle, in a cover of small weight but sufficiently resistant, adapted to fit the body of the fuse in such a manner as to isolate it from the atmosphere, or to isolate at least
30 those parts of the said body where the ducts or ports for the discharge of the gases of the fuse composition open, while forming around and in front of said discharge ports, a chamber of suitable capacity to allow of
35 the complete and uninterrupted combustion of the fuse composition under conditions that are practically comparable to combustion in a state of rest.

The combustion protected by the chamber
40 bounded by the cover, takes place as it were in a closed vessel, and in all cases under conditions which can be easily determined with accuracy beforehand by suitably proportioning the capacity of the chamber and the volume of the fuse rings.

45 The cover may isolate the body of the fuse, or at least the discharge ports, in a complete manner, or it may comprise one or more small orifices in the neighborhood of the most distant points of the said exhaust

ports. In the latter case there may be provided at the top of the resistant cover inclosing the air chamber, a small airtight cover pierced with holes, so that by turning the
55 said small cover relatively to the resistant cover, the orifices in the latter can be closed or opened at will.

By making the resistant cover of variable profile, the ballistic characteristics of the
60 projectile may be modified according to requirements.

Various practical constructional forms of this invention are illustrated by way of example in the accompanying drawings in
65 which:

Figures 1 and 2 are respectively a longitudinal section on the line I—I of Fig. 2, and a horizontal section on the line II—II
70 of Fig. 1, of a first embodiment of this invention.

Fig. 3 is an elevation corresponding to Fig. 1.

Fig. 4 is an elevation partly in section of a second embodiment.

Fig. 5 is a sectional elevation of a third
75 embodiment.

Fig. 6 is an axial longitudinal section of a fuse illustrating a fourth embodiment of the invention.

Fig. 7 is an elevation partly in section of
80 a fifth embodiment.

The fuse proper may be of any known type of time fuse. It may comprise for instance around a fuse body A provided with the usual percussion mechanism B and a
85 detonator C, a fixed fuse ring D located between two movable fuse rings E and F.

The body of the fuse and its fuse rings are preferably so constructed as to cause the discharge of the gases generated by the combustion of the fuse composition, to take place
90 at the external periphery of the rings.

According to the present invention the known fuse is provided with a cover G, for instance of sheet steel, sufficiently rigid and
95 light and capable of insulating it from the atmosphere.

The capacity of this cover is determined in such a manner that it shall leave between its inside surface and the fuse which it pro- 100

fects from external influences, a chamber H of suitable and variable capacity according to the nature of the shots to be fired, and more particularly variable according to the volume of the fuse rings and the nature of the powder contained by them.

It is to be understood that a cover that insulates the fuse and especially the discharge ports of the fuse rings, from all direct contact with the atmosphere during the flight of the projectile, while leaving around the body of the fuse a chamber H of suitable capacity, would allow the combustion to take place under conditions quite comparable to those of a state of rest, in view of the fact that the variable effects of the atmosphere due to the changes of altitude or the different initial velocities, and to other causes, will remain without influence.

The cover G may be mounted on the body of the fuse in any suitable manner.

In the embodiment shown in Figs. 1, 2 and 3, the cover G consists of a simple spun or stamped member held by a collar g between a shoulder a on the fuse body and a fixing ring I.

The cover thus held is movable. It is provided on its inside wall with nibs G^1 , G^2 , engaging in notches e , f , of the movable rings E, F, thus allowing of regulating the position of said rings by displacing the cover which moves them with it.

g^1 are orifices which may be provided near the top of the cover to allow of the gradual discharge of the air and the gases of combustion.

These orifices may be formed at the bottom of an annular groove g^2 in which, as shown in sectional elevation in the embodiment illustrated in Figs. 1 and 4, a small airtight cover J may be held. This small cover may be itself pierced with orifices j in that portion which is beaded in to the annular groove g^2 .

By turning the small cover J on the cover G, the orifices g^1 can be closed or opened wholly or partly at will.

An easy means of staying the cover consists for instance in making its ogival portion bear as shown in Figs. 1 and 5 upon the mushroom-shaped end k of a stem K which is itself formed on or fixed to the fuse body A.

The insulating sleeve G, instead of being formed of a steel stamping, may, as shown in the embodiment illustrated in Fig. 6, be made in two parts. In this embodiment it comprises an ogival portion G, for instance of aluminium, which may be fixed on the fuse body A by means of screws L, and a cylindrical element G^3 movable by means of its upper edge in an annular groove of the ogival portion G.

This element G^3 which may be made of sheet steel or of brass, will be provided with the driving nibs G^1 , G^2 , of the movable rings E, F.

Orifices g^1 may be pierced in the ogival portion G, and the latter may, as shown in the embodiment illustrated in Fig. 7, be formed with an annular groove g^2 for the engagement of an adjustable cover J.

The manner of reinforcing the insulating cover, as likewise the manner of fixing or mounting the latter upon the fuse body, may vary at will.

By fitting one and the same fuse with insulating covers of different profiles, it is possible to vary at will the ballistic characteristics of the projectile with which the fuse is intended to be used.

What I claim is:—

1. In a device for preventing premature extinction of combustion in time fuses for projectiles during flight, the combination of a fuse body having discharge ports for products of combustion, a casing supported on said body and spaced therefrom to form a chamber for receiving and for confining said products of combustion to create pressure therein during said flight.

2. In a device for preventing premature extinction of combustion in time fuses for projectiles during flight, the combination of a fuse body having adjustable fuse rings and discharge ports for products of combustion, an adjustable perforated casing supported on said body and spaced therefrom to form a chamber for receiving and for confining said products of combustion to create pressure therein during said flight, and lugs on said casing engaging said fuse rings to permit adjusting the latter.

3. In a device for preventing premature extinction of combustion in time fuses for projectiles during flight, the combination of a fuse body having discharge ports for products of combustion, a casing having valve-controlled openings, said casing being supported on said body and spaced therefrom to form a chamber for receiving and for confining said products of combustion to create pressure therein during flight.

4. A device for preventing premature extinction of combustion in time fuses for projectiles during flight as defined in claim 1, in combination with a stay member located between the body of said fuse body and said casing for increasing the rigidity of the latter.

5. In a device for preventing premature extinction of combustion in time fuses for projectiles, the combination of a fuse body having discharge ports for products of combustion, a casing having openings supported on said body and spaced therefrom to form

a chamber for receiving said products of combustion, and a revoluble cover mounted on said casing and provided with openings adapted to register with the openings
5 in said casing and regulate the escape of products of combustion from said chamber.

In testimony whereof I have signed this specification.

EUGÈNE SCHNEIDER.

Witnesses:

ANDRÉ MOSTICKER,
CHAS. P. PRESSLY.