

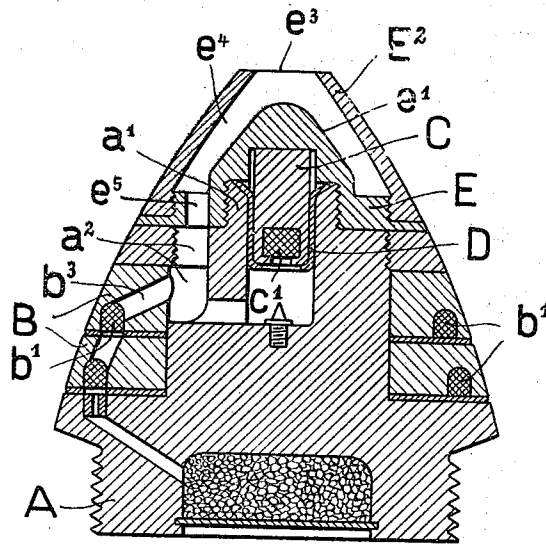
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O. OESTERLEN ET AL

SLOW COMBUSTION FUSE FOR PROJECTILES

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UNITED STATES PATENT OFFICE.

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SLOW-COMBUSTION FUSE FOR PROJECTILES.

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(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that we, OTTO OESTERLEN, residing at Essen, Germany, and KARL WIESER, residing at Werden, Ruhr, Germany, both citizens of the Republic of Germany, have invented a certain new and useful Improvement in Slow-Combustion Fuses for Projectiles (for which we have filed application in Germany, August 31, 1918), of which the following is a specification.

It has been found that the burning compositions of the ordinary slow combustion fuses burn away more slowly than is intended or that under some circumstances the combustion ceases altogether as soon as the fuses are used on projectiles which are fired at a high velocity or reach heights in their flight at which there is only a very small air pressure. This invention relates to a slow combustion fuse which obviates this disadvantage in a simple manner.

The invention will be described with reference to the accompanying drawings which show a construction of the fuse according to this invention the same being shown in axial longitudinal section.

A denotes the body of the fuse and B the fuse rings of the slow combustion fuse which contain the burning composition b^1 . In the body A of the fuse is movably mounted a firing plunger C adapted to ignite the burning composition b^1 and containing a primer e^1 and enclosed by a holder D of U-shaped formation. To a cylindrical extension a^1 of the body A of the fuse is screwed a plate E, which carries a substantially conical shaped cap e^1 mounted coaxially with the longitudinal axis of the fuse. To the plate E is rigidly attached an approximately conical shaped hollow cap E^2 the longitudinal axis of which coincides with the longitudinal axis of the fuse. This cap E^2 has on its upper end a circular through aperture e^3 , the centre point of which lies in the axis of the fuse. The hollow conical shaped annular space, which is formed by the cap E^2 and e^1 communicates through a boring e^5 in the plate E with a passage a^2 in the body A of the fuse running parallel with the axis of the latter, and from which a passage arranged obliquely to the axis of the fuse leads to the

burning composition b^1 . The passages b^3 and a^2 , the boring e^5 and the annular space e^4 with the opening e^3 constitute the only means of connection between the burning composition b^1 and the outer air. This passageway b^3 , a^2 , e^5 , e^4 , e^3 opens to the air in the direction of the longitudinal axis of the fuse.

After the projectile has been fired the air which is contained in the hollow space b^3 , a^2 , e^5 , e^4 undergoes considerable compression under the influence of the progressive velocity of the projectile, and the point at which the burning composition burns away, is therefore always under considerable pressure. As the opening e^3 of the hollow space b^3 , a^2 , e^5 , e^4 is located in the centre of the fuse and the point of combustion is farthest away from the centre, the centrifugal force which the air contained in the hollow space is subjected to, also acts in a direction, which increases the pressure at the point of ignition. The action of the pressure produced at the point of ignition in the manner described has the advantage that too sluggish a combustion or even the extinction of the burning composition is eliminated with certainty and moreover even when the projectile has a very high speed of rotation or when a height is reached at which there is only a very small air pressure.

Claims.

1. A slow combustion fuse for projectiles comprising a body provided with a cylindrical extension, fuse rings carrying a slow combustion fuse secured to said body, a firing pin mounted in said extension, a plate screw-threadedly engaging said extension and provided with a cap, a conical hollow cap open at its front end and centrally thereof screw-threadedly engaging said plate and forming with said first mentioned cap a hollow conical-shaped annular space, said body and fuse rings being formed with a passage-way providing communication between said annular space and said burning composition of the combustion fuse.

2. A slow combustion fuse for projectiles comprising a body, a cylindrical extension projecting from said body, fuse rings containing a slow combustion fuse secured to said body, a plate screw-threadedly engag-

ing said extension, a cone-shaped cap projecting from said plate, a cone-shaped hollow member attached to said plate and provided with an opening in the direction of the longitudinal axis of the fuse, said hollow member and cap forming a conical-shaped annular space, said body and fuse rings having formed therein a passage way providing communication between said annular space and the burning composition of the fuse.

3. A slow combustion fuse for projectiles comprising a body, a cylindrical extension formed on said body, fuse rings containing a combustion fuse secured to said body, a firing pin mounted in said extension, a plate provided with a conical shaped cap secured to said extension, said cap covering said firing pin, a frusto-conical shape hollow member secured to said plate, the free end of said member being open and disposed centrally of the fuse, said cap and hollow member forming a hollow conical-shaped annular space, said fuse ring and body having formed therein a passage way providing communication between said annular space and the burning composition of the fuse.

4. A slow combustion fuse for projectiles comprising a body provided with an extension and fuse rings containing the burning composition of the device, a cap secured to said body, a hollow member secured to said body and open at its free end centrally of the device, said cap and hollow member together forming an annular space which is inclined outwardly from the open end of said member, said body and fuse ring being provided with a passage way affording communication between said annular space and the burning composition of the fuse.

5. A slow combustion fuse for projectiles comprising a main body secured to a part of the body of the projectile, a fuse ring being rotatably mounted on the fuse body outside

said part of the body of the projectile and a slow combustion composition carried by said fuse ring, said composition communicating with the outer air space only by a passage-way which opens straight into the air space essentially in the direction of the longitudinal axis of the fuse.

6. A slow combustion fuse for projectiles comprising a main body secured to a part of the body of the projectile, a fuse ring rotatably mounted on the fuse body outside said part of the body of the projectile and a slow combustion composition carried by said fuse ring, said composition communicating with the outer air space only by a passage-way which opens straight into the air space in the center of the front surface of the fuse.

7. A slow combustion fuse for projectiles comprising a main body secured to a part of the body of the projectile, said fuse body being formed with a central extension provided with a hollow space, a fuse ring rotatably mounted on the fuse body outside said part of the body of the projectile, a slow combustion composition carried by said fuse ring, a firing plunger located in the hollow space of said central extension for igniting said composition, a conical cap covering the hollow space of said extension, and a conical hollow cap arranged on the front end of the fuse and forming with said first mentioned cap a hollow conical-shaped annular space, said slow combustion composition communicating with the outer air space only by a passage-way which opens into said hollow conical-shaped annular space.

The foregoing specification signed at Essen, Germany, this 24th day of June, 1920.

OTTO OESTERLEN.
KARL WIESER.

In presence of—
HANS GOTTMANN,
JOSEF OLBERTZ.