

988,610.

Patented Apr. 4, 1911.

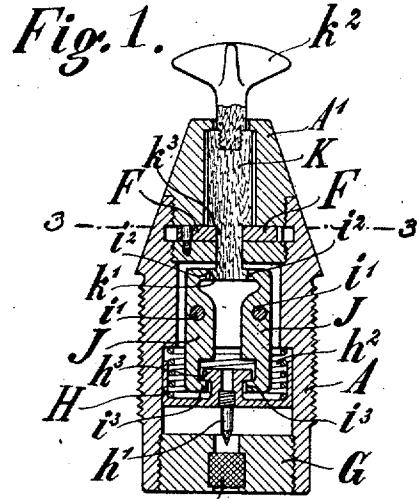


Fig. 2.

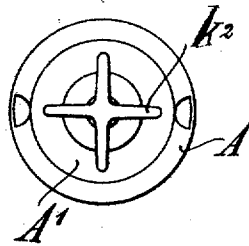


Fig. 3.

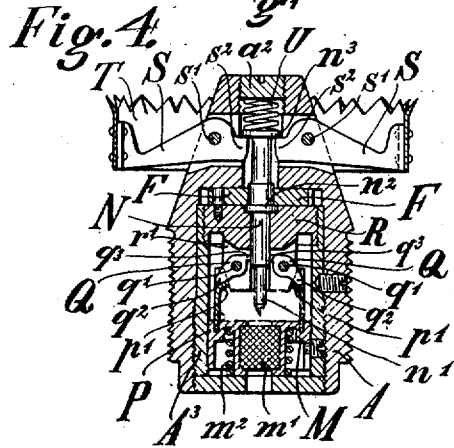
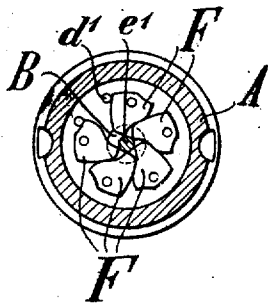
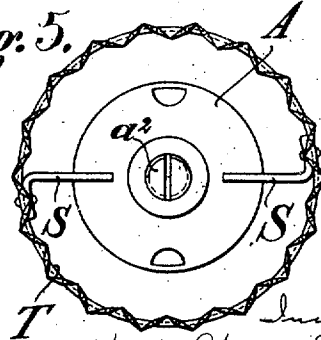


Fig. 5.



Witnesses
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IMPACT-FUSE.

988,610.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed July 28, 1909. Serial No. 510,102.

To all whom it may concern:

Be it known that we, KARL WIESEB, residing at Florastrasse 4, and WILHELM SCHWARTZ, residing at Bergstrasse 20, Brede-
ne-
y, Germany, both subjects of the Em-
peror of Germany, have invented a certain
new and useful Improvement in Impact-
Fuses, of which the following is a specifica-
tion.

The present invention relates to impact
fuses, and the object of the invention is to
provide an impact fuse which is so sensitive
that it enters into action even when the pro-
jectile, which is provided with the fuse,
hits the bag of a balloon.

In the accompanying drawings, Figure 1
is an axial longitudinal section of one em-
bodiment of the invention; Fig. 2 is a top
view of Fig. 1; Fig. 3 is a section on line
3—3, Fig. 1, looking from above; Fig. 4 is
an axial longitudinal section of a second em-
bodiment of the invention; and Fig. 5 is a
top view of Fig. 4.

The embodiment of the invention shown
in Figs. 1 to 3 will first be described. The
base-plug G, containing the pellet g^1 is
screwed into the fuse-body A. The hollow
member H, being under influence of the
spring h^2 , is slidable and loosely mounted in
the fuse-body and carries an ignition-needle
 h^1 . This spring tends to displace the hollow
member H in such a manner that the needle
 h^1 ignites the pellet g^1 . The hollow mem-
ber H is held in the transport-position
shown in the drawing through the medium
of two retaining levers J which are sym-
metrically arranged relative to the longitu-
dinal axis of the fuse and which can swing
on bolts i^1 which extend transversely to the
longitudinal axis of the fuse. The levers J
hold the member H in the transport posi-
tion by means of noses i^2 which engage be-
neath a collar h^3 on the hollow member.
The upper ends of the retaining levers J
are provided with noses i^2 , which lie against
a collar h^1 on a shank K which is slidably
arranged in the fuse-head A^1 . This shank
carries on its end, projecting outside of the
fuse-head, a cross-shaped head k^2 , and rests,
during the transport condition of the fuse,
with a shoulder k^3 against a safety device,
which is withdrawn by the action of the cen-
trifugal force on the firing of the gun. This
safety device (Fig. 3) consists of several
plate-shaped arresting or-retaining pieces

F, pivotally mounted and being of such a
shape, that each arresting piece in swinging
out of the safety position, is still able to
hold an adjacent arresting piece for a while
in the safety position (see Patent No. 60
932,173). One of the arresting pieces F,
which is intended to leave its safety position
first, is secured therein by a bolt d^1 (Fig.
3), which is moved away in firing by the in-
ertia, thereby liberating the said arresting-
piece. The shank K is preferably made from
wood or it may be formed by a hollow body
of other light material so that it has only
small inertia. The weight of the retaining
levers J is distributed in such a manner
relative to the axis of oscillation of the le-
vers that the center of gravity of the levers
is located between their axis of oscillation
and their nose i^2 . After the firing, the safety
device F is automatically released; and the
shank K is then held in its resting position
by means of the friction alone, between the
collar h^1 and the noses i^2 , which work like
jaws of a vise. This friction is sufficient to
balance the resistance presented by the air to
the head k^2 of the shank K during the flight
of the projectile, as the friction is relatively
great, because the centrifugal force created
during the flight of the projectile presses
the noses i^2 against the collar h^1 of the shank
K due to the above mentioned distribution
of the weight of the locking levers J. If the
head k^2 of the shank K hits the bag of a bal-
loon the shank K moves axially to such an
extent that the collar h^1 releases the noses i^2
of the retaining levers J. Under the action
of the centrifugal force, the lower ends of
the retaining levers J then swing away from
each other to such an extent that the noses i^2
move out of engagement with the collar h^1
of the hollow member H. The result is that
the spring h^2 comes into action and moves
the hollow member H rearwardly so that the
pellet is ignited by the needle h^1 .

In the embodiment shown in Figs. 4 and
5, the pellet m^1 is arranged in a hollow mem-
ber M which is loosely slidable but non-
rotatably arranged in a sleeve A^3 screwed
into the fuse-body A, the member M being
under the action of a spring m^2 . This
spring tends to move the pellet m^1 toward
the needle n^1 , but this movement of the
pellet m^1 on the member M is prevented by
a safety-device when the fuse is in the trans-
port condition. The safety-device mainly

consists of a ring P arranged on the member M and two retaining pieces Q which are swingingly mounted on bolts q^1 in a recess r^1 provided in a member R which closes the sleeve A^2 toward the fuse-head. The retaining pieces Q are provided with noses q^2 which engage over lugs p^1 of the ring P; and with other noses q^3 , in the manner of the jaws of a vise, the retaining pieces Q rest against a bolt N carrying the ignition-needle n^1 . This bolt N is of greater diameter than the ignition-needle, and is permanently prevented from moving toward the pellet m^1 by means of a collar n^2 . Over the collar n^2 engages a safety-device F, which corresponds to the safety device for the needle-bolt, described in connection with Figs. 1 and 3, and which can have one of its retaining pieces held in the safety position by means of a bolt in the manner described in connection with Fig. 4. The upper end of the bolt N has a further collar n^3 below which engage noses s^2 of two levers S which are arranged diametrically opposite one another and which can swing in a recess of the fuse-body about the bolts s^1 , which extend transversely to the longitudinal axis of the fuse. The free ends of the levers S carry a ring T (see also Fig. 5) which is of greater diameter than the fuse and which has its front edge formed as a saw. A spring U, which tends to hold the bolt N in the position in which the collar n^2 on the bolt lies against the member R, is arranged between the collar n^3 on the bolt N and a plug a^2 which is screwed into the fuse head. After the shot is fired the safety-device F is automatically released. If the projectile which is provided with the fuse, hits the bag of a balloon the bag is torn to pieces by the toothed edge of the ring T, and the resistance thus created causes the outer ends of the levers S to swing rearwardly and through the medium of the collar n^3 the noses s^2 of the levers S carry the bolt N along against the action of the spring U to such an extent that the needle n^1 becomes located opposite the noses q^3 of the retaining piece Q which formerly were lying against the bolt N. As the needle n^1 is of smaller diameter than the bolt N, the retaining pieces Q are not any longer held against turning and the ring P is therefore not held against axial movement. The result is that the spring m^2 enters into action and moves the hollow member M with the pallet m^1 against the needle n^1 .

Having thus described the invention, what is claimed and desired to be secured by Letters Patent, is:—

1. An impact fuse comprising a fuse-body, a pellet in said body, a part projecting outside of the fuse-body and movable to cause ignition of the pellet, a braking means for holding said movable part against move-

ment with a force only slightly in excess of the air pressure acting upon said part during the flight of the projectile, and a safety device preventing movement of said part by the action of the inertia on firing, said device being adapted to be automatically released after firing.

2. An impact fuse comprising a fuse-body, a pellet in said body, a part projecting outside of the fuse-body and movable to cause ignition of the pellet, a braking means for holding said movable part against movement with a force only slightly in excess of the air pressure acting upon said part during the flight of the projectile, and a safety device preventing movement of said part by the action of the inertia on firing, said device being adapted to be automatically released after firing and said movable part being cross-shaped on its projecting end for reducing penetrating effect without increasing air resistance.

3. An impact fuse comprising a fuse-body, a pellet in said body, a part projecting outside of the fuse-body and movable to cause ignition of the pellet, a braking means for holding said movable part against movement with a force only slightly in excess of the air pressure acting upon said part during the flight of the projectile, and a safety device preventing movement of said part by the action of the inertia on firing, said device being adapted to be automatically released after firing and said movable part having relatively small specific gravity, whereby its inertia developed in flight may be overcome by contact with a slightly resisting body.

4. An impact fuse comprising a fuse-body, a pellet in said body, a part projecting outside of the fuse-body and movable to cause ignition of the pellet, said part being so readily movable that the force required for moving the part is only slightly in excess of the resistance opposed to the part by the air during the flight of the projectile, and a safety-device preventing movement of said part by the action of the inertia on firing, said device being adapted to be automatically released when the projectile commences its flight, the projecting end of said movable part being formed as a serrated ring.

5. An impact fuse comprising a fuse-body, a pellet in said body, a part projecting outside of the fuse-body and movable to cause ignition of the pellet, said part being so readily movable that the force required for moving the part is only slightly in excess of the resistance opposed to the part by the air during the flight of the projectile, and a safety-device preventing movement of said part by the action of the inertia on firing, said device being adapted to be automatically released when the projectile commences its flight, and a braking means adapted to

be held in effective position by centrifugal force during the flight of the projectile to prevent said movable part from being moved by the resistance of the air.

- 5 6. An impact fuse comprising a part movable to ignite the fuse, a spring tending to effect the movement of said part, means whereby said movable part is held from movement against the action of the spring,
- 10 a member projecting outside of the fuse-body and movable to cause said means being released, a braking means for holding said movable member against movement with a force only slightly in excess of the air pressure acting upon said member during the flight of the projectile, said braking means being held in effective position by the action of said spring, and a safety-device preventing movement of said member by the action
- 15 of inertia on firing, said device being adapted to be automatically released after firing.
7. An impact fuse comprising a fuse-body, a part movable to ignite the fuse, a spring tending to effect the movement of said part,
- 25 a readily movable member projecting outside of the fuse-body and adapted to be moved by a force but slightly in excess of the resistance offered to said member by the air during the flight of the projectile, a
- 30 safety-device preventing movement of said member by the action of the inertia on firing, said device being adapted to be automatically released when the projectile commences its flight, and means whereby the
- 35 movable part is held from movement against the action of the spring, said means being adapted to be released when said member moves upon encountering a resistance greater than the resistance of the air.
- 40 8. An impact fuse comprising a fuse-body, a part movable to ignite the fuse, a spring tending to effect the movement of said part, a readily movable member projecting outside of the fuse-body and adapted to be
- 45 moved by a force but slightly in excess of the

resistance offered to said member by the air during the flight of the projectile, a safety-device preventing movement of said member by the action of the inertia on firing, said device being adapted to be automatically released when the projectile commences its flight, and means whereby the movable part is held from movement against the action of the spring, said means being adapted to be released when said member moves upon encountering a resistance greater than the resistance of the air, said means acting as a brake on said member to prevent the member being moved by the resistance of the air.

9. An impact fuse comprising a fuse-body, a part movable to ignite the fuse, a spring tending to effect the movement of said part, a readily movable member projecting outside of the fuse-body and adapted to be moved by a force but slightly in excess of the resistance offered to said member by the air during the flight of the projectile, a safety-device preventing movement of said member by the action of the inertia on firing, said device being adapted to be automatically released when the projectile commences its flight, and means whereby said part is held from movement against the action of the spring, said means being adapted to be released when said member moves upon encountering a resistance greater than the resistance of the air, said means comprising pivoted levers having one end engaging said part and having their other end held by centrifugal force in frictional connection with said member during the flight of the projectile to prevent the member being moved by the resistance of the air.

The foregoing specification signed at Bar-men, Germany, this 26th day of June, 1909.

KARL WIESER. [L. S.]

WILHELM SCHWARTZ. [L. S.]

In presence of—

OTTO KÖNIG,

WILLY KLEIN.