

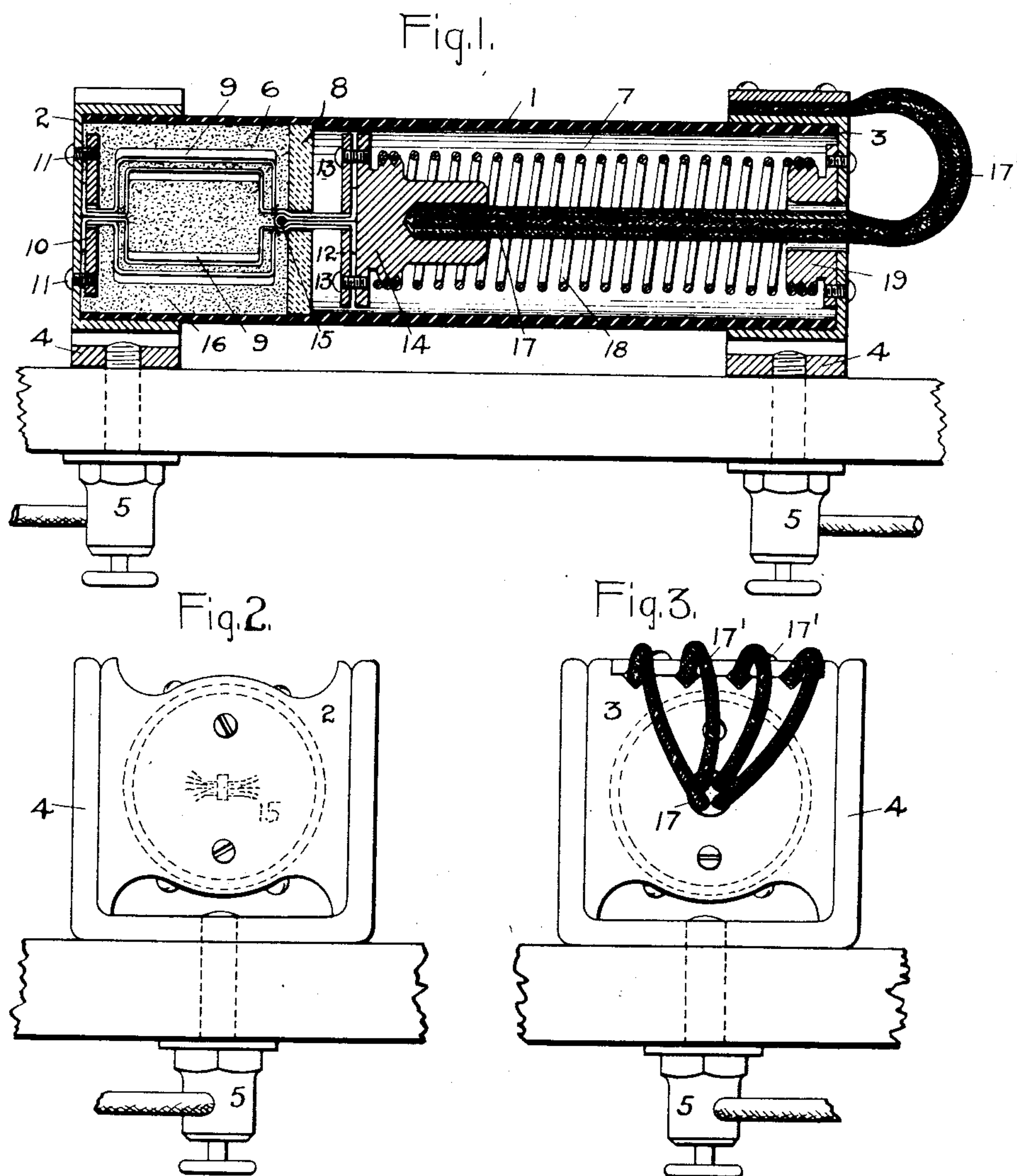
No. 867,496.

PATENTED OCT. 1, 1907.

H. GEISENHÖNER.

FUSE.

APPLICATION FILED JUNE 29, 1903.



WITNESSES:

*Robt L. Chapman*  
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Att'y.

# UNITED STATES PATENT OFFICE.

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## FUSE.

No. 867,496.

Specification of Letters Patent.

Patented Oct. 1, 1907.

Application filed June 29, 1903. Serial No. 163,515.

*To all whom it may concern:*

Be it known that I, HENRY GEISENHÖNER, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Fuses, of which the following is a specification.

This invention relates to cut-outs of the thermal type in which the circuit is opened by the melting of a section of fusible conductor. In these devices it is desirable to quickly separate the broken ends of the circuit to avoid the formation of an arc or to break it if it forms. This is in many cases effected by means of a spring, which keeps the fusible conductor under tension. But such a construction has the disadvantage, however, of causing a rupture of the fuse in case it is softened by a momentary and not dangerous overload.

One object of my invention is to provide a lock which will prevent the opening of the circuit by a temporary overload but will not interfere with the proper operation of the fuse when the overload persists.

The fuse is inclosed in a chamber filled with finely divided refractory material, such as sand, one end of the fuse being fastened at one end of said chamber. The spring is housed in an adjacent chamber and is connected with the fuse through a hole in the intervening partition. In order to prevent the escape of fire through this hole when the fuse blows, I provide suitable means for plugging the hole when the spring withdraws the connecting means between it and the fuse. Moreover, it is desirable to have some way of knowing when the fuse has blown, and my device provides for this by the changed arrangement of the flexible conductor connecting the spring with the line terminals.

In the accompanying drawing, Figure 1 is a longitudinal section of my improved fuse and Figs. 2 and 3 are end views thereof.

The body of the fuse is a cylinder 1 of insulating material, such as vulcanized fiber. It is closed at each end by a metallic cap 2, 3, said caps being suitably supported by saddles 4 to which the binding-posts 5 for the line wire are secured. The interior of the body 1 is divided into two chambers 6, 7, by a partition 8 of insulating material, such as lava. In the smaller chamber 6 is the fusible section of conductor, preferably composed of a plurality of strips 9 clamped at one end between the cap 2 and a metallic washer 10, which is fastened to said cap by screws 11. The other ends of the fuse-strips pass through a hole in the partition 8 and are clamped by a washer 12 and screws 13 to a metallic follower 14 adapted to slide in the chamber 7. The ends of the strips, or a portion of them, are carried back into the chamber 6 and looped around a piece of

flexible fire-proof material 15, such as a bunch of asbestos cord. The chamber 6 is filled with sand 16 or other finely divided refractory material.

A pigtail composed of one or more flexible conductors 17 is connected with the follower 14 and passes freely through a hole in the cap 3, beyond which it is curled forward and connected with the cap.

A helical spring 18 is attached at one end to the follower and at the other end to the cap 3, preferably by means of a tubular block 19 fastened to said cap and encircling the pigtail 17.

When the parts are in the position shown in Fig. 1 the tension of the spring is sustained by the partition 8, being transmitted thereto by the looped end of the fuse and the transverse locking-piece of asbestos 15. There is therefore no danger of rupturing the fuse in case it is softened by a temporary overload. But when a persistent overload melts the strips and the loop, the spring is released and instantly retracts the follower and breaks the arc. The locking-piece 15 being of refractory material does not volatilize, so that the flame is reduced to a minimum, which is a great desideratum when handling heavy currents. A metallic lock of any kind would add considerably to the flame and enhance the possibility of injuring the follower and spring. As a further safeguard, the flexible asbestos cord is forced by the pressure of the burning fuse-vapor into the hole in the partition and plugs it, so that the escape of fire into the spring chamber is almost wholly prevented. The pigtail 17 is pushed out through the hole in the cap 3 and its curl 17' is greatly enlarged, thus indicating at once the fact that the fuse has blown.

In accordance with the patent statutes, I have described the principle of operation of my invention together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is—

1. In a fuse, the combination with a body, of a partition therein having a hole, a fusible conductor having one end passed through said hole, a spring attached to the end of said conductor, and means for plugging said hole when the fuse blows.

2. In a fuse, the combination with a body, of a partition therein having a hole, a fusible conductor having one end passed through said hole, a spring attached to the end of said conductor, and a bunch of flexible fireproof material attached to said conductor on the opposite side of the partition from the spring.

3. The combination with a body containing two chambers, of a fuse in one of them, a follower in the other chamber attached to the end of said fuse, a spring for



actuating said follower, and a flexible conductor connected with said follower and passing freely through the end of said body.

4. The combination with a body, of caps on the ends thereof, a partition having a hole, a fuse attached to one of said caps, a spring-actuated follower connected with the other end of said fuse, and a flexible conductor connected with said follower and passing freely through a hole in the other cap.
5. In a fuse, the combination with a body, of caps on the ends thereof, a fuse and a spring therein, and a flexible conductor attached to said spring, passing freely through the end of said body and curled up to a point of attachment with the cap.
6. In a fuse, the combination with a body containing

two chambers, of a fuse in one of them, a spring in the other connected with said fuse, and a lock for preventing the operation of the spring when only a temporary overload occurs.

7. The combination with a body containing a fuse chamber and a spring chamber, of a fuse, a spring attached thereto, and a non-fusible locking-piece in the fuse chamber for sustaining the tension of the spring.

In witness whereof, I have hereunto set my hand this 27th day of June, 1903.

HENRY GEISENHÖNER.

Witnesses:

BENJAMIN B. HULL,  
HELEN ORFORD.