K. WIESER.

METHOD OF PRODUCING SPRINGS FOR MECHANICAL TIME FUSES.

APPLICATION FILED OCT. 28, 1909.

1,166,870.

Patented Jan. 4, 1916.

Fig. 1.

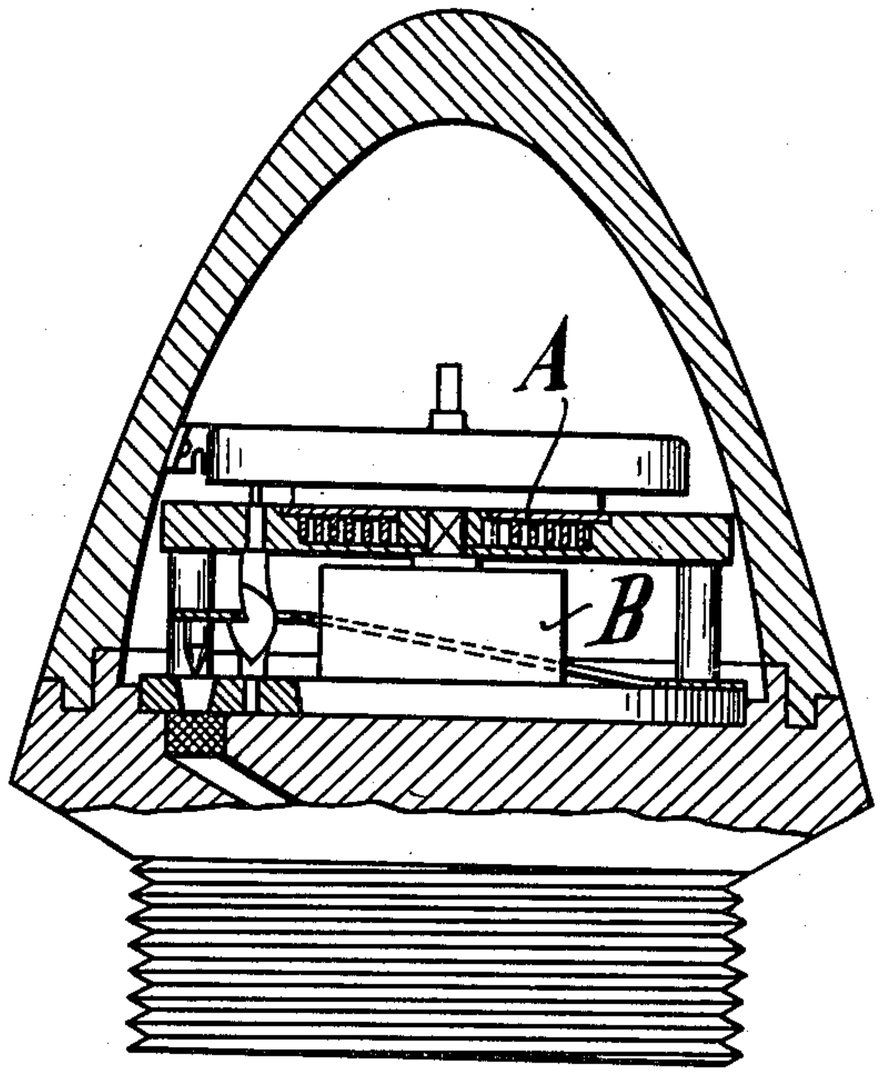


Fig. 2.

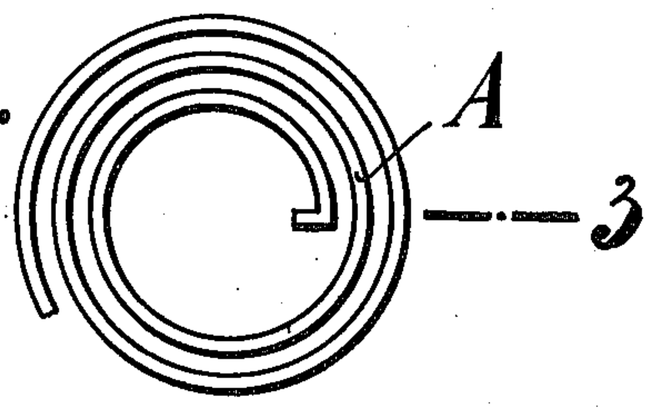
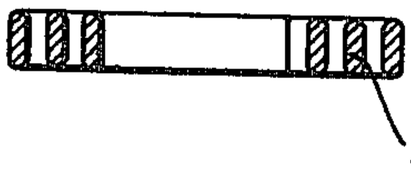


Fig. 3.



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UNITED STATES PATENT OFFICE.

KARL WIESER, OF BREDENEY, GERMANY, ASSIGNOR TO FRIED. KRUPP AKTIEN-GESELLSCHAFT, OF ESSEN-ON-THE-RUHR, GERMANY.

METHOD OF PRODUCING SPRINGS FOR MECHANICAL TIME-FUSES.

1,166,870. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed October 28, 1909. Serial No. 525,066.

To all whom it may concern:

Be it known that I, KARL WIESER, a subject of the Emperor of Germany, and a resident of Bredeney, Germany, have invented certain new and useful Improvements in Methods of Producing Springs for Mechanical Time-Fuses, of which the following is a specification.

The present invention relates to springs for mechanical time fuses with clock work. The tension springs heretofore used for the clock work of such fuses were commonly clock springs, that is to say, thin spirally wound steel strips rendered elastic by a hardening and tempering process. Such springs which occasionally break even in constantly working clock works where they are carefully protected from severe shock, owing to the difficulty in hardening them uniformly, afford only slight security against breaking when used for the clock work of mechanical time fuses. The causes of breakage reside in the peculiar strains to which the tension spring of the clock work of mechanical time fuses, are exposed. The spring remains for months under tension, during the storage period of the fuse in the magazine and then at the time of use of the fuse, is suddenly subjected to very heavy strain by the shock incident to firing and the centrifugal force incident to the flight of the projectile. In consequence, breakage occurs comparatively often and failures result.

The invention has for its purpose to provide mechanical time fuses with clock work, which are fully dependable. This purpose is attained, according to the invention, by producing a spiral spring from hard drawn steel wire whose natural elasticity is further increased by additional mechanical working in the cold state, such as by drawing, rolling or hammering, and furthermore in doing this, to change the section of the spring wire from round to flat with the greater dimension in the direction of the axis of the fuse and projectile, that is, perpendicular to the plane of spring coil.

Springs of hard drawn steel wire are known as such. But such springs soon lose their original elasticity according to experience, even though their use is restricted to those cases in which they are only occasionally subjected to strain (bolster springs).

It has been established by experiment that tension springs of hard drawn wire, whose natural elasticity has been increased by mechanical working in the cold state, are fully equal to the peculiar strains developed in mechanical time fuses. The springs are fracture-proof and retain their elasticity. Clock work provided with such springs are, therefore, wholly admissible for mechanical time fuses.

In the accompanying drawings, Figure 1 shows the assembly of a mechanical time fuse with clock work as frequently produced of late, Fig. 2 shows on a large scale a part of the tension spring for the same, and Fig. 3 is a section on the line 3—3 of Fig. 2.

A designates the tension spring of the clock work which is arranged in the housing B. The spring consists of a wire of elongated round form in cross section, which is produced from round wire by drawing or rolling in the cold state and thereby simultaneously subjected to the working necessary for increasing its elasticity.

Having thus described the invention, what is claimed as new therein and desired to secure by Letters Patent is:—

Method of producing spiral springs that will withstand sudden shock without deformation or breaking after having been kept under tension for a considerable time, said method consisting in taking cold drawn steel wire and subjecting said wire to an additional cold treatment for the purpose of increasing its elasticity, said treatment comprising cold working of the wire, changing its section from a round to an elangated cross section and coiling the wire thus flattened into a spring, with the greater dimension of the wire parallel to the axis of the spring coil.

The foregoing specification signed at Barmen, Germany, this 16th day of October, 1909.

KARL WIESER.

In presence of—
CHAS. J. WRIGHT,
OTTO KÖNIG.