

1724

H. Julius Smith's
Improvement in Electric Fuse.

112859

PUBLISHED MAR 21 1871



Fig. 1.



Fig. 2.



Fig. 3.

Witnesses

William W. Loomis
Chas. P. Gentry

Inventor

H. Julius Smith

United States Patent Office.

HENRY JULIUS SMITH, OF BOSTON, MASSACHUSETTS.

Letter Patent No. 122,626, dated March 22, 1871; extended March 7, 1873.

IMPROVEMENT IN ELECTRIC FUSES.

The following relates to a new and useful improvement in electric fuses.

I, Henry Julius Smith, of Boston, in the State of Massachusetts, have invented an improvement in Electric Fuses, of which the following is a specification.

The invention consists in the peculiar construction of the fuse-head, whereby it is provided with two separate chambers or magazines.

It also consists in the employment of novel devices and means for securing the wires within the fuse-head, whereby the fuse-head itself is made to serve as a shield to prevent communication between those portions of the fuse-wires which are just outside of the head.

On account of its high cost, it is desirable to use as little of the printing compound as is feasible; that is, enough of it to make the ignition of the fuse certain, but not enough of it to give so much flame as to render the igniting the waste. To increase the amount of flame, the fuse is charged with an inferior powder.

When there are to be used near the place of manufacture, the printing may be placed in the same chamber with the inferior explosive material of the fuse; but when the fuses are transported any considerable distance, or are loaded to any considerable extent, the lamp of printing is apt to be ground into dust, and by being diffused through the rest of the charge its extraordinary capability of ignition is lost. By this invention the waste power of the printing is prevented.

In the drawing:—

Figure 1 is an exterior view of my fuse.

Figure 2 is a sectional view taken at right angles to Fig. 1.

Figure 3 is a sectional view of a modification of my invention.

The figures are enlarged to three times the actual size of the parts represented.

The shell of the fuse is of wood, and consists of two cups, but it differs from other fuses made of two cups in having both cups in an upright position, the bottom of the smaller cup, marked B in the drawing, fitting into the larger cup A, as shown in Fig. 2.

The smaller cup is turned out, so as to leave a thin bottom, as shown. Two wires are then cut upon my particular, about half way from the bottom to the top of the cup, deep enough to make small holes at the bottom of each side, opening into the cup.

A minute lump of printing having been placed in the bottom of the cup, the extremities of the two wires of the fuse-head are stripped of their insulating covering, and after having their ends bent into hooks, as shown in Fig. 2, are pushed through the holes at the bottom of the sides.

A wooden plug, whose diameter is equal to that of the hole of the cup, is then driven into the cup far enough to leave a chamber, B, Fig. 2, only large enough to hold the printing in place.

The plug contains the two hooks and holds them in place near the bottom of the cup, at the same time keeping them far enough apart to break the circuit by opening the printing at the proper time. The plug fits the cup so closely that the wires are well secured within it. The smaller cup, with the wires thus attached, is then driven into the larger cup, bottom downward, leaving a chamber, A, as shown in Fig. 2, containing the powder or explosive compound, which has previously been placed in the larger cup.

The operation of the fuse is as follows:—

The spark, passing from one wire to the other in the smaller chamber, passes through and ignites the printing. The printing exploding, burns and the bottom of the small chamber and ignites the powder in the large chamber. A second explosion follows, which ignites the charge of the fuse.

It will be observed that the small cup, with its wires and printing, as above described, is in itself a fuse; and it is obvious that a fuse consisting of one cup, with its wires extending through sides, and secured by a plug pushed in from the mouth, as above described, will be of practical use in blasting, when the chamber at the bottom is left sufficiently large to hold the explosive charge.

The advantage gained by constructing a fuse with two separate chambers may also be gained when the insulated wires of the cord pass in at the mouth of the smaller cup, as shown in Fig. 3. In this case the ends of the wires are stripped of their coverings and bent into hooks, and are kept apart and secured to the fuse-head by a long wooden plug, C, as shown.

I am not aware that the fuse above described before been secured to the fuse-head by a plug driven into the mouth of the fuse, the plug of the same time serving to insulate the wires and close up the magazine; but the best way to secure the wires with the fuse-head is to make use of the holes at the bottom of the sides, cut as above described, and the wires may be cut with equal advantage, whether the smaller cup is driven into the larger bottom downward, or whether it is inserted before being driven into the larger cup, or whether a cylinder D, used in the place of the smaller cup, or whether the fuse-head consists of one cup. When the small cup is reversed, the stripped ends of the wires are pushed through the holes at the bottom of the sides into the cup.

A plug is then driven between the wires across the bottom of the cup, and the wires are bent over the end

of the plug, so as to come within a short distance of such rib.

The advantage of having the face-band serve as a shield between the wires outside of the face-band may be obtained by inserting the wires through small holes made by boring directly through the sides of the face-band into the chamber, without cuttings; but there is a liability to split the wood, which is avoided by the use of the ribs.

I am aware that I am not the first to make a face consisting of two chambers, and I wish to limit my invention in this respect to my two shells, one being a face in itself, as herein described, and fitting closely within the other, as specified.

I claim—

1. A face, constructed with two chambers, when the shell forming one of the chambers with its wires and plugs forms an independent face, as described,

and fits closely within the shell containing the common portion, as specified.

2. Attaching the wires by passing them through the sides of the face-band, substantially as described.

3. A rib or ribs, cut into the side of the face, substantially as described, for the purpose described.

4. Securing the face-wires to the face-band by a plug driven into the mouth of the face, when the plug secures the wires and closes the magazine, substantially as shown in Fig. 2.

5. A face, consisting of one cup, with its wires entering through the sideband secured by a plug pushed in from the mouth, substantially as described.

II. JULIUS SMITH.

Witness:

WILLIAM W. SWAN,
CHAR. F. GOSWELL.