

J. HARLÉ.
DOUBLE ACTING FUSE.
APPLICATION FILED AUG. 17, 1908.

932,701.

Patented Aug. 31, 1909.

Fig. 1.

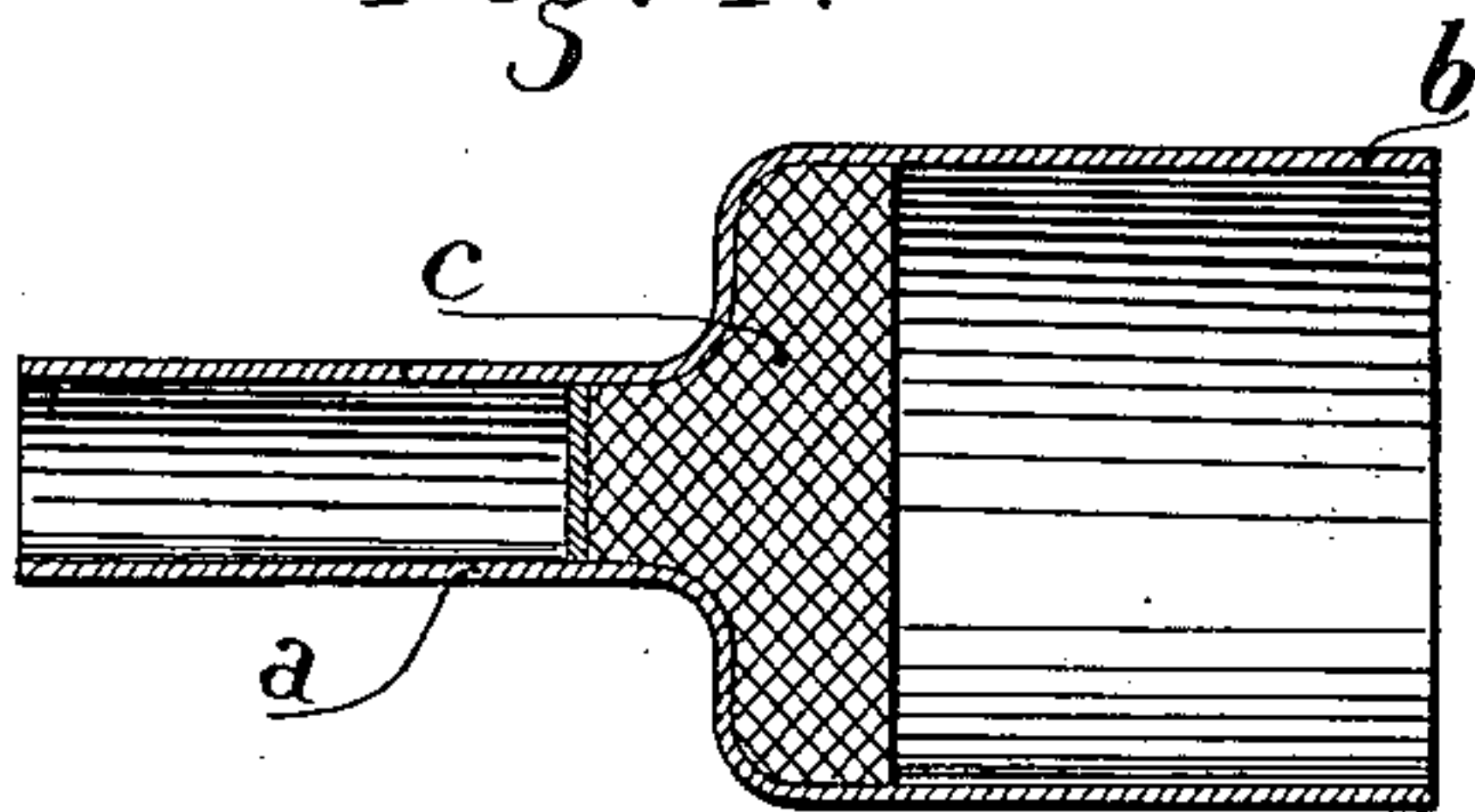


Fig. 2.

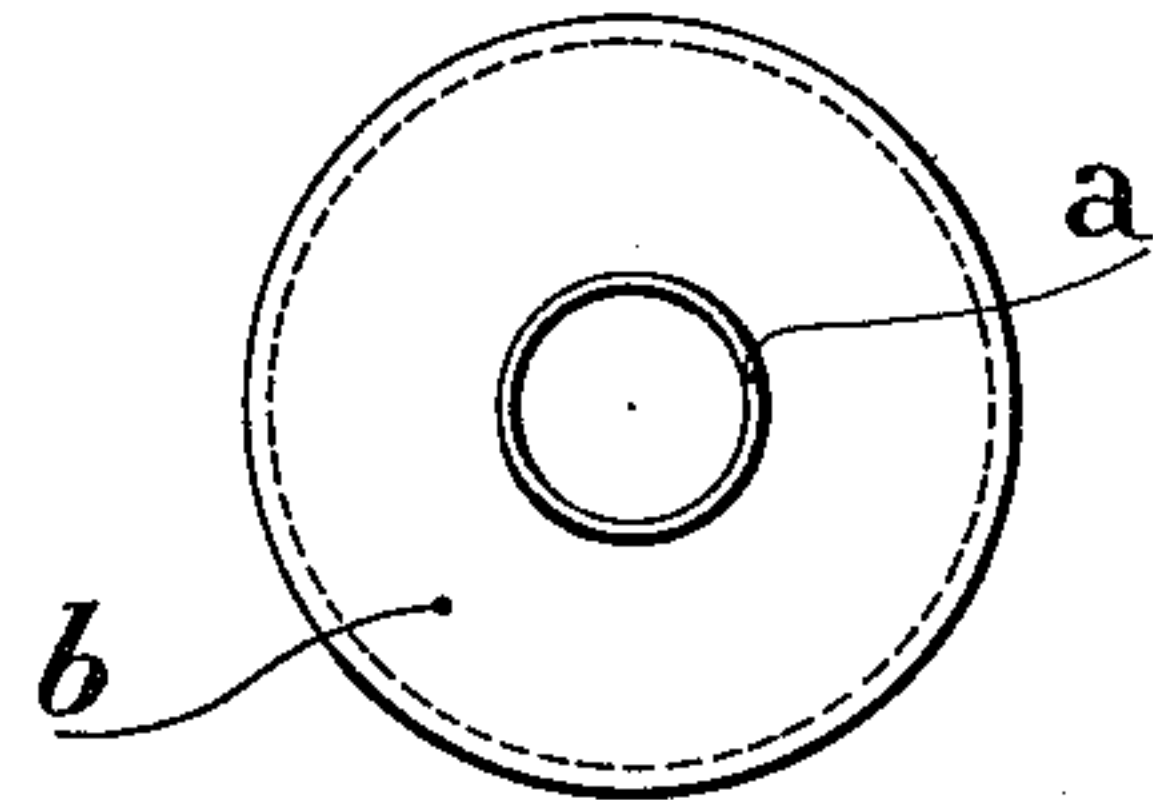


Fig. 3.

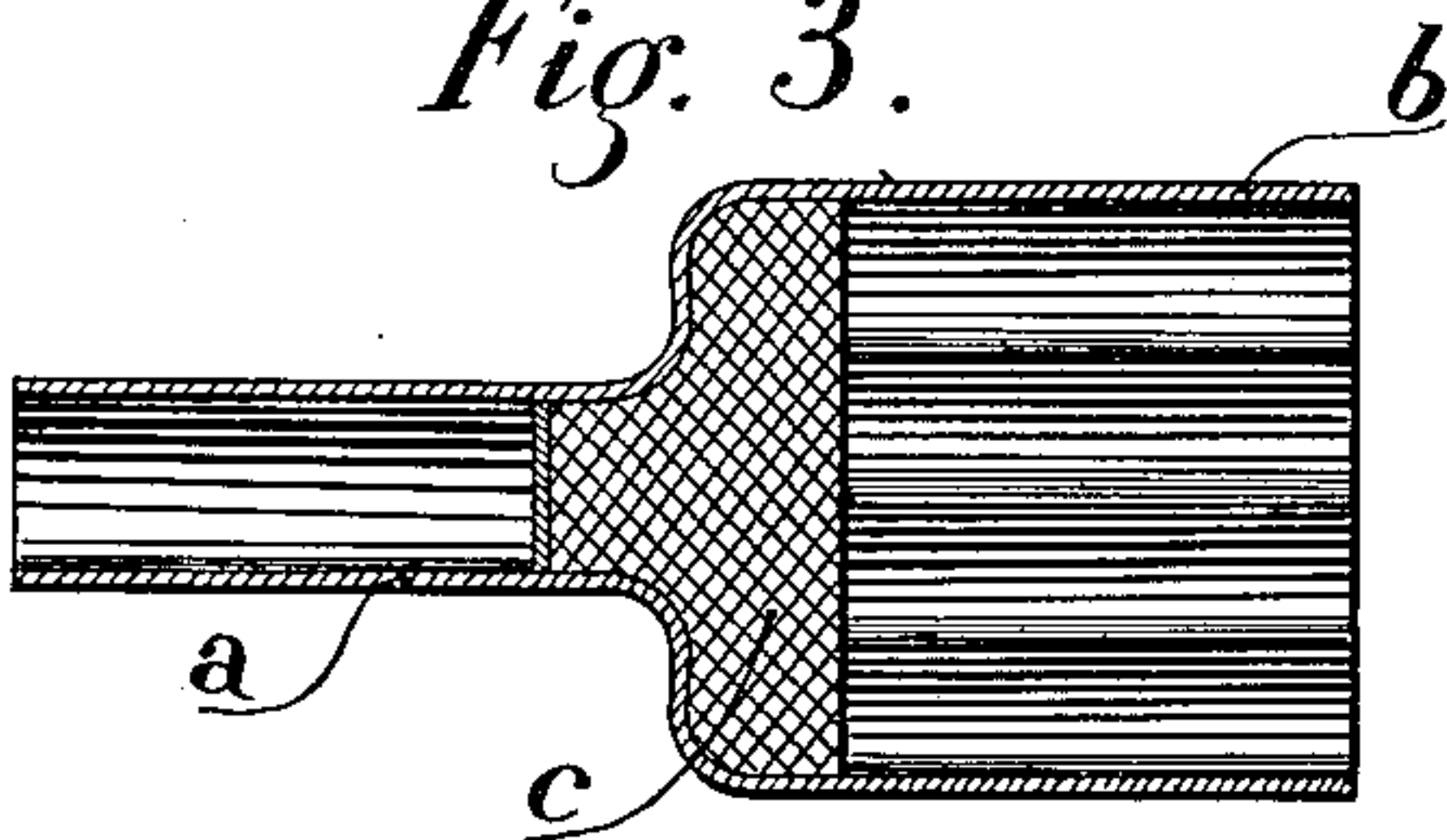


Fig. 4.

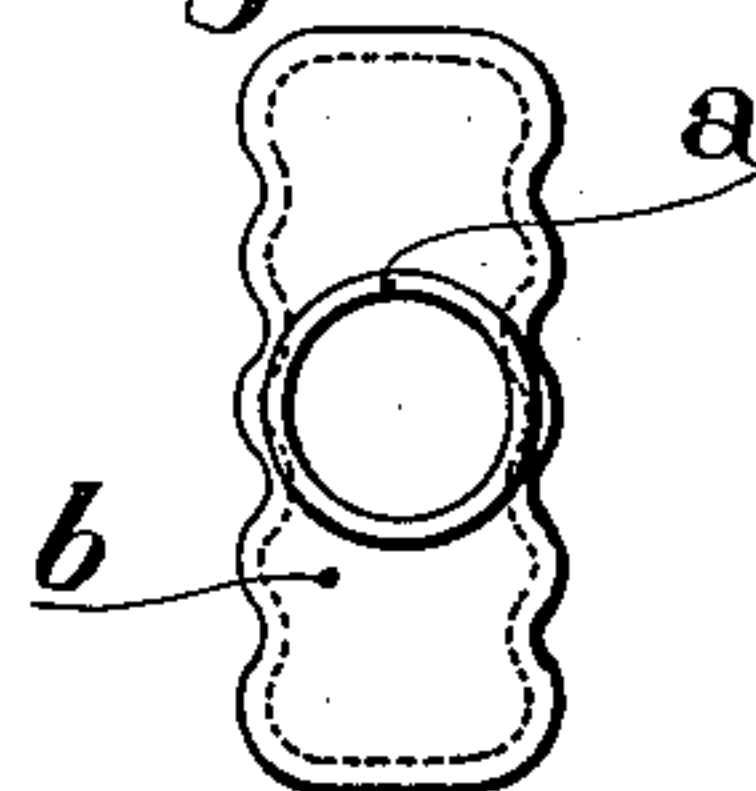


Fig. 6.

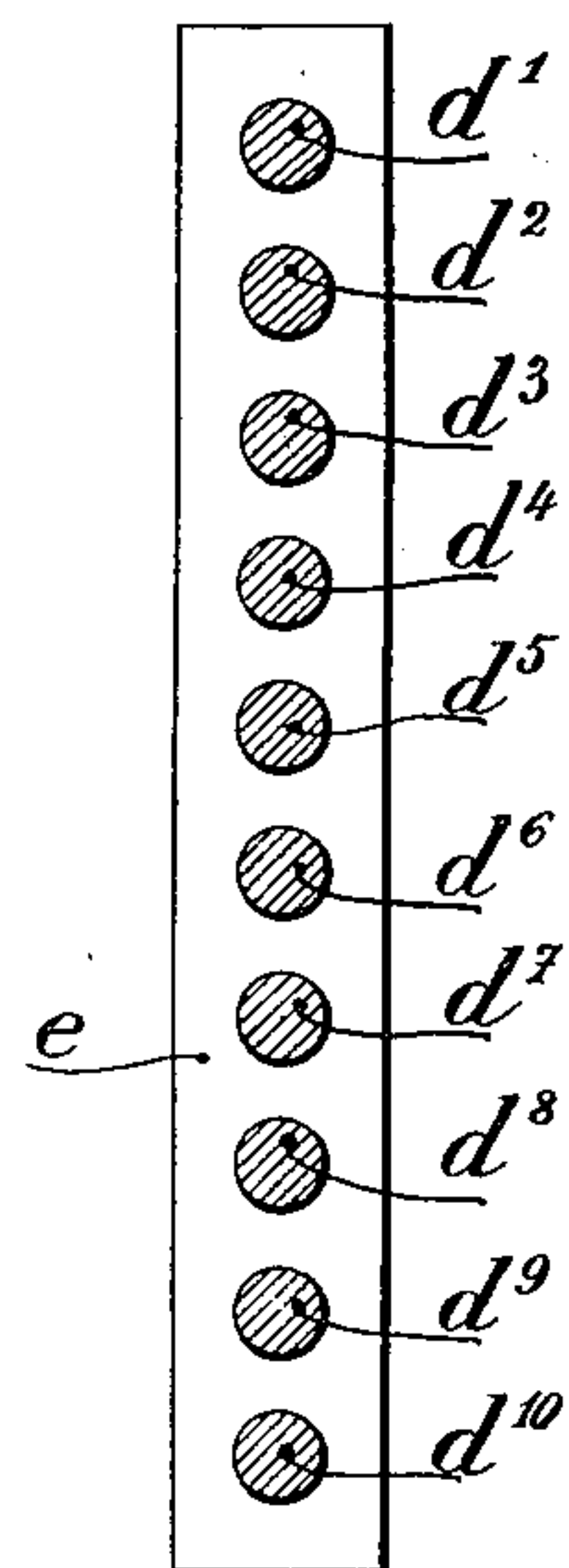
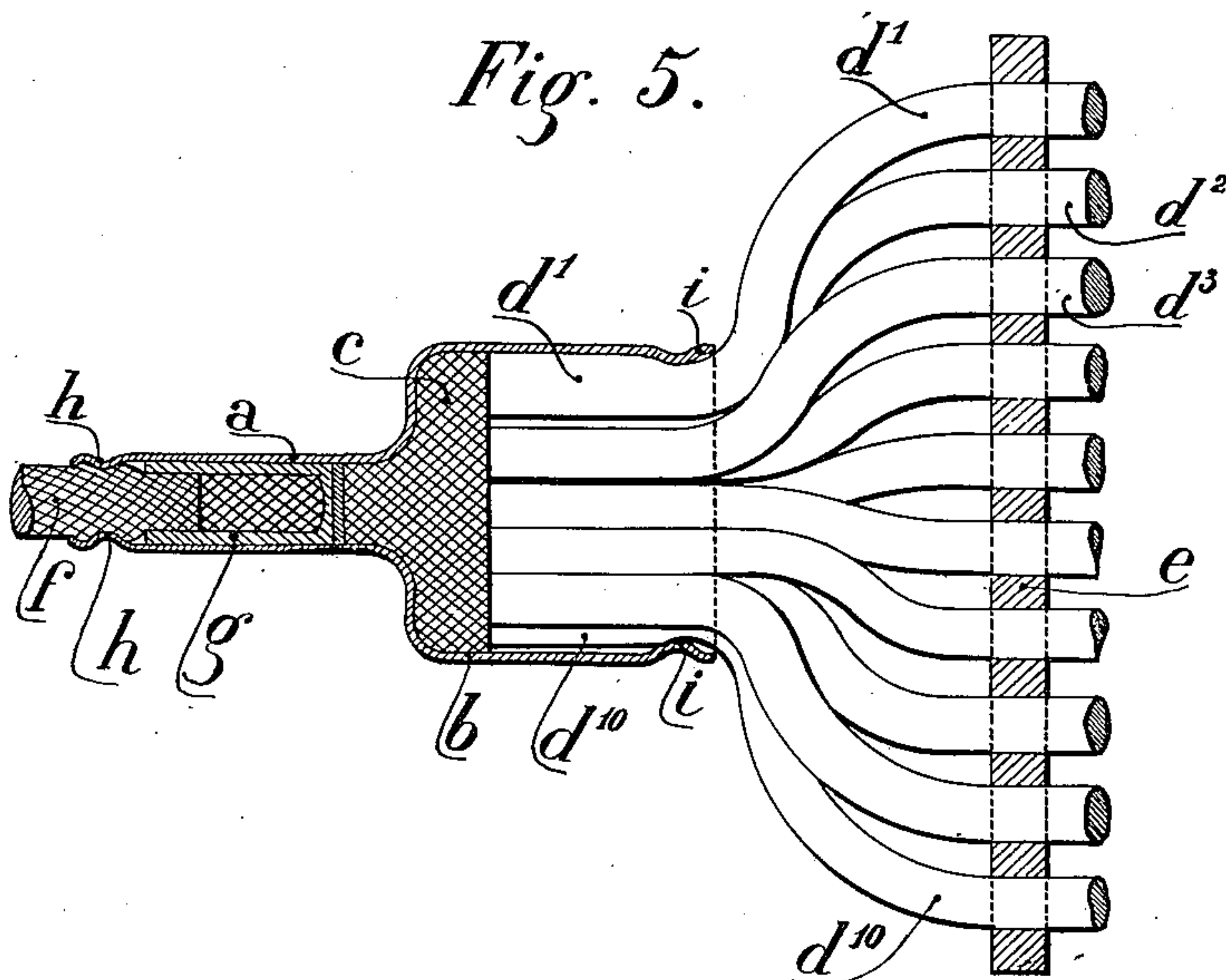


Fig. 5.



Witnesses:
A. Fayat
A. Schanzelberger

Inventor:
Jean Harlé
by *Ferdinand Harlé*
K. M. M. M.

UNITED STATES PATENT OFFICE.

JEAN HARLÉ, OF ROUEN, FRANCE.

DOUBLE-ACTING FUSE.

932,701.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed August 17, 1908. Serial No. 448,875.

To all whom it may concern:

Be it known that I, JEAN HARLÉ, a citizen of the French Republic, and resident of Rouen, France, have invented new and useful Improvements in Double-Acting Fuses, of which the following is a specification.

The use of double acting fuses which consist of an inner detonating tube surrounded by an annular layer of gunpowder serving as slow fuse suggests several problems which are very interesting, and particularly the following two:—1, to pass from the fusing action of a double acting fuse to the detonating action of a plurality of double acting fuses; 2, to realize the simultaneous detonation of any number of double acting fuses with a very restricted number of detonators of fulminate of mercury. For realizing these problems a special connecting piece is used which in itself is not new, as such instruments have already been used for the simultaneous ignition of a number of fuses, but never before for the simultaneous detonation of a number of detonating tubes or, as in the present case, of double acting fuses.

The connecting piece used consists of a suitably shaped socket adapted to receive a suitable number of double acting fuses, of a tube of small diameter for the reception of the initial double acting fuse and of an intermediate chamber which contains explosive, preferably trinitrotoluene, for communicating the detonation of the initial fuse to the plurality of fuses in the main socket.

In the accompanying drawings various forms of the connecting piece are shown by way of example.

Figures 1 and 2 represent in longitudinal section and in cross section respectively one form of construction while Figs. 3 and 4 and Figs. 5 and 6 represent two other forms of construction of the device.

The socket, destined to receive the plurality of double acting fuses is designated *b* and the tube for the initial double acting fuse is designated *a*. *c* is the central part between the socket *b* and the tube *a*. The socket *b* may be of circular cross section, as shown in Figs. 1 and 2, or of rectangular cross section as shown in Figs. 3 and 4, in which case its walls preferably are fluted, each fluting being destined to receive one of the plurality of double acting fuses *d*¹ and so forth. The tube *a* for the initial fuse *f* is of such diameter that fuse *f* will form a snug fit therein. The central part *c* is filled

with a suitable detonating explosive, such for example as trinitrotoluene. A detonator *g* has been fixed upon the end of the initial double acting fuse *f* before the same is inserted in its tube, said fuse *f* being secured in tube *a* by means of a ridge *h*, a ridge *i* of socket *b* serving to secure the double acting fuses *d*¹ and so on in their positions. To keep the double acting fuses *d*¹, *d*², *d*³ etc. to *d*¹⁰ apart, a guide plate *e* may be used, as shown in Figs. 5 and 6, which has as many perforations as there are double acting fuses inclosed in the socket *b*. If there are more than ten double acting fuses to be detonated at the same time, each of the double acting fuses *d*¹ to *d*¹⁰ can serve as an initial fuse for another set of double acting fuses which are fixed upon the end of said fuses *d*¹ etc. in the same manner as the fuses *d*¹ are fixed upon the end of fuse *f*.

The charge is detonated as follows:—The initial double acting fuse *f* is either ignited or detonated according to the prevailing circumstances. If it is ignited, the detonator *g* will detonate the intermediate charge *c* which in its turn simultaneously detonates all the double acting fuses fixed in socket *b*. If the initial double acting fuse *f* is to be detonated, the detonator *g* may be dispensed with.

The device described and shown is characterized by absolute safety in manipulation, by great simplicity and by the fact that owing to the very restricted number of detonators required for the simultaneous detonation of a plurality of double acting fuses, the expenses are considerably reduced.

I claim:—

A device for the simultaneous detonation of a plurality of double acting fuses by one double acting fuse comprising a fluted cylinder in which the ends of the plurality of double acting fuses are fixed, a tube in which the end of the initial double acting fuse is fixed, a chamber connecting said socket and said tube, and a charge of detonating explosive, in said chamber for communicating the detonation of the initial fuse to the plurality of fuses, substantially as described and shown and for the purpose set forth.

JEAN HARLÉ.

Witnesses:

F. AUDRIEN,
H. ROTTERS.