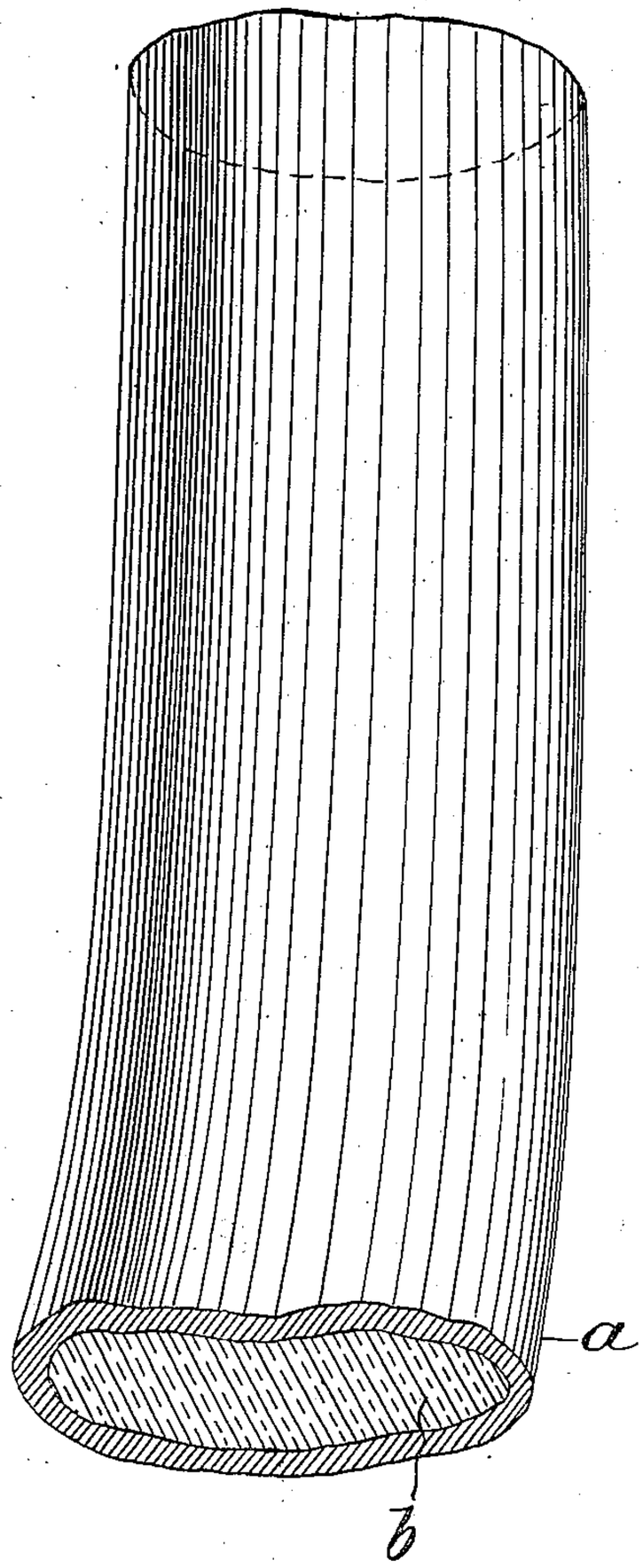
No. 882,154. PATENTED MAR. 17, 1908.

L. LHEURE.

FUSE FOR MINES.

APPLICATION FILED JAN. 27, 1905.



Witnesses
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UNITED STATES PATENT OFFICE.

LOUIS LHEURE, OF PARIS, FRANCE.

FUSE FOR MINES.

No. 882,154. Specification of Letters Patent. Patented March 17, 1908.

Application filed January 27, 1905. Serial No. 242,942.

To all whom it may concern:

Be it known that I, LOUIS LHEURE, citizen of France, residing at Paris, France, have invented certain new and useful Improvements in Fuses for Mines, of which the following is a specification.

This invention has reference to fuses for mines or the like.

The filling of fuses with explosives of small density presents very considerable difficulties but by means of the fuse which forms the object of the present invention a system of filling or charging is attained which is very easy and very certain the invention being based on the substitution of either trinitrotoluene or trinitrobenzene for the explosives usually employed.

In the accompanying drawing the improved fuse for mines is shown in a perspective view, one end being shown in cross section.

The mode of manufacture consists in filling with melted nitrated hydrocarbon of the aromatic series, in particular with trinitrotoluene *b* a tube of lead or of tin *a* of suitable internal diameter and of reducing the tube afterwards to the final diameter desired, by successive drawing operations in a rolling mill or a draw-plate after the cooling of the explosives. The fuse thus obtained possesses the property of exploding under the action of a detonator of 1.50 grains of fulminate of mercury, and of transmitting the explosion with velocities of 5000 and 6000 meters per second. This property of transmitting the explosion with great velocities is retained even with small diameters. The tubes have been made as small as 2 millimeters external diameter, thus forming in effect detonating wires in which the velocity of the explosion has been about 4000 meters.

The various ordinary modes of ignition (other than the fulminate detonator) particularly violent shocks or blows and friction, are without action on the detonating tubes of trinitrotoluene. In a lighted fire the tubes burn quietly without scattering or decrepitating. They are therefore devices which are susceptible of being handled with almost complete security. They may be employed either for effecting the simultaneous detonation of several explosive charges or for insuring the ignition of a single isolated explosive charge. Moreover the filling of trinitrotoluene may be replaced by trinitrobenzene, as already indicated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

An improved method for the manufacture of fuses for mines consisting in melting trinitrotoluene, in filling the melted trinitrotoluene into a tube and in drawing out the filled tube to the required length in reducing its diameter, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LOUIS LHEURE.

Witnesses:
JOHN BAKER,
ALFRED FREY.