

[54] **DEVICE FOR DESTROYING
MACHINERY**

[75] Inventor: **Hans Guntermann**, Essen-Steele,
Germany

[73] Assignee: **Elektro-Thermit GmbH**, Essen, Ger-
many

[22] Filed: **July 14, 1971**

[21] Appl. No.: **162,504**

[30] **Foreign Application Priority Data**

July 18, 1970 Germany.....P 20 35 737.3

[52] U.S. Cl.....**102/90, 102/66**

[51] Int. Cl.....**F42b 11/24**

[58] Field of Search.....102/90, 87, 66, 6

[56] **References Cited**

UNITED STATES PATENTS

3,291,050	12/1966	Ahlert et al.	102/90
2,790,389	4/1957	Ackerman, Jr.	102/90
2,791,178	5/1957	Thompson	102/90 X

FOREIGN PATENTS OR APPLICATIONS

1,153,664	8/1963	Germany	102/90
-----------	--------	---------	--------

Primary Examiner—Benjamin A. Borchelt

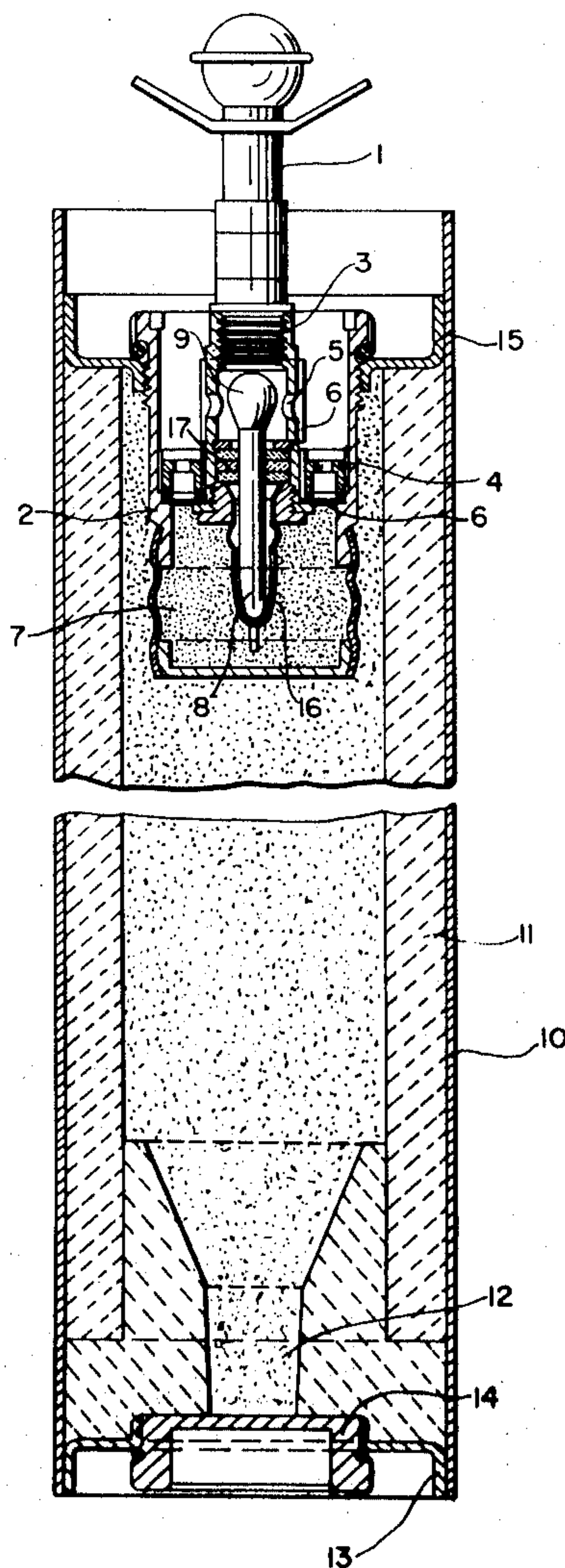
Assistant Examiner—Harold Tudor

Attorney—James E. Bryan

[57] **ABSTRACT**

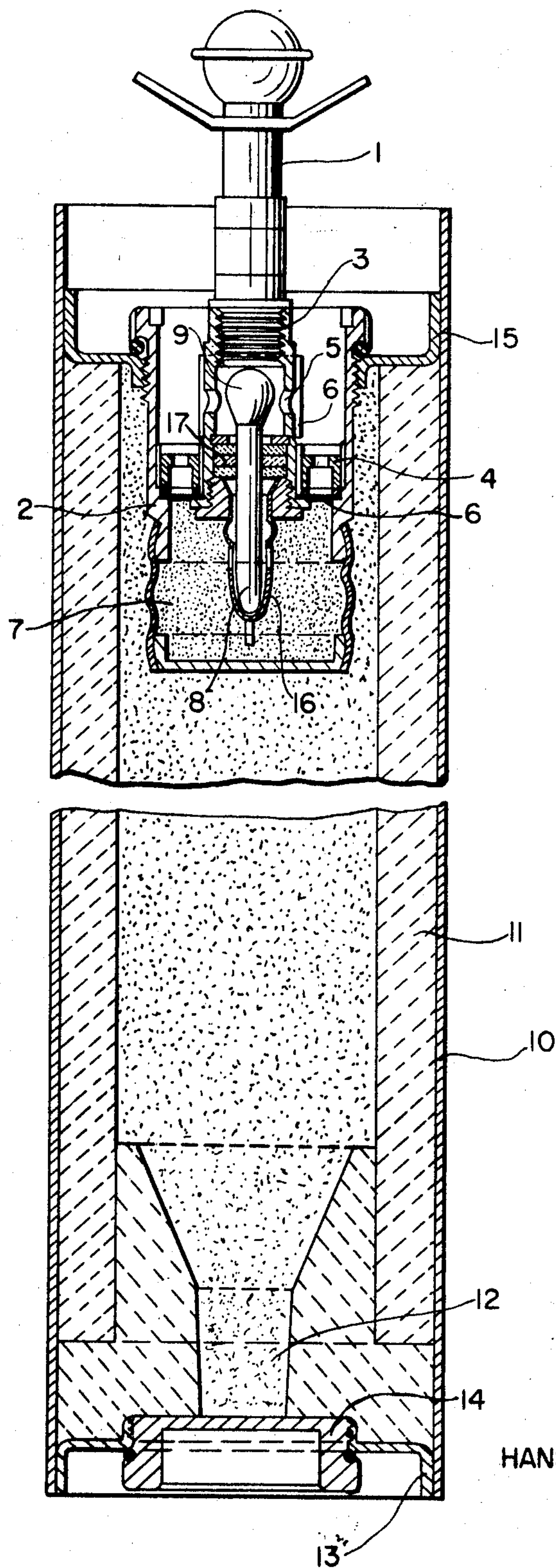
This invention relates to an improvement in a device for destroying machinery comprising a highly fire-resistant outer casing containing an aluminothermic reaction mixture, at least one outlet opening in the casing, and igniter means in said casing. The improvement comprises ignition transmitter means connected to said igniter means and including inner casing means closed on one end, perforated inner tubing means mounted in said inner casing means, perforated annular ring means between said inner tubing means and said inner casing means, easily meltable means covering the perforations in said inner tubing means and said annular ring means, an ignition mixture in said inner casing, and ignition rod means extending at one end into said explosive mixture and at the other end into said inner tubing means.

6 Claims, 1 Drawing Figure



PATENTED JUN 5 1973

3,736,878



INVENTOR
HANS GUNTERMANN

James E. Bryan
ATTORNEY

DEVICE FOR DESTROYING MACHINERY

This invention relates to a device for destroying or rendering inoperative various types of machinery and mechanical devices such as tanks and, in particular, gun barrels.

The device includes a casing lined with a highly fire-resistant material and which contains an aluminothermic reaction mixture. The casing is provided with one or more outlet openings for the high temperature aluminothermic reaction products and, in one end of the device, there is an igniter which operates in conjunction with a hot-burning ignition transmitter for initiating the aluminothermic reaction.

A device of this type is described, for example, in German Pat. No. 1,153,664. The device disclosed in the aforementioned German patent has the disadvantage, however, that during the reaction of the aluminothermic reaction mixture, and thus before the discharge of the aluminothermic reaction products, the pressure in the container or casing increases to such an extent that there may be a rupture of the end cap which covers the ignition transmission element so that molten reaction products as well as unreacted portions of the aluminothermic reaction mixture are ejected upwardly from the aluminothermic charge. Accordingly, the device does not operate in a uniformly safe manner nor does it operate in a quiet and unseen manner, as is desired.

The present invention provides a device which eliminates the foregoing disadvantages in a simple and operationally secure manner. The desirable features of the present invention are achieved by a construction in which the igniter is connected to an ignition transmitter or carrier composed of an inner casing which is closed at the bottom thereof and has a shorter perforated inner tubing mounted within the inner casing, which inner tubing serves as a detonator casing. A perforated annular ring connects the inner casing and the inner tubing and the perforations in the inner tubing as well as in the annular ring are covered by easily meltable or combustible foils, preferably made of a thermoplastic synthetic material such as polyvinyl chloride, for example.

The chamber formed between the inner casing, the inner tubing, and the perforated annular ring is filled with an ignition mixture of known composition into which one end of a highly combustible ignition rod is inserted. The ignition rod has an ignition head on the other end thereof and the ignition head is positioned in the inner tubing in a manner such that the perforations in the inner tubing are opposite the ignition head.

The device of the invention will be further illustrated by reference to the accompanying drawings in which one embodiment is shown in section. The device of the invention is composed of the external cylindrical casing 10 which is lined with a highly fire-resistant material 11. At the lower end of the casing, the lining has an outlet opening 12 which is covered by a metallic plug 14 which is threaded into the lower end wall 13 of the casing 10.

The ignition transmitter of the invention is threaded into the upper end wall 15 of the casing 10. The ignition transmitter is composed of an inner casing 2 and a perforated inner tubing 3 of a smaller diameter than the inner casing 2, which tubing serves as a detonator casing for the igniter 1. The inner tubing 3 is mounted

within the inner casing 2 by means of the perforated annular ring 4. The perforations in the annular ring 4 as well as the perforations 5 in the inner tubing 3 are covered by easily meltable or combustible foils 6, which foils are waterproof.

The chamber 7 formed by the inner casing 2, the inner tubing 3, and the annular ring 4 is filled with an ignition mixture of known composition into which the lower end of the ignition rod 8 projects. The ignition rod 8 has an ignition head 9 on the upper end thereof which ignition head is positioned in the inner tubing 3. The ignition rod 8 is mounted in the inner tubing 3 by means of an annular ceramic supporting element 17 and the lower end of the ignition rod 8 is surrounded by a perforated tube 16 which is threaded into the inner tubing 3 and thus protects the ignition rod 8 from damage. Instead of the supporting element 17, it also is possible to employ an asbestos cord or an asbestos ring, as well as other materials which are unaffected by high temperatures.

Instead of the manual igniter 1 disclosed in the drawings, it also is possible to use an electric igniter which need only ignite the ignition head of the ignition rod 8.

In the operation of the device disclosed in the drawings, ignition is effected by means of a friction igniter. The spark which is formed by actuation of the igniter ignites the ignition head 9 of the ignition rod 8. As a result of the heat generated in this manner, the covering foil 6 of the inner tubing 3 is melted through. The ignition then propagates from the ignition head 9 by means of the ignition rod 8 to a point where, finally, the ignition mixture contained in the inner casing 2 is reacted by the heat developed by the ignition rod 8. The heat generated during the reaction of the ignition mixture also melts the covering foil 6 over the perforations in the annular ring 4. The pressure generated during the ignition is relieved through the perforations in the ring 4 as well as through the perforations 5 in the inner tubing 3 and thus does not buildup.

In the further course of the reaction, the ignition mixture melts through the inner casing 2 and ignites the aluminothermic reaction mixture, which latter finally melts the sealing plug 14 whereby the reaction products escape through the opening so formed.

It will be obvious to those skilled in the art that many modifications may be made within the scope of the present invention without departing from the spirit thereof, and the invention includes all such modifications.

What is claimed is:

1. In a device for destroying machinery comprising a highly fire-resistant outer casing containing an aluminothermic reaction mixture, at least one outlet opening in the casing, and igniter means in said casing, the improvement which comprises ignition transmitter means in said outer casing connected to said igniter means and including inner casing means closed on one end, perforated inner tubing means mounted in said inner casing means, perforated annular ring means between said inner tubing means and said inner casing means, easily meltable means covering the perforations in said inner tubing means and said annular ring means, an ignition mixture in said inner casing, and ignition rod means extending at one end into said explosive mixture and at the other end into said inner tubing means.

3

2. A device according to claim 1 in which the easily meltable means covering the perforations is a synthetic plastic material.

3. A device according to claim 2 in which the synthetic plastic material is polyvinyl chloride.

4. A device according to claim 1 including an annular ring of ceramic material supporting said ignition rod means in said inner tubing means.

4

5. A device according to claim 1 including an ignition head on said ignition rod means, said head being positioned opposite the perforations in said inner tubing means.

5 6. A device according to claim 1 including a perforated casing surrounding the end of the ignition rod means extending into said ignition mixture.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,736,878 Dated June 5, 1973

Inventor(s) Hans Guntermann

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, penultimate line, "explosive" should read - - -
ignition - - -.

Signed and sealed this 1st day of January 1974.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

RENE D. TEGTMEYER
Acting Commissioner of Patents