

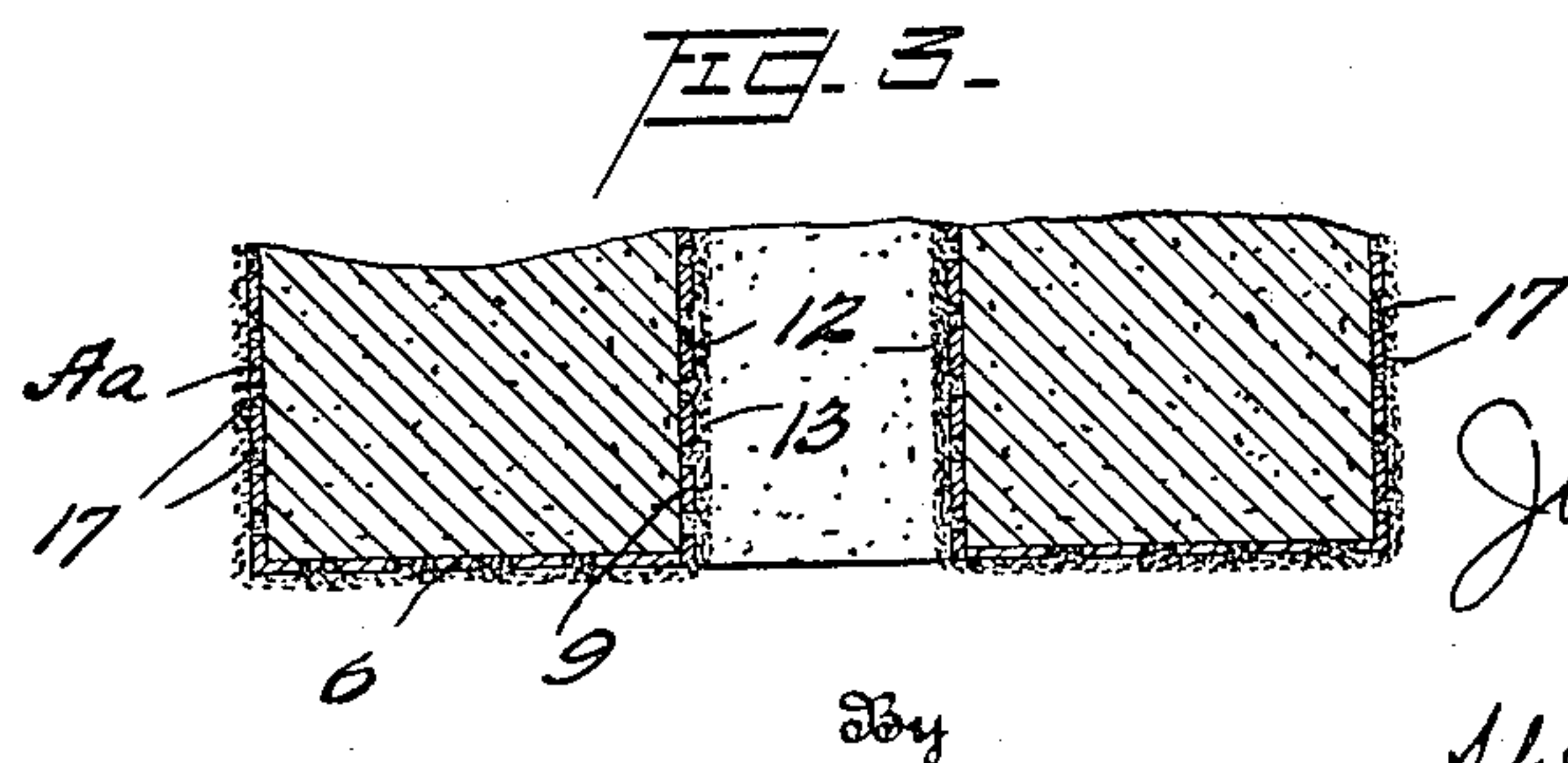
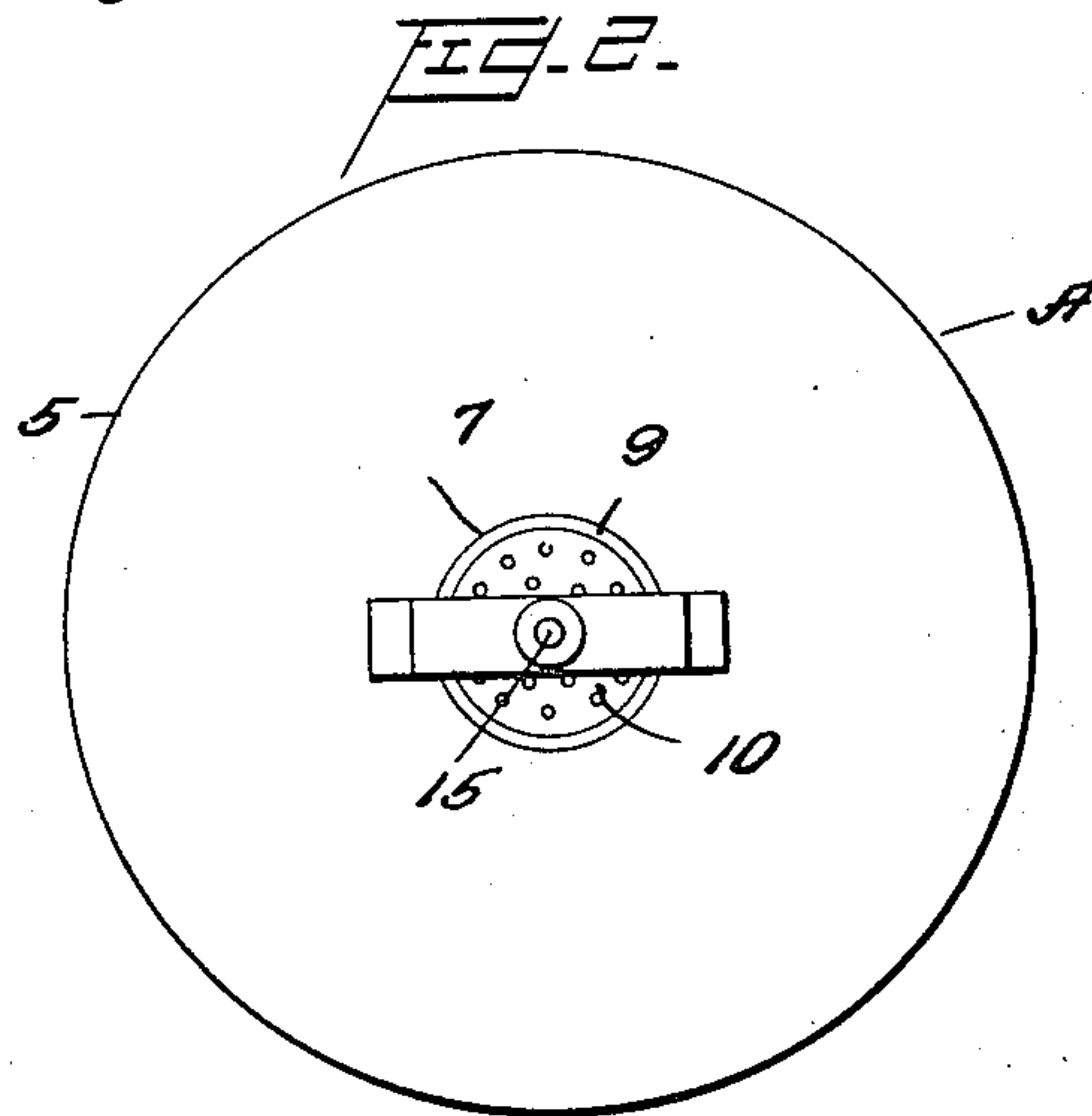
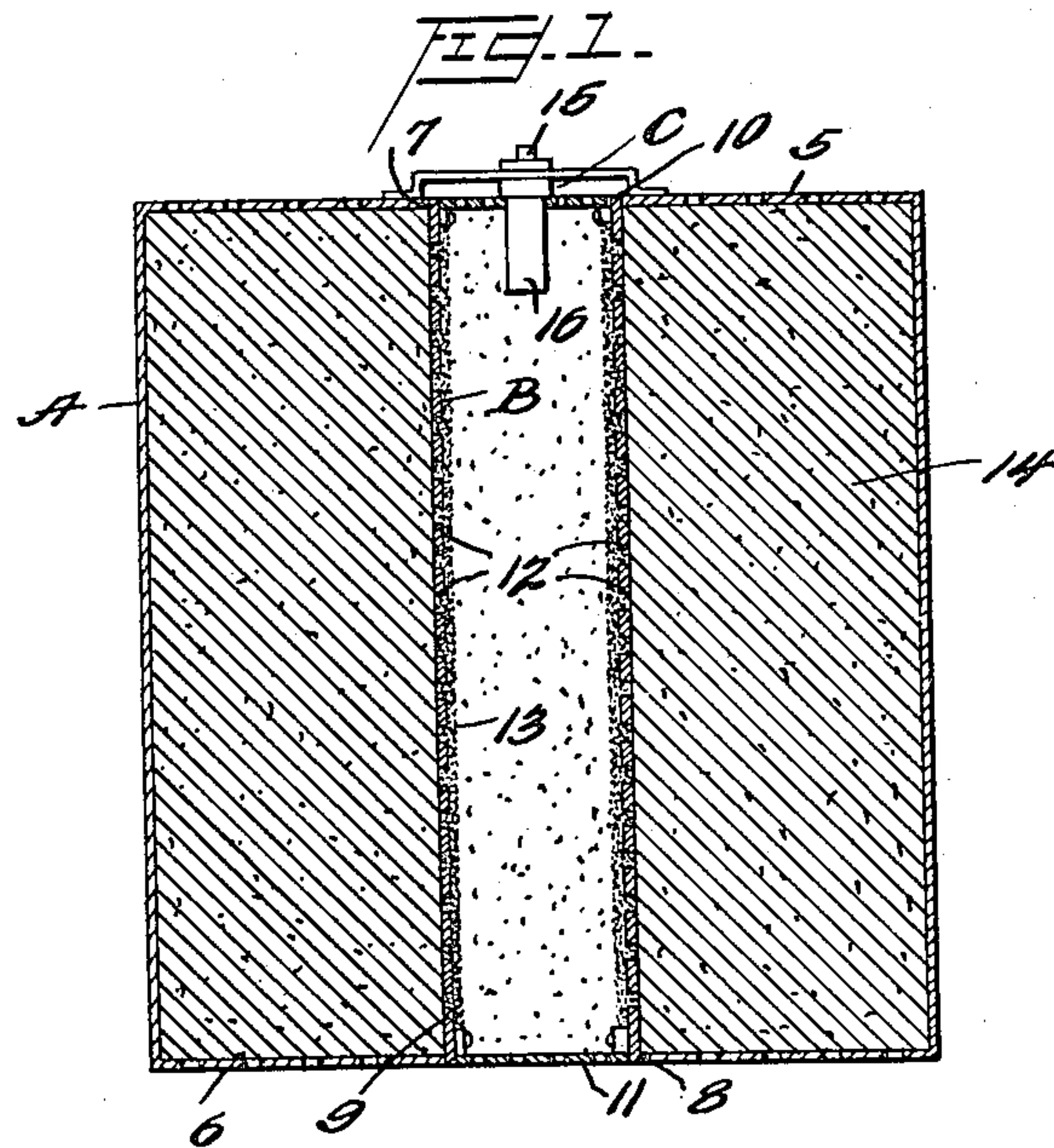
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HAND GRENADE OR AERIAL BOMB

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UNITED STATES PATENT OFFICE

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HAND GRENADE OR AERIAL BOMB

Application filed October 15, 1931. Serial No. 569,061.

Generically this invention relates to hand grenades or aerial bombs but it is more particularly directed to the type wherein a booster device is disposed centrally of the body portion and extends from the top to the bottom thereof.

One of the important objects of this invention is the provision of a cylindrical container, a foraminous tube or hollow cylinder disposed centrally of said container constituting an opening therethrough and a booster or starter coating comprising a mixture of black powder, collodion and acetone or other suitable ignitable booster mixture applied to the inner surface of said tube and adapted to seal the openings thereof, a mass of moldable ignitable material placed in said container surrounding the tube and solidified therein adapted to emit gas upon ignition, and means for igniting said booster material to ignite the solidified mass, whereby the opening through said tube constitutes a draft means and insures the complete ignition of the solidified mass.

A further object of this invention is the provision of a hand grenade or aerial bomb of this character comprising an outer foraminous cylinder and an inner centrally disposed foraminous tubular cylinder or core and providing a centrally disposed opening therethrough constituting a chimney means, an ignitable booster material applied to the inner surface of said core and outer surface of said container effecting a sealing coating therefor, a solidified mass of ignitable gas producing material in said outer container, and means for igniting said booster, whereby said core member constitutes a draft and gas discharge medium adapted to intensify the ignition of said solidified mass by means of said booster, the partial discharge of the gases through said foraminous outer container and ignition of the booster thereon, together with the booster on said core contributing to heat said container, prevent ready handling thereof after setting off of the device, and insure complete ignition and combustion of said mass.

With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construc-

tion, combination and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawing, in which like characters of reference indicate like parts throughout the several figures, of which:

Fig. 1 is a central vertical longitudinal section through a grenade constructed in accordance with my improved invention.

Fig. 2 is a top plan view of the device.

Fig. 3 is a fragmentary central vertical sectional view similar to Fig. 1 of a modified form of container.

Practice has demonstrated that grenades of this general type wherein a booster is used to initially ignite the ignitable mass, that the complete ignition of the latter is often not as expeditiously effected as it should be, and it was to overcome this and other deficiencies by providing a grenade including a container, a solidified mass of ignitable material within the container, a booster device comprising a foraminous tubular member extending through said mass and to or beyond the outer end surfaces of said container, and having a booster material applied to its inner surface, filling and sealing the mesh or other openings extending through the wall thereof for igniting said mass and means for igniting said booster, whereby said tubular member constitutes a chimney, the draft therethrough not only effecting the simultaneous, rapid, continuous and complete ignition of the booster and mass, but contributing to effect the forced and continuous discharge of the gas liberated from said mass, that I designed the device forming the subject-matter of this invention.

In the illustrated embodiment characterizing this invention there is shown a metal container A, a tubular booster device B, and a firing or fuse mechanism C.

The metal container A is preferably cylindrical in configuration and is formed with a top 5 and bottom 6, which are formed with the centrally disposed aligned openings 7 and 8, respectively.

Suitably mounted in openings 7 and 8 and forming a continuation of said openings through the container A is the tubular boost-

er and draft device B preferably formed of any suitable foraminous material such, for instance, as metal gauze 9 with its ends 10 and 11 formed of the same material, and which may be detachable or dispensed with if desired. When said tube B is operatively positioned the said ends 10 and 11 may be flush with the respective ends 5 and 6, or they may extend beyond the surface thereof, according to the particular requirements. Though metal gauze is preferably designated as the material from which the device B is constructed, it is to be understood that it may be constructed from any suitable material perforated to produce a foraminous effect, and the mesh openings or perforations 12 are designed to be filled with and sealed by a booster material 13 of any suitable ready ignitable substance, such as black powder mixed with collodion, acetone, and the like. The booster material 13 is applied as a coating to the interior surface of the tube, sealing the openings therein and extending through the foramina to the outer surface thereof, for a purpose hereinafter more fully appearing.

When the booster device B above described has been operatively positioned in container A, a suitable ignitable material or composition adapted to emit gas upon ignition, is placed in said container and surrounding said booster device and is reduced into a molded or solidified mass 14 by tamping or by a suitable solidifying agent mixed with said material, as will be clear without further explanation.

A suitable firing or fuse mechanism C is mounted in any well known manner on the container A, including a suitable electrical contact medium or manually operable means 15 for setting off fuse element 16 and secured to the upper edge or top 5, with said fuse element 16 adjacent the end 10 and material 13 of booster device B, said fuse adapted to effect ignition of booster 13, which in turn ignites the solidified mass 14 to liberate the gas therefrom, as will directly more fully appear. The coating material 13 is adapted to extend beyond the upper surface of the mass 14 or the tube adjacent its upper end may be without perforations, so that the booster material 13 after being ignited will burn for a predetermined time interval before igniting the mass 14.

In Fig. 3 is shown a modified form of container Aa similar in every respect to container A except that it is formed throughout its surface area with a plurality of perforations 17 which permit the escape of a certain portion of the hot gases as they are emitted from said mass, said openings being sealed with a coating of said booster material 13 applied to the outer surface of said container, and the ignition of said booster and mass contributing to quickly heat the

container or device after it has been set off and prior to the complete ignition and consumption of the mass.

In the composition of the solidified mass, at the present time, I prefer to use a mixture comprising a halogen derivative of acetophenone, such a fluorine, iodine, bromacetophenone, chloracetophenone or toxic gas producing substance such as diphenylamine-chloroaisine, and a fuel such as nitroglycerine or gun powder.

From the above it is apparent that I have designed an improved hand grenade or aerial bomb, which in addition to its function as such is designed to ignite or set fire to whatever it comes in contact with after being set off, comprising in effect an annular U-shaped container for a solidified mass adapted to emit gas upon ignition, a foraminous tubular booster device extending centrally through said container, constituting a chimney or draft medium with its inner surface coated with a suitable ignitable booster material extending through said foramina to contact said mass for igniting the same, and means for igniting said booster, the coating of booster material extending slightly beyond the surface and surface coating of the container, whereby a predetermined time interval elapses after ignition of said booster before said mass is ignited thereby, the draft through said tube adapted to intensify the ignition of the booster and to effect a more rapid discharge of the gas from said container, the foramina effecting communication between the tube and container to permit ignitable contact of the booster with the mass, and likewise, the escape of the liberated gas from the container to the interior of said tube for discharge to the surrounding atmosphere, as will be clear without further explanation.

Although in practice I have found that the form of my invention illustrated in the accompanying drawing and referred to in the above description as the preferred embodiment, is the most efficient and practical; yet realizing that the conditions concurrent with the adoption of my invention will necessarily vary, I desire to emphasize that various minor changes in details of construction, proportion and arrangement of parts, may be resorted to within the scope of the appended claims without departing from or sacrificing any of the principles of this invention.

Having thus described my invention, what I desire protected by Letters Patent is as set forth in the following claims:

1. A hand grenade comprising a container, a booster device comprising a foraminous tubular member, disposed centrally through said container and to the outer surfaces thereof, a mass of ignitable material in said container surrounding said tubular member, a coating of ignitable booster material applied

to the inner surface of said tube and filling the foramina thereof for igniting said booster material, whereby said tubular member constitutes a draft medium to effect complete simultaneous ignition of the booster material and solidified mass and discharge of the gas from said container.

2. A hand grenade comprising a container, a solidified mass of ignitable material therein adapted to emit gas upon ignition, a booster device disposed centrally through said container and mass, said device comprising a foraminous tubular member, a booster coating of ignitable material covering the one surface of said tube and extending through and sealing the foramina thereof, and means for igniting said booster, whereby said booster when ignited is adapted to ignite said solidified mass after a predetermined time interval, and said tubular member is adapted to constitute a chimney, the draft through which intensifies the continuous ignition of the booster and mass and effects rapid discharge of the gas from said container.

3. A hand grenade comprising a foraminous outer container, a solidified mass of ignitable material therein adapted to emit gas upon ignition, a foraminous tubular member extending through said container and mass, a coating of ignitable booster material applied to the inner surface of said member and sealing the foramina thereof, said booster material adapted to effect ignition of said mass, and means for igniting said booster material, whereby the ignition of said materials creates a draft through said tubular member effecting discharge of the heated gases there-through and through the foramina of said outer container for heating the same to prevent ready handling thereof.

4. A hand grenade or aerial bomb comprising an outer foraminous container, a solidified mass of ignitable material therein adapted to emit gas upon ignition, a foraminous tubular device extending through said container and mass, the exposed surfaces of the container and tubular device being coated with an ignitable booster material sealing the respective foramina thereof and upon ignition adapted to ignite said mass, said tubular device additionally constituting a draft and gas discharge medium.

This specification signed this 2nd day of May A. D. 1931.

JOHN W. YOUNG.