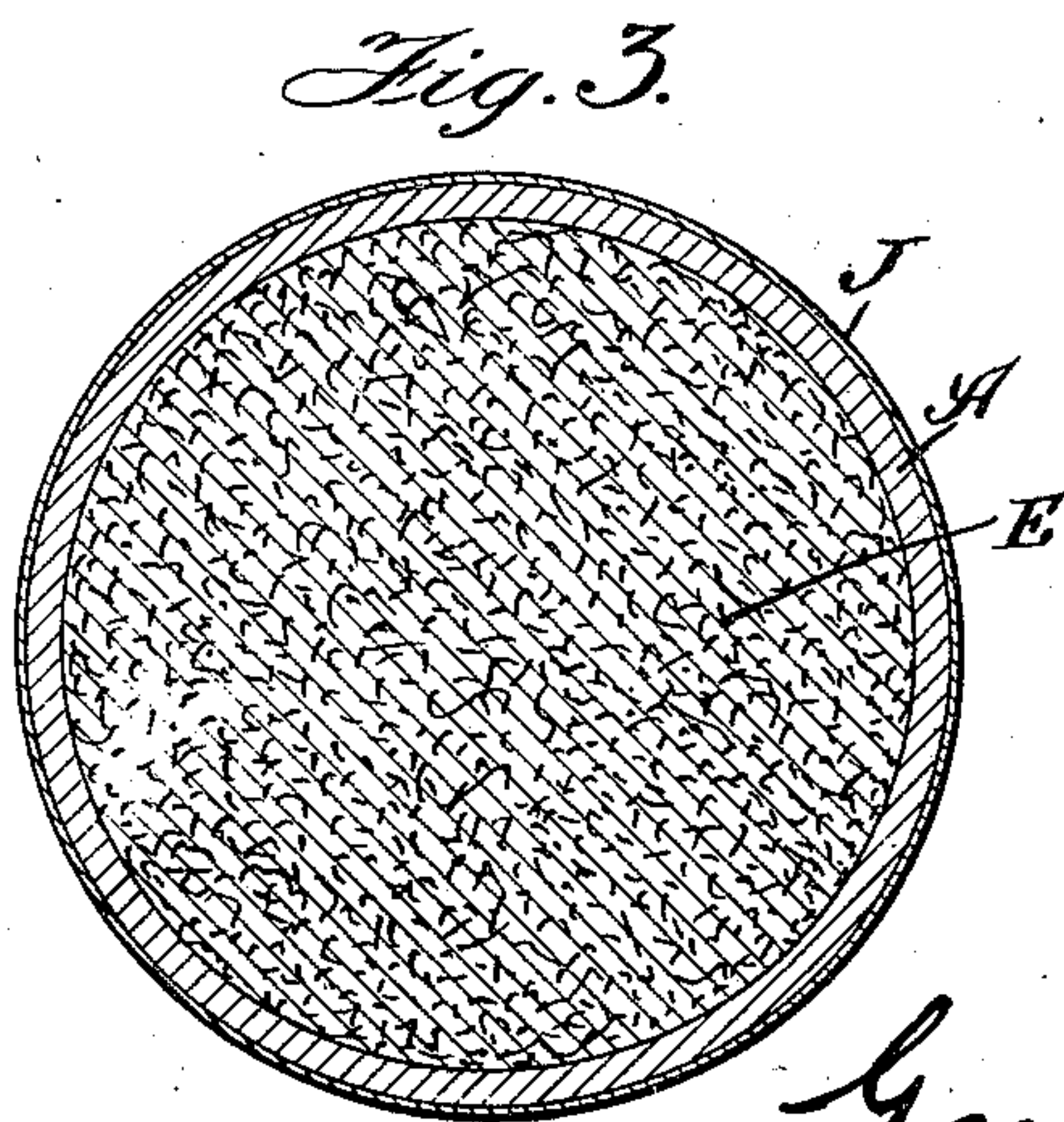
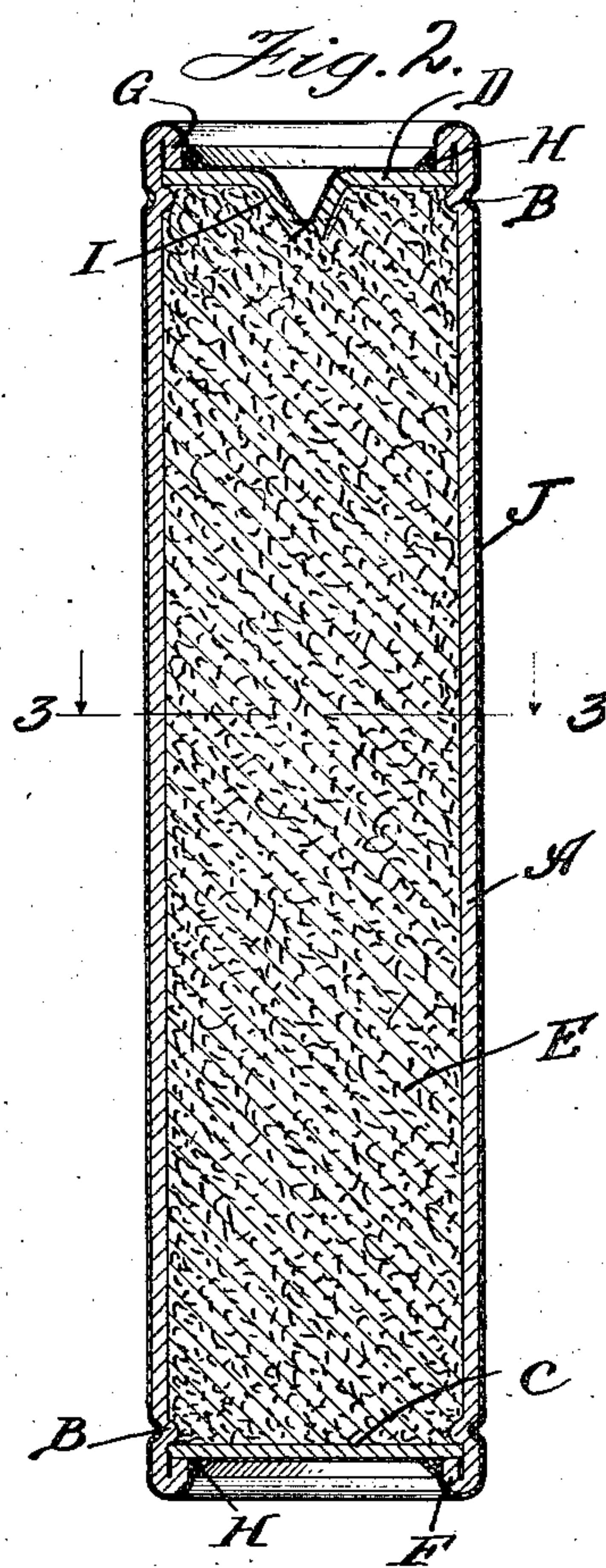
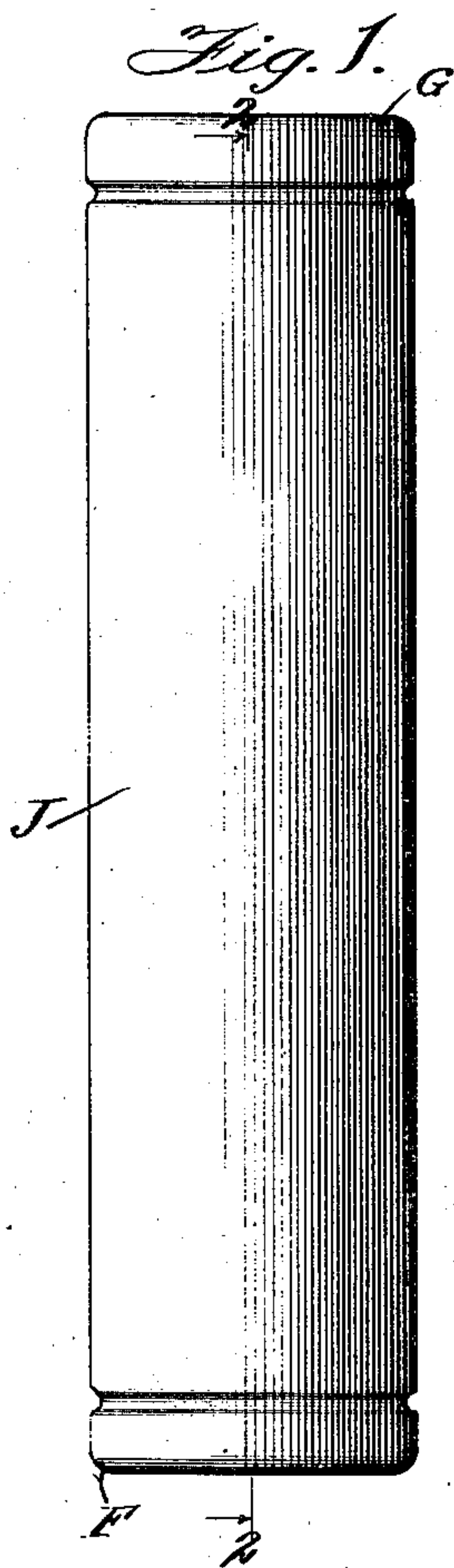


G. M. PETERS.
BLASTING CARTRIDGE.
APPLICATION FILED DEC. 6, 1907.

969,186.

Patented Sept. 6, 1910.



Witnesses:
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UNITED STATES PATENT OFFICE.

GERSHOM MOORE PETERS, OF CINCINNATI, OHIO.

BLASTING-CARTRIDGE.

969,186.

Specification of Letters Patent.

Patented Sept. 6, 1910.

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To all whom it may concern:

Be it known that I, GERSHOM M. PETERS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Blasting-Cartridges, of which the following is a full, clear, and exact specification.

This invention relates to cartridges for blasting purposes generally, but has more especial reference to that type of blasting cartridge employed in coal and other mining, and blasting operations where the result is effected by drilling a blast hole and then forcing the charge or cartridge into the same by a rammer. Cartridges of this character are usually loaded with explosives requiring a detonating primer to set them off, and the container for the explosive is liable to become mashed, distorted and otherwise damaged while being shoved into the blast hole, and even if this does not result in clogging up the hole and necessitate the extraction of the damaged cartridge with all the attendant dangers, it leaves the primer exposed to the rammer, and unless great care be exercised, premature explosion and loss of life are liable to follow.

My invention is designed to obviate these defects, and it has for its primary object to provide an improved cartridge of the described character which will be safe to handle, and when used with a primer, will protect the same from contact with the rammer.

Another object of the invention is to provide an improved blasting cartridge which will be of durable and inexpensive construction and will hermetically seal the explosive against the deteriorating influences of the atmosphere during storage or shipment and will also protect its explosive contents from contact with water frequently found in places where cartridges of this description are used.

With a view to the attainment of these ends and the accomplishment of certain other objects which will hereinafter appear, the invention consists in the features of novelty which will now be described with reference to the accompanying drawings and then more particularly pointed out in the claims.

In the said drawings—Figure 1 is a side elevation of a blasting cartridge constructed

according to this invention. Fig. 2 is a longitudinal sectional view thereof, and Fig. 3 is an enlarged cross-section taken on the line 3—3, Fig. 2.

The body portion A of the cartridge shell is composed of a section of tubing which preferably consists of paper or equivalent material, and may be constituted by a section of the paper tubing ordinarily employed in the manufacture of cartridge shells, but is preferably made of several strata of paper laid up by winding a strip of the paper the desired number of times about a rotating mandrel of the desired diameter and pasting or gluing the strata together as they are laid up, so that when dried, the result is a stiff, hard tube, which may be subsequently cut into the desired lengths suitable for the different sizes of cartridges to be produced. After this length or section of tubing is obtained, it is provided near its extremities with internal shoulders B which extend around the inner periphery thereof and form supports for wads or closures C, D, that are inserted into the ends of the shell. These shoulders B may be formed in the shell or tube in any suitable way, either while the tube is being made, or subsequently, the means of producing the same forming no part of my present invention. A suitable method of accomplishing the result is to indent the outer surface of the tube throughout a peripheral line by any suitable tool held thereagainst while the tube is rotating on a mandrel of proper size, also having a peripheral groove to receive the material displaced inwardly by the external tool, or any other well-known beading machine may be employed for the purpose, but in the manufacture of sections of paper tubing for cartridges, it is common to employ a mandrel in combination with a series of rotating spaced knives for cutting the tube into the desired lengths, and hence the most convenient way of producing these shoulders B is to press the wall of the shell into grooves in the mandrel while the tube is being cut, the mandrel, of course, being smaller than the internal diameter of the tube thus decreased by the inward displacement of its wall.

In loading the shell with the explosive E, one of the wads C, D is first inserted in one end of the tube against the adjacent shoulder B, and the tube at this end is then crimped or turned inwardly, as shown at F,

and pressed firmly against the wad C so as to hold the wad against outward movement while the shoulder B holds it against inward movement. The tube or shell is then filled
 5 and packed with the explosive material, when the other wad D may be inserted in the upper end of the tube against the retaining shoulder B at that end, and the top end then crimped as shown at G, like the
 10 bottom end, firmly in contact with the wad D for holding the latter against outward movement. This being done, both ends of the shell are sealed at the conjunction of the wad and the end of the shoulder produced
 15 by the crimping F. G. Should the general water proofing hereinafter mentioned not be sufficient, any suitable material may be employed for thus sealing the cartridge to render it water and air tight, but I prefer
 20 to employ for the purpose a quantity of sealing wax H, applied or spun around the inner edge of the shell while in a fluid or semi-fluid state. Before inserting the last wad D, it is preferable to prepare it for
 25 the introduction of the fuse or primer, by making an indentation or partially puncturing the same, as shown at I, so that the puncture may be subsequently completed by the introduction of any sharp, rounded in-
 30 strument, thereby providing an entrance for the introduction of any suitable fuse or primer, not necessary to illustrate. The cartridge being thus constructed and prepared, the whole is dipped into or otherwise coated
 35 with a liquid water proof material, preferably a quick drying substance, such, for example, as liquid paraffin wax or asphaltum, which provides it with a complete envelop
 40 J, absolutely impervious to moisture. The cartridge is then ready to be packed or stored, or put directly into use, and will keep any length of time unaffected by moisture or atmospheric influences.

It will be understood, of course, that in
 45 the use of the cartridge thus constructed, it is pushed into the blast hole endwise in the ordinary manner by means of a rammer or other suitable instrument, and the shell or body of the cartridge being composed of
 50 stiff, hard paper or like material, it will maintain its shape and the distortion and damage heretofore resulting from the action of the rammer, where the wrapper or container of the cartridge is composed of
 55 soft material, will be avoided. It will also be seen that in forming the outer shoulders by reaming the ends of the tube or shell portion for holding the wads in place, two rigid flanges or rims are produced of sufficient
 60 length beyond the wads, as at G, to hold the rammer aloof from contact with the primer, should it become exposed or pushed to the surface in the act of placing the cartridge,

and thereby avoid all danger of accidental contact between the primer and rammer and
 65 the premature explosion which is liable to result therefrom.

In order that the invention may be understood by those skilled in the art, the details of an exemplification thereof have been thus
 70 specifically described, but

What I claim is:

1. In a blasting cartridge the combination of a tube for the explosive, and a closure inserted within one end of the tube and pro-
 75 vided with a partial puncture for the insertion of a primer or fuse.

2. In a blasting cartridge the combination of a tube for containing the explosive, a closure inserted in the end of the tube for
 80 holding the explosive in place and having a partial puncture for the insertion of a fuse or primer, the end of the tube being extended beyond the closure and doubled back upon itself to form a rigid projection for
 85 holding a rammer aloof from the closure.

3. In a blasting cartridge the combination of a tube for the explosive, and a non-perforated wad inserted in the end of the tube at a distance from the extremity there-
 90 of for retaining the explosive in place, the extremity of the tube being reamed inwardly toward the wad and a quantity of sealing material connecting the reamed extremity of the tube with the outer face of
 95 the wad.

4. In a blasting cartridge the combination of a tube for the explosive, wads in the ends of the tube pressed against interior supports formed in the tube, one of said
 100 wads being indented for the introduction of a primer, an explosive contained within the tube between said wads, the ends of the tube being reamed inwardly against the wads, and an exterior coating of impervious ma-
 105 terial completely enveloping the tube and wads and said indentation.

5. In a blasting cartridge, the combination with a paper tube grooved near the ends to form inner shoulders or supports,
 110 wads in the ends of said tube, one of said wads being indented or partially perforated and the extremities of said tube being crimped against the said wads to retain the same in position against said supports, an
 115 explosive material in said tube, and water-proofing material entirely enveloping the casing formed by the tube and closures.

In testimony whereof I have signed my name to this specification, in the presence of
 120 two subscribing witnesses, on this 2nd day of December A. D. 1907.

GERSHOM MOORE PETERS.

Witnesses:

A. M. BEEKLEY,
 E. R. MERCKEL.