

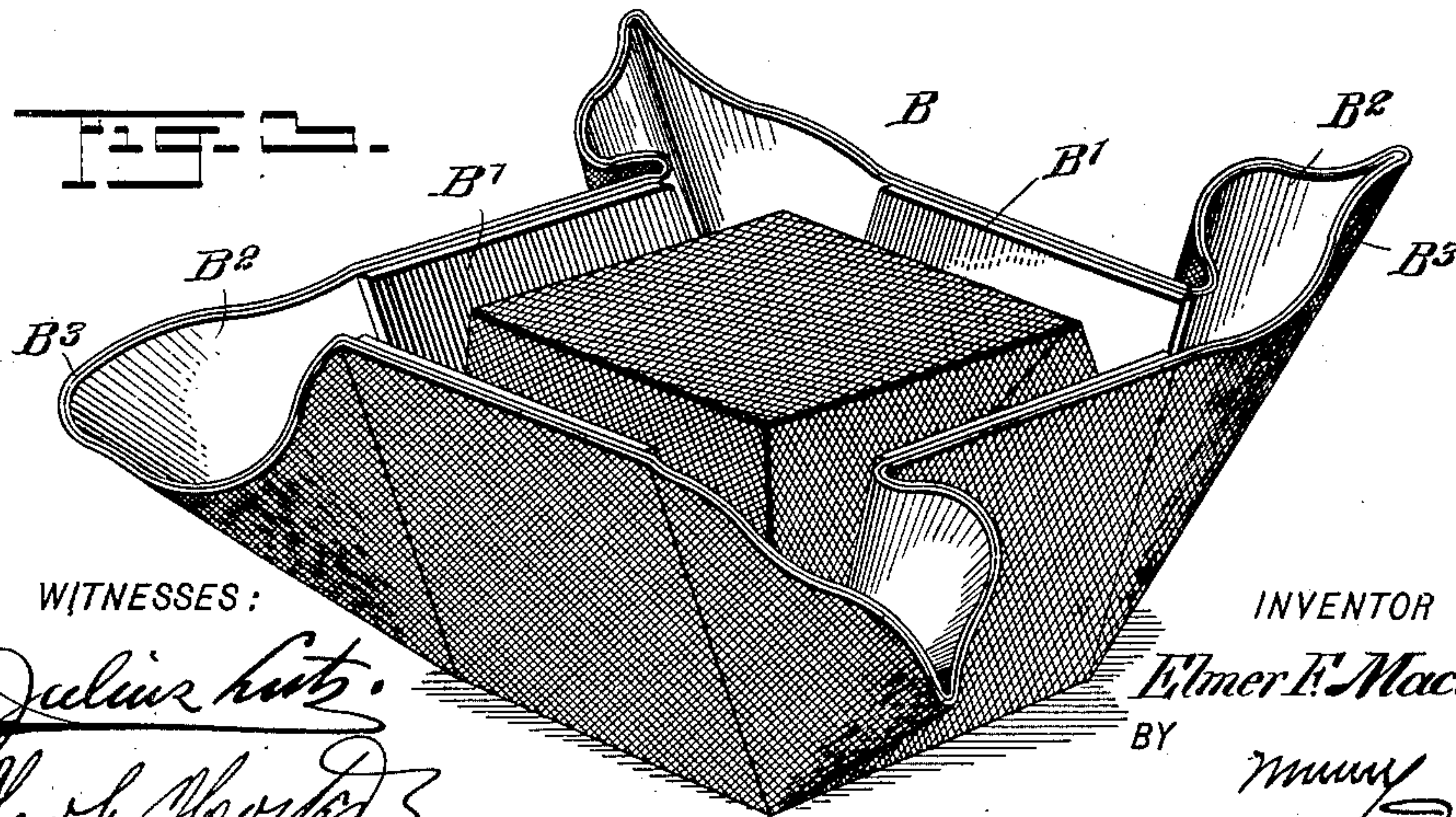
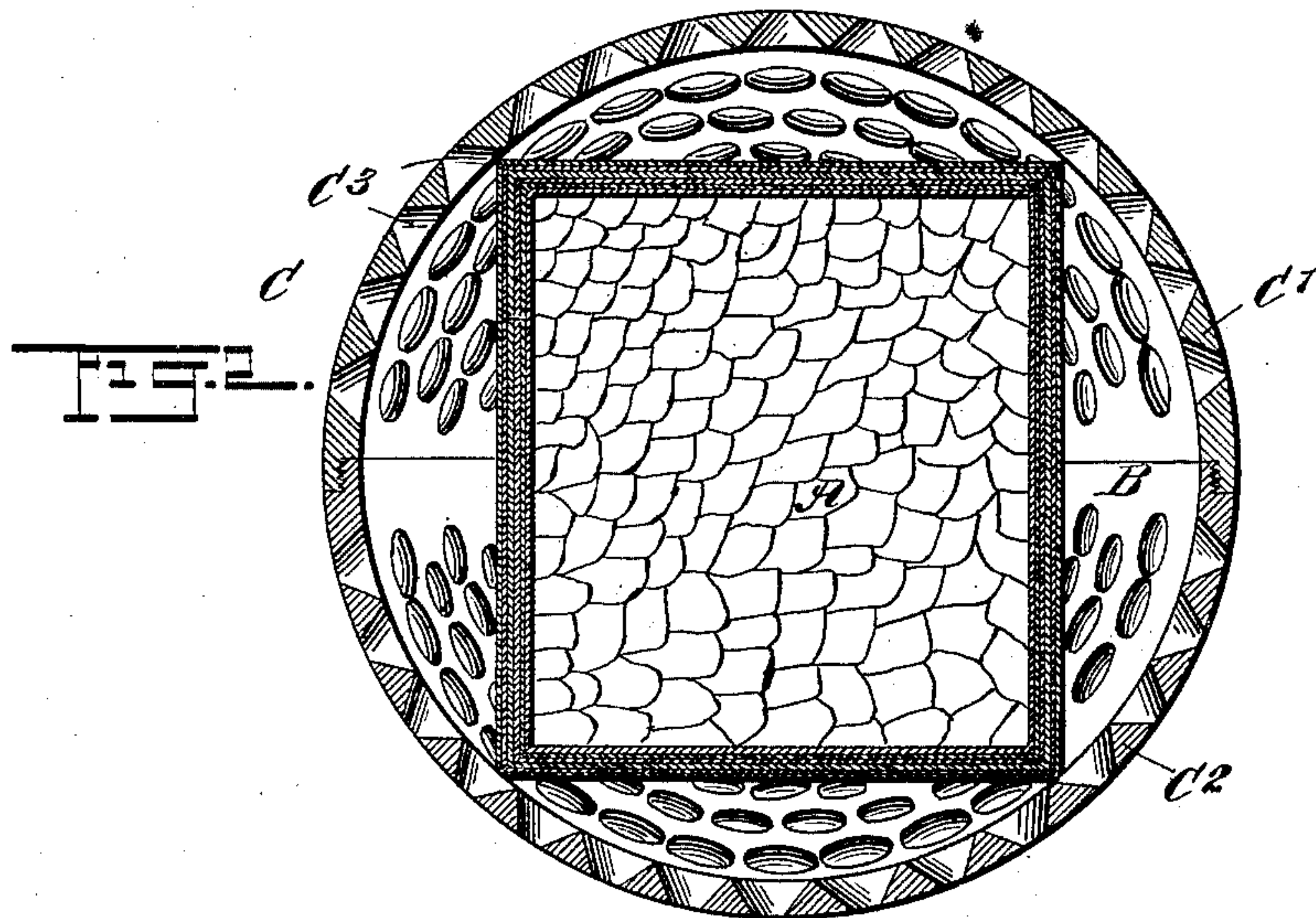
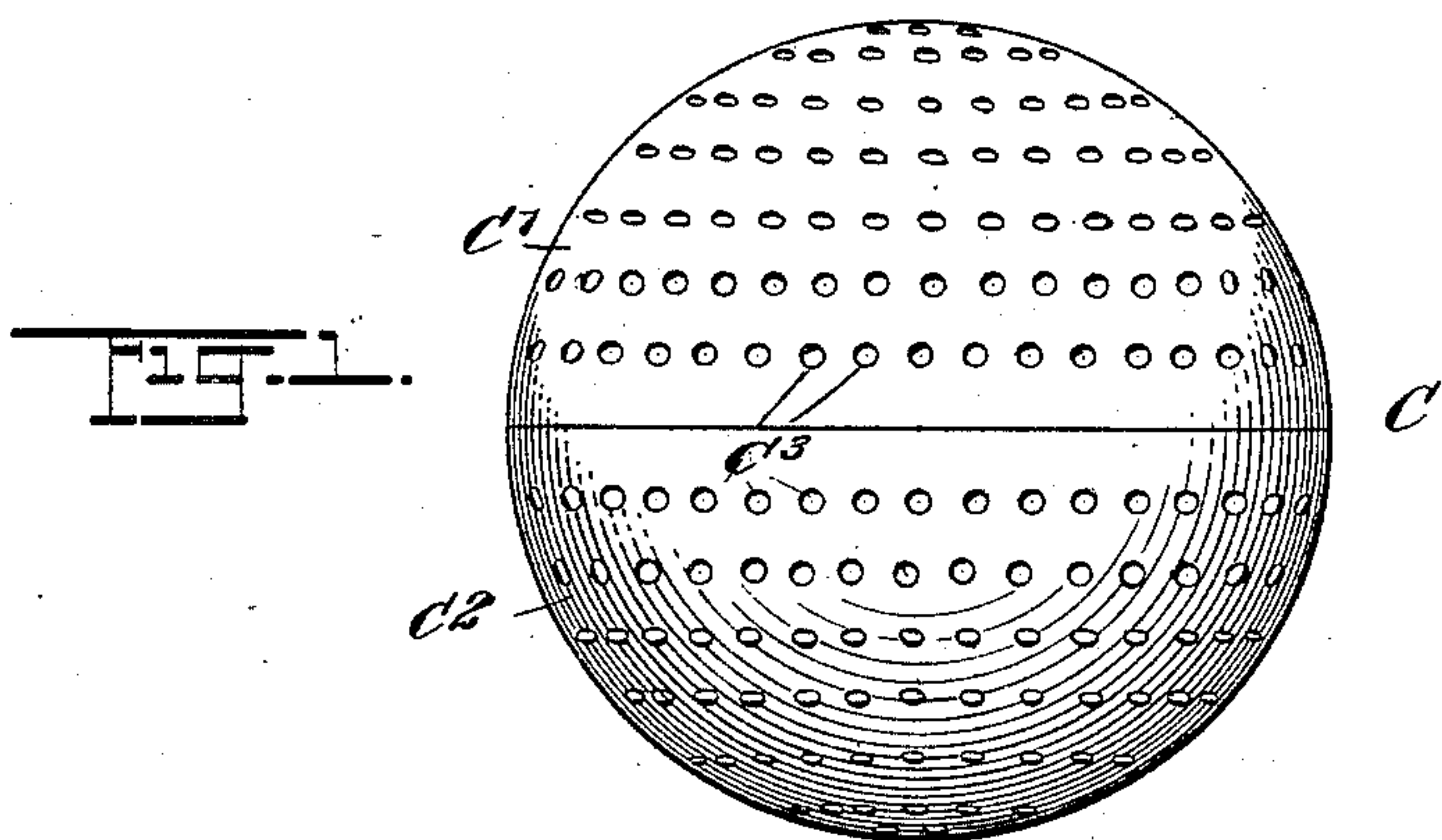
No. 692,322.

Patented Feb. 4, 1902.

E. F. MACKUSICK.  
CARBID CARTRIDGE FOR ACETYLENE GAS GENERATORS.

(Application filed Mar. 14, 1901.)

(No Model.)



WITNESSES:

*Julius Kutz.*  
*Geo. G. Hovest.*

INVENTOR

*Elmer F. Mackusick*

BY

*Wm. S.*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

ELMER F. MACKUSICK, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO  
GEORGE V. FOSTER, OF NEW YORK, N. Y.

## CARBID-CARTRIDGE FOR ACETYLENE-GAS GENERATORS.

SPECIFICATION forming part of Letters Patent No. 692,322, dated February 4, 1902.

Original application filed August 28, 1900, serial No. 28,291. Divided and this application filed March 14, 1901. Serial  
No. 51,074. (No model.)

*To all whom it may concern:*

Be it known that I, ELMER F. MACKUSICK, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Charge for Acetylene-Gas Generators, of which the following is a full, clear, and exact description, this being a division of the application for Letters Patent of the United States for an acetylene-gas generator, Serial No. 28,291, filed by me on August 28, 1900.

The object of the invention is to provide a new and improved charge for acetylene-gas generators which is simple and durable in construction and arranged to hermetically inclose the calcium carbid and prevent disintegration thereof by moisture and other matter while in store and not in use and to cause an intermittent generation of gas when submerged in water to insure a cool generation of gas, while developing a minimum of heat.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is an enlarged sectional side elevation of the same, and Fig. 3 is a perspective view of the package with the shell removed and part of the package open.

A generating substance A, such as calcium carbid, is contained in a package B, consisting of two envelopes placed one in the other, the package being inclosed in a shell C, preferably of spherical shape and made in two parts C' C<sup>2</sup>, screwed or otherwise fastened together. Each envelop for the package consists, essentially, of a cross-shaped piece B', preferably of thin strawboard provided with creases to allow of moving the flaps into an annular position relatively to the center to form a square box.

Each cross-piece B' is covered with a square

piece B<sup>2</sup> of the thinnest muslin or like fabric, which in turn is covered with a correspondingly-shaped piece B<sup>3</sup> of paper of about the quality of ordinary newspaper. The portions of the said square pieces B<sup>2</sup> B<sup>3</sup> form a cover for the cross-shaped piece B', and the cover portions not engaged by the cross-piece are sufficiently flexible to readily fold or double up upon the side of the box and be secured thereto by paste to form an envelop. One of the envelopes thus formed is adapted to contain the calcium carbid or other generating substance, and the other envelop, which is somewhat larger, fits closely over the inner end as a cover, and the package thus produced is in the shape of a cube sealed airtight and fitting into the shell C, as is plainly indicated in Fig. 2. The shell C is provided with apertures or perforations C<sup>3</sup>, made cone-shaped, the apex ends being at the outer surface of the spherical shell to allow water to pass through the apertures into the interior of the shell and to allow the generated gas to escape from the shell.

Now when one of the charges is placed in the water in the generator then the interval during which the charge passes from the surface of the water to the bottom of the generator is sufficient to allow all the air in the space between the packages and the walls of the shell to escape from the latter by way of the perforations C<sup>3</sup>. Within a few seconds after the charge has reached its destination the water gradually permeates the package formed by the envelopes, so as to soften the paste which seals the envelopes, and at the loosened edges penetrates to the substance A, so as to generate the gas, which gently forces the envelopes apart and causes them to move against the inner surface of the shell C, thereby assuming the shape of a ball. The gas now begins to generate rapidly; but in a short time it ceases, and after another brief interval the generation of gas is again resumed. This intermittent action is evidently due to the gas forcing the water out of the shell and the water forcing out the gas alternately. This operation continues until the action is complete. The action of the gas and water in-



sure a cool generation of gas by developing a minimum of heat.

From the foregoing it will be understood that the carbid in the package is sealed against air, but is free to open after introduction into the water, so that when the charge is passed through the water to the place of generation then the gas is generated intermittently under the water, as described.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A charge for a gas-generator, comprising a generating material, an envelop inclosing the generating material and having the parts thereof pasted together to close and seal the same, and a perforated shell in which the envelop is arranged, said shell being larger than the envelop so as to leave a space between the envelop and the sides of the shell, whereby when the charge is immersed, the envelop will be unsealed by the liquid and forced apart and against the sides of the shell by the gas, as set forth.

2. A charge for a gas-generator, comprising a generating material, and a package for inclosing the same, the package consisting of envelops contained one in the other, each envelop comprising a pasteboard box, and a covering for the same of flexible material, said covering being folded and pasted to the box, as set forth.

3. A charge for a gas-generator, provided with a package comprising a box made of a cross-shaped piece of pasteboard, and a covering for the same consisting of a square piece

of fabric and a square piece of paper, as set forth.

4. A charge for a gas-generator, provided with a package comprising a box made of a cross-shaped piece of pasteboard, and a covering for the same consisting of a square piece of fabric and a square piece of paper, the flexible portions of the covering being folded and pasted to the sides of the box, as set forth.

5. A charge for a gas-generator, comprising a generating material, an envelop in the shape of a cube and inclosing the generating material, the parts of the envelop being pasted together to close and seal the same, and a spherical perforated shell made in two sections, whereby a space will be left between the envelop and the sides of the shell, as and for the purpose set forth.

6. A charge for a gas-generator, comprising a perforated shell, a generating material, and a cubic envelop inclosing the generating material and arranged in the shell, the said envelop comprising two box-like sections, each formed of a cross-shaped piece of pasteboard and a covering for the same consisting of a square piece of fabric and a square piece of paper, the covering being folded and pasted to the sides of the box, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELMER F. MACKUSICK.

Witnesses:

THEO. G. HOSTER,  
EVERARD BOLTON MARSHALL.