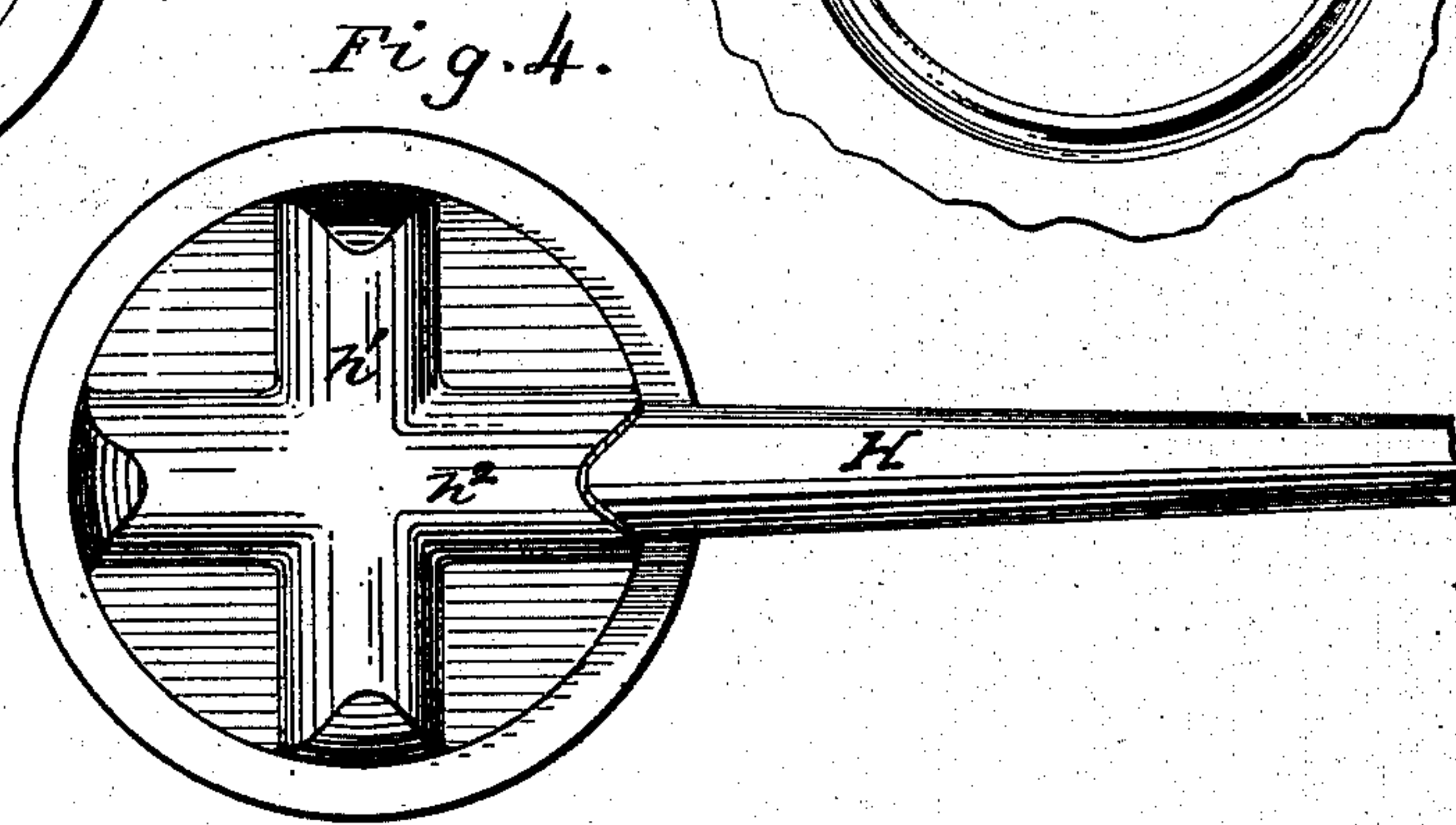
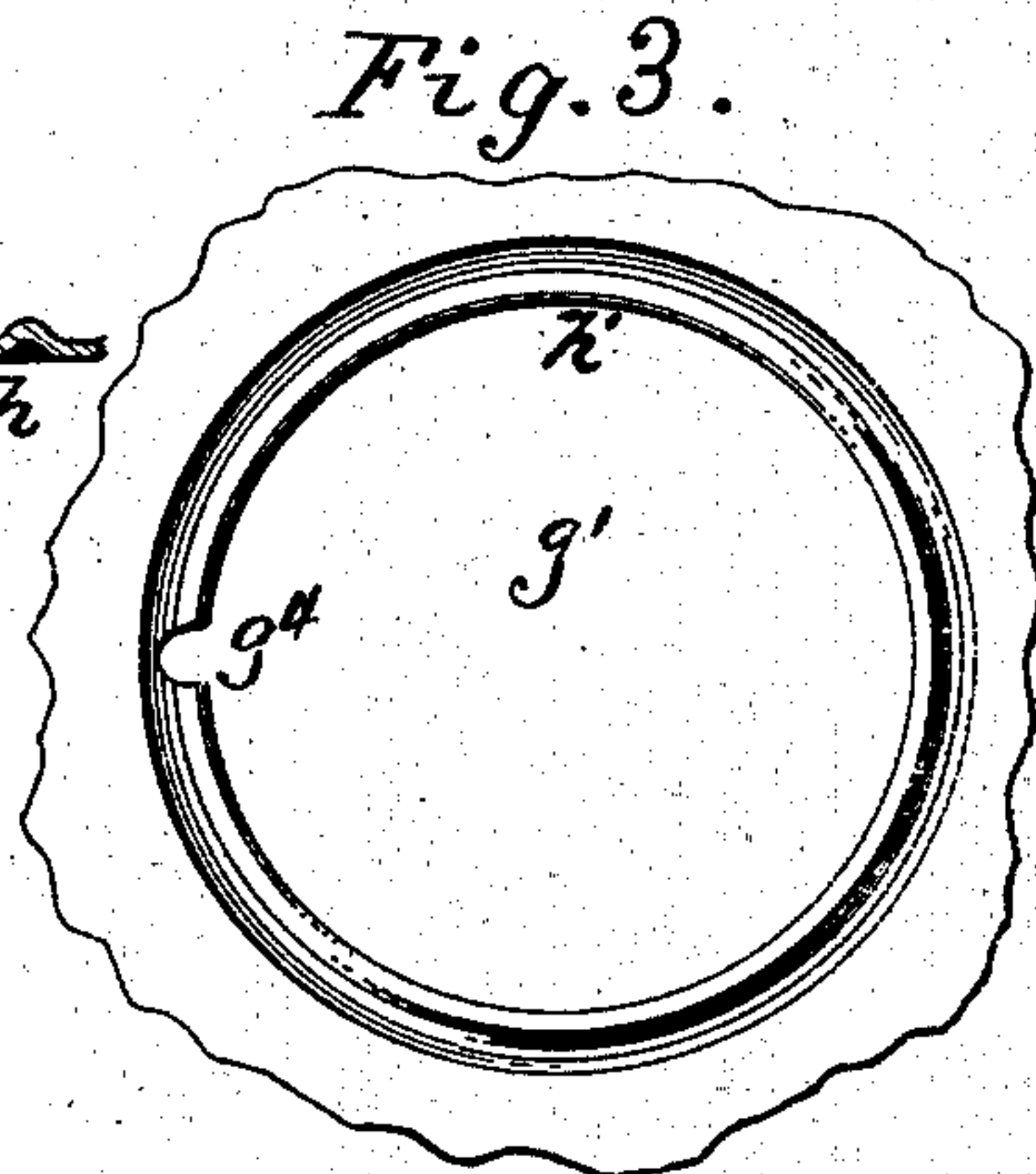
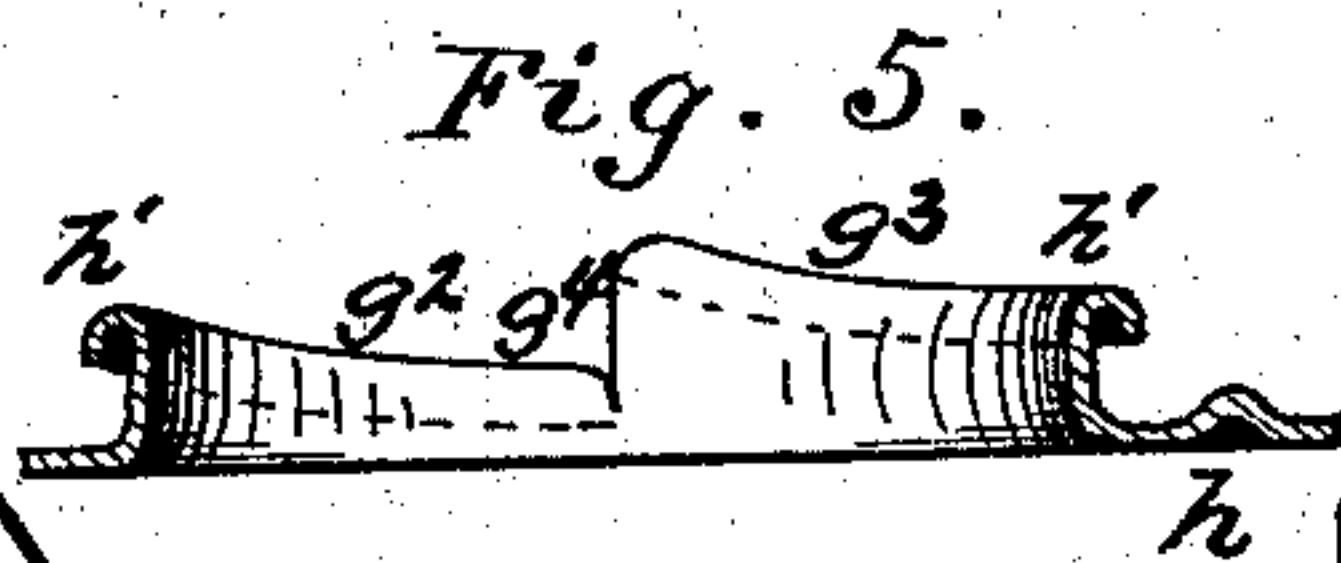
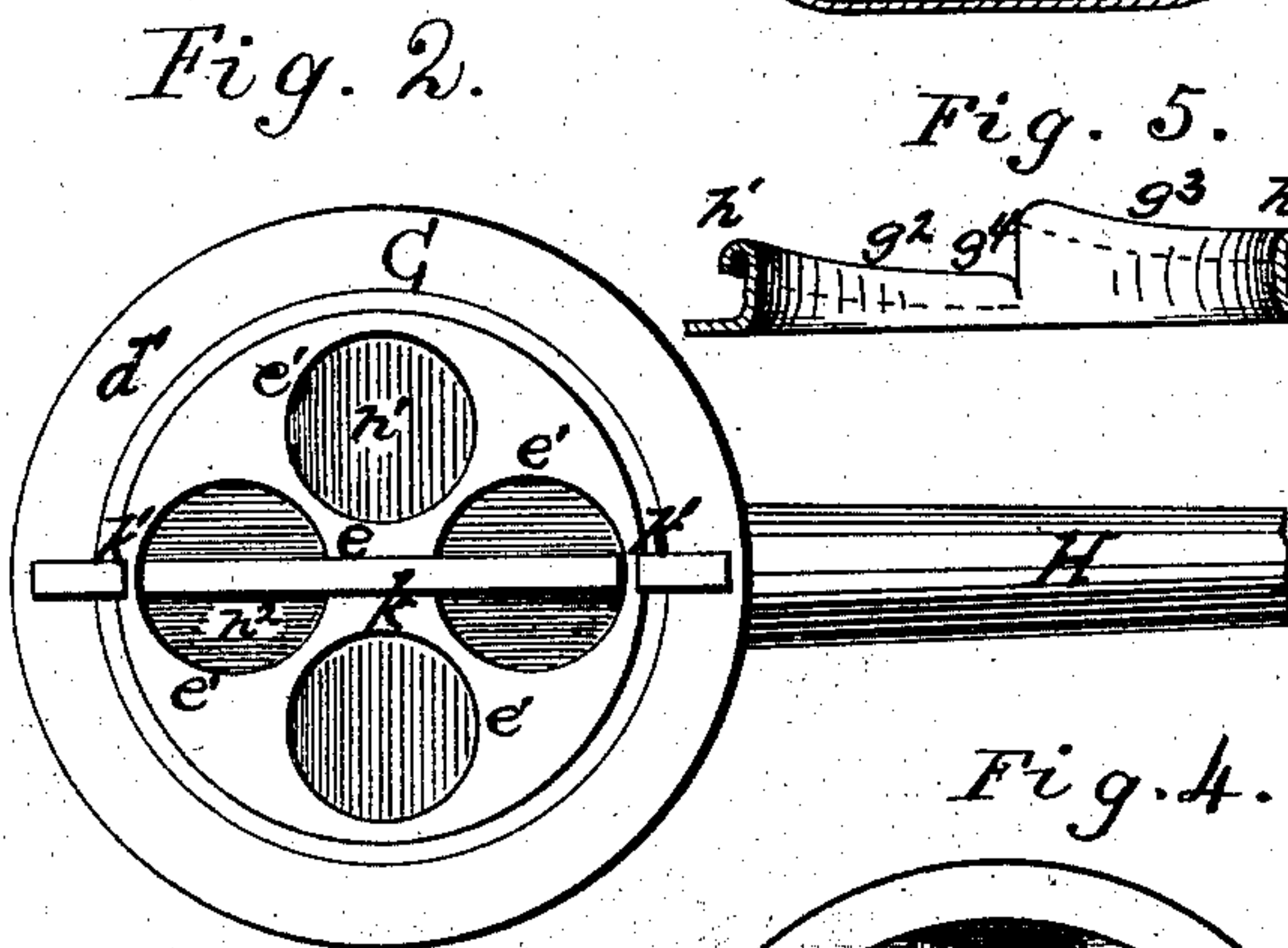
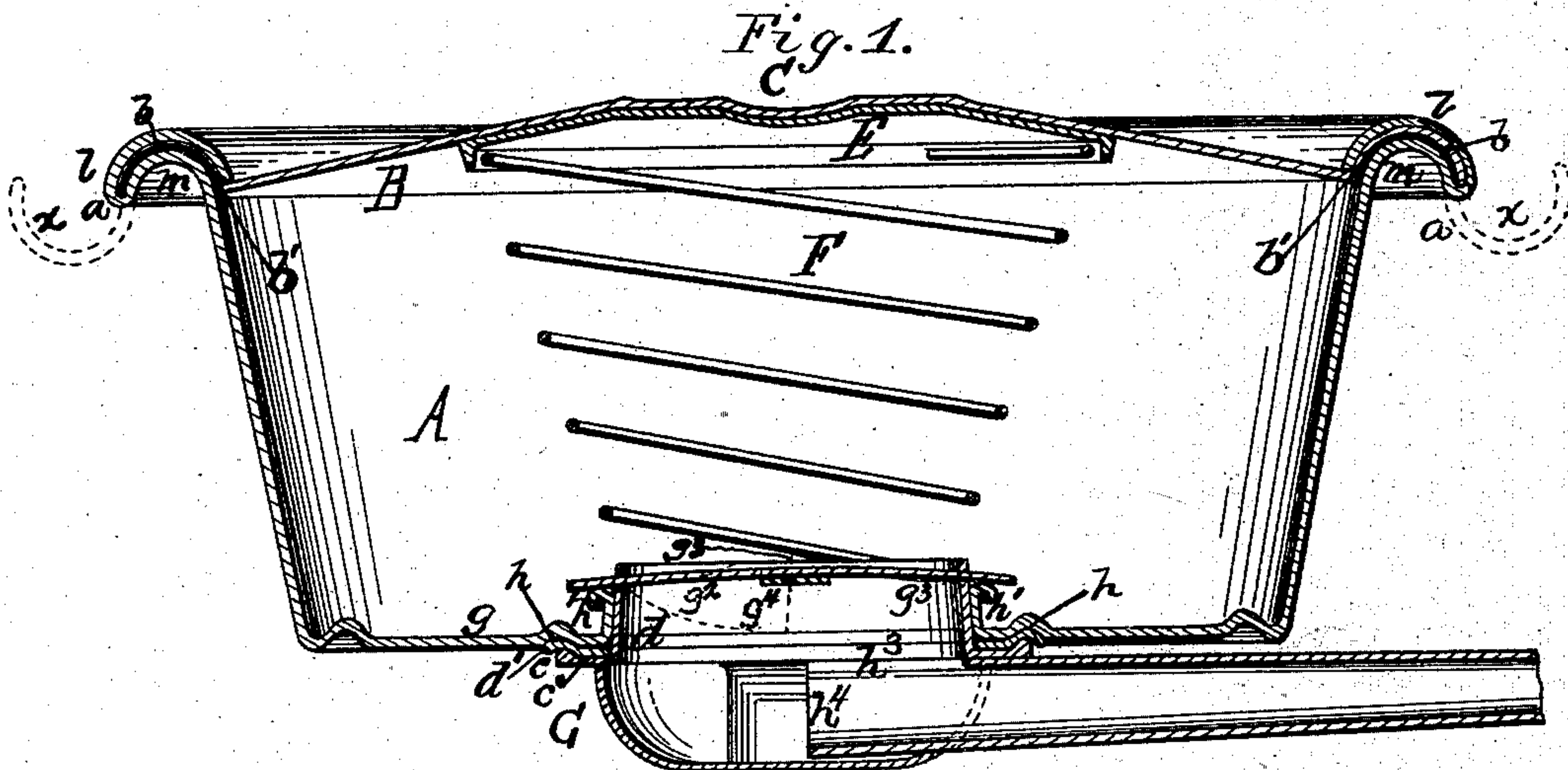


(No Model.)

W. P. HOUCHIN.  
INSECT POWDER GUN.

No. 326,037.

Patented Sept. 8, 1885.



WITNESSES:  
*Thos. Houghton.*  
*Wm. H. Houghton.*

INVENTOR  
*Waldo P. Houchin.*  
BY *W. H. Singleton.*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

WALDO P. HOUCHIN, OF NEW YORK, N. Y., ASSIGNOR TO THOMAS W. HOUCHIN, OF SAME PLACE.

## INSECT-POWDER GUN.

SPECIFICATION forming part of Letters Patent No. 326,037, dated September 8, 1885.

Application filed July 9, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WALDO P. HOUCHIN, a citizen of the United States, residing in the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in what are known as "Insect-Powder Guns," of which the following is a specification, reference being had therein to the accompanying drawings.

The figures of the drawings are on an enlarged scale.

Figure 1 shows a diametrical section of the gun; Fig. 2, an inside view of the stopper; Fig. 3, an inverted view of the bottom of the gun, showing the filling-opening; Fig. 4, an outside view of the stopper; Fig. 5, a detail showing filling-opening.

The invention relates to improvements in what are known as "insect-powder guns;" and it consists in the construction hereinafter set forth and claimed.

In the annexed drawings, the letter A designates the body or chamber of the gun, and B the elastic diaphragm. The upper edge, *a*, of the body A is formed S-shaped in horizontal cross-section, as indicated in Fig. 1 by full lines *m* and dotted lines *x*. The diaphragm B is placed with its edge *b* on the edge *a*, resting on the part indicated by the full lines *m*, and then the part indicated by the dotted lines *x* is turned over the edge *b* of the diaphragm, as shown in full lines *l*. This incloses the edge *b* within the overturned top edge, *a*, of the chamber A, as shown in Fig. 1. Cement or plastic material *b'* may be interposed. This diaphragm is provided with the usual center, C, consisting of the seat E on the inside for the spring F. This seat is of the usual shape, but is made of gum, rubber, or other plastic material. Enough of the plastic material to form a spring-seat is placed on the surface of the diaphragm before the latter is put in place, and then pressure is applied by suitable dies. This forces the plastic material into the desired shape. The spring seat is given its form, and the diaphragm is held to it, the material of the center piece sticking or clinging to the cloth of the diaphragm, and held there simply by adhesion without extraneous fastening. When thus formed it is allowed to harden,

and the top is ready to be put in place, as already described.

At the center of its bottom, *g*, the chamber A is provided with the filling-opening *g'*, to which is adapted the stopper G. The metal of the bottom is turned in at the opening *g'*, and forms two rounded inclines, *g*<sup>2</sup> *g*<sup>3</sup>, each being nearly a semi-circumference in length, and rising in the same direction, with a slight space between their ends. On one side of the opening, where one incline, *g*<sup>2</sup>, begins and incline *g*<sup>3</sup> ends, there is made a notch, *g*<sup>4</sup>. (Shown in Fig. 3.)

Circumferentially around the opening *g'*, at a little distance therefrom, there is made on the outside of the bottom *g* a groove, *h*, forming a bead, *h'*, between it and the opening *g'*.

The stopper is made with a neck, *d*, around which are a bead, *c*, and an inner groove, *c'*, to fit the groove *h* and the bead *h'* of the bottom of the chamber. Around the neck *d* of the stopper is placed a washer, *d'*, which fits snugly on the stopper, and makes an air-tight joint. The inside face, *e*, of the stopper G is provided with several holes, *e'*, arranged as shown. Fastened to this face *e* is a pin, *k*, which runs diametrically across the face *e*, passing through holes *k'* *k'* in its rim, and secured at the center by solder or otherwise.

The top part of the stopper G is provided with the diametrically-crossing grooves *n'* *n*<sup>2</sup>, forming a cross, as shown in Fig. 4. In one of these grooves, preferably one which is parallel with the rod *k*, is secured the spout H of the gun. This spout has its inner end within the stopper open at the top *h*<sup>3</sup> and the extreme end *h*<sup>4</sup>, which keeps the spout from being clogged.

In putting the stopper in place, one end of the pin *k* is caught between the inclines *g*<sup>2</sup> *g*<sup>3</sup> at their ends opposite to the notch *g*<sup>4</sup>; and the other end of the pin *k* is pushed through this notch within the gun. The stopper is then turned by means of the spout H, which acts as a handle, the ends of the pin *k* riding up the inclines and drawing the stopper tightly into place, the bead *c* entering the groove *h*, and the bead *h'* the groove *c'*, the washer *d'* being squeezed tight and making an air-tight joint. This brings the spout at about right angles to its position when the stopper is first



put into the hole *g'*. In case of wear it can be turned farther.

This invention simplifies and strengthens the construction of the guns. The cover can be quickly made and put in place. The grooves in the stopper strengthen it and prevent the spout from twisting off in turning. The holes in the stopper break up the powder, so as to prevent clogging, and the grooves conduct it in little streams to the induct of the spout.

I am aware that a powder-gun has been made of a flexible body held to a rigid bottom by the flange on the latter.

What I claim is—

1. In a powder-gun, the elastic diaphragm, in combination with a center piece made of plastic material, the latter adhering to the former, the material of the center piece stick-

ing or clinging to that of the diaphragm without extraneous fastening, as set forth. 20

2. In a powder-gun, the stopper having a diametric groove, in combination with the spout held in such groove and extending from the stopper, as set forth.

3. A powder-gun stopper having the grooves *n' n²*, located as described, and the spout *H*, as set forth. 25

4. A powder-gun stopper having the holes *e'*, located as described, the grooves *n' n²*, and the spout *H*, as set forth. 30

In testimony whereof I affix my signature in presence of two witnesses.

WALDO P. HOUCHIN.

Witnesses:

JOHN H. REINKEN,  
CHAS. H. IMRES.