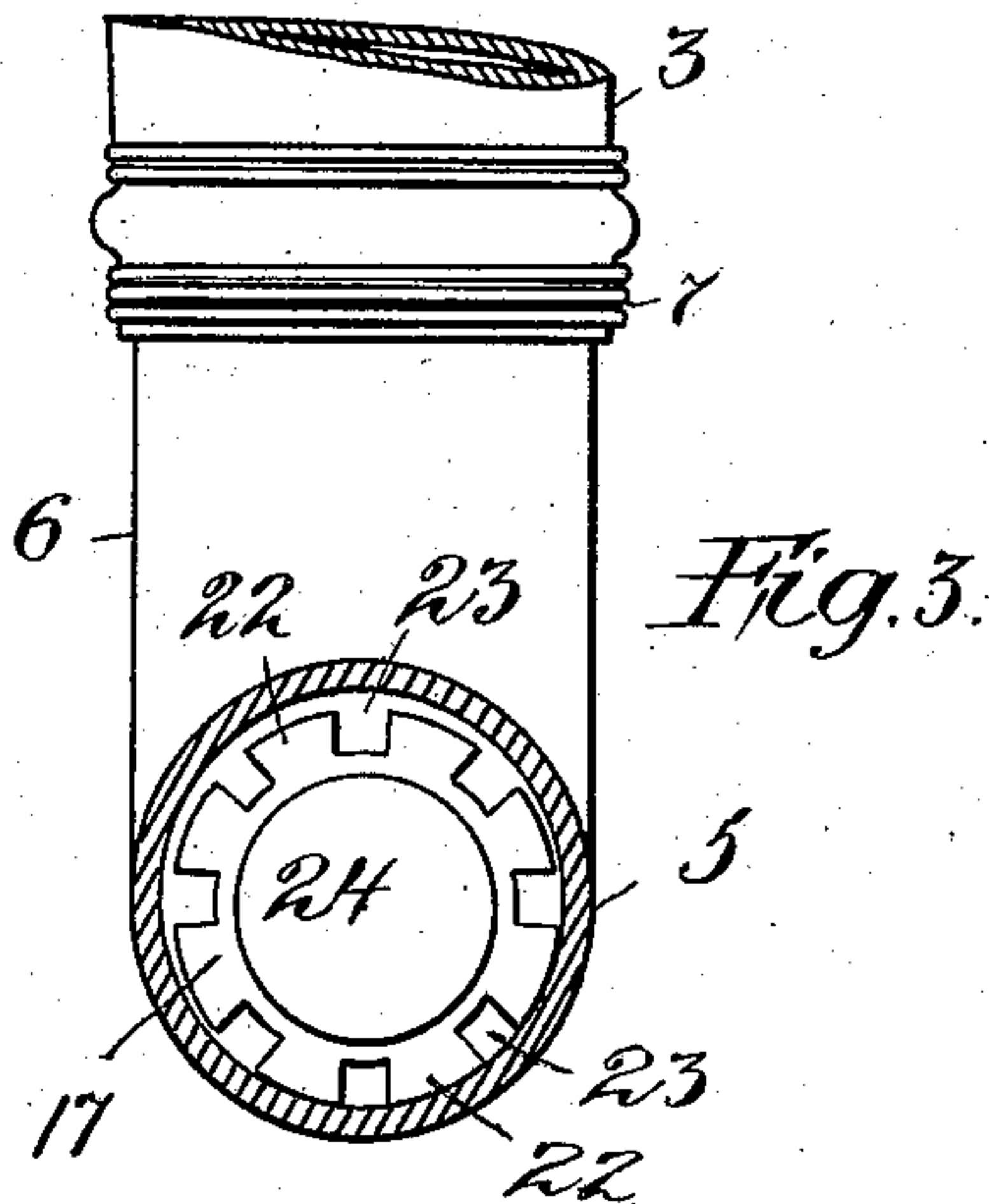
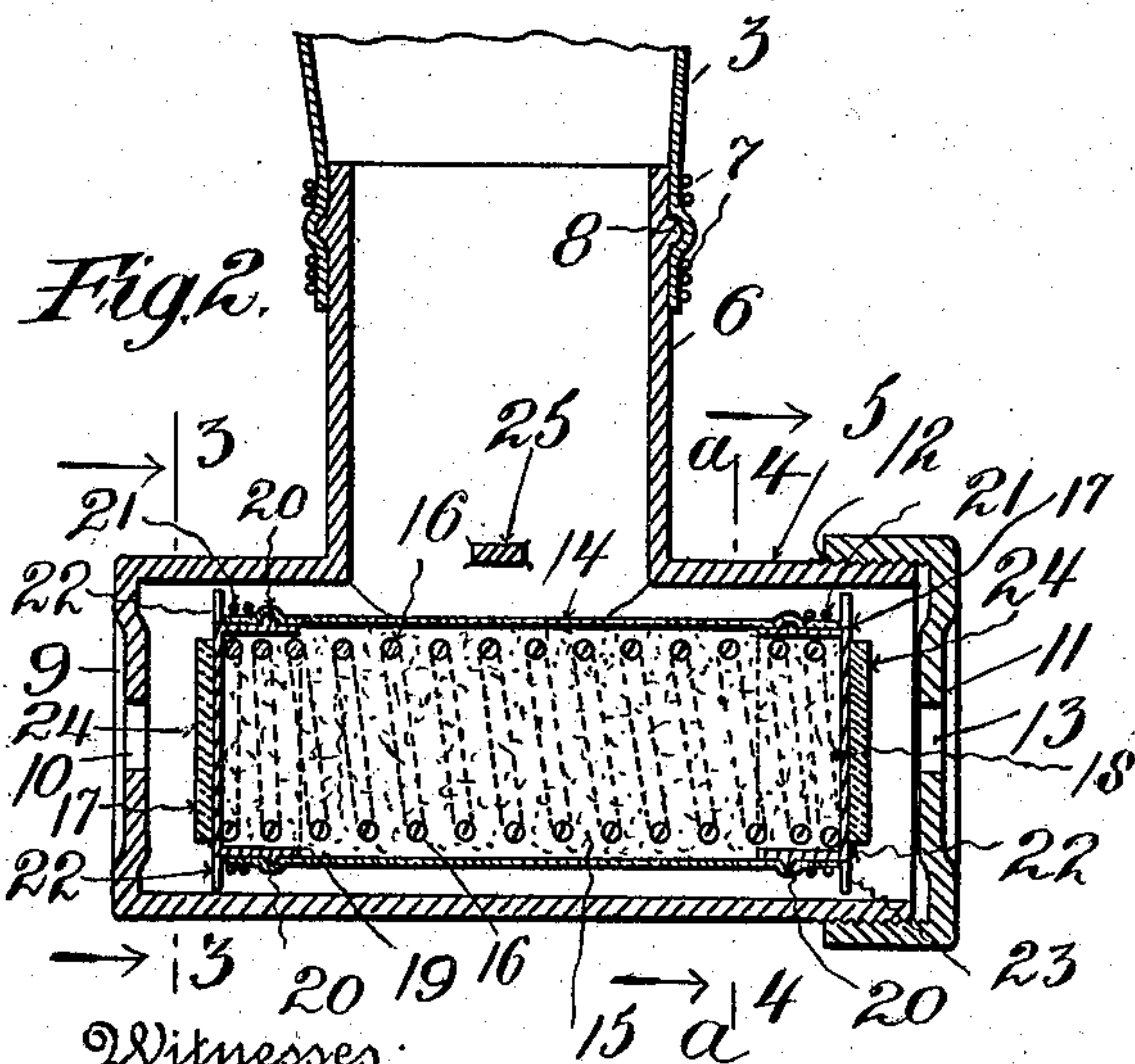
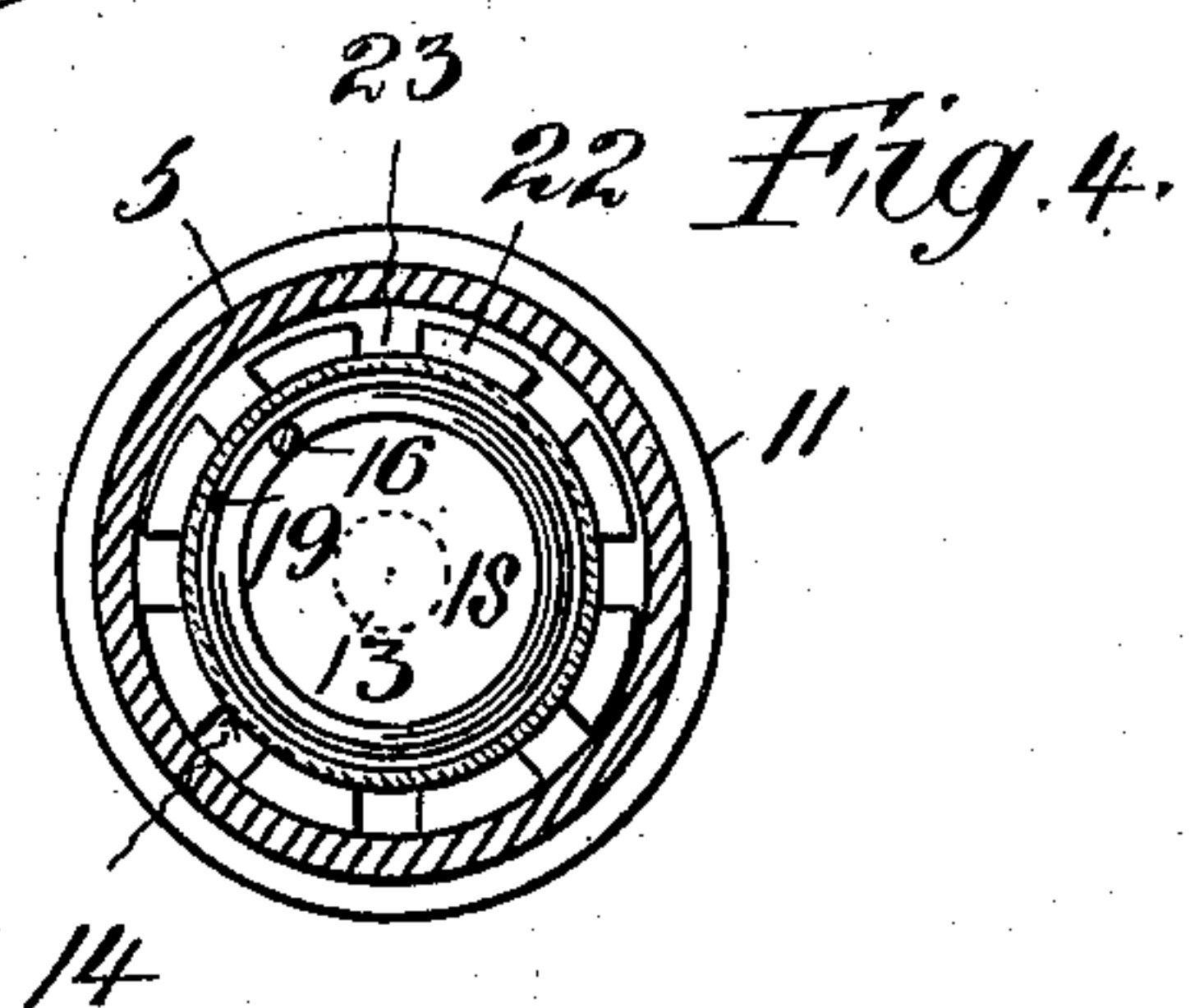
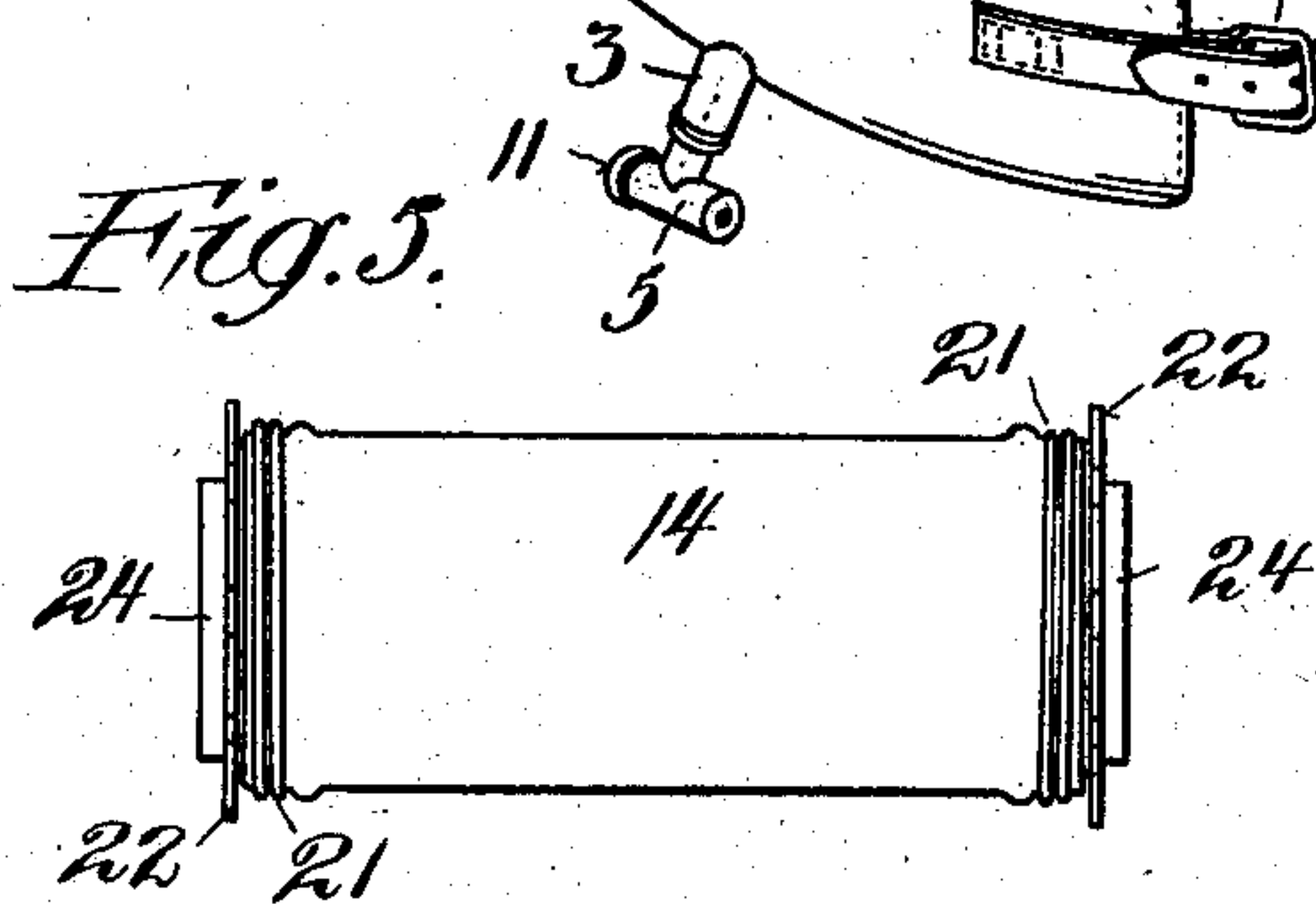
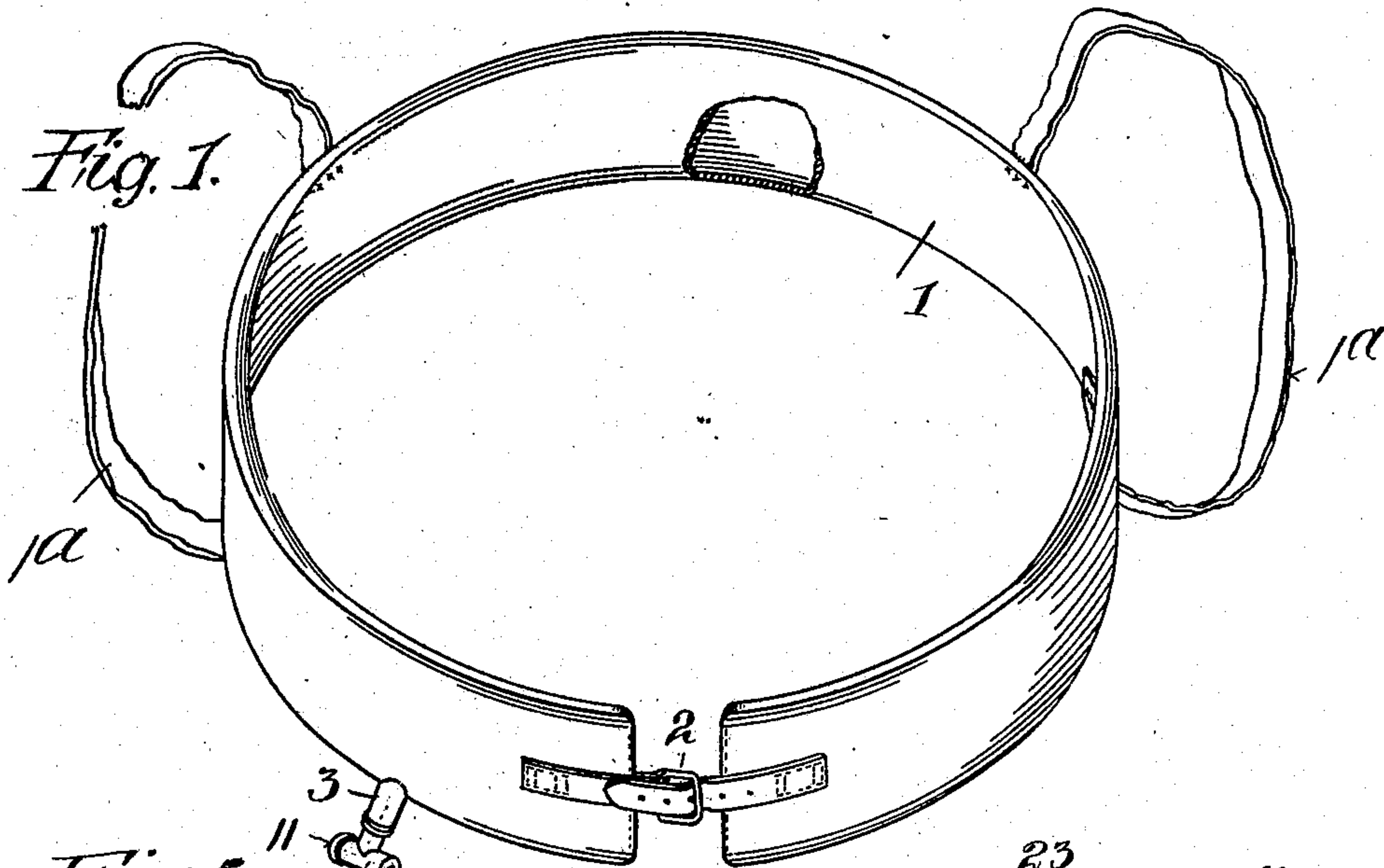


H. P. THORN.
LIFE PRESERVER.

APPLICATION FILED NOV. 16, 1907.

899,635.

Patented Sept. 29, 1908.



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UNITED STATES PATENT OFFICE.

HENRY P. THORN, OF NEW YORK, N. Y.

LIFE-PRESERVER.

No. 899,635.

Specification of Letters Patent.

Patented Sept. 29, 1908.

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To all whom it may concern:

Be it known that I, HENRY P. THORN, a subject of the King of England, and resident of New York city, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Life-Preservers, of which the following is a specification.

My invention relates to life preservers, and its object is to provide an article of inflatable variety which will be compact, simple and efficient and one which will be automatically inflatable.

By the employment of my invention a preserver may be made which will be deflated when not in use, and which, when placed in water, will, entirely without attention be inflated quickly, so as to be of immediate use, and which will be inflated with a harmless gas, thus making the preserver more efficient than the ordinary air filled preserver. Great difficulty is experienced in storing preservers which are constructed of cork and other like substances, especially where large numbers are required to be carried on board a vessel. Where inflatable preservers are used they cannot be retained in an inflated condition for a great length of time, especially without damage and the question of storage becomes important. On the other hand, the preserver must be ready for immediate use so that it may be often impracticable to be obliged to inflate the preserver at the time of use. All such difficulties are overcome in my improved preserver.

The further objects of my invention and details of construction will be hereinafter set forth.

In the drawings forming part of this invention, Figure 1 is a perspective of a life preserver embodying my invention, a part being broken away; Fig. 2 is a longitudinal section through the valve and gas generator. Fig. 3 is a section taken on the line 3, 3, of Fig. 2, Fig. 4 is a section taken on the line 4, 4, of Fig. 2, looking in the direction of the arrows *a*, and Fig. 5 is a side view of the charging cartridge.

In the use of my invention, the form of the life preserver is not material. That is to say, so long as the body is inflatable, it may be in the form of a vest, coat, or any other garment, or a ring, or it may be in the form of a belt, which may have shoulder straps, and it is the latter which I have illustrated.

In Fig. 1 it will be seen that a belt 1 is formed of a hollow airtight material, such as rubber, balloon silk or the like, suitable to be attached about the body and having shoulder straps 1^a, and the ends of this airtight preserver are secured together by a strap and buckle 2 close to the body. Secured to a tube 3 which opens into the interior of the preserver is my improved valve or gas generator, which as shown, is arranged as follows:—The body of the valve 4 is formed preferably of a tubular portion 5 at the end of, and at right angles to, a tubular neck 6, the latter being secured to the stem 3 of the preserver, in any way so as to be airtight, such as by a binding wire 7 on opposite sides of a rib 8 of the neck 6 and outside of the stem 3.

One end of the valve body is provided with a closure or cap 9, having an aperture 10 for the admission of water. The opposite end is provided with a removable cap 11 secured upon the valve body by means of a threaded connection 12 or other suitable connection, and this cap is also provided with an aperture 13 for the admission of water.

The valve and its operating means I have preferably made in the form of a removable cartridge which is placed in the valve body. It consists of a preferably cylindrical body 14 formed of such a material as will absorb water and become quickly weakened by it, and for this use I have found suitable material to be blotting paper. Within this body I provide a material 15 which is of such a nature that when water strikes it a gas will quickly be formed, and for this purpose I prefer to use "hydrone". The quantity of hydrone or the like will depend upon the size of the preserver, there being sufficient used to form enough gas to properly fill the preserver. Within the body 14 I also provide a spiral spring 16 which is normally under compression. As a means for inclosing the ends of the cartridge and keeping the spring compressed I provide a cap 17 at each end of the spring, at least one of which is removable so that the hydrone may be placed inside the spring before the cartridge is put together. The caps consist of a flat plate 18 having a flange 19 of sufficient diameter to snugly fit the bore of the body 14 and is preferably provided with an exterior rib 20, so that by applying a binder 21, on the outside of the body the caps will be securely held against

removal by the pressure of spring 16 which is normally under compression. Extending outwardly from the cap proper is a flange 22 having a series of openings 23, so that the flanges will retain the cartridge centrally in the valve body and still not prevent the free passage of water therein. On the exterior of the caps I provide a piece of felt, rubber or other material 24 in alinement with the apertures 10 and 13 and which may be seated over the same and prevent the entrance of water.

The operation of my invention is as follows. Assuming the preserver to be in the condition shown in the drawings, it will be deflated and the valve unseated so that the apertures 10 and 13 are open. If the person wearing the preserver should fall into the water or the preserver be thrown into the water the latter will immediately begin to flow into the valve body through apertures 10 and 13 and immediately the body or casing 14 of blotting paper or similar material will begin to absorb the water which will greatly weaken it, so that it will be unable to resist the compressed coil spring which is pressing against the caps at all times, and the paper 14 will be pulled apart by the spring. When this takes place the springs move the cartridge caps apart until the pieces 24 are seated over the apertures 10 and 13 when further entrance of the water into the valve will be stopped. The water which has entered the valve will attack the hydrone, or whatever material is used in its place, and a gas will be quickly formed thereby, which will pass into and inflate the hollow body of the preserver. By the time the hydrone has become exhausted there will have been formed enough gas to properly fill the preserver if the cartridge contained sufficient hydrone. The pressure of the spiral spring and also the pressure of the gas will keep the valves seated during the use of the preserver. The cartridges may be renewed from time to time by removing the cap 11, which makes it advantageous to use a cartridge such as is here shown. To keep the spring 16 from getting into the neck 6 I provide a cross bar 25 in the latter against which the spring may bear if it should bend toward the neck.

I do not wish to be limited so far as my broad claims are concerned to the use of all the elements in the way here shown.

The advantages of my improvements are obvious. The preservers are very compact and may be easily stored, always ready for use. Or a person may wear the preserver without any inconvenience, and it will be automatically inflated if he should fall or jump into the water. Besides, there is the increased buoyancy caused by inflating the preserver with gas instead of atmospheric air.

Having now described my invention what I claim is:

1. A life preserver having an inflatable

body, means which will form a gas in said body when acted upon by water, and a valve, a spring in said valve adapted to close the valve and means for resisting the action of the spring, which spring resisting means is adapted to be weakened by water, said gas forming means being located and retained within said spring resisting means and normally protected thereby, whereby when water enters the valve the spring resisting means will be overcome and the valve closed.

2. In a life preserver, an inflatable body, means for forming a gas in said body when acted upon by water, a valve body having a plurality of ports, a valve for closing said ports, a spring for closing the valve, and means for normally compressing said spring to retain the valve open, said valve resisting means being an absorbent material and adapted to be weakened by water, said gas forming means being located within and normally protected by said spring resisting means whereby the entrance of water into the valve body will weaken the valve resisting means and allow the spring to seat the valve.

3. In a life preserver, an inflatable body, a valve body having a port, a cartridge for said valve body comprising a casing of material adapted to be weakened by water, a substance contained in said cartridge casing adapted to form a gas when acted upon by water, and a spring held compressed by the cartridge casing and adapted to overcome the latter and close said port.

4. In a life preserver an inflatable body, a valve body having a plurality of alining ports and a removable cap, a cartridge for said valve body comprising a casing of material adapted to be weakened by water, a substance contained in said cartridge adapted to form a gas, means on said cartridge alining with and adapted to close said ports, and a spring in the cartridge normally compressed, and projecting apertured flanges on the cartridge for guiding the latter in the valve body.

5. In a life preserver, an inflatable body, a valve body communicating therewith and provided with a port, a coiled spring, caps at the ends of the spring, a blotting paper hollow casing adjacent the spring and secured to said caps, and a substance within said casing adapted to produce gas when in contact with water.

6. In a life preserver, an inflatable body, a valve body communicating therewith and provided with a port, a coiled spring, caps at the ends of the spring, a blotting paper hollow casing adjacent the spring and secured to said caps, and hydrone within said casing to produce gas when engaged by water.

7. The combination of a hollow casing comprising a material adapted to be weakened by water and to contain a gas producing

substance, caps secured to opposite ends of said casing, and a spring normally held under compression by said casing and acting upon said caps.

- 5 8. The combination of a hollow casing comprising a material adapted to be weakened by water and to contain a gas producing substance, caps secured to opposite ends of said casing, and a spring concentric with the

casing normally held under compression by 10 said casing and acting against said caps.

Signed at New York city, in the county of New York, and State of New York, this 13th day of November, A. D. 1907.

HENRY P. THORN.

Witnesses:

M. F. WAINRIGHT,
T. F. BOURNE.