

No. 840,031.

PATENTED JAN. 1, 1907.

W. WIEGAND & A. BRAUNERSREUTHER.

SAFETY BOTTLE.

APPLICATION FILED OCT. 5, 1906.

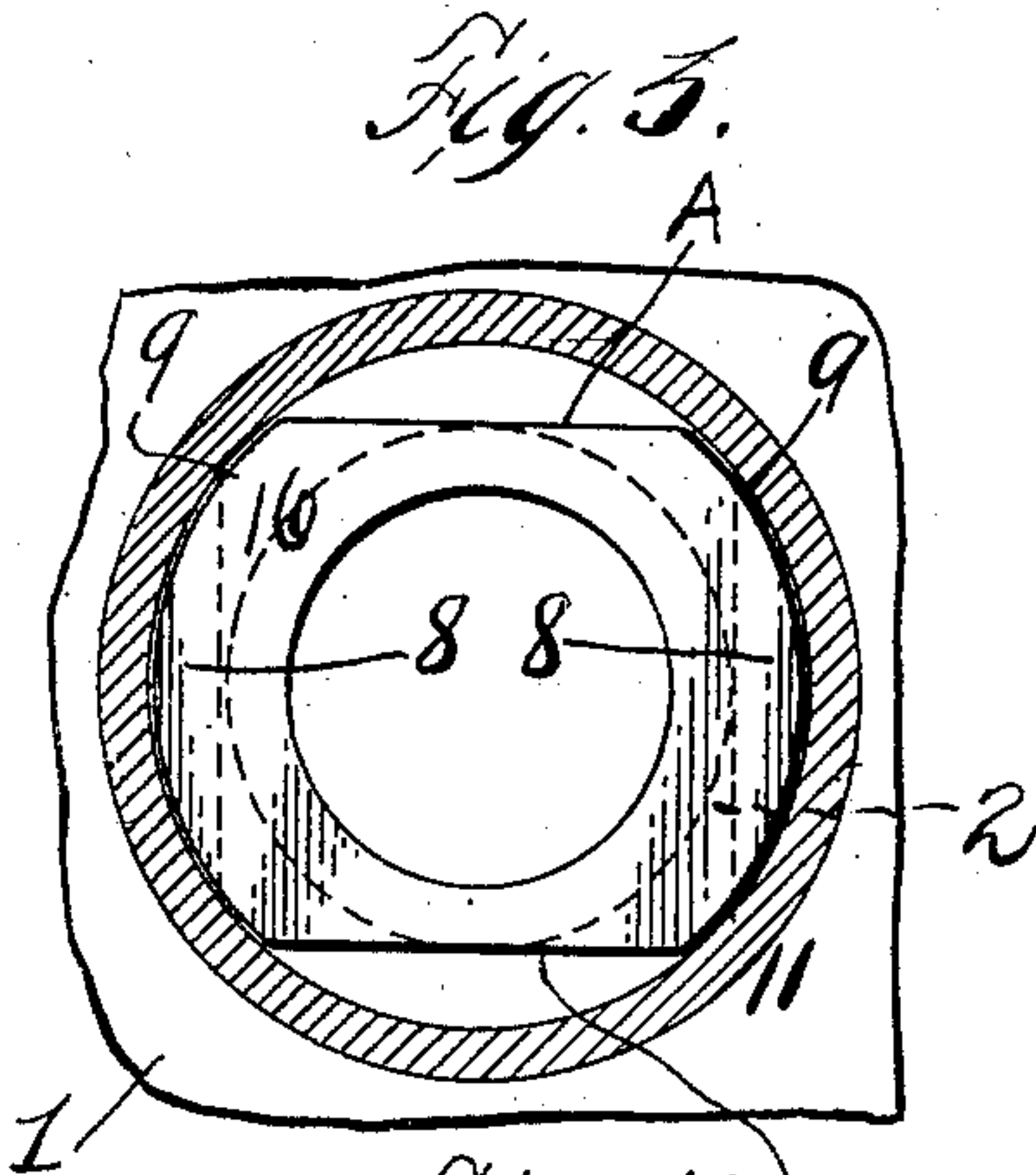
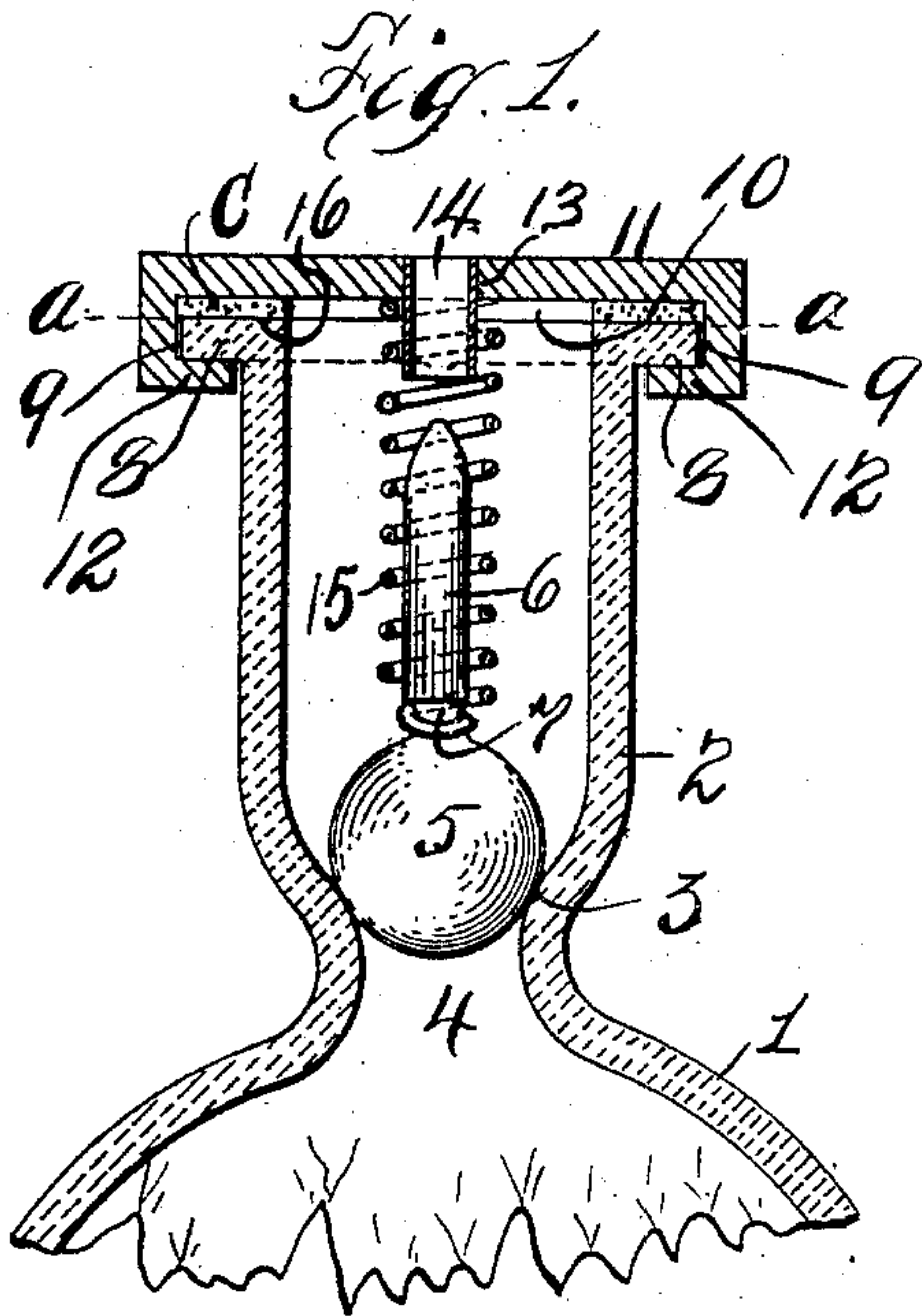
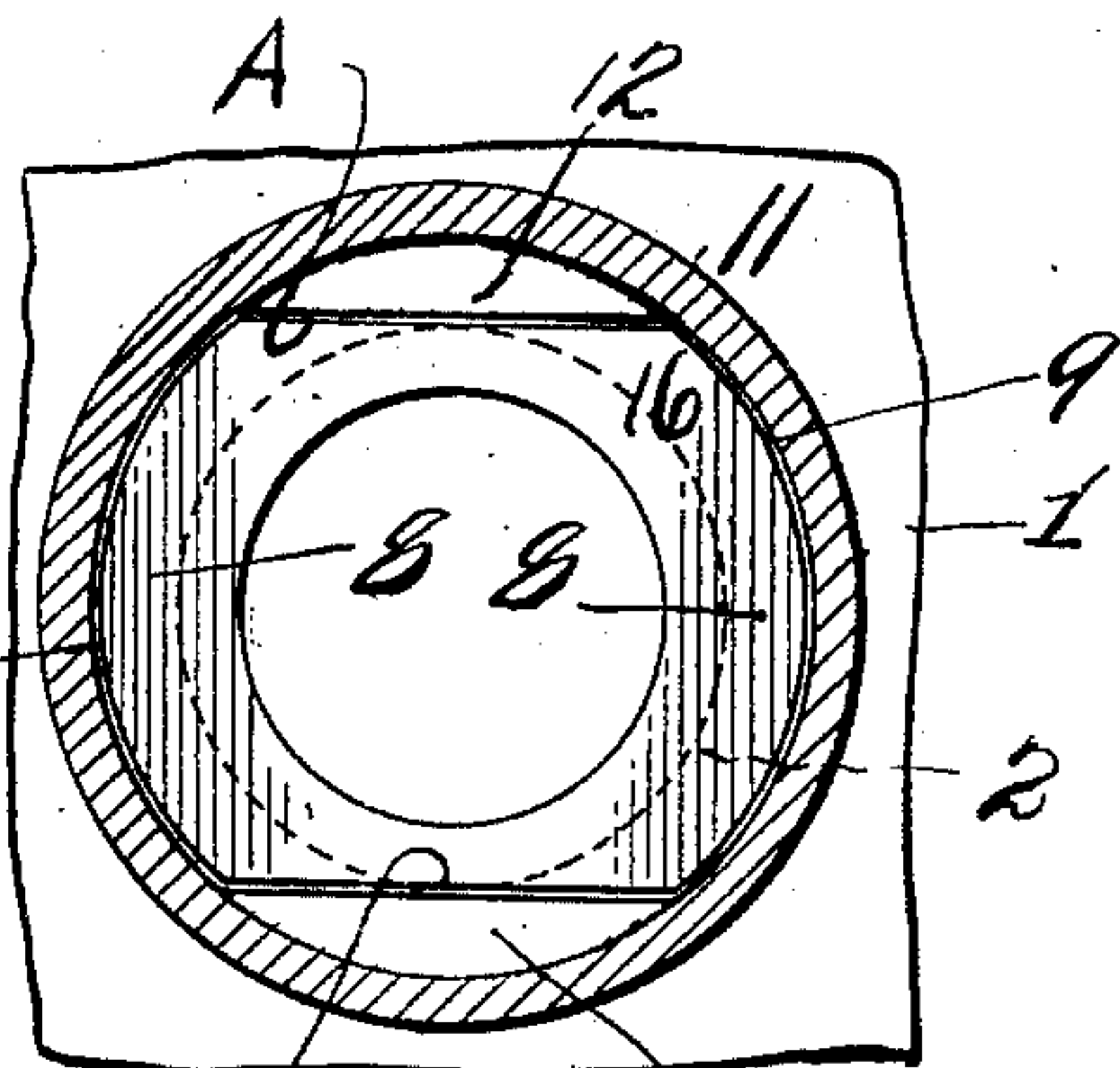
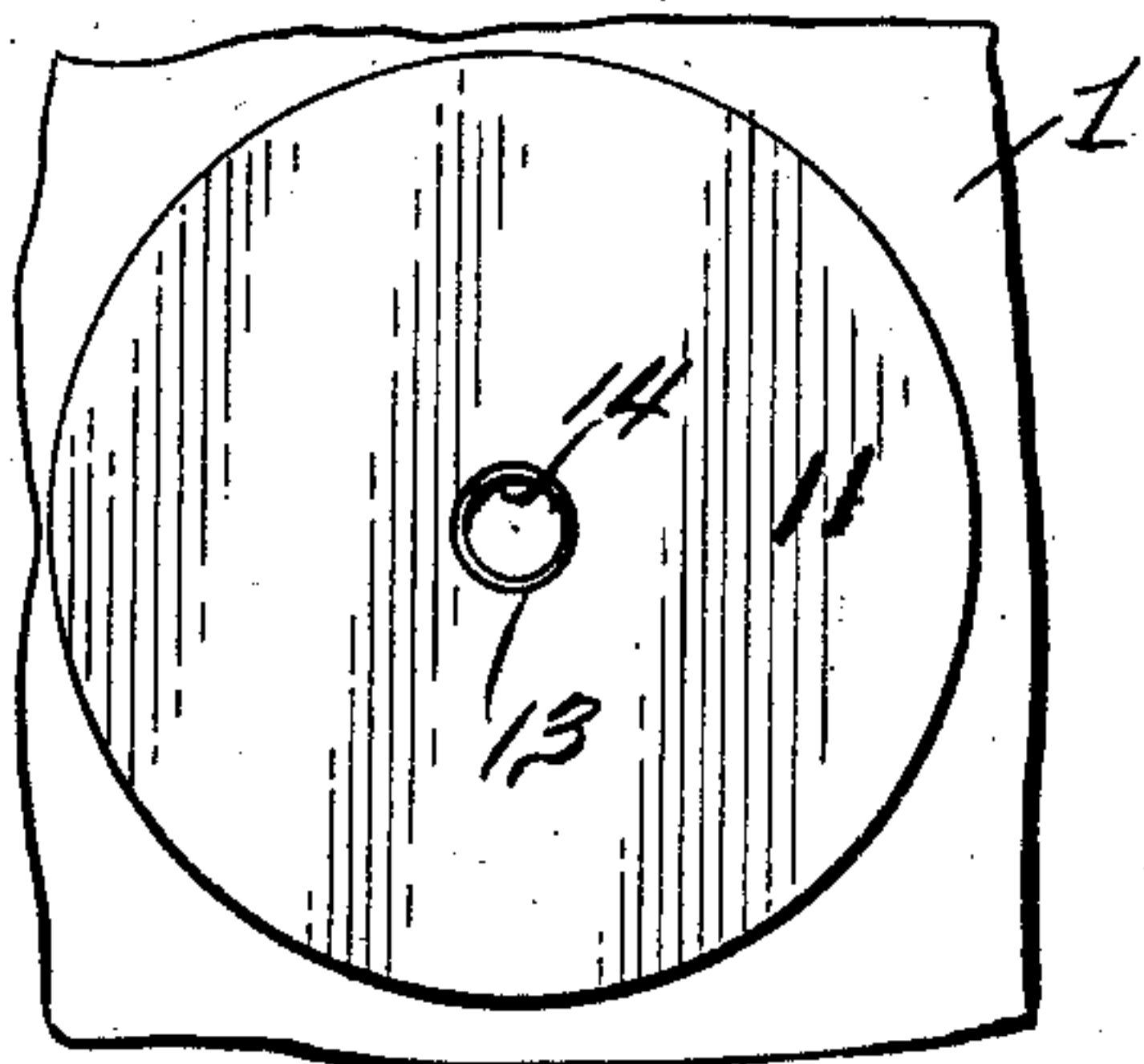
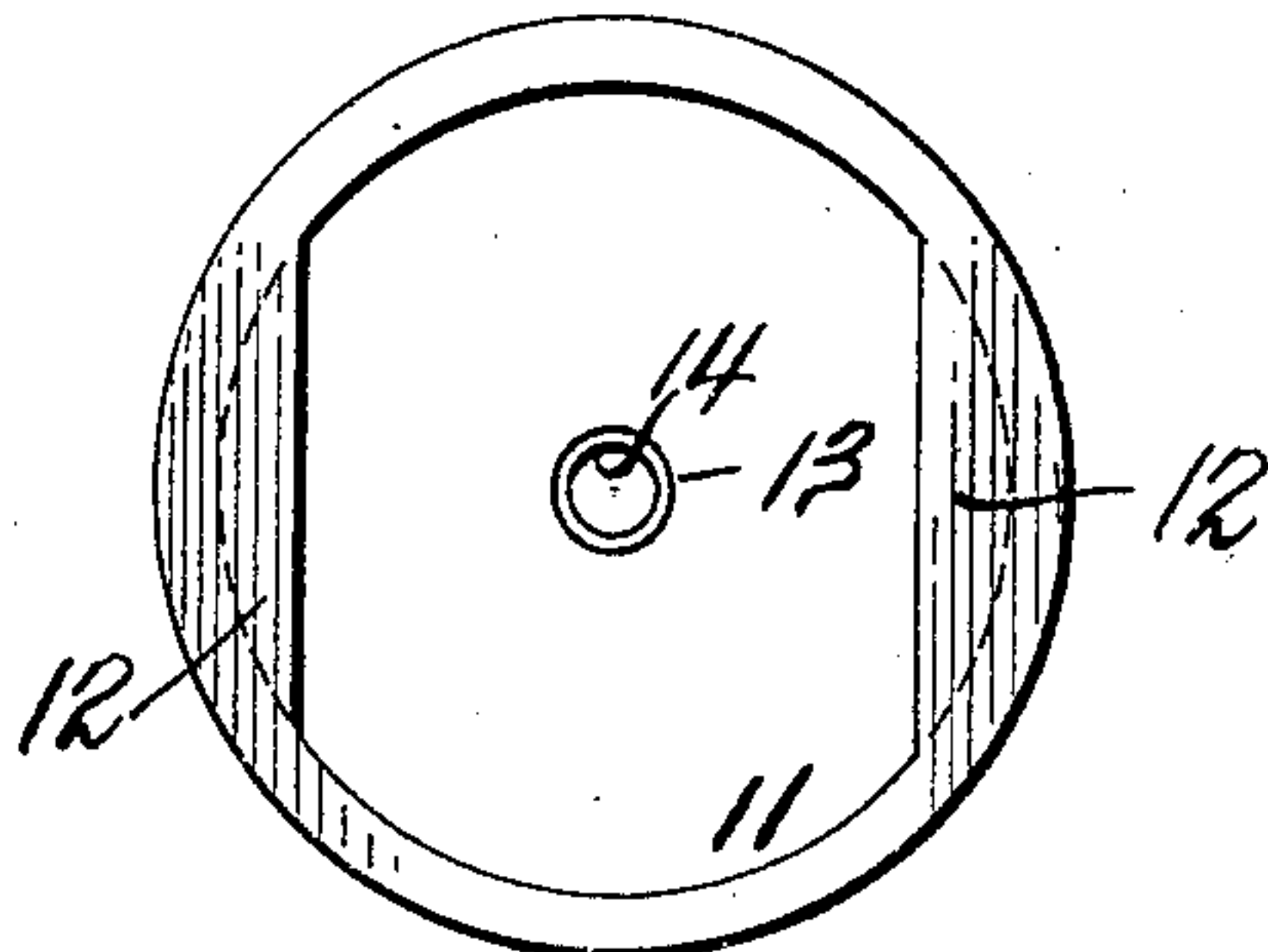
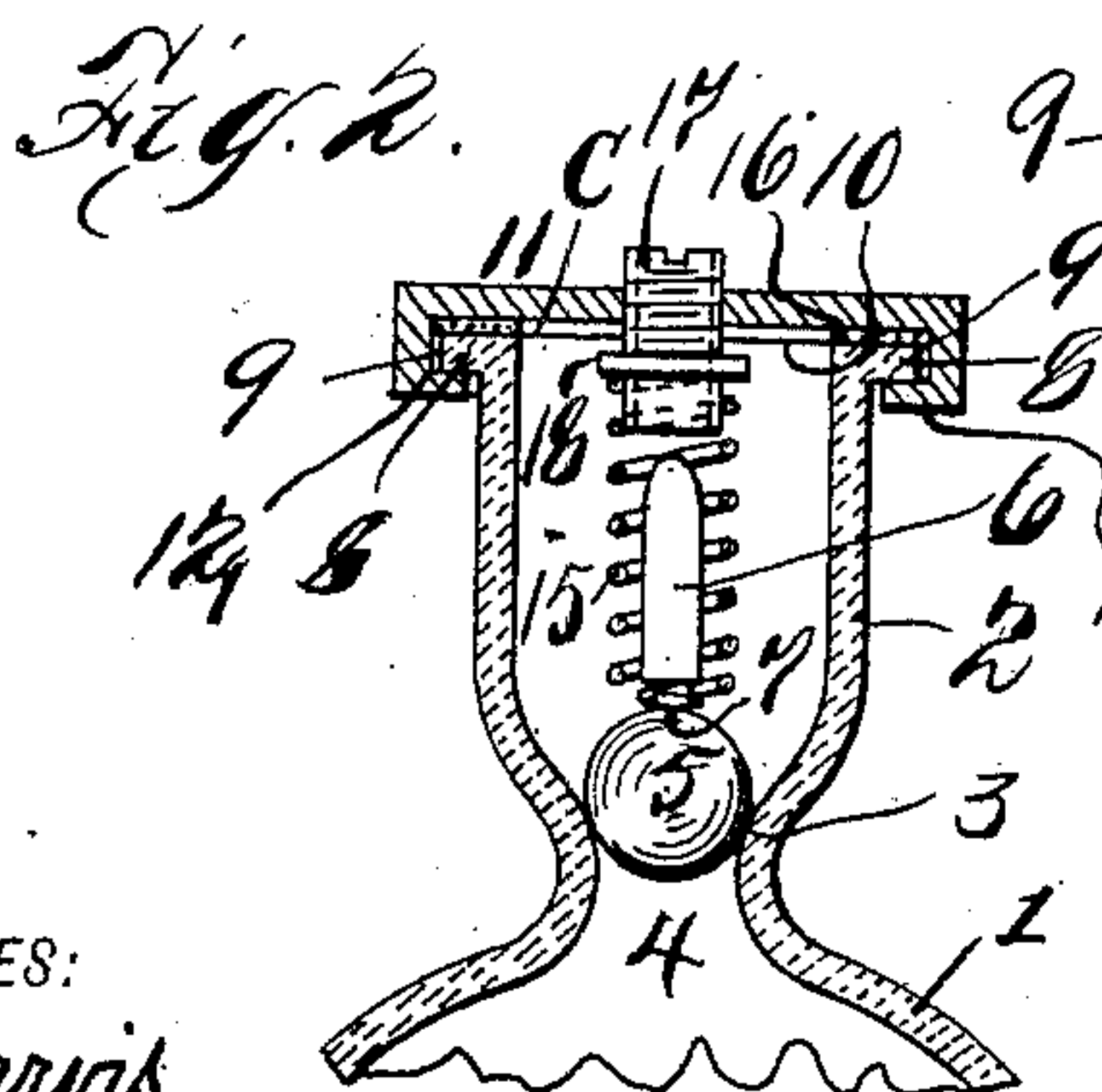


Fig. 4. A



A Fig. 5. 12




WITNESSES:

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SAFETY-BOTTLE.

No. 840,031.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed October 5, 1906. Serial No. 337,548.

To all whom it may concern:

Be it known that we, WILHELM WIEGAND and ALFRED BRAUNERSREUTHER, subjects of the German Emperor, and residents of the city, county, and State of New York, have invented certain new and useful Improvements in Safety-Bottles, of which the following is a clear, full, and exact description.

This invention relates to safety bottles or receptacles, the object being to provide a simple means which can be inserted into the neck or outlet of a gaseous-liquid receptacle, such as a bottle, which will automatically open and relieve the pressure of any excess gases which may be generated therein.

Our improved safety device is particularly adapted for receptacles containing gas-producing liquids, it being so organized as to open and relieve the pressure of the excess gases when said pressure reaches a dangerous or predetermined point, whereby explosion of the receptacle is avoided.

To these and other end, which will hereinafter appear, our invention comprises the novel features of improvement, combination, and arrangement of parts, which we will now proceed to describe in connection with the accompanying drawings, forming part hereof, wherein—

Figure 1 is a vertical central section of the neck and a portion of the body of a bottle containing our improved safety device, the valve being shown in elevation. Fig. 2 is a plan view thereof. Fig. 3 is a sectional plan view thereof, the section being taken on a line *a a* in Fig. 1. Fig. 4 is a bottom plan view of the cap. Fig. 5 is a sectional diagrammatic plan view taken through the cap, showing the manner of applying the cap to the neck of the bottle; and Fig. 6 illustrates, on a reduced scale, a vertical central sectional view of our improvements, wherein an adjustable nipple is shown applied to the cap, the valve being shown in elevation.

Similar characters of reference are intended to indicate corresponding parts in the several views.

Referring to Fig. 1 of the drawings, the numeral 1 indicates a portion of the body of a bottle, which has extending therefrom the neck 2. 3 indicates a valve-seat, preferably formed integral with the neck 2. In order to close the opening 4 of neck 2, we employ a valve 5, which is in this instance illustrated

as spherical, but same may be of other formation. The valve 5 has extending therefrom a stem 6, which is provided in the periphery thereof with an annular groove 7. Said valve and stem are preferably formed of an integral piece of glass. The neck 2 of the bottle is provided at the top thereof with outwardly-extending flanges 8 8, oppositely disposed, the edges 9 of said flanges being curved concentric with the periphery of the neck 2 and the sides thereof being tangent to said neck, as shown in Fig. 3. To seal the outlet 10 of neck 2, we employ a cap 11, provided with inwardly-extending flanges 12 12, the distance between said flanges being slightly greater than the diameter of the neck 2 (see Fig. 5) and less than the diameter of the curved edges of the flanges 8 8. The cap 11 is perforated, as at 13, the perforation or opening being fitted with a nipple 14, which extends inwardly, as shown, Fig. 1. 15 indicates a coiled spring, which at its lower end is sprung into the groove 7 and at its upper end is passed over the nipple 14 and soldered or otherwise attached to the cap or nipple. It will thus be seen that when the cap 11 is removed the valve 5 and spring will come with it. Between the cap 11 and top 16 of the neck 2 we insert a washer or gasket C of suitable material. As the stem 6 of the valve 5 is smaller than the inner diameter of the spring 15, said valve can accommodate itself to the valve-seat 3 in obvious manner.

In order to fill the bottle, the cap 11 is removed, the valve 5 and attached spring 15 being at the same time withdrawn. After having filled the bottle with gaseous liquid the valve 5 is inserted into the neck of the bottle, and the flanges 12 12 of the cap 11 will then be passed over the edges A of the flanges 8 8, Fig. 5, until the top of the cap 11 contacts the gasket C, said gasket being thick enough to require a slight pressure thereon before the flanges 12 12 can be forced under the flanges 8 8. After having gotten the cap 11 in the aforesaid position a slight downward pressure is then applied and the cap turned to the right or left until the flanges 12 12 lock under the flanges 8 8, Fig. 3. In the meantime the valve 5 will have been pressed home against the seat 3 by the spring 15. The spring 15 not only offers a resistance to the ordinary pressure from within the bottle, but also tends to retain the cap

11 in position with respect to the locking-flanges referred to. The tension of spring 15 will be sufficient to hold the valve closed against the flow of the liquid, thus acting as a stopper, but will permit the gases generated within the bottle to escape around the valve and out through the nipple 14 when the pressure of the said gases overcomes the tension of the spring 15.

Figure 6 shows the cap 11 fitted with an adjustable threaded nipple 17, the flange 18 thereon serving to retain the spring 15. By screwing the nipple in or out the tension of the spring can be adjusted, whereby a greater or lesser pressure of the gases will be required to open valve 5.

Having now described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In combination with a liquid-receptacle provided with an outlet, said outlet being provided with a valve-seat, a valve having an elongated stem and adapted to impinge upon said valve-seat, a coiled spring encircling said stem and adapted to press said valve against said seat, a cap for said outlet having an opening, a tube communicating with said opening and adapted to retain the spring in position.

2. In combination with a liquid-receptacle provided with an outlet, said outlet being provided with a valve-seat, a valve having a stem and adapted to impinge upon said valve-seat, a coiled spring encircling said stem and adapted to press said valve against said seat, a self-sealing cap for said outlet, said cap having an opening, and a nipple communicating with said opening.

3. A bottle having upon the neck thereof outwardly-extending flanges oppositely disposed, a perforated cap for said neck provided with inwardly-extending flanges adapted to engage the under side of said flanges whereby said cap is retained in place, a valve-seat in said neck, a valve in said neck adapted to impinge upon said valve-seat, and a spring retained by said cap adapted to force said valve against its seat.

4. A bottle having a neck provided with a plurality of projections, combined with a cap provided with means adapted to engage said

projections whereby said cap is retained in place, a valve-seat in said neck, a valve in said neck adapted to impinge upon said seat, and resilient means carried by said cap adapted to force said valve against said seat.

5. A bottle having upon the neck thereof outwardly-extending flanges oppositely disposed, a perforated cap for said neck provided with inwardly-extending flanges adapted to engage the under side of said flanges whereby said cap is retained in place, a valve-seat in said neck, a valve in said neck adapted to impinge upon said valve-seat, said valve being provided with an elongated stem, a coiled spring adapted to fit over said stem and force said valve against its seat, and an adjustable nipple carried by said cap adapted to retain said spring and adjust the tension thereof.

6. A safety device adapted for receptacles containing gaseous liquids, comprising a valve adapted to normally close the outlet of said receptacles, said valve being provided with a stem, said stem having an annular groove in the periphery thereof, a coiled spring adapted to surround said stem and engage said groove, a cap for said outlet, said cap having said spring attached thereto, whereby said valve can be removed simultaneously with said cap, and an outlet above said valve for the escape of the generated gases.

7. A bottle having a neck, a valve-seat therein, a valve adapted to impinge against said seat, a cap removably fitted upon said neck, a coiled spring secured at one end to said valve and at the other end to the cap, and means for regulating the tension of said spring.

8. A bottle having a neck, a valve-seat therein, a valve provided with a stem fitting in said seat, a cap removably fitted upon said neck, the cap provided with an opening, a threaded nipple fitting in said opening, and a coiled spring secured to the stem of said valve and to said nipple.

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