

P. SAMAIN.  
STOPPERING DEVICE FOR BOTTLES.

(Application filed Aug. 11, 1900.)

(No Model.)

FIG. 1.

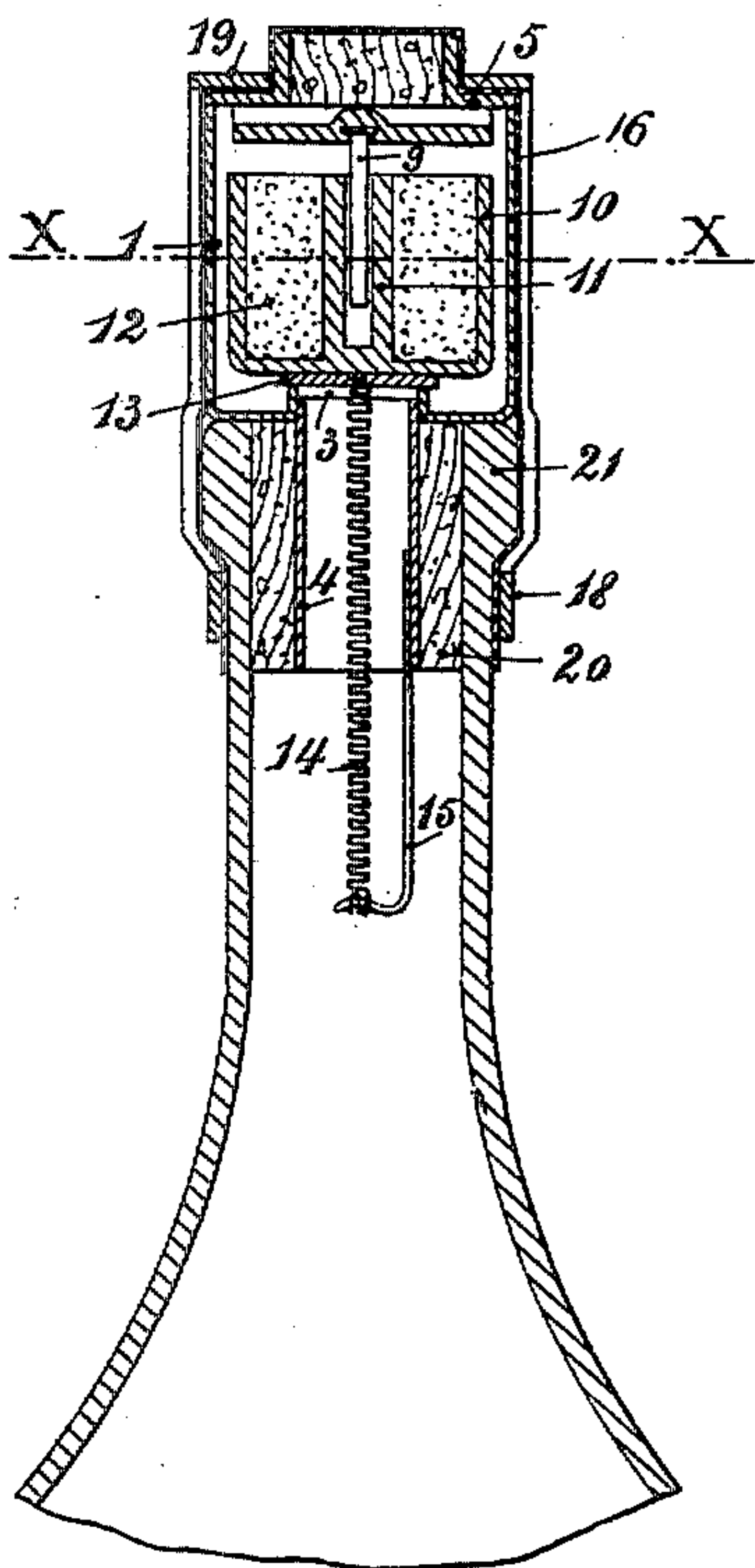


FIG. 3.

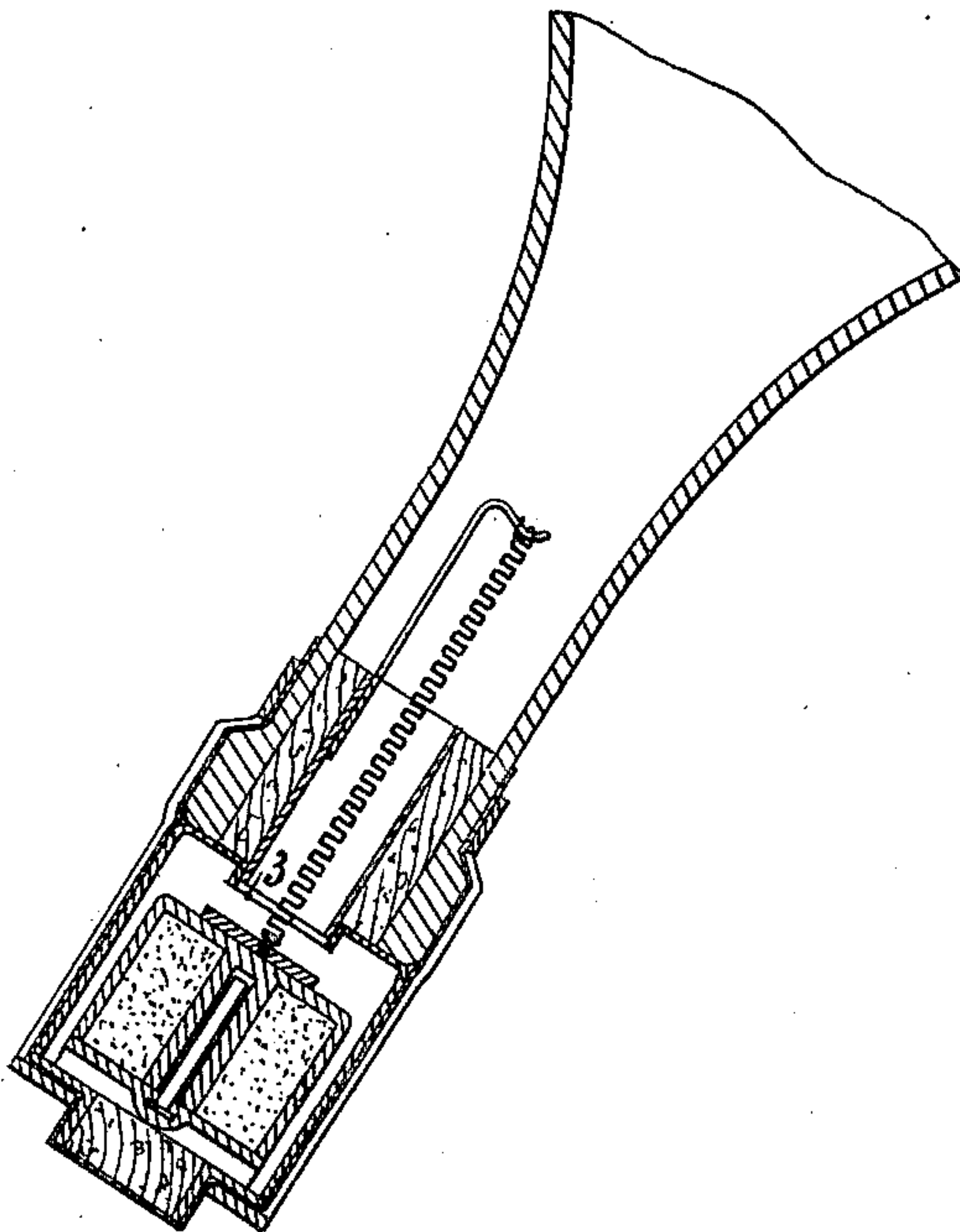


FIG. 2.

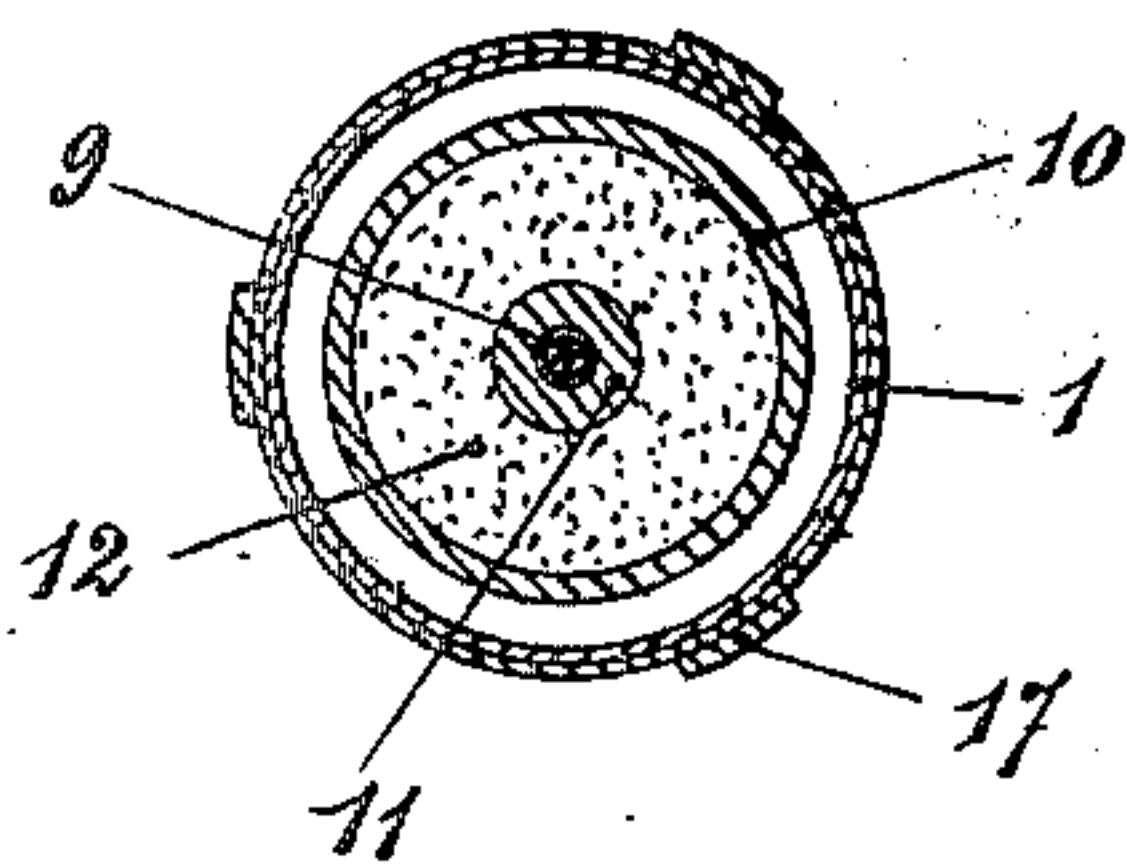


FIG. 5.

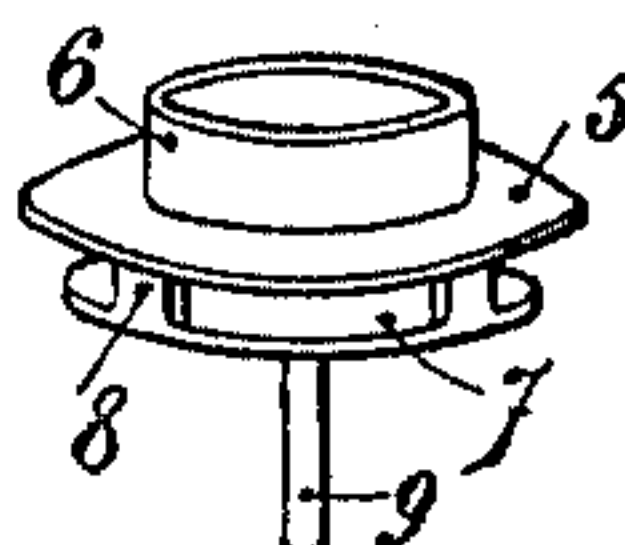
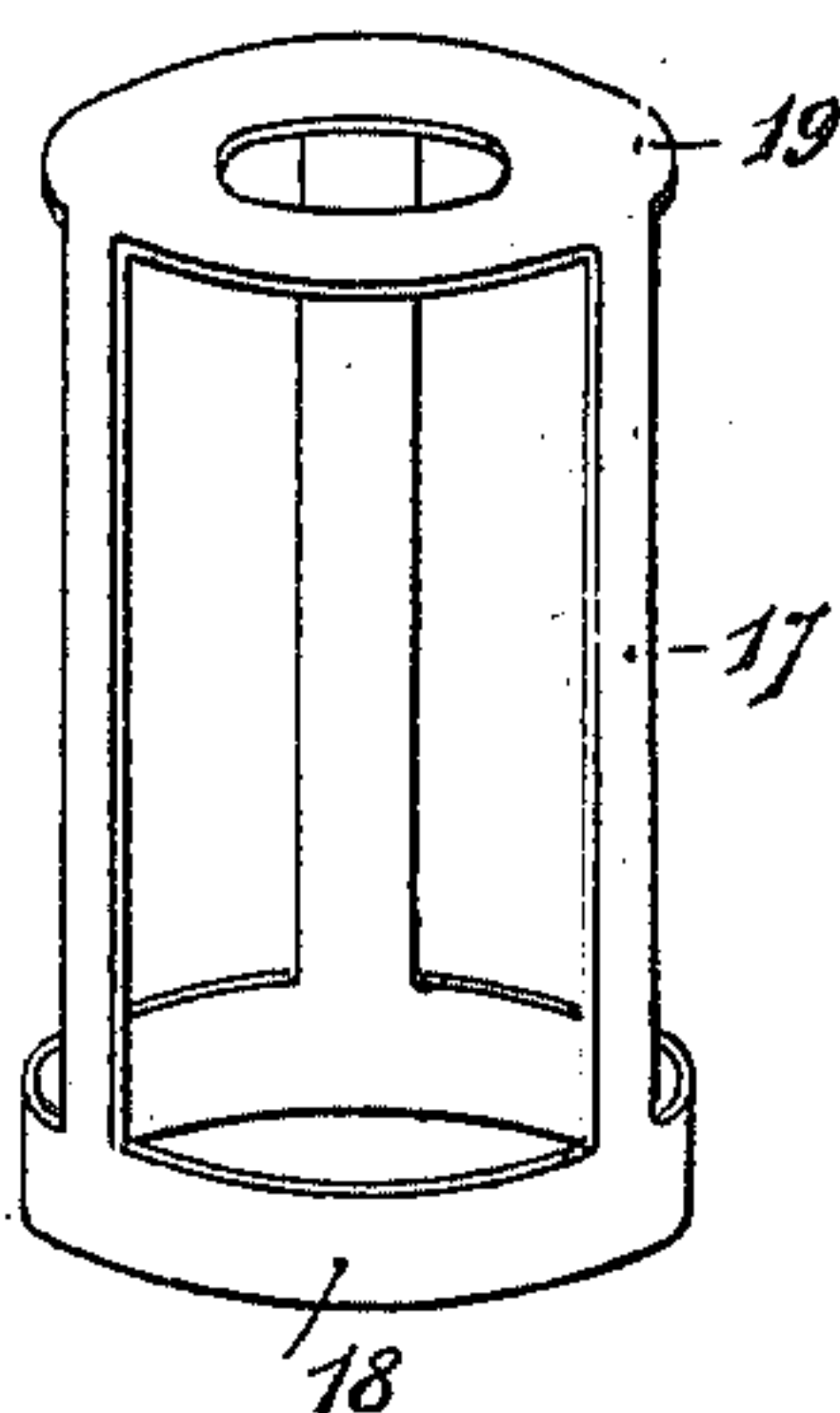


FIG. 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

PIERRE SAMAIN, OF CLAMART, FRANCE.

## STOPPERING DEVICE FOR BOTTLES.

SPECIFICATION forming part of Letters Patent No. 668,020, dated February 12, 1901.

Application filed August 11, 1900. Serial No. 26,587. (No model.)

*To all whom it may concern:*

Be it known that I, PIERRE SAMAIN, inventor and mechanic, a citizen of the Republic of France, residing in Clamart, Seine, in the Republic of France, (whose post-office address is 108 Rue Victor Hugo, Clamart, aforesaid,) have invented certain new and useful Improvements in Stoppering Devices for Bottles and the Like, of which the following is a specification.

My invention relates to an improved stoppering device for bottles and other like receptacles which allows the liquids contained to be poured out and which prevents fraudulent refilling without destroying the system of stoppering.

My invention comprises in combination a system of stoppering allowing the liquid to be poured out, but absolutely preventing the reintroduction of liquid into the bottle, and a system of securing the stoppering device so as to prevent its being taken off or the system restored to its original state if replaced after being taken off. I am quite aware, moreover, that various systems have been invented for stoppering and capsuling bottles which have a result more or less analogous; but my invention is characterized by the special features adopted in order to obtain a simple device which is cheap and certain in its action, as will be shown by the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section taken through the center of the bottle and system of stoppering forming the object of my invention. Fig. 2 is a horizontal section on the line  $xx$  in Fig. 1. Fig. 3 is a sectional view similar to that of Fig. 1, showing the bottle in an inclined position and the position taken by the stopper-valve. Fig. 4 is a perspective view of the frame which holds the stoppering device in its place. Fig. 5 is a perspective view of the guard which is placed in the stoppering device.

The stoppering device comprises a metal casing or envelop 1, the bottom of which is turned up in the center about an orifice 3 and which casing rests on the neck of the bottle by means of the annular bottom formed by stamping out the said orifice. The inner edges of the raised part form a seat for a col-

lar or washer 13. The casing 1 is surmounted by a guard-piece. (Shown in perspective in Fig. 5.) This guard-piece is fixed to the casing 1 by a flange 5, the edges of which are soldered or fixed in any suitable manner to the top of the casing 1. The guard-piece has for its object to prevent the introduction into the interior of the stoppering device of anything likely to stop the action of the stopper-valve—a hooked iron wire, for instance—and the fraudulent refilling of the bottle.

The guard-piece consists of a tubular piece 6, a flange 5, by which it is fixed onto the casing, a plate 7, fixed under the flange 5 and which is attached to it by means of lugs 8, suitably placed in such a manner as to leave a free space for the flow of liquid. In the center of the plate 7 there is placed a stem 9, which serves as a guide for the stopper-valve. In the orifice 3 of the bottom of the casing there is fastened a tube 4 by soldering or in other suitable manner, which tube engages in a hollow stopper, made of cork, india-rubber, or other material, in order to fix the stoppering device in an air-tight manner in the mouth of the bottle. On the interior wall of the tube 4 there is fastened, by solder or otherwise, a rod 15, bent at its lower end to hold one end of a spiral spring 14, the other end of which is fixed to a small screw which is screwed into the collar 13, forming part of the stopper-valve. The stopper-valve consists of a sort of metal thimble 10, carrying in its middle a long socket 11, in which the stem 9 of the guard engages to act as a guide to the stopper-valve in its longitudinal movement. The thimble 10 carries a ring or washer 13 on its lower face, which acts as a valve by bearing on the turned-up edges of the bottom of the casing 1. In the center of the washer 13 one end of the spring 14 is fixed, as above stated. The interior of the thimble 10 is filled up with a material non-corrodible by the liquids to be contained in the bottle, and as my system of stoppering is intended chiefly for use with alcoholic liquids I have found that plaster-of-paris fulfils the desired conditions.

The mode of action of this system of stoppering is as follows: The weight of the stopper-valve and the pull of the spring which fixes it on its seat are calculated in such a



way that the weight of the valve is greater than the pull exerted by the spring, and, further, the volume of the stopper-valve in relation to its weight is determined in such a manner that when the stopper-valve is immersed in liquid the force or buoyant action of the liquid added to the pull of the spring exceeds the weight of the stopper-valve, which means that the stopper-valve is pulled onto its seat by the combined efforts of the force of the liquid and the tension of the spring. To pour out the liquid contained in the bottle, the bottle is completely reversed, the stopper-valve drops by its own weight, which is greater than the pull of the spring, and the liquid flows through the orifice 3, thence through the annular space comprised between the stopper-valve and the casing 1, and finally runs out through the tubular piece 6. For the liquid to flow out air must be free to enter the bottle. For this object, after having completely reversed the bottle to cause the stopper-valve to drop away from its seat, the bottle is inclined, as is shown in Fig. 3, so that air can enter by the uppermost portion of the annular space around this stopper-valve, while the liquid flows out by the lower part of said annular space. On the other hand, if the bottle is reversed and plunged into liquid in order to fraudulently refill it the pull of the spring added to the force of the liquid acting on the stopper-valve, which is plunged therein, becomes greater than the weight of the stopper-valve, and the latter is pressed against its seat, stopping the liquid altogether from entering the bottle by means of the washer 13.

I will now proceed to describe the system of fixing which prevents the stoppering device being raised to fraudulently refill the bottle. The stoppering device being put in place, it is covered by a capsule 16, consisting of a thin sheet of tin or other suitable alloy, such as is ordinarily used. Then on top of the capsule 16 is fastened a frame having the form shown in perspective in Fig. 4. This frame has a ring portion 19, which when in position rests on the top of the stoppering device and is secured to a bottom ring 18 by means of side strips 17. When the frame is put on the stoppering device, the ring 18 comes below the bead 21, formed around the mouth of the bottle. The ring 18 is then contracted by a suitable apparatus in such a way as to clasp the neck of the bottle below the bead 21. The distinctive character of this fastening is based on the nature of the metal which is used in the manufacture of the ring 18. It is made of a suitable brittle metal or alloy, which is, however, capable of being contracted under the bead 21; but a ring of such a metal is unable to stand being enlarged, which does not allow it to be drawn from the neck without breaking, nor is it able to stand the fresh compression to which it would have to be sub-

jected in order to replace it on the bottle after having been once taken off. As an example fulfilling these conditions I might mention eighty-four parts lead to sixteen of antimony, by weight; but I do not restrict myself to this alloy alone, and I can still employ others having the same properties. I prefer to make whole of the frame in brittle metal; but, if desired, only the ring need be made of brittle metal, the ring part 19 and strips 17 being of another metal, it being understood that the whole should be welded together in an undetachable way, so as not to involve any joints. It will be understood that the apparatus or appliance used for compressing the ring 18 can be utilized to print on the latter any kind of mark which will be damaged by the breaking of the ring.

I claim as my invention—

1. A stoppering device comprising a casing having a turned-up edge or valve-seat about a central orifice in its bottom, a guard-plate carrying a stem on its under side, a hollow stopper-valve in the form of a thimble having in its center a long socket adapted to engage over and be guided by said guide-stem, said thimble being filled with plaster-of-paris, a washer fixed under the thimble, a tube fixed in the said central orifice, a rod fixed to the inside wall of the tube, a spiral spring fastened at one end to said rod and at the other end to the washer, and means for fixing the stoppering device on the bottle in an undetachable manner; in combination substantially as hereinbefore set forth.

2. A stoppering device comprising a casing having a turned-up edge or valve-seat about a central orifice in its bottom, a guard-plate carrying a stem on its under side, a hollow stopper-valve in the form of a thimble having in its center a long socket adapted to engage over and be guided by said guide-stem, said thimble being filled with plaster-of-paris, a washer fixed under the thimble, a tube fixed in the said central orifice, a rod fixed to the inside wall of the tube, a spiral spring fastened at one end to said rod and at the other end to the washer, and means for fixing the stoppering device on the bottle in an undetachable manner without breaking an inclosing frame, comprising, a ring of brittle metal which cannot be expanded and contracted more than once without breaking, a top ring portion adapted to engage over a tubular piece on the guard-plate, and side strips connecting the ring and ring portion together; in combination substantially as hereinbefore set forth.

In witness whereof I have hereunto signed my name, this 28th day of July, 1900, in the presence of two subscribing witnesses.

PIERRE SAMAIN.

Witnesses:

PAUL POURNOL,  
ERUPERD MENARD.