

(No Model.)

F. H. GRUENDLER.
NON-REFILLING BOTTLE.

No. 580,615.

Patented Apr. 13, 1897.

Fig. I.

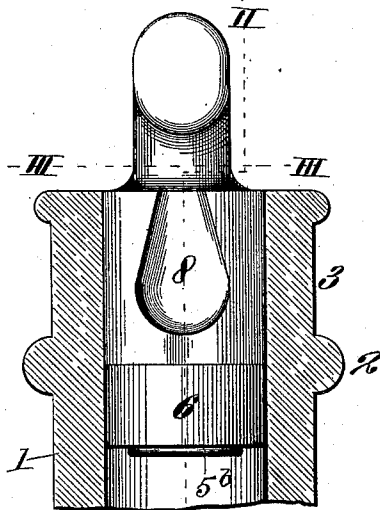


Fig. II.

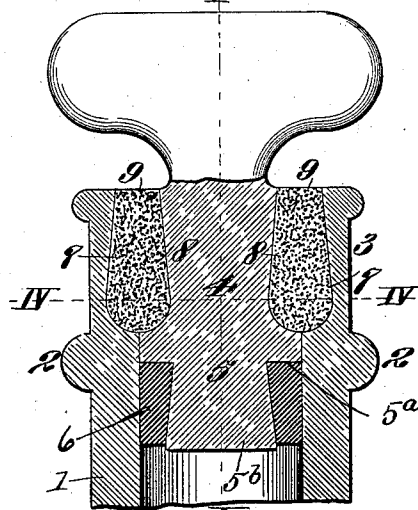


Fig. III.

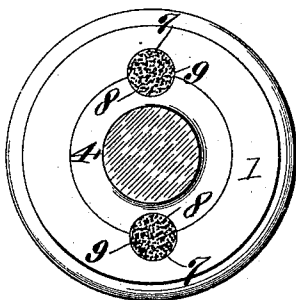


Fig. IV.

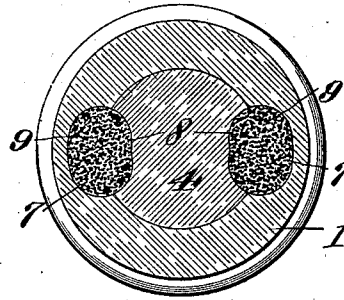


Fig. V.

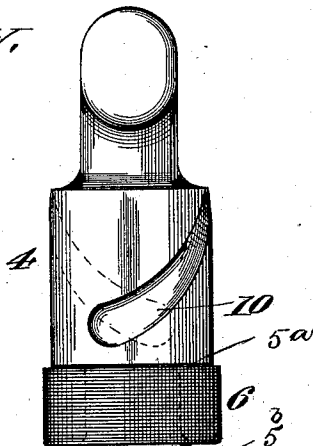
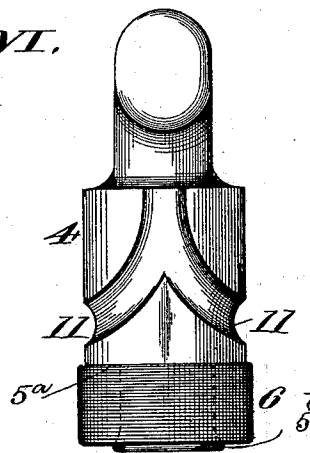


Fig. VI.



Attest:
N. F. Valley

Inventor:
Francis H. Gruendler.
By *Wright, Brod* attys

UNITED STATES PATENT OFFICE.

FRANCIS H. GRUENDLER, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF
TO PETER M. KLING, OF SAME PLACE.

NON-REFILLING BOTTLE.

SPECIFICATION forming part of Letters Patent No. 580,615, dated April 13, 1897.

Application filed October 3, 1896. Serial No. 607,752. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. GRUENDLER, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have
5 invented a certain new and useful Improvement in Non-Refilling Bottles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.
10 My invention relates to an improvement in non-refilling bottles; and it consists in features of novelty hereinafter fully described, and pointed out in the claim.

Figure I is a view illustrating my invention, the neck of the bottle being shown in section on line I I, Fig. II, and the stopper being shown in elevation. Fig. II is a vertical section taken on line II II, Fig. I. Fig. III is a horizontal section taken on line III III, Fig. I. Fig. IV is a horizontal section taken on line IV IV, Fig. II. Fig. V is a side view of the stopper, showing a modified form of grooves for receiving the retaining cement. Fig. VI is a similar view showing another form
25 of grooves.

Referring to the drawings, 1 represents the neck of a bottle, having, preferably, a rib or flange 2, above which is a portion 3.

4 represents the stopper, which is preferably made of glass or porcelain, but which may be of other material. The lower part 5 of the stopper is the part that is designed to act to hold the liquid in the bottle, this part of the stopper fitting in that portion of the neck of the bottle that lies beneath the line of the upper face of the rib 2. The part 5 of the stopper is formed with an annular shoulder 5^a and with a pendent reduced upwardly-flaring portion 5^b, which is provided with a gasket or elastic packing-ring 6.
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The interior of the part 3 of the neck of the bottle is provided with one or more upwardly-extending grooves 7, that taper outwardly from the bottom to the top—that is to say, these
45 grooves or recesses are tapered more at top than at bottom, and they are also preferably wider at bottom than they are at top, as will be seen by referring to the two sectional views Figs. III and IV. The stopper 4 is likewise
50 provided with upwardly-extending grooves or

recesses 8, these grooves or recesses conforming in shape to the grooves or recesses 7, formed in the part 3 of the neck of the bottle. It is important that these grooves or recesses be larger at their lower parts than at their
55 upper parts, but it is immaterial whether they be larger in one direction only or in both directions, as described. When the stopper is inserted, the chambers formed by these recesses are filled with a self-hardening cement
60 9, that locks the stopper to the bottle.

When it is desired to open the bottle, the stopper can only be removed by force that is sufficient to break the part 3 of the neck of the bottle, for the cement fitting in the wedge-
65 like chambers formed by the recesses 7 8 will prevent the stopper being removed without fracturing the part 3 of the neck of the bottle, and thus the bottle cannot be refilled and re-used as an original package, although it may
70 be used to retain the unused portion of its original contents, as the part beneath the portion 3 of the neck of the bottle will be unbroken, and the lower part of the stopper, which is the effective part for holding the liquid in the bottle, will still fit the bottle as
75 originally intended.

As a modification of the wedge-like chambers between the stopper and the part 3 of the neck of the bottle or chambers that are
80 larger at bottom than at top I may employ spiral grooves 10 in the stopper, as shown in Fig. V, corresponding grooves being also formed in the part 3 of the neck of the bottle, and these grooves will be preferably larger at
85 bottom than at top, as shown in Fig. V.

As another modification of the chambers formed by the grooves 7 8 the stopper may be formed with crescent-shaped grooves 11, as shown in Fig. VI, and the part 3 of the neck
90 of the bottle will be correspondingly grooved. By forming chambers in this manner it is not necessary to have the grooves larger at bottom than at top, as neither the turning of the stopper nor an outward pull on it will result
95 in its removal without breaking the portion 3 of the neck of the bottle.

I claim as my invention—

The combination of a bottle having a neck formed with internal outwardly-tapering
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grooves, and a stopper formed with correspondingly external outwardly - tapering grooves, with an annular shoulder beneath the grooves, with a reduced inwardly-flaring pendent portion beneath the shoulder and with an elastic packing-ring surrounding the pendent portion, the grooves forming jointly the frus-

tum of a cone the end of which coincides with the mouth of the bottle; substantially as described.

F. H. GRUENDLER.

In presence of—

E. S. KNIGHT,
N. FINLEY.