V. E. MAUGER.

Apparatus for Filling Medicinal Capsules.

No. 219,285. **Patented Sept. 2, 1879**

Fig: 1

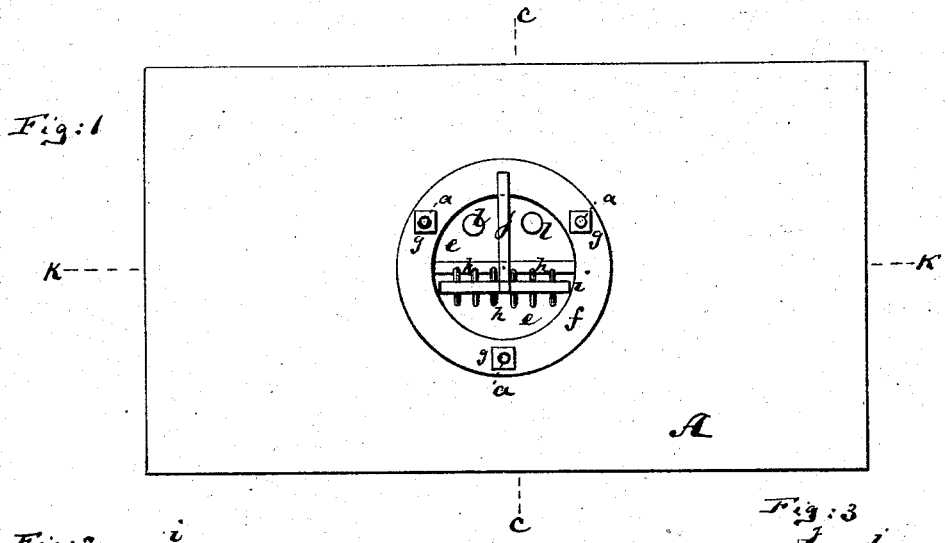


Fig: 2

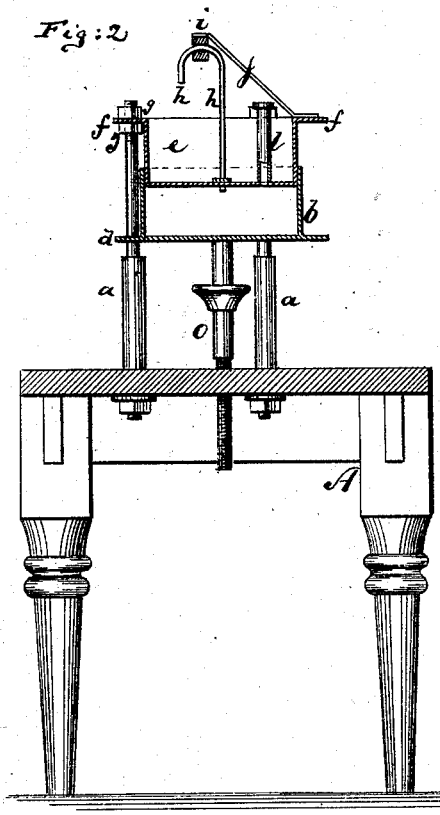
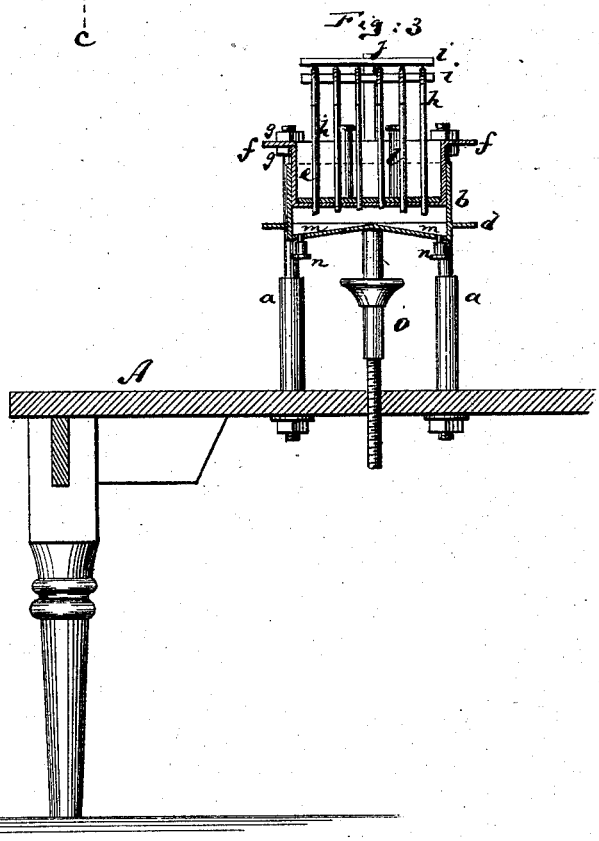


Fig: 3



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UNITED STATES PATENT OFFICE.

VICTOR E. MAUGER, OF NEW YORK, N. Y., ASSIGNOR TO MARY A. MAUGER, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR FILLING MEDICINAL CAPSULES.

Specification forming part of Letters Patent No. **219,285**, dated September 2, 1879; application filed May 26, 1879.

To all whom it may concern:

Be it known that I, VICTOR E. MAUGER, of New York city, county and State of New York, have invented an Improved Apparatus for Filling Medicinal Capsules, of which the following is a specification.

In the accompanying drawings, Figure 1 is a top view of my improved apparatus for filling medicinal capsules; Fig. 2 is a vertical transverse section on the line *c c*, Fig. 1; and Fig. 3 is a vertical longitudinal section on the line *k k*, Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to an improved apparatus for filling liquid medicines into capsules, and has for its object, principally, to prevent any sediments in the medicine from entering the capsules or clogging the filling-pipes.

The invention consists in the combination of a vertically-sliding vessel, which contains the liquid medicine, with a stationary plunger projecting into the upper portion of said vessel, and with fixed filling-tubes, which pass with their lower ends through the plunger into the upper part of the vessel, and are open at both ends, so that the contents of said tubes will be moved in opposite directions, and follow both movements of the sliding vessel.

The invention also consists in improved means for drawing the sediments and impurities from the vessel containing the medicine, and in other details of improvement hereinafter more fully pointed out.

In the drawings, the letter A represents a table or other suitable support for my improved apparatus. From the surface of this table project three (more or less) vertical guide-rods, *a a*, which are, with their lower ends, rigidly secured to the table.

b is a vessel, made of metal or other proper material, of preferably cylindrical or oval form, and entirely open on top. This vessel is free to slide up and down between the guide-rods *a*, it being provided with a laterally-projecting flange, *d*, which is perforated to allow the guide-rods *a* to pass through the same. The guide-rods *a* have, or may have, shoulders, upon which the flange *d* rests when the vessel *b* is in its lowest position.

To the upper ends of the rods *a* is rigidly secured a cup-shaped or solid plunger, *e*, which is shaped to fit with exactness into or over the vessel *b*. This plunger *e* is secured to the rods *a* by a laterally-projecting flange, *f*, which is perforated to receive the upper screw-threaded ends of the rods *a*, the flange being held in place between two nuts, *g g*, which are screwed upon each rod *a*; but the plunger *e* may be fastened to the rods *a* or to any other suitable support in different manner. The plunger *e* is of such size that it fits closely into or over the vessel *b*. When the vessel *b* is in its lowest position the plunger merely enters its upper part; but when the vessel is in its uppermost position it is almost completely filled by the plunger.

h h h are a series of filling-tubes, secured with their lower ends in the plunger *e*, and open to communicate with the upper portion of the vessel *b*. The tubes *h* project upward from the plunger. These tubes are preferably placed in a straight row, diametrical with the plunger. The pipes *h* are firmly braced by cross-bars *i* and a brace, *j*, or otherwise to be perfectly rigid, and are bent down at their upper open ends. *l l* are charging-tubes, which are likewise secured to the plunger *e*, and communicate with the upper portion of the vessel *b*. Each charging-tube *l* is closed by a cock or cap when the apparatus is being used. At the bottom the vessel *b* is provided with one or two grooves or depressions, *m m*, which are preferably situated directly beneath the pipes *h*. These grooves may have inclined bottoms, and increase in depth gradually from the center of the vessel *b* toward its periphery. At the lowest portion each groove *m* has an opening, which may be closed by a screw-plug, *n*. The vessel *b* is supported on, and may be raised or lowered by, a screw, *o*, or by other suitable means.

The vessel *b*, being drawn down, is charged through the tubes *l* with the medicine which is to be introduced into the capsules. The capsules are held against or placed upon the upper ends of the tubes *h*. The vessel *b* is now gradually and gently raised by the screw *o*, thereby expelling the liquid contents through the tubes *h* into the capsules. If the capsules should be

accidentally over-filled, or whenever they are properly filled, the vessel *b* is slightly lowered, sucking thereby all superfluous medicine out of the upper part of the tubes *h*. After one set of capsules is filled they are removed, another set of empty capsules held to the tubes *h*, and so on until the liquid in the vessel *b* is exhausted. The vessel is now lowered, refilled, and the operation goes on as before.

It will be seen that the tubes *h* will always be filled from the surface of the medicine in the vessel *b*, where said medicine is the purest. The heavier sediments and impurities of the medicine will settle at the bottom, and, if grooves *m* are provided, in said grooves *m*, whence they can be withdrawn by first removing the screw-plugs *n*.

I claim—

1. The combination of the sliding vessel *b* with the stationary plunger *e*, fitting into or over said vessel, and with the stationary filling-tubes *h*, that project from the top of the plunger and are open at both ends, so that the contents of said tubes will be moved in opposite directions and follow both movements of the vessel *b*, substantially as specified.

2. The combination of the guide-rods *a* with the vesse *b* and plunger *e* and with the tubes *h* and *l*, substantially as specified.

3. The combination of the sliding vessel *b* with the plunger *e*, tubes *h* and *l*, and with the cross-bars *i* and brace *j*, substantially as specified.

4. The combination of the guide-rods *a* with the sliding vessel *b*, fixed plunger *e*, having tubes *h* and *l*, and with the screw-rod *o*, substantially as herein shown and described.

5. The vessel *b*, made movable and provided with the groove or depression *m*, in combination with the fixed plunger *e*, having the filling-tubes *h*, substantially as herein shown and described.

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Witnesses:
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