April 24, 1956 A. M. McGUIRE 2,742,749

CAPSULE-FILLER

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FIG. 1.

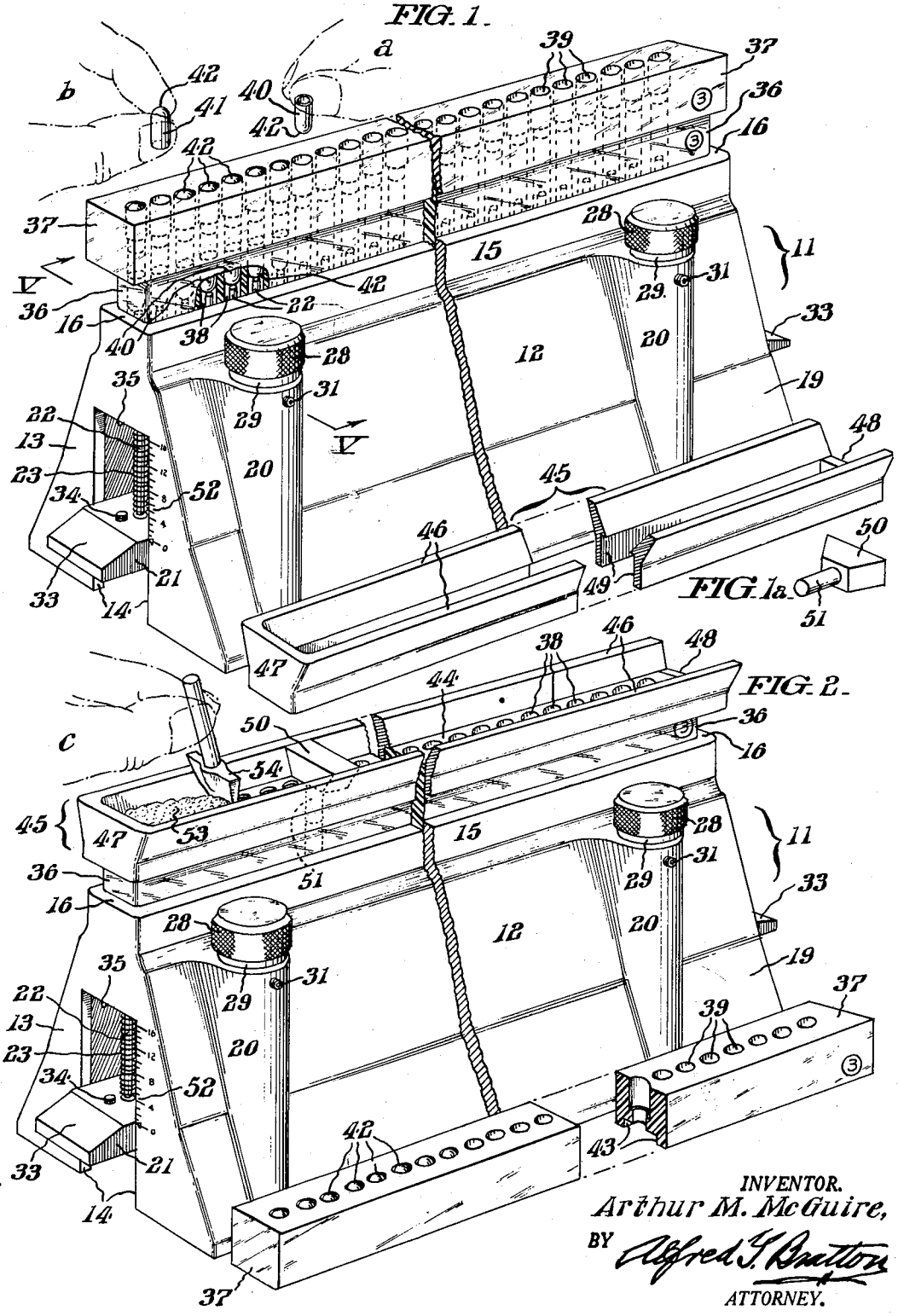


FIG. 1a.

FIG. 2.

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FIG. 3.

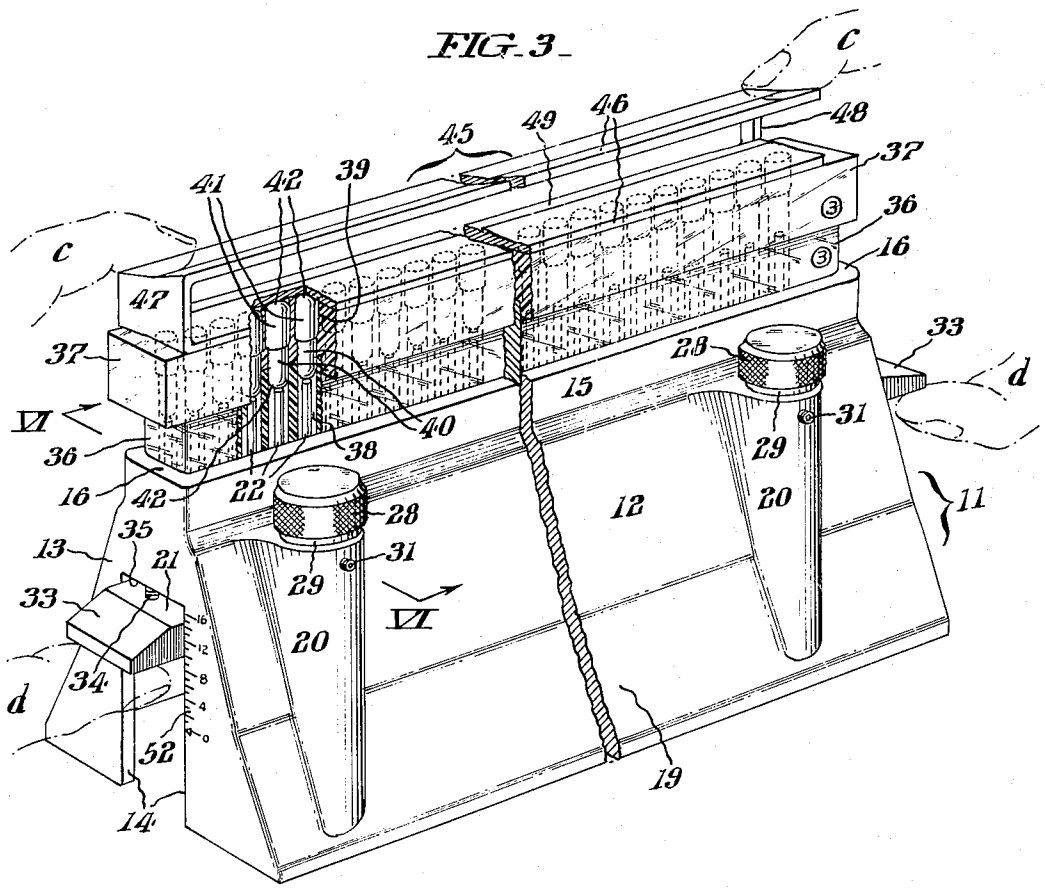
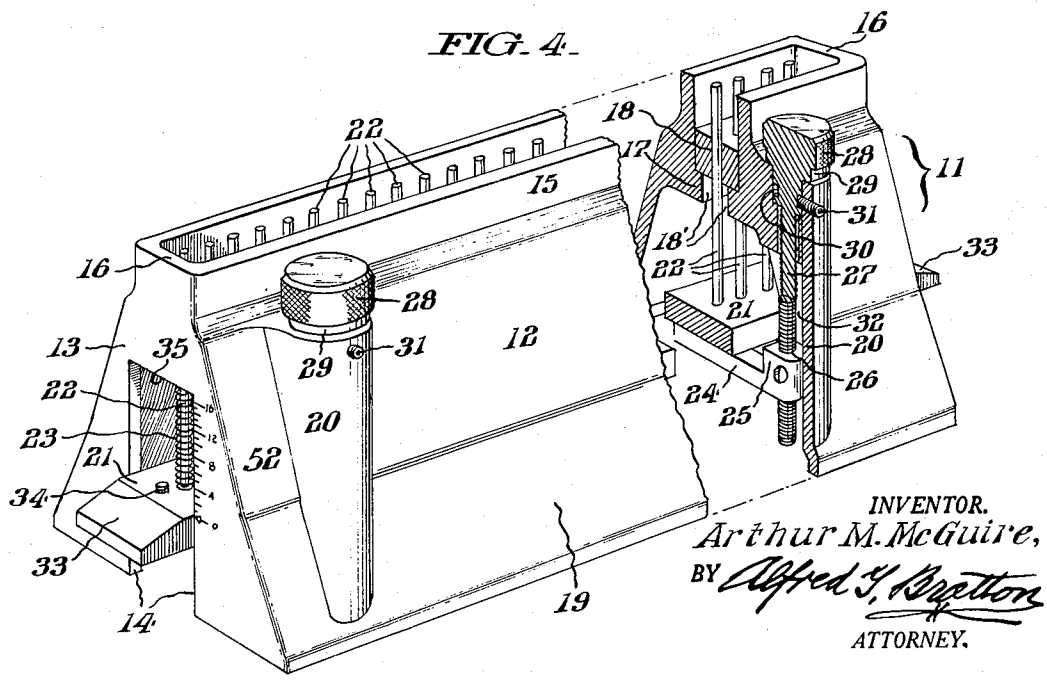


FIG. 4.



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FIG. 5.

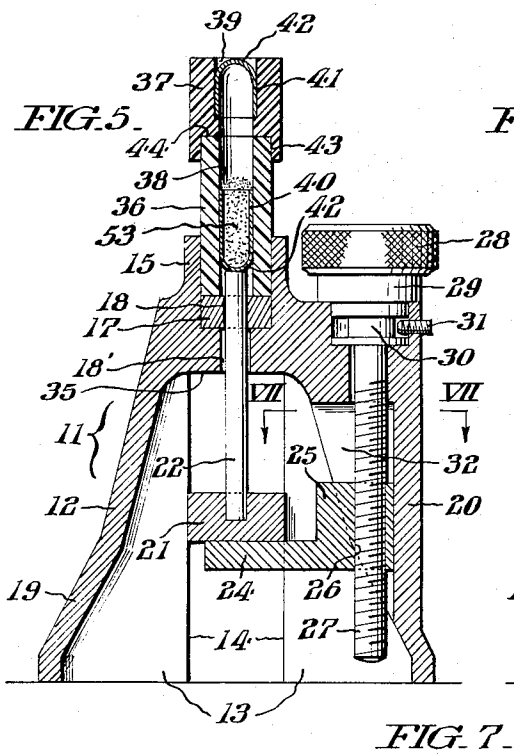


FIG. 6.

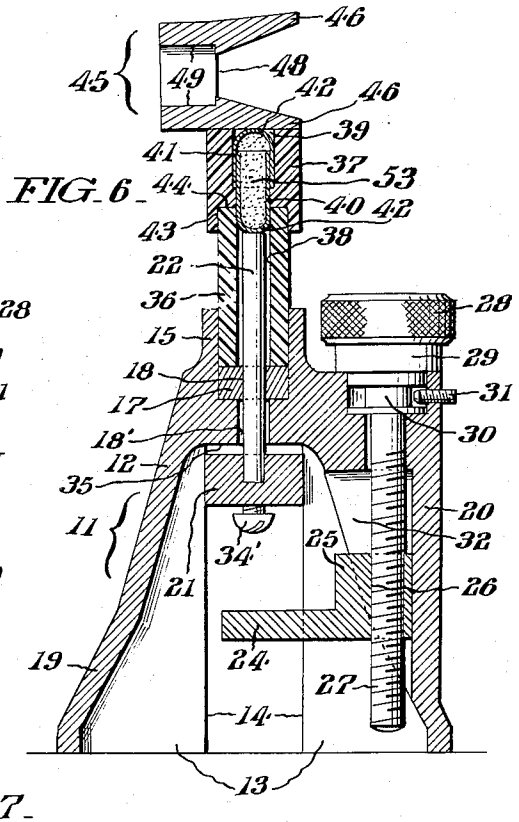


FIG. 7.

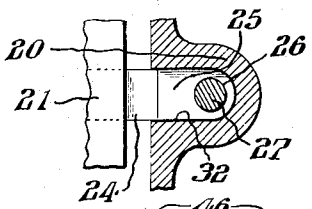


FIG. 8.

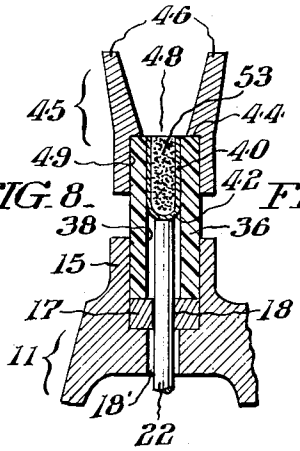


FIG. 9.

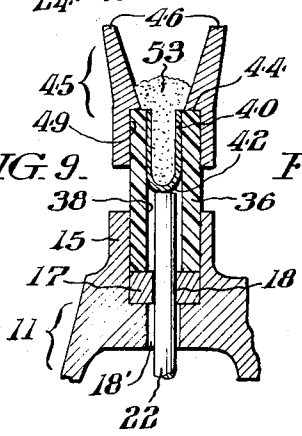
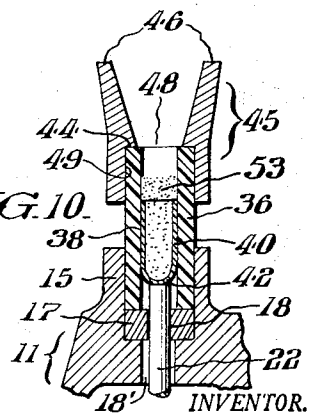


FIG. 10.



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2,742,749

CAPSULE-FILLER

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Application June 4, 1953, Serial No. 359,625

10 Claims. (Cl. 53—268)

This invention has general reference to capsule-filling apparatus or means and, more particularly relates to a novel device especially useful to apothecaries and pharmacists for dispensing or putting-up doctors' medical prescriptions; although my novel device is equally serviceable for filling capsules with granular or other materia medica; as well as different substances or elements of diverse character.

Heretofore, the preparation and filling of medical prescriptions into capsules, by pharmacists and druggists, has not only been a time consuming but a tedious manual procedure; while it has also involved a considerable degree of careful attention in order to prevent, under-or-over filling of said capsules, some wastage of the constituent drug or drugs specified in the prescription, and/or contamination of the overflow. Another objectionable factor inherent to prevailing prescription filling practice is not only the time loss involved, but the difficulty experienced in correctly and accurately charging each capsule individually with the prescribed dosage of a medicinal compound.

The primary object of my invention is to overcome the above stated undesirable factors, in a simple and positively effective manner, by providing a novel capsule-filler, which is adapted to charge a selective series of capsule bodies, with a stipulated quantity of the prescribed medicament, in an expeditious and accurate manner; in which a complemental series of capsule closures are normally sustained in spaced axial alignment with respect to said capsule bodies; and in which the charged capsule-bodies are concurrently telescoped into mated position in the associated capsule closures by a simple manual movement.

Another object of my invention is to provide a capsule filler device including adjuster-means whereby it is readily changed to accommodate different volumetric grades in the medicinal dosage.

A further object of my invention is to provide a capsule-filler of the above indicated species, that is compact, devoid of parts liable to get out of order, which is comparatively cheap to manufacture, and that is easily kept clean and sterile.

A still further object of my invention is to provide a capsule-filler of the type above referred to including novel mating magazine-components, one for reception of the capsule body-portions, and the other for the closures therefor.

Yet another object of my invention is to provide a capsule-filler, of the kind above indicated, that may be manufactured from any desirable material with the magazine-components preferably made of "plasti-glass" or an analagous material.

Other objects and novel features of my invention will hereinafter appear, as the nature of said invention is more particularly described in connection with the accompanying illustrated embodiment thereof; while such embodiment may be considered as a structural type of the novel device, well adapted for handling medical prescriptions,

that are to be filled-up in capsules; although it is to be clearly understood, said device is exemplary only and not limitative.

In the drawings:

Fig. 1, Sheet 1, is a broken, or compacted, perspective view of a capsule-filler embodying my invention, with parts in section to better show otherwise hidden structural features of prime importance.

Fig. 1*a* is a perspective view of a gate-element or stop, for selectively setting apart the number of capsules that are to be charged in accordance with the prescription requirement.

Fig. 2 is a similar perspective view to Fig. 1, but showing how the capsule body portion is charged with medicinal content.

Fig. 3, Sheet 2, is a similar view to Figs. 1 and 2, but showing how the charged capsules are collectively and concurrently telescoped into mated position in the associated closure by a simple manual movement.

Fig. 4 is a broken, or compacted, perspective view of the base portion of my novel device with a substantial part in section to better illustrate an adjuster-means, hereinafter fully described.

Fig. 5, Sheet 3, is a vertical cross-section, taken as typically-indicated by the angled-arrows V—V shown in Fig. 1.

Fig. 6 is a similar cross-section, to the preceding figure, but taken on the plane VI—VI of Fig. 3.

Fig. 7 is a fragmentary plan-section taken as indicated by the angled-arrows VII—VII in Fig. 5.

Figs. 8, 9 and 10 are fragmentary detail sections, of corresponding character, illustrating how medicinal charges of differential volumetric content are fillable into capsules, by aid of my novel apparatus or device without waste or spillage.

In the above listed figures of the drawings, like characters of reference are applied to corresponding parts in all the views and, in the following descriptive matter, specific terms are employed for the sake of clarity. However, it is to be expressly understood the scope of my invention is not thereby limited, as each such term is intended to embrace all equivalents capable of performing the same function for an analagous purpose.

Referring generally to the drawings, and more particularly to Figs. 1 to 6, the base 11 of the novel capsule-filler is preferably of hollow truncate formation; or, more precisely expressed, said base embodies elongate side walls 12; end walls 13, with rectangular cut-outs or openings 14 in the latter; and an upper trough 15, of channel cross-section, with the ends closed-in at 16; whereas the web-portion 17 of such trough 15 is provided with a series of equally-spaced consecutively-located guide-holes 18; or a slot 18′ may extend lengthwise of the said web-portion 17, for a purpose later on again referred to. Additionally, the elongate side-walls 12 have their lower portions 19 outwardly-flared to better stabilize the capsule-filler as a unit; as well as a pair of vertical-outsets 20, proximate the end walls 12, and which constitute housings for adjuster-means hereinafter fully explained.

Incidentally, it is to be noted that, the trough web-portion 17 may be provided with thirty-six guide-holes 18 for example only; as it will be readily apparent, on an understanding of the particular service requirement, that the plurality or total number of said holes 18, may be increased or decreased, according to the size of the filler device and the prescription requirement. Instead of forming the guide holes 18 in the web-portion 17 of the trough 15 as aforesaid, I preferably make the said trough 15 of greater depth and secure therein a rigid guide-element or guide-bar 18^{11}; see Figs. 4–10 to best advan-

tage; with the guide-holes **18** pierced through such bar **18**[11]; for reasons later on, herein amplified.

Supported within the base **11** is, what I preferably term, an actuator-element or bar **21**, having rigidly mounted thereto a plurality of upstanding plunger elements or equally-spaced pins **22**, arranged for elevation through the trough web guide-holes **18** or those of the guide bar **18**[11], hereinbefore mentioned. At this juncture it is to be particularly noted that certain selected, or all of the spaced pins **22** may be equipped with a spirally wound spring **23**, in compression, intermediate the lower face of the channel-section trough **15** and the spacedly confronting upper face of the actuator-bar **21**; whereby said bar **21** is normally influenced downwards into seating engagement on a pair of vertically-adjustable stop-elements, or horizontally-directed fingers **24**, see Figs. 4, 5 and 6, to best advantage. Each stop-element, finger **24**, conveniently, although not essentially, embodies a head-portion **25** and the finger portion **24**, just aforementioned. In addition, the head-portion **25** is provided with a screw-threaded bore **26**, for passage of an adjuster-screw **27** embodying a milled-head **28** with a relatively subjacent shouldered section **29**, for socket-seating in the top portion of the respectively associated vertical outset **20**, see Figs. 4–6; whereas each adjuster-screw section **29** is provided with a circumferential-groove **30** for radial entry therein of the inner end of a retainer-screw **31**, whereby the respective screws **27** are constrained to rotary movement only, as readily appreciated or understood by those conversant with mechanical movements. It is to be further observed that the outer or head-portion **25** of each stop-finger **24** is conformably-shaped for slidable elevation and descent in a correspondingly shaped, vertical groove **32**, see Fig. 7, of the associated outset **20**, so that lateral movement of the stop-fingers **24** is prevented and smooth-coaction of the parts **21**, **24**, **26** and **27** positively ensured. Furthermore, it is observable that the terminal ends **22**, of the actuator-bar **21**, are chamfered-down below the horizontal for a reason hereinafter clarified; while each such end **33** is equipped, inwardly thereof, with a relatively adjustable set-screw **34** for coaction with the confronting upper edge **35** of the base end-openings **14**, as best understood from Figs. 1–4 inclusive. It is also to be observed that the head **34**[1], Fig. 6 only, of the respective set-screws **34** is located below the underside of the terminal-portions **33** of the actuator-bar **21**, whereby said screws **34** jointly serve to evenly limit upward movement of the bar **21** by concurrently impacting the confronting edges **35** of the base end-openings **14**; as well as being located difficult of access, for unauthorized tampering therewith, when "set" for the desired elevation.

Referring again to the channel-section trough **15** the same affords inset-support of a pair of superposed lower and upper associated bar-like magazines **36**, **37**, respectively; and both of which are provided with axially-aligned upright-borings **38**, **39**, individually gauged for reception of the capsule body-portion **40**, and the cap or closure **41** therefor; as later on herein again referred to. The bar-magazines **36**, **37** are preferably made of a desirable transparent plastic, such as plasti-glass for example only, while the upright-borings **38**, **39** may be, although not essentially, slightly reduced in diameter, proximate the end portions for peripherally engaging the rounded or closed-in ends **42**, of the capsule body-portion **40** and closure-cap **41**, to aid in positionally restraining them, against damage, during the capsule-filling-and-closing cycle or period; as readily appreciable by those conversant with the art.

From Figs. 1 to 3 it will be best seen that the upper magazine-bar **37** is comparatively longer than the lower magazine-bar **36**, and that the former is provided in its underside with a lengthwise-recess or groove **43** for mating-engagement therein of the upper lengthwise edge portion of the lower magazine-bar **36**. Also, it is noteworthy, said magazine bars are provided with an index or mark, such as the numeral **3** within a circle for the purpose of ensuring their proper mating registration. See Figs. 1 and 3. Also it will be clearly apparent that the several borings **38**, **39** are in direct axial alignment. Incidentally it will be seen from Figs. 5 and 6, that all the borings **39** in the upper magazine-bar **37** are counterbored to provide an associated stop-shoulder **44** on which the open end of the capsule closure **41** seats, as hereinafter again referred to.

Referring now to Figs. 1, 2, 6 and 8–10, the reference character **45** designates a filler-trough of channel formation embodying spaced side-walls **46**, end-walls **47**, **48** and with an inner shouldering of said side walls to define a recess **49** for seating on the upper part of the aforesaid bar-magazine **36**. Fig. 1*a* shows a mallet-like stop device or divider-gate **50**, shaped for insertion in the filler-trough **45**, by means of an integral pin-section **51**, of a diameter for socketing in the selected boring **39** of the magazine-bar **37**, and hereafter again referred to, in explaining the use of my novel capsule-filler device. **52** designates a scale on each end wall **13** of the base **11** for correspondingly-adjusting the level of the actuator-bar **21**, to thereby uniformly elevate all of the plunger elements or spaced-pins **22** to a common-level by contacting the rounded ends **42** of the capsule body-portions **40** during the charging of the latter with the proper quantity of the medicinal compound, or other desired media, or article.

Having described the structural features of my invention, and assuming the device, by way of example only, is to be used for filling capsules with a compounded medicinal media in accordance with a doctor's prescription for a stated number of capsules, the procedure is as follows:

The empty capsule body-portions **40** are, first of all dropped, or otherwise inserted, into the requisite number of borings **38**, as called for in the doctor's-prescription, with their rounded-ends **42** downward, in the magazine-bar **36**; while a complemental number of the capsule-closures **41** are correspondingly fed or placed in the alignable borings **39** of the upper magazine-bar **37**, as readily understood by the dot-and-dash line indications *a* and *b* respectively shown at the upper left-hand portion of Fig. 1. The magazine-bar **36** is next seated in the trough **15** of the base **11**, it being held in place by a slight friction-fit therebetween; whereupon the filler-trough **46** is seated on the said bar **36**, see Fig. 2, and 8 to 10 inclusive; when the divider-gate **50** is inserted in the boring **38** just ahead or adjoining that, of the capsule body-members, selected for filling. In the drawings the selection chosen is that of the doctor's prescription, namely seven in number; so that the divider-gate pin-section **51** is inserted in the eighth guide-bar hole **18** as readily understood, on reading from the left-hand of Figs. 1 to 3. The medicinal-compound **53**, Figs. 2 and 5 to 10 inclusive, or other media, is now poured into and along the filler-trough **46** by aid of a conventional scraper or distributor-member **54**, Fig. 2 only, as typically indicated by the character *c* at the upper left-hand corner of Fig. 2; it being understood that said member **54** is moved to-and-fro along the trough **45** until all of the medicinal-compound **53** has been evenly charged into the underlying capsule body-portions **40**. The upper magazine-bar **37** with the inserted capsule-closures **41** is now matingly-seated on the upper end portion of magazine-bar **36** in accordance with the indicators **3**, see Figs. 1, 2 and 3, and by aid of the underside recess **49** in said filler-trough **45**. The filler-trough **45** is, now, removed from its capsule filling, or charging location and placed on top of the magazine-bar **37** on one of its side walls **46**, see Figs. 3 and 6 to best advantage; whereupon the user of the device preferably places the outer joint of his or her thumbs on top of the ends of the so placed filler-trough **45**, with the similar joint of the middle finger below the terminal

ends **33** of the actuator-bar **21**; and by contractive-action, of the fingers aforesaid, the said bar **21** is easily elevated from the position of Figs. 1, 2 and 5, to that of Figs. 3 and 6, as readily appreciated by the dot-and-dash line finger indication *c, c* and *d, d*; at the left-and-right hand sides of Fig. 3 respectively. The cyclic operations aforesaid concurrently result in the forcing of the charged capsule body-portions **40** upwardly into the respective axially aligned closures **41**, as clearly understandable from Figs. 5 and 6, more particularly.

It is highly important to note that the adjuster-screws **26** and scales **52** jointly enable the accurate dosage-filling of the capsule body-portions **40**, whether the medicinal compound be of heavy, medium, or fine consistency, see Figs. 8, 9 and 10 respectively.

From the foregoing, it will be clearly apparent that by my present invention there is provided a simple, efficient and very expeditious novel capsule-filler which is comparatively cheap to manufacture, easy to use, and furthermore effects a considerable saving of time; whereas said capsule-filler is thoroughly sterile, while being cleanly to use and immune against derangement when in service, whereas wastage or loss of any of the prescribed charge, for each capsule, during the filling period is positively prevented.

Changes in, or modifications of the embodiment of my invention may occur to those skilled in the art without departure from the inventive concept of the present invention; accordingly, to determine its scope, reference is directed to the following claims: I, therefore, do not wish to be limited to the exact construction illustrated and described, but aim to cover by the terms of said claims all those alterations and modifications which rightly come within the scope and purview of my invention.

I claim:

1. In apparatus for closing capsules of the type comprising telescopically fitted complementary parts, a hollow base of generally rectangular form, a magazine member mounted at the top of said base and having vertical bores for reception individually of one of the said parts of a capsule, a pin extending into the lower end of each of the bores and providing a seat for said capsule part, a common support for said pins and means for adjusting the position of said support vertically in the base to regulate the heignt of said seats in the bores, means for supporting a complementary capsule part in alignment with and above each of the parts first named, and means for applying forces to the support independently of said adjusting means to elevate the support in the base and thereby to cause the pins to displace the capsule parts seated thereon upwardly in the bores and into telescoped relation with the respective overlying complementary parts.

2. A capsule closing apparatus according to claim 1 wherein the said means for supporting the complementary capsule parts comprises a second magazine member mounted at the top of the magazine member first named and having vertical bores for reception of said complementary parts in alignment and in communication with the bores of the first named magazine member.

3. A capsule closing apparatus according to claim 2 including means for immobilizing the complementary capsule parts in the bores of the second magazine member.

4. A capsule closing apparatus according to claim 3 including adjustable means for limiting the extent of the elevation of the pin support by said applied forces.

5. A capsule closing apparatus according to claim 1 comprising resilient means for normally retaining the said pin support in the depressed retracted position.

6. A capsule closing apparatus according to claim 1 wherein the support adjusting means comprises a member providing a seat for said support in the base, means for guiding said seat member for movement vertically in the base, and an adjusting screw rotatably supported in the base and having a head exposed externally of the latter for manual adjustment of the screw.

7. A capsule closing apparatus according to claim 6 wherein the base has a vertically disposed guide channel for reception of one end of the support seating member, said channel also providing a housing for said adjusting screw and terminating at the top in a seat for the head of said screw.

8. A capsule closing apparatus according to claim 1 wherein the hollow base is open at the opposite ends thereof and wherein further the support for said pins projects through and beyond said open ends, the projecting ends of said support being thereby accessible for application by manual means of the said elevating forces.

9. A capsule closing machine according to claim 1 wherein the means for supporting the complementary capsule parts comprises a second magazine detachably mounted at the top of the magazine first named and having bores for reception of said complementary parts positioned for alignment and communication with the bores of the first named magazine member, said apparatus comprising also a trough member adapted for mounting on the first named magazine member and interchangeable with the second magazine member, said trough member having in the bottom thereof a plurality of bores arranged for registration with the bores of the first named magazine member and affording a means for depositing material into the capsule parts seated in the bores of the magazine member first named.

10. In apparatus for filling capsules of the type comprising telescopically fitted complementary parts, a hollow base of generally rectangular form, a magazine member mounted at the top of said base and having vertical bores for reception individually of one of the said parts of a capsule, a pin extending into the lower end of each of the bores and providing a seat for said capsule parts, a common support for said pins and means for adjusting the position of said support vertically in the base to regulate the height of said seats in the bores, and a trough member mounted on the top of said magazine member and having bores arranged for registration with the bores of the latter member and constituting a receptacle for material to be distributed by gravity displacement among the said capsule parts in the bores of the magazine.

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