

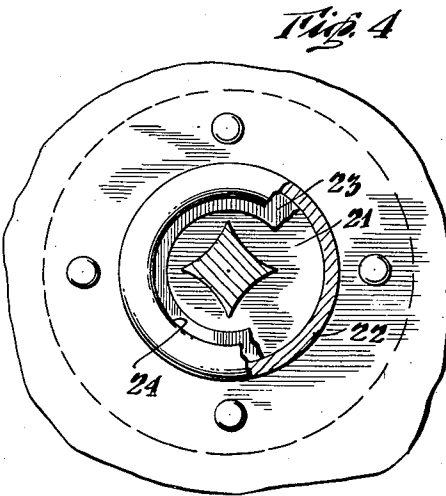
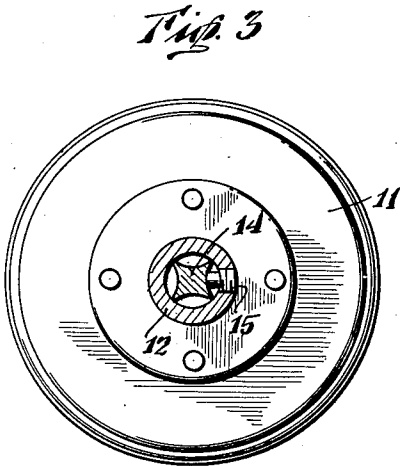
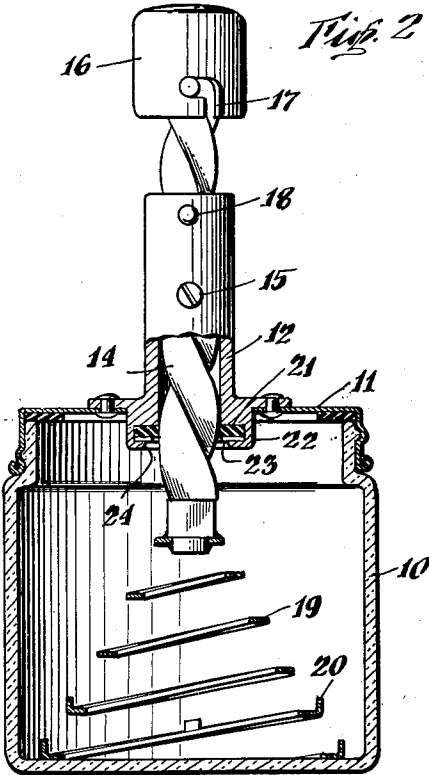
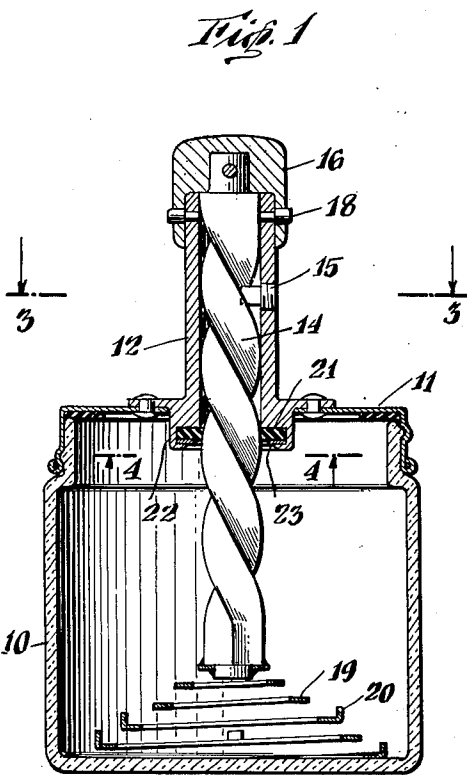
March 17, 1953

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SEDIMENT STIRRER

2,631,826

Filed Aug. 24, 1950

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

Fig. 5

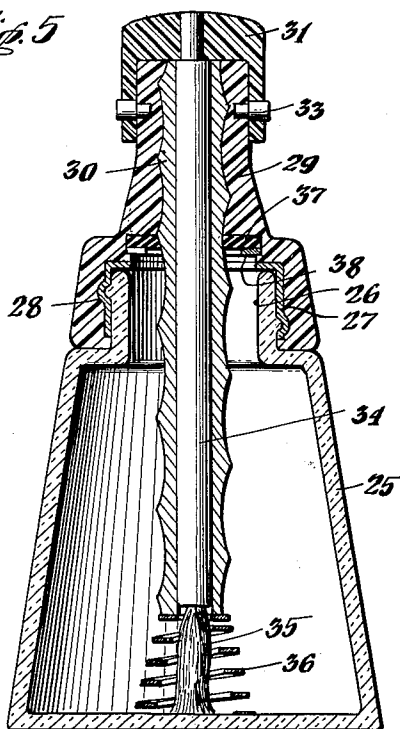


Fig. 7

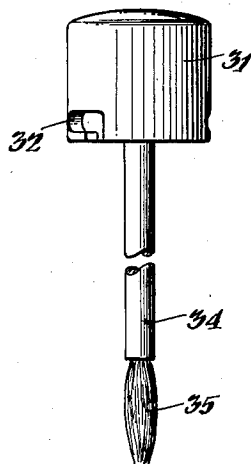
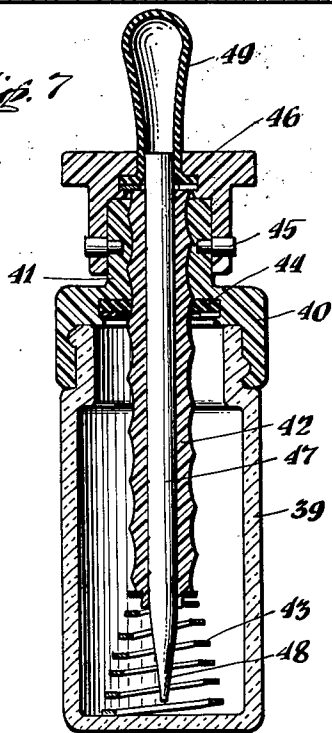
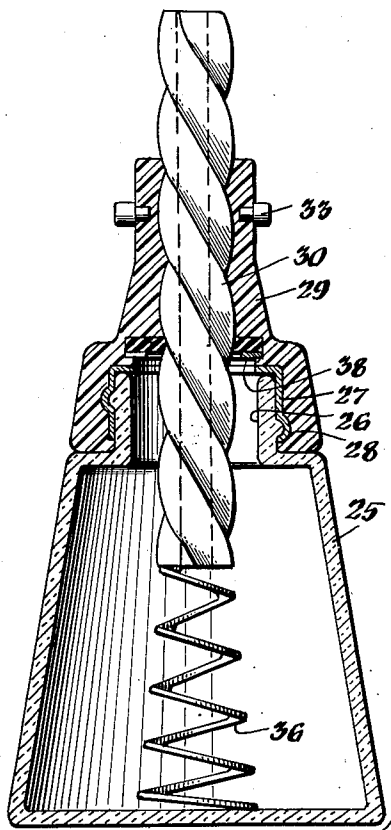


Fig. 6



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UNITED STATES PATENT OFFICE

2,631,826

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Application August 24, 1950, Serial No. 181,119

5 Claims. (Cl. 259-116)

1

This invention relates to a structurally and functionally improved agitating device by means of which a solution of proper consistency may be maintained within a receptacle. The invention has wide application but is of especial value when employed in connection with receptacles which contain substances such as nail polish, paint, ink, etc.

By means of the present invention a structure is furnished which may readily be applied to or embodied in the receptacle assembly containing the solution and by means of which sedimentation of that solution will be prevented without it being necessary for the operator to resort to any involved manipulation of the parts.

A further object is that of furnishing a structure of this nature which will in no wise interfere with the normal dispensing or use of the contained liquids.

An additional object is that of providing an agitating structure involving relatively few parts each individually simple and rugged in construction, such parts being capable of quantity manufacture and ready assembly and when so assembled providing a unitary apparatus operating over long periods of time with freedom from all difficulties.

With these and other objects in mind reference is had to the attached sheets of drawings illustrating practical embodiments of the invention and in which:

Fig. 1 is a sectional side view of a container with an agitating mechanism associated therewith;

Fig. 2 is a view similar to Fig. 1 but showing the parts in different positions;

Figs. 3 and 4 are transverse sectional views taken along the lines 3-3 and 4-4 respectively and in the direction of the arrows as indicated in Fig. 1;

Fig. 5 shows an alternative form of structure; Fig. 6 illustrates the assembly as shown in Fig. 5, but with the parts separated; and

Fig. 7 is a view similar to Figs. 1 and 5 but showing a still further form of structure.

Referring primarily to Figs. 1 to 4 inclusive it will be seen that the numeral 10 indicates the body of the receptacle which may be formed of any desired material and involve any preferred outline. As illustrated, this receptacle carries a removable cap 11 such as would customarily be employed in the event that the receptacle contains substances such as paints. Secured to the cap in any desired manner is a socket 12. This socket or tube accommodates a non-circular

2

member 13 which may have its side faces 14 extending in the form of a spiral. In order to provide for an economical design the inner face of the tube or socket 12 may be cylindrical and of a diameter slightly in excess of the rod or shank 13. An inward projection in the form of a set screw 15 may extend from tube 12 into sliding contact with one of the faces 14. Therefore, when rod 13 is axially shifted with respect to socket 12 it follows that relative rotation of the parts will occur.

A closure and manipulating element 16 is secured to the upper end of rod 13 and this attachment preferably prevents movement of these parts with respect to each other. The closure element 16 may be formed with bayonet slots 17 within which pins 18 carried by socket 12 may extend, and with these parts coupled, element 16 will be secured against movement and retained in the position shown in Fig. 1. Under these circumstances the rod will not be projected. Upon this coupling being released, the rod, together with the closure element 16 may move upwardly.

To cause such upward movement a spring is employed. This spring, as shown in Figs. 1 and 2, is preferably of the flat type and includes a body 19 embracing convolutions of downwardly increasing diameter. Its upper end is fixed to the lower end of shank 13. Its lower end bears against or just clears the face of the base portion of receptacle 10. The spring is conveniently formed with projections or paddle portions 20 which serve as agitators when the spring is moved within body 10.

With a view to providing a structure which will prevent liquid adhering to the faces 14 adjacent the lower end of the rod 13 from being carried up into the socket 12, a washer 21 is conveniently employed. This washer may be formed of any desired material and has a central perforation corresponding to the cross sectional contour and dimensions of rod 13. It encircles the latter at a point adjacent the base of socket 12. It is secured in position by a conveniently extended portion 22 providing a base for the socket. Within this base a ring 23 may be disposed to assure against a displacement of the assembly after the base of the socket has been peened in position. This has been indicated at 24. Accordingly, as rod 13 is axially shifted, washer 21 incident to its wiping contact with the faces of that rod will exert a squeegee action.

Employing a structure of this type and assuming that body 10 is substantially filled with a

3

fluid such as paint, then it is obvious that by releasing closure element 16 rod 13 will rise through socket 12. This will occur incident to the thrust exerted by spring 19. That spring being secured against rotation with respect to the shank or rod 13, it follows that as the latter rotates with respect to the socket the spring will also be rotated within the body of receptacle 12. Therefore fluid within that receptacle will be subjected to an agitating action not alone incident to the separation of the spring convolutions, but also because of the rotation of the latter. Additionally, if the spring carries agitating portions such as paddles or extensions 20, a still greater turbulence will result. Therefore with the aforescribed movement of the rod 13 the fluid within the receptacle will be stirred to cause any sediment to be placed in a condition of suspension. It is apparent that if desired the operator might depress element 16 one or more times and permit it to rise under the influence of the spring to thus repeat this agitating action and until the contents of the receptacle are in precisely the condition desired. Thereupon the cap 11 may be dismounted and those contents may be dispensed or removed in any desired manner as, for example, by dipping a paint brush into same.

Now referring to the structure illustrated in Figs. 5 and 6 it will be seen that there has been shown in these figures an assembly especially intended for the agitating and dispensing of liquids such as nail polish. In certain respects this structure is preferred over that shown in Figs. 1 to 4. In these figures the numeral 25 indicates the receptacle body which may be formed of glass or any other desired material. This receptacle may have an exterior configuration corresponding to the artistic designs commonly employed to package nail polish and similar fluid. It is provided with a neck portion 26 upon which an assembly is mounted in a manner such that it will ordinarily not be removable by the user. This assembly may be largely formed of plastic elements aside from a metallic liner or mounting member 27.

Thus, a base portion 28 may be provided in permanent association with the liner 27 and which conveniently incorporates a design contributing to the artistic continuity of the entire unit. Base portion 28 is continued in the form of an upwardly extending socket portion 29. Slidable within the latter is a rod 30 which is non-circular in section and the faces of which are spirally extended in a manner similar to the faces 14 of rod 13. The interior bore faces of socket 29 are similarly extended. Therefore, when these elements are axially shifted with respect to each other, relative rotation will occur.

Attached to the outer end of rod 30 is a cap or closure element 31. The latter may be formed with bayonet slots 32 cooperative with pins 33 carried by socket 29 in order to lock the parts against relative movements. Element 31 also carries a rod 34 which slidably extends through a bore formed longitudinally of shank or rod 30. Adjacent its lower end rod 34 may carry an applicator brush 35. If such a unit is not desired then the overall length of rod 34 may be increased so that it extends well below the lower end of rod or shank 30.

A spring 36 has its upper end attached to the lower end of shank 30 and in common with the spring 19 as shown in Figs. 1 and 2 may be flat and embrace downwardly extending convolutions of increasing diameter. The lower end of this spring bears against the upper face of the base

4

portion of receptacle 25. While not shown, spring 36 may be formed with paddle or agitating portions if desired. A washer 37 corresponding to washer 21 may be mounted by the base portion of socket 29, and having wiping engagement with the faces of rod 34. This washer may be retained in position by a split ring 38.

In use it will be understood that by releasing the bayonet slot or other coupling between closure element 31 and socket 29, rod 30 under influence of spring 36 will rise to the position shown in Fig. 6. With such rising the contents of receptacle 25 will be agitated or stirred to provide the desired solution. If necessary to disperse sediment accumulations, the operator may depress closure element 31 several times. In any event with the proper solution provided element 31 may be lifted from rod 30 thereby withdrawing brush 35 or its equivalent through the bore of that rod. Thereupon the nail polish or other material may be applied in the usual manner. After such use closure element 31 may again be mounted or disposed upon the upper end of rod 30 by simply inserting brush 35 into the bore of rod 30 and continuing downward pressure until the coupling 32-33 is operative.

The form of device shown in Fig. 7 embraces a receptacle portion 39 of desired material and configuration. A base member 40 may be mounted upon the upper end of this receptacle and embrace a cap portion continued in the form of a socket member 41. Within the bore of the latter a rod 42 is disposed which extends through to the lower end of receptacle 39. A spring 43 has its upper end connected to the lower end of this rod and bears against the base of the receptacle. In common with the previous constructions spirally extending cooperative surfaces exist between the bore of socket 41 and the exterior face of rod 42. Also in common with the previously described structures a washer 44 may be carried by the base member and have wiping engagement with the exterior face of rod 42; a coupling 45 being also furnished between socket member 41 and closure element 46.

Rod 42 as in Figs. 5 and 6 is also formed with a bore. However, in this form of construction, a tube 47 is disposed within this bore and may terminate in a tapered lower end 48. Coupled to the upper end of this tube is a bulb 49 of rubber or other suitable material. Thus, a dispenser is mounted and in which fluid may be discharged drop by drop. Such a construction will be especially valuable in connection with medicaments and inks.

In both forms of apparatus it will be understood that it is not essential to employ springs of the types shown. For example, round stock might be employed for the formation of this unit. Also it need not embrace convolutions. In lieu of these any desired number of spring fingers might have their upper end or ends attached to the rod with their lower portions bearing against the base of the receptacle. In view of the obvious apparent alternative structures which might be employed in this connection, detailed illustration of the same has not been resorted to.

From the foregoing it will be understood that among others the several objects of the invention as specifically aforesaid are achieved. Obviously numerous changes in construction and rearrangements of the parts may be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. An agitating device including in combina-

5

tion a receptacle, a socket mounted upon said receptacle, a spirally convoluted rod extending through the bore of said socket and into said receptacle, a spring secured to the lower end of said rod and bearing against said receptacle to normally urge said rod in an upward direction, said rod being formed with a bore and an applicator disposed within said bore and extending below said rod.

2. A sediment stirrer including in combination a cap for application to a receptacle containing a fluid material to be dispensed, said cap being formed with a central opening, a socket mounted upon said cap in line with said opening, a plunger member extending through said socket and provided with a spiral guiding surface, means mounted by said socket and cooperative with said surface whereby as said plunger is moved axially of said socket it will also rotate, a closure and manipulating element secured to said plunger at a point beyond said socket, said element overlapping the adjacent edge portion and surfaces of said socket and a quick detachable coupling extending between said element and socket to normally maintain the upper portion of the latter housed within the former.

3. In an agitating structure in combination a cover adapted to be used with a receptacle, a socket mounted by and extending above said cover, a rod disposable within said socket, said rod and socket having cooperative surfaces at least one of which is spirally disposed whereby as said rod is axially shifted with respect to said socket relative rotation of the parts will occur, a spring attached to the lower end of said rod and acting against a surface of a receptacle to which said cover is applied for urging the rod upwardly and axially of said socket, said rod being formed with an axial bore extending through to its upper end and an applicator disposable within said bore.

4. In an agitating structure in combination a cover adapted to be used with a receptacle, a socket mounted by and extending above said cover, a rod disposable within said socket, said rod and socket having cooperative surfaces at least one of which is spirally disposed whereby

6

as said rod is axially shifted with respect to said socket relative rotation of the parts will occur, a spring attached to the lower end of said rod and acting against a surface of a receptacle to which said cover is applied for urging the rod upwardly and axially of said socket, said rod being formed with an axial bore extending through to its upper end, an applicator disposed within said bore and a manipulating element attached to the upper end of said applicator and extending beyond said socket.

5. In an agitating structure in combination a cover adapted to be used with a receptacle, a socket mounted by and extending above said cover, a rod disposable within said socket, said rod and socket having cooperative surfaces at least one of which is spirally disposed whereby as said rod is axially shifted with respect to said socket relative rotation of the parts will occur, a spring attached to the lower end of said rod and acting against a surface of a receptacle to which said cover is applied for urging the rod upwardly and axially of said socket, said rod being formed with an axial bore extending through to its upper end, an applicator disposed within said bore, a closure element mounted by the upper end of said applicator and bearing against said rod and means providing a quick-detachable coupling between said element and the upper end of said socket.

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