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[56]

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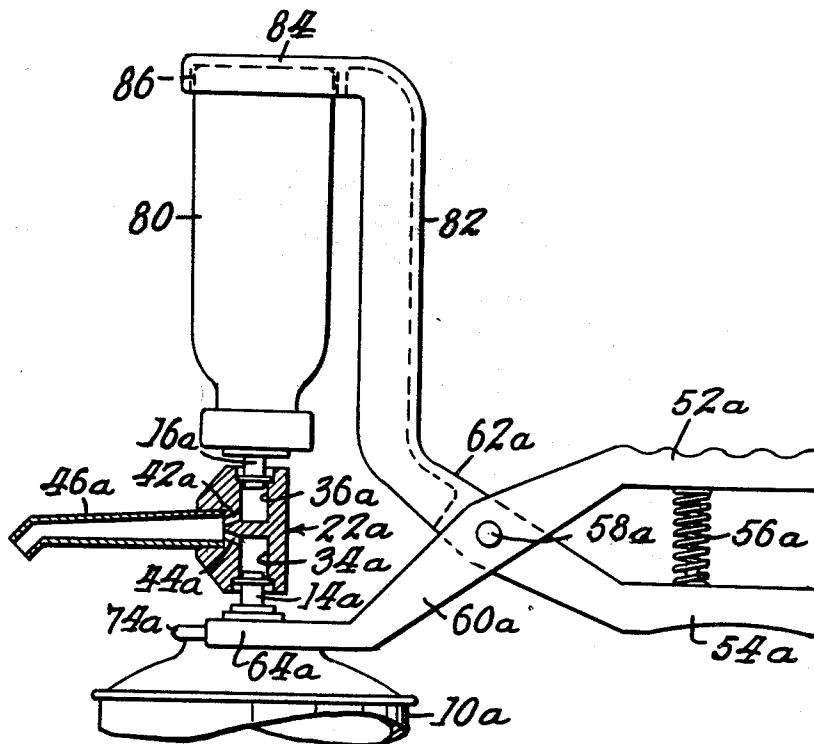
Assistant Examiner—N. L. Stack

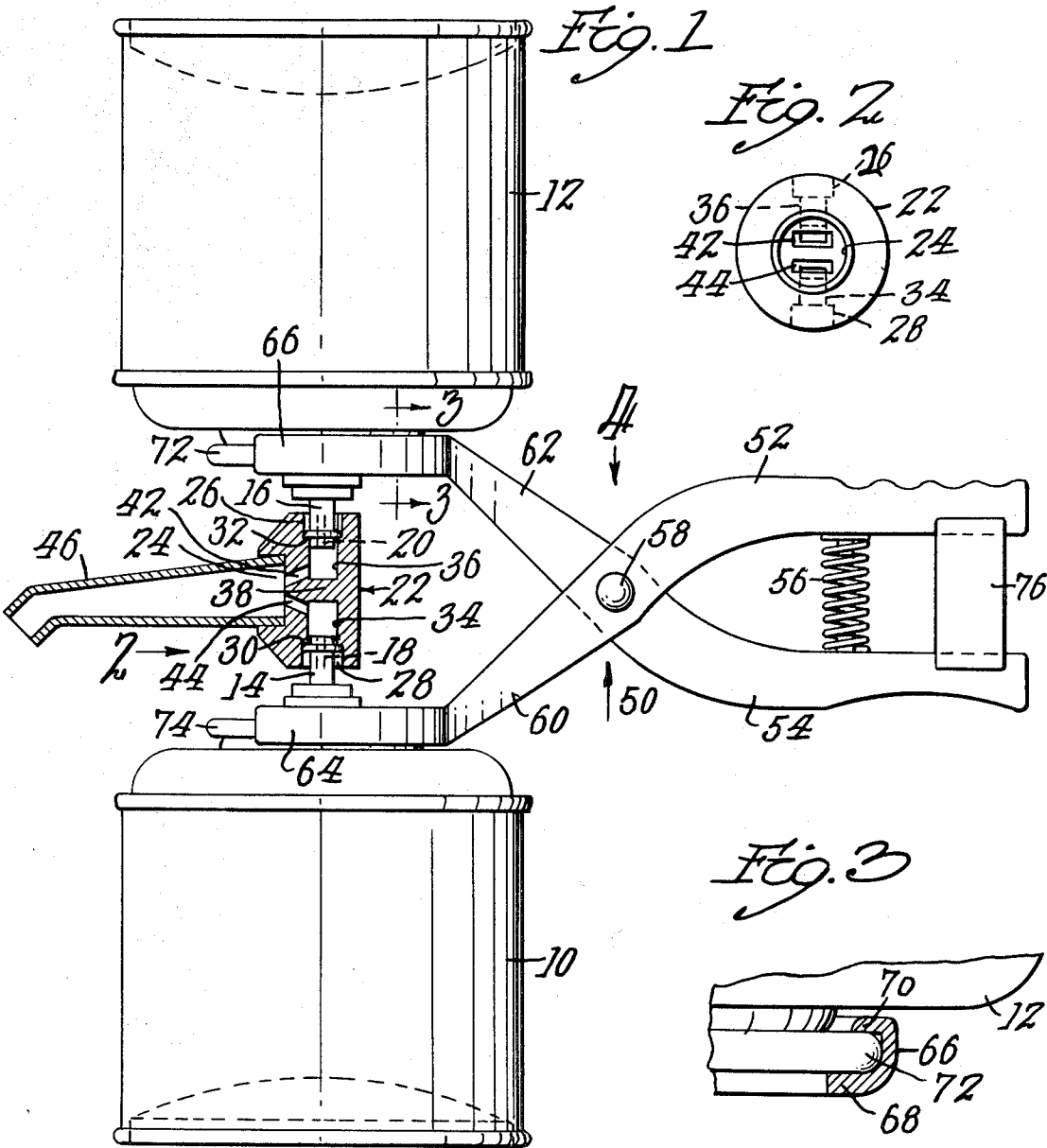
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[54] **AEROSOL DOUBLE MIXING UNIT WITH
 ACTUATING MEANS**
8 Claims, 6 Drawing Figs.

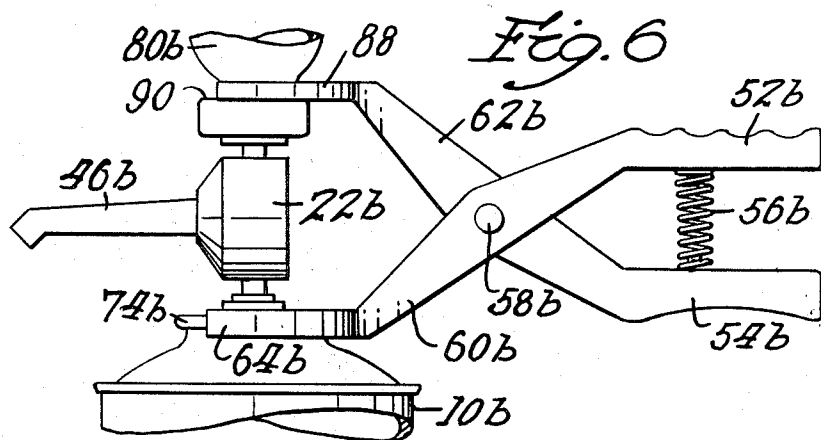
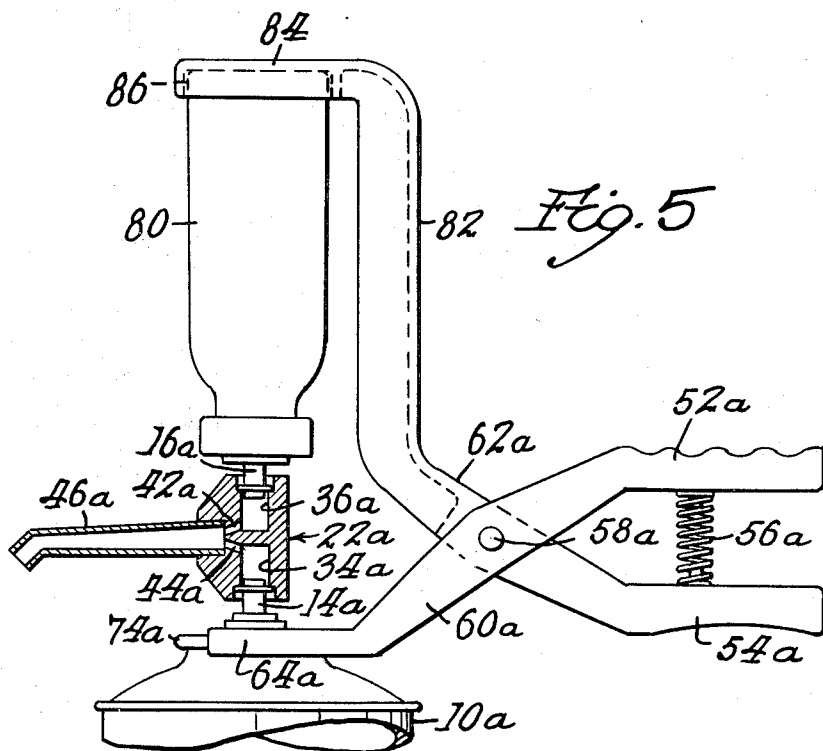
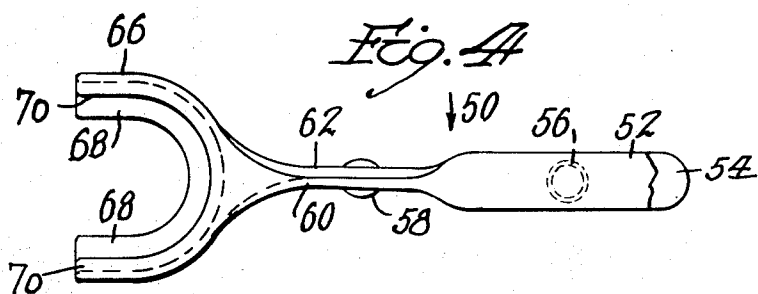
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ABSTRACT: A device having separate chambers receiving the stems of two aerosol containers in opposed relation, the device including a barrier preventing the product of either container impinging on the other, passages around the barrier to a nozzle wherein the products from the two aerosols are mixed, and means in the form of a scissor or plier for attachment to the two aerosols providing one-handed manipulation of the same to cause the aerosol valves thereof to open simultaneously.





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AEROSOL DOUBLE MIXING UNIT WITH ACTUATING MEANS

BACKGROUND OF THE INVENTION

In some applications it is necessary to mix two reacting materials at the time of use, e.g. in the use of hair dye. It is a difficult procedure to manipulate a pair of aerosols to accomplish this action and at the same time to direct the mixture to a desired location.

SUMMARY OF THE INVENTION

In this case two reacting aerosol products are easily mixed even though each product is packaged in its own aerosol container. A one-piece actuating adapter is provided with recesses receiving the aerosol valve stems of different containers in opposed relationship, and a scissor or plier-type of tool is applied to the containers for moving them toward each other while the adapter holds the stems against movement, thereby actuating the aerosols simultaneously, the adapter simultaneously mixing the two products while preventing direct impingement of the spray streams upon the opposed valve stem, and the adapter having a nozzle directing the now-mixed aerosol products at a desired location using the scissor or plier-type actuator as a handle, the operator thereby not only mixing the products and directing the mixture to a desired location but also easily controlling the opening and closing of the valves for the aerosol containers simultaneously.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in elevation partly in section illustrating a form of the invention;

FIG. 2 is a view in elevation of the adapter looking in the direction of arrow 2 in FIG. 1 with the spout removed;

FIG. 3 is an enlarged view in section on the line 3-3 of FIG. 1;

FIG. 4 is a plan view of the actuating tool looking in the direction of arrow 4 in FIG. 1;

FIG. 5 is a view similar to FIG. 1 showing a modification, and

FIG. 6 is a similar view showing a further modification.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. 1, the reference numeral 10 indicates a conventional aerosol container and numeral 12 indicates a similar container. These containers as usual are provided with valve actuating stems 14, 16 which upon being pressed slightly inwardly will cause the valves to open and discharge the aerosol products through the passages 18 and 20 in the stems.

A valve stem actuating adapter generally indicated at 22 is provided with an emission opening or orifice 24 generally centrally thereof, see FIGS. 1 and 2. This orifice is in communication with a pair of aerosol valve stem recesses generally indicated at 26 and 28. These recesses are arranged opposite to each other as clearly shown in FIGS. 1 and 2 and are provided with shoulders or the like 30, 32 which receive the valve stems 14 and 16 respectively, and the stems can be thrust into these recesses to a limited degree only because the shoulders hold the stems in the position indicated in FIG. 1.

The recesses at 26 and 28 continue inwardly forming chambers at 34 and 36, see FIG. 2. At the center of the adapter there is a transverse barrier 38 which extends across the combined chambers 34, 36; otherwise these passages would form a single chamber. Thus when the aerosols are actuated, the sprays therefrom are deflected so that neither spray impinges directly on the valve stem of the other container. This prevents one aerosol spray from entering the opposite container due to a possible pressure differential.

However, the barrier 38 has a free edge formed by converging complementary inclined surfaces 42, these surfaces forming passageways 44 leading into the emission orifice 24. Thus it will be seen that the sprays are directed at converging angles to intermix and react in the emission orifice 24.

A spout of any desired nature such as that at 46 may be applied to the emission orifice 24 with a sliding friction fit and it is clear that many different kinds of spouts may be utilized in this manner to direct the combined products of the two reacting aerosols to a desired location, and to increase the mixing effect.

In order to achieve actuation as described above without using two hands or otherwise requiring an awkward manipulation, an actuating tool is provided which is generally indicated by the reference numeral 50. This device is provided with a pair of crossed handles 52, 54 preferably normally separated by a spring 56 and pivoted together as at 58. This tool presents forwardly extending arms 60 and 62 terminating in arcuate gripping members 64 and 66. These gripping members are provided with inner flanges 68 and smaller outer flanges 70 whereby they may grip the crimped edges 72 and 74 of the respective aerosols, these crimped edges being present in the aerosol containers, holding the valve mechanisms in position with respect to the interior of the containers as is well known to those skilled in the art. The flange at 68 is greater in extent than that at 70 as the flanges 68 overlie relatively free portions of the edges 72 and 74, but the flanges at 70 have only a small amount of area in which to operate. In any event the edges at 72 and 74 are firmly held by means of the jaws on the arms 60 and 62.

The jaw members 64 and 66 may generally be semicircular so that they are easily thrust onto the crimped areas 72 and 74 but when in position they snugly fit the same, and the entire apparatus as seen in FIG. 1 may be manipulated with one hand, with handles 52 and 54, as though the device were a single unit. The spring 56 keeps the handles 52 and 54 apart and this in turn keeps the aerosol containers 10 and 12 in their spaced-apart condition wherein the valve stems are extended and the valves closed. However upon grasping the two handles 52 and 54 in one hand and squeezing with the nozzle 46 pointed in the appropriate direction, it will be seen that the aerosol containers are advanced respectively but the valve stems 14 and 16 are held by shoulders 30 and 32. Thus the valve stems are relatively retracted and the aerosols are actuated to emit their sprays which pass respectively through the chambers 34 and 36, striking the barrier 38, and thence are directed through the passages 42, 44 to become commingled in the orifice 24, whereupon they pass together through the nozzle 46 in the desired direction.

Should it be desired to ship the unit assembled as shown in FIG. 1, any kind of block indicated at 76 may be interposed between the handles 52 and 54 maintaining the same in spaced-apart condition against accidental approach.

In some cases it may be desired to utilize aerosols of different configurations, and in this case actuating tools of slightly different nature should be provided.

For example referring to FIG. 5, there is an aerosol container 10a which is equivalent to that at 10 in FIG. 1. The entire adapter 22a is the same as before described and the numerals correspond. Handle part 52a, arm 60a, and jaw 64a are all the same as before, for embracing the crimped edge 74a for moving the container 10a so as to operate the stem 14a.

However in the case shown in FIG. 5, the aerosol container at 80 is of an elongated type and the arm 62a instead of being provided with a jaw such as that at 66 is extended as at 82 terminating in an inverted well or the like 84 receiving the entire bottom portion 86 of the container 80. The operation however is the same as before described.

As shown in FIG. 6 this can be varied by providing a U-shaped arm 88 instead of the extension 80, which arm will bear upon the bottom of the crimped area 90 of the aerosol 80b, and the corresponding numerals and the action is the same as before described.

I claim:

1. The combination of an adapter having opposed recesses for receiving the opposed valve stems of a pair of separate aerosol containers arranged generally coaxially, and passages in the adapter communicating with the recesses to direct spray from said separate containers to a common mixing chamber

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and orifice for the mixed sprays, an actuator, said actuator including means for engaging the aerosol containers with the valve stems thereof received in the recesses in the adapter, said actuator including means for relatively moving the aerosol containers while the valve stems thereof are held in the adapter, so that upon manipulation of the actuator it causes sprays to issue from said aerosols and to be mixed in the mixing chamber and emitted from the adapter in mixed form, and a single barrier in said adapter forming bottoms for each passage in position to be impinged upon by the sprays issuing from the valve stems of said aerosol containers, said barrier being positioned in a location to prevent the spray of one aerosol from impinging directly upon the valve stem of the other aerosol.

2. The combinations of claim 1 wherein said barrier has a beveled free edge offset from the main streams of said sprays and forming a portion of the passages just at the mixing chamber.

3. An adapter for a plurality of aerosols, said adapter having opposed recesses therein for the reception of the valve stems of at least two aerosols in generally opposed relationship with respect to each other, means in said adapter recesses for holding said valve stems substantially immobile with respect thereto so that movement of the aerosols relative to said adapter causes relative motion of the valve stems, opening the respective aerosol valves and causing spray to issue into said adapter recesses;

said adapter having a chamber receiving the sprays simultaneously so that they become mixed, passages from each recess to the chamber, said mixed spray issuing to the ex-

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terior of said adapter through the chamber;
a scissor-type implement comprising two pivoted members movable with respect to each other, each member including an aerosol holding element and a handle for moving the aerosols simultaneously toward each other and relative to the adapter.

4. The adapter of claim 3 wherein at least one of said aerosol holding elements comprises a generally U-shaped member for detachable connection to a portion of the respective aerosol.

5. The adapter of claim 3 wherein said aerosol holding elements each comprise a generally U-shaped member for detachable connection to a portion of the respective aerosol.

6. The adapter of claim 3 wherein at least one of said aerosol holding elements comprises a generally U-shaped member for detachable connection to a portion of the respective aerosol adjacent the valve stem thereof.

7. The adapter of claim 3 wherein said aerosol holding elements each comprise a generally U-shaped member for detachable connection to a portion of the respective aerosol adjacent the valve stems thereof.

8. The adapter of claim 3 wherein said aerosol holding elements each comprise a generally U-shaped member for detachable connection to a portion of the respective aerosol, one holding element being adapted to engage its aerosol adjacent the valve stem thereof, and the other holding element being adapted to engage the bottom of its respective aerosol, remote from the valve stem thereof.

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