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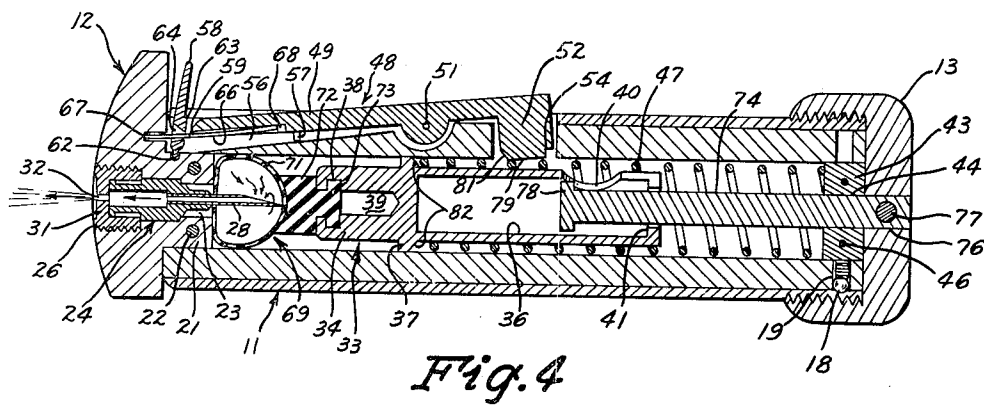
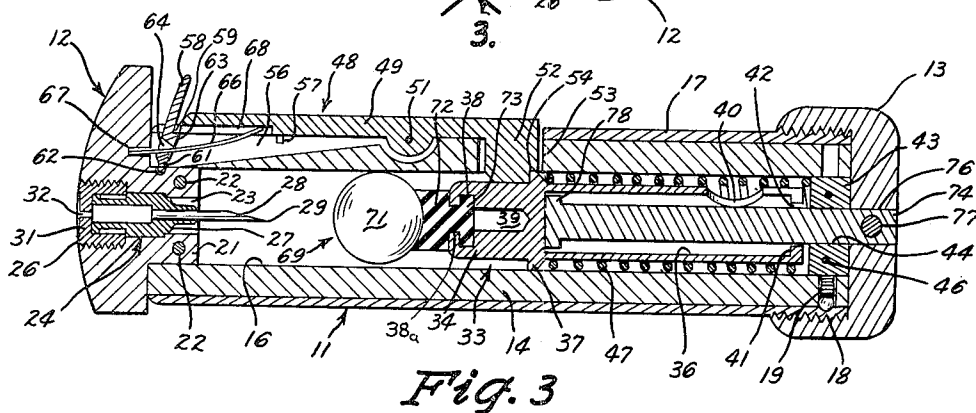
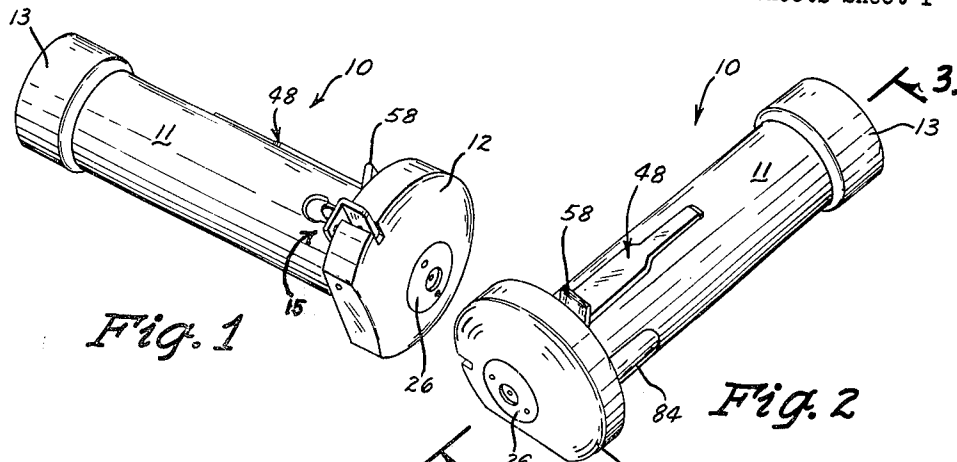
G. A. STANZEL

3,228,565

DEFENSE WEAPON

Filed April 27, 1964

2 Sheets-Sheet 1



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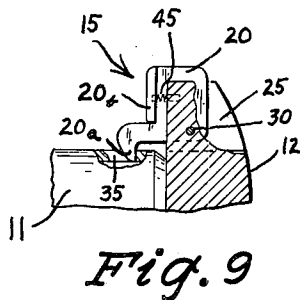
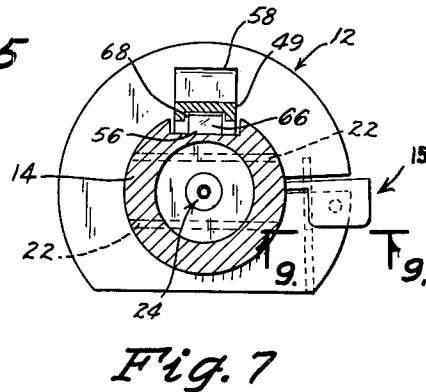
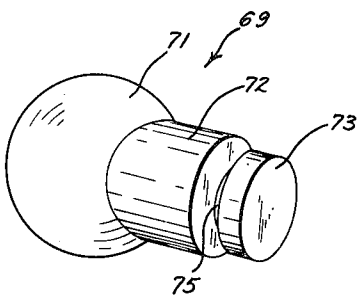
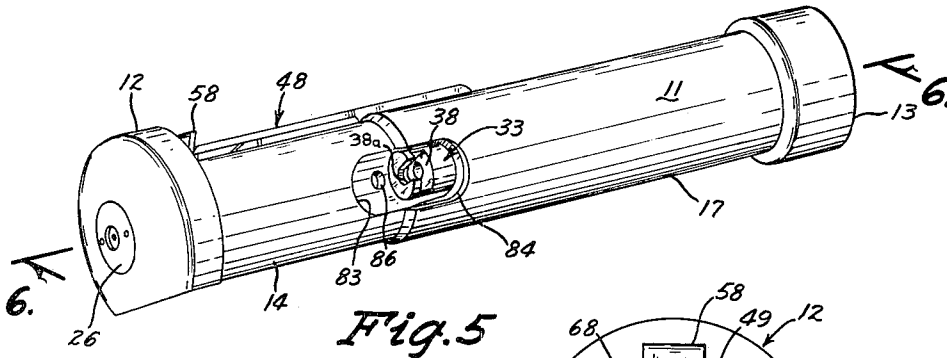
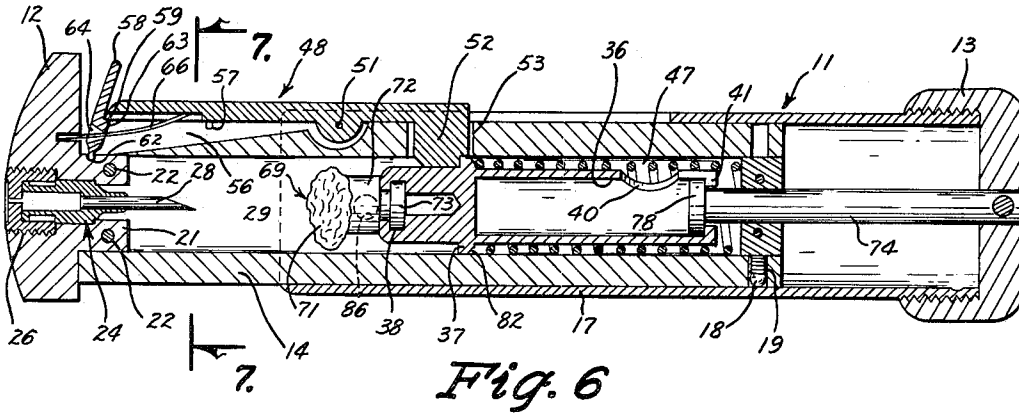
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3,228,565

DEFENSE WEAPON

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6 Claims. (Cl. 222-82)

This invention relates to a fluid dispensing device and more particularly to a defensive weapon of a fluid ejecting type.

It is the object of this invention to provide an improved liquid discharging device which when operated will discharge a spray of liquid.

Another object of the invention is to provide a liquid discharging weapon with a removable and replaceable liquid storing cartridge which is readily and easily loaded into the weapon.

A further object of the invention is to provide a liquid discharging weapon which can be easily carried in a purse or a pocket and can be held in and operated with one hand.

Still another object of the invention is to provide a liquid discharging weapon which is extensible for the purpose of loading a liquid storing cartridge into the weapon and for setting the weapon in a cocked position.

An additional object of the invention is to provide a fluid dispensing device which is sturdy and durable in construction, reliable and effective in operation, and relatively inexpensive to manufacture, assemble and utilize.

These and other objects and advantages of this invention will be readily apparent from a consideration of the following description and the accompanying drawing, wherein:

FIG. 1 is a perspective view of the liquid discharging weapon of this invention showing one side thereof;

FIG. 2 is a perspective view of the weapon of FIG. 1 showing the top side thereof;

FIG. 3 is an enlarged longitudinal sectional view taken along the line 3-3 of FIG. 2 showing the plunger held in the cocked position;

FIG. 4 is a view similar to FIG. 3 showing the plunger in the released position;

FIG. 5 is a perspective view of the liquid discharging weapon in its extended cartridge loading and cocking position;

FIG. 6 is an enlarged sectional view taken along the line 6-6 of FIG. 5 showing an expended cartridge attached to the plunger;

FIG. 7 is a sectional view taken along the line 7-7 of FIG. 6;

FIG. 8 is an enlarged perspective view of the liquid storing cartridge; and

FIG. 9 is an enlarged sectional view taken along the line 9-9 of FIG. 7.

Referring to the drawing, there is shown in FIGS. 1 and 2 the fluid dispensing device of this invention indicated generally at 10. The device 10 has a cylindrical body 11 secured at its forward end to a disc-shaped head 12. A cap 13 is threaded on the opposite end of the body 11.

As shown in FIG. 3, the cylindrical body 11 comprises an inner tubular body or shell 14 having a longitudinal bore 16. An outer tubular member or shell 17 is telescoped over the inner shell 14. The cap 13 is threaded on the rear end section of the shell 17 and is engageable with the rear end of the shell 14. The telescoped posi-

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tion of the outer shell 17 with respect to the inner shell 14 is maintained by a latch 15 and a ball and spring detent 18 seated in a transverse bore 19 in the rear end section of the inner shell 14. The detent 18 is biased in a radially outward direction and engages a recess in the inner wall of the rear end section of the outer shell 17 to maintain the closed telescoped position of the outer shell 17 on the inner shell 14.

As shown in FIG. 9, the latch 15 comprises a crank member 20 having a finger 20a and a laterally projected arm 20b. The crank member 20 extends into a longitudinal slot 25 in the head 12 and is pivotally connected to the head by a pin 30. The finger 20a projects into a hole 35 in the outer shell 14 and engages a portion of the shell forming the hole 35 to lock the outer and inner shells in a telescoped position. The finger 20a is maintained in the hole 35 by a coil spring 45 positioned in a bore in the head 12 and projects rearwardly into engagement with the arm 20b. The latch 15 is released by moving the arm 20b toward the head 12 thereby withdrawing the finger 20a from the hole 35.

With reference to FIG. 3, it is seen that the head 12 has a boss 21 projected into the forward section of the bore 16. The head 12 is connected to the inner shell 14 by pins 22 which project transversely of the boss 21. The center section of the head 12 has a stepped passage 23 in longitudinal alignment with the axis of the bore 16. A needle assembly 24 and nozzle plug 26 are positioned in the passage 23.

The needle assembly 24 comprises a cup-shaped holder 27 carrying a rearwardly extended tubular needle 28. The rear end of the needle 28 is formed on a bias and has a terminal cutting lip 29. The nozzle plug 26 is of a cup-shape and is threadably attached to the head 12. The rear wall of the plug 26 engages the forward section of the holder 27 to hold the needle assembly 24 in a fixed position relative to the head 12. The plug 26 has a transverse disc 31 with a central orifice 32 in axial alignment with the passage in the needle 28.

A plunger 33, slidably positioned in the bore 16 for movement toward and away from the tubular needle 28, has a head 34 secured to a tubular stem 36. The head 34 has an annular peripheral rib 37 positioned in sliding engagement with the walls of the bore 16. The forward section of the head 34 has a transverse slot 38a open to a transverse undercut recess 38 and a longitudinal bore 39.

The stem 36 extends in a rearward direction from the head 34 and terminates in an inwardly directed annular flange 41 having a central hole 42. Secured to the rear end section of the inner shell 14 is a washer 43 having a central hole 44 in alignment with the hole 42 in the stem 36. Pins 46 secure the washer 43 to the shell 14.

The plunger 33 is biased in a forward direction by a coil spring 47 positioned about the stem 36 and in bearing engagement at its opposite ends with the rib 37 and the washer 43, respectively.

A trigger indicated generally at 48 is pivotally mounted on the inner shell 14 and functions to hold the plunger 33 in a lock or cocked position. The trigger 48 comprises a flat lever 49 pivoted at its mid-section by a pin 51 to the inner shell 14. Integral with the rear end section of the lever 49 is an inwardly projected head 52 which is disposed in an opening 53 in the inner shell 14. The lower rearward edge of the head 52 has a transverse notch 54 for receiving a portion of the rib 37.

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As shown in FIG. 3, the head 52 is in engagement with the rib 37 of the plunger 33 and functions as a latch for the plunger 33. In this position the spring 47 is under compression and thereby biases the plunger 33 in a forward direction into the head 52 of the trigger 48.

The forward portion of the lever 49 is positioned over a groove 56 in the inner sleeve 14. As shown in FIG. 4, when the trigger 48 is moved to the release position the forward portion of the lever 49 projects into the groove 56. A short leg 57 secured to the bottom of the lever 49 limits the inward movement of the trigger 48.

The trigger 48 is held in the lock position by a safety latch 58 engageable with the forward lip 59 of the lever 49. The latch 58 which is pivotally mounted on the tubular member 14 prevents movement of the lever 49 into the groove 56 and is interposed between the lip 59 of the lever 49 and the head 12. The inner end of the latch 58 is formed with a projection 61 positioned in a pocket 62 formed in the boss 21 of the head 12. The lower section of the latch 58 has an enlarged boss 63 forming a rearwardly projected step under the lip 59 of the lever 59. A conical-shaped hole 64 extends through the boss 63.

The latch 58 is held in engagement with the lip 59 by a leaf spring 66 extended through the hole 64 into a recess 67 in the head 12. The opposite end of the spring 66 is positioned in a longitudinal groove 68 on the inside of the forward section of the lever 49. The spring 66 curves in an outward direction from the head 12 and functions to bias the trigger 48 to the lock position and to bias the safety latch 58 into engagement with the lip 59 of the lever 49. Movement of the safety latch 58 in a forward direction toward the head 12 disengages the boss 63 from the lip 59 and permits the lever 49 to be moved to the release position as shown in FIG. 4. The spring 47 being under compression biases the plunger 33 in a forward direction toward the head 12.

A liquid carrying capsule of cartridge indicated generally at 69 is releasably attached to the forward section of the plunger head 34. As shown in FIG. 8, the capsule 69 comprises a spherical-shaped hollow flexible body 71, shown as a ball, and an integral cylindrical base 72 formed with a reduced end section 73 to form an annular groove 75. The diameter of the base 72 is smaller than the diameter of the ball. The ball 71 is filled under pressure with a liquid, such as ammonia and water with the use of a hypodermic needle. The capsule 69 may be formed from deformable material such as rubber or plastic.

As shown in FIGS. 3 and 4, a rod 74 extends through a hole 76 in the cap 13, through the hole 44 in the washer 43 and into the stem 36 of the plunger 33. A pin 77 secures the rear end of the rod 74 to the cap 13. The forward end of the rod 74 has an enlarged head 78 adapted to engage the stem annular flange 41. The stem 36 has a keyhole slot 40 used in the assembly of the rod 74 with the plunger 33.

In order to prevent the accidental release of the safety latch 58 the peripheral portion of the head 12 projects radially beyond the radial extent of the latch 58. In addition, the peripheral portion of the head 12 opposite the safety latch 58 is formed with a flat portion thereby preventing the device from rolling when placed on a surface.

The device 10 is normally loaded with a capsule 69 having a charge of liquid and is set in a cocked position as shown in FIG. 3. The end 73 of the capsule is positioned in the recess 38 of the plunger head 34 with the annular groove 75 projected through the slot 38a thereby attaching the capsule to the forward end of the plunger. In this position the plunger 33 is in locking engagement with the trigger 48 and the spring 47 is under compression biasing the plunger 33 toward the needle assembly 24. The device is ready for immediate use.

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In use, the device 10 is held in one hand with the head 12 aimed at an intended target. With his thumb the operator moves the safety latch 58 toward the head 12 and presses on the forward portion of the trigger 48. As soon as the forward end 59 of the lever 49 moves from the boss 63 the lever pivots about the pin 51 moving the head 52 out of engagement with the plunger 33.

As shown in FIG. 4, the head 52 moves from the ridge 37 of the plunger 33. The spring 47 forces the plunger 33 toward the needle assembly 24. The cartridge 69 being carried on the forward end of the plunger 33 is pierced by the lip 29 of the needle 28 and compressed against the boss 21 by the spring 47 so as to apply a pressure on the fluid in the ball 71. The liquid in the ball 71 flows through the needle 28 and the orifice 32 of the nozzle plug 26 and is discharged therefrom as a spray of liquid.

The force of the spring 47 moves the ball 71 into sealing engagement with the end of the boss 21 so that substantially all of the fluid in the ball 71 is forced through the needle 28 and orifice 32. The inner end wall 79 of the trigger head 52 has a length which is greater than the distance between adjacent turns of the spring 47 thereby preventing the head 52 from interfering with the spring 47.

The lower forward edge of the head 52 has a bevel 81 which coacts with an annular bevel 82 on the plunger rib 37 to permit the plunger 33 to move rearwardly of the head 52. As shown in FIG. 6, the plunger 33 is moved rearwardly to a cocked position by releasing the latch 15 and moving the outer shell 11 rearwardly with respect to the inner shell 14. Rearward movement of the outer shell 11 moves the rod 74 rearwardly through the washer 43. The head 78 of the rod 74 engages the inwardly directed flange 41 of the plunger trunk 36 thereby moving the plunger rearwardly against the biasing force of the spring 47. As the plunger 33 is moved in a rearward direction the air in the rear section of the bore 16 escapes through the opening 53 thereby minimizing the dampening effect of the air trapped in the bore 16. When the plunger rib 37 has been moved rearwardly of the head 52, the trigger 48 moves to the lock position under the action of the leaf spring 66. In this position the notch 54 engages a forward portion of the plunger rib 37 (FIG. 6).

As shown in FIGS. 5 and 6, when the outer shell 11 is extended with respect to the inner shell 14 openings 83 and 84 in the side walls of the respective shells are in alignment to provide a passage into the bore 16. This passage has a length and width which permits the removal of an expended cartridge, shown in FIG. 6, from the head of the plunger 33 and the loading of a new cartridge therein.

In order to aid in the removal of an expended cartridge from the bore 16 the wall of the shell 14 opposite the opening 83 is provided with a hole 86. A rod or similar tool is inserted through the hole 86 and is used to force the grooved end 73 of the capsule out of the recess 38 in the plunger head 34.

The cartridge 69 is attached to the forward end of the plunger head 34 by inserting the reduced end 73 of the cartridge base 72 into the recess 38 in the head 34. The end 73 is forced into the recess 38 so as to firmly attach the cartridge 69 to the plunger head 34 at the groove 75.

The outer shell 11 is then moved onto the inner shell 14 closing the passage into the bore 16. As shown in FIG. 9, the latch 15 holds the shells in a telescoped closed position. The weapon is now reloaded with a new cartridge and is set in a cocked position. With the actuation of the safety latch 58 and trigger 48, the weapon will discharge another spray of liquid toward a selected target.

In summary, the fluid dispensing device of the invention is provided with a pair of telescoping tubular shells 14 and 17 carrying a spring biased plunger 33 having a

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head 34. A liquid storing cartridge or capsule 69 is attached to the forward section of the head 34 and moves with the plunger 33 toward a needle assembly 24.

A trigger 48 is biased into engagement with the plunger 33 holding it in a cocked position. When the trigger 48 is released from the plunger 33, the cartridge 69 is moved into engagement with the tubular needle 28 piercing the ball 71. The liquid in the ball 71 is forced through the passage in the needle 28 and discharged through the orifice 32 in the nozzle plug 26.

In order to reload the device, the outer shell 17 is moved to an extended position with respect to the inner shell 14 aligning the openings 83 and 84 in the shells and moving the plunger 33 into engagement with the trigger 48. The spent cartridge 69 is removed from the plunger head 34 through the passage formed by the openings 83 and 84. A new cartridge is attached to the plunger head 34. When the outer shell 17 is moved back over the inner shell 14, the device is ready to operate.

While there have been shown, described, and pointed out the fundamental novel features of the invention it will be understood that various omissions, substitutions, changes in form, and details of the fluid dispensing device illustrated may be made by those skilled in the art without departing from the spirit of the invention which is intended to be limited only as indicated by the scope of the following claims.

I claim:

1. A fluid dispensing device comprising:

- (a) inner and outer telescoped tubular members,
- (b) a cap attached to one end of the outer tubular member,
- (c) head means secured to the end of the inner tubular member opposite the cap,
- (d) fluid conducting means including a tubular needle mounted on said head means with said tubular needle projected into said inner tubular member,
- (e) a plunger slidably disposed in the inner tubular member for movement toward and away from said tubular needle,
- (f) means for biasing the plunger toward the tubular needle,
- (g) a hollow liquid carrying cartridge positioned in the inner tubular member between the plunger and tubular needle,
- (h) means for attaching the cartridge to the plunger,
- (i) trigger means pivotally mounted on the inner tubular member and engageable with said plunger for holding the plunger and cartridge spaced from the tubular needle, said trigger means being movable from said plunger whereby said biasing means forces the plunger toward the tubular needle to move the cartridge on the tubular needle and release the liquid in the cartridge through the fluid conducting means, and
- (j) rod means secured to said cap and engageable with said plunger whereby upon movement of the outer tubular member away from the head means the plunger is carried away from said tubular needle against the force of the biasing means and into engagement with said trigger means thereby removing the cartridge from the tubular needle.

2. A fluid dispensing device comprising:

- (a) inner and outer telescoped tubular members relatively movable to expanded and contracted positions,
- (b) fluid conducting means including a tubular needle operatively connected to one end of the inner tubular member with said tubular needle projected into said inner tubular member,
- (c) a plunger slidably disposed in the inner tubular member for movement toward and away from said tubular needle,
- (d) means for biasing the plunger toward the tubular needle,

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(e) a liquid storing cartridge positioned in the inner tubular member between the plunger and tubular needle,

(f) coacting means on said cartridge and plunger for attaching the cartridge to the plunger,

(g) trigger means mounted on the inner tubular member and engageable with said plunger to hold the plunger and cartridge spaced from the tubular needle, said trigger means being movable from said plunger whereby said biasing means moves the plunger toward the tubular needle whereby to force the cartridge on the needle and release the liquid in the cartridge through the fluid conducting means, and

(h) means operatively connected to said outer tubular member and engageable with said plunger on relative movement of the tubular members to the expanded position to carry the plunger away from said tubular needle against the force of the biasing means and into engagement with said trigger means thereby removing the cartridge from the tubular needle.

3. A device for dispensing liquid from a liquid storing cartridge comprising:

- (a) inner and outer telescoped tubular members relatively movable to expanded and contracted positions,
- (b) fluid conducting means including a tubular needle operatively connected to one end of the inner tubular member with said tubular needle projected into said inner tubular member,
- (c) a plunger slidably disposed in the inner tubular member for movement toward and away from said tubular needle,
- (d) means for biasing the plunger toward the tubular needle,
- (e) means on said plunger for attaching the cartridge to the plunger,
- (f) trigger means mounted on the inner tubular member and engageable with said plunger to hold the plunger spaced from the tubular needle, said trigger means being movable from said plunger whereby said biasing means moves the plunger toward the tubular needle to force the cartridge on the tubular needle and release the liquid in the cartridge through the fluid conducting means, and
- (g) means operatively connected to said outer tubular member and engageable with said plunger on relative movement of the tubular members to the expanded position to carry the plunger away from said tubular needle against the force of the biasing means and into engagement with said trigger means thereby removing the cartridge from the tubular needle.

4. In a fluid dispensing device,

- (a) inner and outer telescoped tubular members relatively movable to expanded and contracted positions,
- (b) a tubular needle connected to one end of the inner tubular member and projected into said tubular member,
- (c) a plunger unit slidably disposed in the inner tubular member for movement toward and away from said tubular needle,
- (d) means for biasing the plunger unit out of the inner tubular member,
- (e) trigger means engageable with said plunger unit for holding the plunger unit in the inner tubular member, said trigger means being movable from said plunger unit whereby said biasing means forces the plunger unit out of the inner tubular member, and
- (f) means operatively connected to said outer tubular member and engageable with said plunger unit on relative movement of the tubular members to the expanded position to carry the plunger unit away from said tubular needle against the force of the biasing means and into engagement with said trigger means thereby removing the cartridge from the tubular needle.

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5. In a fluid dispensing device as defined in claim 4 wherein:

(a) the inner and outer tubular members have openings in the side walls thereof which are in registration when the tubular members are in the expanded position thereby providing a passage to the plunger unit.

6. A liquid storing cartridge usable in a fluid dispensing device having a movable plunger comprising:

(a) a hollow ball having a flexible wall defining a liquid storing chamber, and

(b) a cylindrical base of a diameter smaller than the ball secured to a portion of the wall of the ball, said base having means for attaching the cartridge to the plunger.

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References Cited by the Examiner

UNITED STATES PATENTS

1,215,330	2/1917	Apgar	222—83.5	X
1,880,354	10/1932	Mueller	222—82	X
2,699,167	1/1955	Raiche	128—216	
3,003,703	10/1961	Lambton	239—309	
3,094,155	6/1963	Taramasso et al.	222—73	X
3,110,422	11/1963	Beck	222—83.5	

FOREIGN PATENTS

789,029 1/1958 Great Britain.

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