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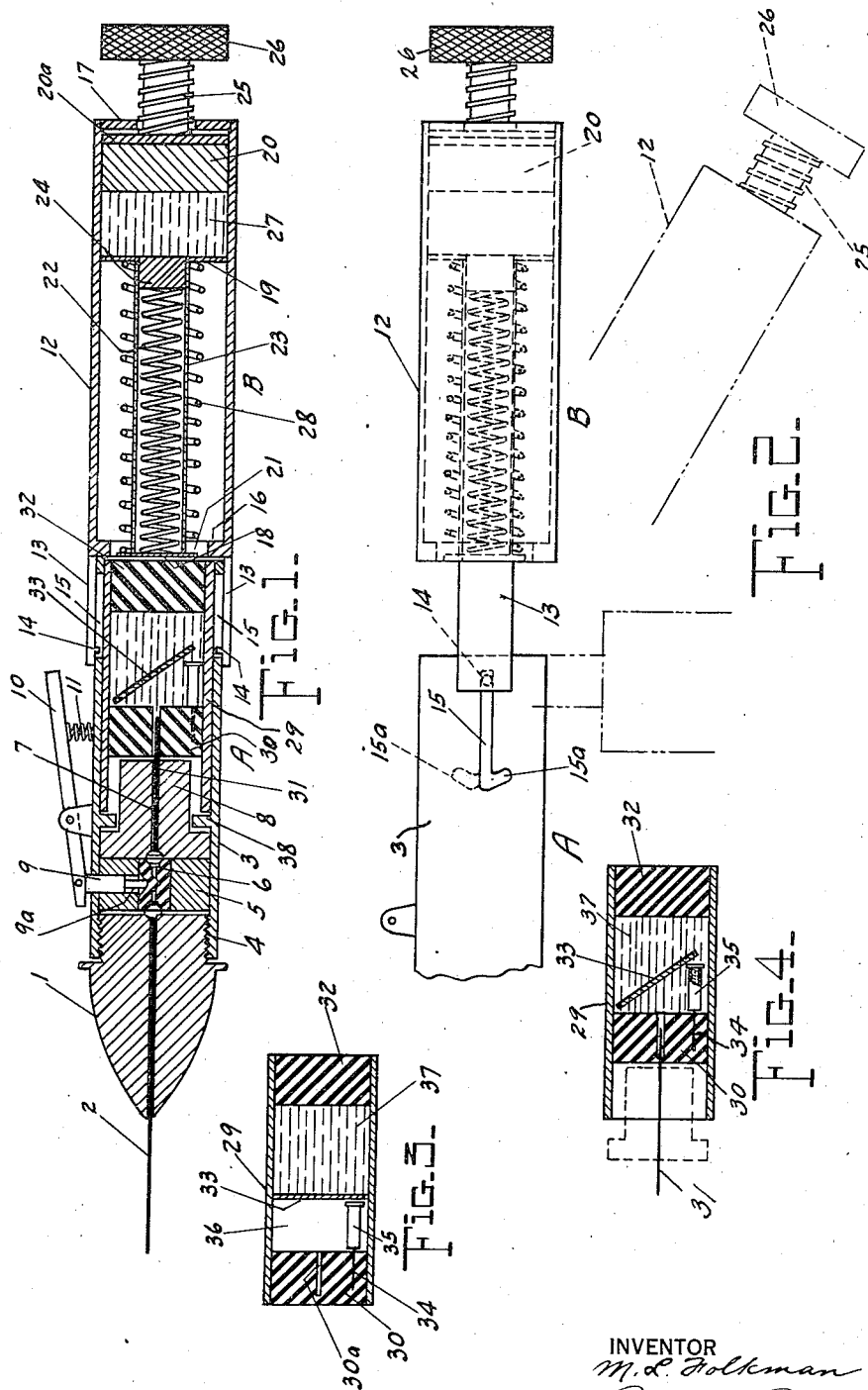
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2,413,303

SYRINGE

Filed Jan. 17, 1944

2 Sheets-Sheet 1



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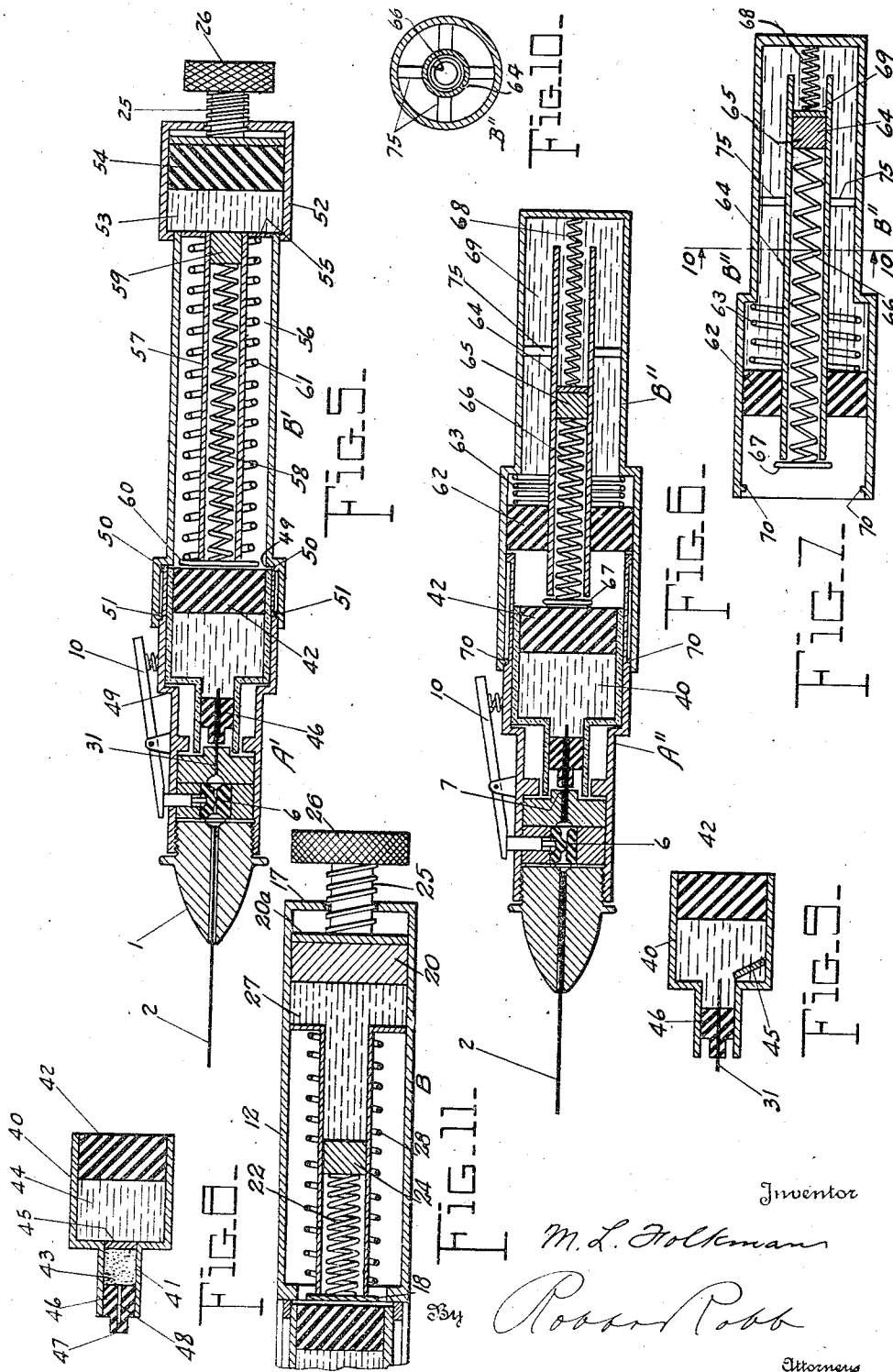
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SYRINGE

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My present invention appertains to the art of surgical instruments, and involves primarily a novel construction of injection device in the form of a syringe, preferably, though not necessarily, of the hypodermic type.

The improvement of this invention involves the employment of a syringe unit comprising an applicator section or body equipped with a suitable nozzle or needle injecting means and valve control instrumentalities for permitting and regulating the passage of the medicament to be injected from said applicator unit to the part of the body to which the latter is applied.

My improved syringe additionally comprises what is herein termed an operating section or barrel, containing instrumentalities whereby energy is stored up in certain medicament expelling means whereby to cause the ejection of the fluid or medicine contained in a suitable ampoule or cartridge adapted to be received in the applicator section or body of the instrument.

A primary object of the general construction of my syringe lies in the provision of the operating instrumentalities self-contained in the operating barrel or section such that by an initial manipulation of suitable parts a pressure force may be created in said operating section and caused to be applied to the medicament contained in the applicator section without requiring the energizing of such force by the surgeon as an incident to the actual injection manipulation of the instrument.

More specifically, in reference to the novel operating instrumentalities above referred to, my operating section or barrel forming a part of the syringe is equipped with a spring propelled piston member or plate adapted for cooperation to apply pressure to the medicament in the applicator section, there being associated with said plate instrumentalities for storing up a pressure force in the operating section, prior to the manipulation of the entire syringe to cause application of the applicator member to the body, the valve means previously referred to being availed of to release the medicament and at the same time enabling the said stored up pressure force to act thereon for performing the medicament expelling function.

My invention consists of other detail features of construction and operative phases of my improved syringe which will appear more fully upon reference to the following description in conjunction with the accompanying drawings, in which:

Figure 1 is a longitudinal sectional view of my syringe showing the medicine ampoule or car-

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tridge inserted in the applicator section with resulting actuation of contained parts of the ampoule to hydrate or dissolve the medicament contained therein into a liquid body, the parts of the operating section of the syringe being shown ready to be energized to create the stored up force for the expulsion of the medicine from the applicator upon opening of the valve control means.

Figure 2 is a fragmentary side view of the main parts of the instrument illustrating the swinging and locking connection between the applicator section and the operating section, dotted lines illustrating the movement of the operating section out of alignment with the applicator section as required preliminary to the insertion of the ampoule or medicine cartridge into the applicator section.

Figure 3 is a sectional view of the ampoule or medicine cartridge alone in the condition in which it is inserted into the instrument.

Figure 4 is a view similar to Figure 3, showing the diaphragm of the ampoule tilted to permit mixing of the distilled water or liquid in the ampoule with the medicine therein contained to condition the medicine for ejection from the syringe through the needle or other applicator means.

Figure 5 is a view similar to Figure 1, disclosing a modified adaptation of the invention.

Figure 6 is a sectional view similar to Figures 1 and 5, showing a further modification of the invention.

Figure 7 is a view of the operating section of the syringe of the construction of Figure 6, disclosing preliminary positions of certain elements before the actuating and ejector pistons have been moved to store up energy in the ejector actuating spring.

Figure 8 is a sectional view of the ampoule or cartridge used in the syringes of Figures 5 and 6 before the medicament has been mixed with the liquefying agent or water thereof.

Figure 9 is a view similar to Figure 8, showing the medicament shifting plunger as when actuated to effect the mixture of the medicament and water.

Figure 10 is a sectional view on the line 10—10 of Figure 7.

Figure 11 is a fragmentary sectional view of the operating section of the instrument, similar to Figure 1, spring parts appearing as when actuated by the manual turning handle.

Describing my construction of syringe in detail and referring particularly to Figure 1, the mechanical features comprise an applicator sec-

tion of the body generally designated A, and an operating or medicament expelling section B. The section A includes the applicator nozzle or head 1 which may or may not be equipped with an injecting needle 2 of the customary hollow form, though the latter is ordinarily used for the purposes of the invention. The head 1 is screwed into the sleeve or tube 3 as shown at 4 and is therefore removably mounted thereon. Adjacent to the head 1 there is positioned in the sleeve 3 in an immovable manner the plug or thick wall member 5 containing passage means therein in the form of a resilient or rubber tube 6, the central passage of which registers with the hollow portion or passage of the needle 2 and also registers with a passage 7 centrally formed in a piston member 8 affixed in the sleeve 3 in a stationary manner at the inner side of the wall member 5 previously referred to. The passage member 6, being resilient, is adapted to be closed and opened by engagement of the reduced end portion 9a of a valve stem 9 which is movable transversely through an opening in the side of the sleeve 3 and is operable by a valve lever 10 spring actuated by spring 11 to normally hold parts 9 and 9a in a position contracting the passage in the passage member 6 to close the same, as seen in Figure 1.

Associated with the applicator member A is the member B previously mentioned, which has locking, sliding, and swinging connecting means with the member A. Said means is obtained by the provision on the barrel or hollow section 12 of the operating member B of spaced arms 13 which have pivot members 14 projecting inwardly therefrom to enter slots 15 in opposite sides of the inner end of the sleeve 3 of the applicator section A. The slots 15 have the end lateral extensions 15a to provide locking portions. By sliding the operating section B leftward as seen in Figure 2 and then rotating said section B slightly, the operating section is lockingly connected to the applicator section A by means of the pivotal members, pins, or projections 14 entering the lateral extensions 15a of said slots 15. Such arrangement locks the sections A and B in alignment.

By rotating the section B oppositely and shifting the same longitudinally with the parts 14 moving in the slots 15, the parts A and B may be separated as shown in Figure 2 and the part B swung to a position permitting the insertion of a medicine cartridge or ampoule into the applicator section A. This likewise is known practice in such instruments.

Passing now to the construction of the operating section B of the syringe, said section comprises the barrel member 12 previously mentioned, the members 13 previously mentioned, an end wall or flange 16 adapted to abut with the inner end of the applicator section A, and an outer end wall or closure 17. Within the section B is disposed the ejector plate 18, the partition 19, and the actuating piston 20. The ejector plate 18 is movable through an opening 21 at the inner end of the barrel member 12. It is affixed at one side to the innermost end of the energy storing spring 22 mounted in the spring enclosing tube 23 which is affixed at one end to the partition 19. In its outer end the spring tube 23 is provided with a movable energy storing piston member 24 having a bearing on the outer end of the spring 22. In the space of the barrel member 12 located between the parts 19 and 24, and the part 20, a pressure fluid, preferably water, is

contained and adapted to be subjected to compression by the piston 20, previously mentioned.

Passing through an opening in the end closure 17 of the barrel 12 is the threaded portion of a screw 25 having a turning handle 26. The inner end of the screw 25 engages a surface member 20a at the outer side of the piston 20. Operation of the screw 25 is adapted to move the piston 20 inwardly in the barrel 12 subjecting the water in the compartment portion 27 of the barrel to compression. Surrounding the spring tube 23 is a coiled spring 28 secured at one end to the member 19 and constituting a restoring spring for a purpose to be hereafter described; also spring 28 is attached to plate 18.

Referring now to the ampoule or medicine cartridge, seen in Figures 3 and 4, it is notable that this cartridge comprises a tube 29 having at one end a rubber closure 30 adapted to be penetrated by the penetrating tubular needle 31 which is affixed to the valve part 5 previously described. At the opposite end of the tube 29 is a second plug or piston part 32. About midway of the ends of the tube 29 is a displaceable partition 33 having water-tight connection with the inner wall of the tube at its periphery. Carried by the plug 30 by a needle member 34 is the medicine containing tube 35 which may contain a liquid medicine or a medicine in dry or powdered form. The partition 33 forms a closure for the outer open end of the medicine containing tube or receptacle 35 and separates this receptacle and the compartment 36 in which it is disposed from the compartment 37 provided between the members 33 and 32. In the compartment 37 is received and contained distilled water intended to be mixed with the medicine in the receptacle 35 for producing the medicinal fluid or liquid to be injected by means of the syringe or to be expelled from the head 1 if this head is designed as a nozzle or similar applicator instead of being equipped with the needle 2.

It is notable that the rubber plug or piston 30 of the ampoule 29 is formed with a recess 30a establishing a passage of slightly less length than the width of the piston. The screw 25 would preferably have a swivelling contact with the plate portion 20a of the piston 20.

If desired, and the medicament used is not subject to deterioration from light, such medicament may be emplaced in the space or compartment 36, though preferably it may be carried in the tube or receptacle 35.

The operation of the syringe and ampoule means will now be described.

With the applicator and operating sections A and B, respectively disposed substantially as in Figure 2, the section B is swung to one side and the ampoule as seen in Figure 3 is inserted in the open end of the sleeve 3 of the section A. The section B of the syringe is then swung back into alignment with the section A and forced toward said section A, the pins 14 moving in the slots 15. This action causes the flanged portion 16 of the section B to engage the ampoule or cartridge and move it longitudinally in the sleeve 3 toward the head 1. The inward movement of the ampoule is limited and fixed for the operating adjustment thereof by means of a flange 38 integral with and interiorly of the sleeve 3. In the action of moving the ampoule to the position of Figure 1 as described the metal plunger 8 of the applicator unit A has contacted with the rubber plunger or piston 30 of the ampoule as the latter slid to its home position limited by the member

38. During this relative motion of the part A and the ampoule, the medicament tube 35 which is off center or eccentric to the axis of the sleeve 3 strikes the partition or diaphragm 33 and tilts the same to the position of Figure 1, thus permitting the distilled water in the compartment 37 of the ampoule to mix with the medicament located either in the chamber 36 or in the tubular receptacle 35. The medicament dissolves in the distilled water and is ready to be used and the ampoule or cartridge with its enclosed parts is disposed as is illustrated in Figure 1, wherein it will be seen that the needle 31 has penetrated the rubber plunger 30 and entered the recess 30a thereof so that the medicament may enter said needle. At this time the medicament has been dissolved and is ready for use but no flow thereof from the syringe has taken place since the valve means 6 and 9 remain closed.

Next the operating section B of the syringe is turned so as to lock the same in relation to the section A by the projections 14 entering the portions 15a of the slots 15.

The knob or handle 2 is now given a few turns whereby to move inwardly the actuating piston 20, thereby compressing the liquid or water in the compartment 27. The pressure thus exerted upon the said fluid in the compartment 27 acts upon the smaller energy storing piston 24 so as to move the same toward the section A of the syringe and compress the spring 22 storing up energy in said spring. At this time the spring 22 cannot act to expend its energy on the ejector plate 18 because the plate 18 is in abutment with and stopped from movement by the rubber plunger or piston 32 of the ampoule.

With the spring 22 now under compression and with stored energy therefore, the syringe is ready to be used.

The surgeon or operator by grasping the body portions of the syringe comprising the members A and B will insert the penetrating needle 2 into the patient. In this operation it is not necessary for the user to concern himself about holding the syringe in the manner of the ordinary syringe requiring the thumb to be held upon the piston actuating member that forces the medicament into the body of the patient. For administering the medicament through the needle 2 the user simply depresses the outer spring actuated end of the valve lever 10, raising the stem 9, releasing the pressure on the rubber valve sleeve 6. This permits the orifice of the sleeve to open and frees the medicament so that the same may pass through the needle 31, sleeves 6, and needle 2, to the point of administration. The egress of the medicament in the ampoule being permitted by the opening of the valve 6, the stored up energy in the compression spring 22 acts on the ejector plate 18 and forces the ejecting plunger or piston 32 of the ampoule in the direction of the head 1, thereby with piston effect forcing the medicated fluid in the ampoule to the point of application desired. The piston or plunger 32 will move as long as the valve 6 is kept open, and the valve may be closed and opened several times or just once, so that regulation of the amount of medicament administered will be had as may be desired or required. The movement of the member 32 will be limited by its ultimate contact with the tube 35, at which time the medicament will be substantially exhausted.

After all the medicament is used, the user of the instrument will unscrew the knob 26 and thus the actuating piston 20 will be drawn back

toward the closure member 17. This releases the pressure in the compartment 27 containing the water, and the spring 28, encircling the tubular extension 23, being connected at one end to the ejector plate 18 and at the other end to the partition 19, will pull the plate 18 toward the handle 26 and thus act upon the spring 22 to cause said spring to restore the small energy storing piston 24 to its normal position in the instrument as shown in Figure 1.

The members A and B of the syringe are then unlocked by disengaging the parts 14 and 15a, the section B is swung to one side, and the exhausted ampoule which will be withdrawn from the applicator section A may be discarded and a fresh ampoule or cartridge inserted in its place for the purposes of the next use of the instrument.

I have illustrated in Figures 5 to 9 inclusive modified features of construction of syringes embodying the principles of my invention as previously described, together with a modified form of ampoule or cartridge.

In the modified constructions of my invention at last referred to, certain parts are substantially the same in construction as those previously set forth in reference to the syringe of Figure 1, and they are similarly designated in Figures 5 to 7 inclusive.

First I will set forth the novel form of ampoule employed in my modified constructions of syringe.

Referring to Figure 8, this ampoule will be seen to comprise the enlarged body 40 having the tubular extension 41. The body 40 is equipped with a closure member or plug 42 similar to the previously described plug or piston member 32. The tubular extension 41 is designed to hold a medicament 43 in powdered form separated from the liquid (water) 44 in the body 40 by means of a displaceable diaphragm 45. In the outer end of the extension 41 of the ampoule is located the small plunger 46 having the protruding pressure or finger piece 47 and formed with a longitudinal recess 48 terminating short of the outer end of the member 47, the latter being adapted to be penetrated by the needle 31 as previously described in relation to the construction of Figure 1. According to my modified construction of ampoule it is intended that the mixture of the dry or other medicament 43 and liquid 44 shall be effected by hand pressure, pushing in on the plunger 46 at the fingerpiece 47. This mixture will be performed previous to placing the ampoule in the syringe. After the mixture has been thus effected, the ampoule will be disposed in the applicator section A' of the syringe member in the same manner as previously described in reference to the Figure 1 construction. However, the body portion 40 of the ampoule will engage a shoulder portion 49 of the applicator section when the ampoule is placed in the applicator section A', the inward movement of the ampoule being thus limited. The operating section B' of the syringe is somewhat similar to that of the construction of Figure 1, excepting that the inner end of said section is somewhat enlarged at 50, and this portion is provided with the interlocking slide pins 51 similar to the pins 14 previously described. At its outer end the section B' is also enlarged as seen at 52 to provide a chamber for water 53 and for the actuating piston 54 movable by the screw 25 under turning action of the handle 26 as described in my preferred construction.

A partition 55 divides the section B' into the

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chamber holding the water 53 and the spring and ejector chamber 56. A tubular member 57 contains the energy storing spring 58 secured at one end to the energy storing piston 59 and at the opposite end to the ejector plate 60, the piston 59 and the spring 58 being within the member 57. External to the member 57 is a pull-back spring 61 for restoring the plate 60 to its normal actuating position preliminary to use of the syringe.

In operation, the ampoule is emplaced in the applicator section A' of the syringe in the manner previously described with regard to Figure 1, after the medicament, and water for liquefying the same, have been mixed. The operating section B' of the syringe is then swung into alignment with the section A' as previously described, and moved longitudinally to slide the sections together until the shoulder 50' of the portion 50 engages the inner end of the section A' and abuts with the right hand end of the body of the ampoule. The medicament is now ready to be dispensed, and for this purpose the knob or handle 26 will be turned in order to move the actuating piston 54 inwardly, thereby to force the water 53 in the chamber containing the same against the energy storing piston 59. This action moves the piston 59 and compresses the spring 58, thus storing up energy in the ejector plate 60 by which to force the plug or piston 42 toward the nozzle or head 1 when flow of the medicament to the patient is to be effected. Upon opening of the valve 6 by the hand lever 10 the medicament entrapped in the ampoule will be released and the plug or piston 42 will be moved by the ejector plate 60 to effect the flow of the medicament through the needles 31 and 2 as described in relation to the Figure 1 construction. When the medicament has been administered to a patient, the handle 26 is unscrewed and this permits the spring 58 to return the energy storing piston 59 to its position of Figure 5 and permits the spring 61 to pull the ejector plate 60 back to its position of Figure 5. The operating section B' is then unlocked from the section A', and the two sections moved apart so to speak, and the section B' swung to one side to permit the removal of the emptied ampoule.

The construction in Figures 6 and 7 is somewhat similar to that in Figure 5 excepting that in this modification of Figure 6 the manually operable knob 26 and associated parts are done away with. In this construction it is contemplated to utilize the movement of the operating section B' relatively to the applicator section A' to store up the energy in the ejecting piston and spring and ejector spring plate means for causing the ejection or expulsion of the medicament fluid from the instrument. Parts in this construction similar to the construction of Figure 5 are correspondingly designated. It is notable however that in Figure 6 the operating section B' contains intermediate its ends the actuating piston 62 adapted to be engaged with the adjacent ends of the applicator section A' so that the latter will move the piston 62 in the operation of pushing the two sections A' and B' together in a slidable manner, after which they are interlocked as by the means 15a used in the Figures 1 and 2 construction. The action of moving the piston 62 as stated compresses a spring 63 in the section B' and forces water in the section B' at the right of the piston 62 into the tubular spring container 64. The spring container 64 also contains the energy storing piston 65 functioning similar to the piston 59 and cooperating with the

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spring 66 connected to the ejector plate 67. At the end of the piston 65 opposite the spring 66 is a restoring spring 68. Looking at Figures 6 and 7, therefore, it will be seen that when the piston 62 is forced to the right in the act of coupling interlocking engagement of the sections A' and B', if the ampoule has been placed in the section A'. The water 69 in the section B' will be caused to enter the right hand end of the tube 64, will move the energy storing piston 65 to the left, placing the spring 66 under stored operating tension against the ejector plate 67. Then when the needle 2 of the syringe has been forced into the patient for injection purposes, the user of the syringe merely actuates the lever 10 for the valve 6 and upon opening of the valve the medicament in the ampoule 40 will flow for intravenous administering to the patient. When the ampoule has been emptied the syringe members A' and B' will be pulled apart slidably as permitted by the extent of movement of the pins 70 and the ampoule may be displaced. Thereupon, the spring 63 will be permitted to expand and shift the actuating piston 62 leftward to assume its normal position maintained thereby previous to the pushing together operation of the two sections A' and B' of the syringe. When the piston 62 is so moved by the spring 63 the spring 68 connected to the piston 65 at its left end and to the outer end of the section B' at its right end will restore the piston 65 to its normal position of Figure 7, causing a certain amount of the water entering the tube 64 to pass into the body of the section B' so that the parts assume the relations in Figure 7.

A spider or web member 75 positions the member 64 in the member B' against movement therein.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A syringe comprising an applicator section, an operating section movably mounted thereon, the applicator section having a medicament charge containing means, an energy storing spring in the operating section, ejector means for the medicament operable by said spring, and means adapted to be actuated incident to relative movement of the applicator and operating sections of the syringe for storing up energy in said spring by which to move the medicament ejector means, including an actuating piston in the operating section engageable by the applicator section for shifting said piston, an energy storing piston for storing up energy in said spring, and a liquid interposed between the actuating piston and the said energy storing piston for moving the latter incident to the action of the actuating piston shifting the liquid in the operating section in relation to the energy storing piston.

2. A syringe comprising an applicator section, an operating section movably mounted thereon, the applicator section having a medicament charge containing means, an energy storing spring in the operating section, ejector means for the medicament operable by said spring, means adapted to be actuated incident to relative movement of the applicator and operating sections of the syringe for storing up energy in said spring by which to move the medicament ejector means, including an actuating piston in the operating section engageable by the applicator section for shifting said piston, a spring cooperating with the ejector means of the applicator section, an energy storing piston for storing up energy in said spring, a liquid interposed between the actu-

ating piston and the said energy storing piston for moving the latter incident to the action of the actuating piston shifting the liquid in the operating section in relation to the energy storing piston, and means for restoring the energy storing piston and the actuating piston to normal positions when relative movement of the applicator and operating sections is effected oppositely to the first mentioned relative movement.

3. In a syringe, in combination, an applicator section comprising an applicator member for administering a medicament, the said applicator member being provided with an exit passage for medicament contained by an ampoule therein, valve means controlling said passage, an ampoule containing medicament emplaceable in the applicator member and including an ejecting piston, an operating section associated with the applicator section of the syringe and comprising an energy storing spring coacting with the ejecting piston, and an instrumentality for storing up energy in said energy storing spring for moving the said ejecting piston when the medicament of the ampoule is released by control of the valve means to enable the medicament to pass to the applicator member, an energy storing piston coacting with said spring, an actuating piston in the operating section operable incident to movement of the instrumentality mentioned, and said operating section having a fluid holding compartment intermediate said actuating piston and said energy storing piston.

4. A syringe as claimed in claim 3, combined with a restoring spring associated with the energy storing spring to restore the latter to its original condition upon adjustment of the actuating piston to its original position previous to operation thereof.

5. In a syringe, in combination, an applicator section comprising an applicator member for administering a medicament, the said applicator member being provided with an exit passage for medicament contained by an ampoule therein, valve means controlling said passage, an ampoule containing medicament emplaceable in the applicator member and including an ejecting piston, an operating section associated with the applicator section of the syringe and comprising mechanical energy storing means normally conditioned without stored energy, an instrumentality cooperable with the operating section for storing up energy in said energy storing means for moving the said ejecting piston when the medicament of the ampoule is released by control of the valve means to enable the medicament to pass to the applicator member, an ejector plate on the operating section associated with said mechanical energy storing means and coacting with said ejecting piston to move the same, said operating section having a fluid holding compartment intermediate said instrumentality and said energy storing means, together with means for automatically restoring the ejector plate and energy storing means to their normal condition and positions upon release adjustment of said instrumentality after the energy of the energy storing means has effected the movement of the ejecting piston.

6. In a syringe, in combination, an applicator section comprising an applicator member for administering a medicament, the said applicator member being provided with an exit passage for medicament contained therein, valve means controlling said passage, ejecting means for ejecting medicament from the applicator section, and an

operating section associated with the applicator section and including a mechanical energy storing means coacting with the ejecting means and normally conditioned without stored energy, an instrumentality for storing up energy in said mechanical energy storing means for effecting medicament expelling action of said ejecting means under control of said controlling means, a manually operable actuating piston, an energy storing piston forming a part of the storing means, and a body of liquid between the last mentioned piston and the actuating piston, and means for automatically restoring the actuating and energy storing pistons to original normal conditioned adjustments upon release adjustment of said instrumentality.

7. A syringe comprising an applicator section adapted to receive a medicament charge, ejector means for expelling the medicament charge from the applicator section, controlling means for controlling passage of the medicament charge from the applicator section, an operating section associated with the applicator section of the syringe and comprising an energy storing spring normally conditioned without stored energy and coacting with the ejector means, an instrumentality for storing up energy in said energy storing spring for effecting medicament expelling action of the ejector means under the control of said controlling means, an energy storing piston coacting with said spring, an actuating piston in the operating section operable incident to movement of the instrumentality mentioned, said operating section having a fluid holding compartment intermediate said actuating piston and said energy storing piston, and means for automatically restoring the energy storing piston to its original condition upon release adjustment of the actuating piston after the ejector means has been operated by the spring.

8. A syringe as claimed in claim 7, in which the restoring means includes a spring connected to the energy storing piston.

9. A syringe comprising an applicator section adapted to receive a medicament charge, ejector means for expelling the medicament charge from the applicator section, controlling means for controlling passage of the medicament charge from the applicator section, an operating section associated with the applicator section of the syringe and comprising an energy storing spring coacting with the ejector means, an instrumentality for storing up energy in said energy storing spring for effecting medicament expelling action of the ejector means under the control of said controlling means, an energy storing piston coacting with said spring, an actuating piston in the operating section operable incident to movement of the instrumentality mentioned, and said operating section having a fluid holding compartment intermediate said actuating piston and said energy storing piston.

10. A syringe comprising an applicator section adapted to receive a medicament charge, ejector means for expelling the medicament charge from the applicator section, controlling means for controlling passage of the medicament charge from the applicator section, an operating section associated with the applicator section of the syringe and comprising an energy storing spring coacting with the ejector means, an instrumentality for storing up energy in said energy storing spring for effecting medicament expelling action of the ejector means under the control of said controlling means, an energy storing piston co-

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acting with said spring, an actuating piston in the operating section operable incident to movement of the instrumentality mentioned, said operating section having a fluid holding compartment intermediate said actuating piston and said energy storing piston.

11. A syringe as claimed in claim 7, wherein the restoring means includes a spring connected to the operating section and operatively associated with the energy storing piston.

12. A syringe comprising an applicator section adapted to receive a medicament charge, ejector means for expelling the medicament charge from

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the applicator section, controlling means for controlling passage of the medicament charge from the applicator section, an operating section associated with the applicator section of the syringe and comprising energy storing means coacting with the ejector means, an instrumentality for storing up energy in said energy storing means for effecting medicament expelling action of the ejector means under the control of the controlling means, and said operating section having a fluid holding compartment intermediate said instrumentality and said energy storing means.

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