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Wright

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[54] **ADJUSTABLE SYRINGE DOSE AID**

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[52] **U.S. Cl.**..... **128/272,** 128/215, 141/376, 128/218 C

[51] **Int. Cl.**..... **A61m 5/00,** A61j 5/00, A61m 5/22

[58] **Field of Search**..... 128/215, 218 R, 218 C, 128/218 PA, 218 F, 218 D, 272, 218 M; 206/43; 403/104, 106–108; 248/229, 316 A, 298, 285, 307; 141/329, 27, 357, 375, 376

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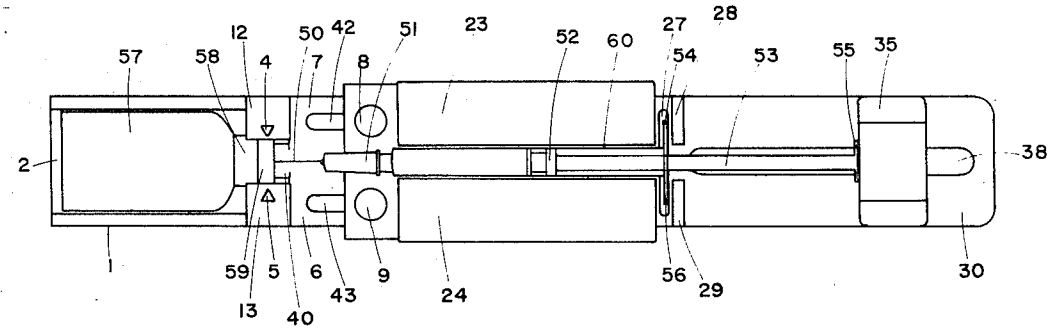
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[57] **ABSTRACT**

An instrument is disclosed for transferring specified amounts of fluids from a container to a syringe without dependency on eyesight.

21 Claims, 3 Drawing Figures



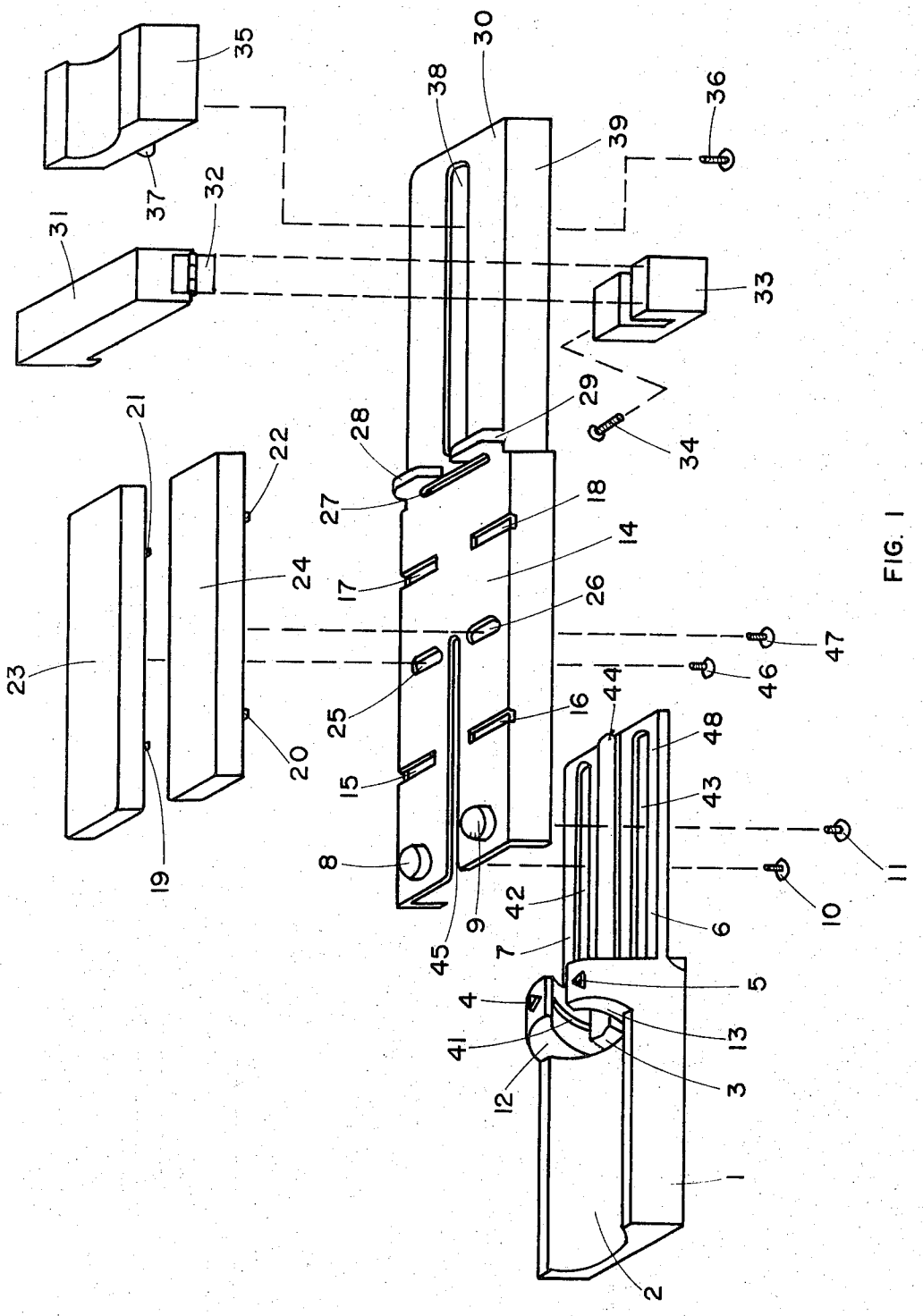

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FIG. 1

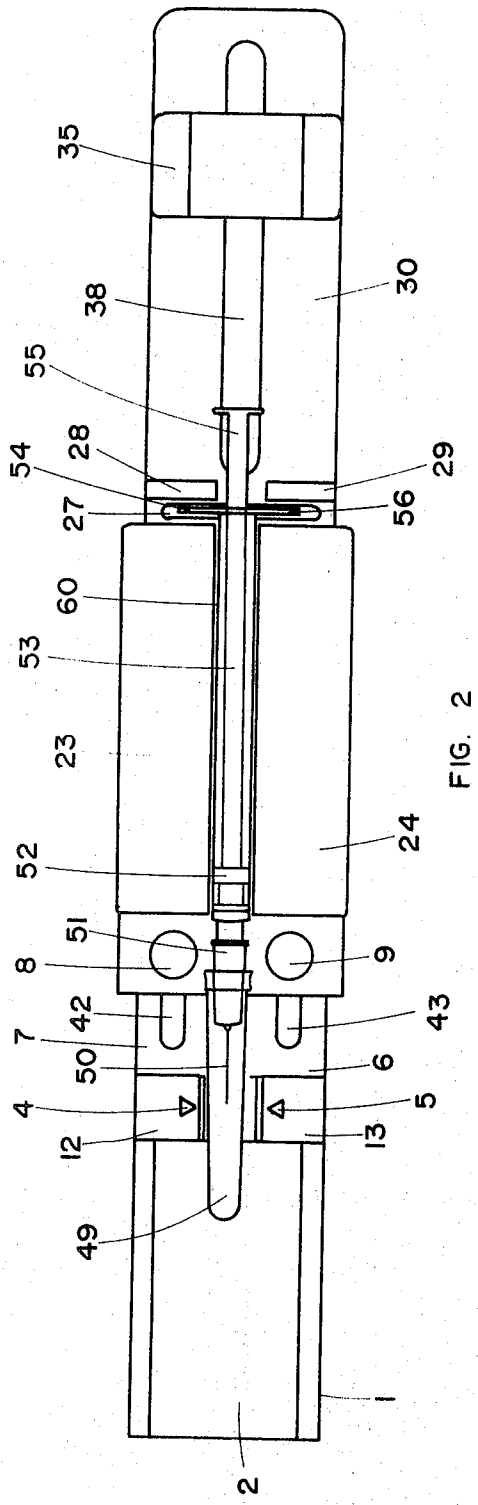

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FIG. 2

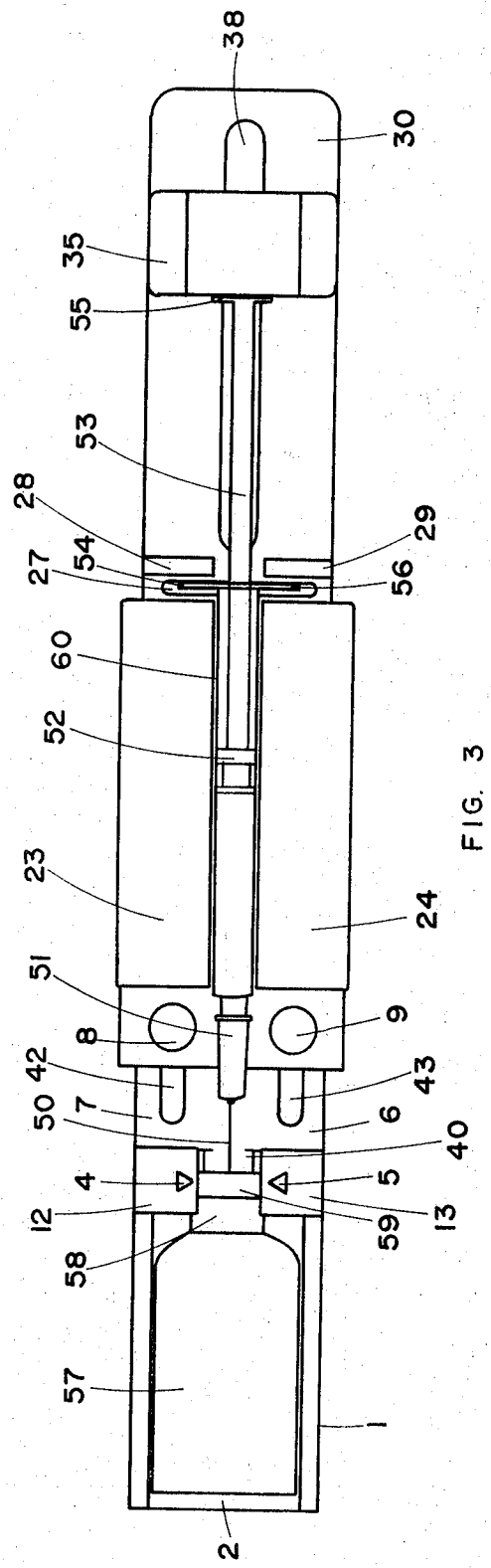

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FIG. 3

ADJUSTABLE SYRINGE DOSE AID

This invention relates to an instrument which aids in obtaining exact dosages of medication within syringes and more particularly to an instrument which may be so constructed that exact dosages may be obtained without dependency on eyesight. Many people, for example, diabetics, find it necessary to give themselves injections of insulin or other medications. A basic problem exists in being able to load the syringe and properly pierce the top of the medication container with the syringe needle. It is, also, imperative to load the syringe with the proper dosage of medication.

Persons who have sight impediments and many unskilled parents or patients face the constant problem of concern over the proper amount of medication. The present invention solves the dosage problem and enables virtually anyone to obtain the proper dosage of medication from a container to a syringe.

An object of this invention is to provide an adjustable syringe dose aid from which the proper dosage of a medication in a syringe may be obtained by a blind or unskilled person.

Another object of this invention is to provide an instrument that is adjustable for obtaining varying dosages of medication in a syringe without dependency on the eyesight.

Still another object of this invention is to provide an instrument for accurately obtaining varying dosages of different medications in the same syringe without dependency on the eyesight.

Another object of this invention is to provide an instrument for accurately obtaining varying dosages of medication in a syringe and maintaining the sterility of the syringe being used without dependency on the eyesight.

Another object of this invention is to provide an instrument for accurately obtaining varying dosages of medication in syringes of varying dimensions of lengths and diameters.

Briefly, the invention is an instrument for transferring specified amounts of fluids from a container to a syringe without dependency on eyesight. The instrument comprises a frame upon which the syringe may rest, extraction preparation means for transferring the fluids from the container to the syringe, and stop means to prevent more than a pre-determined amount of the fluids to be transferred from the container to the syringe. The frame comprises container holding means attached to the frame, side guides slidably mounted on the frame, and finger stops rigidly mounted on the frame. The extraction preparation means comprises a rest for the top of the container, and adjustable sliding means rigidly attached to the rest and slidably attached to the frame, whereby the tip of the needle of the syringe may be placed at a pre-determined needle position with respect to the rest. The extraction preparation means further comprises alignment means for determining the pre-determined needle position for the needle of the syringe to be placed with respect to the rest so that when the container is placed in the rest, the tip of the needle will pierce the top of the container. The rest further comprises top stop means to restrict the top of the container to a pre-determined position on the rest. The adjustable sliding means comprises a slide member containing openings, a slide piece rigidly mounted on the slide member, slide guide means within the frame

through which the slide piece may slide, and attachment means, such as screws, which may be loosened for slidably adjusting and tightened for fixing a rigid position of the side member with respect to the frame. The stop means comprises a plunger stop slidably mounted on the frame which restricts the movement of the plunger of the syringe beyond a pre-determined stopping point on the frame. The stop means may further comprise a plurality of adjustable plunger stops slidably mounted on the frame for transferring specified amounts of fluids from a plurality of containers. The plunger stop may be regidly attached to the frame by use of stop attachment means, such as screws. The adjustable plunger stops may be slidably attached to the frame by adjustable attachment means comprising hinge means and connecting means. The rest may be protected by a plurality of needle point protectors which alleviate any requirement for the tip of the needle to be touched and enables the needle to remain sterile.

The invention will be more fully understood from the following detailed description and appended claims when taking with the drawings in which:

FIG. **1** is an exploded parts view of the instrument.

FIG. **2** is a top view of the instrument with a covered needle in place.

FIG. **3** is a top view of the instrument with a syringe in place and its needle injected in a bottle containing fluids.

Referring now to the drawings, FIG. **1** is an exploded parts view of the instrument. A bottle or container containing fluids may be placed in container holding means, such as container carrier **1** by laying the container body in trough **2** and the container neck and container top on container top rest **3.**

The instrument basically comprises a frame upon which the syringe may rest, extraction preparation means to transfer the fluids from the container to the syringe, and stop means to prevent more than a predetermined amount of the fluids to be transferred from the container to the syringe.

In the embodiment of the invention, shown in FIG. **1,** the frame consists of frame section **14** and frame section **30.** The extraction preparation means comprises container top rest **3** and an adjustable sliding means comprising alignment means, such as needle alignment arrows **4** and **5,** adjustable slide member **48,** slide piece **44,** slide guide means, such as slide guide **45,** screws **10** and **11,** opening **42** and **43,** and buit-in nuts **8** and **9.** The adjustable sliding means is rigidly attached to container top rest **3** and may be adjusted so that the top of the needle of the syringe will be placed at a predetermined needle position, whereby when the container top **59** is placed on container top rest **3,** the tip of needle **50** will pierce container top **59,** as shown in FIG. **3.**

Screws **10** and **11** act as attachment means extending through openings **42** and **43** and may be loosened for slidable adjusting and tightened for fixing a rigid position of adjustable slide member **48** with respect to frame section **14.**

Adjustable slide member **48** is rigidly attached to container carrier **1.** Adjustable slide member **48** comprises one side **6** and the other side **7,** slide piece **44,** and openings **42** and **43.** Screw **11** passes through opening **43** to connect within built-in nut **9** which is located on frame section **14.** Screw **10** passes through

opening 42 to enter built-in nut 8 on frame section 14. Slide piece 44 slides within slide guide 45 as the distance between frame section 14 and container carrier 1 is varied. The sliding action of slide piece 44 within slide guide 45, along with the adjusting screw 10 within built-in nut 8, and screw 11 within built-in nut 9, provide the ability to adjust the distance between frame section 14 and container carrier 1 while still maintaining a substantially rigid connection between the two parts.

A syringe may be placed on a frame between side guides 23 and 24, after side guides 23 and 24 are attached to frame section 14. Side guide 23 may be attached to frame section 14 by screw 46 which fits through screw slot 25. Side guide 24 may be attached to frame section 14 by screw 47 which enters through screw slot 26. Screw slots 25 and 26 are openings for the screw to enter. These openings, screw slots 25 and 26, enable side guides 23 and 24 to be adjusted laterally so that different diameter plungers or barrels for different syringes may be made to fit comfortably onto frame section 14. Slide 19 on side guide 23 slides in indented slide opening 15 on frame section 14. Slide 21 on side guide 23 slides in indented slide opening 17 on frame section 14. Slide 20 on side guide 24 slides in indented slide opening 16 on frame section 14. Slide 22 on side guide 24 slides in indented slide opening 18 on frame section 14.

Cross slot 27 enables the syringe to be placed within frame section 14 no matter what the position of the syringe stops 54 and 56 (see FIGS. 2 and 3). Syringe stop stops 28 and 29 act to contain the syringe within a fixed position by preventing lateral movement.

Frame section 30 is rigidly attached to frame section 14 and comprises edges including edge 39 and containing an opening which is slide guide 38. Adjustable plunger stop 31 may be attached to frame section 30 by use of hinge means, such as hinge 32, which is attached to connecting means, such as adjustable connecting member 33. Screw 34 attaches adjustable connecting member 33 to edge 39 of frame section 30 and may be loosened for slidable adjusting and tightened for fixing a rigid position by adjusting screw 34. Plunger stop 35 is secured to frame section 30 by stop attachment means, such as screw 36 which screws into slide 37 which is attached to plunger stop 35. Slide 37 slides within slide guide 38. plunger stop 35 slides conectably along frame section 30 and may be attached in a fixed manner by the adjustment of screw 36.

Stop means, such as plunger stop 35 and adjustable plunger stop 31, prevents the plunger end 55 from passing a pre-determined stopping point and therefore, prevents more than a pre-determined amount of the fluid in container body 57 from being tranferred to the syringe.

FIG. 2 shows a top view of the instrument with a covered needle in place. Needle 50 is protected by protective needle cover 49 which is attached by hand pressure to needle mounting piece 51. The syringe comprises needle 50, needle mounting piece 51, plunger head 52, plunger 53, syringe stops 54 and 56, plunger end 55, and syringe body 60. The syringe body is placed within frame section 14 and adjusted so that the point of needle 50 lies directly between needle alignment arrows 4 and 5. The adjustment in order to have the point of needle 50 lie directly between needle alignment arrows 4 and 5 is made by sliding frame section 14 by use of slide piece 44 within slide guide 45. At the proper distance, screw 10 is tightened into built-in nut 8 and screw 11 is tightened into built-in nut 9 to fix the position of the needle point. Side guides 23 and 24 may be adjusted at the time the syringe is placed within frame section 14 by the tightening of screws 46 and 47.

FIG. 3 shows a top view of the instrument with a syringe laying in frame section 14 and the point of needle 50 piercing container top 59. A container comprising container body 57, container neck 58, and container top 59 has been placed within container carrier 1. The tip of needle 50 is protected by needle point protectors 12 and 13 which are rigidly connected to container carrier 1. Ridge 41 within needle point protector 12 along with ridge 40 on container top rest 3 and a ridge (not shown) on needle point protector 13 all serve to hold and guide container top 59 to the appropriate position when the container is inserted. The instrument may be used in the following procedure. The syringe may be removed from its package and placed between side guides 23 and 24. Syringe stops 54 and 56 may be placed in cross slot 27. Screws 10 and 11 may be loosened so that slide piece 44 may slide within slide guide 45. The end of needle 50 may be aligned directly between needle alignment arrows 4 and 5. Screws 10 and 11 may then be secured to built-in nuts 8 and 9 to secure the desired position. A container may then be placed within container carrier 1 with the container top 59 pressed against ridges 40 and 41 and the ridge not shown. These ridges act as a top stop means. Plunger 53 may be pulled back to plunger stop 35, which has been pre-set in a desired fixed position. The syringe body 60 is ordinarily marked with graduations which indicate the amount of dosage therein. These graduations are not shown in the drawings. The amount of dosage that will enter the needle can thereby be pre-set by the use of the graduations and the adjustments as herein discussed.

In some cases different amounts of medications may be required in the same syringe. In this case, an adjustable plunger stop 31 (shown only in FIG. 1) may be added to the instrument. The patient using the instrument may therefore use one pre-set plunger stop 35 for one medication and adjustable plunger stop 31 for a second medication. Additional adjustable plunger stops may be added for desired amounts of other medications.

A plurality of adjustable plunger stops, such as adjustable plunger stop 31, slidably mounted on frame section 30 may be used for transferring specified amounts of fluids from each of a plurality of containers, such as container 57, by the movement of the plunger 53 of the syringe to a plurality of pre-determined stopping points, which would be determined by each of the plurality of the adjustable plunger stops.

When properly set, a blind person or a person who has difficulty reading the graduations on the syringe body 60 will have no difficulty in obtaining the exact dosage of medication to be used. The instrument may be used to transfer specified amounts of fluids from a container to a syringe without dependency on eyesight.

No sterilizing of the disclosed invention is necessary in using this instrument as disposable or sterilized reusable syringes may be used without compromise of syringe sterility.

Due to the design of the instrument, and in particular needle point protectors **12** and **13**, the needle point remains sterile and is never required to be touched. The top of the container may be swabbed with alcohol or some other sterilization means, and the patient can be assured of having no contamination problems.

The instrument may be set by a medical technician or Doctor and a patient should have no fear of receiving the wrong dosage.

While the invention has been described with reference to specific embodiments, the description is illustrative and is not to be construed as limiting the scope of the invention. Various modifications and changes may occur to those skilled in the art without departing from the spirit and acope of the invention as defined by the appended claims.

I claim:

1. An instrument for transferring specified amounts of fluids from a container to a syringe without dependency on eyesight comprising:

a. a frame upon which said syringe may rest; and

b. extraction preparation means slidably attached to said frame to transfer said fluids from said container to said syringe; and

c. stop means secured to said frame to prevent more than a pre-determined amount of said fluids to be transferred from said container to said syringe;

d. container holding means slidably attached to said frame and rigidly attached to said extraction preparation means and capable of holding said container;

e. said frame further comprising side guides transversely slidably mounted on said frame, slidably adjustable for holding syringes of different diameters on said frame;

whereby said instrument is adjustable for syringes of varying lengths and capable of use by persons with differing quality of eyesight, including blind persons.

2. An instrument according to claim **1** wherein said container holding means comprises a trough.

3. An instrument according to claim **1** in which said frame further comprises syringe stop stops rigidly mounted on said frame for restricting lateral movement of said syringe on said frame.

4. An instrument according to claim **2** in which said frame further comprises side guides slidably mounted on said frame, slidably adjustable for holding syringes of different diameters on said frame.

5. An instrument according to claim **1** in which said frame further comprises syringe stop stops rigidly mounted on said frame for restricting lateral movement of said syringe on said frame.

6. An instrument according to claim **4** in which said frame further comprises syring stop stops rigidly mounted on said frame for restricting lateral movement of said syringe on said frame.

7. An instrument according to claim **1** in which said extraction preparation means comprises:

a. a rest for the top of said container; and

b. adjustable sliding means rigidly attached to said rest and slidably attached to said frame whereby the tip of the needle of said syringe may be placed at a pre-determined needle position with respect to said rest, whereby when said top of said container is placed on said rest, said tip of said needle will pierce said top of said container.

8. An instrument according to claim **7** in which said extraction preparation means further comprises alignment means for determining said pre-determined needle position for said needle of said syringe to be placed with respect to said rest whereby when said top of said container is placed in said rest said tip of said needle will pierce said top of said container.

9. An instrument according to claim **8** wherein said alignment means are needle alignment arrows.

10. An instrument according to claim **8** in which said rest further comprises top stop means to restrict said top of said container to a pre-determined top position on said rest whereby when said needle has been placed in said pre-determined needle position and when said top of said container is placed within said rest, said tip of said needle will pierce said top of said container.

11. An instrument according to claim **7** in which said adjustable sliding means comprises:

a slide member, containing openings, rigidly connected to said rest; and

b. a slide piece rigidly mounted on said slide member; and

c. slide guide means within said frame through which said slide piece may slide; and

d. attachment means extending through said openings to attach said slide member to said frame, whereby said attachment means may be loosened for slidable adjusting and tightened for fixing a rigid position.

12. An instrument according to claim **11** wherein said attachment means are screws.

13. An instrument according to claim **1** in which said stop means comprises a plunger stop slidably mounted on said frame restricting the movement of the plunger of said syringe beyond a a pre-determined stopping point on said frame.

14. An instrument according to claim **13** in which said stop means further comprises a plurality of adjustable plunger stops slidably mounted on said frame whereby specified amounts of fluids may be transferred from each of a plurality of containers by the movement of the plunger of said syringe to each of a plurality of pre-determined stopping points determined by each of said plurality of adjustable plunger stops.

15. An instrument according to claim **13** in which said plunger stop may be secured to said frame by use of stop attachment means.

16. An instrument according to claim **15** wherein said stop attachment means comprises a screw.

17. An instrument according to claim **14** where the attachment of said plurality of said adjustable plunger stops are slidably attached to said frame by adjustable attachment means comprising:

a. hinge means attached to said adjustable plunger stop; and

b. connecting means attached to said hinge means and slidably mounted on said frame.

18. An instrument according to claim **6** in which said adjustable sliding means comprises:

a. a slide member, containing openings, rigidly connected to said rest; and

b. a slide piece rigidly mounted on said slide member; and

c. slide guide means within said frame through which said slide piece may slide; and

d. attachment means extending through said openings to attach said slide member to said frame,

whereby said attachement means may be loosened for slidable adjusting and tightened for fixing a rigid position.

19. An instrument according to claim **11** in which said stop means further comprises a plurality of adjustable plunger stops slidably mounted on said frame whereby specified amounts of fluids may be transferred from each of a plurality of containers by the movement of the plunger of said syringe to each of a plurality of pre-determined stopping points determined by each of said plurality of adjustable plunger stops.

20. An instrument according to claim **6** in which said stop means further comprises a plurality of adjustable plunger stops slidably mounted on said frame whereby specified amounts of fluids may be transferred from each of a plurality of containers by the movement of the plunger of said syringe to each of a plurality of pre-determined stopping points determined by each of said plurality of adjustable plunger stops.

21. An instrumnet according to claim **7** in which said rest further comprises a plurality of needle point protectors rigidly connected to said adjustable sliding means located above said rest, whereby when said needle lies in said pre-determined needle position, no requirement exists for said tip of said needle to be touched and sterility may be maintained.

* * * * *