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[54] **SYRINGE HOLDER**

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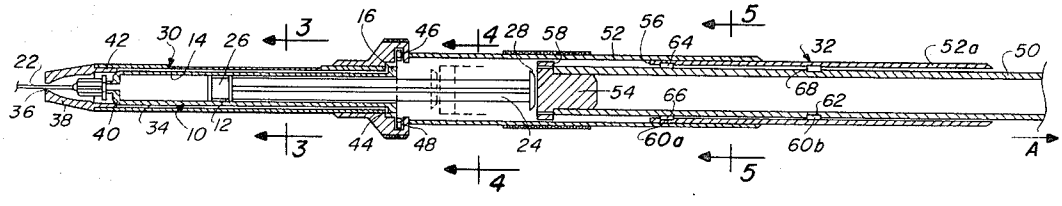
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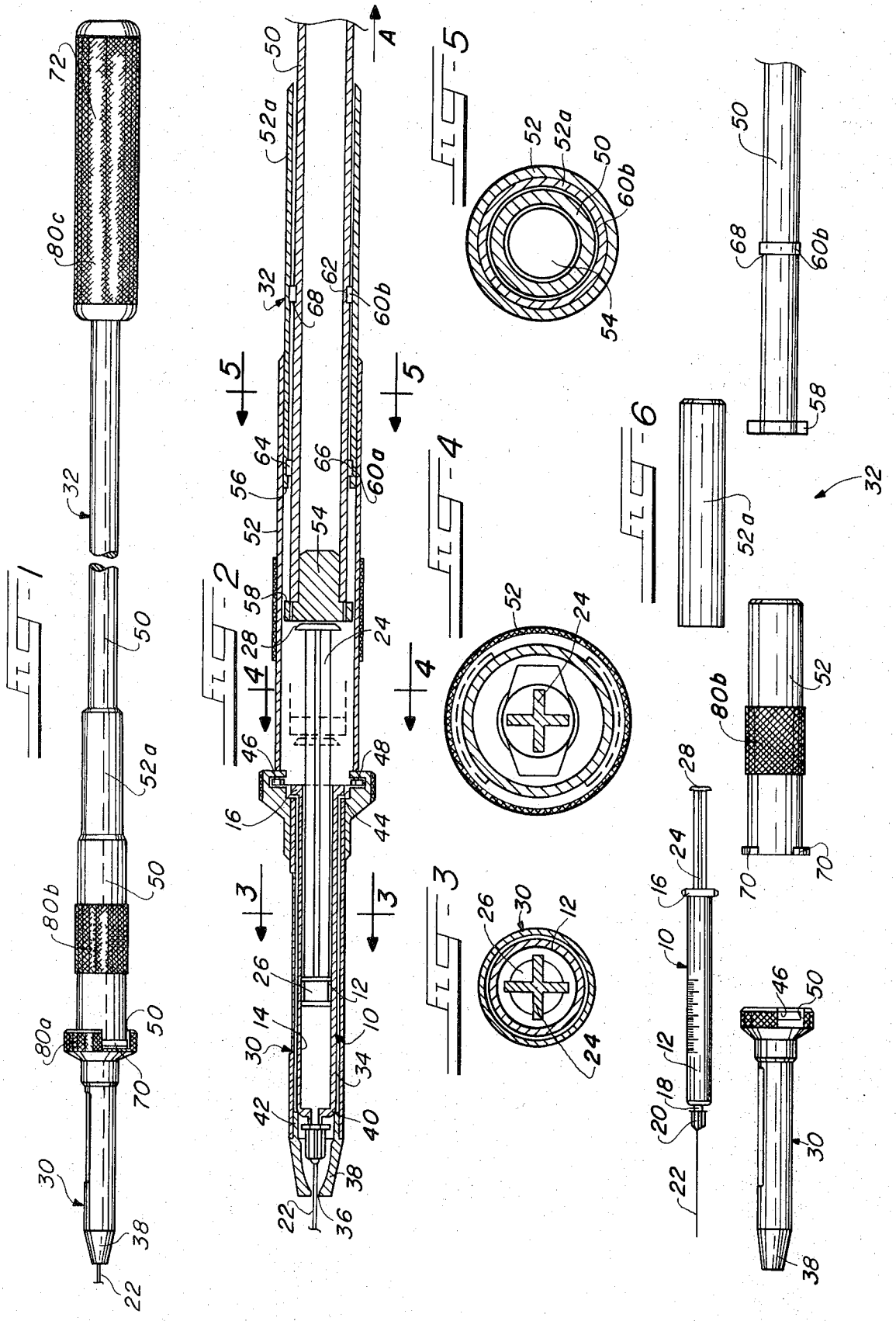
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[57] **ABSTRACT**

A holder for standard syringe assemblies for administering fluid medication hypodermically. The holder includes, in combination, a plurality of adapter portions each for receiving one of a plurality of different sized standard syringe assemblies, such as known disposable standard syringe assemblies. The adapters having identical connecting portions for connection onto the end of an elongated handle which has inner and outer telescoped members. The inner telescoped member of the handle is movable into abutment with the outer end of the plunger portion of the syringe assembly to force medicant through the needle portion of the syringe assembly when the handle and adapter are moved lengthwise to cause the adapter to engage a body and then cause the telescoped handle to collapse.

1 Claim, 6 Drawing Figures




FIG-1
FIG-2
FIG-3
FIG-4
FIG-5
FIG-6

SYRINGE HOLDER

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to medical equipment, and more particularly to a syringe assembly holder and actuator therefor.

This invention further relates to improvements in means for administering drugs, medicines or other fluid medication hypodermically to an animal or other patient which is situated at a distance from or unapproachable by a person desiring to administer the drugs or medicines to the patient. Oftentimes, in administering drugs and medicines to animals, the animal must be bound or contained in close quarters by a chute or other means to enable an operator to come sufficiently close to the animal to administer the drug or medicine through a hand syringe assembly. This invention is directed to providing a new and improved means which permits the administration of the drugs or medicines at a safe distance from the animal to eliminate danger to the administering party. The device is useful, for instance, by cattlemen or other livestock workers for treatment of animals for various diseases or sicknesses from a safe distance, as by a rider on horseback or while riding in an automobile or other vehicle. The device is also designed for use on animals which may be kept in cages such as in zoos or the like, such as monkeys or other animals which oftentimes must be tranquilized to gain access to the animal's quarters or otherwise care for the animal.

Devices of the character described are known but are rather complicated in construction, expensive to manufacture, and not readily adaptable for repeated usage where sterilization is an important factor. More particularly, standard syringe assemblies of standard sizes (e.g., 2-½ cc and 5 cc of liquid) have become increasingly popular and widely utilized in both human and veterinary administrations. The syringe assemblies are usually presterilized and disposable in nature after a single injection.

An object of this invention is to provide a new and improved device of the character described and, particularly, the combination of a holder for receiving standard syringe assemblies and for operating such assemblies at a safe distance from the patient.

In the exemplary embodiment of the invention, the holder is designed for use with a standard syringe assembly for the purpose of administering fluid medication hypodermically. The syringe assembly normally is of the disposable, presterilized type that has a barrel with a circular enlargement on one end and a tip on the other end on which a needle may be mounted. A plunger is slidably received in the barrel for movement from an extended position relative to the barrel, with the barrel filled with medicant, toward the tip end of the barrel for forcing the medicant through the needle. The holder includes, in combination, a plurality of different sized adapter portions for receiving different sized standard syringe assemblies, with the outer end of the plunger portion of the syringe assembly in its extended position protruding from one end of the adapter, and with the needle exposed on the opposite end of the adapter. An elongated rigid telescoped handle is removably connected at one end to an adapter. The adapters have identical connector portions for connection to the handle. The one end of the handle is hollow and the plunger of the syringe assembly protrudes thereinto when in its extended position. An inner telescoped member of the handle is movable relative to an outer telescoped member into abutment with the end of the plunger to force the medicant through the needle when the handle and adapter are moved lengthwise to cause the adapter to engage a body and cause the telescoped handle portions to move to a collapsed position. The circular enlargement of the syringe assembly is clamped between adjacent connector portions of the adapter and handle portions when the same are connected together. Stop rings are embedded in annular grooves in certain of the handle telescoped members and slidable relative to adjacent members to define outer and inner limit positions of relative longitudinal movement of the telescoped handle members.

Other objects, features and advantages of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is an elevational view of the holder of the present invention, partially broken away, with a syringe assembly received therein;

FIG. **2** is a partial longitudinal central section through a portion of the holder shown in FIG. **1**;

FIG. **3** is a vertical section taken generally along the line **3—3** of FIG. **2**;

FIG. **4** is a vertical section taken generally along the line **4—4** of FIG. **2**;

FIG. **5** is a vertical section taken generally along the line **5—5** of FIG. **2**; and

FIG. **6** is an exploded elevational view of the various components of the holder of the present invention in combination with a syringe assembly.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings in greater detail, and first to FIGS. **2** and **6**, a standard syringe assembly, generally designated **10** in FIG. **6**, is utilized for the purpose of administering fluid medication and/or drugs hypodermically. Such syringe assemblies presently are available in various sizes for containing various quantities of liquid medication, but their structure remains standard, for all practical purposes. Most such standard syringe assemblies are presterilized and designed for disposal after a single injection.

Each syringe assembly **10** includes a barrel **12** having an interior cylindrical chamber **14** (FIG. **2**) which contains the drug or medication. The barrel has a circular enlargement **16** at one end thereof and a tip **18** on the other end thereof on which a hub portion **20** of a needle **22** is removably mounted. A plunger **24** is slidably received within the barrel **12**, with a piston **26** having sealed contact with the interior walls of the barrel chamber **14**. The plunger **24**, in the embodiment of the invention shown in the drawings, has a cross shape as shown in FIGS. **3** and **4** and includes an outer abutment head **28** on the end thereof opposite the piston **26**. The plunger is movable from an extended position relative to the barrel **12** (as shown in full lines in FIGS. **2** and **6**) with the barrel at least partially filled with the medicant. The plunger is movable, as indicated by the dotted lines in FIG. **2**, toward the tip end of the barrel **12** for forcing medicant through the needle **22**.

The syringe assembly holder of the present invention is shown herein to generally include an adapter portion, generally designated **30,** and a handle portion, generally designated **32.**

Each adapter portion **30** of the handle is designed for receiving a particular size syringe assembly **10,** with the outer or head end of the plunger **24** of the syringe assembly protruding from the inner end of the adapter, as shown in FIG. **2.** The barrel **12** of the syringe is received within a cylindrical cavity **34** of the adapter **30,** with the needle **22** exposed through an aperture **36** at the front end **38** of the adapter. A shoulder **40** on the front of the syringe barrel **12** abuts against a shoulder **42** on the inside of the adapter to define the forward position of the barrel **12** when received within the adapter. The circular enlargement **16** of the syringe barrel **12** protrudes outwardly into an annular recess **44** (FIG. **2**) on the inside of the adapter.

As will be more apparent hereinafter, to facilitate connection of the adapter to the handle portion **32** of the holder, the inner end of the adapter has an inwardly opening annular groove **46** which is covered only partially by a pair of radially inwardly extending flanges **48** which are separated by angularly disposed access slots **50** (seen best in FIG. **1**). The slots **50** provide longitudinal openings to the annular groove **46.**

It is within the contemplation of this invention to provide a plurality of different sizes of adapters **30** to accommodate or receive different sized standard syringe assemblies. For instance, a larger size adapter is shown in FIG. **6** than the adapter shown in FIG. **1.** However, the head portions thereof which include the annular groove **46** and flanges **48** are of the same size for connection to the handle portion **32** of the holder.

The handle portion **32** of the holder of the present invention is a telescoped handle having an inner telescoped member **50** and an outer telescoped member **52.** The inner telescoped member **50** has a plug **54** (FIG. **2**) on the inner end thereof for abutting engagement with the head **28** of the syringe plunger **24,** and the outer telescoped member **52** is adapted for connection to the adapters **30,** as described hereinafter.

As shown in the drawings, the outer telescoped member **52** actually has an inner extension portion **52***a* fixed thereto, as by bonding or a press fit, so as to define an inner forwardly facing shoulder **56.** The plug **54** on the inner end of the inner telescoped member **50** protrudes radially outwardly therefrom to define a rearwardly facing shoulder **58** which may abut against the shoulder **56** and thereby cooperates therewith to define the outer extended relative limit position of the handle as the inner telescoped member **50** moves in the direction of arrow A (FIG. **2**) relative to the outer telescoped member **52** (and its extension portion **52***a*).

A pair of stop rings **60***A* and **60***B* are provided to define the inner or collapsed limit position of the telescoped members. More particularly, stop ring **60***b* is embedded in an annular groove **62** on the outer surface of the inner telescoped member **50** and slides along the inner surface of the outer telescoped member extension portion **52***a*. Stop ring **60***a* is embedded in an annular groove **64** on the inner surface of the outer telescoped member extension portion **52***a* and slides along the outer surface of the inner telescoped member **50.** Stop ring **60***a* defines a rearwardly facing abutment shoulder **66** and stop ring **60***b* defines a forwardly facing abutment shoulder **68** which cooperates to define the inner or collapsed limit positions of the telescoped members **50** and **52** as the telescoped member **50** moves opposite the direction of arrow A relative to the outer telescoped member **52.**

The outer telescoped member **52** is connected to the adapters **30** by means of a pair of radially outwardly extending flanges **70** which may pass through the longitudinally opening access slots **50** as the handle portion **32** and adapter **30** are moved axially toward each other with the flanges **70** aligned with the slots **50.** The flanges **70** come into abutment with the circular enlargement **16** of the syringe assembly and clamps the circular enlargement between the flanges **70** and the annular recess **44** within the adapters **30.** The groove **46** is tapered so that relative angular or twisting motion between the handle portion **32** and adapters **30** causes the flanges **70** to lock under the inwardly protruding flanges **48** of the adapters to connect the adapter to the handle portion with the syringe assembly fixed in place. The needle **22** protrudes from the front of the adapter and the plunger **24** of the syringe assembly protrudes into the interior of the outer telescoped member **52** as shown by the full lines in FIG. **2.** The combination then is ready for use and an injection is accomplished by a person holding an enlarged handle grip **72** and thrusting or moving the combination lengthwise to cause the adapter to engage a body as the needle **22** penetrates the body. The telescoped members **50** and **52** then move to their collapsed positions as defined by the stop rings **60***a* and **60***b*, and the plug portion **54** on the end of the inner telescoped member **50** forces the plunger **24** of the syringe assembly toward the tip of the syringe assembly to force the medicant within the barrel chamber **14** through the needle **22** into the patient's body.

After the injection, the handle portion **32** and adapter portion **30** are twisted in a reverse direction and separated to permit removal and disposal of the previously used syringe assembly. A new syringe assembly may be inserted into the adapter, the telescoped members **50** and **52** of the handle portion **32** moved to their relative extended positions, and the handle portion **32** again connected to the adapter with the syringe assembly plunger **24** protruding into the outer telescoped member **52,** whereupon the combination is ready for another injection.

Roughened surfaces **80***a*, **80***b* and **80***c* (FIG. **1**) may be provided on the adapter **30,** the outer telescoped member **52,** and the handle grip **72,** respectively, to facilitate manipulation of the device. The length of the handle portion **32** is dependent solely upon the use for which the device is intended.

The foregoing detailed description has been given for clearness of understanding only and no unnecessary limitations should be understood therefrom as some modifications will be obvious to those skilled in the art.

I claim:

1. Holder means for standard type syringe assemblies for the purpose of administering hypodermically fluid medication, or the like, said syringe assemblies each being of the type that has a barrel with a circular enlargement on one end and a tip on the other end on which a needle may be mounted and a plunger slidably received in the barrel for movement from an extended position with the barrel filled with fluid to an ejection position toward the tip end of the barrel for forcing the fluid through the needle, said holder means comprising, in combination:

one of a plurality of adaptors of different sizes for enclosing respectively different sizes of said standard syringe assemblies with the plunger portion of a syringe assembly in its extended position exposed at one end of the adaptor and the needle protruding from the other end of the adaptor, said other end of the adaptor forming an annular, depth determining surface for said needle;

said adaptor having a recess at said one end thereof for receiving the circular enlargement of the barrel of a syringe assembly, and connection means at said one end thereof formed by inwardly opening annular groove means adjacent said recess and means providing access to said groove means; and

an elongated, rigid tubular telescoping handle portion having complementary connection means on one end formed by radially outwardly extending flange means engaged within said groove means through said access means of said adaptor to removably clamp the circular enlargement of the barrel of a syringe assembly in recess by relative rotation of said handle and said adaptor, while also securing said handle portion to said adaptor, said one end of the rigid handle being hollow and into which the plunger of said syringe assembly may protrude when in said extended position, the handle having a hand graspable portion on the opposite end thereof and telescoping means within the handle for movement against said plunger to move said plunger relative to said barrel to force the medicant through the needle for injection purposes while said depth determining surface portion abuts the skin of a patient to be injected.

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