Oct. 18, 1955 C. O. KENDALL 2,720,969

PACKAGE AND MOUNTING FOR HYPODERMIC SYRINGE ASSEMBLY

Filed Dec. 10, 1953

Fig. 1

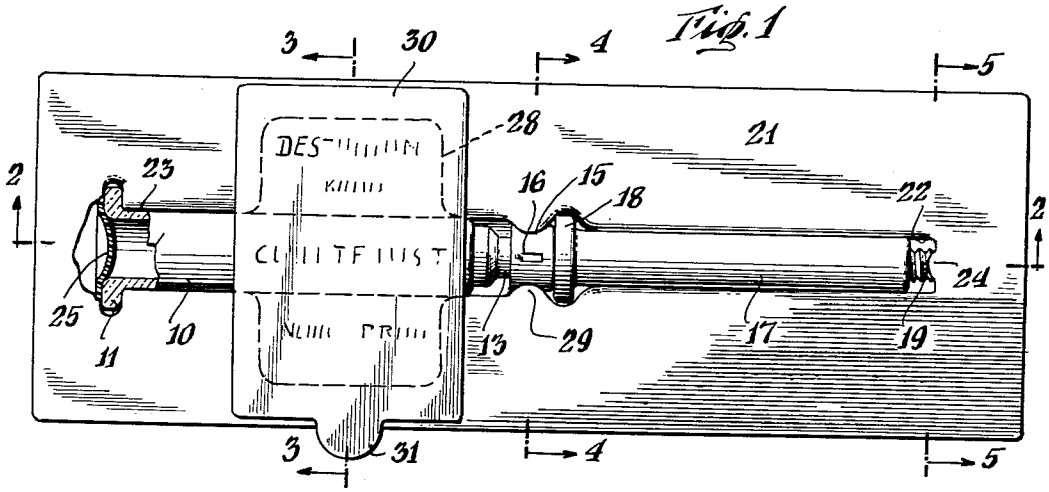


Fig. 2

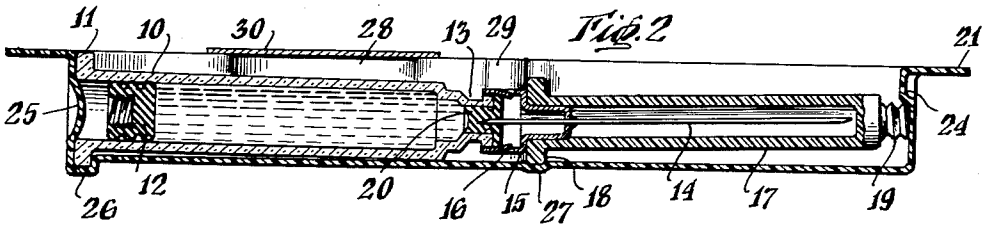


Fig. 3

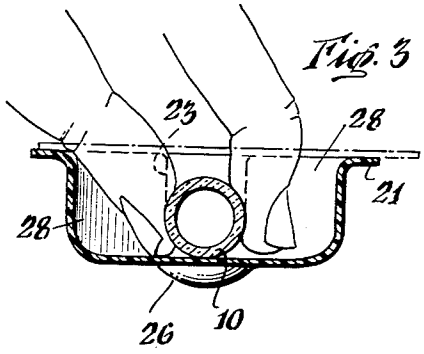


Fig. 4

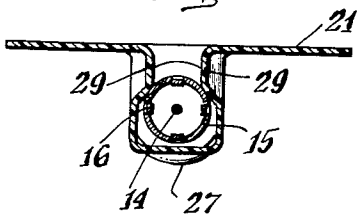
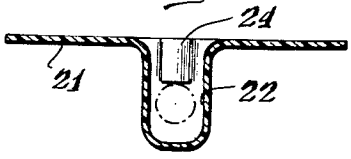


Fig. 5



INVENTOR.
Charles O. Kendall
BY Kane, Dalsimer and Kane
ATTORNEYS

United States Patent Office 2,720,969 Patented Oct. 18, 1955

2,720,969

PACKAGE AND MOUNTING FOR HYPODERMIC SYRINGE ASSEMBLY

Charles O. Kendall, Waldwick, N. J., assignor to Becton, Dickinson and Company, Rutherford, N. J., a corporation of New Jersey

Application December 10, 1953, Serial No. 397,318

6 Claims. (Cl. 206—78)

This invention relates to a structurally and functionally improved package and/or display mounting for a hypodermic syringe assembly and by means of which the parts of the latter will be maintained in proper relative positions and be readily available for use by a physician or other technician.

It is a primary object of the invention to furnish a mounting which will support the parts of a syringe assembly against accidental movement with respect to each other so that these parts will be maintained in proper relative positions until they are to be used and without any danger existing of the device being rendered operative by accidental pressures, jars, etc.

A further object is that of furnishing a mounting such that the elements of the supported assembly will be maintained in their initially sterile condition, free from contamination. Also, the assembly will be properly labeled to comply with the laws governing the packaging of medicament. However, the parts will be instantly available to the user so that he may readily disassociate them from the mounting or package and render the assembly operative for injection purposes.

With these and other objects in mind, reference is had to the attached sheet of drawings and illustrating one practical embodiment of the invention and in which:

Fig. 1 is a plan view of the complete package or mounting for a single hypodermic syringe assembly and showing such an assembly in position;

Fig. 2 is a longitudinal sectional view taken along the line 2—2 in the direction of the arrows as indicated in Fig. 1; and

Figs. 3, 4 and 5 are transverse sectional views taken along the lines 3—3, 4—4 and 5—5 respectively, in the direction of the arrows as indicated in Fig. 1.

While the present invention is not limited to use with a syringe assembly of one specific configuration or type, it is primarily intended that such assembly include parts which must be relatively moved in order to render the apparatus operative. Also it is contemplated that the barrel of the assembly may be packaged with medicament at the time it reaches the ultimate user. A preferred form of assembly embodying these characteristics has been shown in position in Figs. 1 and 2. Primarily referring to that assembly and these views, it will be seen that the numeral 10 indicates the barrel of the syringe which, in the usual manner, has its rear open end defined by a flange 11 and its bore closed adjacent this rear end by a piston stopper 12. The latter is intended to be engaged by an actuator and for the purpose of being coupled therewith is conveniently furnished with a screw threaded rear recess. The forward end of the barrel may be reduced in diameter as indicated at 13 and preferably terminates in an outwardly extending flange. Slidably embracing this flange is the hub 15 of an assembly of which a needle 14 forms a part. This needls is rigidly supported by the hub and the side walls of the latter are provided with one or more instruck tongue portions 16. A needle sheath 17 has an open end defined by a flange 18. This bears against the base of the cup-shaped hub 15. At its outer end, the sheath is conveniently formed with a screw threaded extension 19 which is receivable within the recess of the piston 12. As shown, needle 14 has points at both of its ends and the inner needle end is embedded within a stopper 20, preferably of rubber and which stopper seals the forward or outer end of barrel 10.

It is apparent that with hub 15 merely partially telescoped over the flange of reduced portion 13 and the head of stopper 20, a somewhat casual connection is established. In fact, any sudden jar or strain is liable to result in a detachment of the needle assembly and the sheath from the barrel. Conversely, if the hub 15 is forcibly telescoped over the reduced end portion of the barrel, then the inner end of the needle will be placed in contact with the liquid medicament contained in that barrel. Simultaneously with the establishment of communication between the bore of the needle and barrel interior, the locking detent (such as the tongue 16) will engage against the rear surface of the flange at the outer end of reduced portion 13. This will lock the parts against separation.

It is obvious that this final positioning of the parts should not occur until just before the injection is to be given. At that time, the physician or other user, by deliberate manipulation, can establish the desired relative positions. This will involve a telescoping of the needle hub over the neck of the barrel. With such movement of the parts the inner end of the needle is caused to pierce stopper 20 so that its bore is in communication with the medicament contained within the barrel. Also, the tongues or pawls will override the flange at the outer end of reduced portion 13 and lock behind the same to prevent a subsequent separation of the needle assembly from the barrel and in effect to secure these two parts against any movements with respect to each other. Thereupon by detaching sheath 17 from hub 15, the needle 14 has its outer end exposed. This needle, of course, has been maintained in sterile condition by the sheath prior to its removal. Now by coupling extension 19 of the sheath with the threaded recess of piston 12 or establishing any other coupling which is provided at this point, the physician will be able to aspirate by retracting piston 12 and will be able to inject by projecting that piston.

The present package and mounting serves to adequately display the assembly and permit an identification of the contained medicament. Also, it serves to protect the elements of the assembly from shifting so that a physician may be asssured the parts are in proper condition at the time he receives the package. Finally, the physician or other user will be enabled to substantially instantly withdraw the assembly and establish the operative condition of the parts. To this end, the package or mounting is formed of suitable sheet material such as, for example, plastic of relatively thin gauge.

Thus, this sheet has, in the accompanying drawings, been indicated by the numeral 21. It is formed with a longitudinally extending trough including an outer end portion 22 of a width such that it may receive the sheath 17. The opposite end portion of the trough at 23 has a width such that it may receive barrel 10. The sheet 21 is formed of a material preferably having resilient characteristics. A protuberance 24 extends into trough portion 22 from the end wall of the same. A second protuberance 25 extends from the end wall of trough portion 23. Enlargements, or recesses may be furnished in the base of the trough portions as indicated at 26 and 27. Intersecting the zone of the trough portion 23 is a recess or second trough portion 28. The width of the latter should be ample to accommodate in its opposite ends, for

example, the thumb and forefinger of a person. In line with the rear of trough portion **22**, the material is "bumped" inwardly as at **29** to provide overlapping or clip arms defining between their ends a distance less than the diameter of the hub **15**.

Now with the needle assembly associated with the barrel in the manner shown, all parts of the syringe which must remain uncontaminated, will be completely protected. The syringe is disposed in the trough with the rear open end of barrel **10** as defined by flange **11** receiving the protuberance **25**. The end of sheath **17** providing part of the needle assembly is slid past protuberance **24**. The resiliency of the material embraced in sheet **21** or its equivalent permits of the latter "springing" to allow for this shifting of the parts. Under these circumstances, the rocking movement of which the adjacent ends of the barrel and needle assembly are capable will cause the central zone to shift through a "dead-center" position so that flange **18** will bear firmly against the base of the trough. If an enlargement such as **27** is furnished, then the adjacent flange surface may extend into the recess defined by it. Therefore, the inherent resiliency embodied in the entire assembly will cause the parts of the syringe to remain in mounted position. At the same time, pressures will not be so great that the inner end of needle **14** will be caused to penetrate stopper **20** or its equivalent.

Quite aside from this factor of retention and regardless of whether such structure is used, the clip portions defined by extended parts **29** will spread as the syringe is disposed in the trough. They will cam against the surface of cup **15** until the latter snaps downwardly or inwardly to its final position shown in Fig. 2. With the parts so disposed, these clip ends will overlap the central zone of the syringe assembly and will prevent the latter from accidentally raising. While it is, of course, entirely feasible to merely employ the clips or the "dead center" structure, it is definitely preferred to embody both of these features in the mounting. Thus, a double safeguard will be furnished to prevent accidental displacement and in either event the outer ends of the sheath **17** and barrel will be held against shifting upwardly within the trough. The width of the latter through portions **22** and **23** precludes of the fingers of a user grasping any part of the syringe for the purpose of lifting it from the trough.

Also, a label **30** will, quite independently of the foregoing, serve to retain the assembly. This label, bearing identification of medicament contained in barrel **10**, will fully comply with the regulations safeguarding the use of the medicament. In other words, the label will be definitely individual to and overlying to the vial, ampule or barrel **10**. Finally this label will clearly show that the assembly has never theretofore been used, or removed from its mounting and thus will serve as an indicator in this connection as well as preventing access to the transverse trough or recess **28**.

However, when a physician or other user desires to employ the syringe, all that he has to do is grasp tab **31** and strip off label **30**. Thereupon, by inserting the thumb and forefinger respectively through opposite sides of the recess **28** as shown in Fig. 3, the syringe barrel may be grasped and lifted upwardly. With such lifting, the outer ends of the syringe may tend to pivot with respect to the ends of the trough. Regardless of this, however, hub or cup **15** will shift past clips **29** and the entire assembly may now be lifted clear of sheet **21**.

The physician by bringing pressure to bear against sheath **17** in the direction of the barrel, will cause the needle hub to telescope over the end of that barrel. This will result in the locking elements of the assembly functioning, the inner end of needle **14** being placed in communication with the interior of barrel **10** and the needle assembly being stabilized so that it remains, in effect, rigid and co-extensive with the barrel. Now, by detaching sheath **17**, the needle is exposed and an actuator is

provided for piston **12**. As afore brought out, with the coupling of that actuator and piston, the syringe may be aspirated or an injection may be given.

Thereafter the entire assembly should be discarded. Sections of sheet **21** may be individual to a given syringe assembly or else may be formed to furnish a plurality of mountings or packages.

Thus, among others, the several objects of the invention as specifically aforenoted are achieved. Obviously, numerous changes in construction and rearrangements of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. A package for a hypodermic syringe comprising in combination a syringe barrel, a needle assembly coextensive and in contact therewith, said barrel and assembly being relatively rockable, a body of material defining a trough portion receiving said barrel and assembly, the ends of said trough being separated a distance less than the ends of said syringe and said package being formed of resilient material whereby—with the ends of said syringe engaging the ends of said trough—the adjacent parts of the barrel and needle assembly will swing past a dead-center position defined by their axial alignment and will bear against the trough base.

2. A package for a hypodermic syringe comprising in combination a syringe barrel, a needle assembly coextensive and in contact therewith, said barrel and assembly being relatively rockable, a body of material defining a trough portion receiving said barrel and assembly, the ends of said trough being separated a distance less than the ends of said syringe, said package being formed of resilient material, whereby—with the ends of said syring engaging the ends of said trough—the adjacent parts of the barrel and needle assembly will swing past a dead-center position defined by their axial alignment and will bear against the trough base and a clip structure overlying said syringe and said trough base at a point intermediate the ends of the latter to prevent removal of said syringe from said trough.

3. A package for a hypodermic syringe comprising in combination a syringe barrel, a needle assembly coextensive and in contact therewith, said barrel and assembly being relatively rockable, a body of material defining a trough portion receiving said barrel and assembly, the ends of said trough being separated a distance less than the ends of said syringe, said package being formed of resilient material whereby—with the ends of said syringe engaging the ends of said trough—the adjacent parts of the barrel and needle assembly will swing past a dead-center position defined by their axial alignment and will bear against the trough base and means forming a part of said body and cooperating with the ends of said syringe to prevent an elevation thereof.

4. A package for a hypodermic syringe comprising in combination a syringe barrel, a needle assembly coextensive and in contact therewith, said barrel and assembly being relatively rockable, a body of material defining a trough portion receiving said barrel and assembly, the ends of said trough being separated a distance less than the ends of said syringe, said package being formed of resilient material whereby—with the ends of said syringe engaging the ends of said trough—the adjacent parts of the barrel and needle assembly will swing past a dead-center position defined by their axial alignment and will bear against the trough base and said trough being intersected by a recess into which the fingers of the operator may be inserted for the purpose of grasping such syringe.

5. A package for a hypodermic syringe comprising in combination a syringe barrel, a needle assembly coextensive and in contact therewith, said barrel and assembly being relatively rockable, a body of material defining a trough portion receiving said barrel and assembly, the ends of said trough being separated a distance less than the ends of said syringe, said package being formed of resilient

material whereby—with the ends of said syringe engaging the ends of said trough—the adjacent parts of the barrel and needle assembly will swing past a dead-center position defined by their axial alignment and will bear against the trough base, said trough being intersected by a recess into which the fingers of the operator may be inserted for the purpose of grasping such syringe and a label attached to said body and extending across said recess adjacent and overlying said barrel to prevent such grasping of the syringe.

6. A package for a hypodermic syringe comprising in combination a syringe barrel, a needle assembly coextensive and in contact therewith, said barrel and assembly being relatively rockable, a body defining a trough receiving said barrel and assembly and protuberances extending from the ends of said trough and separated a distance less than the separation of the adjacent ends of said assembly and barrel.

References Cited in the file of this patent

UNITED STATES PATENTS

1,007,804	Schimmel	Nov. 7, 1911
1,833,304	Putt	Nov. 24, 1931
2,077,240	Jeffords	Apr. 13, 1937
2,325,712	Shurmur	Aug. 3, 1943
2,477,274	Trecek	July 26, 1949