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M. L. LOCKHART

2,586,069

SYRINGE ASSEMBLY

Filed April 4, 1950

Fig. 1

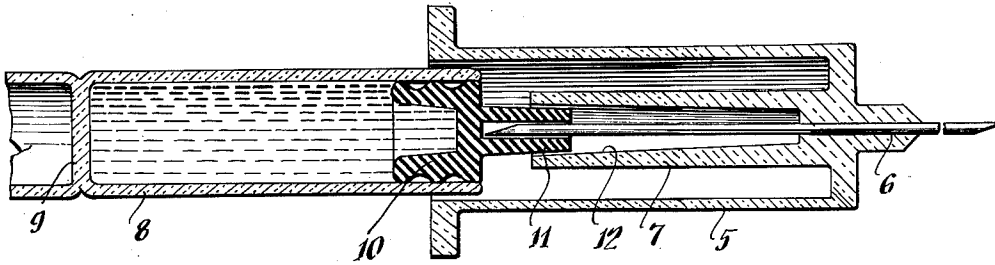


Fig. 2

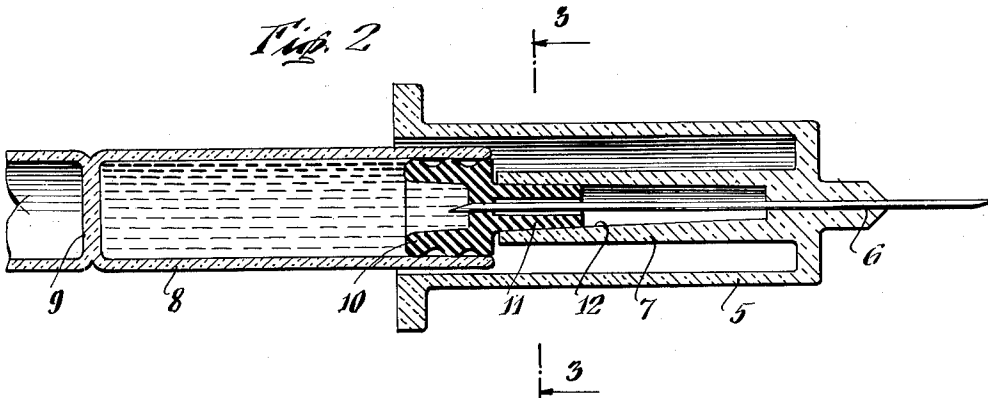
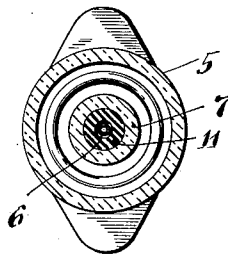


Fig. 3



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UNITED STATES PATENT OFFICE

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SYRINGE ASSEMBLY

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Application April 4, 1950, Serial No. 153,793

5 Claims. (Cl. 128—220)

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This invention relates to a structurally and functionally improved syringe assembly by means of which an aspirating function may be accomplished in addition to the usual hypodermic injection.

The present application is a continuation-in-part of my prior application for United States Letters Patent, Serial No. 658,670 entitled "Closure" and filed in the Patent Office on April 1, 1946, now Patent No. 2,556,331, dated June 12, 1951.

Among the objects of the present invention are those of providing a design which will be relatively simple and capable of being produced by means of automatic machinery and methods and which will include relatively few parts, of rugged construction, operating with freedom from all difficulties over a long period of time.

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

Fig. 1 is a sectional side view of the novel assembly and illustrating the ampule in process of association with the holder;

Fig. 2 is a similar view but showing the parts operatively coupled; and

Fig. 3 is a transverse sectional view taken along the lines 3—3 and in the direction of the arrows as indicated in Fig. 2.

In these views, the numeral 5 indicates a holder conveniently formed of plastic and which mounts a double ended needle 6. The needle is encircled within the holder by a tubular thrust portion 7. The bore of the latter is flared. The inner needle end extends beyond the inner end of that portion. It is to be understood that the holder as shown is merely intended for illustration rather than limiting purposes and that the invention might be incorporated in an assembly employing a holder of a different design.

The reference numeral 8 indicates an ampule preferably formed of glass and having oppositely facing compartments divided from each other by a partition 9. The outer ends of these compartments are closed by piston type stoppers 10. It is apparent that as the inner end of the thrust portion 7 is brought into contact with the outer face of the stopper the inner end of the needle 6 will have penetrated the diaphragm of the stopper. This will establish communication between the needle bore and the interior of the ampule compartment. Continued inward pressure of the ampule will cause the stopper to ride inwardly within the ampule bore and function

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as a piston to express the medicament through the bore of the cannula. This operation may be continued until all medicament has been exhausted.

Where a physician desires to ascertain whether the epidermis-penetrating end of the needle is lodged in a vein it is necessary that he aspirate in order to create a condition of pressure such that a drop or so of blood may discharge from the inner end of the cannula. Such a result may be achieved by the present construction in that the stopper is furnished with a forward, tubular and tapered extension 11 which has a diameter such that it may be accommodated within the flared outer end of the bore of the thrust portion. The bore of this extension defines a space such that the body of the needle may pass there-through. The flared bore of the thrust portion is defined by a face as indicated at 12. Therefore, as the faces of the extension and thrust portion are forced into contact, a wedge fit will be established.

The degree of frictional contact will be such that a physician may move the ampule rearwardly without disturbing the relationship of the stopper and thrust portion. Therefore the stopper will move outwardly with respect to the ampule bore. This will reduce the pressure within the ampule compartment and may even create a condition of subatmospheric pressure. In any event, a pressure differential will be brought into being which will allow the physician to determine whether or not the outer end of the needle is lodged in a vein.

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

I claim:

1. A syringe assembly including in combination a tubular holder, a thrust portion forming a part of said holder and extending within the bore thereof, an ampule, a piston stopper closing the end of said ampule, an extension forming a part of said stopper and projecting towards said thrust portion and said thrust portion being formed with a bore to receive and frictionally engage the surfaces to said extension.

2. A syringe assembly including in combination a tubular holder, a thrust portion forming a part of said holder and extending within the bore thereof, an ampule, a piston stopper closing the end of said ampule, an extension forming a part

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of said stopper and projecting towards said thrust portion, said thrust portion being formed with a bore to receive and frictionally engage the surfaces of said extension, and the surfaces of said bore and extension being tapered to provide a wedge fit.

3. A syringe assembly including in combination a holder formed with a bore, a thrust portion extending rearwardly within said bore, a needle encircled by said thrust portion and extending beyond the same and said thrust portion defining a tapered recess to receive an extended portion forming a part of an ampule-stopper to be engaged by said thrust portion and penetrated by said needle.

4. A syringe assembly including in combination a holder formed with a bore, a thrust portion extending rearwardly within said bore, said thrust portion defining a tapered recess, a stopper and an extended part forming a portion of said stopper and projectible into wedging engagement with the surfaces of said recess, such that said stopper will move with said thrust portion—

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as the latter tends to pull away from said stopper—whereby said stopper may function to cause aspiration within said assembly.

5. A syringe assembly including in combination a holder formed with a bore, a thrust portion extending rearwardly within said bore, said thrust portion defining a tapered recess, a stopper and an extended part forming a portion of said stopper and projectible into a wedging engagement with the surfaces of said recess, the outer surfaces of said extended part being tapered.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
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