

April 1, 1930.

W. F. JAMISON

1,752,384

HYPODERMIC SYRINGE

Filed July 2, 1928

Fig. 1.

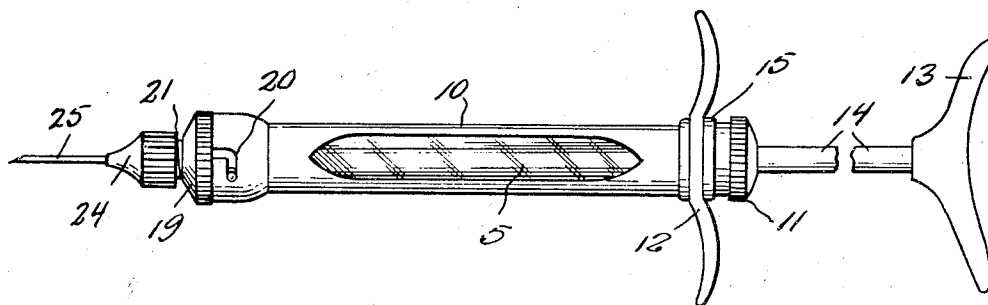


Fig. 2.

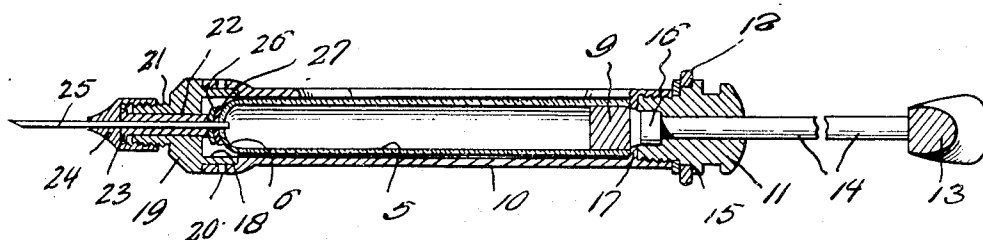


Fig. 3.

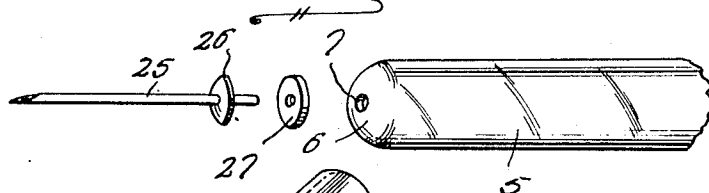


Fig. 4.

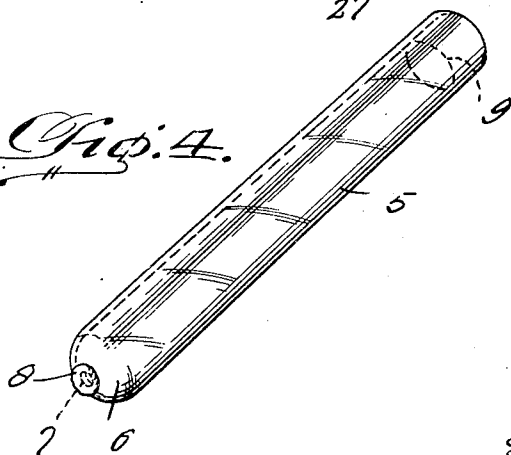
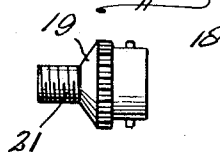


Fig. 5.



Inventor
W. F. Jamison,

By *Stanley Bruch*
Attorney

UNITED STATES PATENT OFFICE

WILLIAM F. JAMISON, OF LOS ANGELES, CALIFORNIA

HYPODERMIC SYRINGE

Application filed July 2, 1928. Serial No. 289,904.

This invention relates to hypodermic syringes, and has for its general object to provide a device of this character into which a medicinal package in the nature of an ampule may be charged, after the manner of loading a gun, the several parts being so correlated and arranged that a freshly made medicinal preparation may be injected by the syringe without at any time coming in contact with human hands, unsterilized parts, or the like.

A further object of the invention is to provide a syringe of the above character which is extremely simple in construction, and which embodies simple and efficient means to form the necessary fluid tight joint between the ampules and the syringe, expeditiously and with very little trouble upon the part of the user.

A further object of the invention is to provide an ampule having a special construction adapting it to be placed in a hypodermic syringe, so that the ampule operates as the cylinder or barrel of the syringe.

The invention consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawing and claimed.

In the drawing:

Figure 1 is a side elevational view of a syringe embodying the present invention having an ampule operatively positioned therein.

Figure 2 is a view of the syringe shown in Figure 1, substantially in central longitudinal section.

Figure 3 is a fragmentary developed perspective view, showing the hypodermic needle, the packing disk and the adjacent end of the ampule;

Figure 4 is a perspective view of the ampule; and

Figure 5 is a side elevational view of the detachable head for the syringe barrel.

The syringe of the present invention is particularly designed to discharge the contents of the ampule shown in Figures 2 to 4 inclusive. This ampule comprises a glass body 5 having a convexo-spherical front end 6 which is provided with a central or axial

outlet aperture 7 normally closed by a removable sealing element 8 in the nature of a thin layer of sealing wax or the like. The ampule contains a rubber or other stopper 9 which is adapted to act as a piston to expel the contents of the ampule through the opening 7 after the sealing element 8 has been removed. Any suitable sealing medium may be placed over the open rear end of the ampule 5 and the exposed end of the stopper 9 so as to maintain the contents of the ampule in an absolutely sterile condition until the time of use.

The syringe comprises a barrel 10 in the rear end of which is removably threaded a closure plug 11 which carries a detachable cross bar 12 for engagement by the fingers of the operator, the palm of whose hand engages a handle or cross bar 13 upon the outer end of a plunger rod 14, the cross bar 12 being clamped between an annular shoulder 15 of the plug 11 and the adjacent end of the barrel 10 as clearly shown in Figure 2. The plunger rod 14 carries a plunger 16 at its inner end which is adapted to engage the stopper 9 and force said stopper forwardly to expel the liquid contents of the ampule from the latter. An internal shoulder or annular flange 17 is provided in the barrel 10 adjacent its rear end to form a seat at one side for the plug 11 and at the other side for the adjacent rear end of the ampule 5, and as this flange is rigid, there is no danger of breaking or crushing the ampule by threading the plug 11 inwardly an excessive distance.

The forward end of the barrel 10 is enlarged or counterbored to receive the sleeve portion 18 of a head 19, which sleeve portion of the head 19 has a bayonet joint connection with the enlarged or counterbored forward end of the barrel 10 as at 20. The head 19 has an axial bore and terminates in an axial tip 21 in which is removably fitted an elongated sleeve 22 having an annular flange 23 on its outer end adapted to abut an internal shoulder provided in a cap 24 adjustably threaded on the tip 21. The flange 23 will be spaced from the free end of the tip 21 and extends through the head 19 into the sleeve portion 18 thereof adjacent the forward end of

the ampule 5 as clearly shown in Figure 2. The hypodermic needle 25 has a rigid concavo-spherical seat member 26 adjacent but spaced from its inner end, and applied on the hypodermic needle 25 is a packing washer 27 disposed at the inner side of the seat member 26. The sleeve 22 is slidable in the head 19 and adjustable inwardly by threading of the cap 24 onto the tip 21, and as the sleeve 22 is engageable with the seat member 26 at its inner end, the tightening of the cap 24 will cause the washer 27 to be pressed tightly against the convexo-spherical forward end 6 of the ampule 5 about the opening 7 to form a fluid tight joint between the hypodermic needle 25 and the ampule 5. Naturally, the seat member 26 conforms to the shape of the forward end of the ampule so that the packing washer 27 will be uniformly shaped and compressed against the adjacent end of the ampule for most effectively insuring against leakage of the contents of the ampule through the opening or aperture 7 about the hypodermic needle 25. When the cap 24 is threaded onto the tip 21, the ampule 5 has its rear end firmly pressed against the flange 17, after which seating of the washer 27 properly against the end 6 of the ampule takes place. In this way the ampule may be expeditiously and effectively positioned and held for discharge of its contents when the plunger 16 is actuated.

In use, the head 19 together with the sleeve 22, cap 24 and hypodermic needle 25 is detached from the barrel 10, and the plunger rod 14 is fully withdrawn to the position of Figure 2. The ampule is then inserted into the barrel 10 through the open forward end of the latter until it seats against the flange 17, it being understood that the sealing means are, however, previously removed. The head 19 is then applied to the barrel 10 and any necessary adjustment of the cap 24 is then made to effect proper seating of the ampule against the flange 17 and seating of the washer 27 against the forward end of the ampule with the rear or inner end of the hypodermic needle 27 projecting into the adjacent end of the ampule through the opening 7. When pressure is applied to the handle 13 to force the plunger downwardly or inwardly, said plunger contacts with the stopper 9 and exerts pressure upon the liquid within the ampule. This pressure upon the liquid in turn forces the liquid out through the hypodermic needle.

It is to be understood that the invention is not limited to the precise construction set forth, but that minor changes may be made without departing from the spirit and scope of the invention as claimed.

What I claim as new is:

1. A syringe of the character described comprising a barrel adapted to receive an ampule, a head removably applied to the forward

end of the barrel and having a sleeve slidably extending therethrough, a hypodermic needle extending through said sleeve and the head and provided near its inner end with a rigid seat engaging the inner end of said sleeve, a washer on the inner end of the needle at the inner side of said seat adapted to make fluid tight contact with the end of the ampule when the needle is adjusted inwardly and means to inwardly adjust said sleeve for correspondingly adjusting the needle.

2. A syringe of the character described comprising a barrel adapted to receive an ampule, a head removably applied to the forward end of the barrel and having a sleeve slidably extending therethrough, a hypodermic needle extending through said sleeve and the head and provided near its inner end with a rigid seat engaging the inner end of said sleeve, a washer on the inner end of the needle at the inner side of said seat adapted to make fluid tight contact with the end of the ampule when the needle is adjusted inwardly, means to inwardly adjust said sleeve for correspondingly adjusting the needle, said last named means comprising a cap adjustably threaded on the detachable head and abutting the outer end of the sleeve.

3. A syringe of the character described comprising a barrel adapted to receive an ampule, a head removably applied to the forward end of the barrel and having a sleeve slidably extending therethrough, a hypodermic needle extending through said sleeve and the head and provided near its inner end with a rigid seat engaging the inner end of said sleeve, a washer on the inner end of the needle at the inner side of said seat adapted to make fluid tight contact with the end of the ampule when the needle is adjusted inwardly, means to inwardly adjust said sleeve for correspondingly adjusting the needle, and an internal shoulder in the rear end of the barrel forming a rigid abutment for the rear end of the ampule.

4. A syringe of the character described comprising a barrel having a removable head at its forward end and adapted to receive an ampule, a hypodermic needle slidably through said head and adapted to enter the forward end of the ampule, a seat member on the inner end portion of the needle, a packing washer on the needle at the inner side of said seat member adapted to form a fluid tight connection between the needle and the ampule upon inward adjustment of said needle, means associated with the head for inwardly adjusting said needle, an abutment for the rear end of the ampule on the inside of the barrel adjacent the rear end of the latter, said needle adjusting means embodying a sleeve slidably through the head and abutting the outer side of said seat member, and an adjusting cap for the sleeve threaded on said head.

5. A syringe of the character described comprising a barrel having a removable head at its forward end and adapted to receive an ampule, a hypodermic needle slidable through said head and adapted to enter the forward end of the ampule, a seat member on the inner end portion of the needle, a packing washer on the needle at the inner side of said seat member adapted to form a fluid tight connection between the needle and the ampule upon inward adjustment of said needle, means associated with the head for inwardly adjusting said needle, an abutment for the rear end of the ampule on the inside of the barrel adjacent the rear end of the latter, said needle adjusting means embodying a sleeve slidable through the head and abutting the outer side of said seat member, an adjusting cap for the sleeve threaded on said head, said ampule having a convexo-spherical forward end provided with a central aperture to receive the inner end of the needle, said seat member being of concavo-spherical form to fit and tightly seat the washer against the adjacent end of said ampule.

In testimony whereof I affix my signature.
WILLIAM F. JAMISON.

30

35

40

45

50

55

60

65