

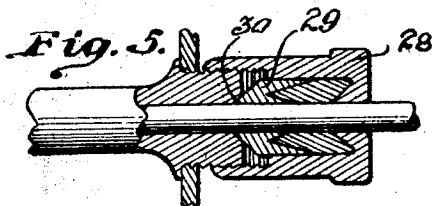
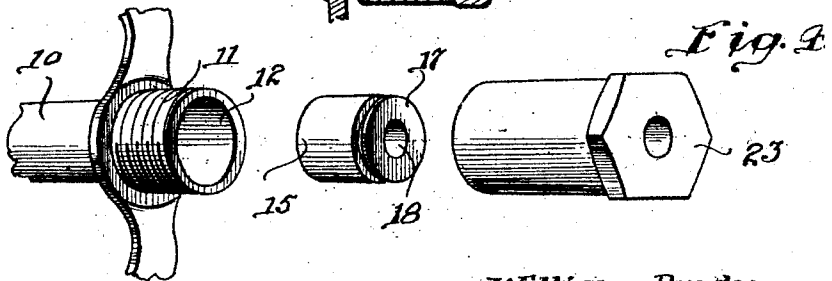
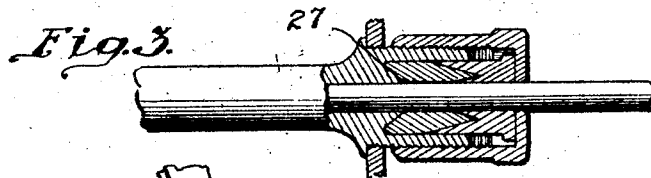
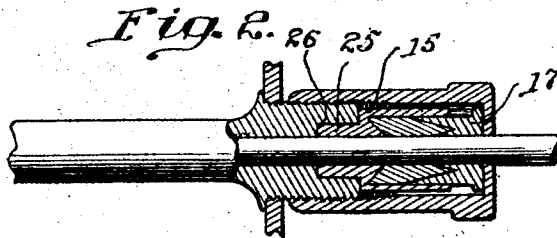
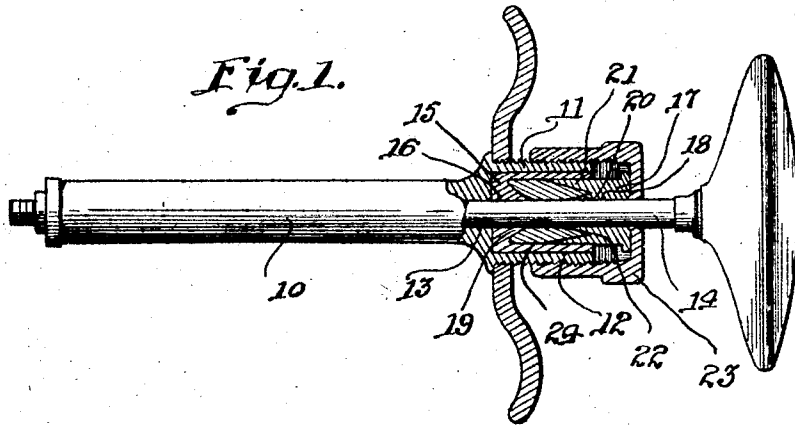
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1,592,335

W. BRODY ET AL

HYPODERMIC SYRINGE

Filed July 26, 1924



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## UNITED STATES PATENT OFFICE.

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## HYPODERMIC SYRINGE.

Application filed July 26, 1924. Serial No. 728,469.

Our invention relates to improvements in hypodermic syringes and more especially to means for packing the plungers thereof.

Heretofore it has been customary to pack the plungers of syringes with leather washers which are very inefficient and as the head must be removed frequently, the washers become spread out of shape and must be replaced. It is also a difficult task to remove the washers from within the syringe. When these washers leak, the liquid from within the syringe comes in contact with the hands of the operator and causes painful diseases of the skin.

An important object of our invention is to do away with these disadvantages.

Another object of our invention is to provide a device of the above mentioned character which can be readily taken apart and reassembled and which will always have a leakproof joint.

Another object of our invention is the provision of a device of this character which is simple in construction, inexpensive to manufacture, and strong and durable in use.

Other objects and advantages of our invention will be apparent during the course of the following description.

In the accompanying drawings which form a part of this specification and wherein like numerals designate like or corresponding parts throughout the same,

Figure 1 is a side elevation, of a hypodermic syringe equipped with our device, parts being shown in section.

Figure 2 is a similar view of a modified form of our invention.

Figure 3 is a similar view of another modification.

Figure 4 is a detail perspective view showing the various parts and their relations, and,

Figure 5 is a fragmentary sectional view of still another modification.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of our invention, the numeral 10 designates the barrel of the usual syringe having the externally screw threaded end portion 11 provided with an opening or recess 12 arranged concentrically of the longitudinal bore or passage 13, through which the usual plunger 14 operates. Snugly arranged within the recess 12, and conforming to the shape thereof, is the packing holder 15, which has an opening 16 to receive the

plunger. Telescopically arranged within the packing holder 15 is the tightening cap 17 which also has an opening 18 to receive the plunger.

The back wall of the packing holder is tapered at 19 toward the open end thereof. The tightening cap has a similar tapered portion 20, extending in the opposite direction and is also provided with a tapered projection 21 extending toward the outer periphery thereof and extending a substantial distance beyond the end of the wall 20, thereby forming, with the wall 20, an annular groove substantially V-shaped in cross section.

The tightening cap 17 is preferably provided with an annular flange 22 which is flush with the end thereof, and a tightening nut 23 engages the screw threaded end 11 of the barrel of the syringe.

Packing 24 is arranged within the holder 15 and when the nut 23 is tightened the cap 17 will be forced into the holder and will expand the packing. Instead of forcing the packing against the end walls of the holder and cap, as usually occurs, the long tapered projection 21 will force the packing directly against the plunger. The tapered walls 19 and 20 enable the plunger to be removed and reinserted without any difficulty, as they serve to retain the packing within the holder.

It will be seen that the packing unit may be removed bodily, as shown in Figure 4 to facilitate cleaning, and when the device is reassembled, the tightening of the nut will expand the packing to form a liquid tight joint, without the use of a wrench.

In the form shown in Figure 2 the rear wall of the packing holder bears against the face of the barrel and is provided with a sleeve extension 25 extending into the opening 26 in the barrel. The operation is the same as in the form shown in Figure 1.

In the form shown in Figure 3 the packing holder 27 is made integral with the barrel of the syringe.

In the form shown in Figure 5 the position of the holder and cap is reversed and the holder is formed integral with the tightening nut 28. The tightening cap 29 fits within the nut 28 and has its rear face tapered and adapted to fit in a tapered seat 30 in the end of the barrel member.

While we have shown and described the preferred embodiment of our invention, it is

to be understood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of our invention or the scope of the subjoined claims.

Having described our invention what we claim and desire to protect by Letters Patent is:

1. The combination with a syringe having a plunger, of a packing member therefor comprising telescoping members, packing arranged between said telescoping members, the walls of the telescoping members adjacent the plunger being tapered in opposite directions towards the plunger for retaining the packing between the telescoping members when the plunger is withdrawn whereby the plunger may be readily reinserted.

2. The combination with a plunger, of a packing member therefor comprising a packing holder, and a tightening cap telescoping therewith, said tightening cap having a tapered portion adapted to press the packing against the plunger said cap and holder also being provided with oppositely tapered walls said walls tapering towards the plunger for retaining the packing between the holder and cap.

3. The combination with a plunger, of a packing member therefor comprising a packing holder, and a telescoping cap adapted to function therewith, said cap and holder having oppositely tapered walls said walls tapering towards the plunger to retain the packing therebetween when the plunger is withdrawn, whereby the plunger may be readily reinserted and means carried by said telescoping cap for forcing the packing directly against the plunger.

4. The combination with a plunger of a

removable packing unit therefor, comprising a packing holder having its rear wall tapered towards its open end, and a tightening cap telescoping therewith and having a tapered wall corresponding to the wall of the holder, but extending in the opposite direction, said tightening cap having its inner wall tapered away from its outer periphery, thereby forming an annular V-shaped groove, whereby the packing will be forced directly against the plunger but will be retained between the telescoping members when the plunger is withdrawn, and means to exert pressure on the tightening cap.

5. The combination with a plunger having a recess arranged there about of a removable packing unit adapted to be arranged in said recess comprising a packing holder having its rear wall tapered towards its open end, a tightening cap telescoping therewith and having a tapered wall corresponding to the wall of the holder but extending in the opposite direction, said tightening cap having its inner wall provided with a long taper away from its outer periphery, thereby forming an annular V-shaped groove, whereby the packing will be forced directly against the plunger but will be retained between the telescoping members when the plunger is withdrawn, and a nut adapted to be screwed onto the syringe to exert pressure on the tightening cap and to retain the packing unit in the recess.

In testimony whereof we affix our signatures.

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TEOBALDO G. BOLDIZZONI.