

## **Improvements in or connected with hypodermic syringes / [James Ernest Arnold].**

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### **Publication/Creation**

Redhill : Printed for His Majesty's Stationery Office by Love & Malcomson, Ltd, 1904.

### **Persistent URL**

<https://wellcomecollection.org/works/mybabpxn>

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N<sup>o</sup> 1261



A.D. 1904

*Date of Application, 18th Jan., 1904*

*Complete Specification Left, 3rd Sept., 1904—Accepted, 6th Oct., 1904*

PROVISIONAL SPECIFICATION.

**Improvements in or connected with Hypodermic Syringes.**

I, JAMES ERNEST ARNOLD, of the Firm of Arnold & Sons, of 31, West Smithfield, in the City and County of London, Instrument Makers, do hereby declare the nature of this invention to be as follows:—

The primary object of this invention is to provide an improved construction of syringe, in which the glass barrel shall be partially encased and guarded by a pierced or slotted sleeve, and at the same time to employ the said sleeve to maintain the two end caps upon the barrel, while allowing of the ready detachment of the guard sleeve and the said end caps to facilitate the taking to pieces of the syringe.

10 To this end I fit the caps to the ends of the barrel so as to be readily detachable therefrom, for instance, the cap formed with the nozzle for receiving the needle may be fitted by the end of the barrel being ground to fit into the cap, while the opposite cap (which may if desired be formed with finger clips and through which cap the piston rod passes)—can be fitted frictionally upon its end  
15 of the barrel. It is obvious that so constructed, the caps can be quite readily removed by simply being pulled off from the ends of the barrel, and I then provide a preferably metal sleeve, through one end of which the syringe is passed until the smaller end of the nozzle cap passes through the shouldered end of this tubular sleeve and the cap is supported against that end. The cap  
20 through which the piston rod passes is then embraced by the end of the tubular sleeve, and that end of the sleeve is secured to the said cap by some convenient attachment which will enable the sleeve to be readily disengaged and removed when required.

As an example of an attachment device which I have found to answer well  
25 in practice, I provide a bayonet-joint slot in the end of the tubular sleeve and a pin on the exterior surface of the rear metal cap, which pin enters the bayonet slot of the tubular guard, and by partially rotating the said guard the two end caps are drawn together and securely maintained in their proper positions upon the ends of the barrel.

30 With such a construction, in order to take the syringe to pieces for cleaning or other purposes, it is only necessary to give the tubular guard a slight axial rotation relatively to the rear end cap, to disengage the pin from the bayonet slot, when the guard can be drawn off endwise and the caps, so released, readily removed. The replacement and putting together of the parts of the syringe  
35 can be effected with equal facility by a reversal of the aforesaid operations.

The bayonet slot in the end of the tubular sleeve may, and preferably is, slightly inclined so that when the pin on the end cap has entered the inclined portion of the slot, the axial rotation of the tubular sleeve will tend to draw the two end caps on to the barrel.

40 Dated this 18th day of January 1904.

BREWER & SON,  
London and Leeds,  
Agents for the Applicant.

[Price 8d.]

*Arnold's Improvements in or connected with Hypodermic Syringes.*

## COMPLETE SPECIFICATION.

**Improvements in or connected with Hypodermic Syringes.**

I, JAMES ERNEST ARNOLD, of the Firm of Arnold & Sons, of 31, West Smithfield, in the City and County of London, Instrument Makers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The primary object of this invention is to provide an improved construction of syringe, in which the glass barrel shall be partially encased and guarded by a sleeve, preferably pierced or slotted, and at the same time to employ the said sleeve to maintain the two end caps upon the barrel while allowing of the ready detachment of the guard sleeve and the said end caps, to facilitate the taking to pieces of the syringe.

The invention will now be described with reference to the accompanying drawings, which shew an example of construction of a hypodermic syringe according to the said invention, drawn to an enlarged scale in order to more clearly shew the device, Fig: 1 being a front elevation of the syringe with the sleeve and end caps in position, Fig: 2 a side elevation of the sleeve detached, Fig: 3 a side elevation of the syringe with the sleeve removed, and Fig: 4 a sectional side elevation of the syringe with the sleeve in position thereon.

Referring to the drawings the caps 1, 2 are fitted to the ends of the barrel 3 so as to be readily detachable therefrom, for instance the cap 2 formed with the nozzle 4 for receiving the needle may be fitted by the end of the barrel 3 being ground to fit into the cap 2, while the opposite cap 1 (which may if desired be formed with finger grips 5 and through which cap the piston rod 6 passes) can be fitted frictionally upon its end of the barrel. It is obvious that so constructed, the caps can be quite readily removed by simply being pulled off from the ends of the barrel, and I then provide a preferably metal sleeve 7 (Fig. 2) which is generally pierced or slotted as shewn to allow of observation of the contents of the barrel; through one end 8 of this sleeve 7 the barrel 3 is passed with the nozzle cap in position thereon until the smaller end of the nozzle cap 2 passes through the shouldered end 9 of this tubular sleeve and the cap is supported against that end (see Fig. 4). The cap 1 through which the piston rod 6 passes is then embraced by the end 8 of the tubular sleeve 7, and that end 8 of the sleeve is secured to the said cap 1 by some convenient attachment which will enable the sleeve to be readily disengaged and removed when required.

As an example of an attachment device which I have found to answer well in practice, I form a bayonet-joint slot 10 in the end 8 of the tubular sleeve 7 and a pin 11 on the exterior surface of the metal cap 1, which pin enters the bayonet slot of the tubular guard 7, and by partially rotating the said guard 7 or rotating the cap 1 relatively to the guard 7 the two end caps 1 and 2 are drawn together and securely maintained in their proper positions upon the ends of the barrel 3.

With such a construction in order to take the syringe to pieces for cleaning or other purposes, it is only necessary to give the tubular guard a slight axial rotation relatively to the end cap 1 to disengage the pin from the bayonet slot, when the guard can be drawn off endwise and the caps, so released, readily removed. The replacement and putting together of the parts of the syringe can be effected with equal facility by a reversal of the aforesaid operations.

The bayonet slot in the end of the tubular sleeve may be slightly inclined

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so that when the pin on the end cap has entered the inclined portion of the slot, the axial rotation of the tubular sleeve or of the cap 1 will tend to draw the two end caps on to the barrel.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. In hypodermic syringes having a barrel and end caps; providing a tubular guard sleeve, generally having pierced or slotted walls, into which sleeve the syringe is passed with its nozzle cap in position, until the said nozzle cap is supported against the inturned or shouldered end of the sleeve, the piston cap being then connected to the other end of the guard sleeve by a readily detachable connection such as a bayonet joint, whereby the barrel is protected and the caps supported and held substantially as set forth.

15 2. A hypodermic syringe having a barrel, a detachable nozzle cap at one end, and a detachable cap at the other end through which the piston rod passes; in combination with a pierced or slotted sleeve, an inturned end or equivalent to the sleeve to support the nozzle cap when the syringe is inserted within the sleeve, and a bayonet joint connection between the piston cap and the end of the sleeve, constructed and arranged substantially as described with reference  
20 to the accompanying drawings.

Dated this 3rd day of September 1904.

BREWER & SON,  
London and Leeds,  
Agents for the Applicant.

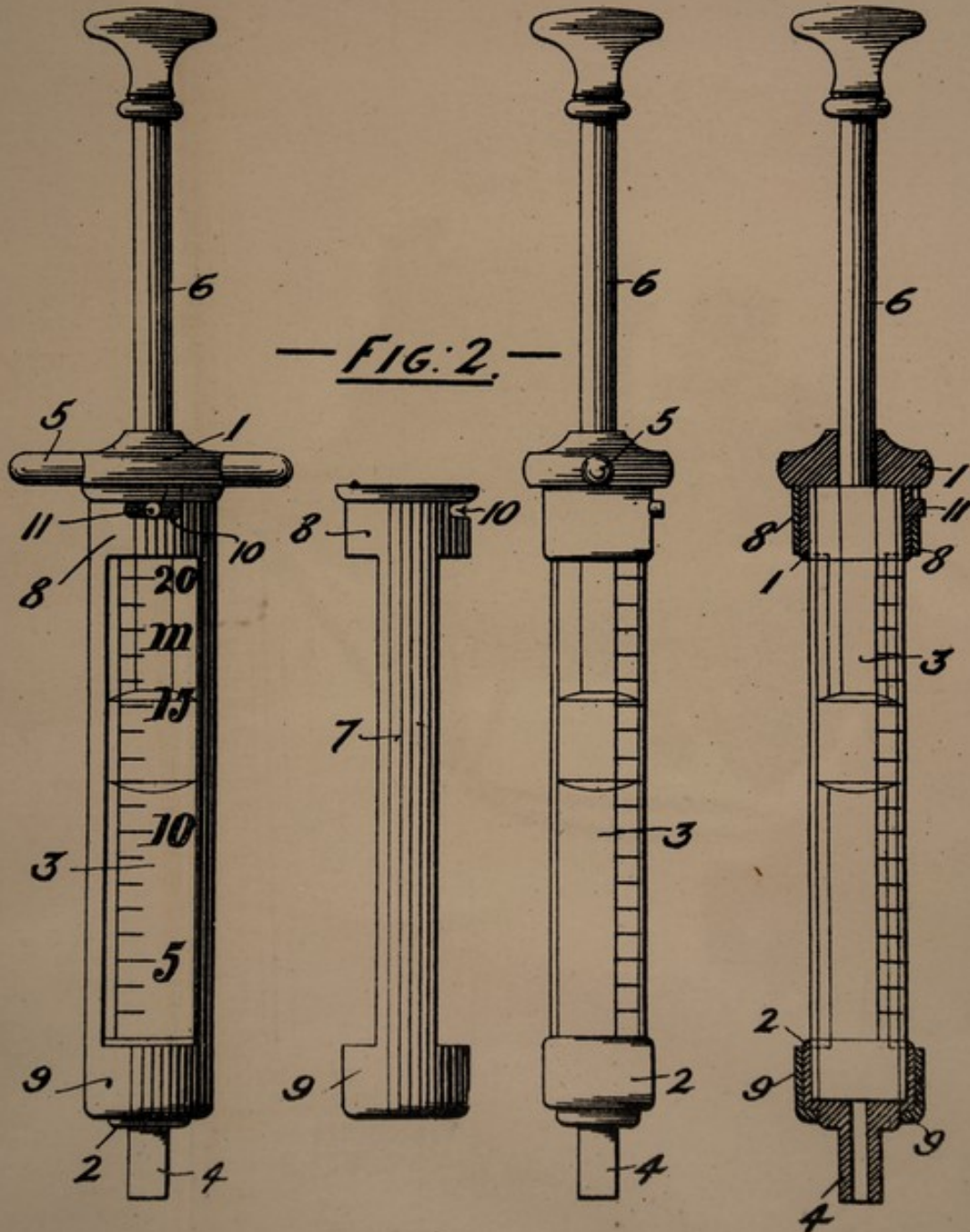
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—FIG:1.—

—FIG:3.— —FIG:4.—



[This Drawing is a reproduction of the Original on a reduced scale.]

