

No. 679,198.

Patented July 23, 1901.

C. WITKOWSKI.
HYPODERMIC SYRINGE.
(Application filed Jan. 17, 1901.)

(No Model.)

Fig. 1.

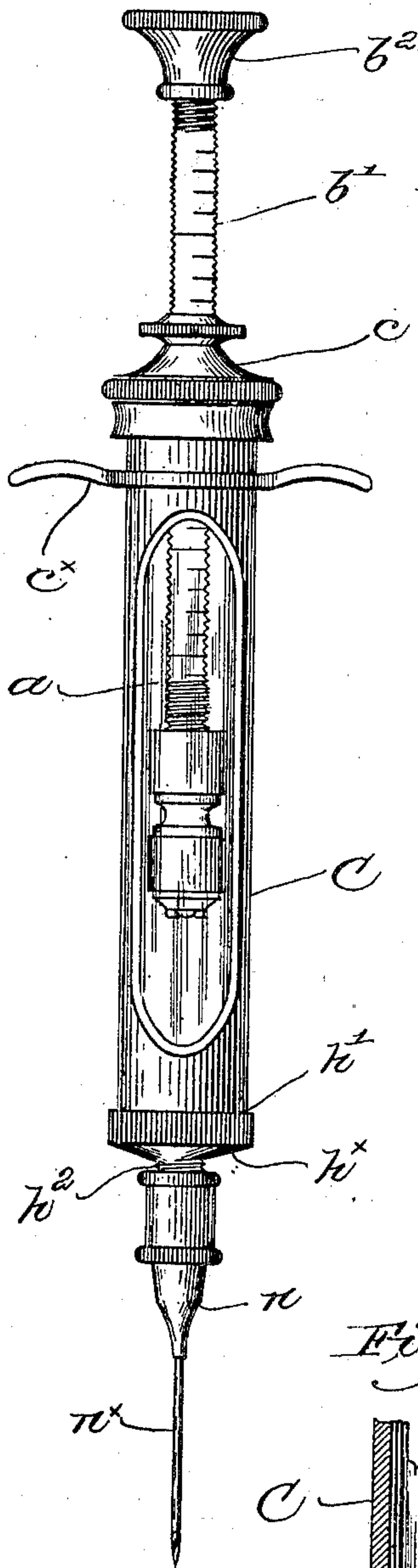


Fig. 2.

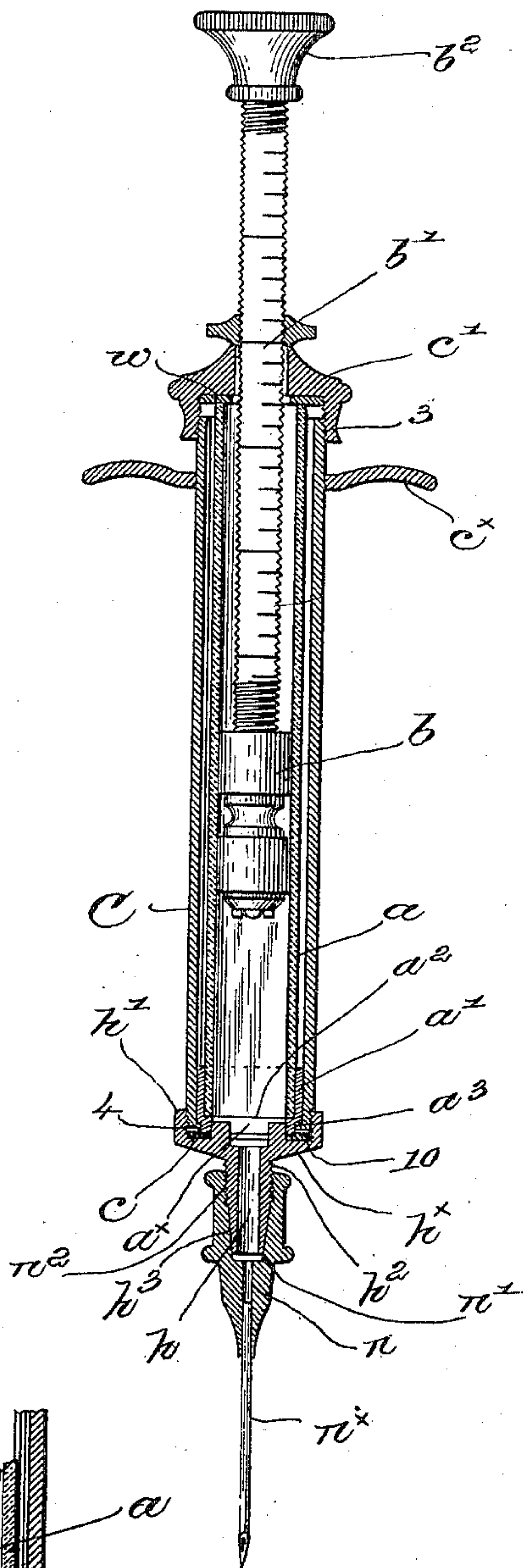
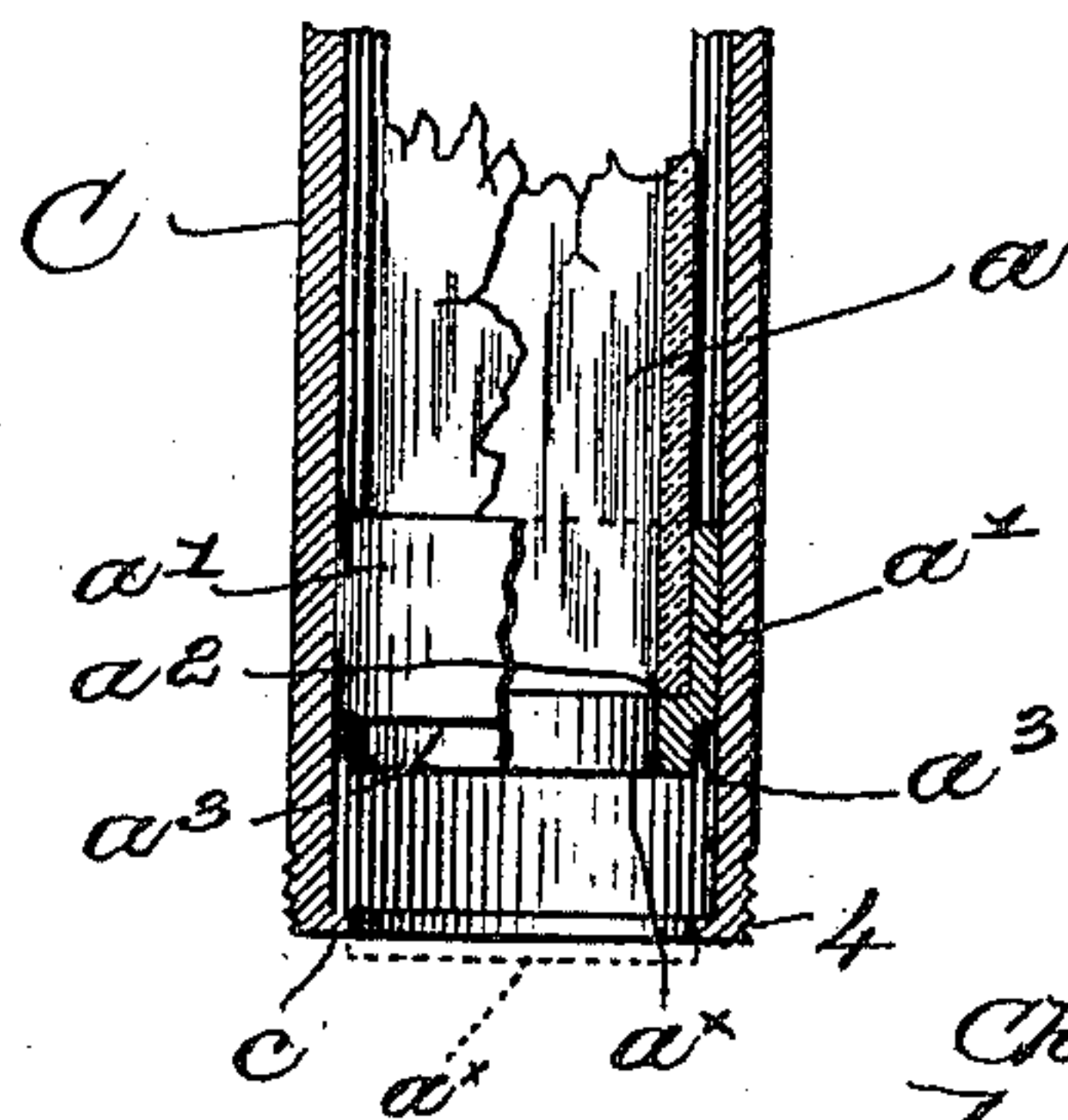


Fig. 3.



Witnesses:

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HYPODERMIC SYRINGE.

SPECIFICATION forming part of Letters Patent No. 679,198, dated July 23, 1901.

Application filed January 17, 1901. Serial No. 43,576. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WITKOWSKI, a citizen of the United States, and a resident of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Syringes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to syringes, and more particularly to hypodermic syringes; and among the objects of the invention are the simplification of the construction of such devices, the attainment of greater efficiency and convenience in the operation thereof, and the removal of certain objectionable features now existing.

The various novel features of my invention will be hereinafter fully described, and particularly pointed out in the following claims.

Figure 1 represents in elevation a syringe embodying one form of my invention, the view being made on a large scale. Fig. 2 is a longitudinal sectional view thereof, the various parts being assembled; and Fig. 3 is a sectional detail, on a yet larger scale, of a portion of the syringe-barrel and the tubular protective guard therefor.

I have herein shown the barrel of the syringe as an open-ended cylinder a , preferably of glass and provided with a piston b and piston-rod b' , having a handle b^2 of well-known or usual construction. The inner end of the barrel is in accordance with my invention provided near its extremity with an external annular shoulder to engage an internal annular seat on the tubular metallic protective guard C, and, referring to Figs. 2 and 3, the barrel a is shown herein as provided at one end with an external metal collar a' , permanently secured in place, as by insoluble and acid-proof cement, an internal shoulder a^2 of the collar supporting the end of the barrel, the collar being externally reduced in diameter beyond the end of the barrel to form an external annular shoulder a^3 , which abuts against an internal annular seat c , formed on the end of the guard C, thereby positioning the barrel, the extremity a^x of the collar, which is internally the exact di-

ameter of the barrel, forming a continuation thereof which projects beyond the end of the guard. Longitudinal thrust on the barrel to seat the shoulder a^3 on the guard has manifestly no tendency whatever to separate or loosen the barrel and collar. Heretofore it has been usual to interpose a washer between an internal flange on the guard and the end of the barrel to make an air-tight joint, the end of the guard abutting against another washer in the head; but the washer in the guard has been a source of great annoyance and trouble, as it was difficult to replace when worn, it was readily affected by acids, and it afforded a lodgment for dirt. Not only that, but the slightest chip off the glass barrel or any obstruction, such as a grain of solid matter between the end of the barrel and the washer, absolutely destroyed the tightness of the joint and made the syringe worthless until a new barrel or washer was inserted. In my present invention, as will hereinafter appear, I entirely eliminate this washer and all its objectionable features as above noted and provide for a tight joint at all times. Herein the guard C, having the finger-pieces c^x , is shown as externally threaded at its ends at 3 and 4 to receive thereupon, respectively, the closing-cap c' and the head h^x , the piston-rod passing freely through the former, which bears against the outer end of the barrel and presses the shoulder a^3 thereof upon its seat, retaining the projecting end a^x of the collar in operative position. The usual washer w is interposed between the end of the barrel and the cap, the length of the barrel being such that it will project slightly beyond the adjacent end of the support C, as in Fig. 2. The head h^x , having a longitudinal bore h , is shown as provided with an interiorly-threaded annular flange h' at its inner end to screw upon the threaded part 4 of the guard and to thereby force the continuation a^x of the barrel, which, it will be remembered, is the projecting end of the collar a' , tightly against the annular washer 10 in the head, forming an absolutely air-tight joint, it being entirely immaterial whether or not the end of the guard abuts against the said washer 10. Heretofore it has been usual to

provide the head with a threaded nipple to be screwed into the threaded socket of the needle-base, a washer being interposed between the cap and the end of the base to make
 5 a tight joint, or the nipple has been tapered to enter a correspondingly-tapered socket in the needle-base, forming a tight joint. In the former structure if the washer is lost or mislaid or if it leaks, as it is very apt to, the
 10 syringe is useless and a new washer must be applied, sometimes an impossibility, and at all times causing vexatious delay. In the latter structure the washer is eliminated; but as the needle-base is held on the nipple by
 15 friction it often happens that the needle will pull off from the syringe at most inopportune times.

The construction forming a part of my invention and now to be described combines
 20 the security of the one type referred to with the tight joint of the other, while eliminating the objectionable features of both.

In accordance with my invention the nipple is herein shown as having an externally-
 25 threaded base h^2 and a tapering tip h^3 , the latter entering a correspondingly-tapered socket n' in the needle-base n , to which the tubular needle n^x is secured, the larger end of the socket being threaded, as at n^2 , Fig. 2,
 30 to screw upon the part h^2 of the nipple. By means of the screw-thread I secure a positive connection or lock between the nipple and the needle-base, so that there is no possibility of accidental removal of the needle; but
 35 the tapered end of the nipple fitting tightly into the socket n' insures an absolutely air-tight joint with the needle-base without the use of any washer whatever.

It will be manifest that a needle-base having a tapered socket can be used with the
 40 head herein described, connection being made by frictional contact, so that my syringe can be used therewith as well as with the form of needle-base which I prefer having the positive connection. With the latter the joint
 45 can be tightened as much as desired, as screwing the needle-base onto the threaded nipple operates to more firmly force the tapered tip of the nipple into the tapered portion of the
 50 socket.

My invention is not restricted to the precise construction or arrangement herein shown and described, as the same may be varied without departing from the spirit and
 55 scope of the invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a syringe, the barrel, a separable, tubular protective guard therefor, and means
 60 to position the barrel in the guard with the inner open end of the barrel projecting beyond the adjacent end of the guard, the projecting portion of the barrel having the internal diameter of the main portion thereof and forming a continuation of the barrel.

2. In a syringe, the barrel having an external annular shoulder near one end, and a separable, tubular guard provided at one end with an internal seat, to be engaged by the shoulder, the barrel below the shoulder passing
 70 through and projecting beyond the end of the guard.

3. In a syringe, a glass barrel having permanently secured thereto a metallic collar
 75 forming a continuation thereof and having an external, annular shoulder, and a separable, tubular guard having at one end an internal annular seat, to engage the shoulder, the end of the collar projecting beyond the adjacent
 80 end of the guard.

4. In a syringe, the barrel having an external annular shoulder near one end, a separable tubular guard therefor having at one end an internal annular seat for the shoulder, the
 85 end of the barrel projecting beyond the end of the guard, and a detachable head for the adjacent end of the guard, to cooperate with the projecting end of the barrel, and form an air-tight joint therewith.

5. In a syringe, a glass barrel having a metallic collar permanently secured to one end thereof, and an external, annular shoulder formed in said collar near its end, the portion of the latter beyond the shoulder forming a
 95 continuation of the barrel.

6. In a syringe, the barrel, a tubular guard therefor, means to position the barrel in the guard with its lower end projecting beyond the adjacent end of the guard, the projecting
 100 portion having the internal diameter of the main portion of the barrel, and a head screwed upon the guard and having a washer to be engaged by the projecting end of the barrel, forming an air-tight joint thereat.

7. In a hypodermic syringe, a glass barrel, a metallic collar surrounding and permanently secured to one end thereof, said collar having an external annular shoulder, and an internal annular shoulder to support the adjacent
 110 extremity of the barrel and take up longitudinal thrust upon the latter, the portion of the collar beyond the internal shoulder having the internal diameter of the barrel and forming a continuation of the latter.

8. In a syringe, the barrel having an external shoulder near one end, a separable tubular guard therefor having at one end an internal annular seat for the shoulder, the end of the barrel projecting beyond the guard, a detachable head for the adjacent end of the
 120 guard having a washer to engage and form an air-tight joint with the projecting end of the barrel, means to support the needle on the head, and a detachable cap for the other end of said guard, to close the adjacent end of the barrel and maintain its shoulder on the seat of the guard.

9. In a hypodermic syringe, the guard, a barrel longitudinally positioned therein with
 130 its end projecting beyond the adjacent end of the guard, the projecting end having the

internal diameter of the main portion of the
barrel, a head detachably connected with the
guard and having a washer to engage and
form an air-tight joint with the projecting
5 end of the barrel, and an external nipple on
said head, having a smooth tapering tip and
a locking-thread at the base of the tip.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

CHARLES WITKOWSKI.

Witnesses:

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