(No Model.)

F. EISSNER.

SYRINGE.

No. 577,682. Patented Feb. 23, 1897.

Fig. 1.

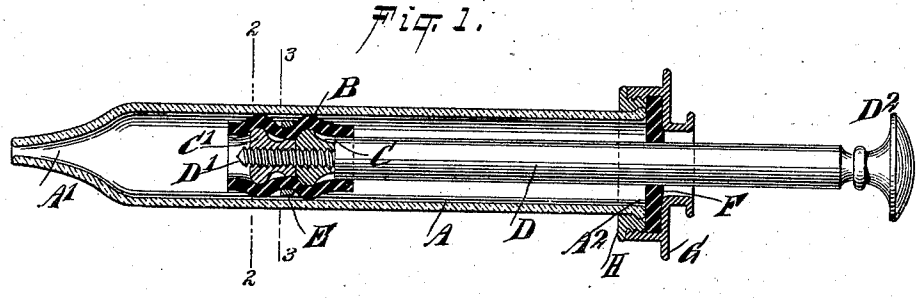


Fig. 2.

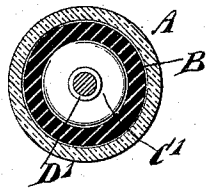


Fig. 3.

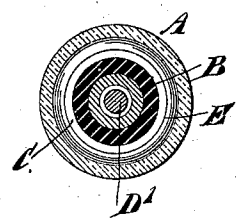
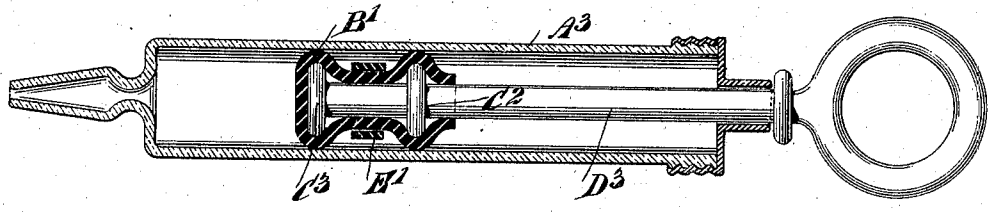


Fig. 4.



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SYRINGE.

SPECIFICATION forming part of Letters Patent No. 577,682, dated February 23, 1897.

Application filed January 30, 1893. Serial No. 577,331. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK EISSNER, of New York city, in the county and State of New York, have invented a new and Improved Syringe, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved syringe which is simple and durable in construction, more especially designed for the use of surgeons, and arranged for conveniently and quickly disconnecting the several parts to permit of thoroughly cleaning the same, so as to render the syringe aseptic.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section of the improvement. Fig. 2 is an enlarged transverse section of the same on the line 2 2 of Fig. 1. Fig. 3 is a like view of the same on the line 3 3 of Fig. 1, and Fig. 4 is a longitudinal section of a modified form of the improvement.

The improved syringe is provided with a barrel A, made of glass or like material and formed with a contracted outlet A′ at one end and at its other end with an outwardly-flaring mouth A^2, as is plainly shown in Fig. 1. In the barrel A operates a plunger provided with a cylinder B, made of an elastic material, such as rubber, and stretched over annular ridges C C′, placed suitable distances apart and preferably in the form of nuts screwing on the reduced threaded end D′ of the plunger-stem D. The cylinder B is engaged between the ridges C C′ by a ring or band E, so as to contract that portion of the cylinder between the two ridges while the portion of the cylinder over the ridges is in contact with the inner surface of the barrel A. The elastic cylinder B is made of an interior diameter somewhat less than the diameter of the ridges C C′ on the stem D, and when said cylinder is placed over the ridges on the stem its end portions will project beyond the ridges and, being of less diameter than the portions of the cylinder overlying the ridges, serve to permit the plunger formed by said cylinder to be conveniently entered into the barrel. The nuts forming the ridges C C′ are each provided with reduced portions or necks, and the neck of one nut bears against the larger end portion of the other nut when the nuts are in position on the threaded portion of the stem, so that a circumferential recess or channel is formed between the two ridges, into which channel the elastic cylinder presses, so as to form an annular groove adapted to receive the ring or band E. This band forms a clamp surrounding and contracting the central portion of the cylinder between the annular ridges C C′.

Now it will be seen that when the plunger is withdrawn from the barrel the diameter of the cylinder over the ridges is slightly in excess of the internal diameter of the barrel A, so that when the plunger is inserted into the barrel at the flaring mouth A^2 said cylinder is slightly compressed at the annular ridges, and consequently a very tight fit of the plunger in the barrel A is insured.

The plunger-stem D passes through an elastic disk F, held against the flaring mouth A^2 of the barrel A by a cap G, screwing on a ring H, slipped over the barrel A from the outlet end of the latter and resting against the flaring mouth A^2, as will be readily understood by reference to Fig. 1. By this arrangement the disk F is securely held in place on the barrel A, said disk forming a stuffing-box for the plunger-stem D. The outer end of the latter is provided with the usual handle D^2 for enabling the operator to reciprocate the plunger in the barrel A for drawing in and ejecting the liquid.

In the modified form shown in Fig. 4 the barrel A^3 contains a plunger having an elastic cylinder B′, the outer end of which is closed, and the cylinder is stretched over two annular ridges C^2 C^3, formed integrally with the stem D^3 and placed a suitable distance apart. The cylinder between the ridges is connected by an elastic band E′, so as to contract this portion of the cylinder similarly to the ring E above described in reference to Fig. 1.

Now it will be seen that when the cylinder B is open at the outer end, as shown in Fig.

1, the resistance of the liquid ejected from the barrel A has a tendency to open the outer end against the inside of the barrel A to insure a still tighter joint between the plunger and the barrel.

It will be seen that by the arrangement described the several parts of the syringe can be readily taken apart to permit of thoroughly cleaning the same to render the syringe completely aseptic, it being understood that the construction is such that the several parts can be readily disconnected and assembled without requiring skill.

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

1. A piston for syringes, comprising a stem provided with a plurality of circumferential and spaced ridges, an elastic tube arranged on the stem over the ridges thereof, and having its ends extending beyond said ridges, and a clamp engaging the elastic tube between the ridges of the stem to contract it into the space between the said ridges and firmly secure it in place, substantially as described.

2. A piston for syringes, consisting of a stem having a reduced and threaded end, two nuts having reduced portions or necks and screwing on the said reduced portion of the stem, said nuts forming spaced circumferential ridges, an elastic tube arranged on the stem over the nuts with its ends projecting beyond the same, and a band encircling the tube and contracting it into the channel formed by and between the nuts, substantially as herein shown and described.

FREDERICK EISSNER.

Witnesses:
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