

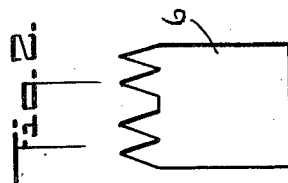
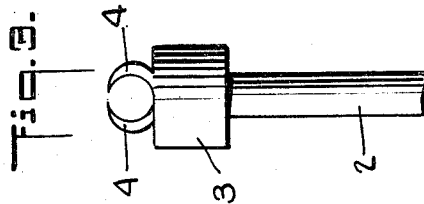
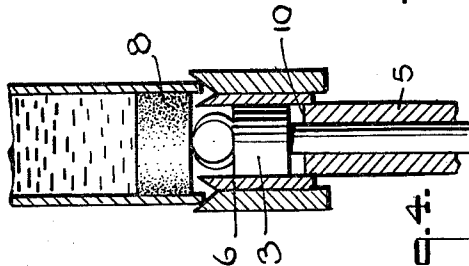
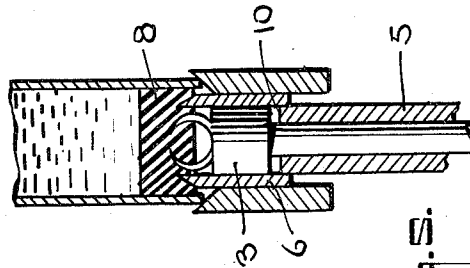
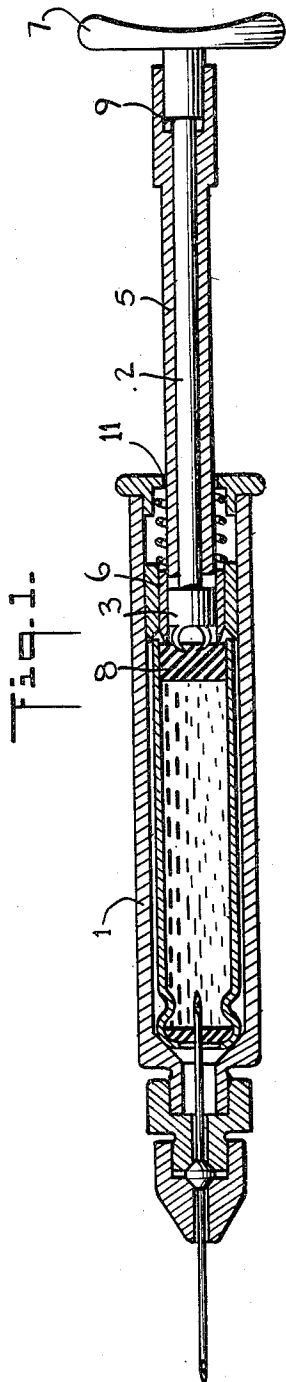
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W. BREITENBACH

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SYRINGE WITH ASPIRATION DEVICE FOR CYLINDRICAL AMPOULES

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INVENTOR:

WILHELM BREITENBACH

BY

Richardson, David and Nelson

ATTORNEYS.

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2,789,559

SYRINGE WITH ASPIRATION DEVICE FOR CYLINDRICAL AMPOULES

Wilhelm Breitenbach, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Brüning, Frankfurt am Main, Germany, a corporation of the Federal Republic of Germany

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2 Claims. (Cl. 128—218)

The present invention relates to a syringe with aspiration device for cylindrical ampoules.

There exists a number of syringes for direct injection from normal cylindrical ampoules. Nearly all these syringes show the known disadvantage that they do not allow of effecting an aspiration, i. e. with them it is impossible to ascertain, by a slight suction, whether a blood vessel has been injured. Although a great number of proposals have been made and partially patented in order to overcome this drawback, the known syringes involve some disadvantages which have not been overcome satisfactorily and prevent their practical use.

For instance, there are known, for a long time, devices which, like a corkscrew, penetrate into the piston stopper of the cylindrical ampoule. The use of plungers, similar to corkscrews, for effecting injections with cylindrical ampoules, was, however, not always possible since, often, the stopper simultaneously turned itself.

The present invention relates to a syringe wherein the stopper is prevented from turning around itself by fixing it by means of a casing provided with teeth. The contact plane between the piston stopper and the piston rod is simultaneously enlarged by using, instead of a simple corkscrew, a pair of claws which by turning can be forced into the stopper. The advantages of this design are the following:

The stopper of the cylindrical ampoule which serves as a piston stopper can exactly and easily be connected with the piston rod without a special additional device in the stopper, i. e. each normal and commercial cylindrical ampoule can be used with this syringe for aspiration and injection, a good connection between piston rod and piston stopper being guaranteed.

The injection syringe is shown in the accompanying drawing in which Figure 1 shows, in longitudinal section, a syringe device containing a cylindrical ampoule; Figure 2 is a side view of the casing provided with teeth which serves for fixing the stopper of the ampoule; Figure 3 is a side view of the piston rod provided with claws which, by turning, penetrate into the piston stopper. Figure 4 shows a longitudinal section of the plunger head with the cylindrical ampoule fitted thereto (partial view), before the aspiration device penetrates into the piston stopper of the cylindrical ampoule.

Figure 5 shows a longitudinal section of the aspiration device with the cylindrical ampoule fixed onto it (partial view) after the aspiration device has penetrated into the piston stopper of the cylindrical ampoule.

In the accompanying drawing 1 shows the syringe holder itself provided with the injection needle attached thereto. 2 shows the piston rod which, at its end, carries the plunger head 3 provided with two claws 4 which can be turned into engagement with the piston stopper and

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which is slidably mounted in a square plunger casing 5 which ends in an enlarged cylindrical casing 6 provided with teeth. 7 shows a thumb-plate serving to turn the piston rod 2 and to move it in the direction of the axis, for the purpose mentioned below.

The injection syringe according to the present invention, with aspiration device for commercial cylindrical ampoules provides the piston rod 2 which can be turned and displaced in the direction of the axis by means of thumb-plate 7 and carries at its fore-end a plunger head 3 and claws 4 which can be forced into the piston stopper, the piston rod 2 being movably mounted in a square plunger casing 5 which is led through a square opening 11 at the rear end of the injection casing and which ends in the enlarged cylindrical casing 6 provided with teeth.

The movement of the piston rod 2 in axial direction of the square plunger casing and the casing 6 provided with teeth is controlled by arresting devices at each end shown in 9 of Figure 1, at the thumb-plate 7 and 10 of Figure 4, at the plunger casing 5. Thereby it is guaranteed that the claws 4 are forced only a little into the piston stopper; on account of their form and their plane of action however, this is quite sufficient to obtain a solid connection with the piston stopper. The syringe can easily be handled. The piston rod 2 having been drawn back, the cylindrical ampoule is placed into the syringe holder 1, fixed in a known manner and centered (compare Figures 1, 4 and 5) by a conical support of the syringe holder. While slightly pressing the piston rod 2 firmly connected with the thumb-plate 7, against the piston stopper 8 of the ampoule, the thumb-plate 7 is turned to the right by about 90°, whereby the claws 4 at the end of the piston rod 2 at the plunger head 3 penetrate into the piston stopper 8, and the casing 6, armed with teeth at the end of the square plunger casing 5 which cannot be turned around its axis, prevents the stopper from turning around itself.

The injection needle is then attached or screwed in, in a known manner, at the fore-end of the syringe holder and the syringe is ready for injection and aspiration.

When the injection is finished, the piston rod 2 is detached from piston stopper 8 of the cylindrical ampoule by turning back to the left the thumb-plate 7 until it is arrested by the stopping device; thereby the claws 4 are again withdrawn from the stopper 8.

I claim:

1. Syringe with aspiration device for cylindrical ampoules wherein a piston rod, which can be turned and axially displaced by means of a thumb-plate, at its fore-end ends into a plunger head and claws to be forced into a piston stopper, said piston rod being movable in a square plunger casing, said plunger casing being led through a corresponding square opening of the rear end of the syringe holder and ending in an enlarged cylindrical casing provided with teeth.

2. Syringe as claimed in claim 1 wherein the axial movability of the piston rod is limited in relation to the casing armed with teeth.

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