

<p>(21) Application No 8807646.8</p> <p>(22) Date of filing 28.03.1988</p>	<p>(51) INT CL<sup>4</sup> A61M 5/24 5/315</p> <p>(52) UK CL (Edition J) A5R RCA RCC RGG RGP</p>
<p>(71) Applicant Robert Derek Channon 'Woodlands', Holcombe, Nr Bath, Avon, BA3 5DE, United Kingdom</p> <p>(72) Inventor Robert Derek Channon</p> <p>(74) Agent and/or Address for Service Robert Derek Channon 'Woodlands', Holcombe, Nr Bath, Avon, BA3 5DE, United Kingdom</p>	<p>(56) Documents cited GB 2109690 A EP 0293572 A1 EP 0265876 A2 WO 88/07874 A1 WO 87/02895 A1 WO 82/02662 A1</p> <p>(58) Field of search UK CL (Edition J) A5R RCC RGP INT CL<sup>4</sup> A61M</p>

(54) Multiple injection infusion device (portable)

(57) A portable infusion/injection device which can be worn on a belt around the waist or used as an injection device, comprises a cover (1) is used to protect from mechanical damage the drug reservoir (2) into which the rubber piston (3) is inserted which is propelled by the lead screw nut (4) which is also the piston rod. The mechanism is attached to both the cover and the snail cam (6) by the knurled carrier (5). The knurled thimble (7) is restrained by the carrier (5) and the cam box guide (9) which is prevented from revolving by the pin (8). The clapper block (10) is driven down onto the snail cam (6) by a spring (11). The threaded nut (12) contains the spring tension and provides a stop for the lead screw (13) with its knurled cap. The needle protector (14) has a chamber with a latex membrane which allows the needle to be stored in a sterile environment.

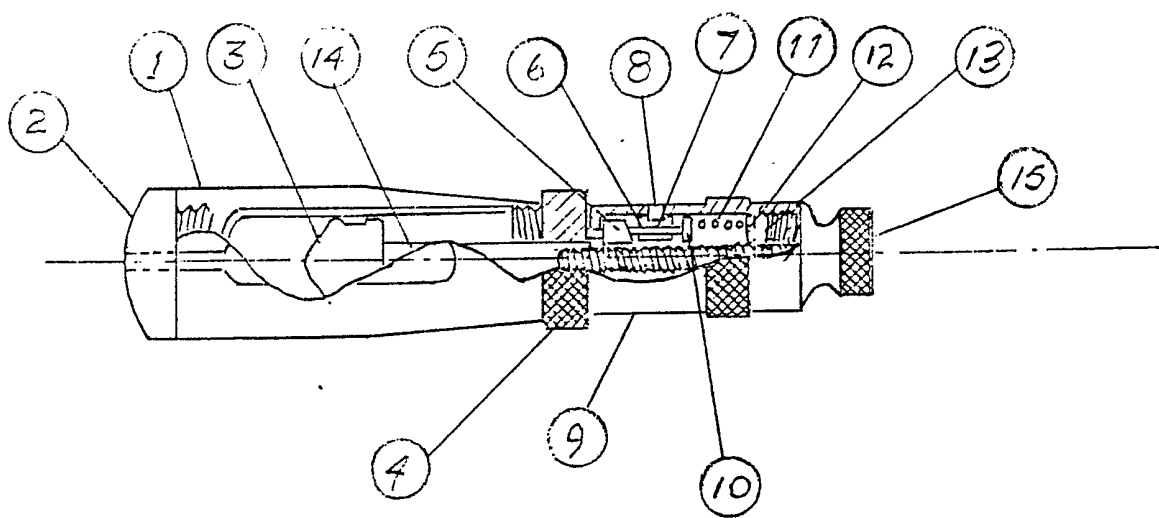


FIGURE 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.  
 The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.  
 At least one of these pages has been prepared from an original which was unsuitable for direct photoreproduction.

GB 2 222 525 A

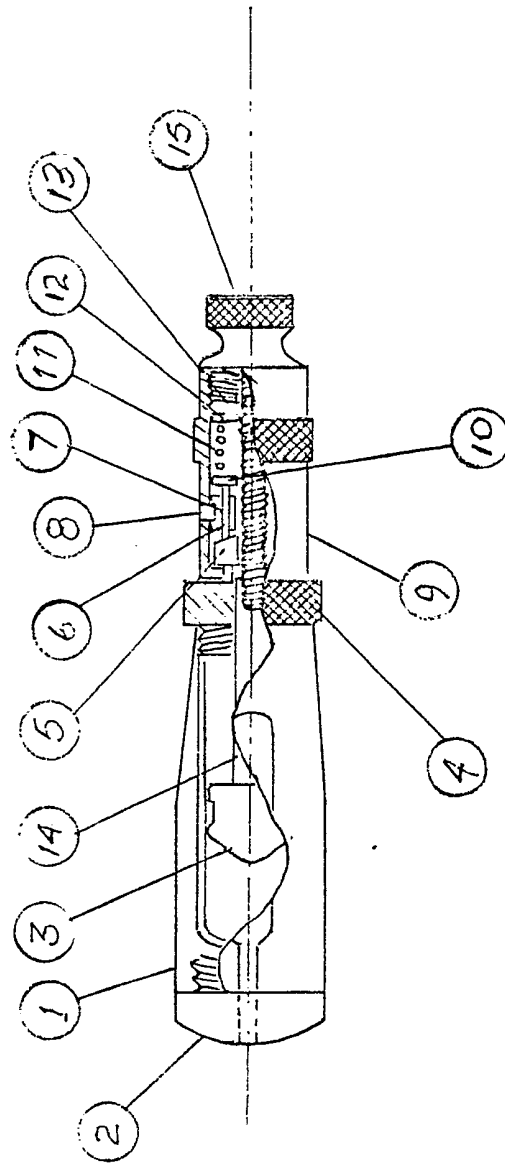


FIGURE 1

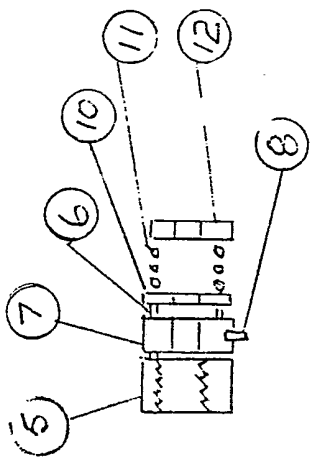


FIGURE 2

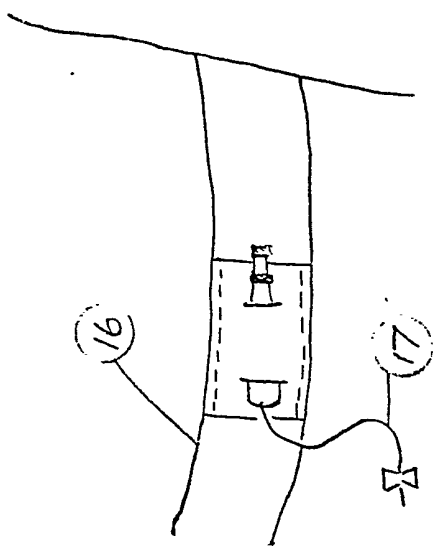


FIGURE 3

INFUSION DEVICE

The present invention relates to an infusion device which can be used to administer medicaments to patients over a prolonged period of time.

- 1 The invention is applicable particularly but not exclusively, to the administration of insulin to patients suffering from diabetes mellitus.

In the past patients have needed to inject long and short acting insulins to fulfil the daily need for insulin. It has been in the past only convenient for patients to inject early in the morning and to rely on the decaying characteristics of a long acting insulin to cope with the requirement for insulin throughout the day.

The present invention provides an infusion device which will allow patients to inject a natural insulin at any time, for example, prior to eating a main meal.

The device is worn by the patient either around the abdomen or on the arm, not unlike a wrist watch. To operate the device and infuse the drug a knurled thimble is rotated a given number of times according to the patient's requirements. An audible click indicates each time a dose is metered. The device is normally connected to the patient via a standard disposable cannula through which the drug is infused.

- 5 The device can be used for inter-muscular, intravenous or subcutaneous infusion although the cannula characteristics may have to change.

The invention will be illustrated by the following description of one embodiment of an infusion device according to the present invention.

- 6 Figure (1) is a diagrammatic view of the device in part section.

Figure (2) shows the "click" or clapper-box mechanism.

Figure (3) shows the means of attaching the device to the patient.

7 The infusion device consists of a casing (1) to which is attached  
by screw thread a slotted cap (2). Behind the cap is located,  
complete with rubber plunger, a disposable drug reservoir (3).  
The disposable drug reservoir is retained in place by a double-  
8 ended knurled hollow cap (4) which is screwed to the cam(5) of  
the clapper-box mechanism (see Figure (2)). The clapper-box  
mechanism consists of a pair of sliding pins (6) which are constrained  
from turning by a clapper-box body (7). The body itself is  
constrained in all axes by the pin (8) which is located in  
9 the knurled thimble body (9). the clapper-box pins are constrained  
from moving back by the circular collar (10), and are caused to  
rise over the cam by the action of the spring (11) which in turn is  
retained by the threaded ammulus (12). The plunger is caused to  
10 move down the drug reservoir by the action of the lead screw (13)  
on the lead screw nut (14). The lead screw is connected to the  
knurled thimble by the knurled cap (15).

The device is illustrated on an abdominal belt (16). A butterfly  
11 type cannula (17) is shown for the purposes of illustration.

- 3 -

NOTES TO PATENT APPLICATION

- (1) The device can be used as an injection device in place of a conventional syringe.
- (2) The casing is slotted to allow cannula access.
- (3) The base in the knurled cap is drilled off centre to prevent the lead screw unit (14) from turning.

CLAIMS

- 1 Small correctly shaped infusion, injection device which does not use a conventional syringe but uses its own disposable resevoir.
- 2 Resevoir which can use any make of insulin/or acceptable drug.
- 3 Simple reliable mechanism which consists of a lead screw and nut providing very accurate doses.
- 4 Device which is carried in a case which prevents damage when the patient moves.
- 5 Device as in 1 which can be used also for storage and injection of suitable approved drugs (eg insulin).
- 6 Device as in 5 with a cover with a sterile needle protection which uses self sealing latex as a membrane.
- 7 Device which has audible clicks when used for both injection and infusion.