



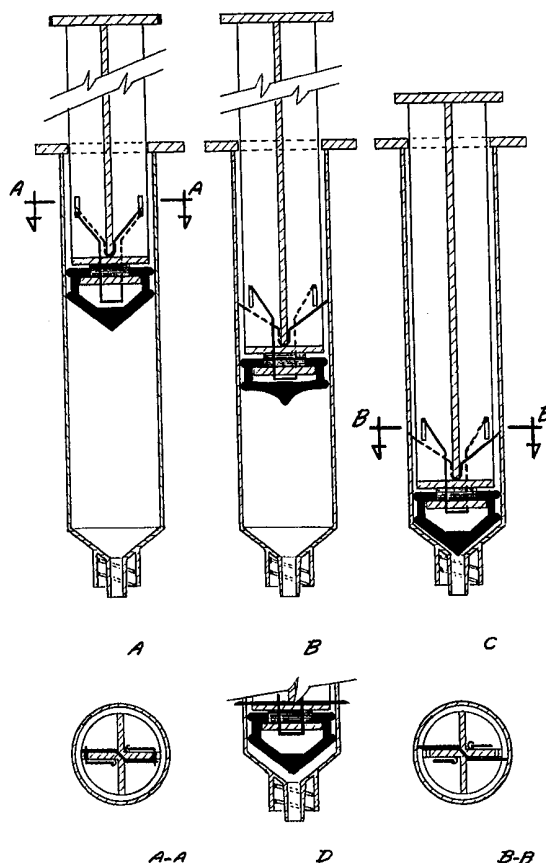
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/BR98/00011 (22) International Filing Date: 11 March 1998 (11.03.98) (30) Priority Data: CI 9800002 6 March 1998 (06.03.98) BR (71)(72) Applicants and Inventors: DE PAIVA MARQUES, José, Luiz [BR/BR]; Rua Alberto de Oliveira Santos, 59, Conjunto Ricamar, Room 611, CEP-29010-908 Vitória, ES (BR). ANTOLINI JUNIOR, Antonio, Carlos [BR/BR]; Rua Alberto de Oliveira Santos, 59, Conjunto Ricamar, Room 611, CEP-29010-908 Vitória, ES (BR).		(81) Designated States: AU, CA, CN, CU, JP, KP, MX, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report.

(54) Title: LOCKING AND BLOCKING SYSTEM FOR DISCARDABLE OR DISPOSABLE SYRINGE

(57) Abstract

A non re-usable syringe comprising a syringe barrel, a piston consisting of a piston head and a piston rod, a piston locking means being designed as claws and staple which locking means is activated during injection by relative approaching movement between the piston head and the piston rod in such a way as to lock the piston inside the syringe barrel against any subsequent aspiration or, alternatively, the locking means comprises radially expanding elastic claws being compressed together by a retaining ring so that during injection stroke the claws are released from the retaining ring. In both cases the claws come into engagement with the inner side wall of the syringe barrel to thereby inhibit retracting of the plunger. If forced retraction of the plunger is attempted in order to reload the syringe the locking means will perforate the syringe barrel due to sharpened ends of the claws. Also means to disrupt the piston seal by piercing and a non-separable connection between needle hub and syringe nozzle is disclosed.



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LOCKING AND BLOCKING SYSTEM FOR DESCARDABLE OR DISPOSABLE SYRINGE

The devices presented in this addition's certificate, maintain basically the same characteristics of the original 05-solicitation, locking made by claws made of inox steel, diameter 0,5mm (it can be applied by another claws without solder, to facilitate the industrialization (in the original solicitation it was applied a small cross with four claws for contact), the ring was reduced and it doesn't have contact with the internal 10-revestment of the syringe (in the original model, the ring has to be longest, for that the claws have on bigger course).

The model number "two" on the page 01/05. On the page, the pressure generated by the application, the liquid (The 15-medicament) the pressure over the application over the piston, that turn on the blocking system a staple (Inox 0,6mm of thickness), (SEE FIGURE "A"), page 01/05, that will impulsionate the staple upside, it will pull the claws upside, with point, and they will resist to the pressure from the claws, 20-that are fixed on the internal revestment of the syringe (see figure "B" on page 01/05) and (see figure "C" on page 01/05), if there is an higher effort to return the piston the claws will penetrate on the revestment of the syringe, (see detail "D" on page 01/05).

25- Model number "thir" on page 02/05. At this model, the process of activation of the device is the same of the model number two (page 01/05), through the pressure from the rubber, the staple has it's points, and they work as claws that will lock the system, (see figure "E" on page 02/05), the 30-points doesn't touch in the internal wall of the syringe, if it's under tension like an "hook" (see cortex "A-A" and "B-B" on page 02/05), it's locked, it obstruct the piston return, see (cortex "B-B" - page 02/05).

Model "four", page 03/05. In this model, the piston than anchors the rubller, se (figure "I", page 03/05) the rubleer has an lock, the claws are fixed in the inferior part of the shaft, and it obstructs the returning of the piston, 05-when it's completed all operation, if there is an higher effort to pull or push the piston, the claw's points see look (detail "L" - page 03/05), and it will damage definitely the syringe.

Model (five), page 04/05, on this model, it was 10-utilized an smallest ring, comparing with the original sollicitation, this ring is fixed in the internal part of the syringe (see figure "M" page 04/05), this ring fixes de claws , (see figure "N" on page 04/05),(and the same process on page, 01/05 and on page 02/05), the claw is fixed on the ring (see 15-figure "O" - on page 04/05, it's shown with an angle of 90° (ninety degrees), if compared with the figures "M" and "N", for an leetter fiew of the claws, (see detail "P" on page 04/05).

All draws are logitudinals. The models showm 20-doesn't cut the good working of the syringe.

It's important to show that the dispositive will be only acioned if, there is an havier or highest/higher pressu re on the piston, the higher pressure will active the locking device, the piston will not return anymore.

25- All devices can be aplied in any kind of syringe's size and capacity.

On the page (04/05 at figure "O", detail "P" and cortex "B-B"), it's shown an device of automatic perfuration, and the rubleer will not work anymore, the device is composed 30-into two pins in shape of "T", it's fixed in the lowest part of the piston, that is fixed on the claws, that are fixed in the internal revestment of the syringe, see (detail "P"- page 04/05), this system of perfuration (with stainless stell/with

0,6mm of thickness) according to the project. For a 100% (one hundred per cent) safe's syringe, there is on necessity to the needle stay locked, and conected to the syringe, there are many kinds and shapes of commercials syringes, with or 05-without needle, mounted or not mouted, and the needle can be acquired separately etc., in this case, the user with locking system can share needles, to have an syringe 100% safely see, (detail on page 05/05 - detail "Q") with a simple ring that can be made/manufactured by polipropylene, stainless inox 10-stell or another resistant hard plastic material, the ring is made of two parts. On (the detail "Q", page 05/05), the needle is locked, when the needle is inserted in the point/extremity of the syringe (see detail "S", page 05/05), the ring will lock de piston until lock all syringe, locking the needle.

15- The ring has two parts and it permits an good inicial penetration, see (detail "T" on page 05/05), this system has an simple screw.

All claws can have an little limitalion of 2mm into the point, to avoid that the claws go aut of the syringe, man tainning an good locking of the syringe.

CLAIMS/REVINDICATIONS

01-Adiction to the invention "LOCKING AND BLOCKING SYS
TEM FOR DESCARDBLE OR DISPOSAL SYRINGE", is characterized for
a locking system that is acioned by the rubleer's pression
05-from the piston during the aplication, an staple is pushed
by the rubleer and liberate the two claws that are fixed in
their points, the claws are fixed in internal revestment of
the syringe, locking the piston, the claws will perfurate the
internal revestment of the syringe, details on the page 01/05.

10 02-Adiction to the invention "LOCKING AND BLOCKING SYS-
TEM FOR DESCARDBLE OR DISPOSAL SYRINGE", is characterized for
a locking system acioned by the pression from the rubleer ' s
piston during the aplication, one staple is pushed by the
rubleer, the points of the staple are the claws that will
15-lock the piston the staple has in the midle of it's shafts,
two locks like an hook, that are fixed in the little staple,
to not return, the points will be under tension, and when
they are liberated they will be supported in the internal
revestment of the syringe, if there is any attempt of unlo-
20-cking, the claws will perfurate the internal revestment of
the syringe, (details on the page 02/05)

03-Adiction to the invention "LOCKING AND BLOCKING SYS
TEM FOR DESCARDBLE OR DISPOSAL SYRINGE", is characterized for
a pin that join the rubleer and the piston, mantaining a
25-little course, the claws pass throught the pin, when the
syringe is utilized at the end of the aplication, the pression
from the rubleer pushes the rubleer throughout the piston,
liberating the claws that are fixed over the inferior part
syringe, when the operation is finished, the piston is locked,
30-if there's on higher effort to pull the piston, the claws will
perfurate the syringe's internal revestment (details on the
page 03/05).

04-Adiction to the invention "LOCKING AND BLOCKING SYS

TEM FOR DESCARDBLE OR FISPOSAL SYRINGE", is characterized for a system that uses a little ring that fix the claws, the ring is fixed into the points of an staple, this staple is acioned by the pression carried out by the rubleer, at the end of the 05-operation, the piston, the claws will perfurate the syringe revestment, details on the page 04/05.

05-"PERFURATION'S DEVICE OF THE SYRINGE'S RUBLEER", is characterized by one or more pins made of inox steel $\emptyset$ 0,5 mm, to aproximately 0,6 mm in shape of "T", when there is on 10-higher effort to pull the piston from the locked syringes, after it's respective use, the claws will be impulsioned to the rubleer, perfurating it, and invalidating the re-utilization of itself (details on page 04/05, figures "O", "P" and cortex "B-B").

15- 06-LOCKING DEVICE FOR THE NEEDLE IN THE SYRINGE", is characterized for a little ring that stay inside the needle in a furrow, the ring locks the furrow in the point of the syringe, it doesn't permit that the needle ejects from the syringe, details on the page 05/05.

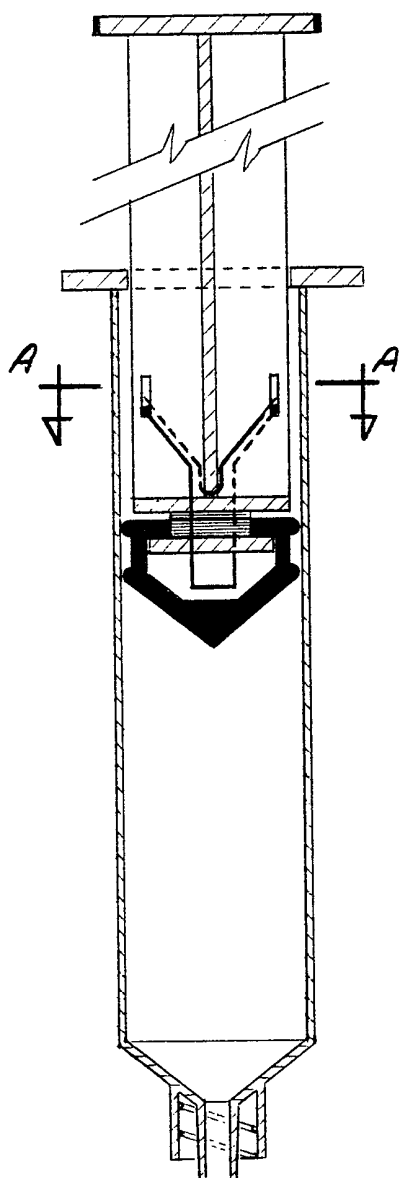


FIG. "A"

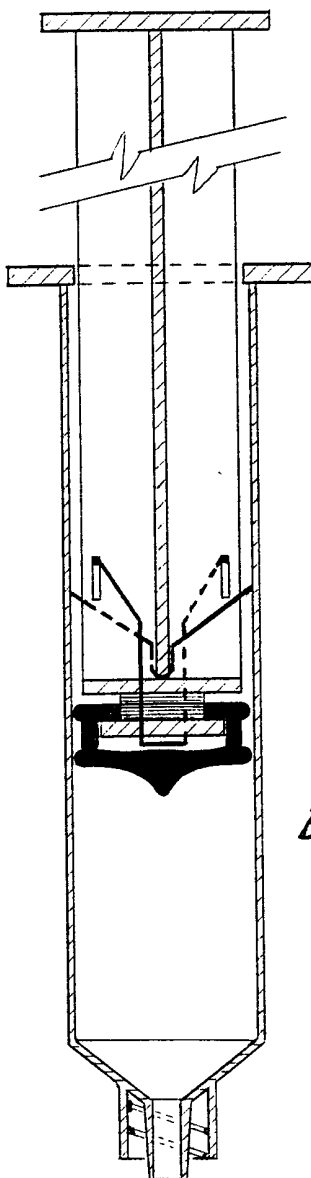


FIG. "B"

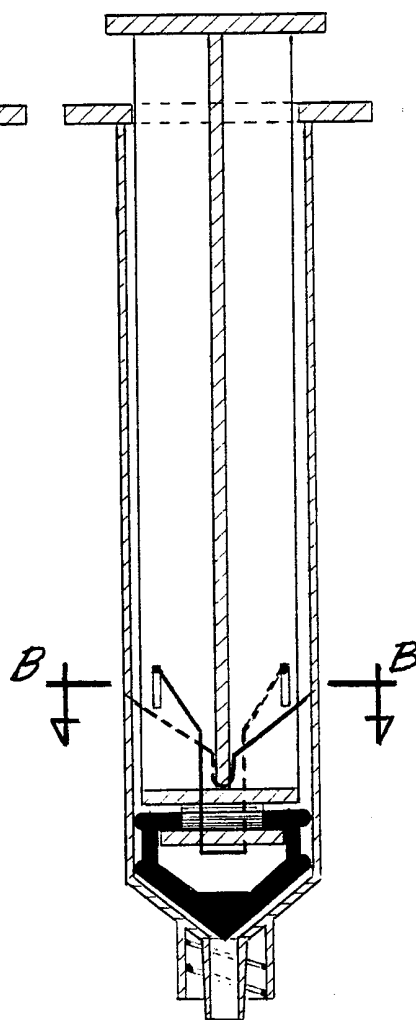
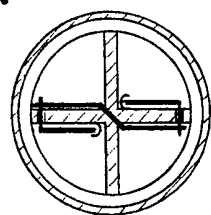
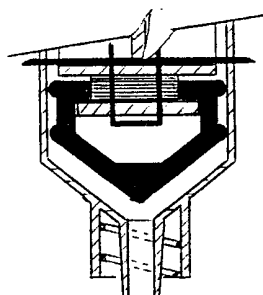


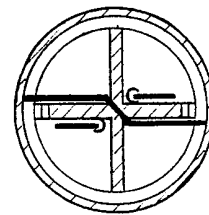
FIG. "C"



CORTEX "A-A"



DET. "D"



CORTEX "B-B"

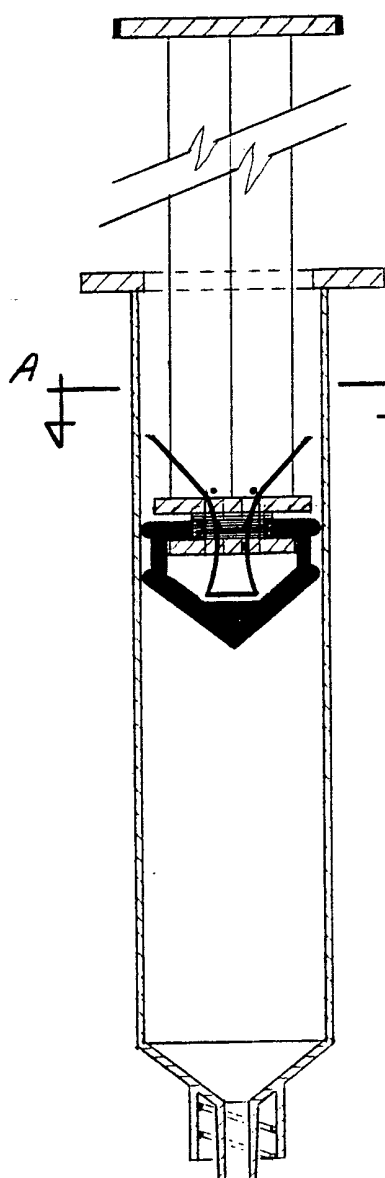


FIG. "E"

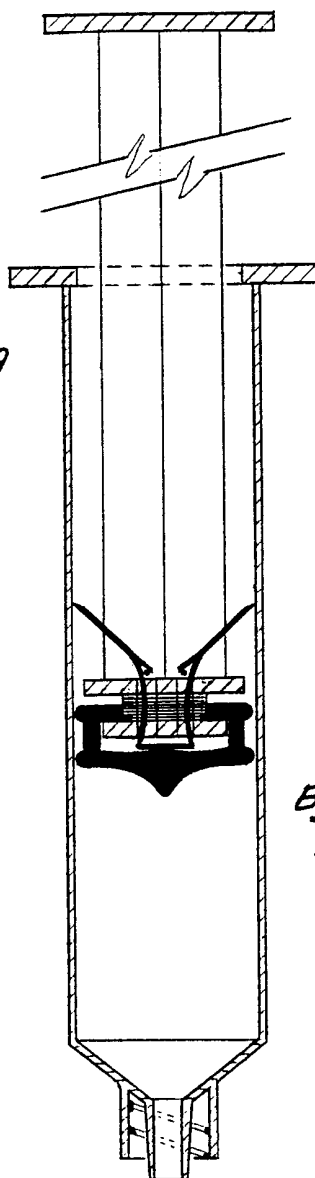


FIG. "F"

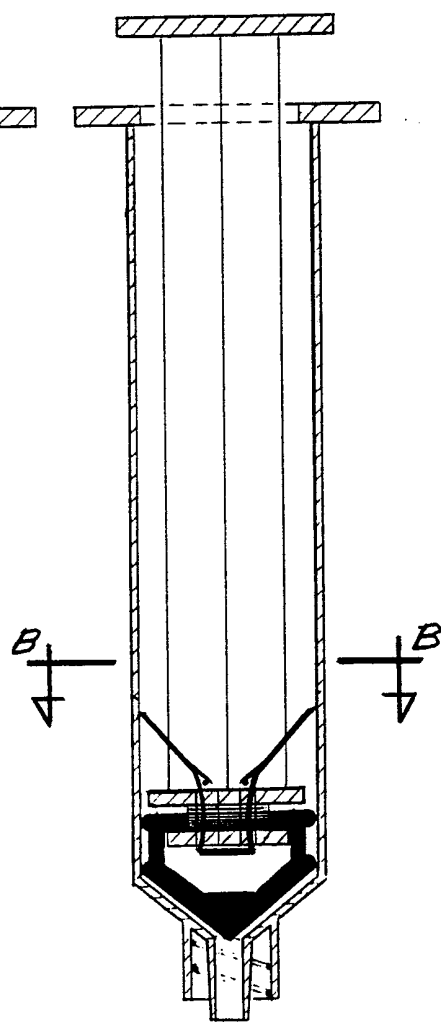
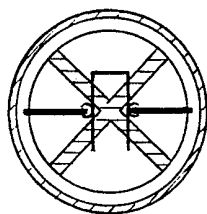
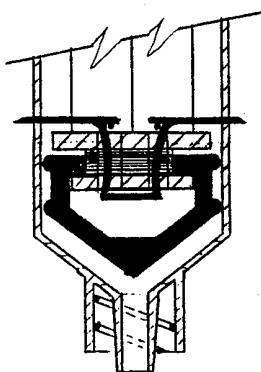


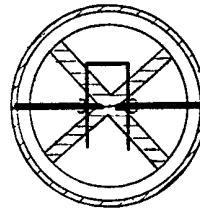
FIG. "G"



CORTEX "A-A"



DET. "H"



CORTEX "B-B"

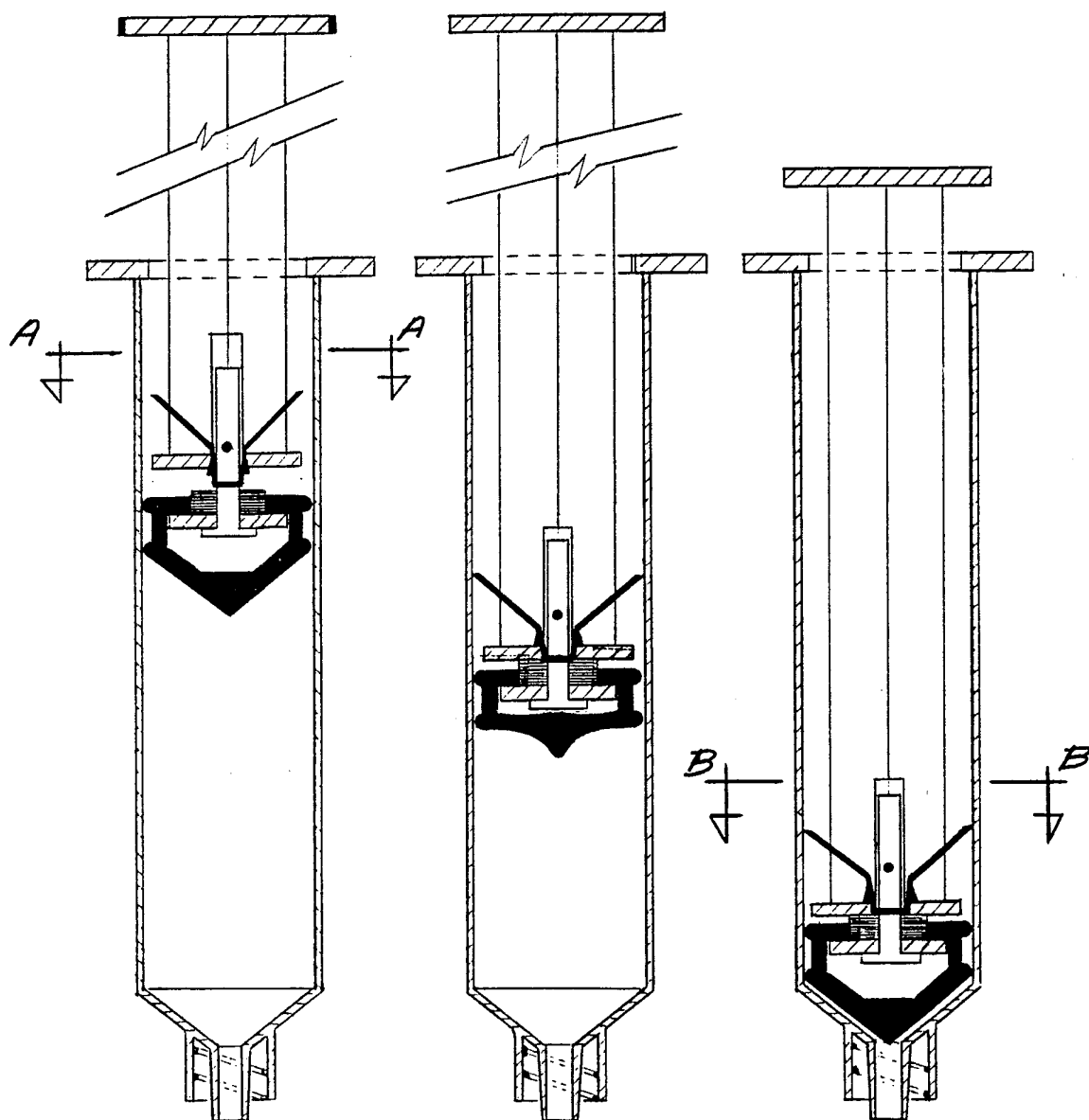
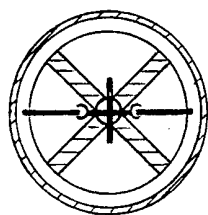


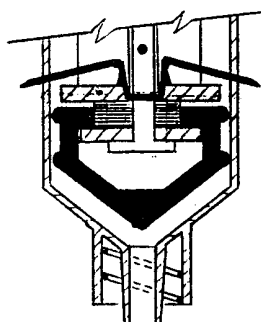
FIG. "I"

FIG. "J"

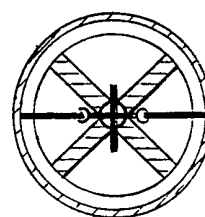
FIG. "K"



CORTEX "A-A"



DET. "L"



CORTEX "B-B"

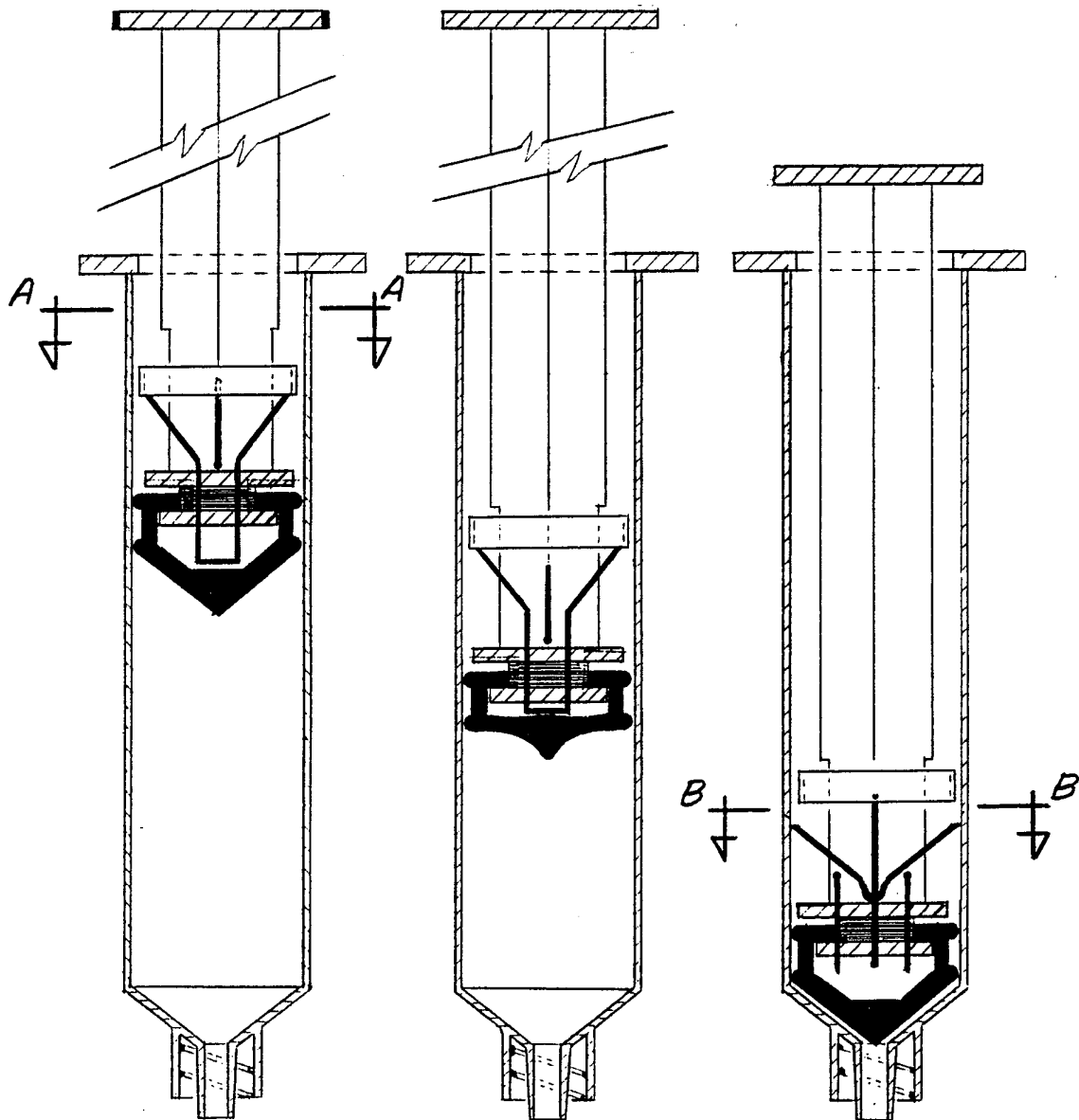
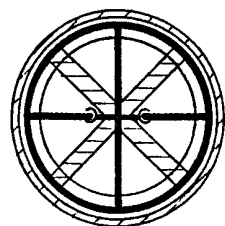


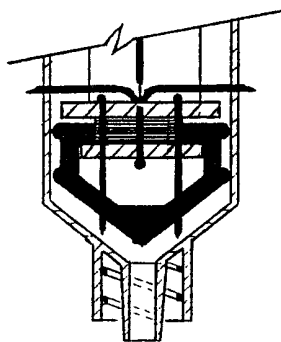
FIG. "M"

FIG. "N"

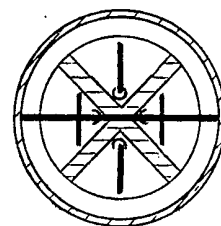
FIG. "O"



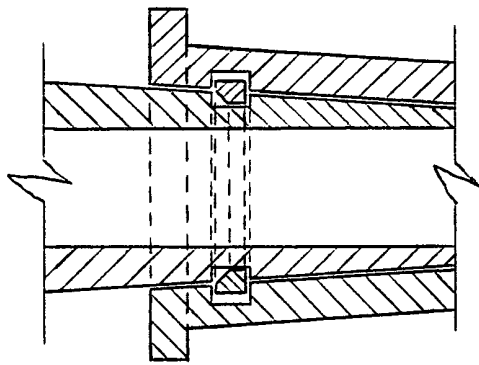
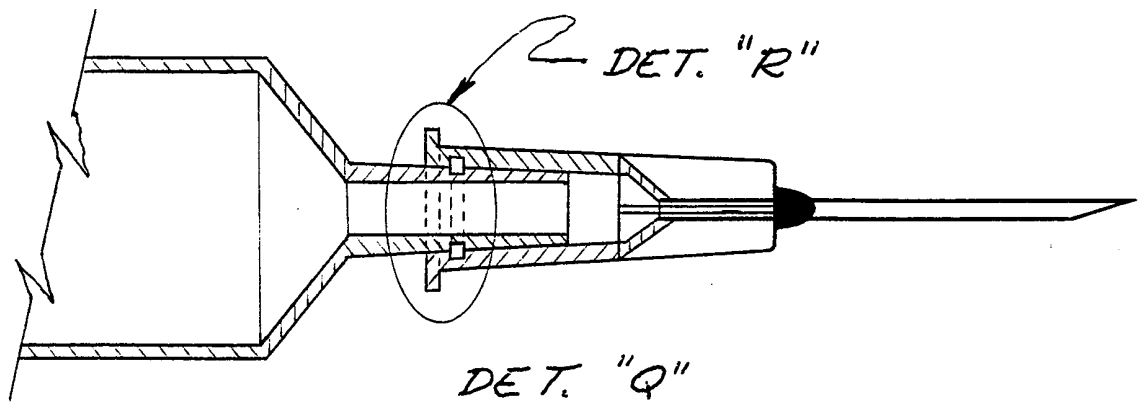
CORTEX "A-A"



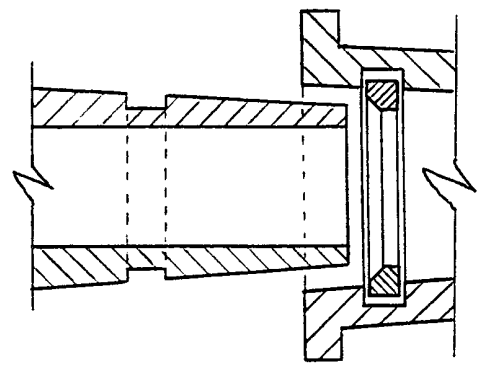
DET. "P"



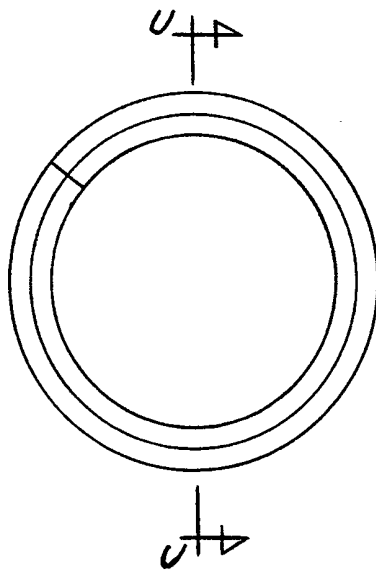
CORTEX "B-B"



DET. "R"



DET. "S"



DET. "T"



CORTEX "U-U"

INTERNATIONAL SEARCH REPORT

International Application No

PCT/BR 98/00011

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61M5/50 A61M5/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 085 640 A (GIBBS) 4 February 1992 see column 14, line 31 - line 45 see column 15, line 27 - line 29 see figures 52-54 ---	1-4
A	US 5 021 047 A (MOVERN) 4 June 1991 see column 7, line 18 - line 38; figures 29-33 ---	1-4
A	WO 90 07949 A (FENET) 26 July 1990 see page 9, line 15 - line 30 see figures 6,7 ---	1
A	US 4 731 068 A (HESSE) 15 March 1988 see column 3, line 55 - line 66 see figures 1-4 -----	4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
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- *G* document member of the same patent family

Date of the actual completion of the international search

13 November 1998

Date of mailing of the international search report

18 07 1999

Name and mailing address of the ISA

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SEDY R.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/BR 98/ 00011

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-4

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-4

non reusable syringe comprising piston locking and syringe barrel
perforating means

2. Claim: 5

perforating means to perforate a piston head

3. Claim: 6

locking ring making part of a connecting means between needle hub and
syringe nozzle.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/BR 98/00011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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