



(22) Date de dépôt/Filing Date: 2006/04/03

(41) Mise à la disp. pub./Open to Public Insp.: 2007/10/03

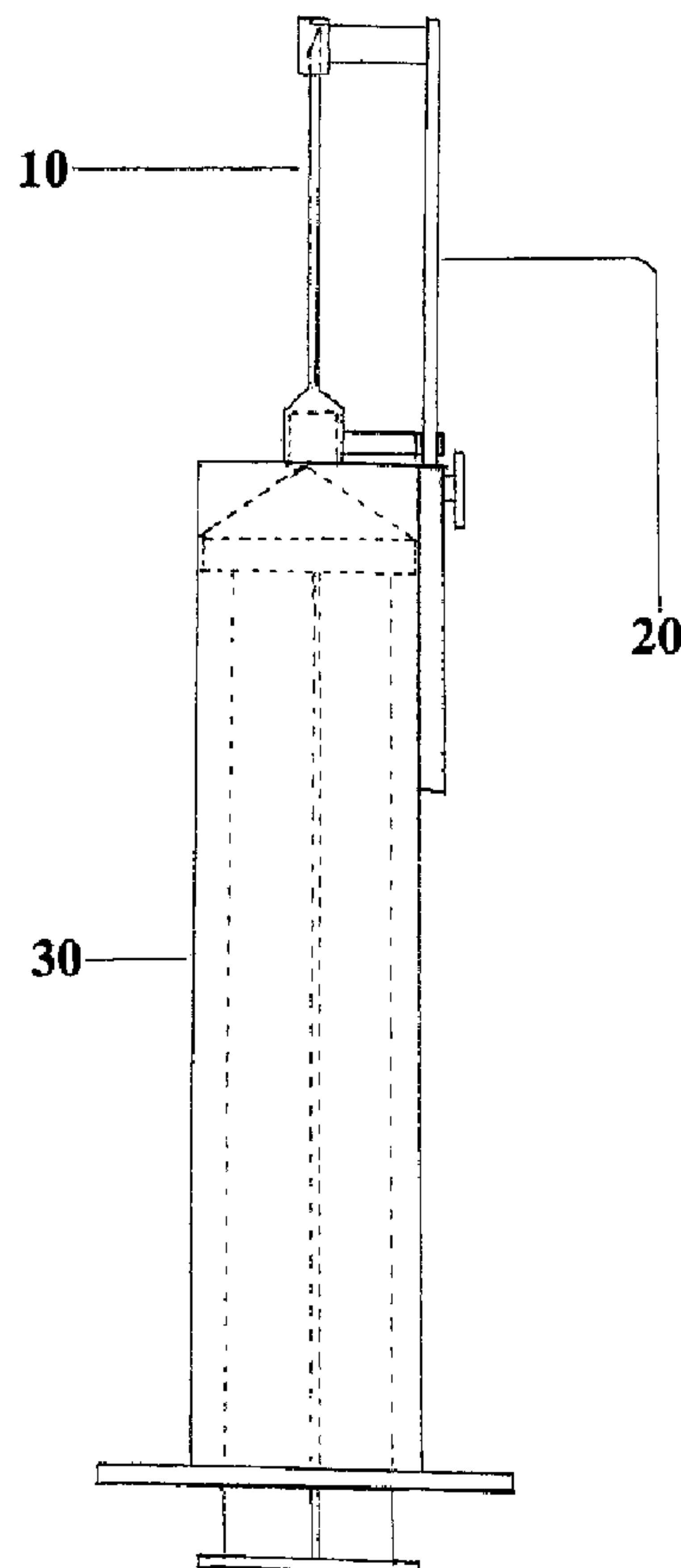
(51) Cl.Int./Int.Cl. *A61M 5/32* (2006.01)

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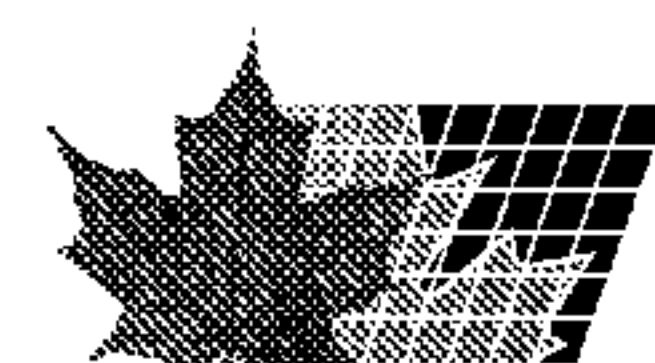
(54) Titre : SYSTEME DE SOUTIEN D'AIGUILLE JETABLE POUR SERINGUE

(54) Title: DISPOSABLE NEEDLE RACK SYSTEM FOR SYRINGE



(57) Abrégé/Abstract:

Disposable needle rack system comprises a needle assembly, a needle rack, and a cylinder with channel, wherein the needle assembly has a Double-T arm for locking and guiding the needle rack; needle rack has one slotted guide with a lock, a T-shaped



(57) **Abrégé(suite)/Abstract(continued):**

tab, a protective end with a protective tab; and the cylinder has a channel which guides and holds the needle rack. After using the syringe, hold the cylinder and use thumb to push on the needle rack's T-shaped tab, slide the rack forward and lock the needle assembly. Then push the needle rack further and remove the needle rack and the needle assembly together from the cylinder.

## ABSTRACT

Disposable needle rack system comprises a needle assembly, a needle rack, and a cylinder with channel, wherein the needle assembly has a Double-T arm for locking and guiding the needle rack; needle rack has one slotted guide with a lock, a T-shaped tab, a protective end with a protective tab; and the cylinder has a channel which guides and holds the needle rack.

After using the syringe, hold the cylinder and use thumb to push on the needle rack's T-shaped tab, slide the rack forward and lock the needle assembly. Then push the needle rack further and remove the needle rack and the needle assemble together from the cylinder.

## DISPOSABLE NEEDLE RACK SYSTEM AND METHOD OF USE

## BACKGROUND OF INVENTION

The Retractable sheath or retractable needles have existed in many safety syringe designs. Those designs cannot safely and easily separate the hazardous needle from the less-hazardous cylinder and store the hazardous needle properly. Thus it will be not easy for safe disposal and processing of the individual component.

The patient's body fluids and blood inevitably contaminates the hypodermic needle when the needle enters into a patient's body. After the needle is used, the needle brings a risk to physicians, nurses, and other health care personnel because the needle might transmit an infection or disease to such personnel if it were to accidentally puncture them. There are more than 25 pathogens which have been reportedly transmitted from needlesticks. The most serious are the transmission of Hepatitis C (HCV), Hepatitis B (HBV), and HIV. Improved syringes can reduce the risk of needlesticks.

## SUMMARY OF INVENTION

One aspect of this invention is a disposable needle rack system for syringes comprising: an needle assembly, a needle rack, and a cylinder with channel, wherein the needle assembly is removable; and the needle rack is moveable and stores the needle assembly and is disposable after use; and the cylinder, with channel, that the needle assembly attaches to.

Another aspect of this invention is the needle assembly, which has one "Double-T arm" that fits into needle rack's centre track.

Another aspect of this invention is the needle assembly, which can be guided, locked and removed from the syringe by Double-T arm at the base of the needle assembly. The

Double-T arm will allow the guide to be locked in the covered position.

Another aspect of this invention is that the needle rack is open, contoured to the profile of the cylinder and disposable, and is comprised of a protective end with a protective tab, a T-shaped tab, a slot, and a lock.

Another aspect of this invention is that the needle rack holds the top of the needle in the protective end. The protective end has a protective tab which, when the needle is retracted, drops to cover the hole through which the needle is guided. This prevents the needle from being slid back through the hole accidentally.

Another aspect of this invention is that the needle rack slides forward, guided by a channel on cylinder.

Another aspect of this invention is that the needle rack is easier to slide by pushing on T-shaped tab which has a grooved surface on the top on the bottom of the needle rack when moving the needle rack into the safe position.

Another aspect of this invention is that the needle rack slides and locks the needle assembly and is removed together with the assembly from the cylinder.

Another aspect of this invention is that the cylinder has one channel guiding and holding the needle rack.

Another aspect of this invention is the ability to store the needle safely, comprising: sliding a needle rack forward and locking the needle assembly, then removing the needle rack and the needle assembly from the cylinder, and finally removing the needle safely and storing it and the cylinder for disposal or processing.

## BRIEF DESCRIPTION OF DRAWINGS

For understanding this invention better, reference may be made to the accompanying

drawings in which:

FIG 1 is a sectional view of a disposable needle rack system for syringes comprising: a needle assembly, a needle rack, and a cylinder with channel, wherein the needle assembly is removable; and the needle rack is moveable and stores the needle assembly and is disposable after use; and the cylinder, with channel, that the needle assembly attaches to.

FIG 2 is a side view of the needle assembly.

FIG 3 is an enlarged top view of the needle assembly.

FIG 4 is an enlarged 3D view of the needle assembly.

FIG 5 is a side view of the needle rack.

FIG 6 is a top view of the needle rack.

FIG 7 is an enlarged front view of the needle rack.

FIG 8 is an enlarged 3D sectional view of the needle rack.

FIG 9 is an enlarged 3D sectional view of the protective end with an open protective tab when the needle is in the exposed position.

FIG 10 is an enlarged 3D sectional view of the protective end with a close protective tab when the needle is in the covered position.

FIG 11 is a sectional view of the cylinder with channel.

FIG 12 is a top view of the cylinder with channel.

FIG 13 is a 3D sectional view of the cylinder with channel.

FIG 14-16 illustrates the method of use for the disposable needle rack system.

## DETAILED DESCRIPTION

The following detailed description outlines specific aspects of the invention in order to provide a thorough understanding of it and its uniqueness.

As show in FIG. 1, the syringe with the disposable needle rack system includes a needle assembly 10, a needle rack 20, and a cylinder with channel 30. There is a removable needle rack 20 that is contoured to the profile of the cylinder 30 and stores the needle assembly 10.

FIG 2, FIG 3, FIG 4 are the views of the needle assembly comprised of a needle 11, a Double-T arm 12 that fits into the needle rack's centre track 23 ,shown in FIG 6, FIG 8,. The needle assembly can be guided, locked and removed from the syringe by Double T-arm 12 at the base of the needle assembly. The Double-T arm 12 will allow the guide to be locked in the covered position.

FIG 5, FIG 6, FIG7, FIG 8 are the views of the needle rack. The needle rack is open, contoured to the profile of the cylinder and disposable, and is comprised of a protective end 21 with protective tab 24, a T-shaped tab 22, a slot 23, and a lock 26 by means of two bumps 25 at the bottom of the slot and on the inside of the slot.

FIG 9 is the enlarged view of the protective end 21 with an open protective tab 24. The protective end 21 has a protective tab 24 which, when the needle 11 is exposed, is raised by the needle.

FIG 10 is the enlarged view of the protective end 21 with a close protective tab 24. The protective end 21 has a protective tab 24 which, when the needle rack slides forward and the needle 11 is retracted, drops to cover the hole through which the needle is guided. This

prevents the needle from be slid back through the hole accidentally. The protective tab 24 drops into position by means of elastic pressure where it is attached to the protective end 21.

FIG 11, FIG 12, FIG 13 are the views of the specially designed cylinder including a barrel 31, which stores the fluid to be injected, with the channel 32, which guides and holds the needle rack 20, along its length.

The method of removal of the disposable needle rack system –

STEP 1 - FIG 14: After the needle has been removed from the patient the needle rack 20 is still in the retracted position. The first step is to apply pressure to the T-shaped tab 22, shown in FIG 5, FIG 6, FIG 7, FIG 8, on the top of the rack and slide the rack into the extracted position, as shown in FIG 15, until the sticks lock into position at the bottom of the guide slot 23, shown in FIG 6, FIG 8, and the protective tab 24, shown in FIG 9, FIG 10, drops to cover the hole through which the needle is guided.

STEP 2 – FIG 15: The needle rack 20 has been extracted and safely locked into position with the tip of the needle inside of the protective end cap 21 and the protective tab 24, shown in FIG 10, has already dropped to cover the hole through which the needle is guided. The protective tab prevents the needle from be slid back through the hole accidentally.

STEP 3 – FIG 16: The needle assembly 10 and the needle rack 20 are removed from the cylinder 30 after pushing on the T-shaped tab further. After the needle assembly 10 and the needle rack 20 have been separated they may both be disposed of in their designated,

individual disposal containers. Ideally this will allow for specific and unique waste handling treatments for both parts of the syringe.

## CLAIMS

1. Disposable needle rack system for syringes comprising: a needle assembly, a needle rack, and a cylinder with channel , wherein the needle assembly is removable ; and the needle rack is moveable and stores the needle assembly and is disposable after use; and the cylinder, with channel, that the needle assembly attaches to.
2. The system of claim 1, wherein the needle assembly has one “Double-T arm” that fits into the needle rack’s centre track. Henceforth referred to as the “T-arm”.
3. The system of claim 2, wherein the needle assembly can be guided, locked and removed from the syringe by T-arm at the base of the needle assembly. The T-arm will allow the guide to be locked in the covered position.
4. The system of claim 1, wherein the needle rack is open, contoured to the profile of the cylinder and disposable, and is comprised of a protective end with protective tab, a T-shaped tab, a slot, and a lock.
5. The system of claim 4, wherein the needle rack holds the top of the needle in the protective end. The protective end has a protective tab which, when the needle is retracted, drops to cover the hole through which the needle is guided. This prevents the needle from being slid back through the hole accidentally.
6. The system of claim 5, wherein the protective tab drops into position by means of elastic pressure where it is attached to the protective end.
7. The system of claim 4, wherein the needle rack slides forward, guided by a built-in channel on the cylinder. The T-shaped tab has a grooved surface on the top for pushing the slide more easily when moving the needle rack into the safe position.
8. The system of claim 4, wherein the needle assembly locks by means of two bumps at the

bottom of the slot and on the inside of the slot.

9. The system of claim 4, wherein the needle rack slides and locks the assembly and is removed together with the assembly from the cylinder.
10. The system of claim 1, wherein a specially designed cylinder with a built-in channel along its length.
11. The system of claim 10, wherein the channel guides and holds the needle rack.
12. This invention has the ability to remove and store the needle safely, comprising: sliding a needle rack forward and locking the needle assembly, then pushing the needle rack further and removing the needle assembly from the cylinder, and finally removing the needle safely and storing it and the cylinder for disposal or processing.

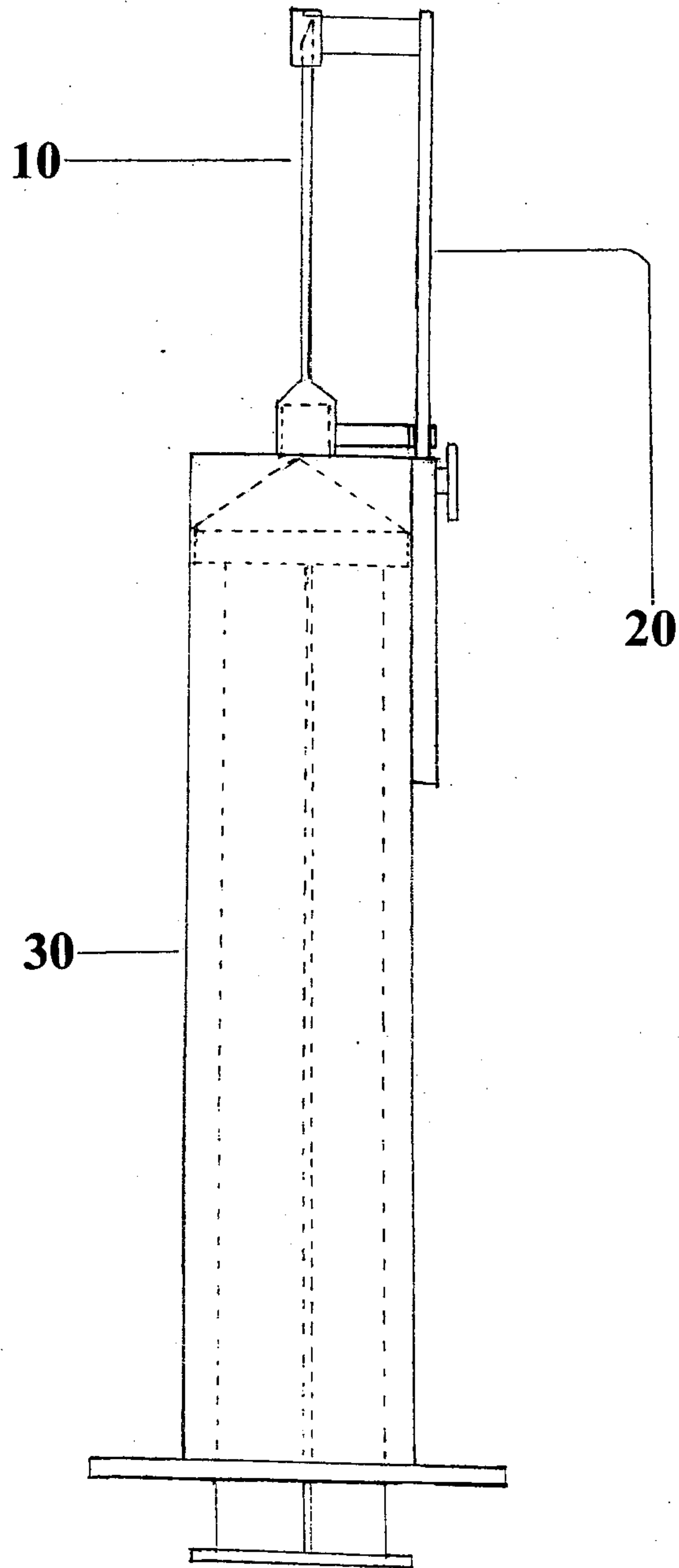


FIG 1

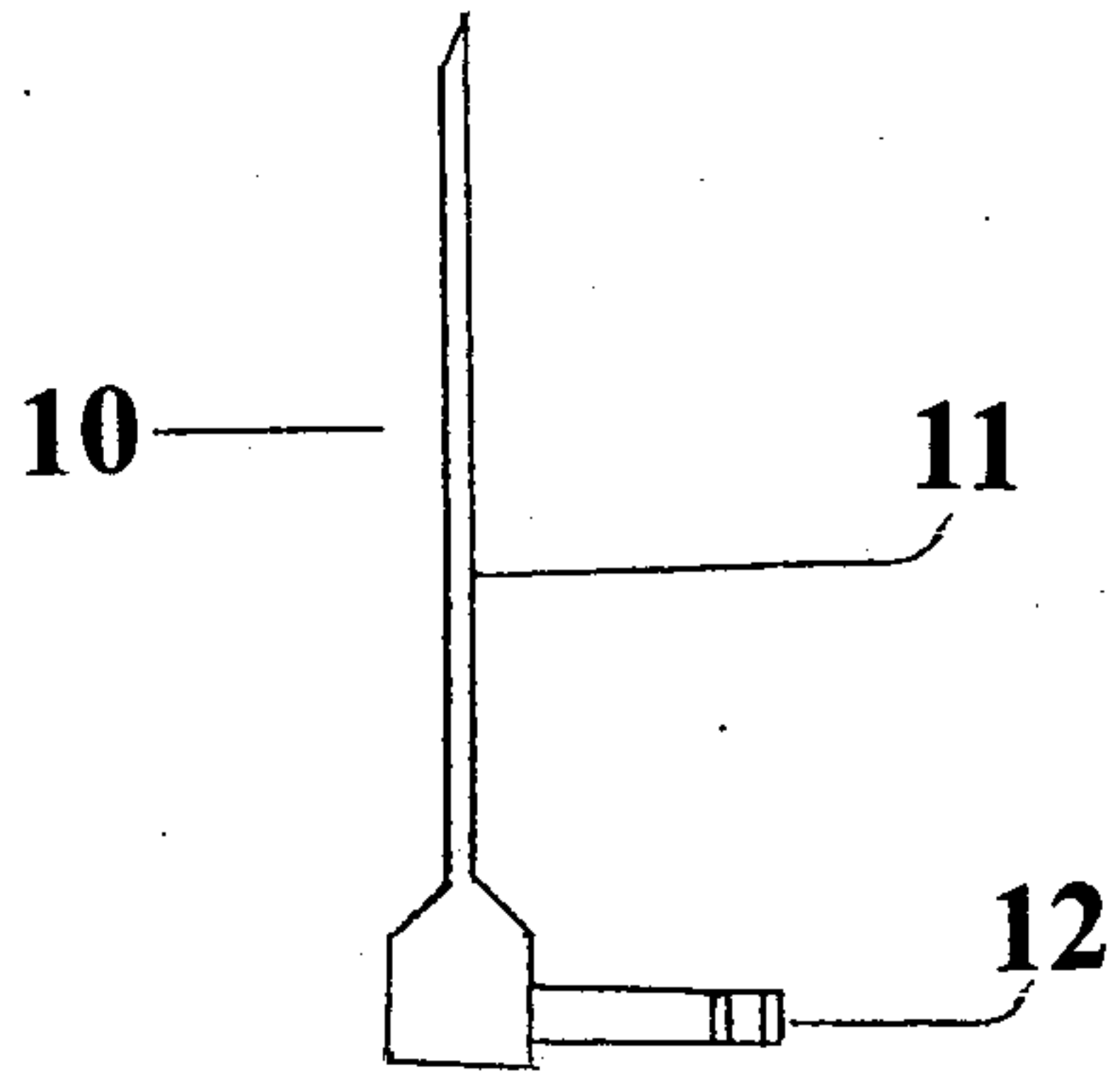


FIG 2

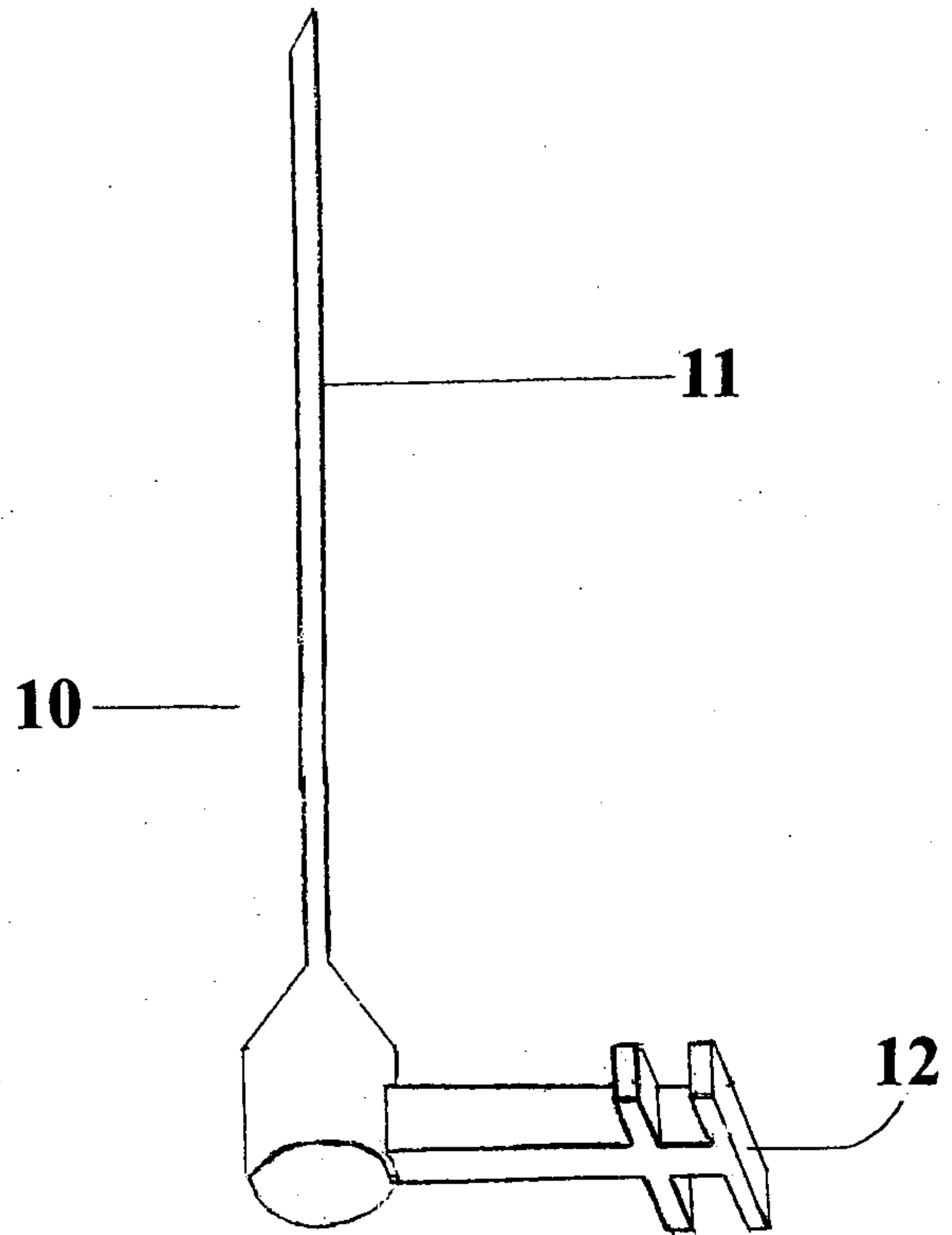


FIG 4

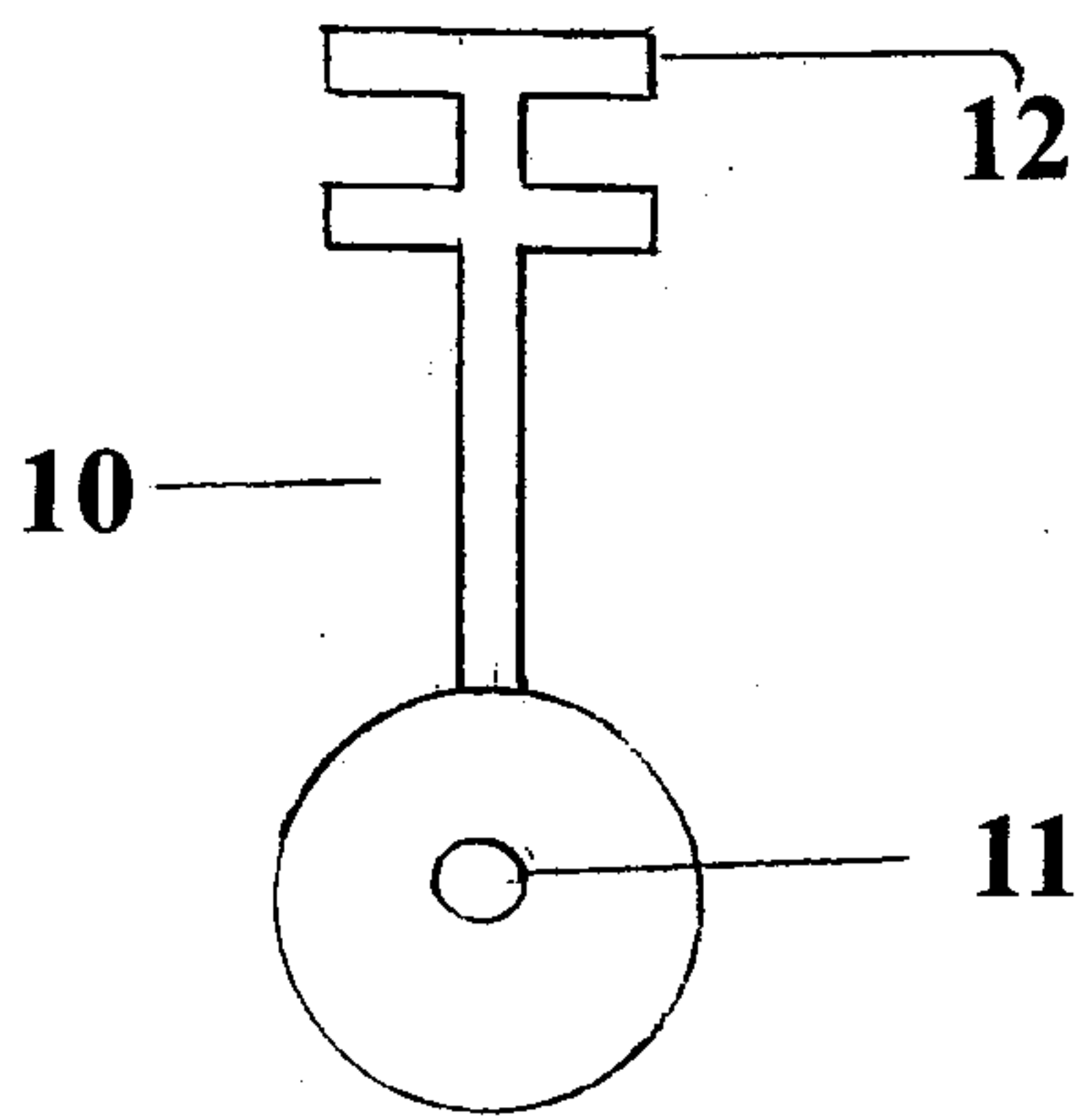


FIG 3

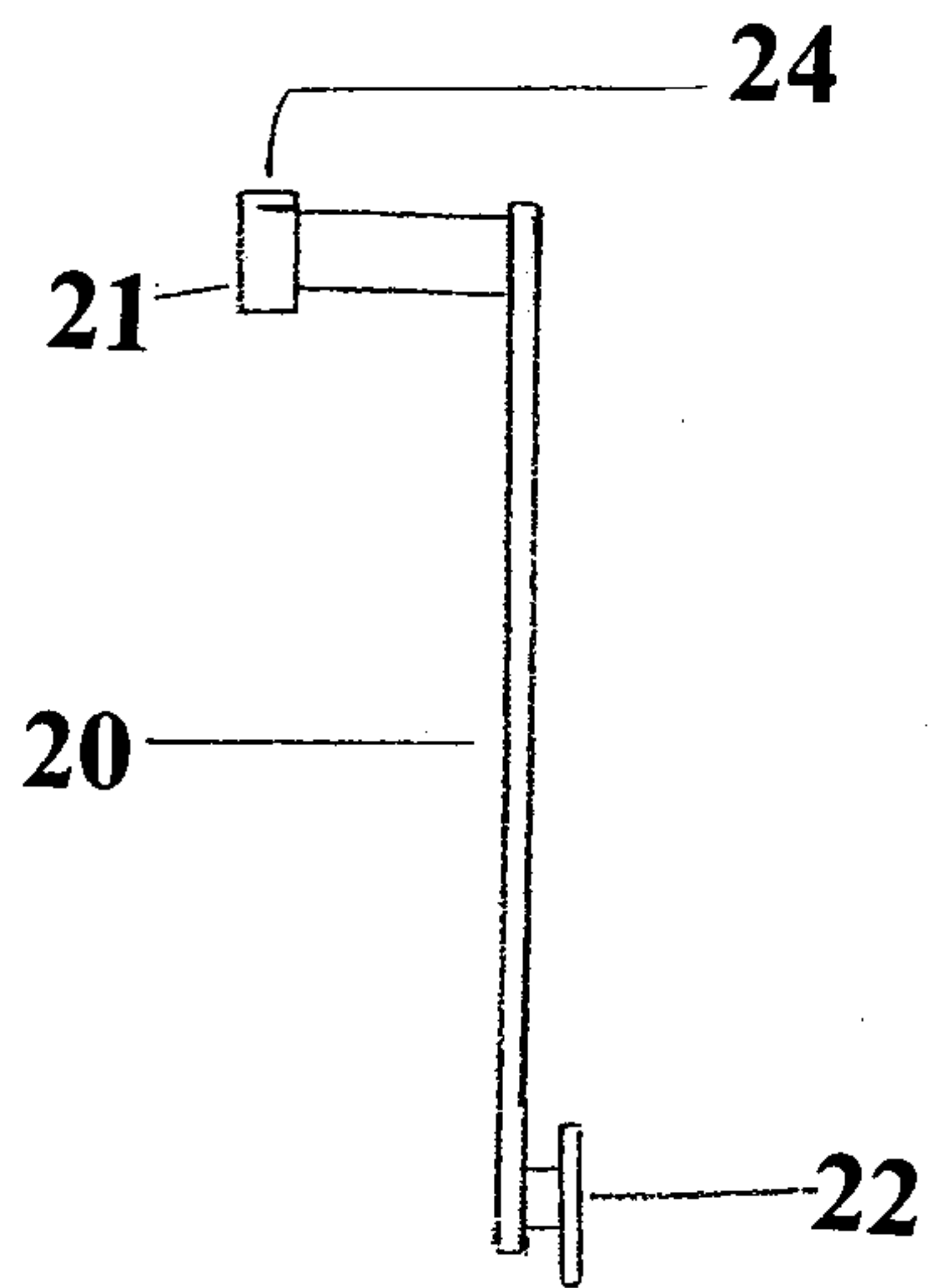


FIG 5

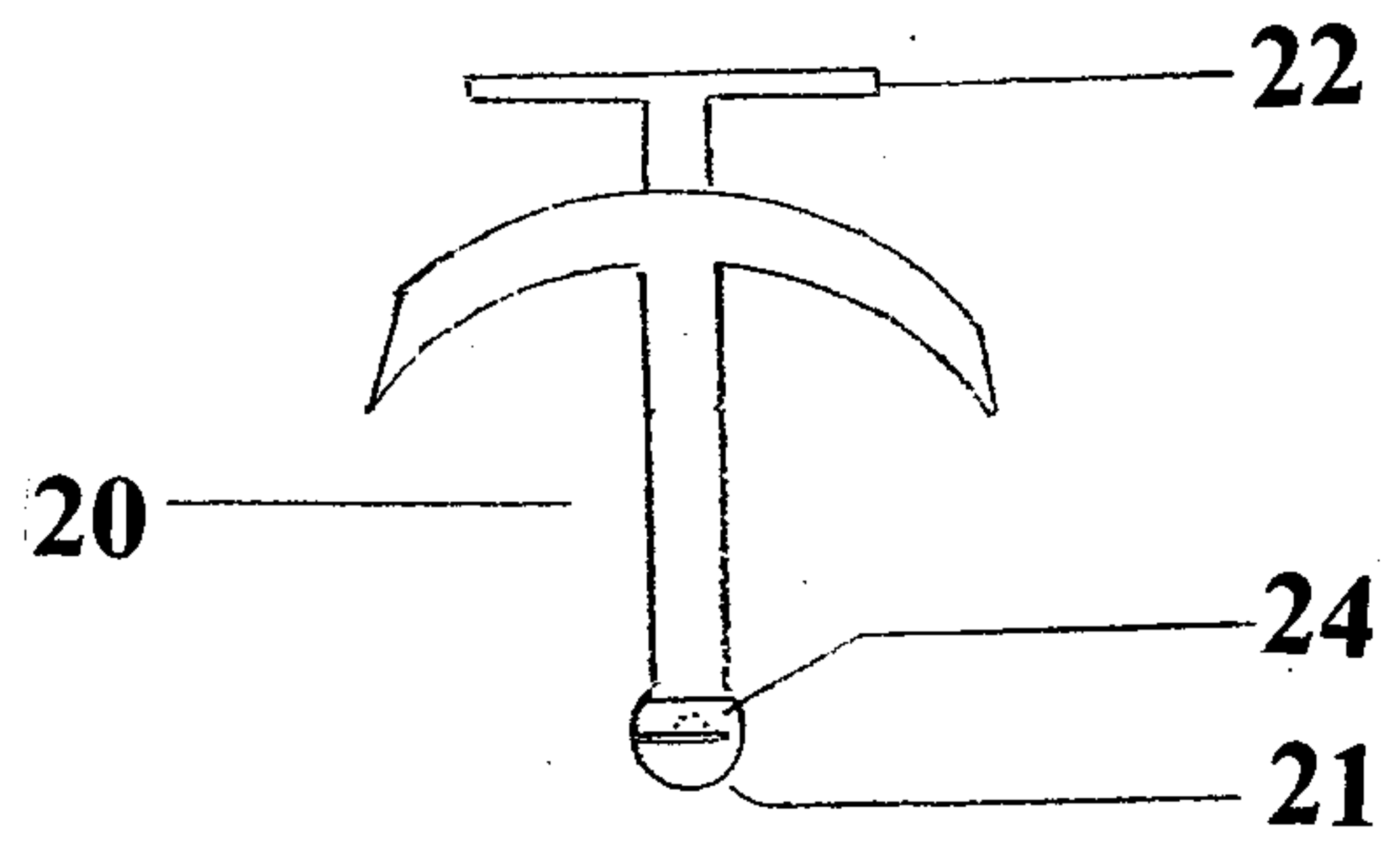


FIG 7

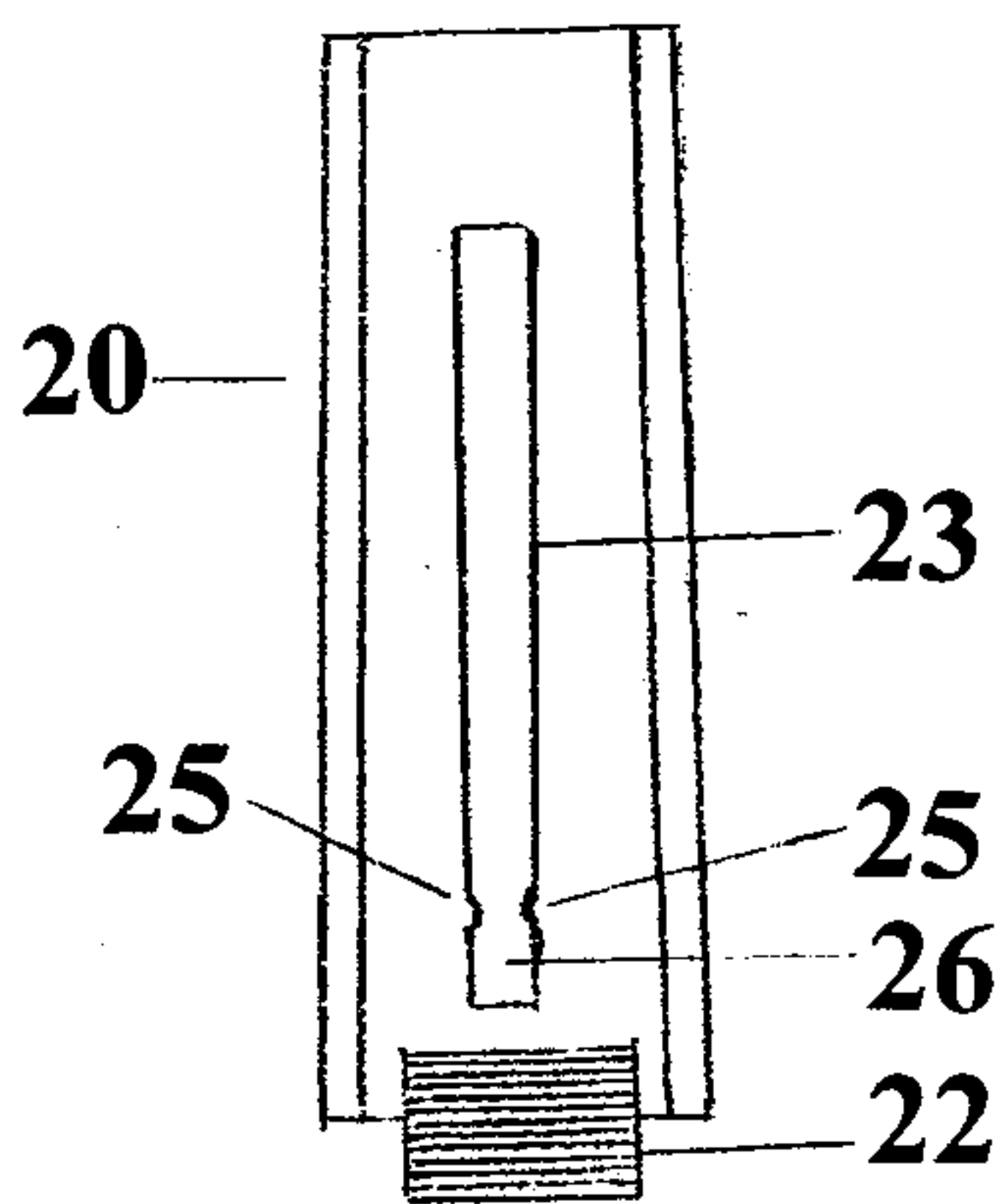


FIG 6

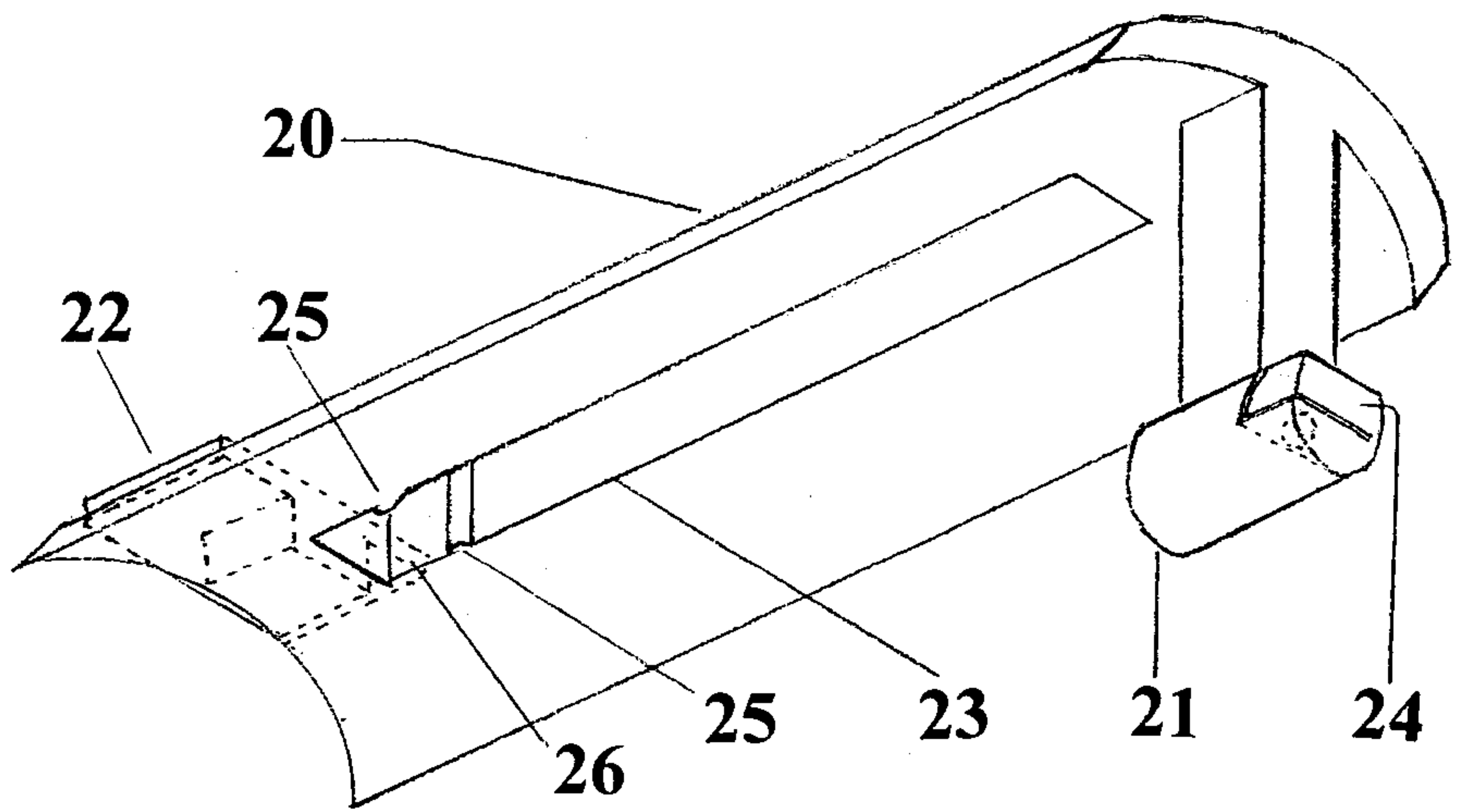


FIG 8

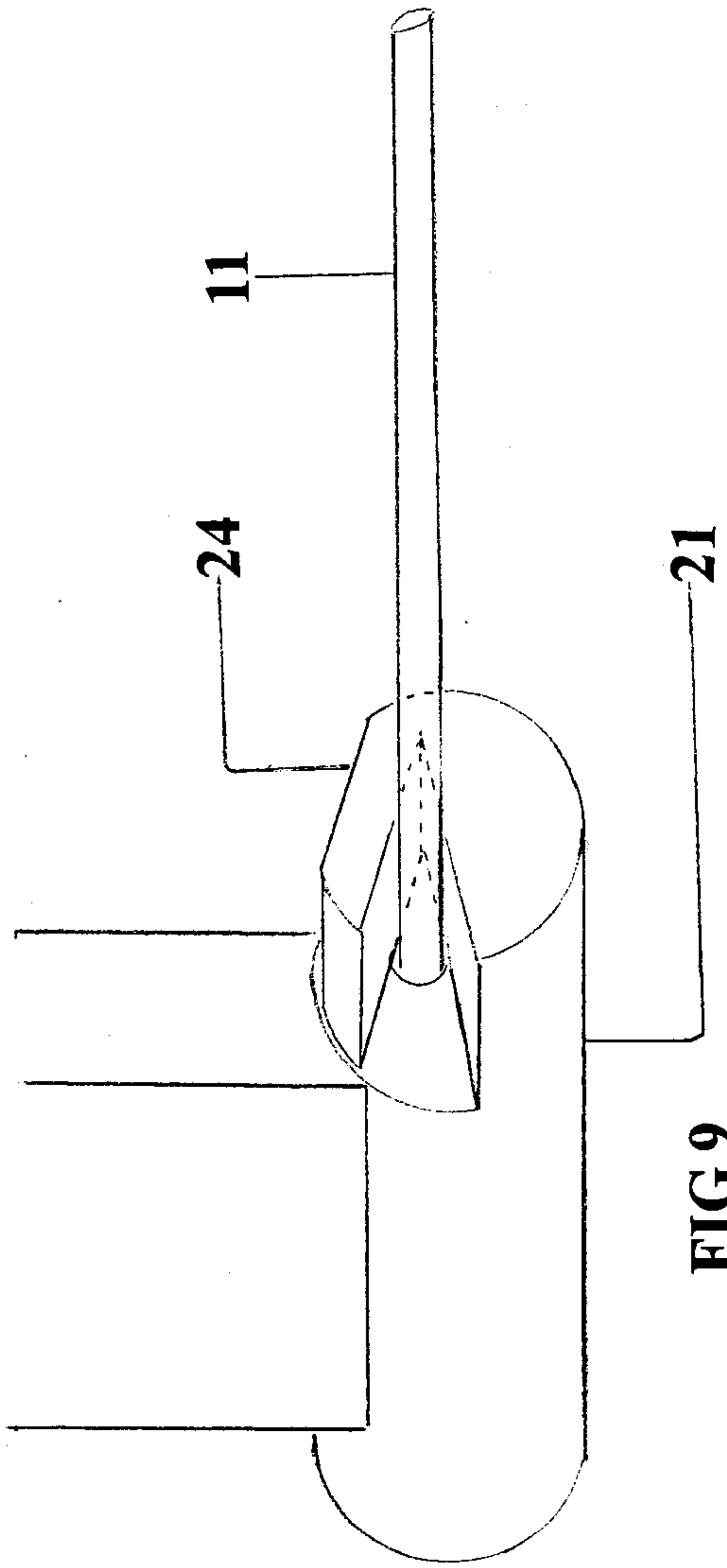


FIG 9

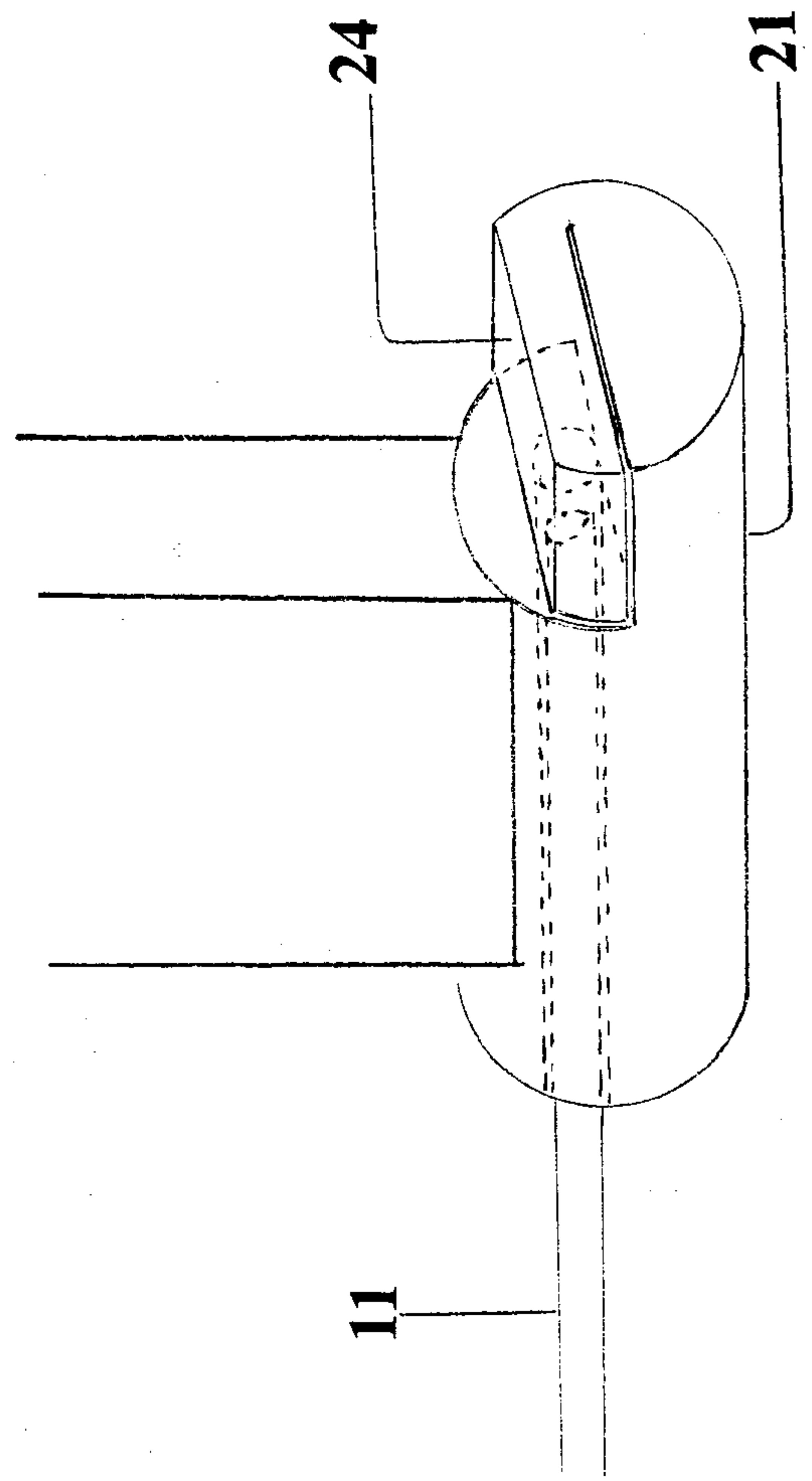
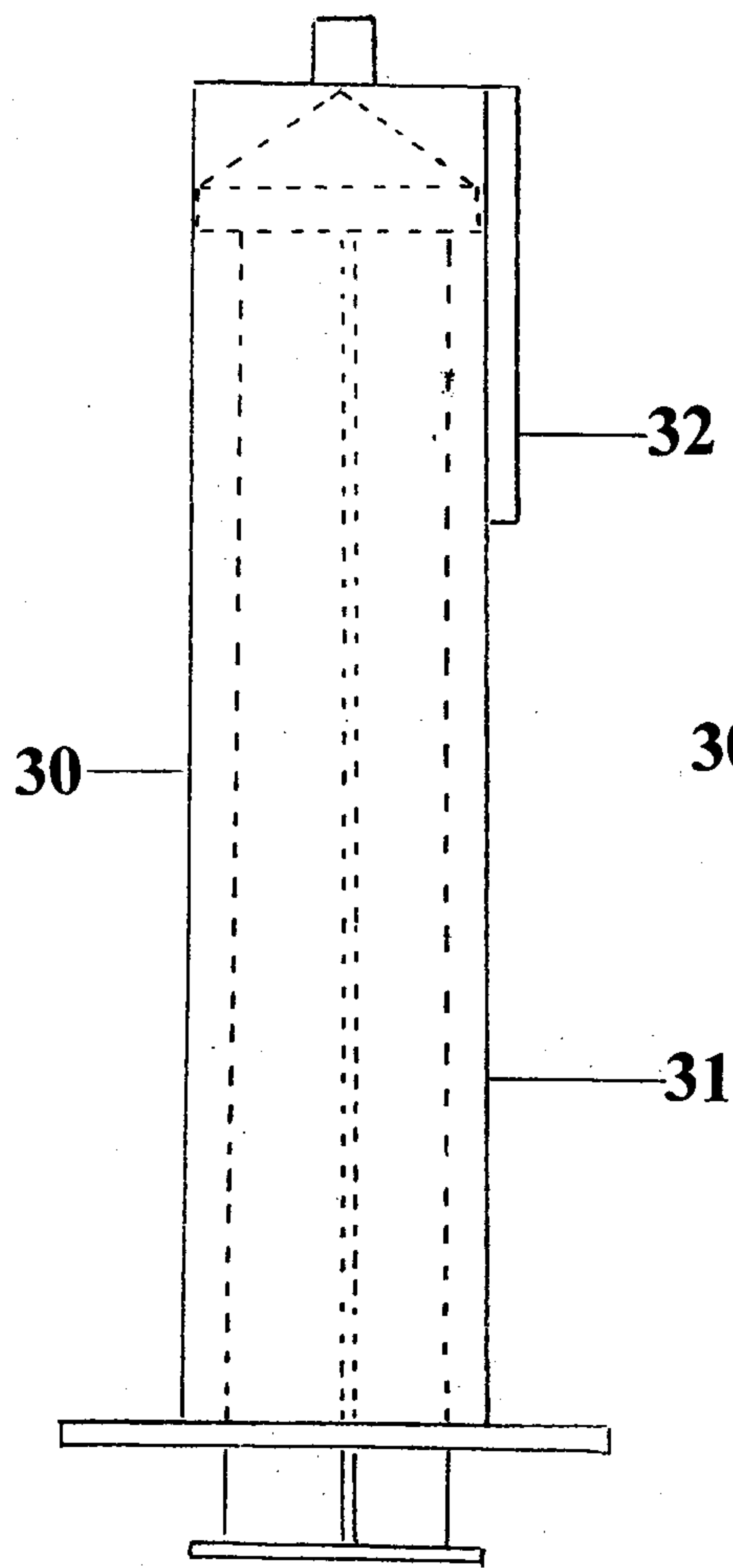
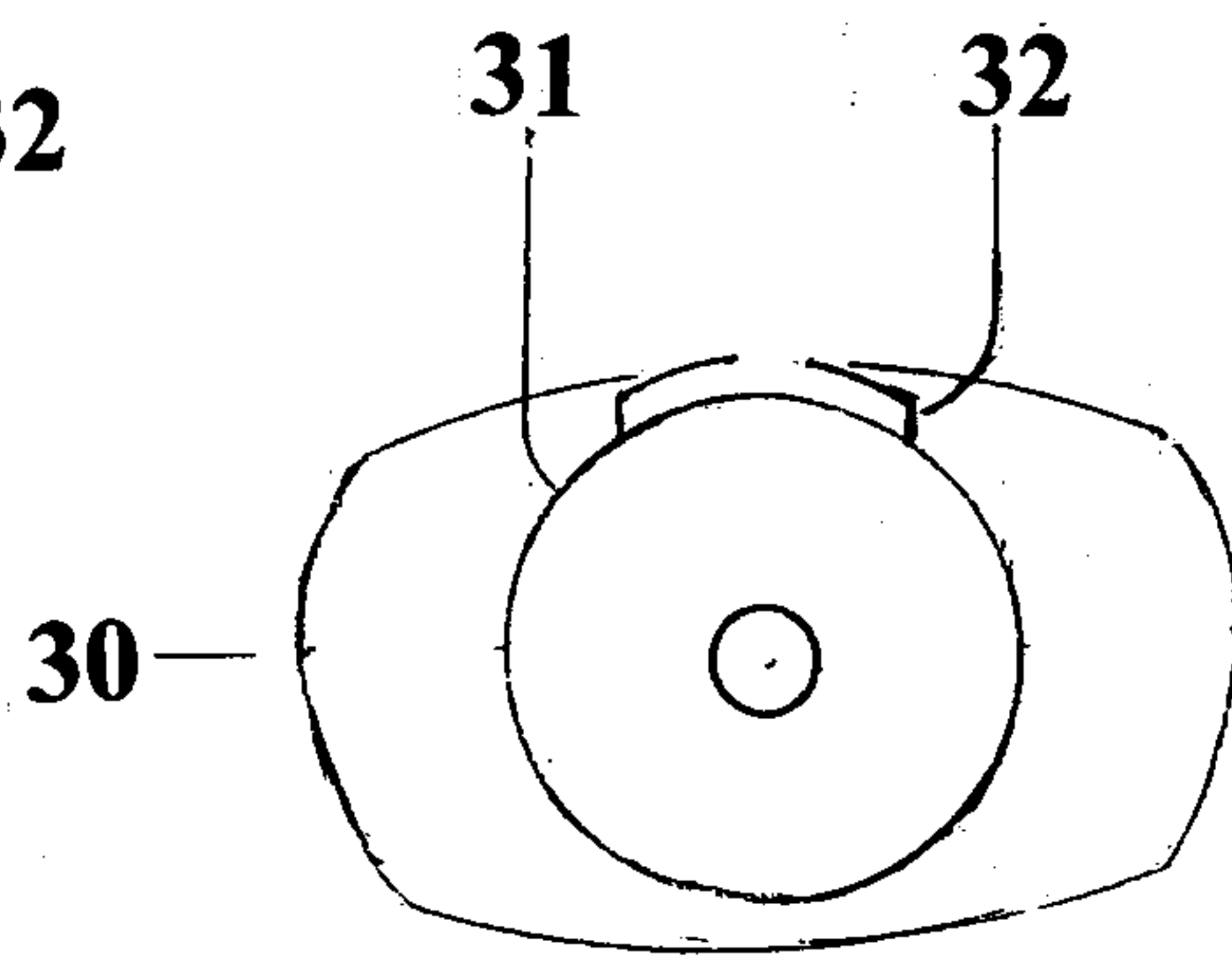


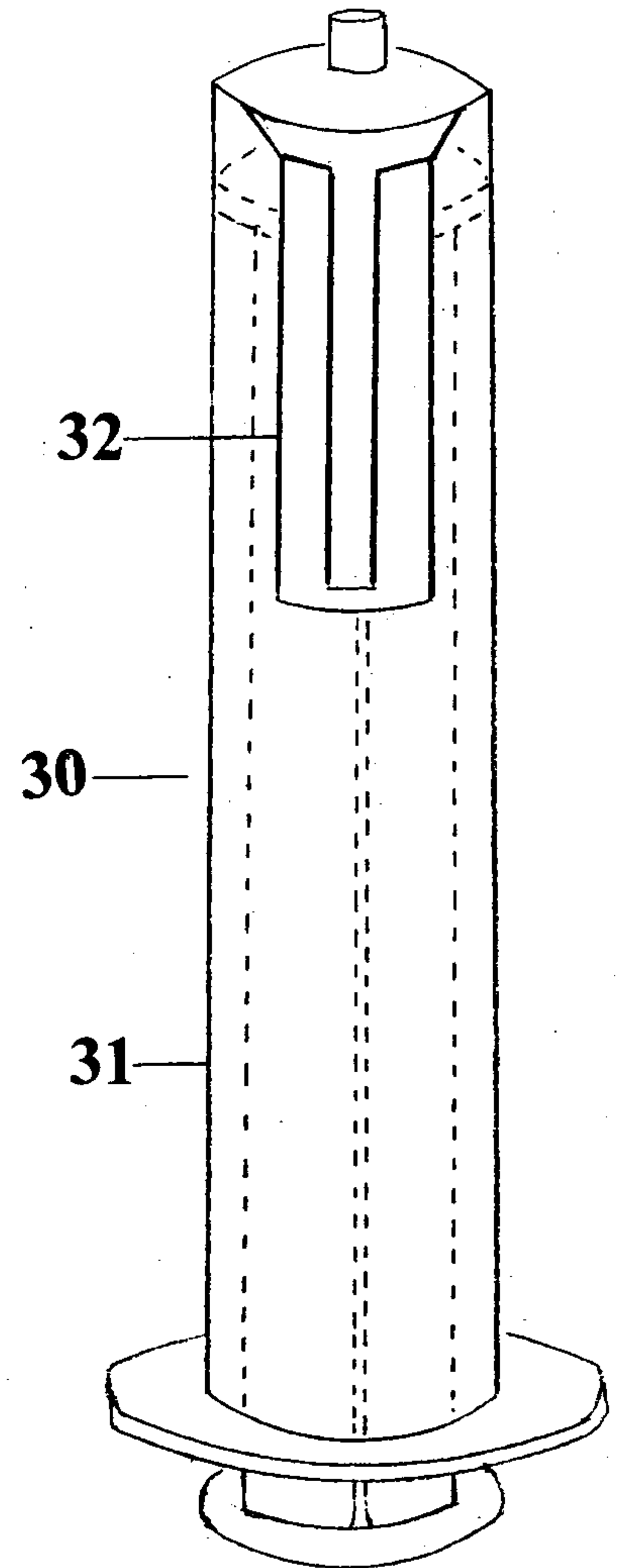
FIG 10



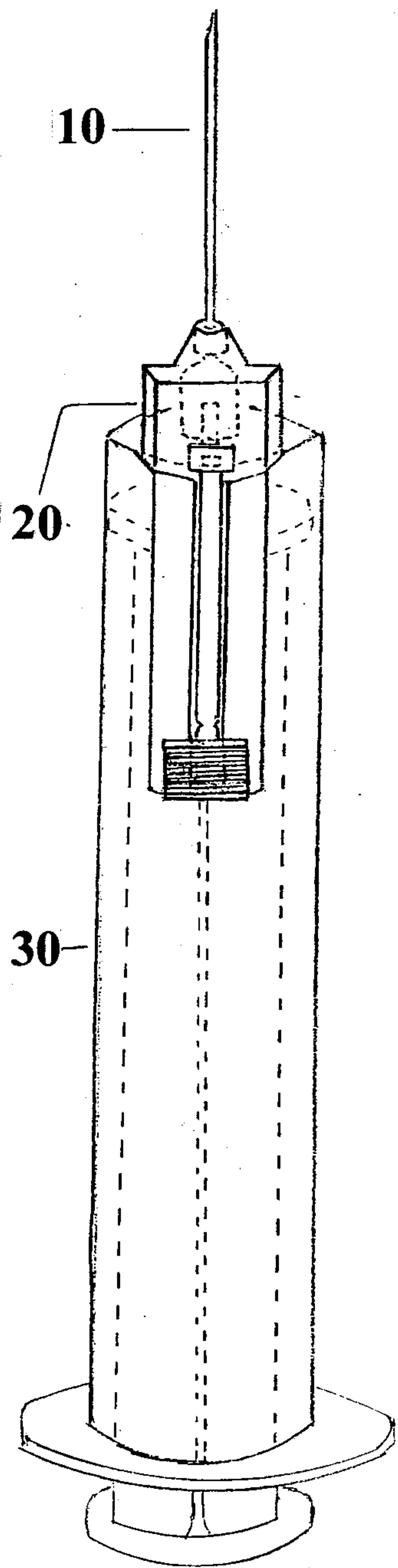
**FIG 11**



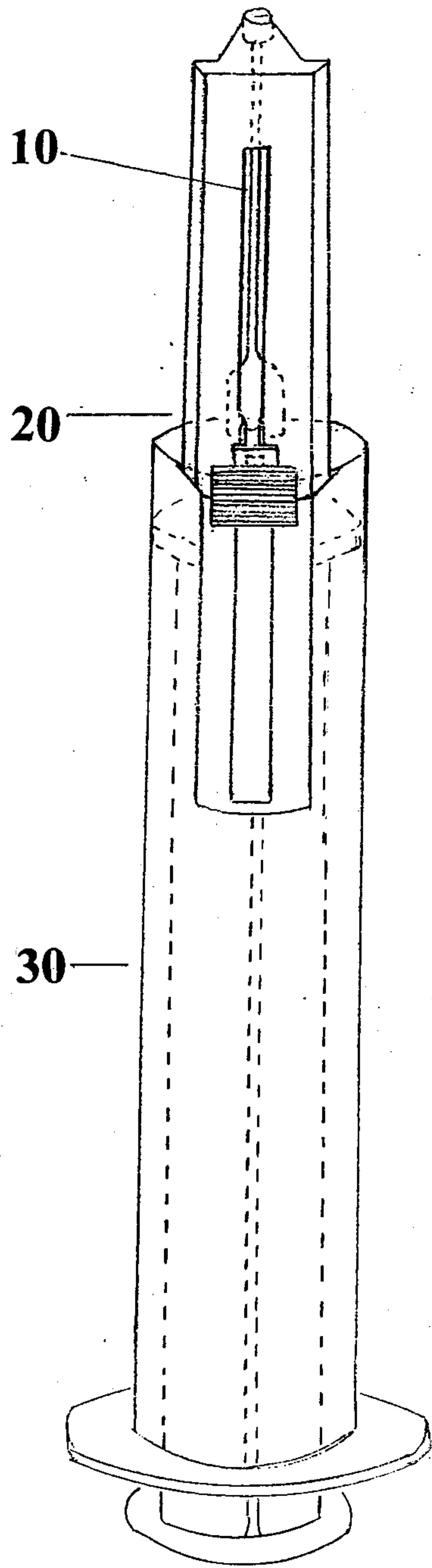
**FIG 12**



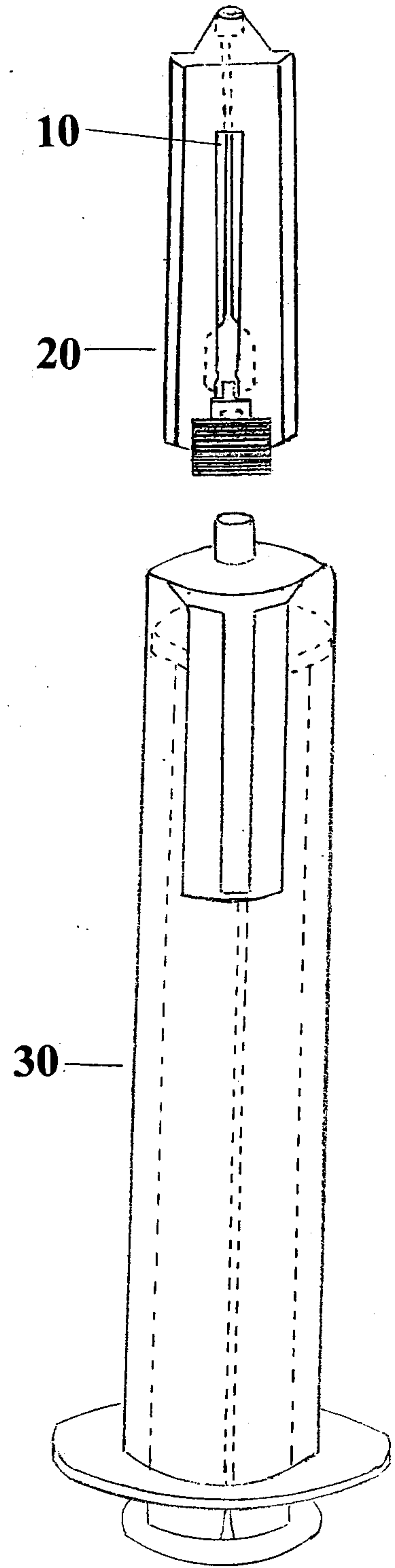
**FIG 13**



**FIG 14**

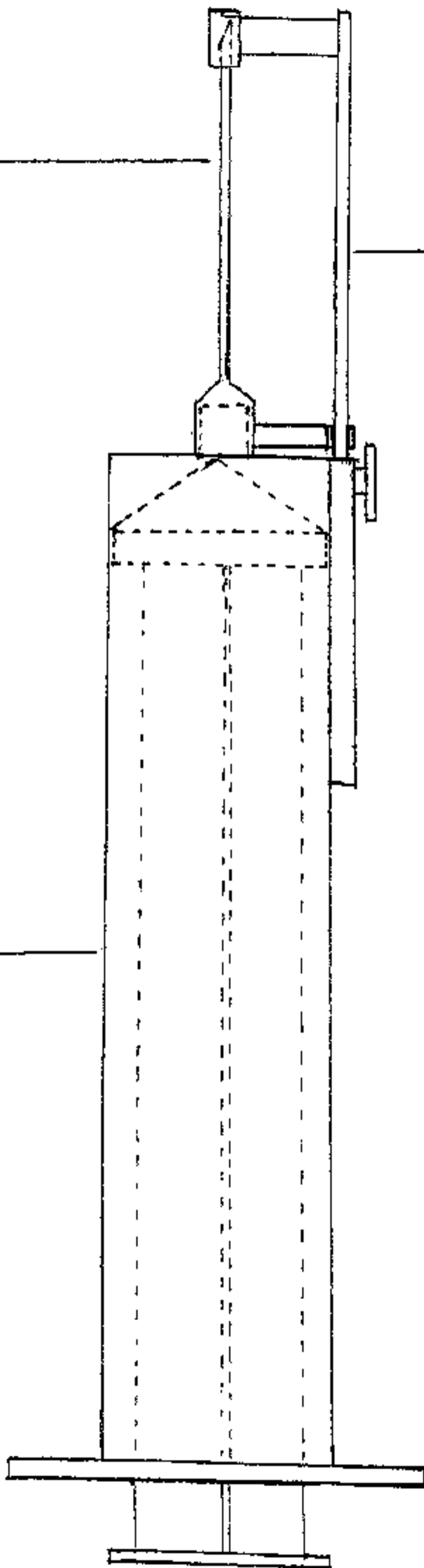


**FIG 15**



**FIG 16**

10



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30