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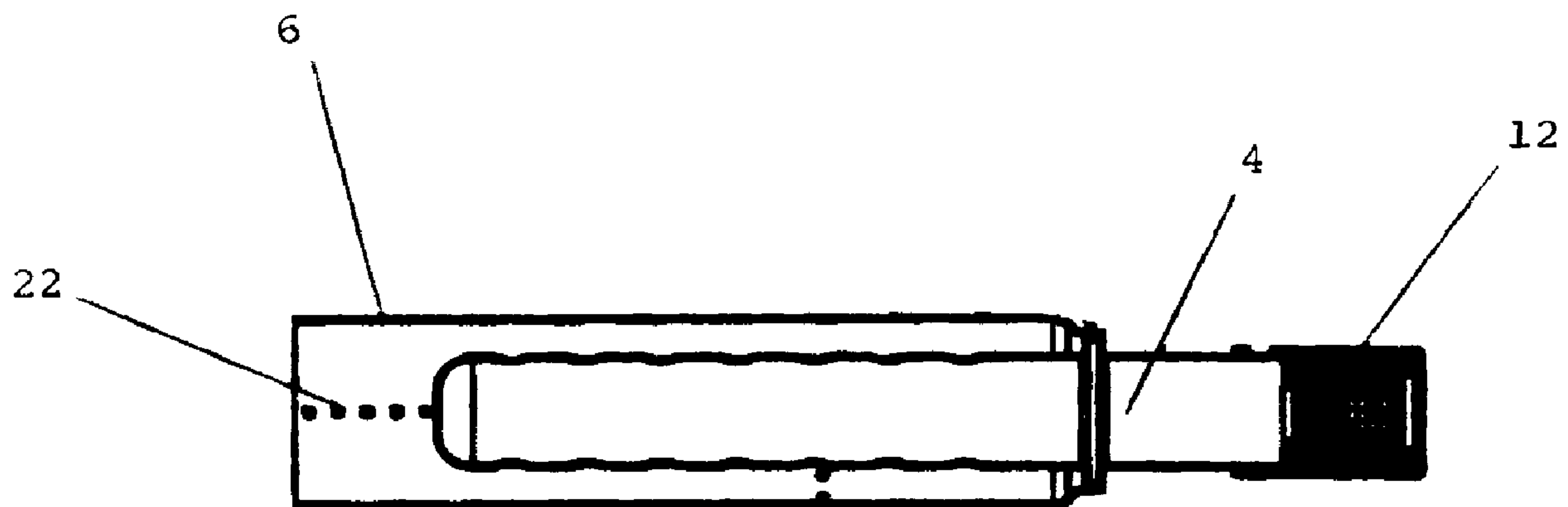
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(54) Titre : BRULEUR A DOUBLE TUBE POUR BARBECUE

(54) Title: TUBE IN TUBE BURNER FOR A BARBECUE



(57) Abrégé/Abstract:

A tube burner has a venturi tube concentrically mounted within a burner tube. The burner tube has openings along each side that decrease progressively in size from the upstream end to the downstream end of the burner tube. The tube burner generates substantially even heat at the openings in the burner tube. A method of constructing a tube burner is provided whereby the venturi tube is mounted substantially within the burner tube.

ABSTRACT

A tube burner has a venturi tube concentrically mounted within a burner tube. The burner tube has openings along each side that decrease progressively in size from the upstream end to the downstream end of the burner tube. The tube burner generates substantially even heat at the openings in the burner tube. A method of constructing a tube burner is provided whereby the venturi tube is mounted substantially within the burner tube.

TUBE IN TUBE BURNER FOR A BARBECUE

BACKGROUND OF THE INVENTION

FIELD OF INVENTION

This invention relates to a tube burner for use with a flammable gas supply of a barbecue grill. The tube burner has a venturi tube containing a venturi extending a substantial distance into a burner tube and to a method of construction thereof.

DESCRIPTION OF THE PRIOR ART

Tube burners are known with a venturi located at an inlet end of a burner tube. The venturi is open to a downstream end of the burner tube and as well has an opening at an upstream end. The venturi is located in a venturi tube. The upstream end has a connector thereon to connect the tube burner to a flammable gas supply. The burner tube has a plurality of openings of equal size along each side. The venturi has an air inlet at the upstream end to allow gas and air entering the venturi to mix in the appropriate proportions so that the gas/air mixture is flammable. The tube burner has a single wall. The gas/air mixture exiting from the plurality of openings in the burner tube is combustible for those openings that are not close to the upstream end. The openings near the upstream end do not produce a usable flame.

When the previous tube burners are used in a barbecue grill, (also known as a gas barbecue), difficulty has been encountered in providing a tube burner that will burn efficiently and evenly throughout its length. When the venturi tube is located at the inlet end of the burner tube, the tube burner often burns unevenly. The openings in the side of the burner tube near the upstream end do not produce a usable flame.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a tube burner in which even burning is achieved throughout the length of the tube burner. It is a further object of the present invention to provide a tube burner in which a venturi tube is substantially embedded in a burner tube of the tube burner.

A tube burner is used with a flammable gas supply, the burner comprising a burner tube and a venturi tube. The venturi tube has a venturi therein, the venturi tube extending from the venturi into the burner tube. The burner is connected to the gas supply and has an air inlet upstream of the venturi. There is a passage connecting the gas supply and the air inlet to the venturi. The venturi tube has at least one opening therein within the burner tube for a gas/air mixture to pass into the burner tube. The burner tube has a plurality of openings

along each side thereof through which the gas/air mixture entering the burner tube from the venturi tube can escape for combustion.

A tube burner is used with a flammable gas supply for a barbecue grill. The burner comprises a top, bottom and two sides and has a venturi tube and a burner tube. The venturi tube is concentrically mounted partially within the burner tube. The venturi tube has a venturi therein and has a connector at an outer end for connection to the gas supply. The outer end has an air inlet and the venturi tube terminates partly along the length of the burner tube. The venturi tube has at least one opening therein downstream from the venturi, the at least one opening being located within the burner tube. The burner tube has a plurality of openings along each side thereon through which the gas/air mixture entering the burner tube from the venturi can escape for combustion.

A tube burner is used with a flammable gas supply, the burner comprising two ends and two sides and having a venturi tube and a burner tube. The venturi tube is concentrically mounted substantially within the burner tube, the venturi tube having at least one opening therein within the burner tube. The venturi tube has a venturi therein and has a connector at an outer end for connection to the gas supply. The outer end has an air inlet. The burner tube has a plurality of openings along the side thereof through which a gas/air mixture entering the burner tube from the venturi tube can escape for combustion.

A method of constructing a tube burner for use with a barbecue grill and a flammable gas supply uses a burner having a burner tube and a venturi tube. The method comprises mounting the venturi tube at least partially within the burner tube at an upstream end of the burner tube. The venturi tube has an air inlet and a connector for connecting the outer end to the gas supply. The method further comprises installing at least one opening in that part of the venturi tube located within the burner tube and installing a plurality of openings along each side of the burner tube through which a gas/air mixture entering the burner tube from the venturi tube can escape.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a top view of a tube burner of the present invention;

Figure 2 is a partial sectional view along the lines A-A of Figure 1;

Figure 3 is a side view of the tube burner;

Figure 4 is a perspective view of the tube burner;

Figure 5 is an end view of the tube burner from an upstream end;

Figure 6 is a schematic top view of a venturi tube;

Figure 7 is a schematic bottom view of the venturi tube; and

Figure 8 is a side view of a Prior Art burner.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

In Figures 1 and 2, it can be seen that a tube burner 2 has a venturi tube 4 concentrically mounted partially within a burner tube 6. The burner tube and venturi tube are concentrically mounted relative to one another. The venturi tube 4 has a venturi (not shown) therein, which is conventional. The venturi tube 4 has a connector 8 at an outer end 10 of the venturi tube 4. An air inlet 12 has a screen thereon with an adjustable cover 14 that can be moved to cover or expose more of the air inlet 12 by removing and appropriately reinserting a screw 16. Preferably, the screen is a stainless steel mesh. The burner tube is crimped to fit onto the venturi tube and the venturi tube and burner tube are spot welded and sealed together at an upstream end 18 of the burner tube 6. A downstream end 20 of the burner tube 6 is closed. In Figure 2, it can be seen that the venturi tube 4 extends substantially into the burner tube 6. Preferably, substantially two-thirds of a length of said venturi tube is located inside of said burner tube.

As best seen in Figures 2 and 3, the burner tube 6 has a plurality of openings 22 along each side thereof. The openings 22 near the upstream end 18 are larger than the openings 22 at the downstream end 20 of the burner tube 6. The openings 22 get progressively smaller from the upstream end 18 to the downstream end 20. Figure 4 is a perspective view of the tube burner 2 and Figure 5 is an end view from an entrance to the venturi tube 4. The same reference numerals are used in Figures 3, 4 and 5 as those used in Figures 1 and 2 to describe those components that are identical.

In Figure 6, there is shown a schematic top view of the venturi tube 4 with a plurality of openings 24 therein. In Figure 7, there is shown a bottom view of the venturi tube 4 with a plurality of openings 25 therein. The openings 24, 25 are located in that portion of the venturi tube 4 that is mounted within the burner tube 6 and is downstream from a venturi 27. The same reference numerals are used in Figures 6 and 7 as those used in Figures 1 and 2 for those components that are identical. It can be seen in Figure 2 that the upper and lower edges of the venturi tube 4 have a plurality of depressions therein. While the openings 24, 25 are not shown in Figure 2, the openings are located at those depressions.

The tube burner 2 has substantially the same length as a prior art tube burner (see Figure 8), but the prior art tube burner does not provide even heat and often has several side openings near the upstream end where no usable flame is produced. The tube burner 2 operates more efficiently in that the heat generated at each of the openings 22 is substantially equal. With previous tube burners, where the venturi is located at the entrance to the burner

tube, the openings in the burner tube near the upstream end do not produce the same heat as the openings in the downstream end. In fact, many of the openings in the upstream end do not even produce a flame. The gas mixes much faster with the air over a shorter distance with the tube burner of the present invention than with the prior art tube burners. The prior art tube burner 20, has a burner tube 32 with a venturi 34 at an entrance 36 thereof. An air inlet 38 is located upstream of the venturi. The gas supply (not shown) is connected to the air inlet 40 of the burner 2. The tube burner has a plurality of openings 42 along each side.

The tube burner is constructed by mounting the venturi tube at least partially within the burner tube and preferably substantially within the burner tube.

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1 CLAIM:

1. A tube burner for use with a flammable gas supply for a barbecue grill, said burner comprising a top, bottom and two sides and having a venturi tube and a burner tube, said venturi tube being concentrically mounted partially within said burner tube, said venturi tube having a venturi therein and having a connector at an outer end for connection to said gas supply, said outer end having an air inlet, said venturi tube terminating partly along a length of said burner tube, said venturi tube having at least one opening therein downstream from said venturi, said at least one opening being located within that portion of said venturi tube that is located inside of said burner tube, said at least one opening being an opening in a top of said venturi tube, said burner tube having a plurality of openings along each side thereof through which a gas/air mixture entering said burner tube from said venturi tube can escape for combustion.
2. The tube burner as claimed in Claim 1 wherein said at least one opening in said venturi tube further comprises an opening at an inner end of said venturi tube.
3. The tube burner as claimed in Claim 2 wherein said at least one opening in said venturi tube further comprises a plurality of openings in the top and a bottom of said venturi tube.
4. The tube burner as claimed in Claim 1 wherein said at least one opening in said venturi tube further comprises a plurality of openings and the top and a bottom of said venturi tube.
5. The tube burner as claimed in any one of Claims 1, 2 or 3 wherein said plurality of openings along each side of said burner tube have a larger size at said end where said venturi tube is located than at an opposite end.
6. The tube burner as claimed in any one of Claims 1, 2 or 3 wherein said plurality of openings along a side of said burner tube decrease in size from said end where said venturi tube is located to said opposite end.
7. The tube burner as claimed in Claim 1 wherein said venturi tube extends substantially into said burner tube.
8. The tube burner as claimed in Claim 1 wherein substantially two thirds of a length of said venturi tube is located inside of said burner tube.
9. A tube burner for use with a flammable gas supply, the burner comprising two ends and two sides and having a venturi tube and a burner tube, said venturi tube being concentrically mounted substantially within said burner tube, said venturi tube having at least one opening therein within that portion of said venturi tube that is located inside of said

burner tube, said at least one opening being an opening in the top of said venturi tube, said venturi tube having a venturi therein and having a connector at an outer end for connection to said gas supply, said outer end having an air inlet, said burner tube having a plurality of openings along each side thereof through which a gas/air mixture entering said burner tube from said venturi tube can escape for combustion.

10. The tube burner as claimed in Claim 9 wherein said at least one opening in said venturi tube further comprises a plurality of openings in the top and a bottom of said venturi tube.

11. A tube burner for use with a flammable gas supply, said burner comprising a burner tube and a venturi tube, said venturi tube having a venturi therein, said venturi tube extending from said venturi into said burner tube, said burner being connected to said gas supply, and having an air inlet upstream of said venturi, there being a passage connecting said gas supply and said air inlet to said venturi, said venturi tube having at least one opening therein within that portion of said venturi tube that is located inside of said burner tube for a gas/air mixture to pass from said venturi tube into the burner tube, said burner tube having a plurality of openings along each side thereof through which said gas/air mixture entering said burner tube from said venturi tube can escape for combustion.

12. The tube burner as claimed in Claim 11 wherein said venturi tube is concentrically mounted with said burner tube.

13. The tube burner as claimed in Claim 12 wherein said air inlet is located in said venturi tube and said venturi tube has a connector for receiving said gas supply.

14. The tube burner as claimed in Claim 11 wherein said at least one opening in said venturi tube further comprises an opening at an inner end of said tube.

15. The tube burner as claimed in Claim 14 wherein said at least one opening in said venturi tube further comprises a plurality of openings in the top and a bottom of said venturi tube.

16. The tube burner as claimed in Claim 11 wherein said at least one opening in said venturi tube further comprises a plurality of openings in the top and a bottom of said venturi tube.

17. A method of constructing a tube burner for use with a barbecue grill and a flammable gas supply, said burner having a burner tube and a venturi tube, said method comprising mounting said venturi tube at least partially within said burner tube at an upstream end of said burner tube, said venturi tube having an air inlet and a connector for connecting said outer end to said gas supply, installing at least one opening in that part of the venturi tube located

within said burner tube, locating said at least one opening in a top of said venturi tube, installing a plurality of openings along each side of said burner tube through which a gas/air mixture entering said burner tube from said venturi tube can escape.

18. The method as claimed in Claim 17 including the step of mounting the venturi tube substantially within the burner tube.

19. The method as claimed in Claim 18 including the step of mounting said venturi tube within said burner tube so that substantially two-thirds of a length of said venturi tube is located inside of said burner tube.

20. The method as claimed in any one of Claims 17, 18 or 19 including the step of mounting said venturi tube and said burner tube concentrically relative to one another.

21. The method as claimed in any one of Claims 17, 18 or 21 including the step of locating a plurality of openings in the top and a bottom of the venture tube.

22. The method as claimed in Claim 17 including the step of locating an opening in an inner end of the venture tube.

FIGURE 1

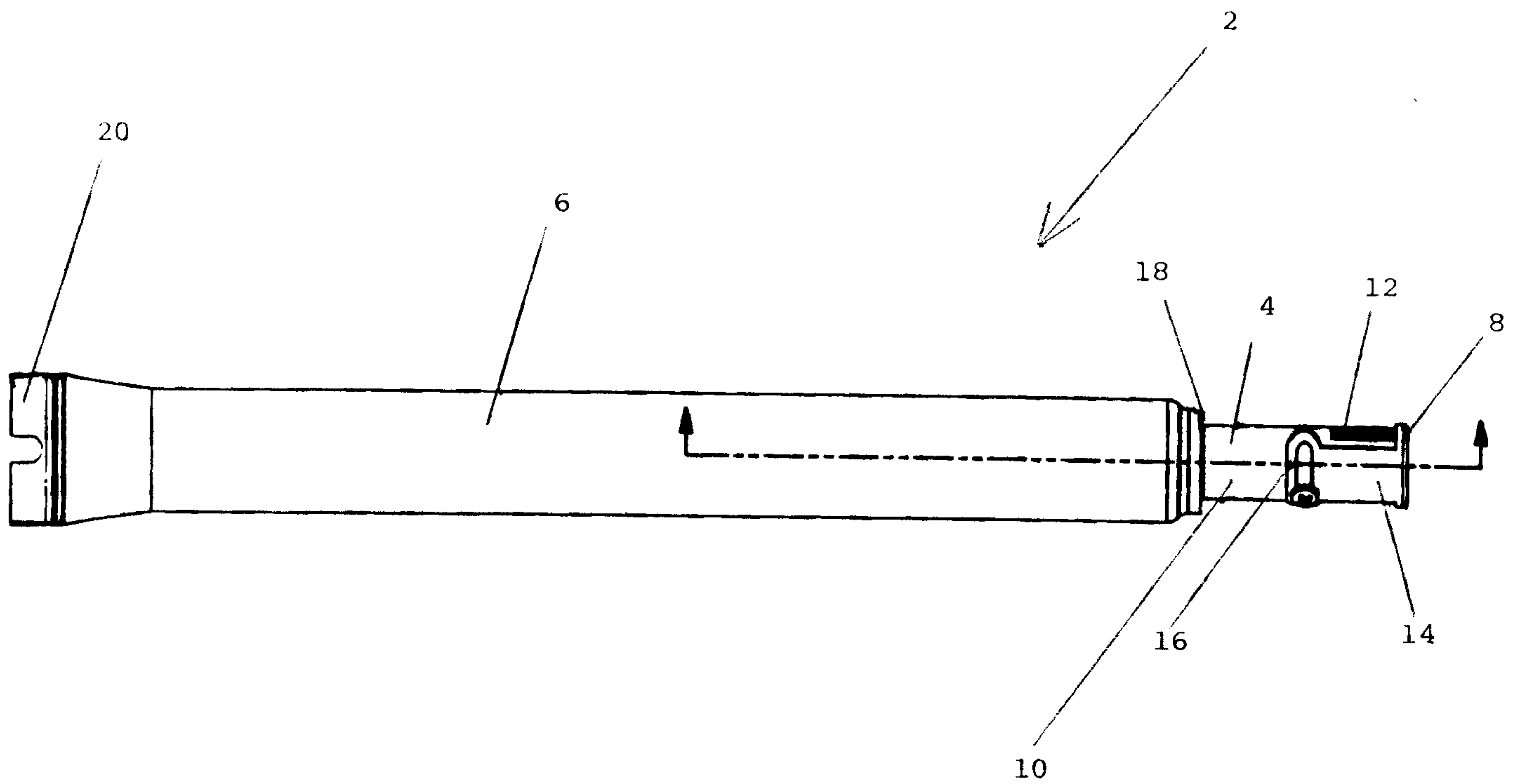


FIGURE 2

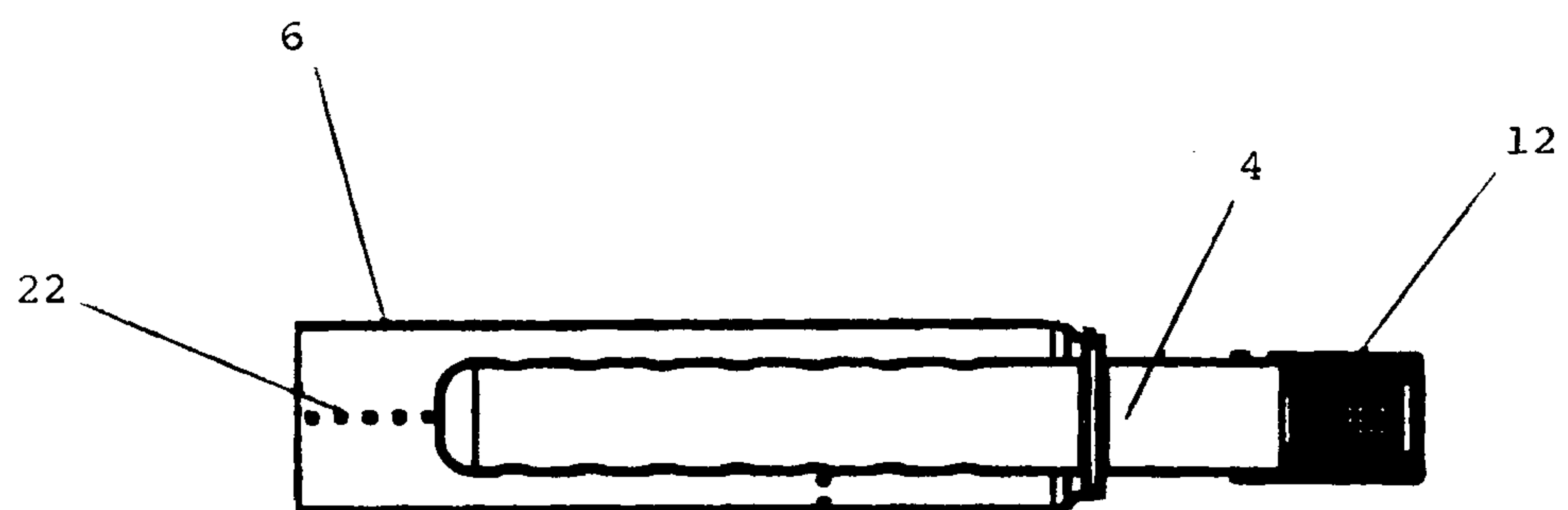


FIGURE 3

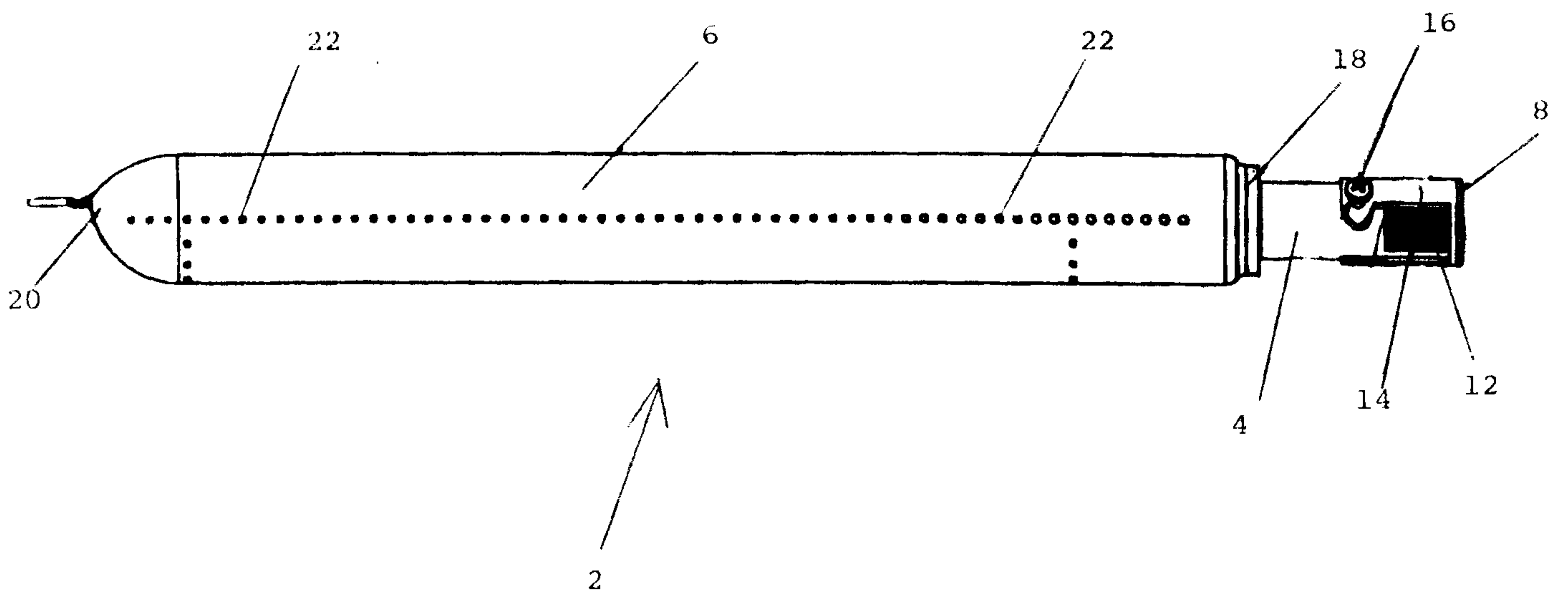


FIGURE 4

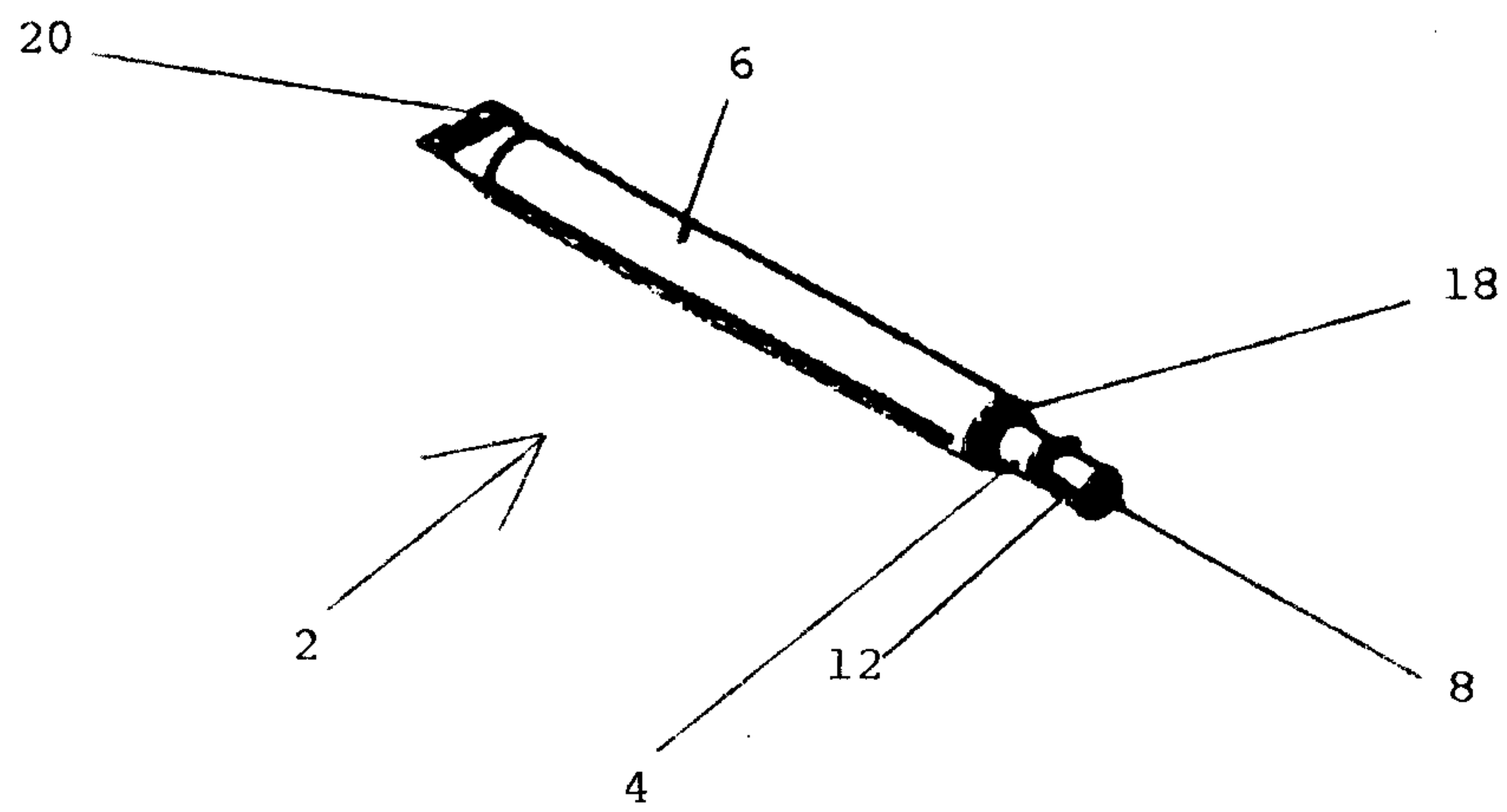


FIGURE 5

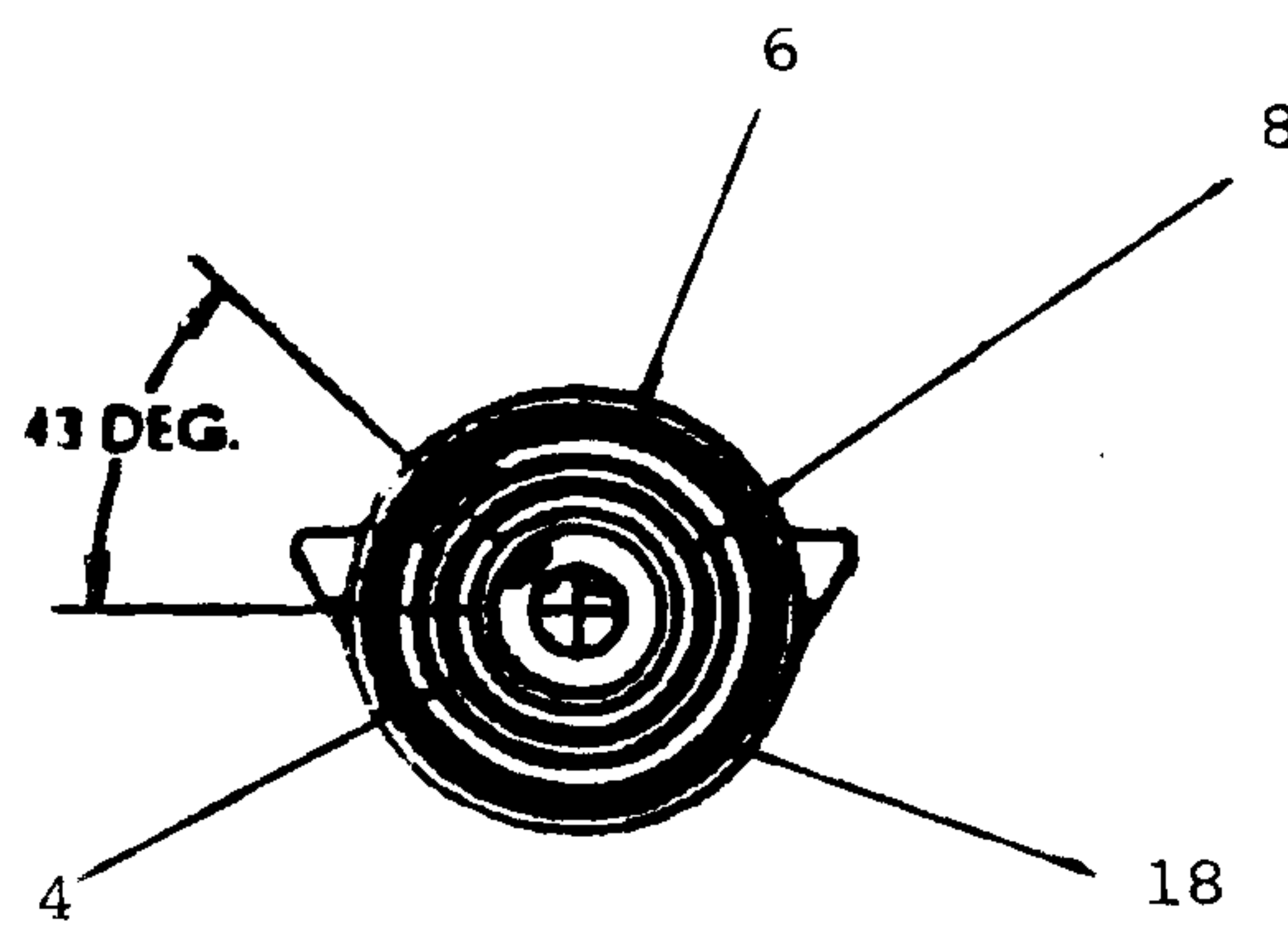


FIGURE 6

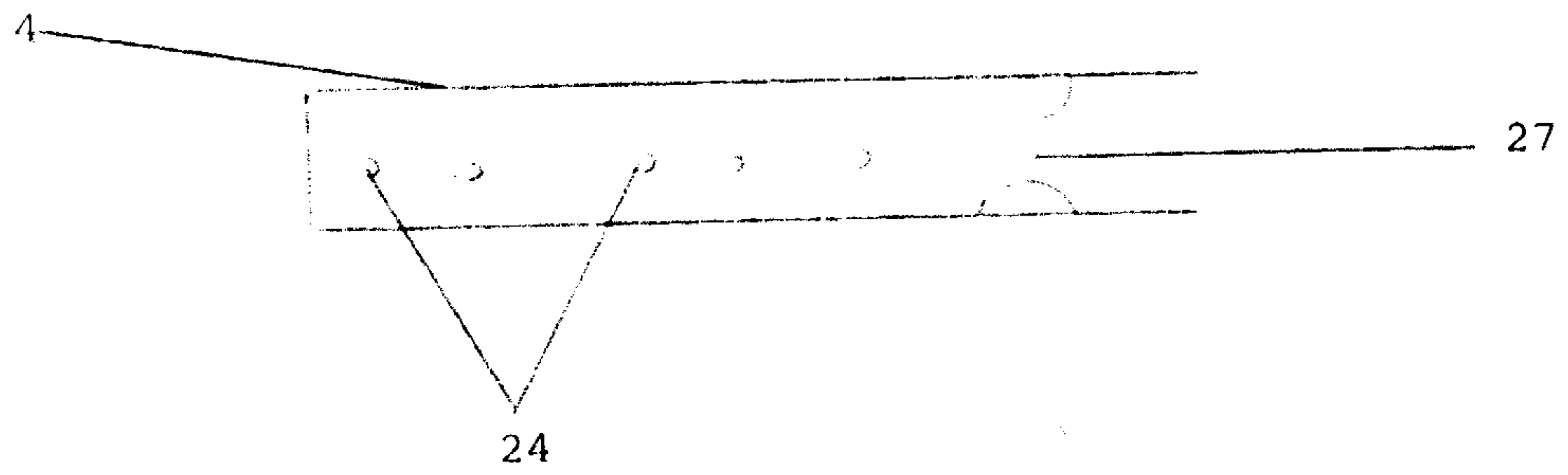


FIGURE 7

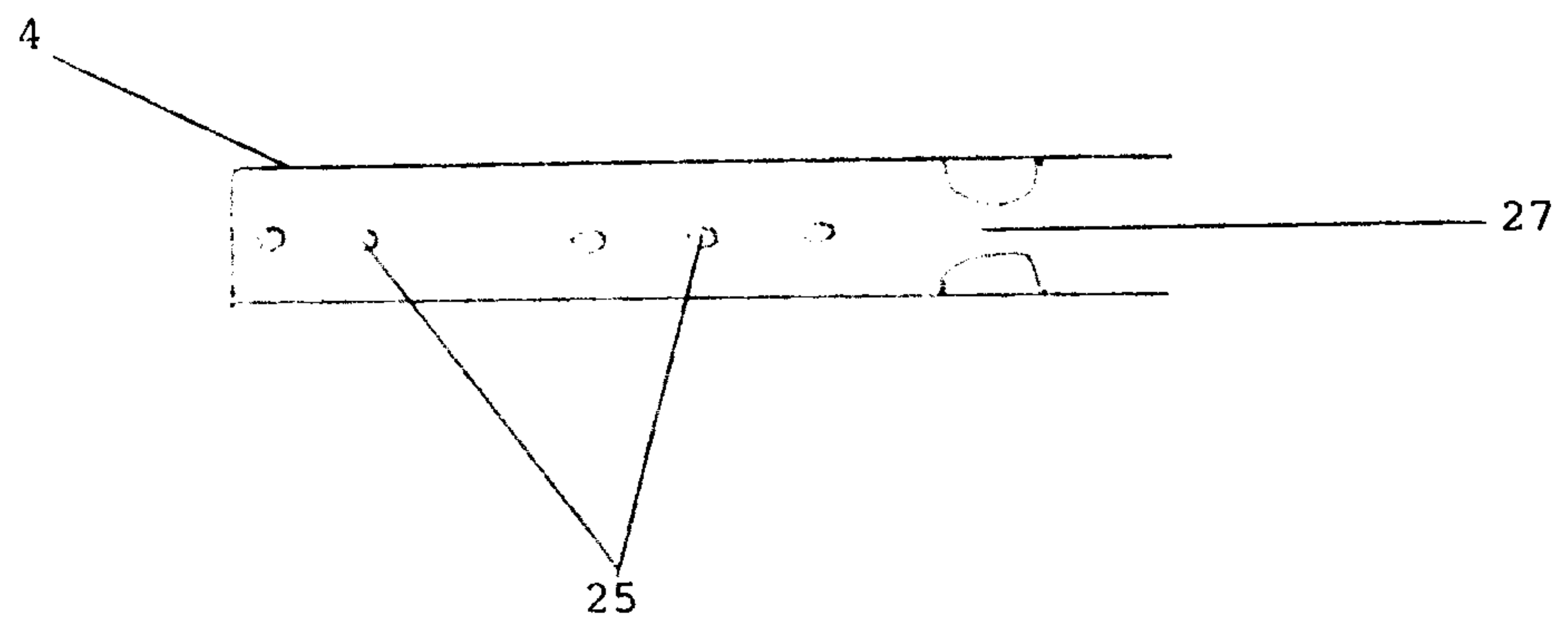


FIGURE 8

PRIOR ART

