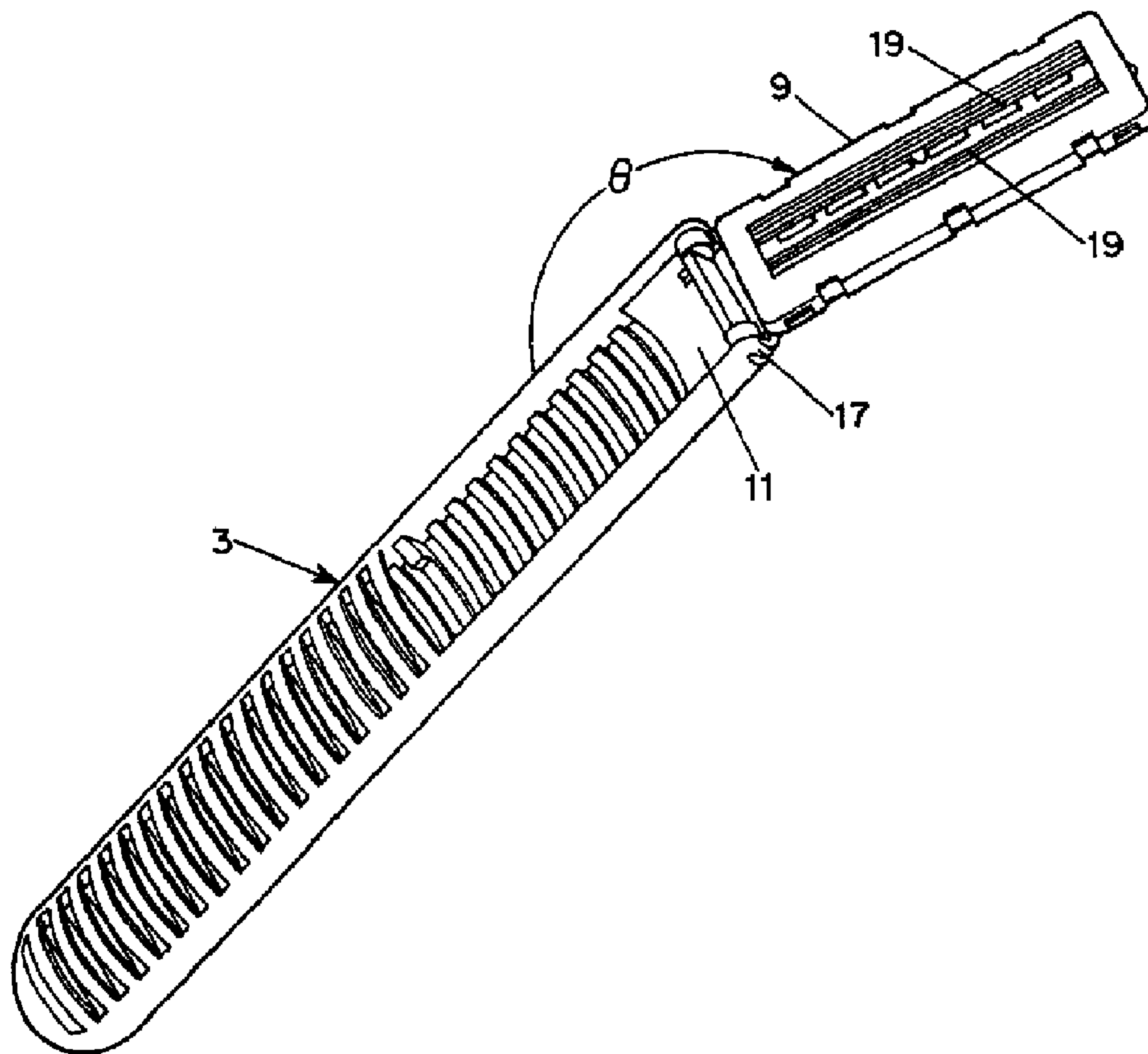




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 (72) Inventeur/Inventor:
 POLITES, ALEXANDRA, US
 (73) Propriétaire/Owner:
 VIOLEX-BIC, S.A., GR
 (74) Agent: OSLER, HOSKIN & HARCOURT LLP

(54) Titre : RASOIR PLIANT
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A folding disposable razor includes a shaving head which folds into the razor handle and is aligned with the handle when in an open or extended position.



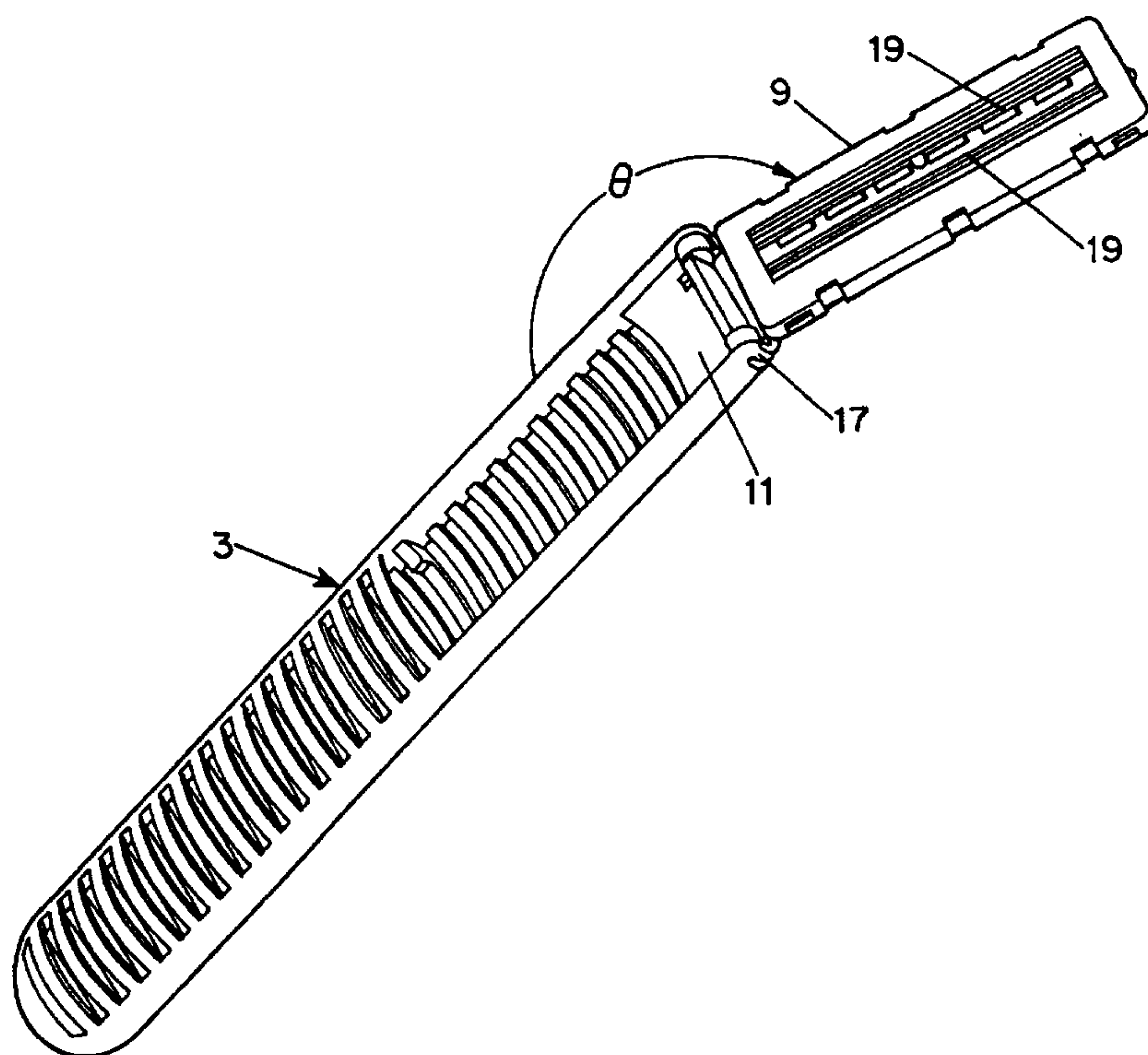
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(54) Title: FOLDING RAZOR



(57) Abstract

A folding disposable razor includes a shaving head which folds into the razor handle and is aligned with the handle when in an open or extended position.

FOLDING RAZOR

SPECIFICATION

Background of The Invention

This invention relates to a razor which includes a shaving head which
5 can be folded into and stored in the razor handle and which allows for bidirectional
shaving.

Conventional razors include a handle with a shaving head affixed
perpendicularly to the handle in a "T" shaped configuration. These conventional
razors usually require a separate cover piece to protect the user from accidental cuts
10 when the razor is not in use. This additional cover piece is inconvenient to keep track
of for the user, and complicates the manufacturing process. In addition, these razors
are not conveniently transported while traveling.

A razor having a T-shaped configuration may also be difficult to
manipulate when used on skin areas which are contoured or narrow and typically does
15 not allow for bidirectional shaving.

Summary of The Invention

Accordingly, it is an object of the invention to provide a razor having a
shaving head which folds into the body of the razor when not in use.

Another object of the invention is to provide a razor which is
20 conveniently and safely transported.

A further object of the invention is to provide a razor which is easy to
manufacture, ergonomic and allows for bidirectional shaving.

These and other objects of the subject invention are attained by
providing a razor having a hollow handle including a plurality of axially spaced
25 apertures along each side of the handle. The handle has a first recess on one side for
receiving a shaving head which is pivotally attached to the top end of the razor handle.

The shaving head includes a projection or lip which extends axially above the pivot point on the top end of the razor handle. The handle also includes a second recess on the side opposite from the side of the handle including the first recess. Upon application of force to the lip portion, the shaving head pivots about the top of the handle and the lip portion is engaged in the second recess in the razor handle.

Alternating slots are placed along the length of the handle. The wall portions on each side are directly opposite the apertures on the opposite side. This design facilitates and reduces the cost of manufacturing of the razor handle. In addition, this handle design helps prevent slippage when wet shaving.

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Brief Description of The Drawings

Further objects and advantages of the present invention will be more fully appreciated from a reading of the detailed description when considered with the accompanying drawings wherein:

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Fig. 1 is a front view of a razor in accordance with the invention;

Fig. 2 is a back view of a razor in accordance with the invention;

Fig. 3 is a side view of a razor in accordance with the invention;

Fig. 4 is a front view of a razor in an unfolded position in accordance with the invention;

20

Fig. 5 is a back view of a razor in an unfolded position in accordance with the invention;

Fig. 6 is an exploded view of the top portion of the razor shown in Fig. 2;

Fig. 7 is a top view of a razor handle in accordance with the invention;

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Fig. 8 is a top prospective view of a razor cartridge for use in the invention;

Fig. 9 is a bottom view of a razor cartridge for use in the invention;

Fig. 10 is a bottom view of a shaving head in accordance with the invention;

Fig. 11 is a bottom perspective view of a shaving head in accordance with the invention; and

Figs. 12(a) and (b) are graphical illustrations of a sectional side view and side view, respectively, of a razor in accordance with the invention.

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Detailed Description of The Preferred Embodiments

Referring to Fig. 1, a razor 1 in accordance with the invention includes a hollow handle 3 having a plurality of apertures 5. The apertures 5 on opposite sides of the hollow handle 3 are axially displaced with respect to one another. Accordingly, an aperture 5 faces a rib 7 or solid portion of the opposite side of the handle. A shaving head 9 folds into a recess 11 on one side of the razor handle 3. A lip or projection 13 extends at an angle from the top portion of the shaving head 9.

10

As best seen in Fig. 2, the handle 3 includes a recess 15 on one side of the handle for receiving and engaging lip 13. The recess 15 is contoured to mate with lip 13.

15

As illustrated in Fig. 3, the lip portion 13 axially extends above the top end of the handle 3 at angle of up to 45 degrees from the shaving head 9. The application of force to lip 13 causes the shaving head 9 to pivot in an upwardly directed motion from recess 11 to an extended position in readiness for shaving.

A razor in accordance with the invention in an extended or unfolded position is shown in Fig. 4. The shaving head 9 is pivotally connected to the handle 3 through a hinge 17 at the top portion of handle 3 and includes blade cartridge 12. The shaving head 9 can pivot about an angle θ of up to 270 degrees, preferably up to 225 degrees from its folded position. As can be seen from Fig. 5, the lip 13 is securely engaged in recess 11 in the razor handle when the razor is in the unfolded or extended position.

25

The shaving head shown in Figs. 6 and 7 includes a base portion 10 upon which a blade cartridge 12 is seated. As best seen in Fig. 7, the base portion 10 may form the back of the blade cartridge 12. In this case, the blades 19 are seated directly on back portion 10. This eliminates the need for a separate back portion for the blade cartridge 12.

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A blade cartridge arrangement having a separate back portion is shown in Fig. 8. Typically, the blade cartridge 12 includes two razor blades 19 thereby allowing bidirectional shaving. The blade cartridge 12 also includes a blade cover 14 supporting razor blades 19. The blade cover 14 is snap fit onto a blade cartridge back portion 16 shown in Fig. 9 which has apertures 18 interspersed between solid sections 20. The apertures 18 facilitate drying of the razor blades and cartridge after wet shaving. The blade cartridge including a separate back portion may be attached to the base portion 10 by non-permanent means such as projections which snap fit into mating recesses or slide into a receiving portion of the base portion 10. Alternately, the blade cartridge including a separate back portion may be permanently attached to base portion 10 by welding, riveting or gluing.

The shaving head of the present invention is pivotally connected to the razor handle. As shown in Figs. 6 and 7, projection 13 of the shaving head 9 includes two arms 21 having circular projecting pins 23. The pins 23 are snap fit into slots 25 on handle 3 thereby securing the shaving head to the handle as shown in Fig. 11. The pins 23 are rotatable in slots 25 allowing the shaving head to pivot about the razor handle.

As shown in Figs. 12(a) and (b) a locking catch 27 mates with recesses 16 in the shaving head shown in Fig. 7 and keeps the razor in a closed position when not in use.

Unlike conventional razors, the shaving head, rather than being placed perpendicular to the razor handle is aligned with it. In the open position, the shaving head is angled back allowing for a natural shaving motion whereby the hand moves in a side to side direction. The angle between the shaving head and razor handle is preferably less than 90 degrees, most preferably up to 45 degrees. The bidirectional shaving head allows the user to shave with much greater speed.

The razor handle may be molded in one piece in a two-part molding tool from polystyrene or other suitable materials. The shaving head base portion is made from the same material as the handle and is also made by injection molding. A previously assembled blade cartridge including shaving blades is then attached to the base portion 10 of the shaving head by either non-permanent or permanent means.

The blade cover and back portion may also be molded from polystyrene or other suitable materials. In an alternate method of preparing the razor, the base portion 10 forms the back of the blade cartridge. In that case, the blade cover and base portion 10 are separately formed by injection molding. Razor blades are then directly seated on
5 the back portion 10. The blade cover is thereafter snap fit onto the base portion on which the razor blades are seated.

After the shaving head is assembled it is pivotally connected to the razor handle by snap fitting circular projecting pins 23 into recesses 25.

Although the invention has been described herein with respect to
10 specific embodiments, many modifications and variations therein will readily occur to those skilled in the art. Accordingly, all such variations and modifications are included within the intended scope of the invention. For example, the razor described herein according to the invention may be disposable or a standard system razor for permanent or semipermanent use.

THE EMBODIMENTS OF THE INVENTION FOR WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A razor comprising:
 - a handle having a bottom end, a top end, two sides, a longitudinal axis extending from the bottom end to the top end, a first recess for receiving a shaving head on one side of said handle, a second recess for receiving a lip portion of the shaving head on the opposite side of said handle, a hinge located at said top end of said handle; and
 - a shaving head comprising a base portion forming the back of a blade cartridge and being pivotally coupled to said hinge;
 - wherein:
 - said shaving head includes a plurality of apertures interspersed between solid sections, and a lip portion adjacent said hinge; and
 - applying force to said lip portion causes said shaving head to pivot about said hinge to engage said lip portion in said second recess.
2. A razor according to claim 1, wherein:
 - said handle includes a plurality of axially spaced apertures along each side of the handle and along the longitudinal axis of the handle; and
 - the axially spaced apertures on one side of said handle are axially displaced with respect to the axially spaced apertures on the opposite side of said handle.
3. A method of making a razor comprising:
 - forming a handle having a bottom end, a top end, two sides, and a longitudinal axis extending from the bottom end to the top end, said handle including a first recess for receiving a shaving head on one side of said handle, a second recess for receiving a lip portion of the shaving head on the opposite side of said handle, and a hinge located at said top end of said handle; and
 - pivotally attaching a base portion of a shaving head to said hinge, said base portion forming the back of a blade cartridge and including a plurality of apertures interspersed between solid sections, and a lip portion adjacent said hinge;
 - wherein applying force to said lip portion causes said shaving head to pivot about said hinge and to engage said lip portion in said second recess.
4. A method according to claim 3, wherein:
 - said handle has a plurality of axially spaced apertures along each side of the handle and along the longitudinal axis of the handle; and
 - the axially spaced apertures on one side of said handle are axially displaced with respect to the axially spaced apertures on the opposite side of said handle.

5. A method according to claim 3, further comprising injection molding said handle and injection molding said shaving head.
6. A razor according to claim 1, wherein said lip portion extends above said hinge.
7. A razor according to claim 1, wherein:
said shaving head has at least one blade having a cutting edge;
said shaving head has a longitudinal axis extending parallel to said cutting edge of said at least one blade; and
said shaving head longitudinal axis is less than 90° with respect to said handle longitudinal axis when said lip portion is engaged in said second recess.
8. A razor according to claim 7, wherein said shaving head longitudinal axis is up to 45° with respect to said handle longitudinal axis when said lip portion is engaged in said second recess.
9. A razor according to claim 1, wherein said base portion is pivotally attached to said handle to pivot up to 270° from a folded position in said first recess to an unfolded position in which said lip portion is engaged in said second recess.
10. A razor according to claim 9, wherein said base portion is pivotally attached to said handle to pivot up to 225° from a folded position in said first recess to an unfolded position in which said lip portion is engaged in said second recess.
11. A razor according to claim 1, wherein:
said shaving head has at least two blades; each blade has a cutting edge; and
said cutting edges are positioned to allow bidirectional shaving.
12. A razor according to claim 11, wherein said cutting edges converge towards each other.
13. A razor according to claim 1, wherein said shaving head:
has at least one blade having a cutting edge;
has a longitudinal axis extending parallel to said cutting edge of said at least one blade;
has front and back edges extending parallel to said longitudinal axis;
has first and second side edges extending between and perpendicular to

said front and back edges and perpendicular to said longitudinal axis; and
is coupled to said handle along one of said side edges.

14. A razor according to claim 13, wherein:
said at least one blade includes at least two blades; each blade has a
cutting edge; and
said cutting edges are positioned to allow bidirectional shaving.

15. A method according to claim 3, wherein said step of pivotally
attaching said shaving head to said hinge includes the step of positioning said lip portion to
extend above said hinge.

16. A method according to claim 4 further comprising the step of injection
molding said handle and injection molding said shaving head.

17. A razor comprising:
a shaving head having a base portion forming the back of a blade
cartridge, at least one blade with a cutting edge, a longitudinal axis extending parallel to said
cutting edge of said at least one blade, front and back edges extending parallel to said
longitudinal axis, and first and second side edges extending between and perpendicular to
said front and back edges and perpendicular to said longitudinal axis; and
a handle having a bottom end and a top end;
wherein said base portion is pivotally coupled to said handle along one
of said side edges of said shaving head and has a pivot axis parallel to said side edges and
perpendicular to said longitudinal axis.

18. A razor according to claim 17, wherein said shaving head is pivotally
coupled to said handle via a hinge.

19. A razor comprising:
a shaving head having a base portion, at least one blade with a cutting
edge seated on said base portion, a lip portion, and a longitudinal axis extending parallel to
said cutting edge of said at least one blade; and
a handle having a bottom end, a top end, and a longitudinal axis;
wherein:
said shaving head is pivotally coupled to said handle to pivot up to
270° from a folded position, in which said shaving head longitudinal axis is substantially
parallel to said handle longitudinal axis with said blade between said shaving head base
portion and said handle, to an unfolded position, in which said shaving head longitudinal axis

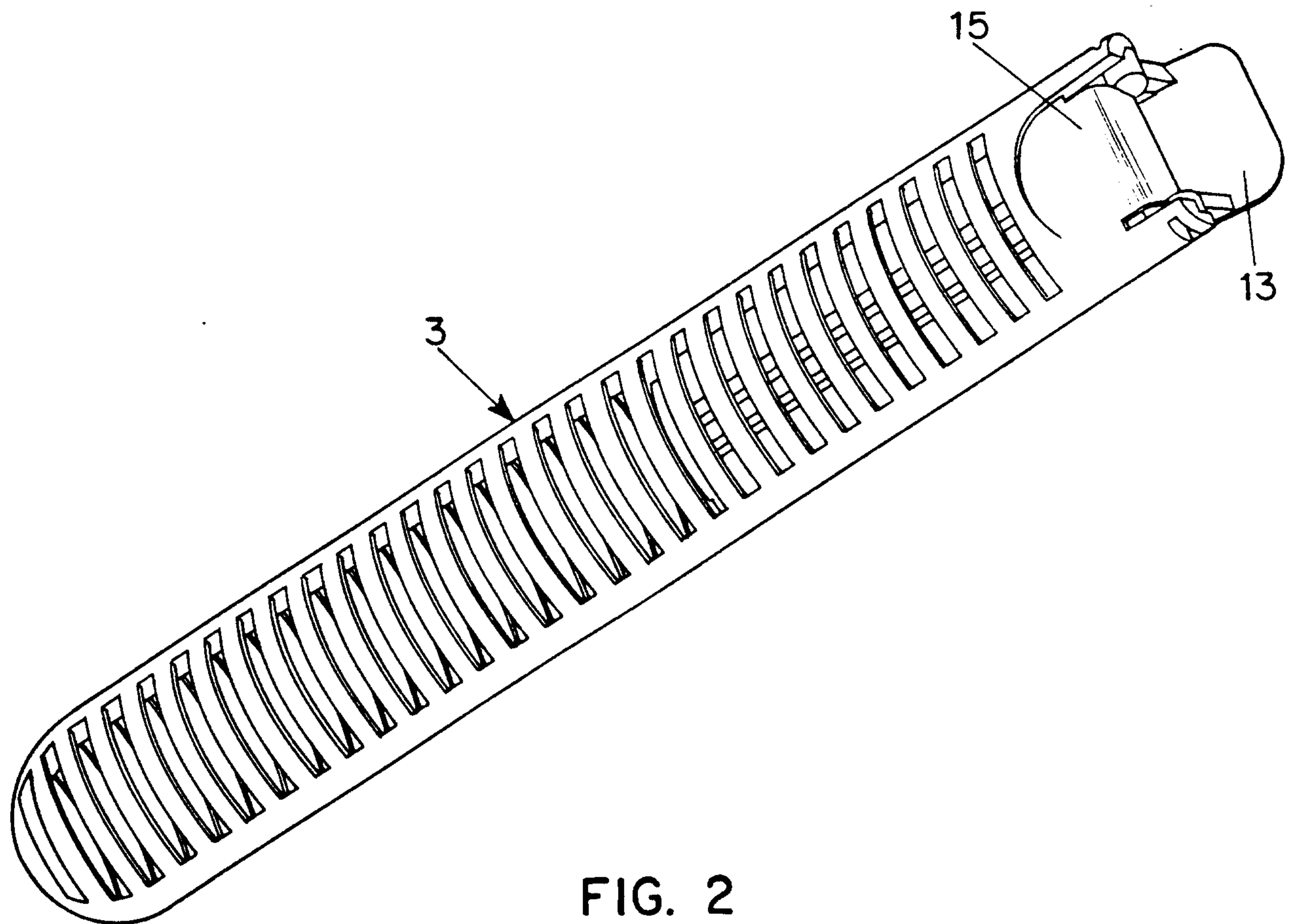
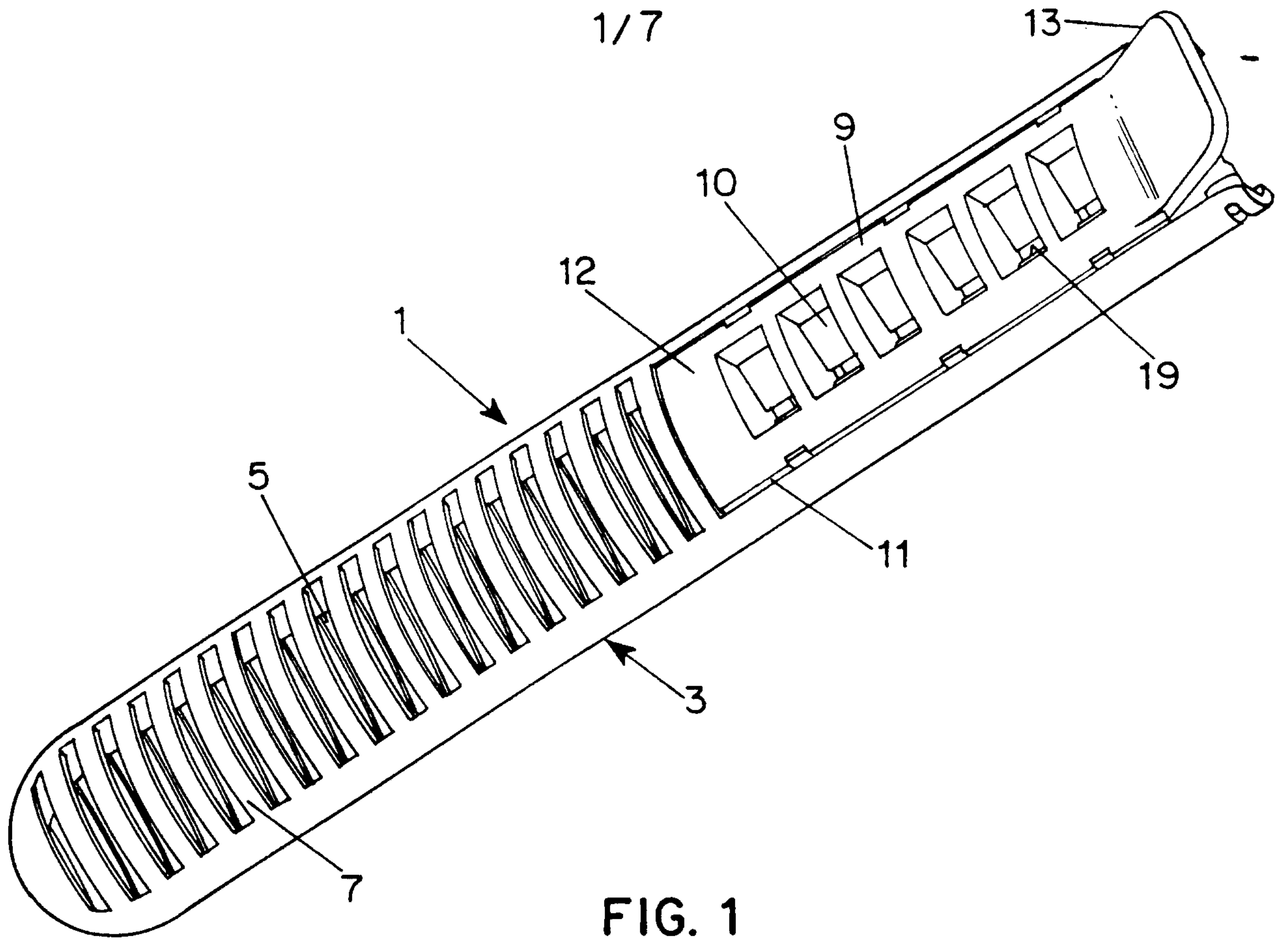
is up to 90° with respect to said handle longitudinal axis; and

in said unfolded position said lip portion securely engages said handle so that the angle between said shaving head and said handle is less than 90°.

20. A razor according to claim 19, wherein said shaving head is pivotally coupled to pivot up to 225° from said folded position to an unfolded position in which said shaving head longitudinal axis is up to 45° with respect to said handle longitudinal axis.

21. A razor according to claim 19, wherein said shaving head:
has front and back edges extending parallel to said longitudinal axis;
and first and second side edges extending between and perpendicular
to said front and back edges and perpendicular to said longitudinal axis; and
is coupled to said handle along one of said side edges of said shaving
head and has a pivot axis parallel to said side edges and perpendicular to said longitudinal
axis.

22. The razor according to claim 19, wherein said base portion has a plurality of apertures interspersed between solid sections.



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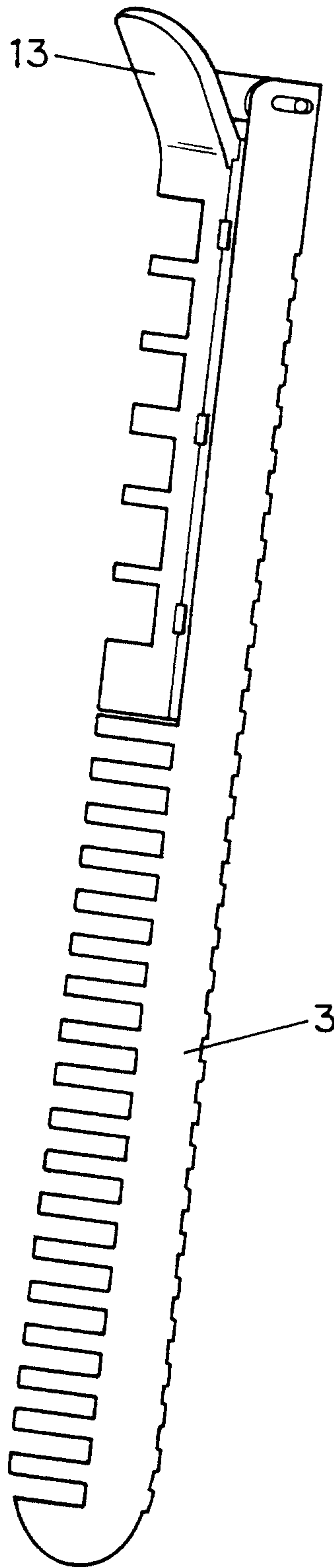


FIG. 3

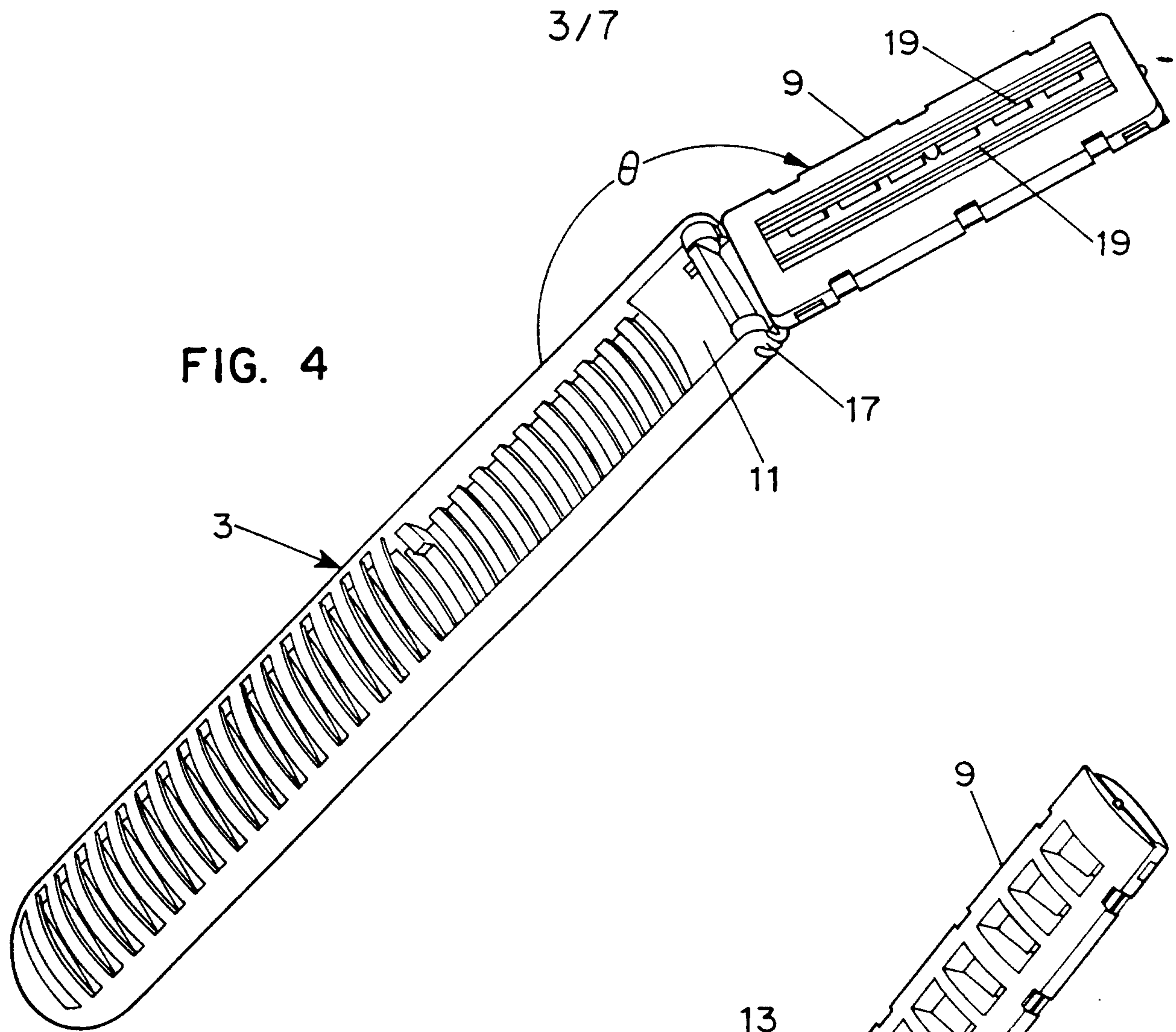


FIG. 4

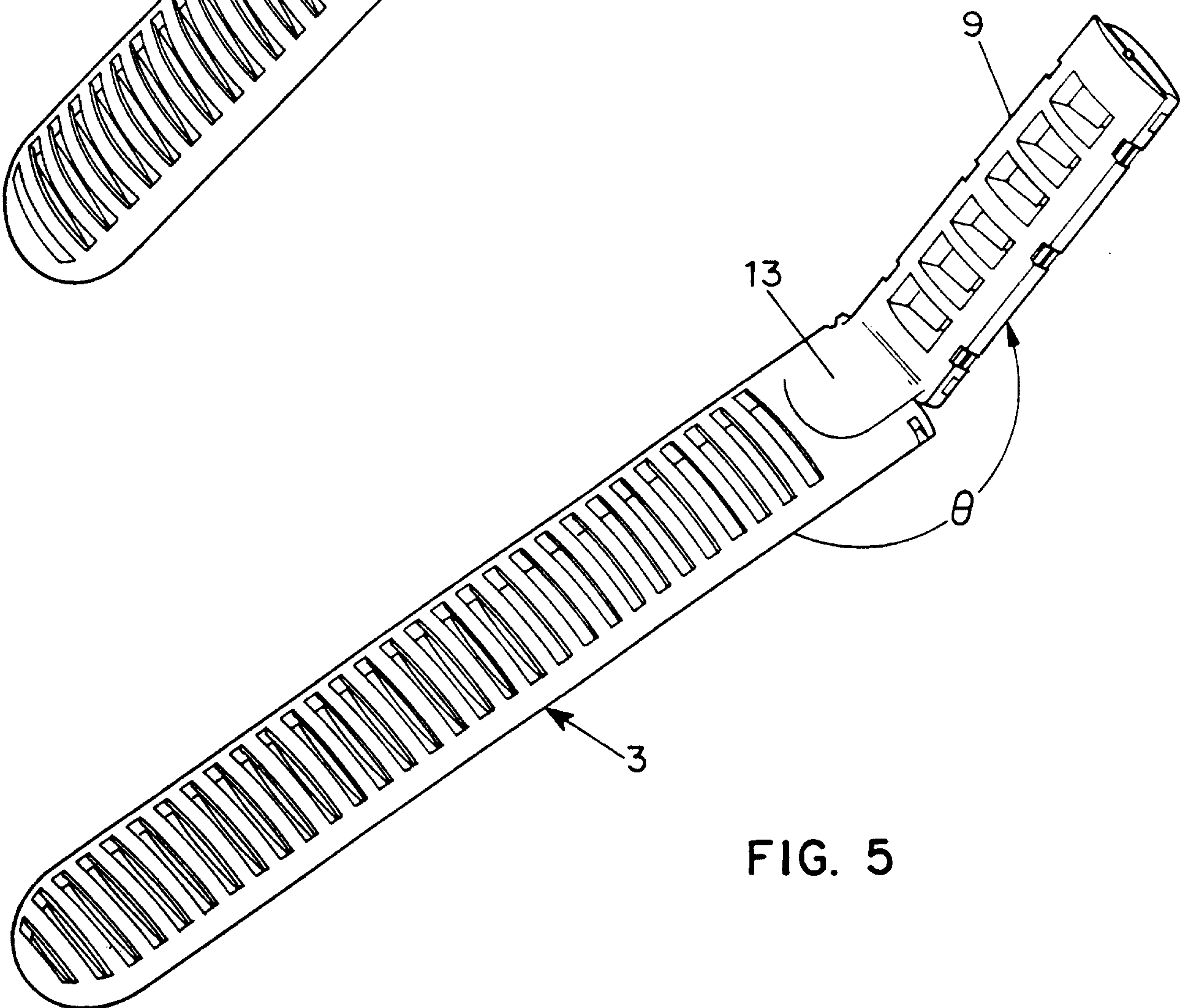


FIG. 5

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FIG. 6

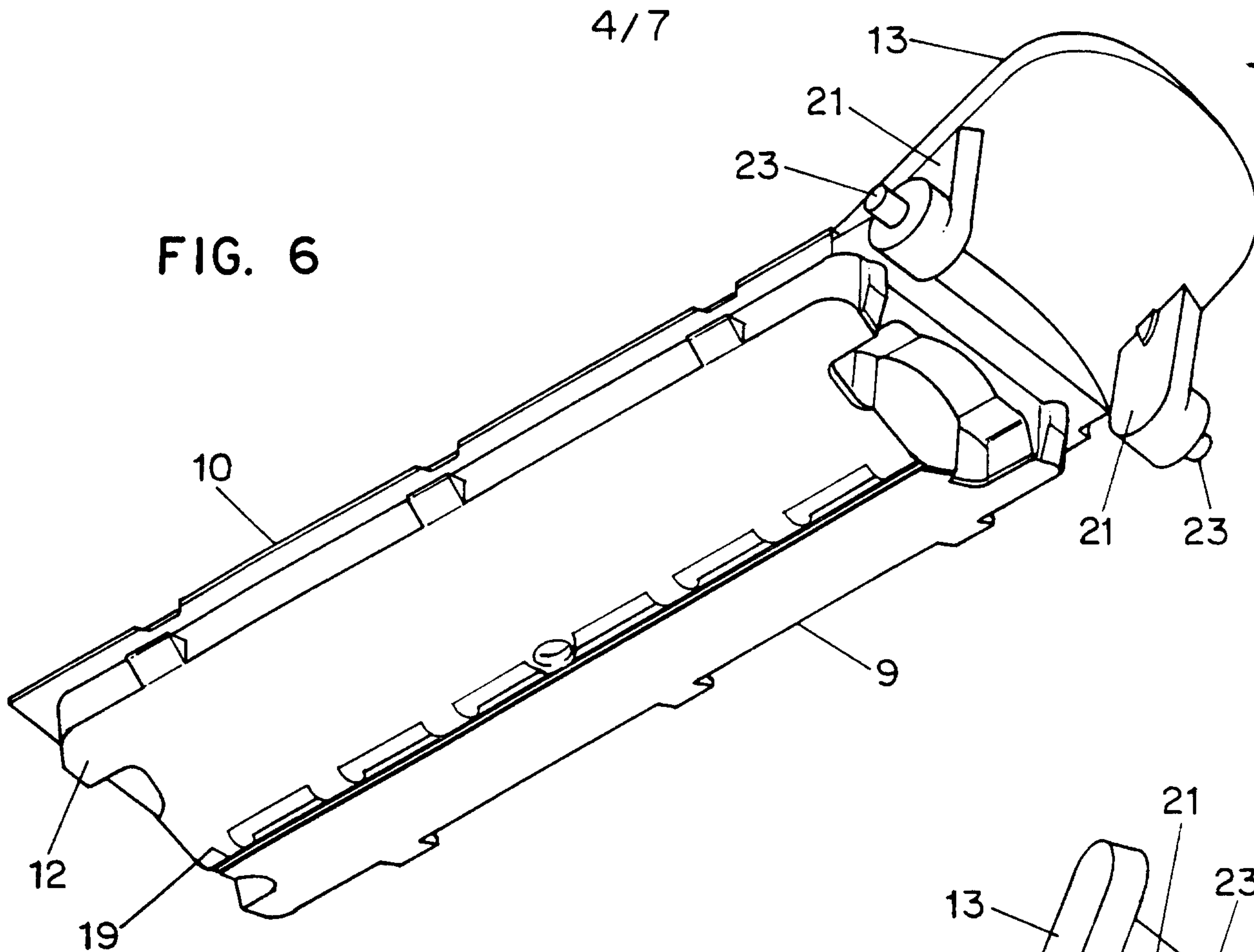
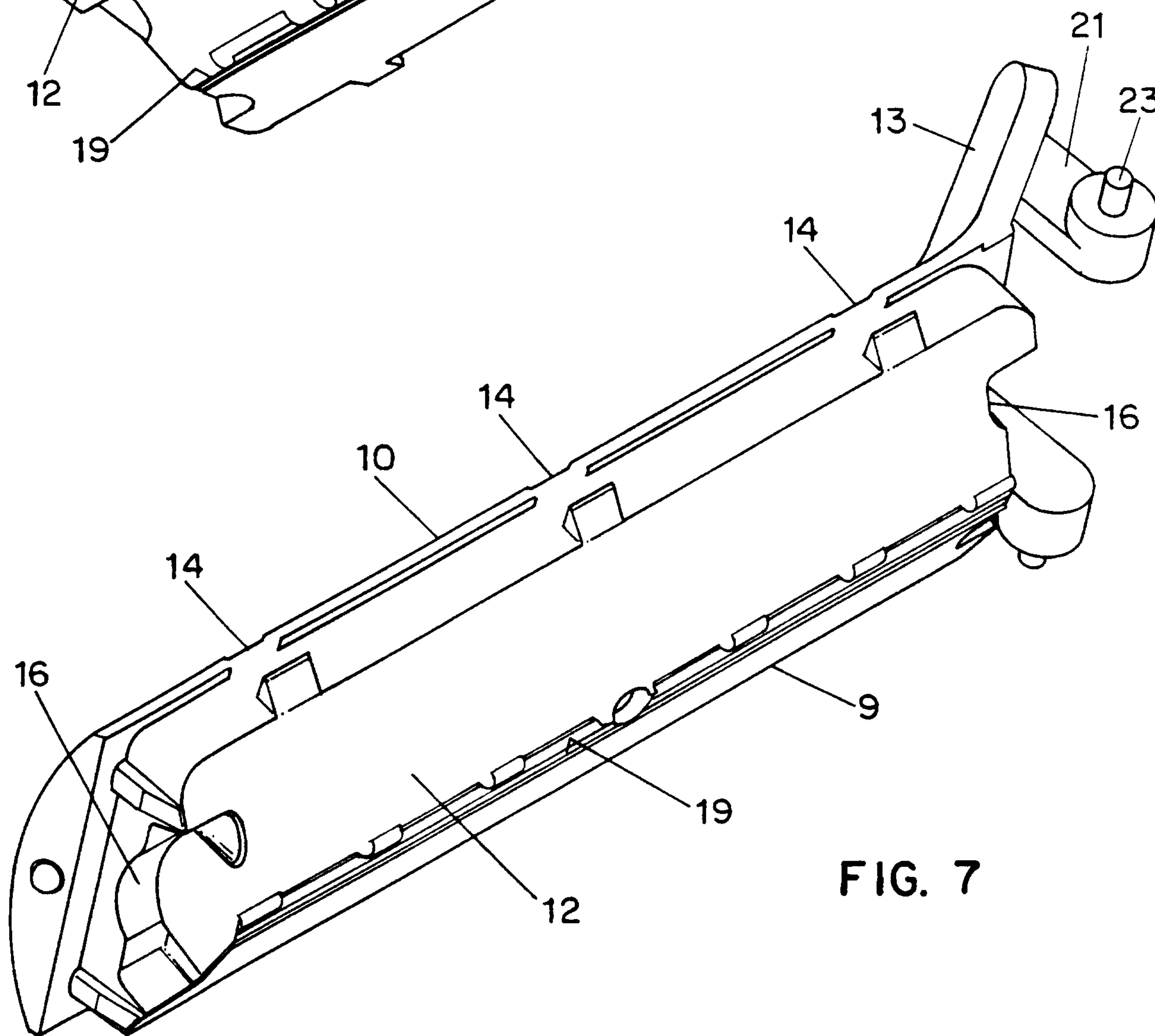


FIG. 7



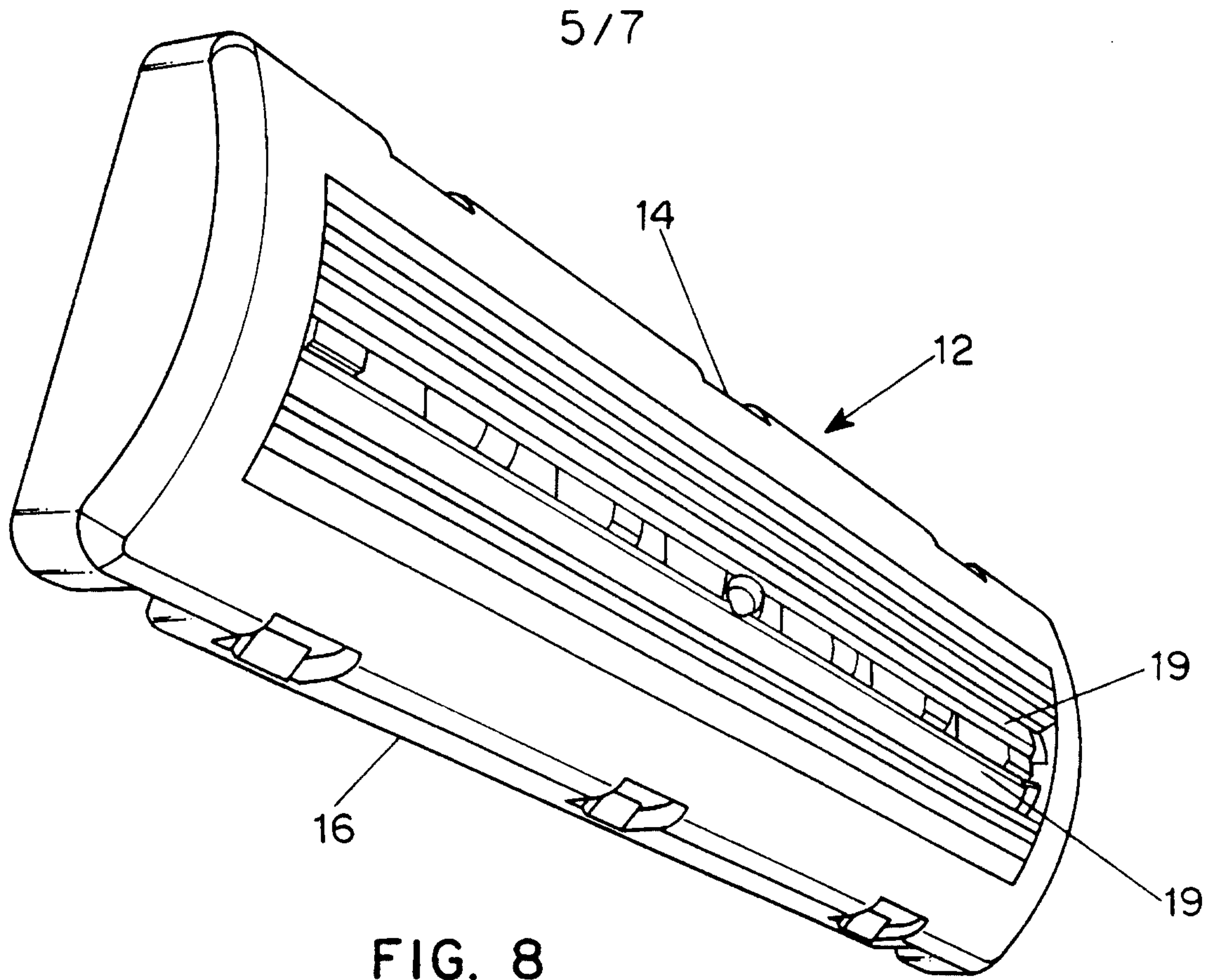


FIG. 8

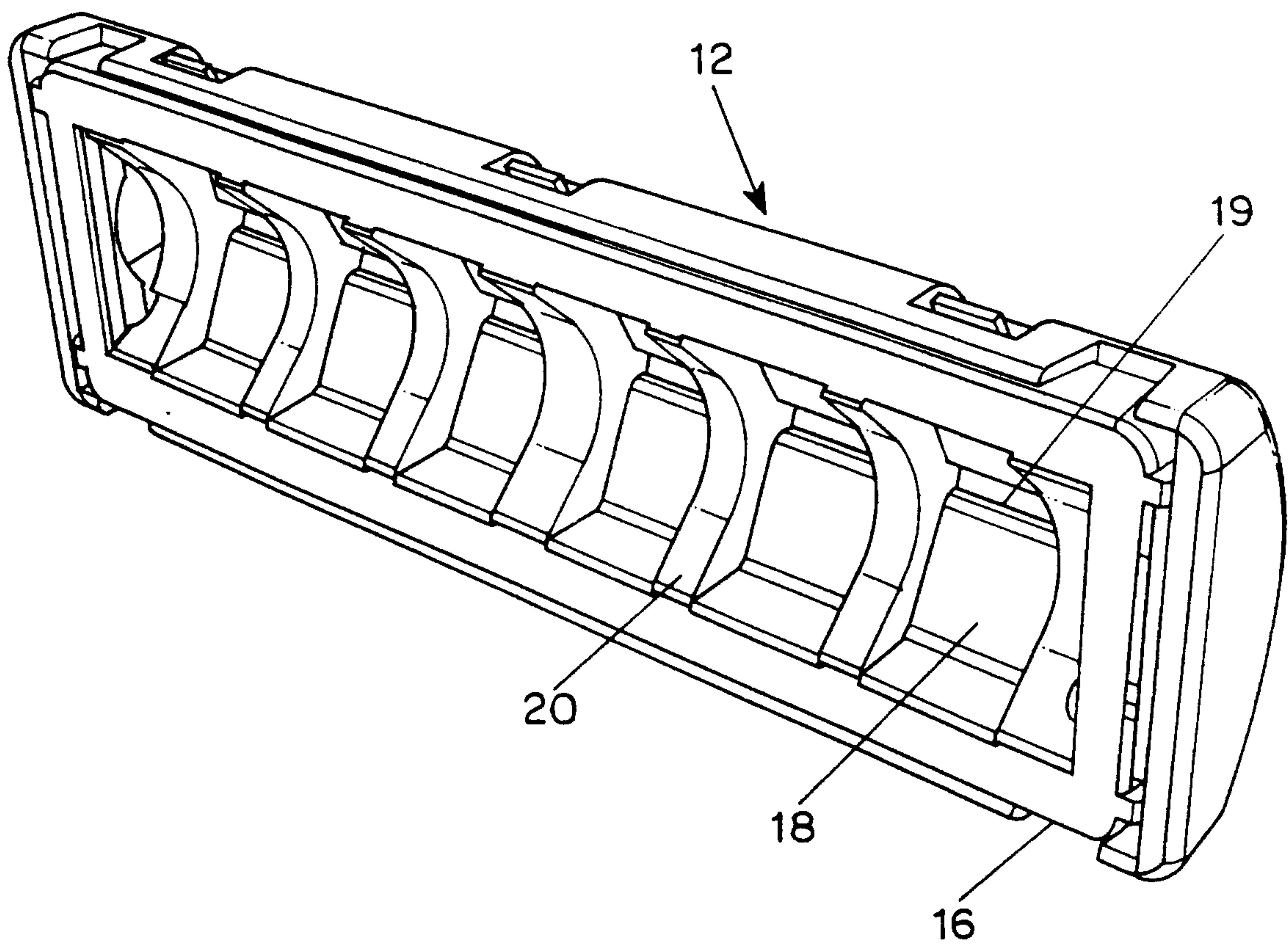


FIG. 9

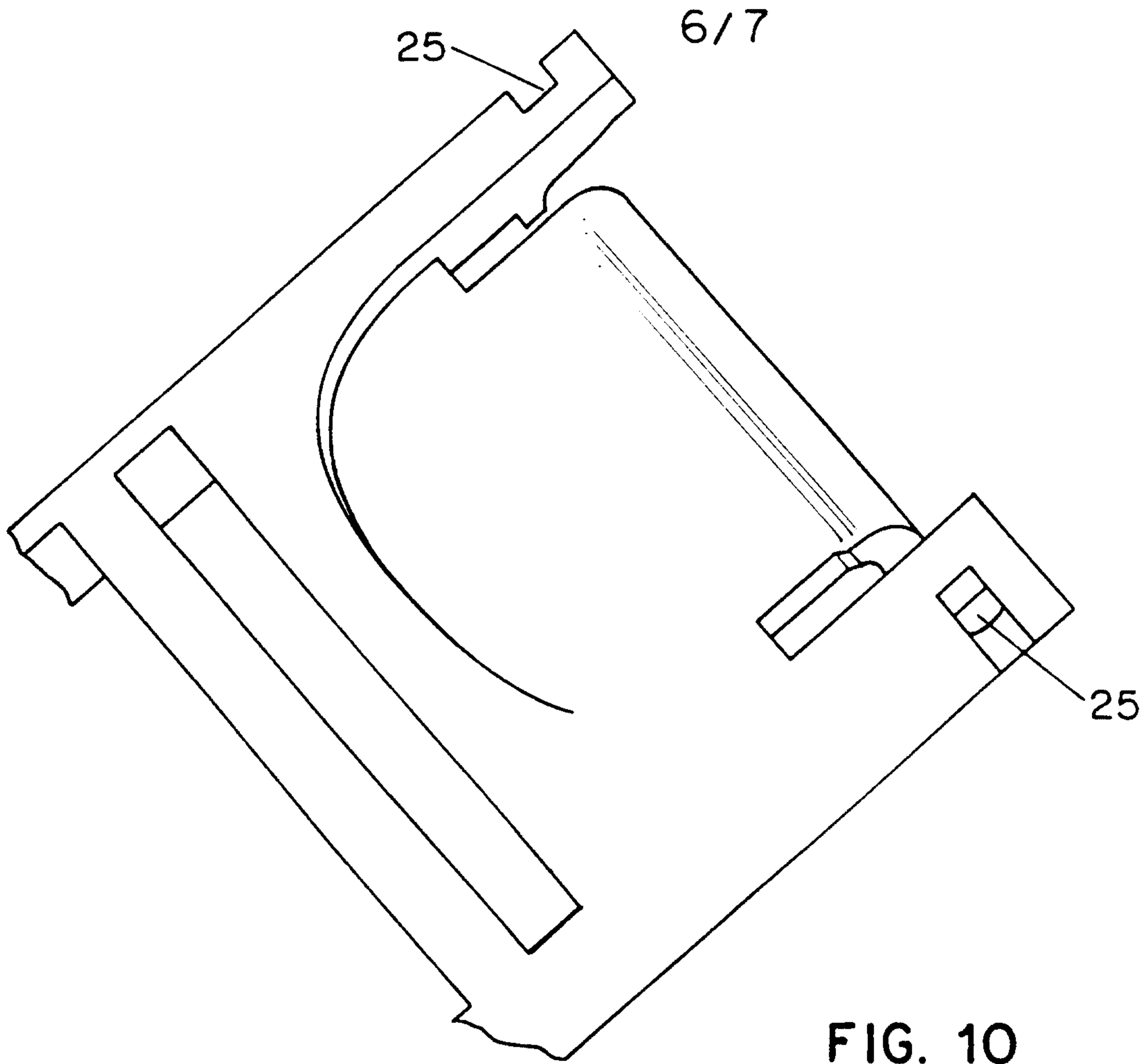


FIG. 10

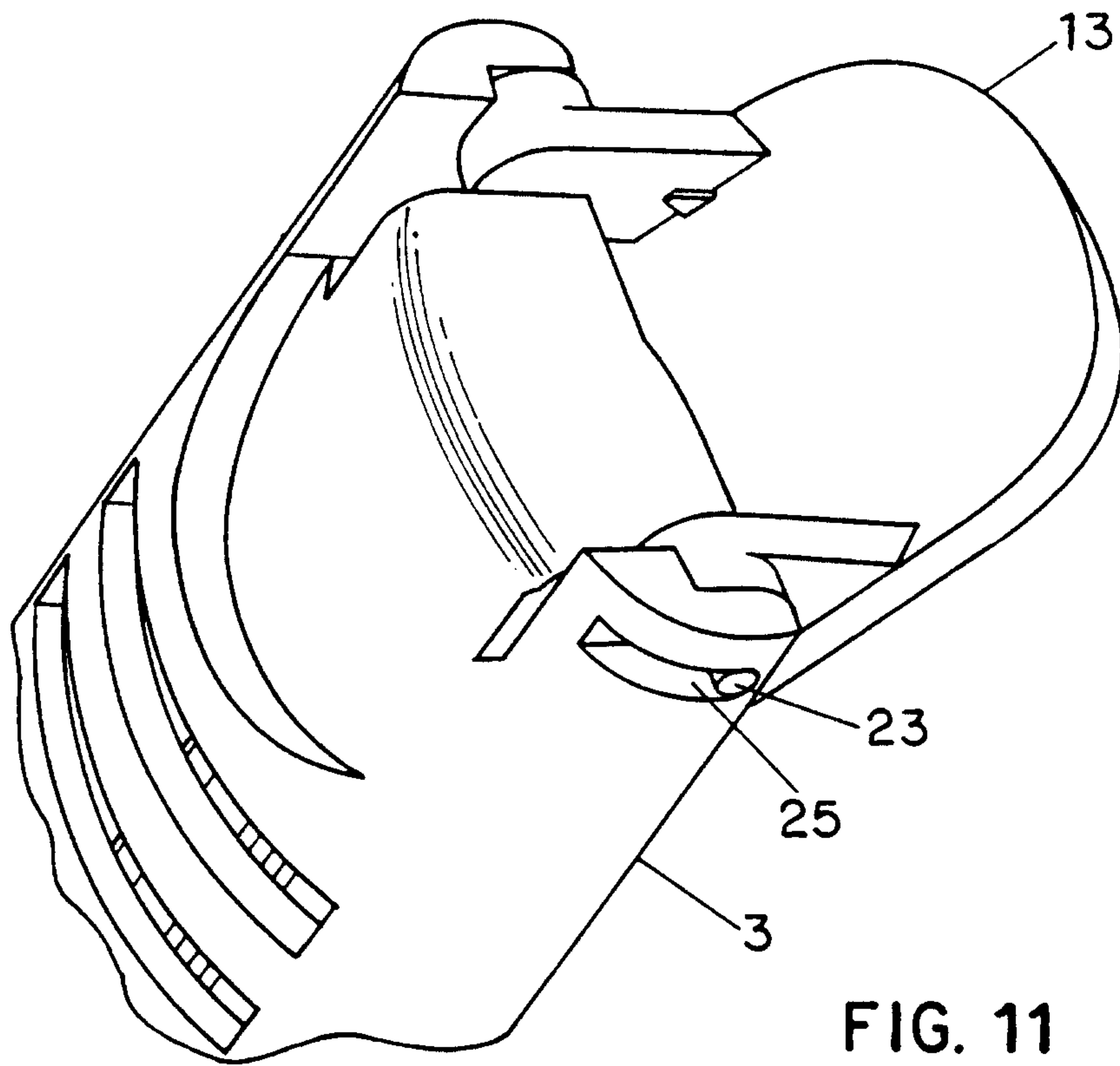


FIG. 11

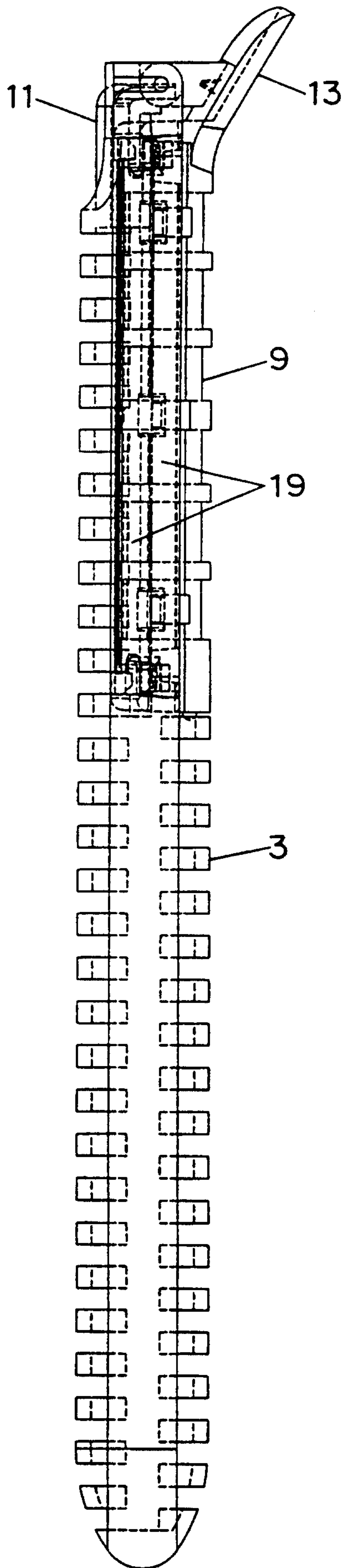


FIG. 12(a)

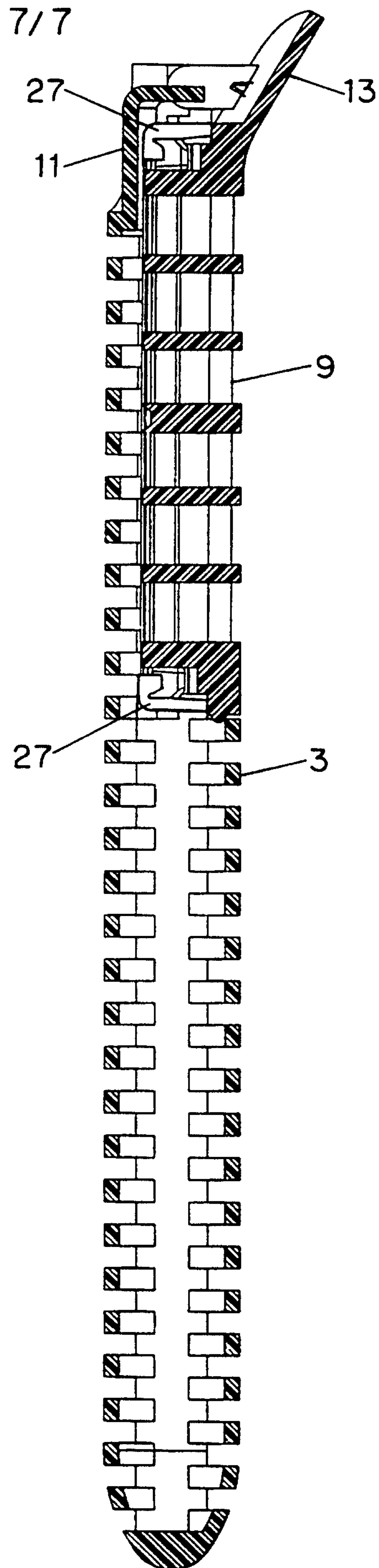


FIG. 12(b)

