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(12) (19) (CA) **Demande-Application**

(21) (A1) **2,279,901**
(86) 1998/02/03
(87) 1998/08/06

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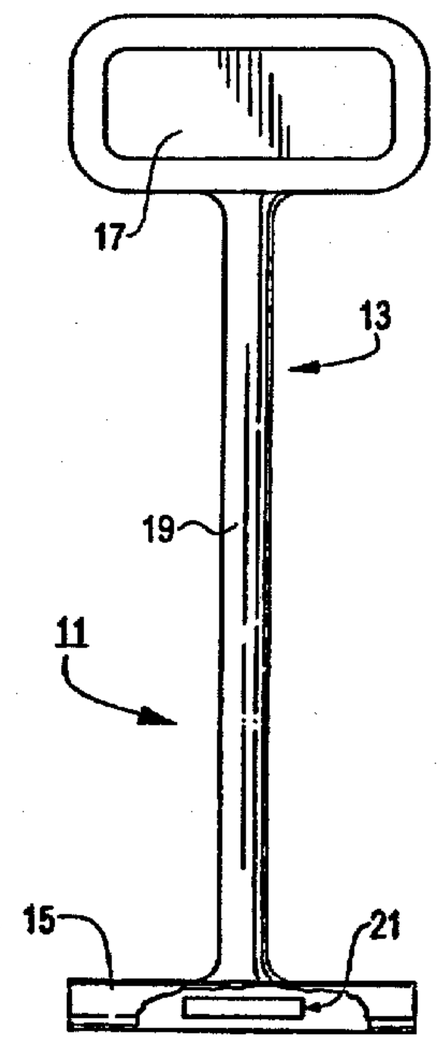
(51) Int.Cl.[6] G08B 13/14, A43D 69/00, F16B 21/00
(30) 1997/02/03 (60/037,114) US

(54) **APPAREIL DESTINE A ETRE UTILISE DANS LA DETECTION DU PRELEVEMENT NON AUTORISE D'UN PRODUIT PROVENANT D'UN MAGASIN OU D'UN AUTRE ETABLISSEMENT COMMERCIAL**

(54) **DEVICE FOR DETECTING UNAUTHORIZED ARTICLE REMOVAL**



(57) Appareil destiné à être utilisé dans la détection du prélèvement non autorisé d'un produit provenant d'un magasin ou d'un autre établissement commercial. L'appareil comporte un dispositif d'attache du type de ceux qui sont utilisés pour attacher une étiquette à un produit. Le dispositif d'attache comporte une première extrémité, une seconde extrémité et un filament reliant ces deux extrémités. La première extrémité est formée en vue de définir une barre transversale qui peut être introduite dans l'étiquette et ensuite dans le produit. La seconde extrémité est dimensionnée et formée pour empêcher la séparation de l'étiquette et du filament. Le dispositif d'attache est réalisé en plastique et comporte un élément actionneur disposé en son sein qui est utilisé comme une partie d'un système de détection de vol.

(57) A device (11) for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment. The device (11) comprises a fastener (13) of the type constructed for use in attaching a tag to the article of commerce. The fastener (13) includes a first end, a second end (17) and a filament (19) interconnecting the first end and the second end (17). The first end is shaped to define a cross-bar (15) which can be inserted through the tag and then through the article of commerce. The second end (17) is sized and shaped to prevent the tag from being pulled off the filament (19). The fastener (13) is made of plastic and includes an activating device (21) disposed therewithin, the activating device being used as part of a theft detection system.

CORRECTED VERSION*

CA 02279901 1999-08-03

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G08B 13/14, A43D 69/00, F16B 21/00

A3

(11) International Publication Number: WO 98/34204

(43) International Publication Date: 6 August 1998 (06.08.98)

(21) International Application Number: PCT/US98/02277

(22) International Filing Date: 3 February 1998 (03.02.98)

(30) Priority Data:
60/037,114 3 February 1997 (03.02.97) US

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(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

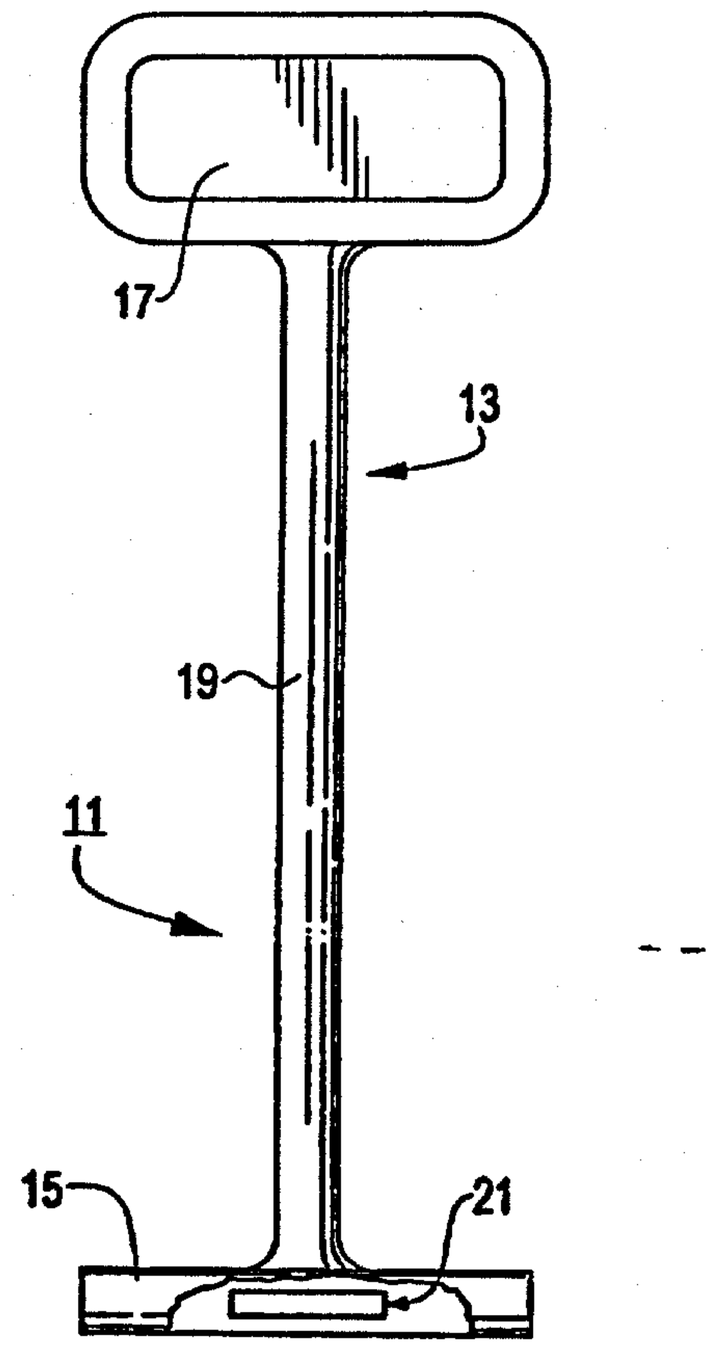
Published
With international search report.

(88) Date of publication of the international search report:
1 October 1998 (01.10.98)

(54) Title: DEVICE FOR DETECTING UNAUTHORIZED ARTICLE REMOVAL

(57)Abstract

A device (11) for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment. The device (11) comprises a fastener (13) of the type constructed for use in attaching a tag to the article of commerce. The fastener (13) includes a first end, a second end (17) and a filament (19) interconnecting the first end and the second end (17). The first end is shaped to define a cross-bar (15) which can be inserted through the tag and then through the article of commerce. The second end (17) is sized and shaped to prevent the tag from being pulled off the filament (19). The fastener (13) is made of plastic and includes an activating device (21) disposed therewithin, the activating device being used as part of a theft detection system.



*(Referred to in PCT Gazette No. 52/1998, Section II)

WO 98/34204 PCT/US98/02277

DEVICE FOR USE IN DETECTING THE UNAUTHORIZED REMOVAL OF AN ARTICLE OF COMMERCE FROM A STORE OR OTHER BUSINESS ESTABLISHMENT

BACKGROUND OF THE INVENTION

The present invention relates to a device for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment.

Plastic fasteners of the type commonly used, for example, to attach merchandise tags to articles of commerce, such as articles of clothing, are well known and are widely used in the retail industry. Typically, such fasteners comprise an elongated member having a first end shaped to define a cross-bar (also commonly referred to as a "T-bar"), a second end, and a thin filament portion interconnecting the cross-bar and the second end. In use, the cross-bar is inserted first through a tag and then through a desired piece of fabric. The second end is appropriately sized and shaped to keep the tag from being pulled off the filament portion.

Typically, such fasteners are mass-produced by a molding process in either one of two different forms known as fastener stock. One type of fastener stock, which is disclosed in commonly assigned U.S. Patent No. 3,103,666 and which is incorporated herein by reference, comprises a plurality of fasteners joined together at their respective cross-bars by an orthogonally disposed runner bar. The other type of fastener stock, which is disclosed in commonly-assigned U.S. Patent No. 4,955,475 and which is incorporated herein by reference, comprises a plurality of fasteners arranged in an end-to-end alignment, the ends of successive fasteners being joined together by severable connectors so as to form a continuously connected fastener stock.

The dispensing of individual fasteners from fastener stock into desired articles of commerce is typically accomplished using an apparatus commonly referred to as a "tagger gun." Examples of tagger guns are illustrated in commonly-assigned U.S. Patent Nos. 5,320,269, 5,024,365, 4,121,487, and 4,456,161, all of which are incorporated herein by reference. Typically, a tagger

gun includes (a) a hollow needle having a longitudinal slot extending across its length; (b) means for separating an individual cross-bar from the remainder of the fastener stock; and (c) means for feeding the individual cross-bar through the hollow, slotted needle and the desired article of commerce. Connections, if any, between the ends of adjacent fasteners are severed by pulling the tagger gun away from the article of commerce after the cross-bar of one of the fasteners has been inserted thereinto.

Although plastic fasteners of the type described above work well in the attachment of merchandise tags to articles of commerce, it is nonetheless known that certain unscrupulous consumers, on occasion, engage in the practice of "ticket switching" wherein the price tag for a low-priced item is switched with the price tag for a desired high-priced item using the plastic fastener from either the low-priced or the high-priced item. Various approaches to this problem have been devised. See e.g., commonly-assigned U.S. Patent No. 5,321,872, incorporated herein by reference, wherein a tamper-resistant plastic fastener is disclosed.

Although unrelated to the use of plastic fasteners, another common problem suffered by merchants is the theft of their merchandise. One approach that has been adopted by many merchants is the attachment of theft-detection devices to their articles of commerce. Such devices, which are typically quite large and conspicuous in appearance, may include an activating device such as a magnet, a pair of elongated strips of magnetizable material, a miniature electronic circuit, a radio frequency transmitter/receiver or the like which may be releasably attached to the article. The activating device is constructed so as to cause an audible signal or alarm to be emitted from a detector if the article is moved past the detector without having been deactivated in some manner. Typically, the detector is located at the egress of the store so as to permit authorized personnel to deactivate or remove the device following the purchase of the item and before the article is moved past the detector.

As an example of one type of theft-detection device, there is disclosed in U.S. Patent No. 4,745,401 to Montean a marker for use in radio frequency electronic article surveillance systems where the marker contains an inductive-

capacitive resonant circuit and is made reversibly deactivatable and reactivatable by the addition of a piece of magnetic material and means, such as a piece of permanently magnetizable material, for biasing the first material to prevent alternating fields induced therein from changing the magnetic state of that material, thereby preventing hysteresis losses from causing a lowering of the Q of the resonant circuit below the point of detection.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a device for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment.

Accordingly, there is provided a fastener which can be used in attaching a tag to an article of commerce, the fastener comprising an elongated unitary member having a first end, a second end, and a filament, said filament interconnecting said first end and said second end, said first end being shaped to define a cross-bar which can be inserted through an article of commerce, said second end being sized and shaped to prevent said filament from being pulled completely through the article of commerce, said fastener being made of plastic and including an activating device disposed therewithin, the activating device being used as part of a theft detection system.

Additional objects, as well as features and advantages, of the present invention will be set forth in part in the description which follows, and in part will be obvious from the description or may be learned by practice of the invention. In the description, reference is made to the accompanying drawings which form a part thereof and in which is shown by way of illustration various embodiments for practicing the invention. The embodiments will be described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that structural changes may be made without departing from the scope of the invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is best defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are hereby incorporated into and constitutes a part of this specification, illustrate various embodiments of the invention and, together with the description, serve to explain the principles of the invention. In the drawings wherein like reference numerals represent like parts:

Fig. 1 is an enlarged front view, broken away in part, of a first embodiment of a device constructed according to the teachings of the present invention for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment;

Fig. 2 is a right side view of the device shown in Fig. 1;

Fig. 3 is an enlarged front view, broken away in part, of a second embodiment of a device constructed according to the teachings of the present invention for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment; and

Fig. 4 is a right side view of the device shown in Fig. 3.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to Figs. 1 and 2, there are shown enlarged front and right side views, respectively, of a first embodiment of a device constructed according to the teachings of the present invention for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment, the device being represented generally by reference numeral 11.

Device 11 is generally in the shape of a fastener 13 of the type commonly used to attach a tag to a piece of fabric. Fastener 13 is preferably constructed of a plastic material such as polypropylene or nylon and is manufactured using conventional molding techniques. Fastener 13 comprises an elongated unitary member having a first end which is shaped to define a cross-bar 15, a second end which is shaped to define a paddle 17, and a filament 19 which interconnects cross-bar 15 and paddle 17. Cross-bar 15 is appropriately sized and shaped to be dispensed through an article of commerce using a tagger gun having a hollow slotted needle. Paddle 17 is appropriately sized and shaped to prevent flexible filament 19 from being pulled completely through an article of commerce through which cross-bar 15 has previously been inserted.

Device 11 further includes a theft detection member 21 mounted within crossbar 15 fastener 13. Theft detection member 21 may be made of an activating device such as a magnet, a pair of elongated strips of magnetizable material, a miniature electronic circuit, a radio frequency (RF) transmitter/receiver or the like. In the preferred embodiment, theft detection member 21 is in the form of a RF reactivatable marker of the type disclosed in U.S. Patent No. 4,745,401 to Montean, which is incorporated herein by reference. Radio frequency (RF) security circuits of the type disclosed in U.S. Pat. No. 4,745,401 to Montean are highly desirable because the paper-thin quality of the RF circuits allows them to be easily disposed completely within fastener 13.

In use, device 11 functions as part of a theft-detection or inventory control system in the following manner: Using well-known techniques, theft detection member 21 is activated to produce a radio frequency electromagnetic field. Fastener 13 is then secured to a desired article of commerce by inserting cross-bar

13 through the article. Preferably a tagger gun is used to insert cross-bar 13 through the article.

Typically, a magnetic field sensor is located at the egress of the room where the article is located. If the article is moved past the magnetic field sensor, the sensor will detect the particular the magnetic field of device 11. The magnetic field sensor, upon detecting the specific magnetic field of fastener 11, will then emit a visual and/or audio signal. To preclude the sensor from activating the alarm, such as if removal of the article is authorized, device 11 is of the type which can be deactivated using a large magnetizable device which alters the electromagnetic field produced by device 11 so as to prevent it from triggering the magnetic field sensor.

It should be noted that although theft detection member 21 is shown in Figs. 1 and 2 as being mounted within crossbar 15 of fastener 13, member 21 could alternatively be located in any other portion of fastener 13, such as in filament 19 or in paddle 17. For example, in Figs. 3 and 4, a second embodiment of a device for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment is shown, the device being identified by reference numeral 31. Device 31 is identical to device 11 in all regards except that in device 31 theft detection member 21 is mounted within paddle 17 of fastener 13 rather than crossbar 15.

The embodiments of the present invention described above is intended to be merely exemplary and those skilled in the art shall be able to make numerous variations and modifications to it without departing from the spirit of the present invention. All such variations and modifications are intended to be within the scope of the present invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A device for use in detecting the unauthorized removal of an article of commerce from a store or other business establishment, said device comprising a fastener of the type which can be used to secure a tag to said article of commerce, the fastener comprising an elongated unitary member having a first end, a second end, and a filament, said filament interconnecting said first end and said second end, said first end being shaped to define a cross-bar, said second end being sized and shaped to prevent said filament from being pulled completely through the article of commerce, said fastener being made of plastic and including an activating device disposed therewithin, the activating device being used as part of a theft detection system.

2. The device as claimed in claim 1 wherein the activating device is located in said cross-bar.

3. The device as claimed in claim 1 wherein the activating device is located in said filament.

4. The device as claimed in claim 1 wherein the activating device is located in said second end.

5. The device as claimed in claim 4 wherein said second end is in the shape of a paddle.

6. The device as claimed in claim 1 wherein the activating device comprises an RF reactivatable marker.

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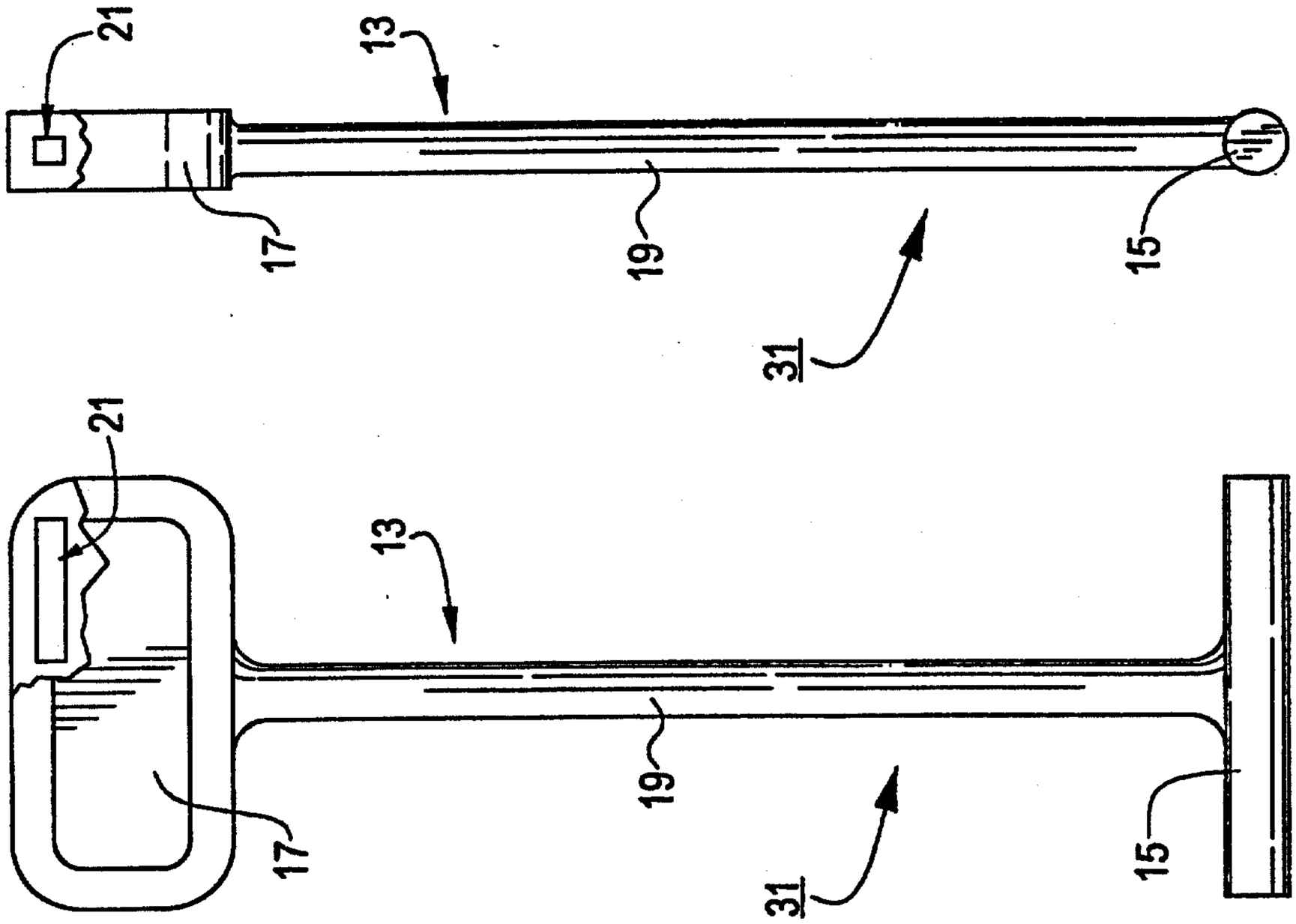

FIG. 4

FIG. 3

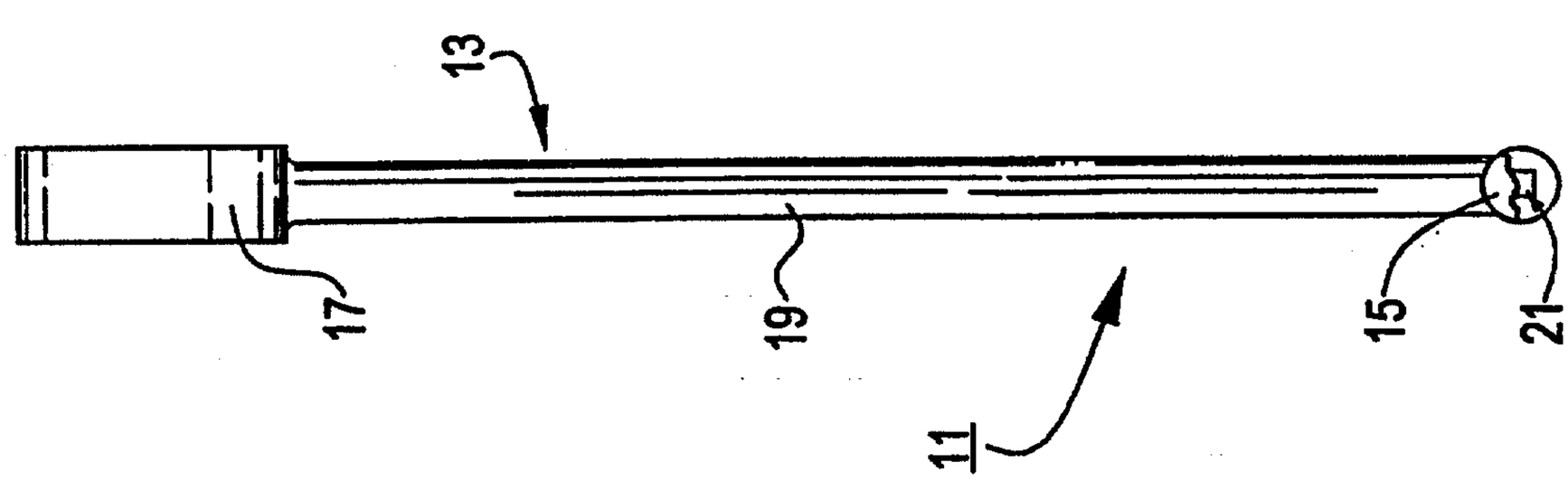

FIG. 2

FIG. 1