



(11) **EP 2 121 497 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
28.03.2012 Bulletin 2012/13

(51) Int Cl.:
B65H 75/18 (2006.01) H05F 3/02 (2006.01)

(21) Application number: **08700159.0**

(86) International application number:
PCT/GB2008/000063

(22) Date of filing: **10.01.2008**

(87) International publication number:
WO 2008/087379 (24.07.2008 Gazette 2008/30)

(54) **ANTI-STATIC CORE FOR RECEIVING WOUND SHEET MATERIAL**

ANTISTATISCHER KERN FÜR DIE AUFNAHME VON WICKELBAHNMATERIAL

ÂME ANTISTATIQUE POUVANT ACCUEILLIR UN MATÉRIAU EN FEUILLE ENROULÉ

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT
RO SE SI SK TR**

(30) Priority: **17.01.2007 GB 0700899**

(43) Date of publication of application:
25.11.2009 Bulletin 2009/48

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Description

[0001] This invention relates to a core for receiving wound sheet material and, more especially, this invention relates to a core which is for receiving wound sheet material and which has an anti-static capability.

[0002] In industry, sheet material is wound on cores to form reels. The sheet material may be, for example, paper, plastics film or cardboard. During use of the reels, the unwinding of the sheet material from its core often causes a build up of static electricity. The static electricity is caused by the fact that the cores are usually made of a non-conductive material, for example cardboard or a plastics material. The build up of the static electricity is due to a Van de Graff effect and high levels of the static electricity, which vary in dependence upon reel rotational speed and humidity levels. The problem of the static electricity is notorious in the printing industry. Static electricity discharges can harm personnel working in the vicinity and/or cause fires on process machines. Antistatic devices are known which deal with the above problem, see for example JP 2004 269109 A.

[0003] It is an aim of the present invention to provide an improved solution to the problem caused by the static electricity.

[0004] Accordingly, the present invention provides a core for receiving wound sheet material which core comprises a tube, a first end member inserted in a first end of the tube, a second end member inserted in a second end of the tube, and earthing means for enabling the core to be earthed in order to enable the discharge of static electricity from the core, the earthing being such that it is through a chuck of a machine handling the core during use of the core whereby the static electricity is discharged through the machine, and characterized in that the core is made of aluminium, and the earthing means is an electrically conducting strip.

[0005] The core of the present invention is advantageous in that, during use of the core, the chuck will always be in the core. Thus, as the static electricity is generated during the unwinding of the sheet material, the static electricity can substantially immediately be discharged through the chuck and the machine containing the chuck.

[0006] The core may be one in which the separately formed earthing means extends along a part of an inner surface of the tube and along a part of an inner surface of one of the end members.

[0007] The core may be one in which the earthing means is separately fitted to one of the end members, and in which the earthing means extends through a hole in the end member.

[0008] Any suitable and appropriate electrical conducting material may be used for the electrically conducting strip. Thus, for example, the electrically conducting strip may be made of copper.

[0009] The core is preferably one in which the earthing is effected through the chuck handling the core at either end of the core. In this case, the first and the second end

members will usually have the same static electricity discharging construction. If desired the first and the second members could have a different static electricity discharging construction, but they would still both be able to discharge the static electricity. Alternatively, if desired, the core could be such that the discharge of the static electricity is able to be effected from one end only of the core, and in this case the core will normally be one in which only one of the end members has the static electricity discharging construction.

[0010] The core may be made in any suitable and appropriate sizes so that, for example, the core may be 3 - 14 inches (75 - 356 mm) in diameter.

[0011] The end members may be made of any suitable and appropriate material. Preferable, the end members are made of a plastics material. The plastics material may typically be polypropylene. The end members may be disposable end members or re-usable end members.

[0012] The core may include a radio frequency identification tag. The radio frequency identification tag will be protected from the effects of the static electricity because the static electricity will be able to be discharged simply and substantially immediately on generation.

[0013] The present invention also extends to the core when including the wound sheet material. As indicated above, the wound sheet material may be paper, plastics film or cardboard. Other sheet materials may be employed.

[0014] An embodiment of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 is a section through part of a core for receiving wound sheet material, the core being handled by a chuck of a machine;

Figure 2 is a cross sectional view like Figure 1 but without the chuck;

Figure 3 is a side view of the core shown in Figure 1; Figure 4 is an exploded view of the core shown in Figure 3 but without the earthing means shown in Figures 1 and 2;

Figure 5 is an end view of one of the end members as shown in Figure 4;

Figure 6 is a perspective view of a tube part of the core as shown in Figure 4; and

Figure 7 shows the core of Figures 1 - 6 provided with wound sheet material and being used in industry.

[0015] Referring to Figures 1 - 6, there is shown a core 2 for receiving wound sheet material. The core 2 comprises a tube 4, a first end member 6 inserted in a first end 8 of the tube 4, and a second end member 10 inserted in a second end 12 of the tube 4. The core 2 is such that it is able to be earthed in order to enable the discharge of static electricity from the core 2. The earthing is such that it is effected through a chuck 14 of a machine handling the core 2 during use of the core 2 whereby the

static electricity is discharged through the machine.

[0016] The core 2 is such that the earthing is effected by a separately formed earthing means 16. The earthing means 16 extends along a part 18 of an inner surface 20 of the tube 4, and along a part 22 of an inner surface 24 of the first end member 6. The earthing means 16 is separately fitted to the first end member 6 by passing through a hole (not shown) in the first end member 6. The earthing means 16 is in the form of an electrically conducting strip which conducts the static electricity to the chuck 14 of the machine handling the core 2.

[0017] Referring to Figures 3 and 4, the second end member 10 is constructed the same as the first end member 6. Thus the second end member 10 also has the earthing means 16. The first and the second end members 6, 10 respectively are thus of the same static electricity discharging construction. The core 2 is then such that it is able to be earthed by the chuck 14 handling the core 2 at either end of the core 2.

[0018] The tube 4 is made of aluminum. The first and the second end members 6, 10 are made of polypropylene but other plastics materials may be employed.

[0019] Referring now to Figure 7, there is shown the core 2 provided with a roll of sheet material 26. In order to form a reel 28. The sheet material 26 is shown being removed from the core 2 for processing. The sheet material 26 is shown passing over a steel path roller 30, whereafter static electricity can build up on the sheet material 26 in the area indicated generally by arrow 32. Without the use of the earthing means 16, static electricity could then be discharged onto a machine such for example as a printing machine as indicated by arrow 34. With the earthing means 16, the static electricity is able to be discharged via the chuck and the handling machine handling the core 2. The chuck is always in contact with the core 2 and thus the static electricity is able to be discharged without sparks as would occur as indicated by the arrow 34 if the earthing means 16 were not present. The avoidance of the sparks avoids the possibility of the sparks causing fires. The discharge of the static electricity via the chuck 14 and its associated handling machine also avoids personnel working in the vicinity of the sheet material 26 receiving unpleasant and possibly harmful static electricity shocks.

[0020] It is to be appreciated that the embodiment of the invention described above with reference to the accompanying drawings has been given by way of example only and that modifications may be effected. Thus, for example, the tube 4 and the first and the second end members 6, 10 may be of different constructions to those shown. The core 2 shown in Figure 7 is typically shown as being used in a printing works but it could also be used in other areas of industry. If desired, one of the end members may be provided with a radio frequency identification tag for enabling the position of the core 2 to be tracked from manufacture to end use. The end members employed in the core 2 may be disposable end members or they may be re-usable end members.

Claims

1. A core (2) for receiving wound sheet material, which core (2) comprises a tube (4), a first end member (6) inserted in a first end (8) of the tube (4), a second end member (10) inserted in a second end (12) of the tube (4), and earthing means (16) for enabling the core (2) to be earthed in order to enable the discharge of static electricity from the core (2), the earthing being such that it is effected through a chuck (14) of a machine handling the core (2) during use of the core (2) whereby the static electricity is discharged through the machine, and **characterised in that** the core (2) is made of aluminium, and the earthing means (16) is an electrically conducting strip.
2. A core (2) according to claim 1 in which the separately formed earthing means (16) extends along a part (18) of an inner surface (20) of the tube (4) and along a part (22) of an inner surface (24) of one of the end members (6).
3. A core (2) according to claim 2 in which the earthing means is separately fitted to one of the end members (6, 8), and in which the earthing means (16) extends through a hole in the end member (6, 8).
4. A core (2) according any one of the preceding claims in which the earthing is effected through the chuck (14) handling the core (2) at either end of the core (2).
5. A core (2) according to claim 4 in which the first and the second end members (6, 10) are of the same static electricity discharging construction.
6. A core (2) according to any one of the preceding claims in which the first and second end members (6, 10) are made of a plastics material.
7. A core (2) according to any one of the preceding claims and including a radio frequency identification tag.
8. A core (2) according to any one of the preceding claims when including the wound sheet material.
9. A core (2) according to claim 8 in which the wound sheet material is paper, a plastics film or cardboard.

Patentansprüche

1. Kern (2) für die Aufnahme von Wickelbahnmaterial, wobei der Kern (2) ein Rohr (4), ein in ein erstes Ende (8) des Rohrs (4) eingeführtes erstes Endglied (6), ein in ein zweites Ende (12) des Rohrs (4) eingeführtes zweites Endglied (10) und Erdungsmittel (16), damit der Kern (2) geerdet werden kann, um

die Entladung von statischer Elektrizität von dem Kern (2) zu ermöglichen, umfasst, wobei die Erdung derart ist, dass sie durch ein Spannfutter (14) einer Maschine bewirkt wird, die den Kern (2) während der Verwendung des Kerns (2) handhabt, wodurch die statische Elektrizität durch die Maschine entladen wird, und **dadurch gekennzeichnet, dass** der Kern (2) aus Aluminium hergestellt ist und das Erdungsmittel (16) ein elektrisch leitender Streifen ist.

2. Kern (2) nach Anspruch 1, bei dem sich das separat ausgebildete Erdungsmittel (16) entlang eines Teils (18) einer inneren Oberfläche (20) des Rohrs (4) und entlang eines Teils (22) einer inneren Oberfläche (24) eines der Endglieder (6) erstreckt.
3. Kern (2) nach Anspruch 2, bei dem das Erdungsmittel separat an einem Ende der Endglieder (6, 8) angebracht ist und bei dem sich das Erdungsmittel (16) durch ein Loch in dem Endglied (6, 8) erstreckt.
4. Kern (2) nach einem der vorhergehenden Ansprüche, bei dem die Erdung durch das den Kern (2) an beiden Enden des Kerns (2) handhabende Spannfutter (14) bewirkt wird.
5. Kern (2) nach Anspruch 4, bei dem das erste und das zweite Endglied (6, 10) von der gleichen, statischen Elektrizität entladenden Konstruktion sind.
6. Kern (2) nach einem der vorhergehenden Ansprüche, bei dem das erste und zweite Endglied (6, 10) aus einem Kunststoffmaterial hergestellt sind.
7. Kern (2) nach einem der vorhergehenden Ansprüche und mit einem Radiofrequenzidentifikationstag.
8. Kern (2) nach einem der vorhergehenden Ansprüche, wenn er das Wickelbahnmaterial enthält.
9. Kern (2) nach Anspruch 8, bei dem das Wickelbahnmaterial Papier, ein Kunststofffilm oder Pappe ist.

Revendications

1. Noyau (2) pour recevoir un matériau laminé enroulé, lequel noyau (2) comprend un tube (4), un premier élément d'extrémité (6) inséré dans une première extrémité (8) du tube (4), un deuxième élément d'extrémité (10) inséré dans une deuxième extrémité (12) du tube (4) et des moyens de connexion à la terre (16) pour pouvoir relier le noyau (2) à la terre afin de permettre la décharge de l'électricité statique depuis le noyau (2), la connexion à la terre étant telle qu'elle est réalisée par le biais d'un mandrin (14) d'une machine qui manipule le noyau (2) pendant l'utilisation du noyau (2), l'électricité statique étant

déchargée à travers la machine, et **caractérisé en ce que** le noyau (2) est constitué d'aluminium et les moyens de connexion à la terre (16) sont une bande électriquement conductrice.

2. Noyau (2) selon la revendication 1, dans lequel les moyens de connexion à la terre (16) formés séparément s'étendent le long d'une partie (18) d'une surface intérieure (20) du tube (4) et le long d'une partie (22) d'une surface intérieure (24) de l'un des éléments d'extrémité (6).
3. Noyau (2) selon la revendication 2, dans lequel les moyens de connexion à la terre sont fixés séparément à l'un des éléments d'extrémité (6, 8) et dans lequel les moyens de connexion à la terre (16) s'étendent à travers un trou dans l'élément d'extrémité (6, 8).
4. Noyau (2) selon l'une quelconque des revendications précédentes, dans lequel la connexion à la terre est réalisée par le biais du mandrin (14) qui manipule le noyau (2) à l'une ou l'autre extrémité du noyau (2).
5. Noyau (2) selon la revendication 4, dans lequel le premier et le deuxième élément d'extrémité (6, 10) présentent la même construction de décharge de l'électricité statique.
6. Noyau (2) selon l'une quelconque des revendications précédentes, dans lequel le premier et le deuxième élément d'extrémité (6, 10) sont constitués de matière plastique.
7. Noyau (2) selon l'une quelconque des revendications précédentes et incluant une balise d'identification à radiofréquence.
8. Noyau (2) selon l'une quelconque des revendications précédentes lorsqu'il inclut le matériau laminé enroulé.
9. Noyau (2) selon la revendication 8, dans lequel le matériau laminé enroulé est du papier, un film en plastique ou du carton.

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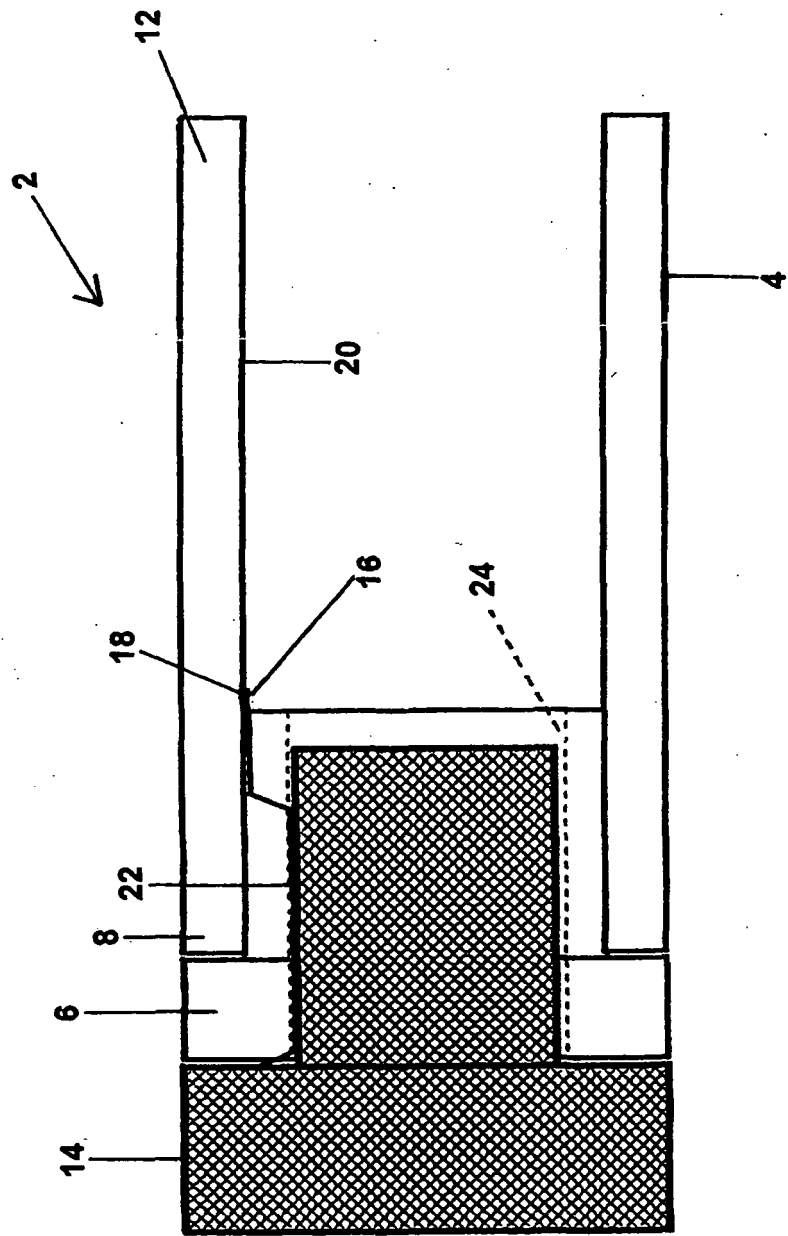


FIG. 1

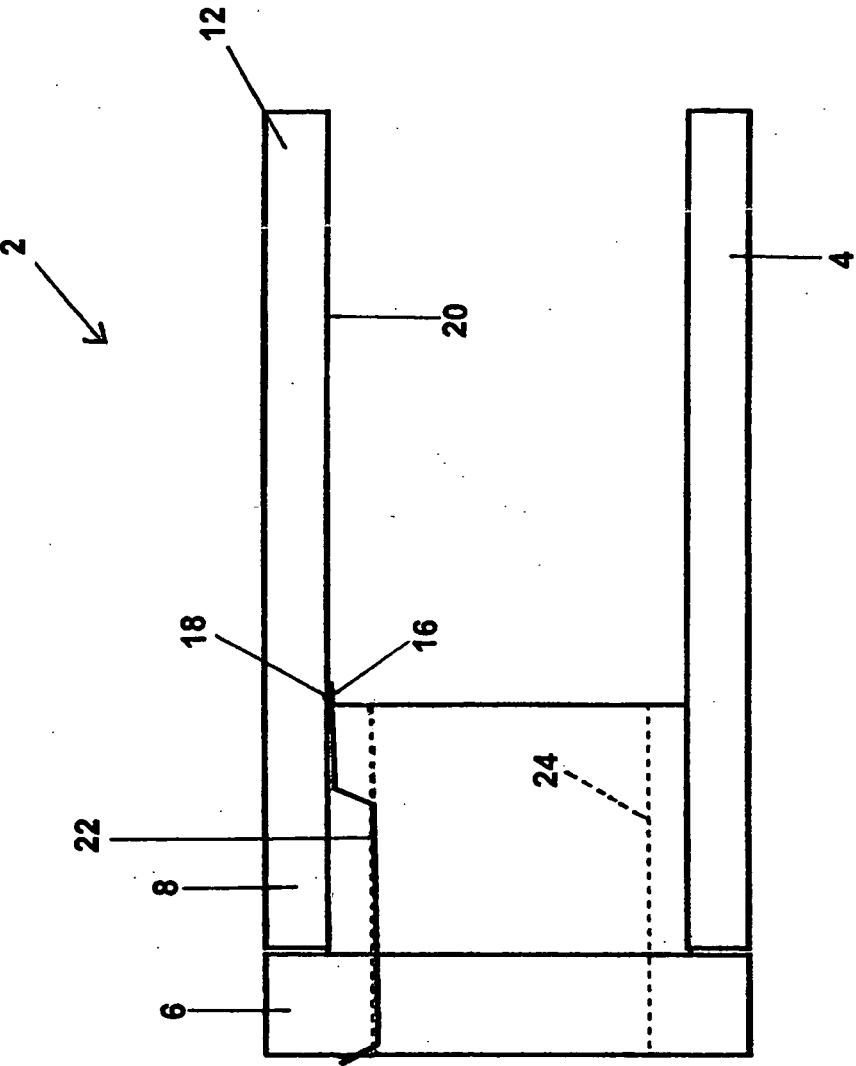
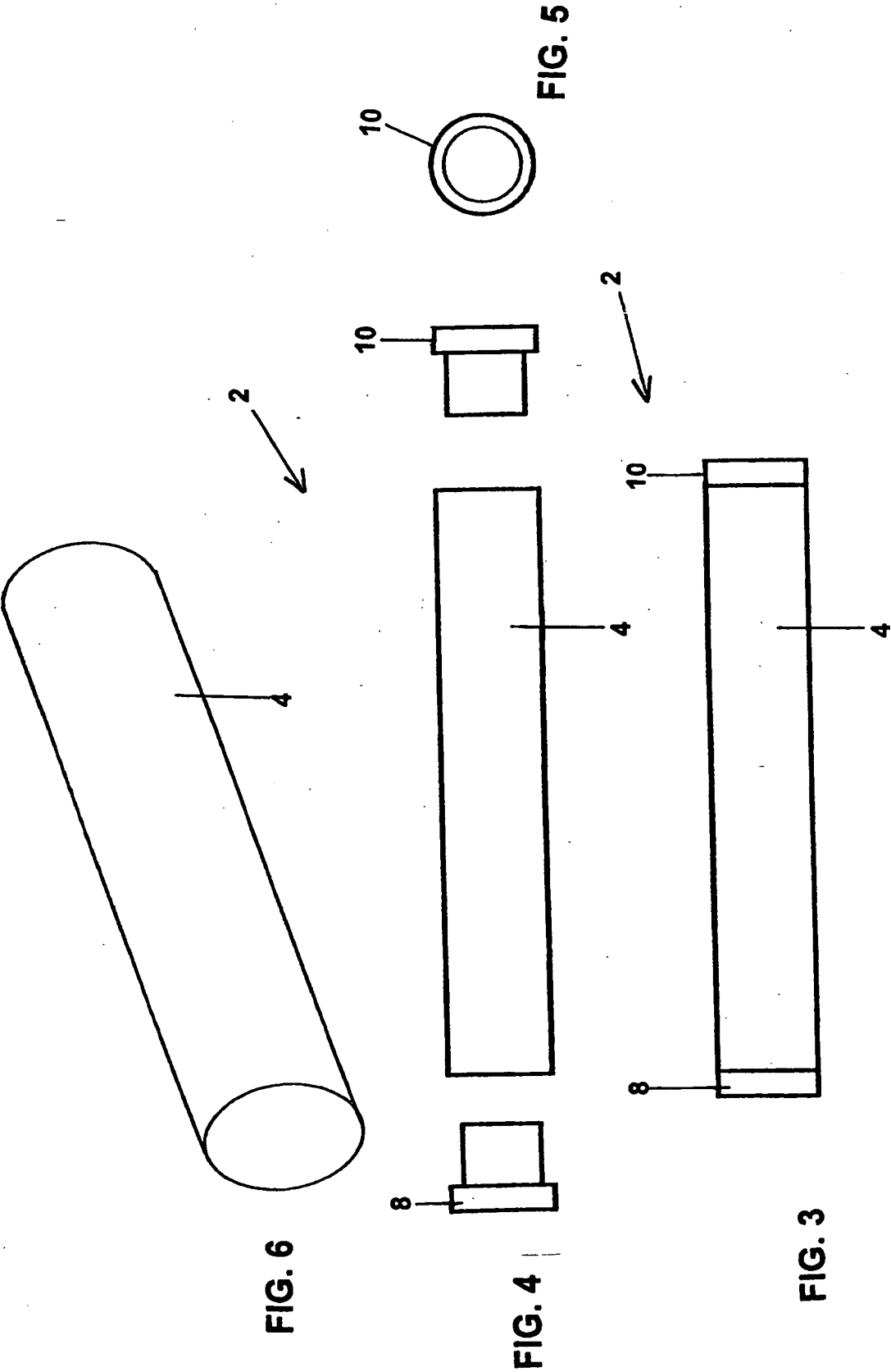
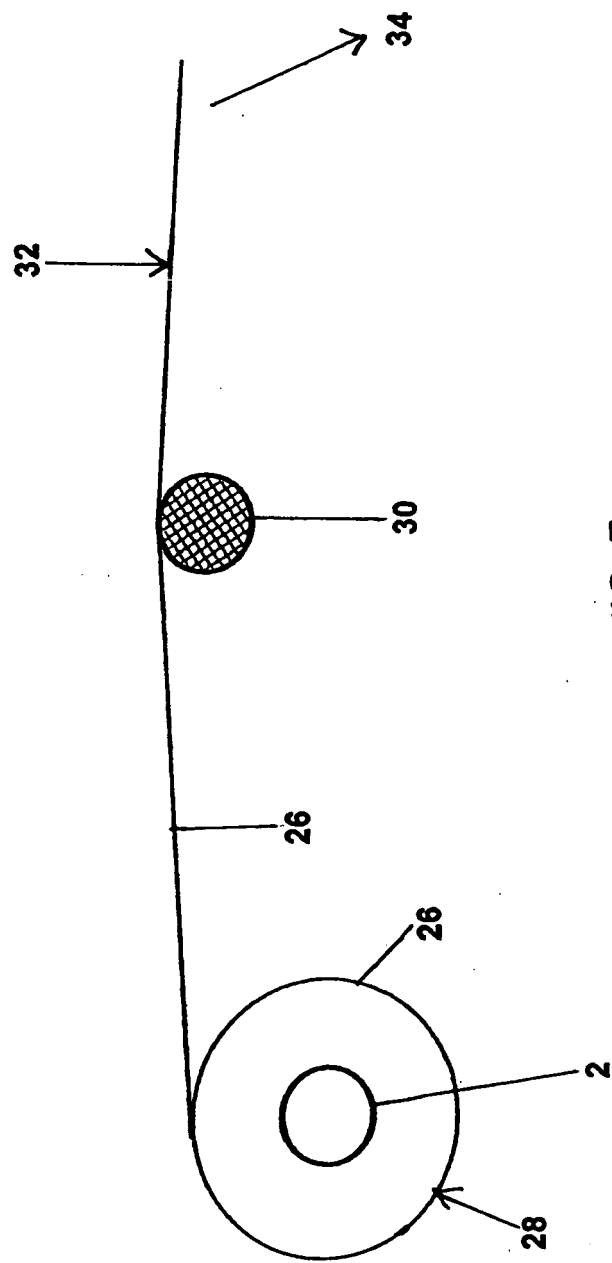


FIG. 2





REFERENCES CITED IN THE DESCRIPTION

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