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(54) **Coin- and token dispensing device**

Münz- und Wertmarken-Ausgabeautomat

Distributeur de pièces de monnaie et de jetons

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Description

[0001] The invention relates to a coin- and token-dispensing device in accordance with the preamble of claim 1.

[0002] A coin- and token-dispensing device of the said type is known from US-4535794-A. A coin- and token-dispensing device of this type is intended, for example, to be fitted in a gaming machine. Coins or tokens which leave the coin- and token-dispensing device via its outlet opening generally drop into a partially vertical passage and then into a tray where a player can collect the coins or tokens. To fill the coin and token holder of the dispensing device, the coin- and token-dispensing device is made accessible by opening a housing of the gaming machine and then the coin and token holder thereof can be topped up with coins and tokens. The coin and token holder can also be topped up with coins and tokens which are introduced by a player when the gaming machine is closed. A connector, which for connection to external electrical means is connected via a cable to electrical components of the coin- and token-dispensing device, is fitted against a wall of the housing opposite a wall comprising the outlet opening.

[0003] In the known coin- and token-dispensing device, the housing thereof is closed apart from a filling opening for the coin and token holder and the outlet opening. Components arranged in the housing, such as a detection member for detecting dispensing of coins and tokens and the said cable with connector are only accessible if the coin- and token-dispensing device is moved and one or more parts of the housing thereof are removed. Consequently, for example the cleaning of an optical detection member for detecting the passage of coins and tokens at the outlet opening requires considerable effort and time. This in turn leads to high maintenance costs. Since the gaming machine cannot be used by paying customers during maintenance work of this nature, prolonged maintenance also leads to loss of turnover for an operator of the gaming machine. To provide some indication of the time losses: the known coin and token holder can hold 1600 coins and tokens and has a coin and token dispensing speed of 200 coins or tokens per minute. If the housing has to be dismantled, the engineer presses a button, so that the holder is emptied at the said speed. This can therefore last 8 minutes. Only then can the housing be removed in order to allow maintenance to be carried out on the desired components. After the maintenance work, the housing has to be reassembled and the coins or tokens have to be returned to the holder. Cleaning a lens of the known coin- and token-dispensing device can therefore easily take 15 minutes. The same drawbacks apply if it should be desired to carry out maintenance work on other electronic components, in particular the control means, of the coin- and token-dispensing device. Maintenance work can be made even more difficult by the fact that the connector, which during maintenance may have to be disconnected from external

electrical means, is for any situation or use of the coin- and token-dispensing device at a fixed location, which is consequently at times difficult to gain access to.

[0004] For the sake of clarity, it should be noted that in the present description the term maintenance work is to be understood as meaning all activities which may have to be carried out on the device, possibly at periodic intervals, after use of the coin- and token-dispensing device has commenced, for example cleaning, repair, adjustment and replacement work.

[0005] It is an object of the invention to overcome the drawbacks of the known coin- and token-dispensing device.

[0006] According to the invention, this object is achieved by the provision of a coin- and token-dispensing device according to claim 1. This makes the detection member very easily and quickly accessible for maintenance work. Cleaning a lens thereof, for example, takes less than 2 minutes. Consequently, maintenance costs and operating losses are greatly reduced.

[0007] The use of an insert member which can be displaced into and out of the housing from the outside and of which a carrier carries the detection member is suitable for other electrical components of the device, in particular components which are more likely to need maintenance than others, to be arranged thereon. It is even possible for the entire insert members to be replaced without difficulty with another insert member, for example with an insert member with a different type of detection member, such as inductive, light-reflecting, light-interrupting, colour-sensitive, resistive or a combination thereof, including a suitable detection circuit.

[0008] US-2002/0060120 discloses a support for a motion sensor of coins supplied by a hopper of a recreational machine. The hopper contains a first sensor for counting coins that are supplied from the hopper through a slot of a door of the machine. Said support comprises two brackets which are attached on either side of said slot and which carry a second sensor, which is in particular an optical sensor. Said support and a coin outlet of the hopper device are constructed such that in a closed door situation a coin supplied by the hopper passes along the second sensor carried by said support on its way through the door slot. Printed circuit boards carrying the second sensor are attached to the brackets forming the support and the support is firmly attached to the door, for example with the collaboration of rivets. Maintenance of the first sensor inside the hopper device will require taking the device apart and the maintenance of the second sensor does not allow easy maintenance by replacement of it.

[0009] The invention is explained below in conjunction with a preferred embodiment shown in the appended drawings, in which:

Fig. 1 shows a perspective view of a preferred embodiment of a coin- and token-dispensing device with removed slidable insert member according to the in-

vention;

Fig. 2 shows a different perspective view of the preferred embodiment with removed components at the ends of a cable passage; and

Fig. 3 shows a perspective, exploded view of the preferred embodiment.

[0010] The preferred embodiment of a coin- and token-dispensing device according to the invention shown in Figs 1-3 comprises a housing with three parts: a centre part 4 with a base 5 and, at its periphery, a substantially rectangular frame 6, and on either side of the centre part 4 a first side part 7, which covers a main space of the centre part 4 delimited by the frame 6, and a second side part 9, which in combination with the centre part 4 forms a coin and token holder. When the coin- and token-dispensing device is in use, it is oriented as shown in Fig. 1. In the present description, the terms vertical and horizontal directions refer to the orientation illustrated in Fig. 1.

[0011] As is indicated in Fig. 3, an endless, belt-like conveyor member 11, which may comprise links 12, only three of which are shown in Fig. 3, is arranged in the centre part 4. Although this is not shown, the conveyor member 11 is therefore in the shape of a loop. In the centre part 4, the conveyor member 11 is guided over guide means, such as the strip 14 leading from the base 5, in such a manner that a radius of a bottom section of the loop is preferably smaller than a radius of a top section of the loop. A gearwheel 16 engages on an outer side, perpendicular to a main plane of the loop, of the conveyor member 11. The gearwheel 16 engages on a transmission wheel 17 which is arranged on the shaft of a motor 18 which is accommodated outside the centre part 4, in a space 19 of the second side part 9. When the motor 18 is running, the conveyor member 11 is rotated in the direction 21.

[0012] On the inner side of the conveyor member 11, which cannot be seen in Fig. 3, there are driver members, for example those which are known from US-4353794-A. Each driver member is suitable for carrying a coin or token resting on it upwards with the coin or token bearing against the conveyor member 11 in its section which rises obliquely upwards with the links 12 shown.

[0013] Coins or tokens can drop out of the coin and token holder, which is defined by the combination of the centre part 4 and the second side part 9, over an inclined base 23 of the coin or token holder and via an introduction opening 24 in the base 5 of the centre part onto a bottom section of the inner side of the conveyor member 11 or onto coins or tokens which are already located there. A vibratory member 26, which is not illustrated in more detail, can assist this conveying of coins or tokens through the introduction opening 24.

[0014] When the conveyor member, with the motor 18 running, is rotated in the direction 21, coins or tokens which have been deposited from the coin and token holder onto the conveyor member 11 are guided upwards on

the said driver members of the conveyor member 11. At a distance above the introduction opening 24, the base 5 of the centre part 4 has an outlet opening, which cannot be seen in the figures but opens out into an outlet space 28 of the second side part 9. The outlet space 28 at least partially has an inclined base 29. At the outlet opening there is a detection member which supplies a corresponding detection signal when a coin or token moves past it. Electrical control means receive the detection signal and power the motor 18 as a function thereof. One end of a cable is connected to the control means, and another end of the cable is connected to a connector.

[0015] According to the invention, the coin- and token-dispensing device comprises an insert member 30 which can be displaced, for example slid, into and out of the housing of the device from the outside via an opening 32 in an outer wall of the housing. The insert member 30 comprises means for detecting dispensing of coins and tokens by the coin- and token-dispensing device.

[0016] The insert member 30 comprises a carrier 31, which is in particular a printed circuit board (PCB) on which the detection member and control means of the coin- and token-dispensing device can be arranged. The carrier 31 is covered by a cover plate 33. The cover plate 33, transversely with respect to a main plane thereof, at one end has a wall plate 34 and at the other end has a bridge 35 which, together with the cover plate 33, leaves clear an aperture 36 for coins and tokens to be passed through. When the carrier 31 has been fitted into the housing of the coin- and token-dispensing device, the wall plate 34 is preferably positioned flush within the boundary of the opening 32. It is preferable for the cover plate 33 and the wall plate 34 to be transparent and to form an integral unit, secured to the carrier 31, with the bridge 35. At the bottom of the bridge 35 there is a light reflector (not shown). Opposite the reflector, there are one or more light transmitters and receivers (not shown) on the carrier 31, making it possible to detect the passage of a coin or token through the aperture 36.

[0017] It is also possible for other electrical components to be arranged on the carrier 31. In particular, indicators, such as LEDs, (not shown) of the control means can be arranged on the carrier 31 next to the wall plate 34, indicating the operation and/or condition and therefore any need to carry out maintenance on the coin- and token-dispensing device when the carrier 31 has been screwed into the housing of the device, and these indicators are visible via the transparent wall plate 36.

[0018] On account of the fact that one or more electrical components which may require maintenance are arranged on the carrier 31, which can be displaced into and out of the housing from the outside, these components are easily and quickly accessible, so that maintenance costs and operating losses are limited.

[0019] As can be seen most clearly from Fig. 2, the centre part 4 and the first side part 7, behind a strip 40, which does not form a complete closure, of the first side part 7, define a passage 41 which is suitable for a cable

(not shown) running from the control means to be laid in. The cable, with a connector 42 at one end, can be guided to one end or the other end of the passage 41, with the application of a certain force, via the slot which is left clear by the strip 40. Recesses in the first side part 7 and if appropriate in the centre part 4 at the ends of the passage 41 are suitable for the connector 42 to be placed in and then held captively by means of a locking member 44. A covering member 45 can be fitted at the other end of the passage 41 from the end having the connector 42. As a result, the most favourable location for the connector can be selected for each specific situation or use of the coin- and token-dispensing device. One consideration in this context may involve the ease of access in situations in which the connector has to be temporarily disconnected from external electrical means.

[0020] Various alternatives are possible in accordance with the invention as defined by the appended claims.

[0021] For example, it is possible to use other types of detection members. Also, the insert member 30 could be displaced via an opening in a different wall of the housing, for example from the top or as a function of the wall of the housing in which the outlet space 28 opens out.

[0022] Depending on the configuration of the insert member 30, an orientation thereof with respect to the housing and an orientation of the detection member with respect to the housing, it is possible for a displacement of the insert member 30 into and out of the housing to comprise a sliding movement, a tilting movement or other movements or combinations of movements.

[0023] Furthermore, it is possible for an electric circuit arranged on the insert member 30 to be connected, optionally via connectors, to internal electrical means. For example, if the expected work to be carried out on the coin- and token-dispensing device only involves periodic cleaning of a reflector of an optical detection member, consideration could be given to the use of an inexpensive cable connection without connectors between the insert member 30 and the remainder of the coin- and token-dispensing device.

Claims

1. Coin- and token-dispensing device, comprising a housing inside which there is an endless, belt-like conveyor member (11) with, during use, substantially vertical main planes and provided on the inner side with catch members which are located at a distance from one another, a holder for coins or tokens with an introduction opening (24), which is present above a bottom section of the conveyor member (11), for guiding coins or tokens out of the holder onto the conveyor member (11), drive means (16, 17, 18) for rotational displacement, in a conveying direction (21), of the conveyor member (11) in order to displace coins or tokens upwards on the catch members, an outlet opening, arranged at a rising section

of the inner side of the conveyor member (11) for discharging coins or tokens from catch members which are displaced past the outlet opening to outside the device, an electrical detection member arranged at the outlet opening for detecting the discharge of a coin or token and for supplying a corresponding detection signal, and electrical control means connected to the detection member and the drive means for controlling the drive means as a function of the detection signal, **characterized by** an insert member (30), which comprises a carrier (31) and which can be displaced into and out of the housing via an opening (32) in a wall of the housing, and whereby the detection member and at least a section of the control means are arranged on the carrier (31).

2. Coin- and token-dispensing device according to claim 1, **characterized in that** the insert member (30) can be displaced perpendicular to main planes of the conveyor member (11).
3. Coin- and token-dispensing device according to a preceding claim, **characterized in that** the insert member (30) comprises a wall plate (34) which is transparent and which, with the insert member (30) fitted into the housing, covers the opening (32), and **in that** the control means comprise one or more indicators which are arranged on the insert member (30) in such a manner that they are visible via the wall plate (34).
4. Coin- and token-dispensing device according to a preceding claim, **characterized in that** the control means are connected via a cable to a connector (42), along one side of the housing, over the entire length thereof, there is a passage (41) for laying the cable from the control means in a longitudinal direction of the passage (41) or in the opposite direction, and each end of the passage (41) being suitable for the connector (42) to be placed therein.
5. Coin- and token-dispensing device according to claim 4, **characterized in that** each end of the cable (41) is suitable for a covering member (45) to be placed in.
6. Coin- and token-dispensing device according to claim 4 or 5, **characterized in that** each end of the passage (41) is suitable for placing a locking member (44) in, in order to hold in place another component (42, 45) placed in the end.

Patentansprüche

1. Münzen- und Wertmarken-Ausgabevorrichtung, die ein Gehäuse aufweist, in dem vorgesehen sind: ein endlosriemenartiges Beförderungselement (11),

das im Gebrauch im Wesentlichen vertikale Hauptebenen besitzt und an der Innenseite mit Einfangelementen versehen ist, die sich in gegenseitigem Abstand befinden, eine Halterung für Münzen oder Wertmarken, die eine Einführöffnung (24) besitzt, die über einem Bodenabschnitt des Beförderungselements (11) vorhanden ist, um Münzen oder Wertmarken aus der Halterung auf das Beförderungselement (11) zu führen, Antriebsmittel (16, 17, 18) zur rotatorischen Verlagerung in einer Beförderungsrichtung (21) des Beförderungselements (11), um Münzen oder Wertmarken nach oben auf die Einfangelemente zu verlagern, eine Auslassöffnung, die in einem ansteigenden Abschnitt der Innenseite des Beförderungselements (11) angeordnet ist, um Münzen oder Wertmarken von Einfangelementen, die sich hinter der Auslassöffnung befinden, in die äußere Umgebung der Vorrichtung abzuführen, ein elektrisches Erfassungselement, das an der Auslassöffnung angeordnet ist, um die Ausgabe einer Münze oder Wertmarke zu erfassen und um ein entsprechendes Erfassungssignal zu liefern, und elektrische Steuermittel, die mit dem Erfassungselement und mit den Antriebsmitteln verbunden sind, um die Antriebsmittel in Abhängigkeit von dem Erfassungssignal zu steuern, **gekennzeichnet durch** ein Einsetzelement (30), das einen Träger (31) aufweist und das **durch** eine Öffnung (32) in einer Wand des Gehäuses in das Gehäuse und aus dem Gehäuse verlagert werden kann, wobei das Erfassungselement und wenigstens ein Abschnitt der Steuermittel auf dem Träger (31) angeordnet sind.

2. Münzen- und Wertmarken-Abgabevorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Einsetzelement (30) senkrecht zu Hauptebenen des Beförderungselements (11) verlagert werden kann.
3. Münzen- und Wertmarken-Abgabevorrichtung nach einem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** das Einsetzelement (30) eine Wandplatte (34) aufweist, die lichtdurchlässig ist und bei in das Gehäuse eingesetztem Einsetzelement (30) die Öffnung (32) abdeckt, und dass die Steuermittel einen oder mehrere Anzeiger umfassen, die an dem Einsetzelement (30) in der Weise angeordnet sind, dass sie durch die Wandplatte (34) hindurch sichtbar sind.
4. Münzen- und Wertmarken-Abgabevorrichtung nach einem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die Steuermittel über ein Kabel mit einem Verbinder (42) verbunden sind, wobei sich längs einer Seite des Gehäuses über dessen gesamte Länge ein Kanal (41) erstreckt, um das Kabel von den Steuermitteln in einer Längsrichtung des Durchlasses (41) oder in der entgegengesetzten Richtung zu verlegen, und wobei in jedem Ende des

Durchlasses (41) der Verbinder (42) angeordnet werden kann.

5. Münzen- und Wertmarken-Abgabevorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** in jedem Ende des Durchlasses (41) ein Abdeckelement (45) angeordnet werden kann.
6. Münzen- und Wertmarken-Abgabevorrichtung nach Anspruch 4 oder 5, **dadurch gekennzeichnet, dass** in jedes Ende des Durchlasses (41) ein Verriegelungselement (44) eingesetzt werden kann, um eine weitere Komponente (42, 45), die in dem Ende angeordnet ist, an ihrem Ort festzuhalten.

Revendications

1. Distributeur de pièces de monnaie et de jetons, comprenant un logement à l'intérieur duquel se trouve un élément de convoyage à courroie sans fin (11) présentant, en fonctionnement, des parois principales sensiblement verticales et comportant, sur sa face intérieure, des éléments de prise qui sont mutuellement espacés, un réceptacle pour pièces de monnaie ou jetons avec une ouverture d'introduction (24), ménagée au dessus d'une partie inférieure de l'élément de convoyage (11), de telle manière à guider des pièces de monnaie ou des jetons hors du réceptacle sur l'élément de convoyage (11), des moyens d'entraînement (16, 17, 18) pour créer un mouvement de rotation, dans un sens de convoyage (21), de l'élément de convoyage (11) afin de déplacer des pièces de monnaie ou des jetons vers le haut sur les éléments de prise, une ouverture de sortie, ménagée dans une partie montante de la face intérieure de l'élément de convoyage (11) de manière à décharger des pièces de monnaie ou des jetons à partir des éléments de prise qui sont déplacés et franchissent l'ouverture de sortie vers l'extérieur du dispositif, un élément de détection électrique prévu pour détecter le déchargement d'une pièce de monnaie ou d'un jeton et pour fournir un signal de détection correspondant, et des moyens de commande électriques reliés à l'élément de détection et aux moyens d'entraînement et prévus pour commander les moyens d'entraînement en fonction du signal de détection, **caractérisé par** un élément à insertion (30), qui comprend un support (31) et qui peut être déplacé vers l'intérieur et vers l'extérieur d'une ouverture (32) ménagée dans une paroi du logement, et de telle manière que l'élément de détection et au moins une partie des moyens de commande soient disposés sur le support (31).
2. Distributeur de pièces de monnaie et de jetons, selon la revendication 1, **caractérisé en ce que** l'élément à insertion (30) peut être déplacé de manière per-

pendiculaire aux parois principales de l'élément de convoyage (11).

3. Distributeur de pièces de monnaie et de jetons, selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément à insertion (30) comprend une plaque de paroi (34) qui est transparente et qui, en association avec l'élément à insertion (30) inséré dans un logement, couvre l'ouverture (32), et **en ce que** les moyens de commande comprennent un ou plusieurs indicateurs qui sont disposés sur l'élément à insertion (30) de telle manière à ce qu'ils soient visibles via la plaque de paroi (34). 5 10
4. Distributeur de pièces de monnaie et de jetons, selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens de commande sont reliés via un câble à un connecteur (42), le long d'une face du logement, sur toute la longueur de cette dernière, **en ce qu'il** existe un passage (41) pour faire cheminer le câble à partir des moyens de commande suivant une direction longitudinale au passage (41) ou dans la direction opposée, et **en ce que** chaque extrémité du passage (41) est adaptée de telle manière à pouvoir y placer le connecteur (42). 15 20 25
5. Distributeur de pièces de monnaie et de jetons, selon la revendication 4, **caractérisé en ce que** chaque extrémité du câble (41) est adaptée de telle manière à pouvoir y placer un élément de recouvrement (45). 30
6. Distributeur de pièces de monnaie et de jetons, selon la revendication 4 ou 5, **caractérisé en ce que** chaque extrémité du câble (41) est adaptée de telle manière à pouvoir y placer un élément de blocage (44), afin de maintenir en position un autre élément (42, 45) placé à l'extrémité. 35 40 45 50 55

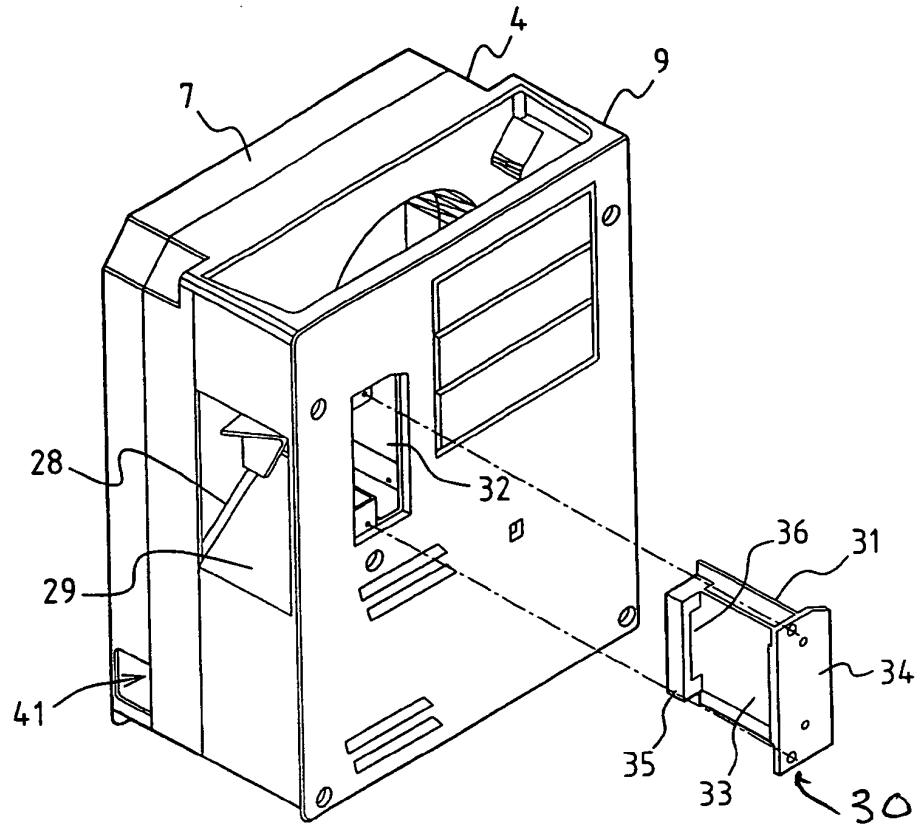


FIG. 1.

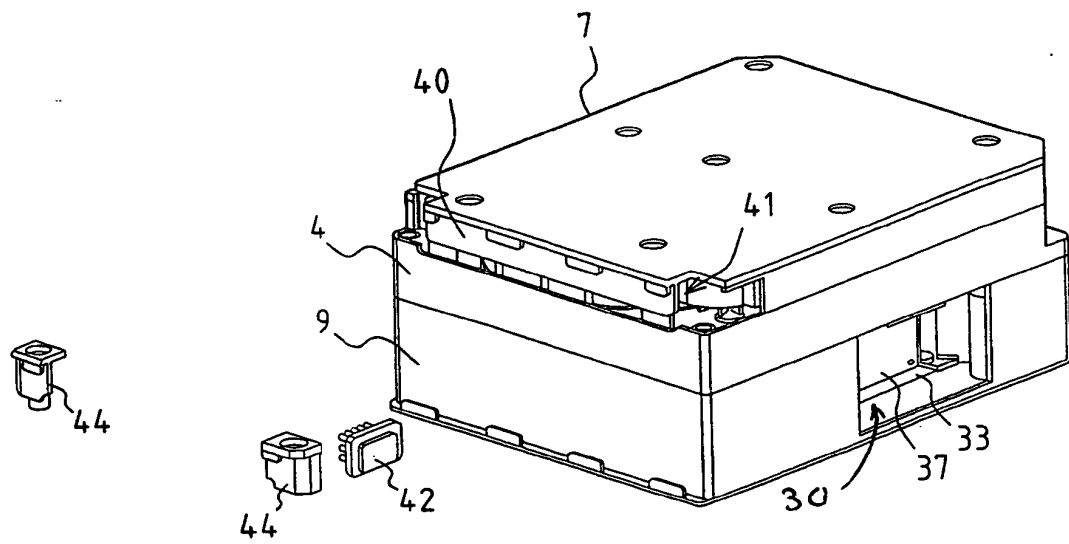


FIG. 2.

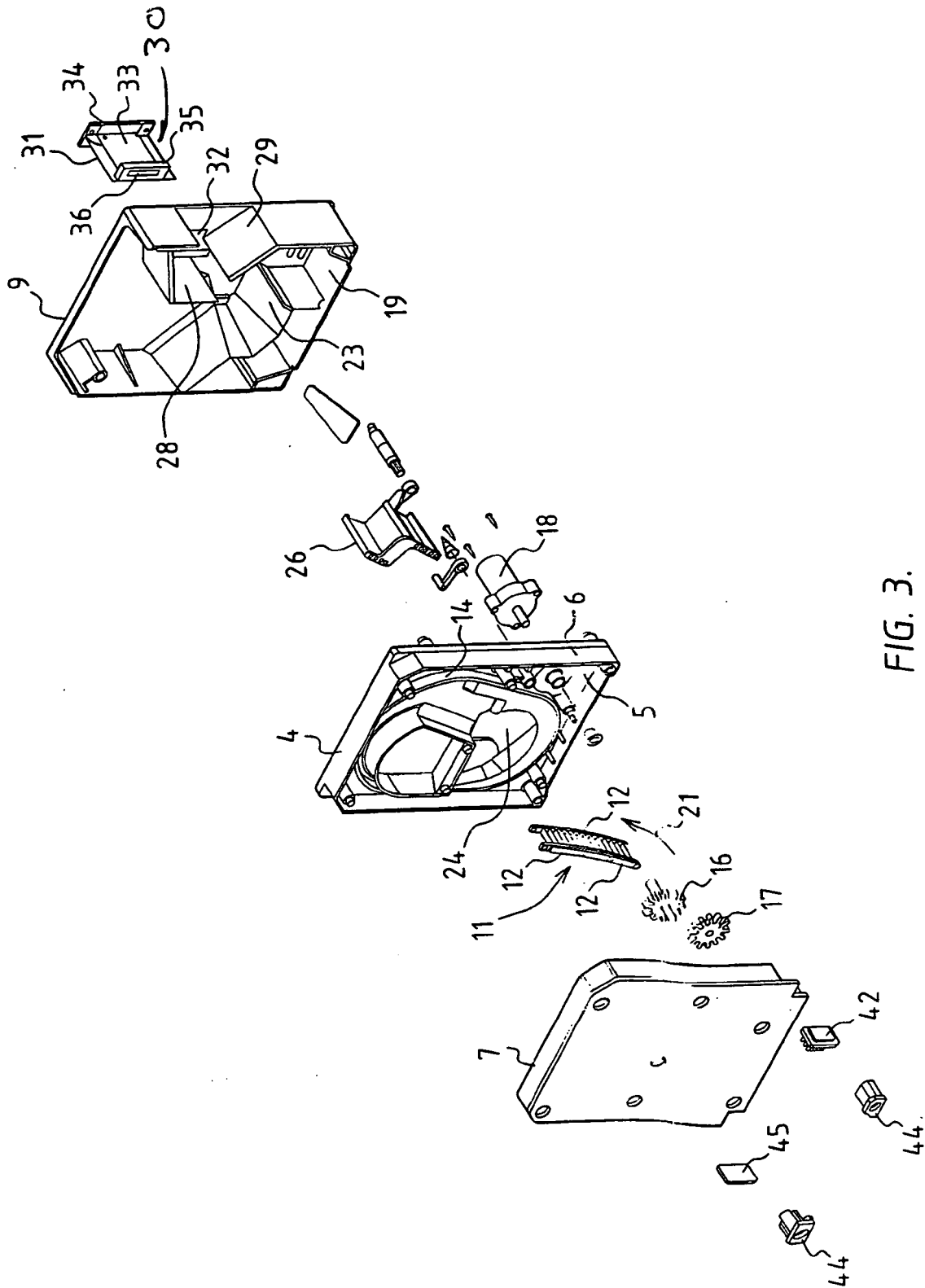


FIG. 3.

REFERENCES CITED IN THE DESCRIPTION

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