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(54) **ABSORBENT SHEET DISPENSER HAVING IMPROVED HAND SENSOR PERFORMANCE**
SPENDER FÜR SAUGFÄHIGE TÜCHER MIT VERBESSERTER HANDSENSORLEISTUNG
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Description

[0001] This invention relates to hands-free dispensers for absorbent sheet products (preferably paper towels), and provides dispensers having improved hand sensor performance in hands-free mode.

[0002] The present inventors have recognized that the presence of metal objects or surfaces in hands-free dispensers, in the vicinity of the hand sensor, sometimes adversely affects the hand sensor performance. United States Published Patent Application No. 2007/0234868 describes a hands-free dispenser in which a capacitive hand (proximity) sensor projects through an opening in the front cover of the dispenser, which permits the dispenser cover to have a metallic outer surface.

[0003] When developing dispensers as described in United States Published Patent Application No. 2007/0234868, it has been found that when the cover has a nickel-plated outer surface, the performance of the capacitive hand sensor can be adversely affected, resulting, for example, in decreased sensitivity of the hand sensor, hypersensitivity of the hand sensor, and/or spontaneous shutting down of the hand sensor. Additional problems can arise due to accumulation of static electricity on the metallic dispenser parts and/or surfaces, which can result in problems such as double feeding of the absorbent sheet through the internal rollers of the dispenser, spontaneous shutting down of the hand sensor, and uncontrolled dispensing of paper.

[0004] A dispenser for dispensing lengths of products is known from US 2008/100982 A1 which represents the closest prior art.

[0005] The present inventors have discovered that one or more of these problems can be mitigated by providing a conductive path from one or more of the metal surfaces that interferes with the intended operation of the dispenser, to a charge receiver that is positioned more remote from the hand sensor than the interfering metal surfaces.

[0006] The invention hands-free dispenser is characterized by the features of claim 1. Preferred embodiments follow from the other claims.

[0007] The invention is preferably applied to hands-free dispensers utilizing capacitive proximity sensors for hand detection, as described for example in United States Published Patent Application No. 2007/0234868, but may also be applied to dispensers utilizing hand sensors that operate on different detection principles, such as active or passive infrared hand sensors.

[0008] The invention preferably draws charge away from a metallized front cover and/or a metal dispensing roller mounted within the dispenser housing, but it will be appreciated that the invention may draw charge away from any metal surface or component of the dispenser, or away from any metal article proximate the dispenser, that interferes with the intended manner of dispenser operation.

[0009] In a preferred embodiment, a conductive wire is mounted inside the dispenser housing, and is electri-

cally connected at one end to both a metallized dispenser cover and a rotating aluminum pinch roll mounted within the dispenser. The wire is preferably encased in plastic or other insulating material intermediate its exposed ends. The wire is preferably connected at its other exposed end to a negative terminal of the battery compartment that holds the batteries powering the dispenser. This embodiment provides a self-contained conductive path that does not complicate the installation of the dispenser; and although the wire does not serve to ground the metal surfaces to any object outside the dispenser, it nevertheless provides improved hand sensor performance by providing a conductive path between the interfering metal surfaces and the more rearwardly-positioned battery compartment.

[0010] When the conductive element is connected at its proximate end to a moving member such as an aluminum pinch roll, the electrical contact will be established by suitable means such as a metallic brush element. When the conductive element is connected at its proximate end to the dispenser cover, it is preferred that the electrical contact occur through the intermediary of a conductive element such as a metallic spring that is mounted on the dispenser body, and which is in electrical contact with the dispenser cover only when the cover is closed.

[0011] It will be appreciated that the interfering metal surfaces and components will typically not be connected to the charge receiver other than by the conductive element according to the invention. For example, a wire supplying driving current to an electric motor would not be a conductive element according to the invention, because such a wire is attendant to the normal operation of the motor. The interfering metal surfaces according to the invention are therefore those that are not necessarily connected to the charge receiver, be it the battery compartment or another charge receiver, for their conventional operation.

[0012] It will be appreciated that the conductive path can take forms other than that of a wire, for example, a metallic element mounted to an interior surface of the dispenser body. Such a metallic element, whether in the form of a wire or flexible plate, may be encased in insulating material intermediate the connections to the interfering surfaces and the charge receiver, or may be exposed in these intermediate regions. In another embodiment, interior brackets are formed in the dispenser body at the time of injection molding of the same, and the conductive element is positioned in these brackets. The brackets may hold a conductive element that has already been provided with an insulating covering, or the brackets may themselves provide an insulating covering that partially or completely covers an otherwise exposed conductive element.

[0013] As noted above, the charge receiver is the negative terminal of the battery compartment, which utilizes the batteries as a charge sink when the dispenser is in operation. In embodiments not covered by the present invention, the charge receiver may take the form of other

metallic elements either inside or outside the dispenser housing, provided that such charge receiver is positioned at a greater distance from the hand sensor than the interfering metallic surfaces to which the conductive element is connected at its other end. It is nevertheless preferred that the charge receiver be a metallic component inside the dispenser housing, in light of the benefits described above.

[0014] The invention is applicable to battery-powered dispensers. In embodiments not covered by the invention, hard-wired dispensers draw their current supply from the mains of the facility in which they are installed. In that case, the distal end of the conductive element would be connected to a suitable charge receiver inside or outside of the dispenser.

[0015] The accompanying figures illustrate a preferred embodiment of the invention. In Fig. 1, a cassette of a hands-free dispenser is shown, that incorporates the one version of the improvement of the present invention. That cassette corresponds to the cassette shown in the figures of United States Published Patent Application No. 2007/0234868. As shown in Fig. 1, a conductive wire encased in plastic is connected at one end to both an aluminum pinch roll (corresponding to the roll 16 shown in Fig. 5 of United States Published Patent Application No. 2007/0234868) via a metallic bracket and a metallic brush, and (via the same metallic bracket) to a metallic spring that is in electrical contact with the dispenser cover when this latter is closed. The particulars of this proximate end connection are shown at greater magnification in Fig. 2. At its distal end, the wire is connected to the negative terminal of the battery compartment, and hence to the negative side of the batteries when the dispenser is in use, as shown in greater detail in Fig. 3.

Claims

1. A hands-free dispenser for dispensing lengths of absorbent sheet products, said dispenser comprising:

a dispenser body containing a dispensing mechanism;
 a hand sensor for detecting the presence of a user's hand in the vicinity of the dispenser;
 a battery compartment;
 an elongated metallic conductive element having a proximate end in electrical communication with at least one interfering metal surface of said dispenser positioned at a first location relative to said hand sensor, and a distal end in electrical communication with at least one charge receiver positioned at a second location relative to said hand sensor, the second location being at a greater distance from the hand sensor than the first location, whereby the hand sensor's performance is improved by providing a conductive path between the at least one interfering metal

surface and the more rearwardly positioned battery compartment;

characterized in that

the charge receiver is a metallic negative terminal of the battery compartment, which is positioned within the dispenser body.

2. The dispenser as claimed in claim 1, wherein the elongated metallic conductive element is a wire.
3. The dispenser as claimed in claim 2, wherein the wire is encased in insulating material intermediate its proximate and distal ends.
4. The dispenser as claimed in claim 1, wherein the elongated metallic conductive element is fully contained within said dispenser body.
5. The dispenser as claimed in claim 1, wherein the elongated metallic conductive element is in electrical communication at its proximate end with at least one of a metallized dispenser cover and a metallic pinch roller.
6. The dispenser as claimed in claim 1, wherein the elongated metallic conductive element is in electrical communication at its proximate end with a metallic pinch roller via a metallic brush.
7. The dispenser as claimed in claim 1, wherein the elongated metallic conductive element is in electrical communication at its proximate end with a metallized dispenser cover via a metallic spring mounted on the dispenser body.
8. The dispenser as claimed in claim 1, wherein the elongated metallic conductive element is a flexible metallic plate or leaf.
9. The dispenser as claimed in claim 8, wherein the elongated metallic conductive element is mounted in brackets molded into at least one interior surface of said dispenser body.
10. The dispenser as claimed in claim 1, wherein the interfering metal surfaces are not connected to the charge receiver other than by the conductive element.

Patentansprüche

1. Automatischer Spender zum Ausgeben von Längen absorbierender Blattprodukte, wobei der Spender umfasst:

einen Spenderkörper, der einen Ausgabeme-

- chanismus beinhaltet;
 einen Handsensor zum Detektieren der Präsenz einer Hand eines Benutzers in der Nähe des Spenders;
 ein Batteriefach;
 ein längliches, metallisches, leitendes Element, das ein proximales Ende mit mindestens einer interferierenden Metalloberfläche des Spenders elektrisch verbunden, die an dem ersten Ort relativ zu dem Handsensor positioniert ist, und ein distales Ende elektrisch mit mindestens einem Ladungsempfänger verbunden aufweist, der an einem zweiten Ort relativ zu dem Handsensor positioniert ist, wobei der zweite Ort einen größeren Abstand von dem Handsensor als der erste Ort aufweist, wobei die Leistung des Handsensors durch Bereitstellen eines leitenden Pfads zwischen der mindestens einen interferierenden Metalloberfläche und dem weiter hinten positionierten Batteriefach verbessert wird;
- dadurch gekennzeichnet, dass**
 der Ladungsempfänger ein metallischer, negativer Anschluss des Batteriefachs ist, das in dem Spenderkörper liegt.
2. Spender nach Anspruch 1, wobei das längliche, metallische, leitende Element ein Kabel ist.
 3. Spender nach Anspruch 2, wobei das Kabel in einem Isolationsmaterial zwischen seinem proximalen und distalen Ende eingehaust ist.
 4. Spender nach Anspruch 1, wobei das längliche, metallische, leitende Element vollständig in dem Spenderkörper enthalten ist.
 5. Spender nach Anspruch 1, wobei das längliche, metallische, leitende Element elektrisch an seinem proximalen Ende mit einer metallisierten Spenderabdeckung und/oder einer metallischen Klemmrolle verbunden ist.
 6. Spender nach Anspruch 1, wobei das längliche, metallische, leitende Element elektrisch mit seinem proximalen Ende mit einer metallischen Klemmrolle via einer metallische Bürste verbunden ist.
 7. Spender nach Anspruch 1, wobei das längliche, metallische, leitende Element elektrisch mit seinem proximalen Ende mit einer metallisierten Spenderabdeckung via einer metallischen Feder verbunden ist, die an dem Spenderkörper montiert ist.
 8. Spender nach Anspruch 1, wobei das längliche, metallische, leitende Element eine flexible, metallische Platte oder Blatt ist.

9. Spender nach Anspruch 8, wobei das längliche, metallische, leitende Element in Haltern montiert ist, die in mindestens einer inneren Oberfläche des Spenderkörpers geformt sind.
10. Spender nach Anspruch 1, wobei die interferierenden Metalloberflächen nicht mit dem Ladungsempfänger außer durch das leitende Element verbunden sind.

Revendications

1. Distributeur mains libres pour distribuer des longueurs d'articles absorbants en feuilles, ledit distributeur comportant :

un corps de distributeur contenant un mécanisme de distribution ;
 un détecteur de main pour détecter la présence d'une main de l'utilisateur au voisinage du distributeur ;
 un compartiment pour piles ;
 un élément conducteur métallique allongé ayant une extrémité proximale communiquant par voie électrique avec au moins une surface métallique interférente dudit distributeur placée à un premier endroit par rapport audit détecteur de main, et une extrémité distale communiquant par voie électrique avec au moins un récepteur de charges placé à un second endroit par rapport audit détecteur de main, le second endroit étant à une plus grande distance du détecteur de main que le premier endroit, grâce à quoi les performances du détecteur de main sont améliorées par la création d'un trajet conducteur entre la/les surface(s) métallique(s) interférente(s) et le compartiment pour piles disposé plus en arrière ;

caractérisé en ce que

le récepteur de charges est une borne métallique négative du compartiment pour piles, qui est disposée dans le corps du distributeur.

2. Distributeur selon la revendication 1, dans lequel l'élément conducteur métallique allongé est un fil.
3. Distributeur selon la revendication 2, dans lequel le film est enrobé par un isolant entre ses extrémités proximale et distale.
4. Distributeur selon la revendication 1, dans lequel l'élément conducteur métallique allongé est entièrement contenu dans ledit corps du distributeur.
5. Distributeur selon la revendication 1, dans lequel l'élément conducteur métallique allongé communi-

que par voie électrique, à son extrémité proximale, avec un capot métallisé du distributeur et/ou un galet pinceur métallique.

6. Distributeur selon la revendication 1, dans lequel l'élément conducteur métallique allongé communique par voie électrique, à son extrémité proximale, avec un galet pinceur métallisé par l'intermédiaire d'un balai métallique. 5
- 10
7. Distributeur selon la revendication 1, dans lequel l'élément conducteur métallique allongé communique par voie électrique, à son extrémité proximale, avec un capot métallisé du distributeur par l'intermédiaire d'un ressort métallique monté sur le corps du distributeur. 15
8. Distributeur selon la revendication 1, dans lequel l'élément conducteur métallique allongé est une plaque ou une feuille métallique souple. 20
9. Distributeur selon la revendication 8, dans lequel l'élément conducteur métallique allongé est monté dans des supports moulés dans au moins une surface intérieure dudit corps du distributeur. 25
10. Distributeur selon la revendication 1, dans lequel les surfaces métalliques interférentes ne sont pas connectées au récepteur de charges autrement que par l'élément conducteur. 30

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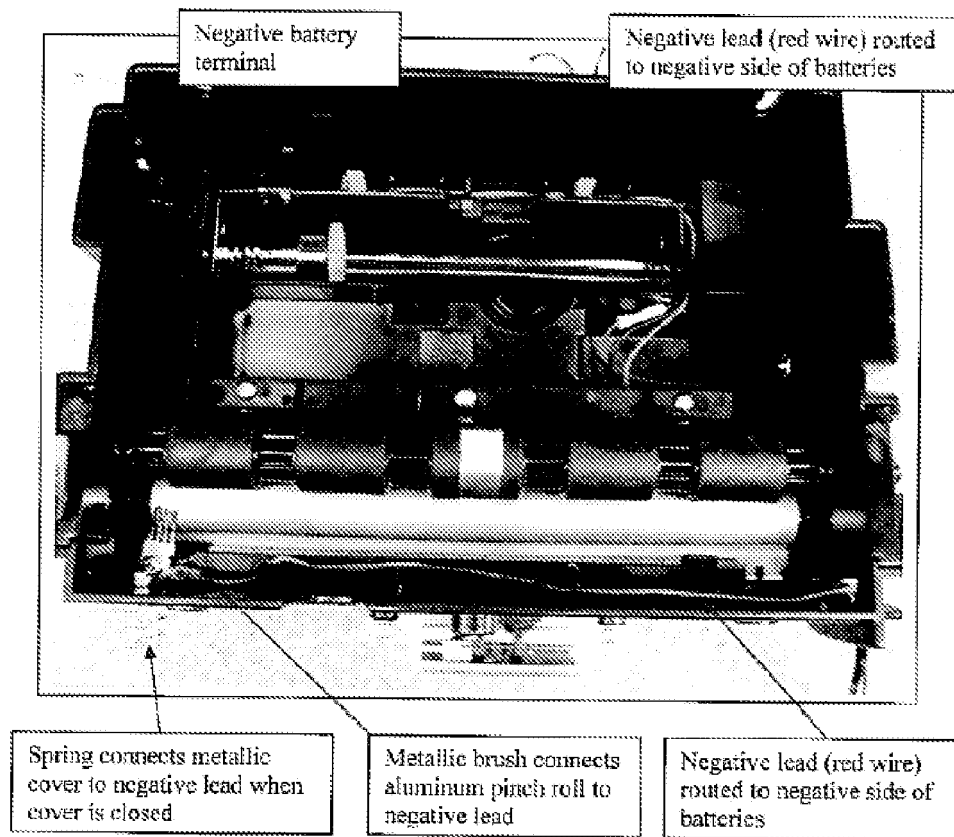


Fig. 1

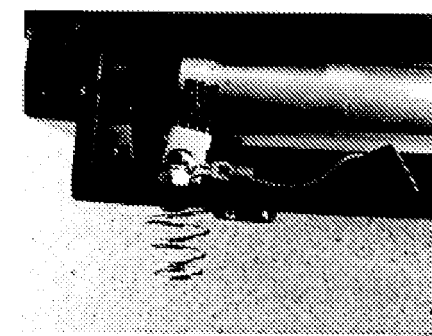


Fig. 2

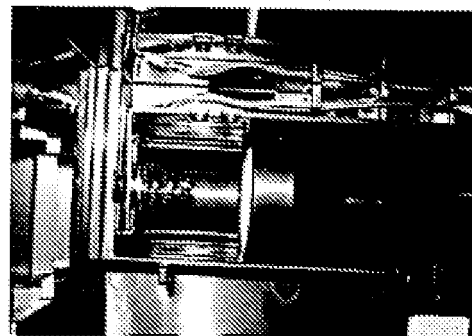


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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