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DISPOSABLE HYGIENIC SUPPORT FOR CLEANING AND DRYING REACTIVE DIAGNOSTIC STRIPS

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(56) Prior Art Documents
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(57) Some of the instances of use of these reactive strips involve a risk that persons (particularly the operator) and the environment (particularly the surfaces on which the tests are undertaken) will become contaminated by the biological material being tested, thus involving the danger of infection and contamination. There has been an increasing awareness of the need to provide protection systems which are simple to use and involve low cost, which permit the avoidance of, or at least minimize, the risk of infection and contamination, this need being particularly emphasized in the light of such serious diseases as viral hepatitis and Aids.

The present invention seeks to provide protection, both for operating environments and for operators, whether in the health sector or not, from the risk of contamination by biological material during certain phases of implementation of tests using reactive strips.

CLAIM

1. A disposable hygienic support for use in removing an excess of biological material which has been deposited on a reactive surface of a diagnostic strip and for drying said reactive surface, wherein said support comprises a substantially rigid covering and an element of absorbent

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material attached therein, said covering being open at at least two opposite ends to permit the insertion of said strip and to allow a portion of the reactive surface of said strip to project from one of said ends and to permit said strip to be withdrawn from said covering by drawing the strip through said covering whereby said portion slidingly engages said element of absorbent material to remove the excess biological material and dry the reactive surface.

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PATENTS ACT 1952

COMPLETE SPECIFICATION

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COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

Disposable hygienic support for cleaning and drying reactive diagnostic strips

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

The present invention relates to a disposable hygienic support for cleaning and drying reactive diagnostic strips which are commonly used, not only in medical analysis laboratories, but also in hospital departments, in medical out-patients departments and also in the patient's home.

As has been previously proposed such strips typically comprise a synthetic material and provide a surface, hereinafter referred to as the reactive surface, on which a chemical system upon which a particular reaction is based has been absorbed or adsorbed. In use, such a surface is immersed or has deposited on it a biological material to be tested, for example, blood, urine, serum, plasma etc. The material remains on the reactive surface for a time determined by the particular method after which the strip is removed and dried with absorbent material or washed with water depending on the type of reaction which takes place on the strip. Subsequently the reaction proceeds, generally developing a colour on the said reactive surface in proportion to the concentration of the substance to be tested.

Some of the instances of use of these reactive strips involve a risk that persons (particularly the operator) and the environment (particularly the surfaces on which the tests are undertaken) will become contaminated by the biological material being tested, thus involving the danger of infection and contamination. There has been an increasing awareness of the need to provide protection systems which are simple to use and involve low cost, which permit the avoidance of, or at least minimize, the risk of infection and contamination, this need being particularly emphasized in the light of such serious diseases as viral hepatitis and Aids.

The present invention seeks to provide protection, both for operating environments and for operators, whether in the health sector or not, from the risk of contamination by biological material during certain phases of implementation of tests using reactive strips.

According to the present invention there is provided a disposable hygienic support for use in removing an excess of biological material which has been deposited on a reactive surface of a diagnostic strip and for drying said reactive surface, wherein said support comprises a substantially rigid covering and an element of absorbent material attached therein, said covering being open at at least two opposite ends to permit the insertion of said strip and to allow a portion of the reactive surface of said strip to project from one of said ends and to permit said strip to be withdrawn from said covering by drawing the strip through said covering whereby said portion slidingly engages said element of absorbent material to remove the excess biological material and dry the reactive surface.

The invention will now be further described by way of example only with reference to the accompanying drawings in which:

Figure 1 shows an embodiment of a hygienic support which has been folded and into which a reactive strip has been inserted;

Figure 2 is a side view of the support of Figure 1;

Figure 3 shows the support of Figure 1 in its flat, or unfolded, condition.

With reference to the aforementioned Figures, a covering of substantially rigid or semi-rigid material, generally indicated by the numeral 1, is formed by a flat element folded into two parts 1a and 1b along a preprinted transverse fold line 2. The flat element 1 may be constructed, for example, of a card material which is preferably externally plastic-coated in order to impart thereto a sufficient impermeability. On the internal face of one of the two parts of the flat element 1, for example on the internal face of the part 1b, there is mounted an absorbent element 3 (for example cotton, gauze, cellulose, synthetic material or the like). Along the two free sides of the two parts 1a and 1b, parallel to the fold line 2, there extends two tabs 4, by means of which the two aforementioned parts 1a, 1b of the flat element 1 are joined, for example by means of adhesive, in such a manner as to form a substantially flattened tubular element, as in the present embodiment, and within which the absorbent element 3 is contained. A projecting side portion 5 is provided along one of the remaining sides of part 1a, i.e. the part to which the absorbent element 3 is not mounted. Finally the part 1b, the part to which the absorbent element 3 is mounted, has a further intermediate transverse fold line 6, the fold line 6 defining an edge which is substantially parallel to fold line 2, so that in profile the part 1b assumes a shape which is substantially that of an inverted V broadly opening out towards the internal face of the part 1a.

In use, the flat element 1 is folded along the fold line 2 and the tabs 4 are joined to each other and a reactive strip S is inserted between the internal face of the part 1a and the absorbent element 3 mounted on the internal face of the part 1b. Insertion of the strip S is facilitated by the fact that part 1b is V-shaped and

consequently the absorbent element 3 is not compressed against the internal face of the part 1a. The reactive surface R of the strip S is aligned with the edge 6, which edge provides rigidity for the support, the part 1a serving as a sliding base for the strip S. After the material to be tested has been deposited on the reactive surface R, and a predetermined reaction time has elapsed, the strip S is extracted from the covering in such a manner that the reactive surface R slides in contact with the absorbent element 3 which removes excess material from it and dries it. During the removal of the strip S, in order to ensure an improved contact with the absorbent element 3, it is expedient to depress part 1b against part 1a in the region of the fold line 6. Once removed from the covering the strip S is ready for the completion of the reaction and the covering 1 is discarded.

It may be advantageous to provide on the part of the covering 1 on which the absorbent element 3 is mounted (part 1b, in the embodiment illustrated here) a liftable edge 7 at a portion on the transverse fold line 6 adjacent the projecting side portion 5 which supports the portion of the strip S carrying the reactive surface R which extends from the covering 1. In this way, even in the presence of reactive surfaces which are particularly thick, the entry of such a surface R between the part 1a and the absorbent element 3 is not obstructed. By virtue of this expedient, moreover, the contact pressure which the absorbent element exerts on the reactive surface R is substantially constant from one test to the other and independent of the pressure exerted by the operator. It must, in fact, be borne in mind that, while the operator presses on the zone 8 of the support, which zone is indicated by the broken line in Figure 1, the cleaning of the reactive surface R is almost exclusively by way of contact with the absorbent element 3 underneath, or near,

the liftable edge 7. This ensures a marked reliability of the results of the tests.

When the reactive strip is used for tests on blood, a drop of which is generally taken from a finger, the part 1a may have an opening in the region of zone 8. From such an opening a portion of the absorbent element 3 underneath is accessible and can be used to clean the point where the blood was taken. In this case, the absorbent element may be in the form of two distinct elements, one of which is located in proximity to the liftable edge 7 and intended to clean the reactive strip, and the other is located in the region of the opening 8 to clean the finger.

Clearly, the configuration and the dimensions of the disposable hygienic support described above are purely exemplifying and indicative, and it is clear that this may be implemented in any tubular or non-tubular configuration (for example folding) provided that it is suitable for the positioning of a reactive strip and for its subsequent cleaning and drying by means of contact with an absorbent element contained therein. The covering 1 may be constructed of any suitable material, provided that it has sufficient rigidity and, preferably, impermeability, such as, for example, polystyrene, PVC, tin foil, possibly covered with PVC etc. The absorbent element 3 may also be impregnated with chemical substances of various types, which are suitable, for example, to react with the reactive surface or to have other specific properties.

The disposable hygienic support may be supplied in packs containing one or more units, possibly contained in cellophane-wrapped bags. Moreover, the hygienic support may advantageously be supplied in combination with the

reactive strip in suitable packs in foil, already inserted into the support and ready for use.

The invention has been described by way of example only and modifications are possible within the scope of the invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A disposable hygienic support for use in removing an excess of biological material which has been deposited on a reactive surface of a diagnostic strip and for drying said reactive surface, wherein said support comprises a substantially rigid covering and an element of absorbent material attached therein, said covering being open at at least two opposite ends to permit the insertion of said strip and to allow a portion of the reactive surface of said strip to project from one of said ends and to permit said strip to be withdrawn from said covering by drawing the strip through said covering whereby said portion slidingly engages said element of absorbent material to remove the excess biological material and dry the reactive surface.

2. A disposable hygienic support according to claim 1, wherein said covering is formed by a flat member folded into two parts along an intermediate fold line, said element of absorbent material being attached to an internal face of at least one of said parts.

3. A disposable hygienic support according to claim 2, wherein at least one of said parts of said flat member to which said element of absorbent material is attached has an inverted V-shaped profile in relation to the profile of the other of said parts thereof.

4. A disposable hygienic support according to claim 2 or to claim 3, wherein said parts are joined to each other along respective edges which are remote from the fold line.

5. A disposable hygienic support according to any one of claims 2 to 4, wherein one of said parts has said

element of absorbent material attached to it and the other one of said parts has an extended side portion which projects from one of said ends for supporting the reactive surface portion of said diagnostic strip.

6. A disposable hygienic support according to claim 5, wherein said one of said parts has a liftable flap provided at an intermediate portion adjacent said extended side portion.

7. A disposable hygienic support according to claim 5 or claim 6, wherein an opening is formed in said other one of said parts at a portion remote from said extended side portion.

8. A disposable hygienic support substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 31st day of May 1991

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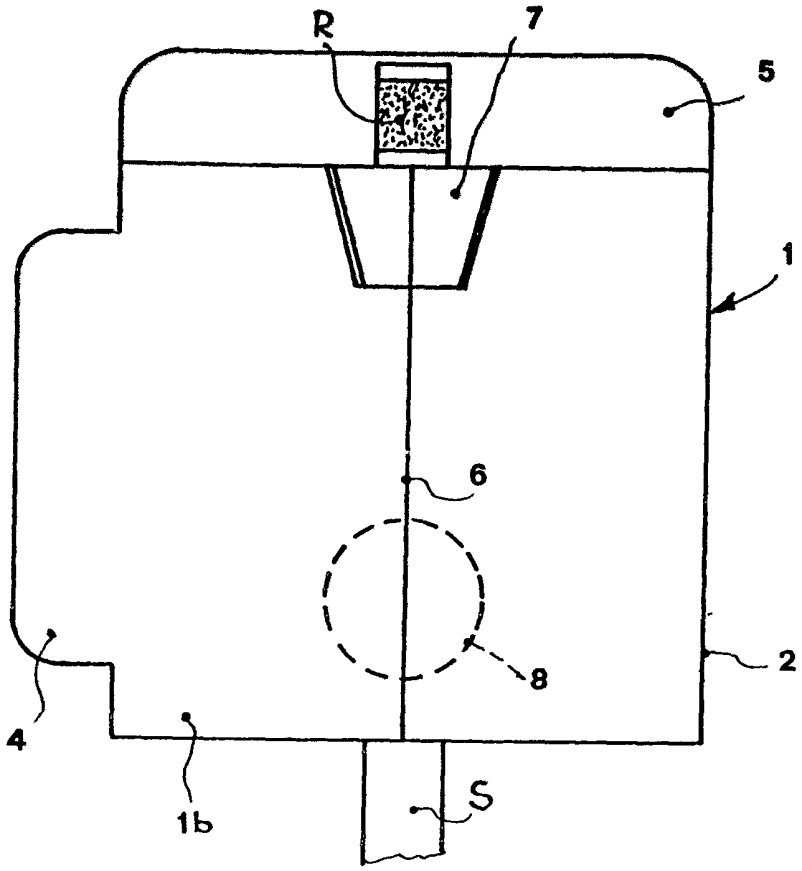

Fig. 1

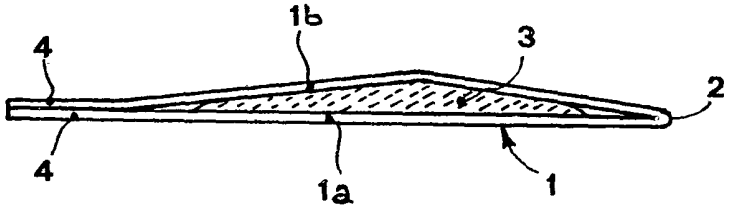

Fig. 2

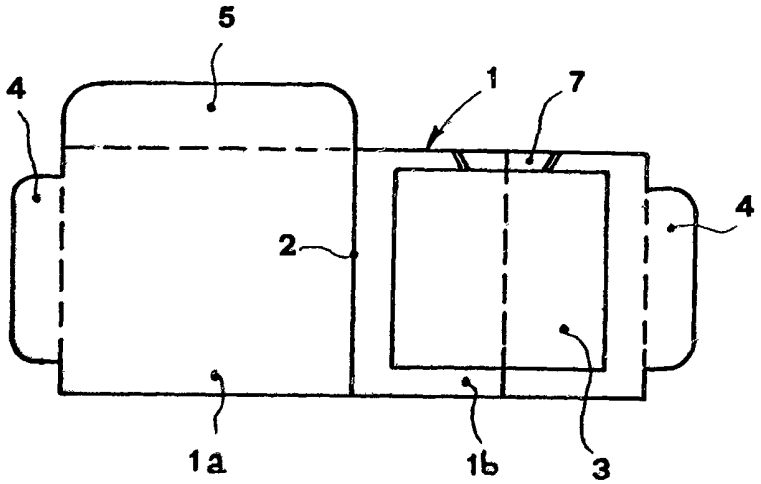

Fig. 3