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(71) Applicant
Tekung Lee
2F, No. 218, Jaoho St., Sungshan, Taipei, Taiwan

(72) Inventor
Tekung Lee

(74) Agent and/or Address for Service
Langner Parry
High Holborn House, 52-54 High Holborn, London, WC1V 6RR, United Kingdom

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G4N NCLC N6P
U1S S1122 S2195

(56) Documents cited
GB 2219679 A **GB 2181286 A** **GB 2177247 A**
US 4800370 A **US 4768023 A** **US 4356818 A**
US 4205672 A **US 4106001 A**

(58) Field of search
UK CL (Edition K) **G4N NCLC**
INT CL[5] **A61F, G08B**

(54) Disposable diaper and alarm

(57) The diaper comprises two electrically conductive elements 13 disposed in spaced relationship between layers 14 of the diaper. The alarm comprises a housing 2 which can be clipped to a pocket in the diaper so as to connect the conductive elements 13 in an alarm circuit, Fig 3 (not shown). In use, the alarm circuit detects the presence of moisture between the conductive elements and in response energizes an audible alarm. Thus, the diaper is disposable while the alarm device can be kept for re-use.

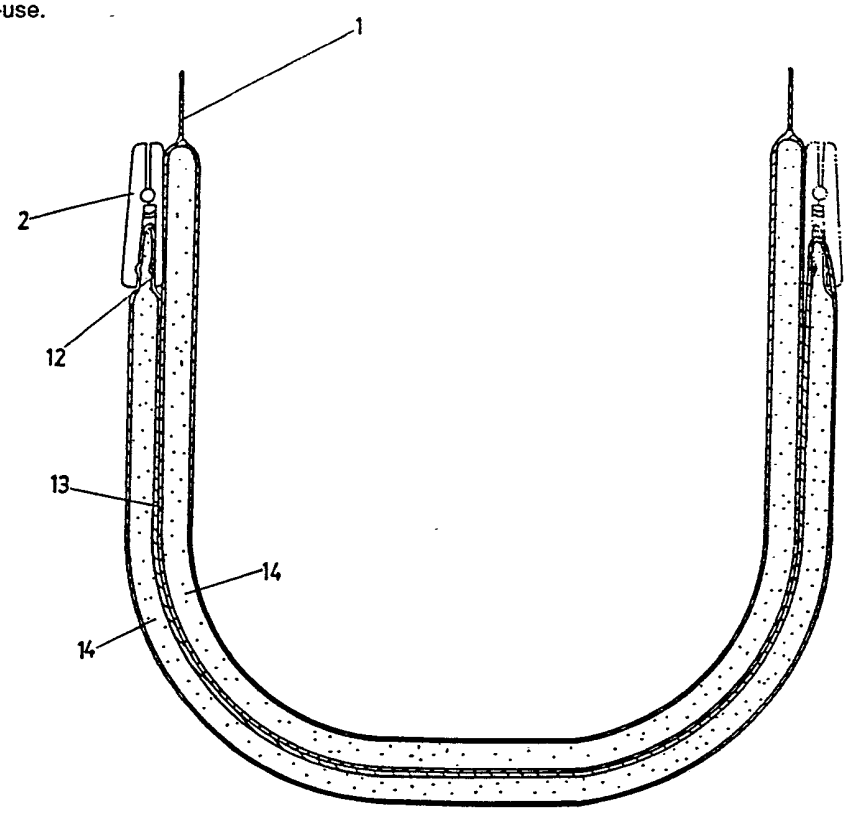

FIG 2

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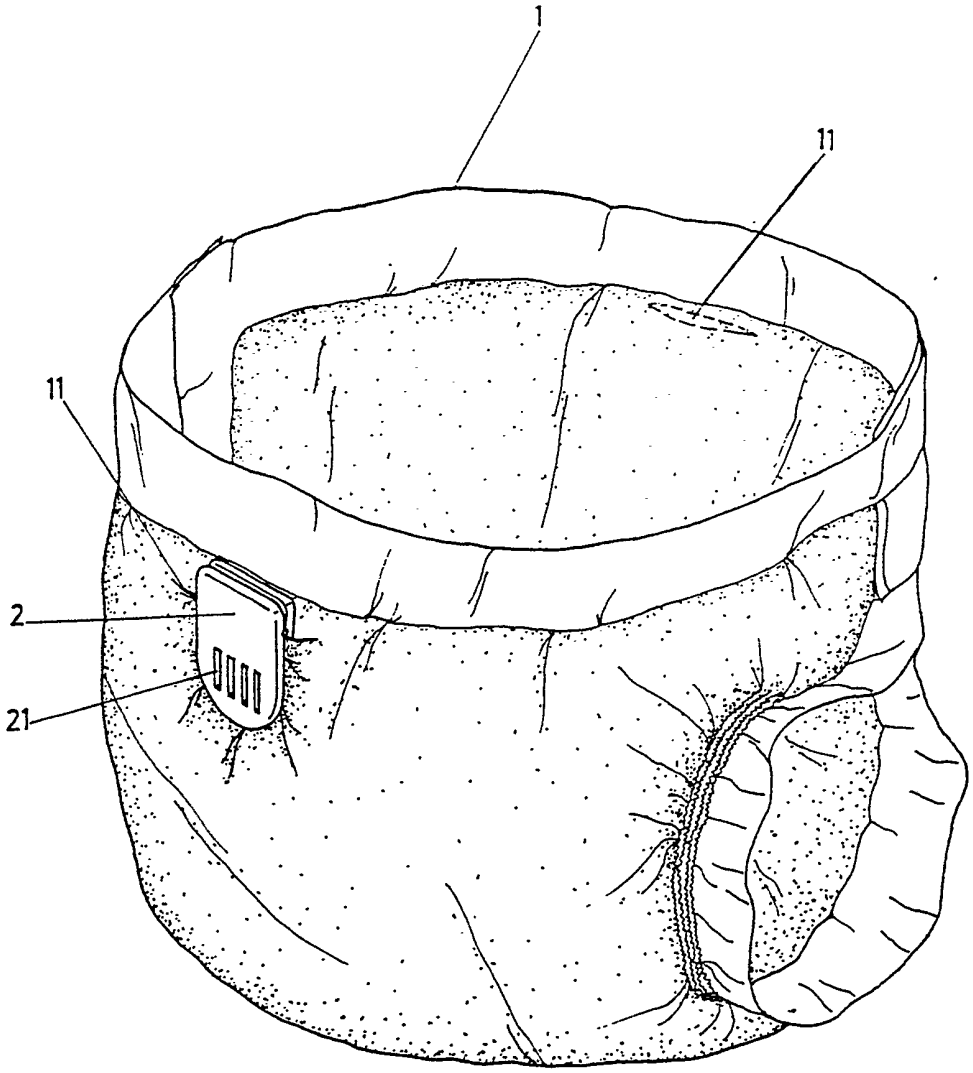

FIG 1

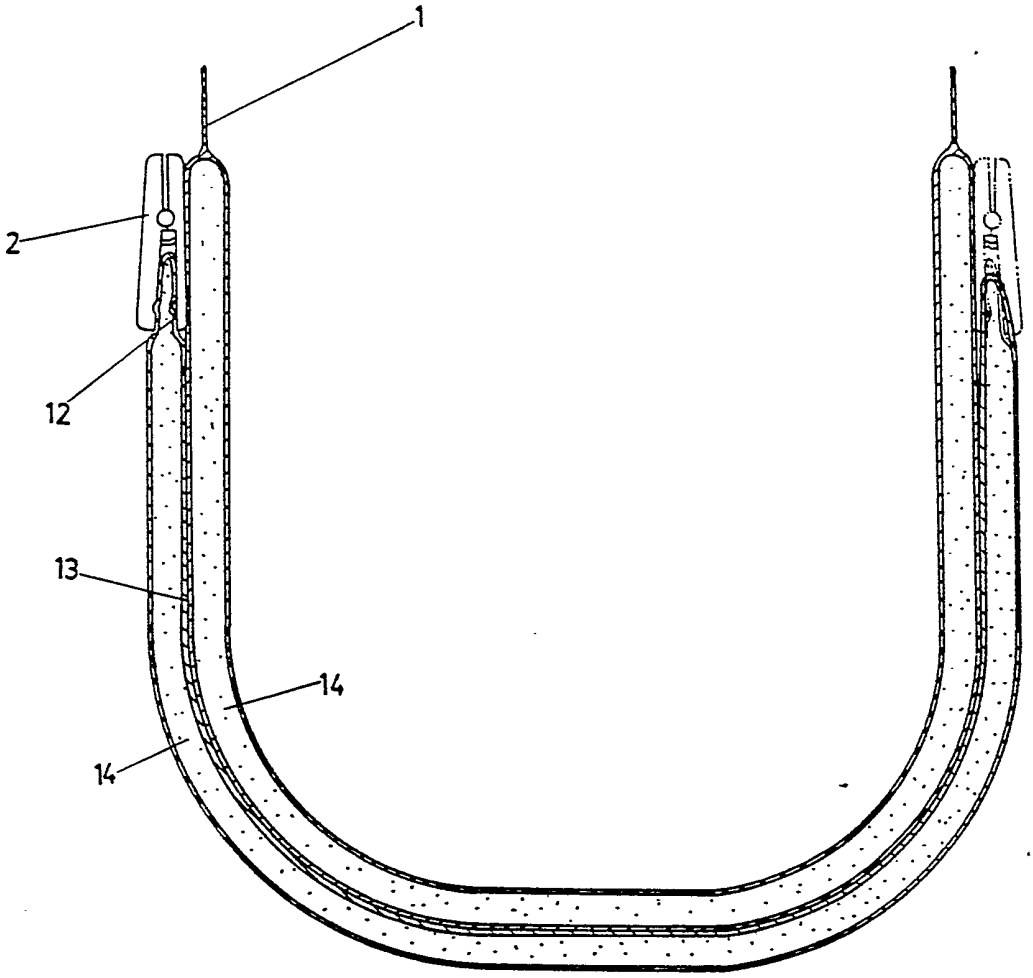

FIG 2

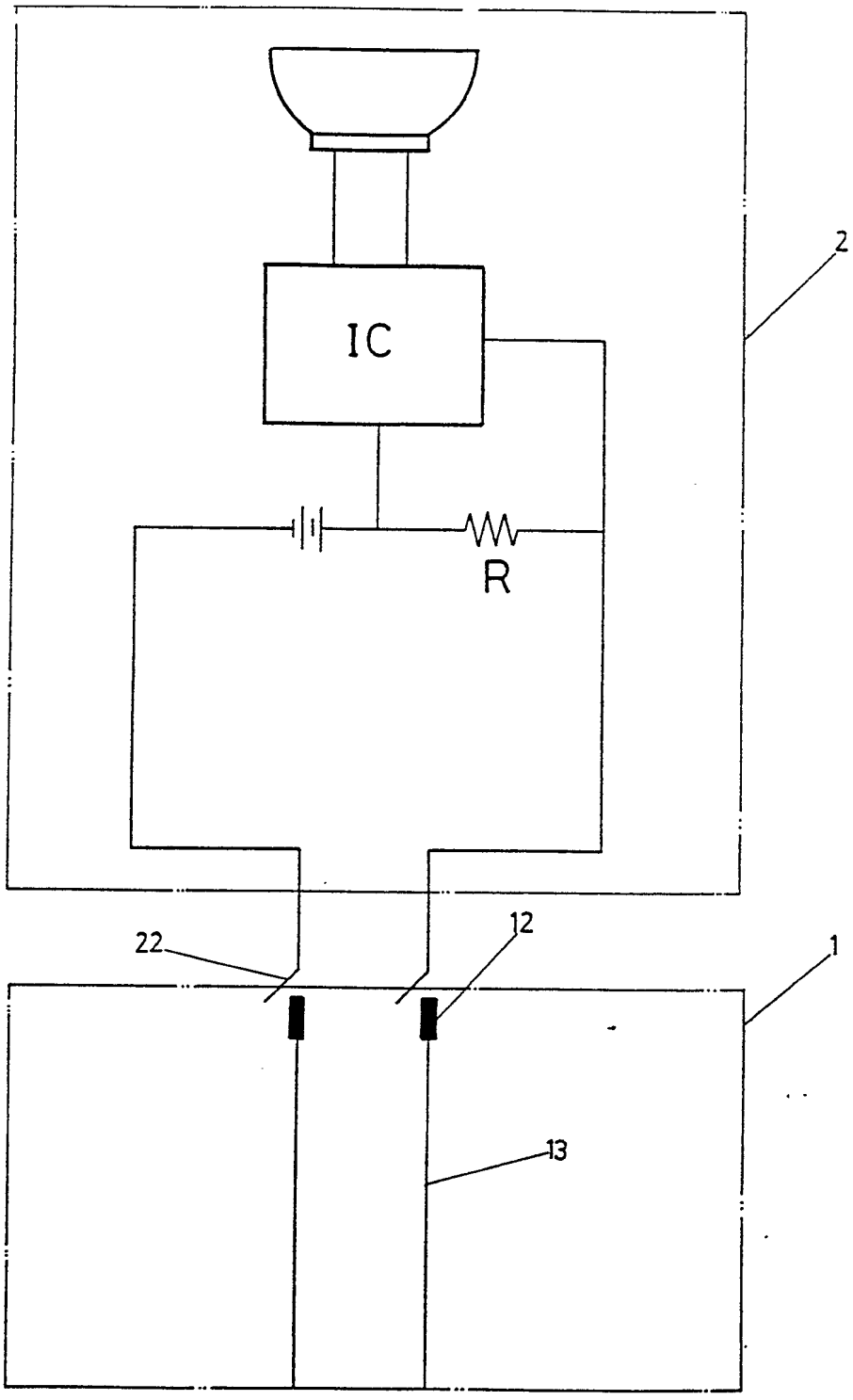

FIG 3

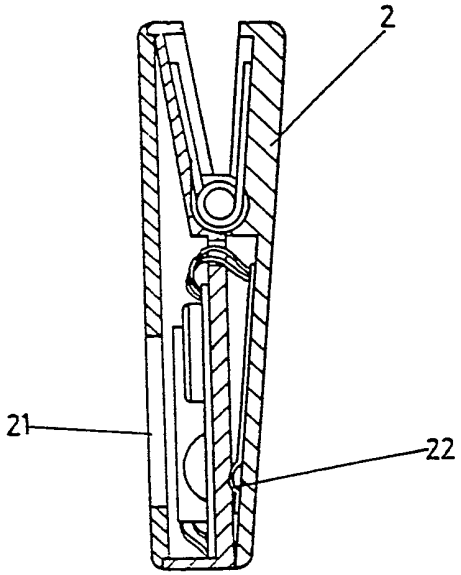

FIG 4

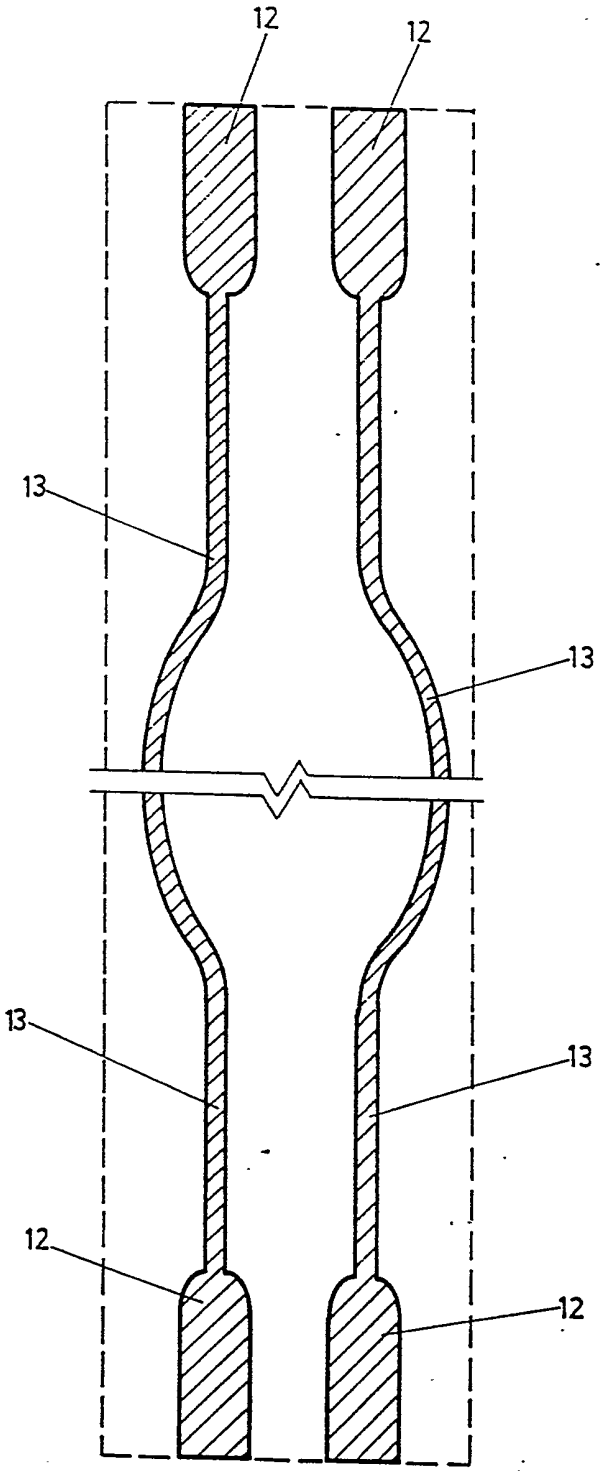

FIG 5

Disposable Diapper and Alarm

This invention relates to a disposable diapper and an adherent alarm.

Many types of diappers with different designs and functions exist in the actual market. However, after a survey, it is noticed that much emphasis is put on the quality and design of the product in order to increase its hygienic effects. For example: high absorbency, comfort and convenience... etc. Because mass production reduces the cost of the product, people put even more emphasis on the disposability of the diappers in the consumer market. Generally, we dispose of the used diapper by enrapping it with the already incorporated adhesive tape, thus cleanly disposed. To use diappers means to bring convenience to users, but not to increase their uncomfort when the diappers are not changed on time. For this reason, the users must be under continuous care and attention so that the wet diappers can be changed constantly, avoiding uncomfort and infections due to the excels. it is a tough and tiresome job for those who take care of babies and patients. They must check it constantly by moving away blanket, taking off pants, then check the diapper to touching, smelling or unwearing the diapper. For both users and persons who take care of them, this is an annoying process, especially for those professional nurses who work in hospitals or asylums, because they have many

SUMMARY OF THE INVENTION

This invention provides a new structural design of the diapper with adherent alarm. Both can be joint together and separated easily. The alarm detects the humidity and produces a warning sound which can be heard clearly.

BRIEF DESCRIPTION OF THE INVENTION

Fig. 1 a perspective view of this invention in a normal position.

Fig. 2 a side view of this invention in vertical cut position.

Fig. 3 a diagram of printed circuit incorporated in the diapper.

Fig. 4 a perspective view of the alarm in vertical position.

Fig. 5 a top view of printed sensory lines.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in Fig. 1, this invention consists of two major parts: a diapper and an alarm. In the outside layer of the diapper there are two appropriate pockets (11), one in front and the other in the back. When the user lies on the back we put the alarm in the front pocket, and viceversa. In other words, the lying position of the user does not affect the effectiveness of this invention.

The alarm can be clipped con-

veniently in both ways, depending on the users' need. The shape of the alarm 2 is like a shell in proper size with battery power supply, IC, IC board, speaker and other electronic parts. On the shell, there is a hole for sound output which matches the pockets 11 of the diapper 1. Since the pocket 11 of the diapper has the same size as the alarm 2, this can be easily put into the pocket without any contact to the skin.

Besides, the alarm can be designed with spring clip (as shown in Fig. 2). It is easy to get the alarm fixed firmly. Those who take care of babies or patients can carry out their duty only by paying attention to the alarm. This will ease a lot their working pressure. Another design is considered in thin, round and smooth shape. It makes the user more comfortable when the alarm is used. the sound output hole 21 of the alarm 2 has its face out. Since the worning sound will not be absorbed by the diapper, the sound effect will be better and be clearly heard. The alarm 1 fits the size of the pockets of the diapper 11, and the clips meet the conductors 12 at the ends of sensory lines 13. These conductors can be designed in a large size in order to keep in touch well with alarm clips 2. The two sensory lines 13 are in the inside layer 14 of the diapper (as shown in Fig. 2). When the inside layer 14 absorbs certain humidity, it make the two sensory

lines in active condition. As shown in Fig. 4, the alarm 2 with its electronic components and clips 22, conductors 22 and sensory lines 13 form an active electronic circuit and then make the alarm sound like agreeable music. Because of the humidity of the diapper, the music sounds continuously, informing the nurse to come to change it, until the alarm is removed.

After analyzing the production cost and technology, this invention, including alarm 2 and the diapper itself is a feasible one, because we may keep the alarm and reuse it repeatedly. Though we dispose the diapper after using it, we also put emphasis on its unit cost. Under keeping its original functions, the production cost and technology of the conductors and sensory lines can be reduced, and the design can be changed or simplified. As shown in Fig. 5, the sensory lines 13 are printed on a thin paper with conductive materials. (like carbon, silver, glue.. etc.). At the same time, the ends of the sensory lines can be enlarged and used as conductors. Nowadays, the technology of printed circuit is widely used in electronic industries, there is no problem in any process of production of this invention. We can produce it in a large scale and high efficient way in order to reduced the production cost. Furthermore, the ordinary diapper generally has isolated paper between inside layers, the sensory lines can be printed on the same paper. It does not affect the function of the diapper. The sensory lines can be parallal or curved ones. The distance between two

sensory lines (13) in the middle part can be widened, through special design to get different sound effects and avoid the alarm sounding in low humidity conditions.

The main purpose of this invention is to provide a new design and structure of disposable diapper with adherent alarm. In fact, they are used together but they can be easily separated. The consumer may dispose the used diapper and keep the alarm for reuse repeatedly. It is very economic and practical. Another purpose is to provide a simple sensory structure between the alarm and the diapper. Each pocket on the diapper has two pieces of conductor which are linked to sensory lines. When the alarm is attached to the pocket, they form an electronic circuit. While the sensory lines get wet at the same time, they are in active condition and make the alarm sound. Even more, the alarm can be attached to either pockets of the diapper according to the users' need. It lets the alarm sound better and get more effects.

In this specification reference to humidity in the description and claims is to be taken to include references to dampness.

CLAIMS

1. A diapper alarm for use with disposable diappers, the alarm comprising detector means for detecting the humidity content of a diapper and to produce an electrical signal representative of said humidity, electrical circuit means for receiving the electrical signal and for producing a warning signal, and indicator means for transmitting an indication of the presence of humidity by responding to the warning signal.

2. An alarm as claimed in Claim 1, including a sound transmitting device for emitting an audible note upon detection of humidity in the diapper.

3. A disposable diapper comprising at least two layers and humidity sensor means located between the at least two layers for attachment to an electrical warning signal generator device.

4. A diapper as claimed in Claim 3, wherein the humidity sensor means comprises two electrically conductive elements located between the diapper layers in spaced relationship, one relative to the other, and two electrical conductors coupled with the said conductive elements for connecting an electrically operative diapper alarm to the humidity sensors when the alarm is mounted on the external surface of a diapper.

5. A diapper as claimed in Claim 4, wherein the alarm is clipped to the electrical by conductive elements.

6. A diapper was claimed in Claim 3, 4 or 5, including a pocket for receiving and holding the alarm, the pocket being located at the front and/or rear of the diapper.

7. A diapper alarm substantially as hereinbefore described with reference to, and as illustrated in, the accompanying drawings.

8. A disposable diapper substantially as hereinbefore described with reference to, and as illustrated in, the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

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Relevant Technical fields

(i) UK Cl (Edition K) G4N (NCLC)

(ii) Int Cl (Edition 5) A61F; G08B

Search Examiner

D L SUMMERHAYES

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

4 FEBRUARY 1992

Documents considered relevant following a search in respect of claims 1-8

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2219679 A EASEUP	1, 2
X	GB 2181286 A KODOSHI	1-5
X	GB 2177247 A KODOSHI	1-4
X	US 4800370 VETECNIK	1, 2
X	US 4768023 XIE	1-4
X	US 4356818 MACIAS	1-4
X	US 4205672 DVORAK	1, 2
X	US 4106001 MAHONEY	1-5

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

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A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

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