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(71)(72) Applicant and Inventor: HANSSON, Rune, Lennart [SE/SE]; Gamla Orupsvägen, Pl 6337, S-243 00 Höör (SE).

(74) Agents: STRÖM, Tore et al.; Ström & Gulliksson AB, Box 4188, S-203 13 Malmö (SE).

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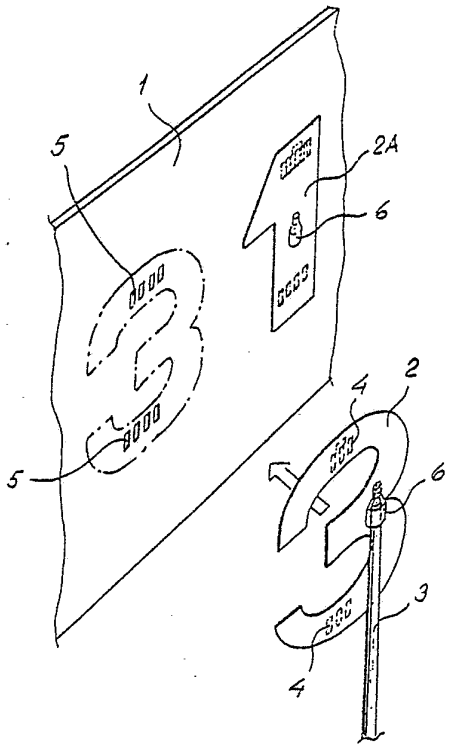
(57) Abstract

Sign-board device having exchangeable signs comprising a plate (1) vertically disposed on a level which is normally out of reach and a number of signs (2, 2A) intended to be detachably attached to the plate. On the surface of said signs (2, 2A) which is turning away from said plate (1) each of said signs is provided with a case (6) open at the botton and extending in the vertical direction of the sign for introduction therein of a rod (3), by means of which the sign can be lifted up to the level of the plate (1) and be brought into contact with the plate. On the plate (1) and/or on each of said signs (2, 2A) are attached elements (4, 5) adapted to detachably hold the sign to the plate on contact between the plate (1) and respective sign (2, 2A). Preferably said elements (4, 5) are permanent magnets. If the signs (2, 2A) are made of magnetic material, e.g. iron plate or steel plate, magnets (5) are attached only to the plate (1) and disposed in positions which correspond to the intended location of the signs. If the signs (2, 2A) are made of non-magnetic material, e.g. plastic material, one orseveral magnets (4) are attached to the surface of the signs which is intended to face the plate (1), said magnets being detachably held to the plate by means of magnetic attraction when brought into contact with the plate (1) or part thereof.



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SIGN-BOARD DEVICE HAVING EXCHANGEABLE SIGNS

The present invention relates to a sign-board device having exchangeable signs comprising a plane plate disposed substantially vertically at a level which is normally out of reach, and a number of signs intended to be detatchably fixed to said plate.

Sign-boards of the kind mentioned are widely used by stores, petrol stations and similar points of sale for advertising the current price of a product, e.g. petrol or other fuel, for making it clearly readable at a long distance off. To accomplish this object the dimensions of the sign-boards used are large and the sign-boards are often disposed at a considerable height above ground level, which results in difficulties when signs shall be exchanged, e.g. when the petrol price is changed for one reason or the other. Existing sign-board arrangements of this kind are usually designed so that signs, e.g. numerals, letters etc. are to be attached by screws to the sign-board being designed as a plain plate. Exchange of text thus requires use of tall ladders or the like, or otherwise a lorry mounted crane is used, having a tall jib, the end of which being provided with a hoist cage in which a person can be hoisted up and effect change of signs. The use of ladders involves obvious risks of accidents, particularly since sign-boards of the kind mentioned in most cases are disposed at a great height above ground level, e.g. in the order of 4 - 6 meters above ground level and sometimes even higher. While the use of a lorry mounted crane reduces the risk of accidents, it usually is too costly to be practiced as a standard procedure every time it is necessary to exchange signs, e.g. to change the price of a product, e.g. fuel. Due to this there is a strong need for improved means and less risky or expensive methods

than is the case at present for applying and exchanging signs on sign-boards of the kind mentioned initially.

The object of the present invention is to bring about a sign-board device of the kind mentioned initially which to a great extent eliminates the difficulties prevailing so far in exchange of signs on sign-boards of the kind mentioned and which is simple with respect to the design as well as in use when the signs on a sign-board shall be exchanged. Another object of the invention is to bring about a device of the kind mentioned initially, which due to a simple design commands a low price and which greatly reduces the risk of accidents in connection with exchange of signs.

According to the invention the objects referred to above are obtained by designing the device in accordance with the characteristics specified in the following patent claims.

In the following the invention is described with reference to an embodiment illustrated on the appended drawings, on which

- fig 1 shows a perspective view of a part of a sign included in the device according to the invention during the mounting of a sign to the sign-board
- fig 2 schematically shows the mutual location on the sign-board and the sign respectively of the per- manent magnets used as fastening elements,
- fig 3 shows the sign seen from the front and in an alternative location of the magnet elements,
- fig 4 is a section through the sign taken as marked at I - I in fig 3, the sign-board situated behind being shown in section at a certain distance from the sign,
- fig 5 is a section as marked at II - II in fig 4,
- fig 6 illustrates schematically the mutual

location of the magnet elements marked in fig 3, partly on the sign, partly on the sign-board situated behind,

- fig 7 is a section taken as marked at III - III in fig 6, illustrating the interaction between the magnet elements disposed on the sign and on the sign-board respectively,

- fig 8 is a perspective view corresponding to the view shown in fig 1 of a preferred embodiment according to the invention, and

- fig 9 is a section through the sign-board according to the preferred embodiment shown in fig 8, schematically illustrating the application of a sign onto the sign-board.

In fig 1 is shown, in a perspective view, a part of a sign-board 1 of the kind used e.g. at petrol stations for advertising the current price of fuel. The sign-board 1, which is assumed to be supported by a rack not shown in the figure, is disposed high up above ground level clearly visible for travellers. The figure illustrates the position in which a sign 2 consisting of numeral three is supported at the end of a rod 3 for being moved up to the sign-board 1, designed as a large, rectangular plate, for attaching the sign 2 on the sign-board next to a previously mounted sign 2A consisting of the numeral 1. On the side of the signs 2, 2A, shown in the figure, as well as on each of the signs which may be chosen for mounting on the sign-board 1, elements are attached at top and bottom of signs 2, 2A, said elements being adapted to detatchably adhere to the sign-board 1 when coming into contact therewith. In the embodiments shown in the figures those elements consist of a number of small permanent magnets 4, preferably of ceramic type. The magnets 4 are attached to the sign 2, 2A by means of a suitable adhesive. As appears from fig

1 three permanent magnets are attached to the signs 2, 2A at the top as well as at the bottom, in parallel with each other and mutually spaced sideways with respect to each other by a distance which is somewhat greater the width of each individual magnet 4. On the sign-board 1, which is assumed to consist of non-magnetic material, a number of permanent magnets 5 of the same kind as the permanent magnets on the signs 2, 2A are attached in a corresponding manner. The number of permanent magnets 5 in the upper and the lower raw respectively on the sign-board 1 differs from the number of magnets, which are attached in corresponding positions on the signs 2, 2A. The upper as well as the lower raw of permanent magnets 5 on the sign-board 1 thus consists of four magnets mutually spaced sideways with respect to each other, so that the permanent magnets 4 on the signs 2, 2A fit in the space between the magnets 5 with a certain minor clearence. On the side of the signs 2, 2A turning away from the sign-board 1 is, by means of welding, glueing or in some other manner attached a case 6 which is open at the bottom and preferably located close to the centre of gravity of the sign. The case 6 consists of an upper, circular cylindrical portion, which then widens conically in direction downwards and is transformed into a lower circular cylindrical portion having a greater diameter. By this case 6 is given a form which reminds of a funnel which is open at the bottom and which facilitates the introduction of a rod 3 by means of which the signs 2, 2A are intended to be lifted up and to be placed at the sign-board, respectively to be removed from this. The funnel-like shape of the case 6 is particularly advantageous for facilitating for a person standing at ground level to introduce the end of rod 3 in the case 6 and for the removal of a sign.

Fig 2 schematically illustrates the pattern according to which the permanent magnets 4 and 5 respectively are attached on the signs 2, 2A and on the sign-board 1 respectively in the embodiment shown in fig 1. The upper raw of permanent magnets in fig 2 thus corresponds to the upper raw of permanent magnets on the signs 2, 2A and the lower raw of permanent magnets 5 in fig 2 corresponds to the raws of permanent magnets on the sign-board 1. In the embodiments according to fig 1 and 2 a number of three raws of permanent magnets 4 are thus located parallel to each other, having a mutual distance between two adjacent magnets 4, which is somewhat greater than the width of the individual magnets 5 which are attached to the sign-board 1. As appears from the figures the central one of the permanent magnets 4 in the upper raw may be formed as a magnet in T-form and then serve as a stop against those permanent magnets 5 arranged centrally in the upper raw of magnets on the sign-board, as shown in dash and dot lines in fig 2. Alternatively the permanent magnet 4 in the upper raw as well as in the lower raw of magnets may consist of identical bar magnets, a stop which not necessarily must consist of a magnet and which corresponds to the upper leg of the magnet 4 in T-form, may be attached to the sign 2, 2A by glueing. For the attachement of the magnets on the signs 2, 2A and on the sign-board 1 respectively it is important that the magnets are arranged so that on attaching the signs on the sign-board 1 the north poles of the magnets 4 on the signs 2, 2A come close to the south poles of the magnets 5 attached on the sign-board. By these measures a very strong and effective magnetic connection is obtained.

Figures 3 - 7 illustrate a modification, which differs from the embodiment shown in figure 1 and 2 in that the permanent magnets 4 and 5 have been located

according to a different pattern. This pattern appears most clearly in figures 6 and 7. The magnets 4 in the upper and in the lower raw on the sign 2 are thus arranged in two adjacent groups, each including two permanent magnets 4, the two groups being spaced apart by a distance somewhat greater than the width of the one of the permanent magnets 5 which is adapted to fit in said interspace. In the two raws of permanent magnets 5 on the sign-board 1 five magnets are mounted adjacent each other in one layer and a sixth permanent magnet on top of the central one of the permanent magnets 5. The last mentioned permanent magnet 5, which thus projects beyond the upper surface of the rest of the permanent magnets 5 is intended to cooperate with the groove formed by the interspace between the pair of magnets 4 on the respective sign, as particularly appears from fig 7, in which the sign-board 1 and the permanent magnet 5 have been drawn up in continuous lines whereas sign 2 and the permanent magnets 4 have been indicated in dash and dot lines. As appears from figures 3 - 7 and particularly from the last mentioned figure, the permanent magnet 4 and 5 in the raws of magnets on the signs and on the sign-board respectively are adapted to contact each other by means of the upper surfaces when signs 2, 2A are being mounted. Also the positioning of the magnets just described leads to a very strong magnetic connection.

As previously mentioned, as a mounting appliance is used a tall rod 3 of a light material, preferably aluminium or light metal. At its outer end the rod 3 is designed to cooperate with case 6, so that a sign 2, 2A, provided with a case, can be slipped on the end of the rod 3. This rod which may be of the kind available on the market in the form of an extension rod for use by painters or window cleaners, can have a considerable

length and may possibly be designed as a telescopicly extensible rod by means of which signs can be attached to the sign-board 1 even if this is disposed at a consideable height above ground level e.g. 4 - 6 meters.

When a sign, e.g. the numeral three, shall be attached to the sign-board 1, the sign 2 is first of all put up at the end of rod 3, said rod projecting into the case 6. The rod 3 carrying at its end the sign 2, 2A is then moved to the approximate position on the sign-board 1 in which the raw of permanent magnets 4, 5 under mutual cooperation magnetically holds the sign 2, 2A on the surface of sign-board 1. The rod 3 is then retracted. When a sign 2, 2A shall be taken down the end of rod 3 is inserted into case 6, the rod 3 then being moved in a direction upwards-outwards carrying the sign 2 which is to be replaced.

The signs 2, 2A can be made of a relatively thin, rigid plate of plastic material having a suitable colour, preferably black. The case 6 is also made of plastics and attached to the sign 2, 2A by means of plastic welding, glueing or otherwise. If the signs 2, 2A are made of thin iron or steel plate it might be possible to eliminate the magnets 4 on the signs 2, 2A and to be content with attaching two permanent magnets 5 in two raws on the sign-board 1. Alternatively the sign-board 1 may be made of iron or steel plate in which case permanent magnets are attached only on the signs 2, 2A. In both cases the sign-board 1 may be provided with a longitudinal rim, serving as a stop and as an alignment rim for aligning the signs with respect to each other. As magnets it is advantageous to use permanent magnets of the kind usually used in magnetic click-type locks in kitchen fittings etc. Ceramic permanent magnets of the kind mentioned above, however, are available in many different shapes, e.g. bowl-shaped or

ringshaped, having two or several poles etc thus providing plenty of possibilities of varying the attaching pattern as desired. The alternative attaching patterns shown in connection with the figures are only intended to be examples of a pair of different attaching patterns which can be used, but many other designs are conceivable.

The use of permanent magnets as holding attachment elements for the signs 2, 2A involves an additional advantage due to the fact that the prevailing magnetic fields exert an attraction force already before the sign in question has come into contact with the sign-board 1, so that the sign seeks the correct position already when it is in the vicinity of the intended location. Even if it is preferred to use permanent magnets, it is also possible to use other types of adhering attachment elements without differing from the inventive idea. It is thus conceivable to use so called Velcro tape instead of magnets, the respective raw of magnets on signs 2, 2A and on the sign-board 1 being substituted by strips of Velcro tape firmly attached by glueing. The sign-board 1 should then preferably be provided with a horizontal rim or other guide element for securing the attachment of the signs in correct position in relation to adjacent signs. The Velco tape connections provide per se a very good grip but requires more precision in attaching the signs than being the case when permanent magnets are used. An embodiment in which the use of permanent magnets is combined with use of Velcro tape is also conceivable, e.g. such that strips of Velcro tape is attached in the interspace between the permanent magnets 5 on the sign-board 1 and partly on the upper side of the permanent magnet 4 alternatively 5 which is intended to fit in said interspace. By this the self-seeking effect mentioned previously as well as the additional

grip provided by the Velcro tape connection is obtained.

In the embodiment described 2, 2 A are numerals, but the signs of course can consist of any figure, e.g. letters, punctuation marks or any arbitrary symbol. Punctuation marks are then glued or painted on a transparent plastic plate, the upper and lower portions of which has been provided with permanent magnets having the same line base and the same pitch as used with respect to the rest of the signs.

Figures 8 and 9 illustrate a preferred embodiment according to the invention. In this embodiment the signs to be attached, e.g. numerals or letters, are made of magnetic material, e.g. thin iron - or steel plate. Due to this the signs are not provided with magnets. These are instead arranged only on the sign-board on which the signs shall be attached. The magnets 5 are thus attached to the sign-board 1 spaced vertically with respect to each other approximately at a distance corresponding to the height of the respective sign and spaced with respect to each other sideways corresponding to the desired spacing between the signs. The magnets 5 may be attached by means of a glue connection or a screw connection or may be arranged in holders fixed on the sign-board by means of screws.

As in the embodiments described previously each sign 2, 2A is provided with a holder 6 in case-form, which in the embodiment shown in figures 8 and 9 consists of a cylindrical tubular case, which is fixed to the sign by means of screws or by welding or the like. The end portion of the rod 3, by means of which the sign 2 is lifted up and attached to the sign-board 1 or taken away therefrom, is designed to have a certain taper so that the rod easily can be introduced into the case 6 as shown in fig 8.

When a sign which shall be fixed by means of the

rod 3 has been lifted up into the vicinity of its intended location on the sign-board 1, the sign 2 is influenced by the magnets 5 which greatly facilitate a correct positioning of the sign since the sign so to say "seeks" its position. It is suitable to move at first the upper part of the sign into contact with the upper magnet 5 and then to turn the rod together with the sign 2 towards the sign-board 1 and if necessary effect adjustment sideways so that the sign is attached to the lower magnet 5 in a vertically aligned position. The rod may then be retracted from the tubular case 6.

The magnets 5 positioned at the top and bottom of the sign-board 1 for each sign may, as shown in figures 8 and 9 each consist of a magnet but may also be composed of several magnets located adjacent each other as is the case in the embodiments shown previously.

The invention is not limited to the illustrated embodiments described above and to the modifications thereof mentioned above but can be modified within the scope of the appended claims.

CLAIMS

1. Sign-board device having exchangeable signs comprising a plate (1) vertically disposed on a level which is normally out of reach and a number of signs (2, 2A) intended to be detatchably attached to said plate, c h a r a c t e r i z e d in that each of said signs (2, 2A) on the side thereof turning away from the plate (1) is provided with a case (6) open at the bottom and extending in the vertical direction of the sign for introduction of a rod (3) therein by means of which the sign may be lifted up to the level of the plate (1) and brought into contact with the plate, and in that on said plate and/or on each of said signs are attached elements (4, 5) adapted to detachably hold the sign on the plate on contact between the plate and respective sign.

2. Device according to claim 1, c h a r a c t e r i z e d in that said elements (4, 5) are permanent magnets.

3. Device according to claim 2, c h a r a c t e r i z e d in that said signs (2, 2A) are made of magnetic material, e.g. iron plate or steel plate, and that magnets (15) are attached only to the plate and located in positions corresponding to the intended location of the signs (2, 2A).

4. Device according to claim 2, c h a r a c t e r i z e d in that said signs (2, 2A) are made of non-magnetic material, e.g. plastic material, and that one or several magnets (4) are attached to the surface of said signs (2, 2A) which is intended to face the plate (1), said magnets on contact with the plate (1) or part thereof being detatchably held to the plate or said part thereof by means of magnetic attraction.

5. Device according to claim 4, c h a r a c t e r i z e d in that on each sign (2, 2A) one or several permanent magnets (4) are attached at the upper portion of the sign and one or several permanent magnets (4) at the lower portion of the sign, and that corresponding raws of permanent magnets (5) are attached on the plate (1) for magnetic holding cooperation with the permanent magnets (4) on said signs (2, 2A).

6. Device according to claim 1, c h a r a c t e r i z e d in that said elements (4, 5) comprise strips of Velcro tape, fixed to the surfaces of the signs (2, 2A) and the plate (1) respectively which are intended to face each other.

7. Device according to claim 6, c h a r a c t e r i z e d in that said elements partly comprise permanent magnets (4, 5) attached to the respective surfaces and partly strips of the Velcro tape type attached to the respective surfaces.

8. Device according to any of the preceeding claims, c h a r a c t e r i z e d in that said case (6) which is fixed to the front side of respetive sign widens in a hopperlike manner in a direction downwards for facilitating introduction therein of the end of said rod (3).

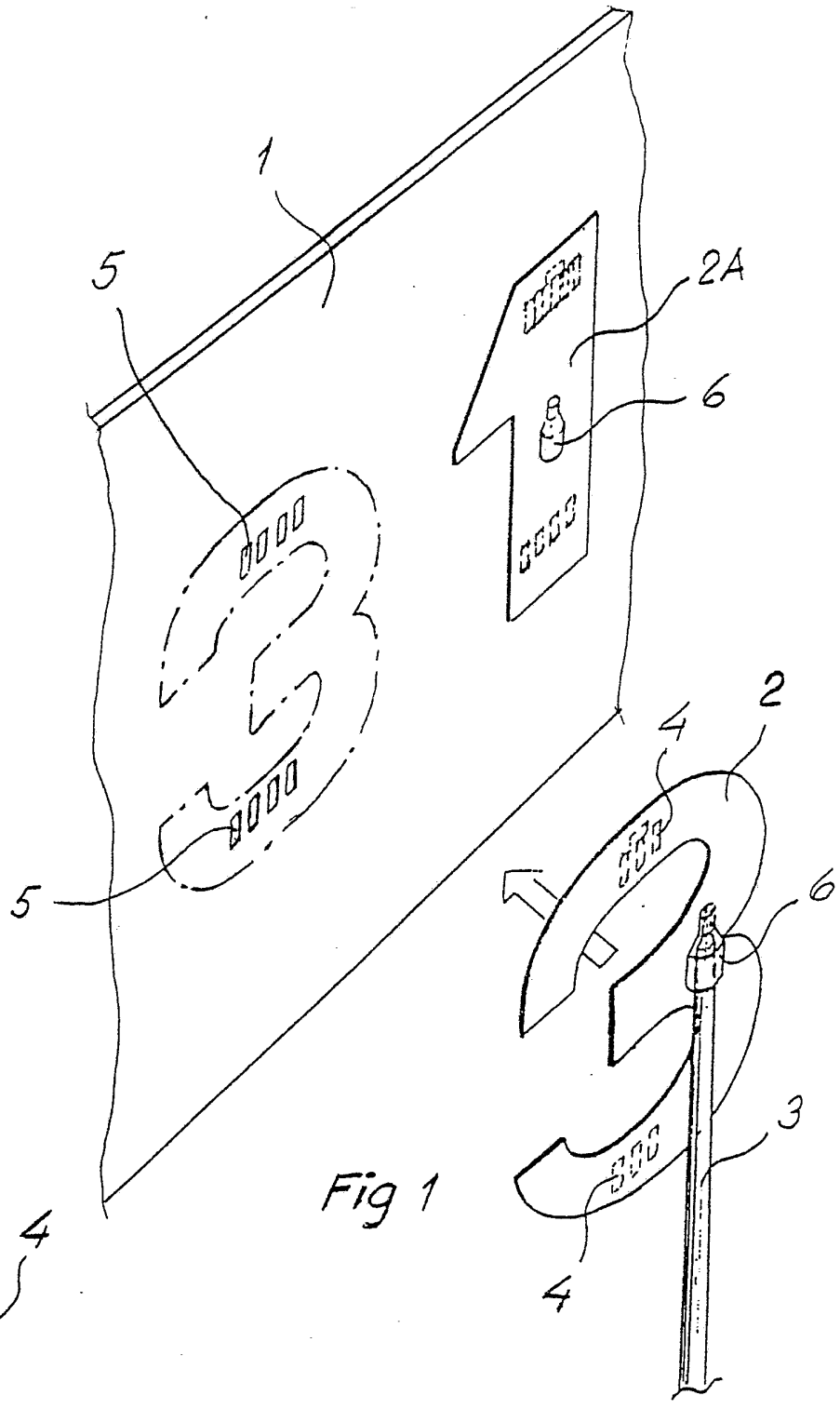

Fig 1

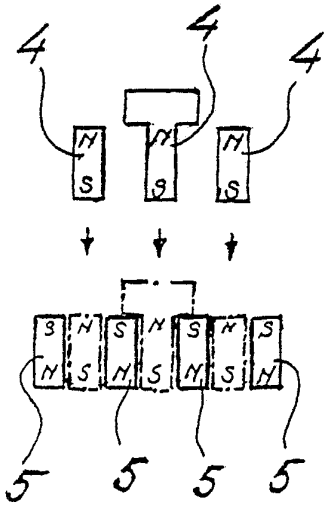

Fig 2

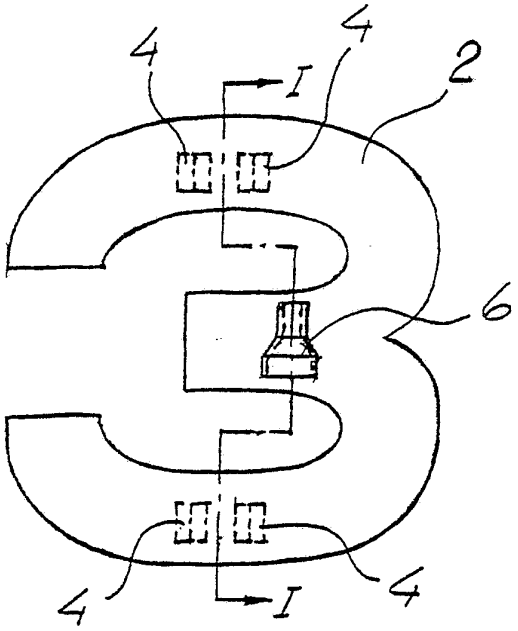

Fig 3

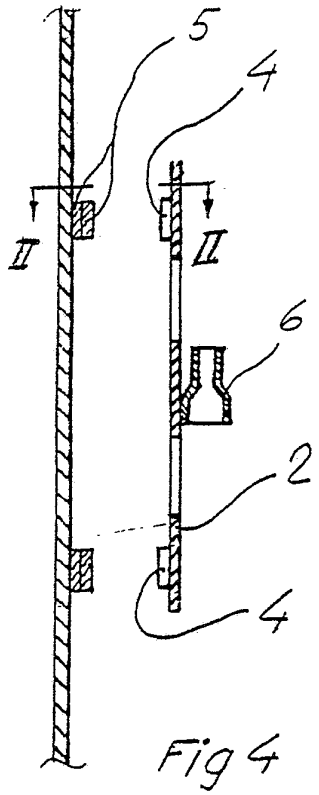

Fig 4

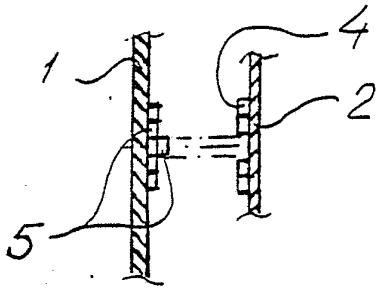

Fig 5

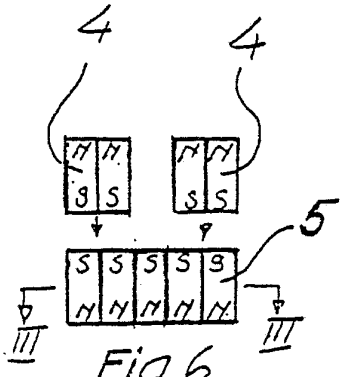

Fig 6

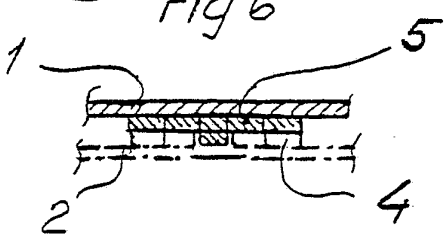

Fig 7

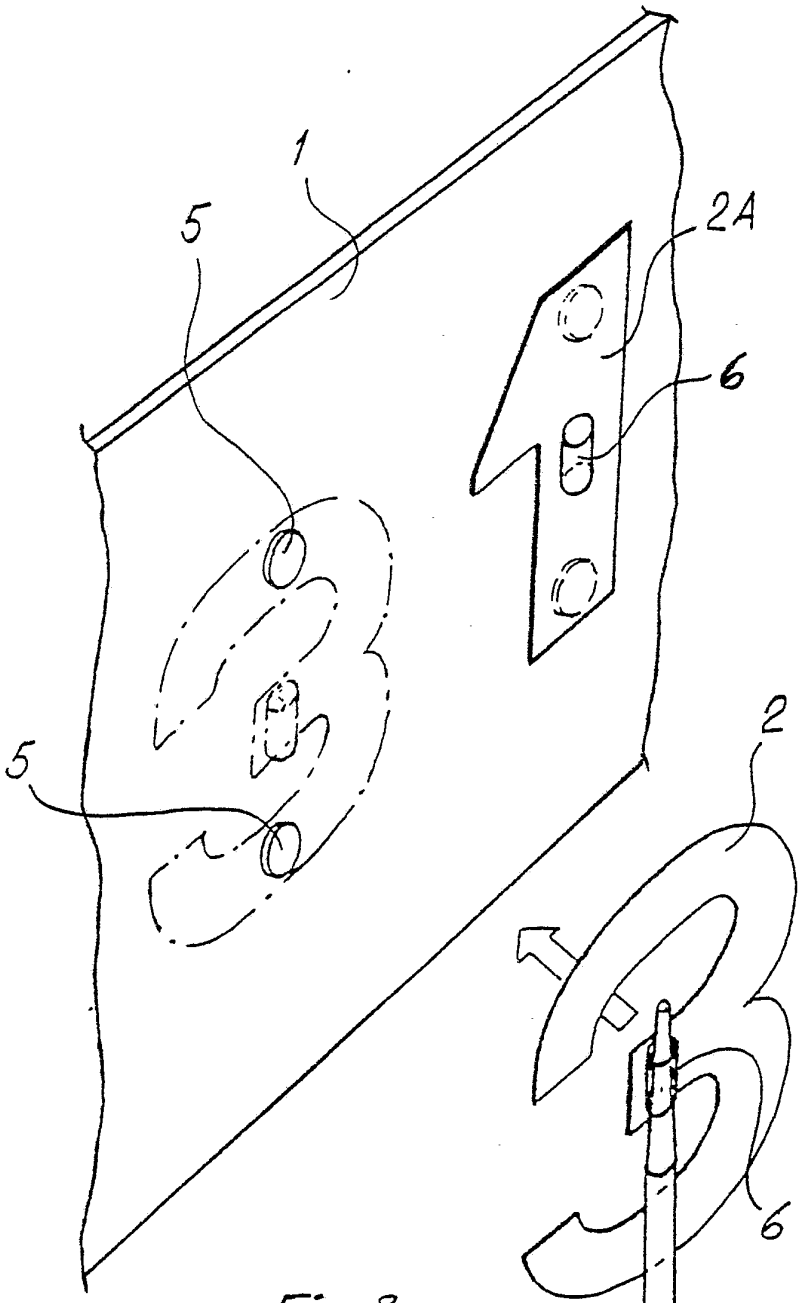

Fig 8

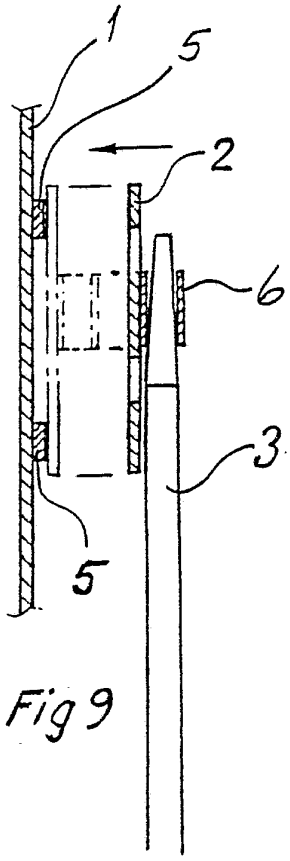

Fig 9

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE84/00242

I CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC 3

G 09 F 7/16

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
IPC 3	A 47 F 13/00,06; G 09 F 7/00,04,16-20
US Cl	40:125, 128, 140-144; 294:19,24

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [5]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
X	US, A, 3 228 138 (BAERMANN) 11 January 1966	1-8
X	US, A, 3 464 134 (FRANKLIN) 2 September 1969	1-8
X	US, A, 3 477 757 (ENGLISH) 11 November 1969	1-8
X	US, A, 3 651 592 (McCORMICK) 28 March 1972	1-8
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IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
1984-09-06	1984 -09- 10
International Searching Authority [1]	Signature of Authorized Officer [10]
Swedish Patent Office	Manfred Weiss

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