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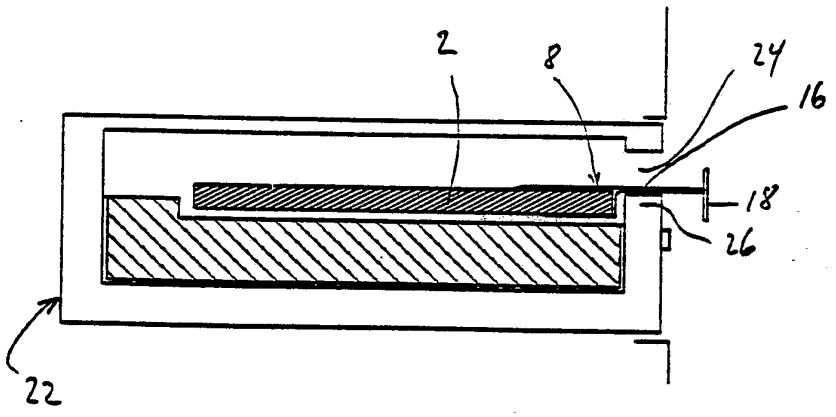
(54) Title: DATA CARRIER, IN PARTICULAR A 3.5" FLOPPY DISK AND, RESPECTIVELY, AN ADD-ON DEVICE FOR SUCH A CARRIER AND AUXILIARIES FOR HOLDING SUCH DEVICES TOGETHER



(57) Abstract

Conventional floppy disks, e.g. of 3.5" type, are completely concealed in their inserted position, and it is not readily discernable if a disk is already present in the floppy disk drive, not to mention which specific disk it is. The present invention remedies this in that the floppy disks (2) are equipped with backwardly protruding plate parts (16) which in the operational inserted position of the floppy disks remain protruding out through the apparatus slot (24) through which the floppy disk is loaded in the floppy disk drive. The protruding plate part (16) will indicate that the slot is filled, and it may carry an externally visible identification of the floppy disk. The protruding part (16) can be an integrated part of the floppy disk or can be an add-on device (8) for fixed mounting on a standard floppy disk. Furthermore, the invention provides for a grip band (22) for holding a series of floppy disks for successive or selective insertion in the floppy disk drive.

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Data carrier, in particular a 3.5" floppy disk and, respectively, an add-on device for such a carrier and auxiliaries for holding such devices together.

The present invention relates to a floppy disk, preferably of standard format which is normally known as a 3.5 inch floppy disk and which is used for insertion in a floppy disk drive slot of associated standard type. These floppy disks consist of a data carrier disk housed in a flat rectangular case with two closed sides, a semi-closed front, and a closed back or gable-end. The floppy disk is loaded into the disk drive by insertion through an open slot located on the front panel of the apparatus following which the floppy disk is lowered slightly so that the floppy disk is now practically hidden from view. To remove the floppy disk a button is pressed activating a mechanism elevating the floppy disk pushing it outwards into a position enabling the user to fetch the floppy disk facilitating the continued removal.

It is essential that the floppy disks are clearly labelled to mark the information contents, a feature which is amply provided for on the flat sides of the floppy disk, the upper side being the most frequently used. In many situation, it would be a substantial advantage if such marking is visible while the floppy disk remains inserted inside the floppy disk drive, but is not feasible in praxis as the said slot is quite narrow. A marking on said gable-end surface could be considered, hereby also facilitating the identification of the floppy disks being stored in a magazine, but the gable-end surface is not particularly well-suited to carry a marking and furthermore, a reading of such marking while the floppy disk is in operative position would be quite impossible since the gable-end surface in that position is completely concealed behind the said panel.

Through this invention, it is realized that it is possible to provide a structure whereby a marking on the floppy disk becomes clearly visible even when the said disk remains in operative position without interfering with the actual design of the apparatus, even enabling further advantages to be attained. According to the invention, the floppy disk is designed or equipped with a device protruding from the upper edge area of the gable-end side positioned so that the protruding part will extend through the said floppy disk drive slot, close to the lower edge of said slot, when the floppy disk assumes its operative position, the external end part of the device being positioned outside said slot and having an upright end surface suitable to receive write-on or stick-on label markings and whose height dimension preferably exceed the thickness of the gable-end of the floppy disk.

The invention is based on the fact that the floppy disk when in operative position behind the said slot is not lowered beyond a position in which the top side of the floppy disk is substantially flush with the lower edge of the slot so that the said protruding part may be located in so close proximity to the top side of the floppy disk that it will not add significantly to the "insertion thickness" of the floppy disk, significant in the sense that the floppy disk would be prevented from being inserted fully into the slot. The slot is even of excess height relative to the thickness of the floppy disk, thus making it permissible for the top side of the protruding part to be at a level above the top side itself. Even the lower side of the protruding part too, could be positioned slightly above the top level of the floppy disk, but it has been found sufficient for it to be flush with this level leaving ample room for the protruding part to be of a suitable thickness, e.g. when

made of a plastics material.

It will be appreciated that the said upright end surface at the outer extreme of the protruding part will be positioned just outside the said slot, i.e. fully visible, hence enabling it to be designed fully without regards to the floppy disk loading conditions. It can span the full length of the gable-end of the floppy disk, and the height can be as desired. Preferably, it has a height only slightly greater than the thickness of the floppy disk as this will give sufficient area for the required identification marking of the disk. There are other reasons why said area should not be unnecessarily heigh, one being that excessive height will prevent the floppy disks from being stacked reasonably close in a storage system.

It should be noted, though, that the height of the marking areas can be larger than the thickness of the floppy disks without preventing a close stacking of said disks when and if said areas appear on end flanges which, although upright, are inclined such that the floppy disks can be set closely together with some degree of overlapping of said end flanges. Evidently, some parts of the information marking will be concealed, but in many instances the remaining part of the visible marking will be adequate for the user to accept or reject various disks limiting the more detailed search to a low number of "unverifiable" disks whose information details can then be discerned on the surface of the disk by a local leafing through the floppy disk display.

So far described, the invention has two aspects, viz. the option of instant visual identification of a floppy disk inserted in a floppy disk drive and the option of an easily accessible and fast identification of the floppy disks stored in a floppy disk magazine with only a minimum of leafing through therein. The

former aspect is significant because, in many situations, it is crucial to know which floppy disk is inserted in the floppy disk drive, i.a. in actions such as formatting, copying, deletion etc. It is a well-known fact that users often remove the floppy disk more than once to make sure that it really is the right one, according to the top side marking, a verification check which this invention will render obsolete in that a visual identification of the floppy disk is instantly discernible without first having to remove said floppy disk.

The other aspect, viz. the easy and fast identification of the stored floppy disks, without an associated leafing through them, is also important because it greatly facilitates the location of the relevant floppy disk to be used, even if the added identification device will imply that the floppy disks should be stored, at a certain interspacing.

Further to this, the very top-side of the protruding plate part could be utilized as an information carrier. This surface may have a significantly larger area than the upright front surface so that relatively many information details concerning the floppy disk will be visible while remaining inserted.

A third aspect, however, is also encompassed by this invention, i.e. the option for the aforementioned protruding parts to be provided in such a coherent and interhinged manner that - outside the insertion slot - a correct nexus or order of sequentially connected operationally successive floppy disks can be created, the function of which will be a highly notable advantage. The user will be able to be confident that the various floppy disks will be activated in the exact planned sequence determined by the work programme. The invention affords the unique option that said protruding part can

be prepared for interaction with the latch mechanism of standard type ring binders so that the floppy disks can be filed in an appropriate way in such binders.

There is another special option in that the said protruding parts can be utilized as support and guiding parts of a displaceable operating lever stretching forwards to interact with the movable "write protect button" which is normally found on the relevant floppy disks. It will then be possible to activate this button to switch off or on the write protect function while the floppy disk remains inside the disk drive. Traditionally, The floppy disk should be removed and re-inserted if this switch function becomes relevant while using the floppy disk.

The invention can be implemented in an easy and cost-effective integrated way in connection with newly manufactured floppy disks, but also in a very simple way in connection with already existing floppy disks. It is evident that the invention also encompasses the necessary applicable unique add-on devices which in a preferred embodiment consist of an injection- moulded clip-on blank to be clipped onto the gable-end area of the floppy disk and which is equipped with the said protruding part whose extreme end is constituted by the aforementioned end flange portion.

The aforementioned option of intercoupling a number of floppy disks is readily effectuated particularly when using these separate add-on units because these may be manufactured as interconnected multi-blanks in whose individual sections the user can mount the actual floppy disks to be used for the task in question. The add-on blanks may then remain permanently interconnected, e.g. with integrated hinges between the identification flanges. Here, it is a preferred option that the add-on blank continue to remain individual separate parts while

special interconnection and interlocking bands are provided which, in desired lengths, can receive and releasably retain a desired number of the floppy disks mounted with add-on blanks, e.g. by intercoupling the flange portions thereof.

In the following, the invention is described in greater detail with reference to the drawings in which

FIG. 1 is a perspective view of a standard type floppy disk and a clip-on part in accordance with the invention to be added onto a floppy disk,

FIG. 2 is a perspective view of a slightly modified clip-on unit,

FIG. 3 is a cross sectional side view illustrating the position of the floppy disk mounted in the floppy disk drive,

FIG. 4 is a perspective view of a grip band for a multitude of floppy disks in accordance with the invention, respectively for a multitude of standard type floppy disks equipped with clip-on parts according to the invention,

FIG. 5 is a plane view of a similar band in a modified design,

FIG. 6 is a side view of a computer with an inserted floppy disk mounted on a band as shown in Fig. 4 or Fig. 5,

FIG. 7 is a side view of a floppy disk equipped with a preferred embodiment of an add-on blank according to the invention,

FIG. 8 and FIG. 9 are side views of floppy disks with modified design of the parts characteristic for the present invention, and

FIG. 10 is a schematical perspective view of an operating device on the floppy disk.

In Fig. 1 is shown a 3.5" standard format floppy disk 2 the description of which in this paper shall be

limited to disclosing that it has a front part 4 at the forefront when inserted in the floppy disk drive and, oppositely, a gable-end 6. According to the invention, a clip-on device 8 is designed to be clipped onto the same gable-end, and for such purpose the blank 8 features a grip part 10 with projecting flanges 12 and 14 which by will clampingly engage with the floppy disk. The upper flange 14 extended backwards in a plate portion 16 the outer end of which features increased width and is terminated by a downwardly protruding flange part 18. Inbetween parts 10 and 18 the side edges of the plate portioned 16 incisions 20 at spacings matching the distance between the holding loops of standard type ring binders. Of course, a safe holding on the floppy disk 2 should be ensured, as achievable e.g. by using glue or dual side adhesive tape on the inside face of one or both of the flanges 14, 12.

FIG. 2 shows a preferred slightly modified embodiment of the clip-on device 8. The only difference being that the plate 16 at the outer end of the incisions 20 continues directly into the flange part 18 and that this part is upright also above the plate 16.

In both cases, the flange part 18 is preferably designed with a height somewhat exceeding the thickness of the floppy disk 2, and the outside of the flange part 18 is hereby well-suited to carry a write-on or stick-on label identification marking for said floppy disk. The same applies to the topside of the plate portion 16.

Insofar that the plate portion 16 is protruding at the top side of the floppy disk, this portion will not obstruct normal use of the floppy disk 2. This is illustrated in greater detail in FIG. 3 showing a floppy disk drive 22 with a normal front slot 24 for the insertion and removal of the floppy disks. The floppy disk 2 is inserted through said slot and is lowered into

its operative position located behind the lower edge area 26 of said slot 24. It will be appreciated that this mounting, despite the add-on device 8 on the floppy disk 2, is feasible because the plate part 16 protrudes outwards stretching from the top side area of the floppy disk.

From Fig. 3, it is directly noticeable that a very direct advantage of this invention is that, from the outside, it will be clearly visible that a floppy disk is inserted in the disk drive, this being indicated by the portions 16, 18 protruding through the slot 24. This is in itself a notable advantage since the users are often unsure whether or not the disk drive is occupied and, in consequence, must devote energy to control checks.

However, it is naturally an even more essential fact that the floppy disk - also when in working position - can now be unmistakably identified by the marking on the flange 18. The user will have no doubt as to which floppy disk is inserted in the drive, and here many users will experience a pronounced advantage.

In terms of filing, it will naturally be equally advantageous that the user is now able to identify the floppy disks by visible inspection of the edge flanges 18 without having to leaf through the floppy disks for reviewing the flat sides. Of course, additional information may be provided on the flat sides, but even when that is required for a final selection of a particular floppy disk, the flanges 18 can still hold sufficient information to limit a detailed leafing to only very few floppy disks.

From FIG. 3, it will be noted that the height of the slot 24 is so much larger than the thickness of the floppy disk 2 that it will be perfectly possible to use of the clamp parts 12 and 14 for the holding of or on

the floppy disk 2 even though this means a certain thickening of the insertion height of said floppy disk.

Even floppy disks produced in accordance with the invention, i.e. with an integrated protruding part 16, 18 it will be of actual interest to let the plate part 16 be located quite close to the upper surface level of the floppy disk, and in practical terms it can be questioned if indeed it will be an advantage, productionwise, to manufacture the floppy disks with the protruding unit as an integrated part of the product rather than using the separately produced individual clip-on devices 8.

It is a known fact that by sequential installation of comprehensive software packages, consisting e.g. of 4 to 12 or even more floppy disks, and also when handling floppy disks for back up procedures, it can prove difficult to manage and control the floppy disks, often resulting in the user having to search for the next dedicated floppy disk. According to the invention the application of the added protruding parts 16, 18 will make it possible to use external carrying means for retaining several floppy disks in a row such that no doubt arises as to the chronological order of the floppy disks.

A carrying means of this sort is shown in FIG. 4, viz. shaped as a flat band 22 provided with interhinged sections 24, connected by integrated hinges 26 and each being shaped with protruding rims 28 between which are made undercut holding grooves which through a sliding motion can receive and retain the flanges 18 of the add-on units 8. Any existing text printed on these flanges is then not readable unless the material used for the flat holding band 22 is transparent. Such measures, however, will not be necessary because the band is used to organize of floppy disk packages for sequential loading procedures of a programme where the

detailed information marking is printed on the back of the band and where also the individual floppy disks can be identified.

Such a holding band can also be modified, e.g. as exemplified in FIG. 5 where the band sections between the hinge areas 26 are shaped with frame parts 32 to encircle completely and retain the flanges 18. For the specific application, however, it is not a condition that the floppy disks be retained in minutely uniform transverse positions on the band and in the embodiment, according to FIG. 4 the band 22 may very well be markedly narrower than the full width of the flanges 18.

Yet another option in connection with the application of the holding band is that a sort of "juke box" can be used for the selective automatic loading of different floppy disks which should not necessarily be operatively interconnected.

FIG. 6 shows a computer 34 wherein is inserted one of the floppy disks from a series of floppy disks placed in the holding band as shown in FIG. 4 or 5. From this, it will be apparent that this does not prevent the other floppy disks to remain mounted on the band which may be freely bent backwards. The band may also be formed by a direct interlocking of the flanges 18 provided a suitable preparation thereof.

FIG. 7 shows a standard format floppy disk 2 with an add-on device 8 according to the invention made a semi-rigid plastics. As depicted in dotted lines, by pressing down the protruding plate part 16, it will cause an upward tilt of the upper inwardly protruding plate part 14, and for the mounting this can be utilized thusly that, on the lower surface of the plate part 14, an adhesive layer covered by a tear-off cover tape can be placed so that, following the sliding in of the add-on device 8 over the edge of the floppy disk 2 the user

may effect such an upward tilt motion of the plate part 14, and then rip off the cover tape, following which the plate part 14 - by said upward tilt of the protruding plate part 16 - can be pressed down for firm adhesion to the upper surface of the floppy disk 2. Alternatively, the add-on device 8 can be secured quite effectively using an adhesive tape across the extreme edge of the plate part 14.

In FIG. 8 is shown a variant of the floppy disk where the outer flange 18 on the add-on device is slanted and where the remaining part of the device consists only of the plate part 16 which by gluing or in any other manner is fixed to the upper surface of the floppy disk. Here, the floppy disk could be a newly manufactured sample with an integrated protruding part 16, 18.

In the embodiment as shown in FIG. 9, the protruding part 16 is retained at a level slightly above the upperside of the floppy disk, and, furthermore, said part is retained at the underside of the floppy disk. At its extreme end, the plate part 16 is profiled with a holding part 36 which can receive individually designed flange portions 18, e.g. of different colours. In this embodiment, the floppy disk can be mounted on a carrying band, according to FIG. 6, whereby the correspondingly adapted band can then cooperate directly with the holding parts 36. Insofar that the thickness of these does not exceed that of the floppy disk, the floppy disks will be able to lie flat up against one another in the band mounted position.

As shown in FIG. 10, one option will allow that a movable operating portion 38 be placed on the protruding part 16, this operating portion at its outermost end, preferably on the side of the protruding part, having a control button 40, while at its inner edge the portion 38 engages with the write protect button 42 of the

floppy disk (see also FIG. 1). This button may thus be operated to switch-over while the floppy disk remains seated inside the floppy disk drive, this being much more convenient rather than having to remove the disk, reverse the switch, and reinsert the floppy disk.

FIG. 10 does not depict in detail the fact whether or not the protruding part 16 is positioned on a separate add-on unit or remains an integrated part of the floppy disk, but it is not deemed necessary to illustrate this in greater detail as both options are encompassed by the invention on equal basis.

The switch button itself is placed on the underside of the floppy disk, but it is accessible from the top-- side through a hole where it can be caught, e.g. between a pair of downwardly protruding tabs at the end of the lever 38.

Herein before, reference has been made to floppy disks of the 3.5" type, but it will be appreciated that the invention is not limited to the use of any special dimension of the floppy disk or corresponding cassettes, already because floppy disks with different dimensions might occur. The invention will be relevant for such floppy disks or cassettes which are mounted as standard receiving equipment in a way corresponding to the way the 3.5" floppy disks are received, i.e. being inserted through a slot for internal placement in the apparatus under such circumstances making it acceptable or feasible for the protruding part to extend outwards through the slot. Some types of equipment exist, e.g. certain video recorders, where the slot is completely occluded after the insertion of the floppy disk or cassette, whereby there is no room for any protruding parts. If, however, such equipment is altered, with a direct view to facilitate the insertion of units equipped with protruding parts, this will be directly attributable to and

hencely comprised by this invention. Beside, most video recorders are equipped with a close flap loosely covering the slot by swinging down from above, leaving ample room for an upper rearward protruding part of the video cassette to extend out through the slot for an external visual identification of the cassette; only the closing flap will not then be swung down to its ordinary closing position. The same applies to most floppy disk drive slots.

C L A I M S:

1. Data carrier unit in the form of a floppy disk or a cassette of the type to be loaded into a disk by insertion through an access slot in an apparatus panel, comprising a flat housing with an enclosed data carrier, said housing having a frontal insertion end and oppositely positioned rear end characterized in that the housing is shaped or equipped with a plate part projecting from the rear edge so far that in the inserted position it will protrude through said access slot so as to enable the external protruding part to carry an identification marking visible in the inserted position position; alternatively, an add-on device suitable for being holdingly attached a conventional carrier unit to form said rearwardly protruding plate part.

2. A unit according to claim 1, characterized in that the rearwardly protruding plate part will terminate in a straight or slanted upright and/or downright flange part formed with an exterior surface suitable to receive an identification marking.

3. A unit according to claim 1, characterized in that the rearwardly protruding plate part at oppositely poled side edges is formed or connected with recessing or ring forming means to interact with the retainer loops of filing ring binders of standard type.

4. A unit according to claim 1, characterized in that the rearwardly protruding plate part ends in a narrow head portion made for insertion placement of a separate, transversely positioned outer flange portion for the receipt of the identification marking.

5. A unit according to claim 1, characterized in that the protruding plate part is furthermore equipped with a switch-over control means which engages with or

is made to engage with a switch-over member on the floppy disk or the cassette, e.g. for write protection of said data carrier.

6. A unit according to claim 1, characterized in that the add-on device is made with a top plate and a grip flange depending therefrom for engaging with the rear edge area of the floppy disk or cassette, optionally with an adhesive ribbon placed on one or more of the contact surfaces of the add-on device.

7. An auxiliary unit for holding together a number of floppy disks or cassettes according to claim 1, characterized in that it consists of a flexible or foldable band which on one side is equipped with a series of holding means for receiving the free end areas of said protruding plate parts or with a series of protruding add-on units for receiving the data carrier units, the other side of the band being suitable to receive an identification marking.

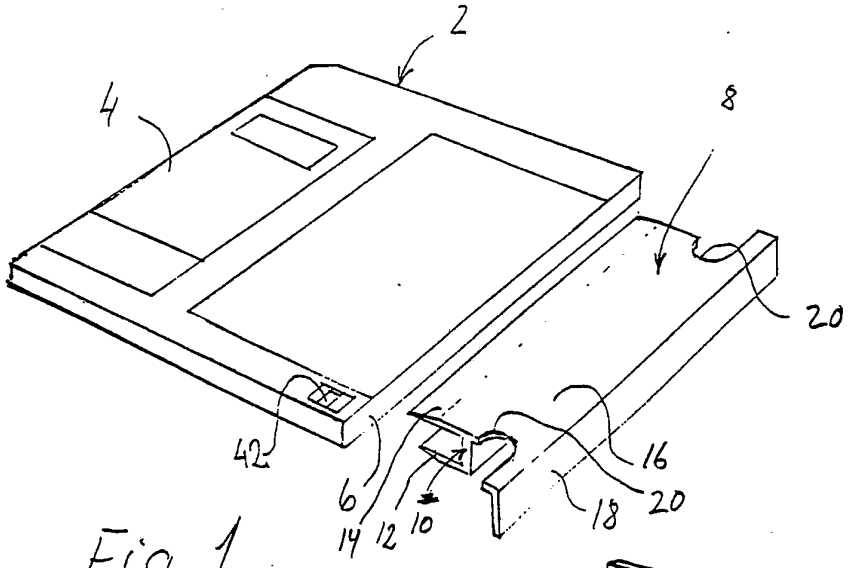


Fig. 1.

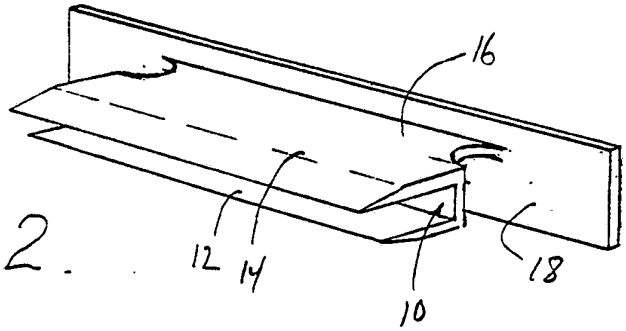
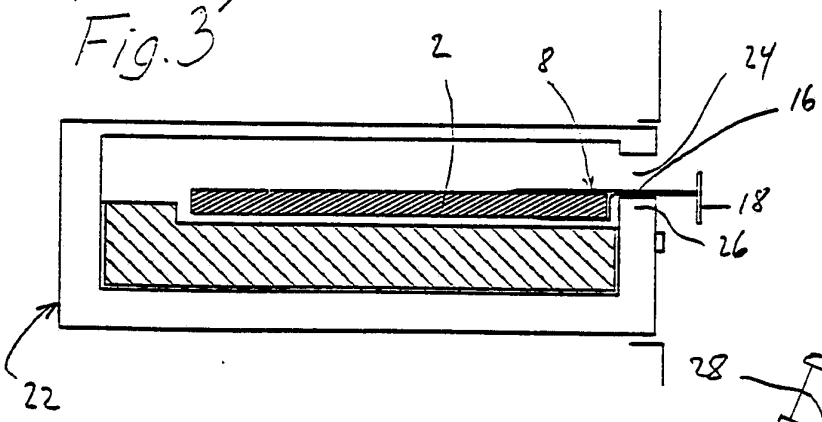


Fig. 2.

Fig. 3



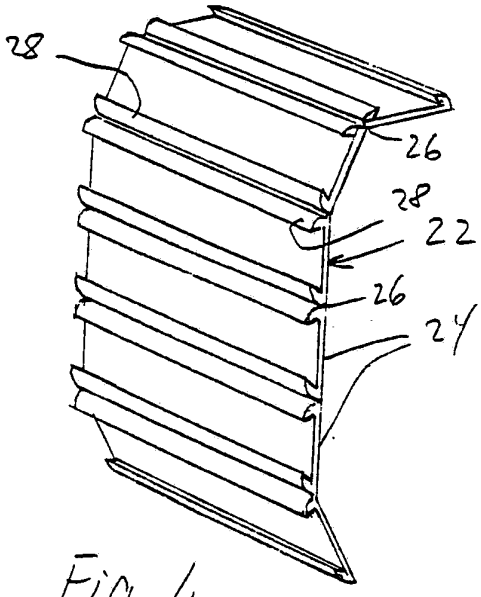


Fig. 4

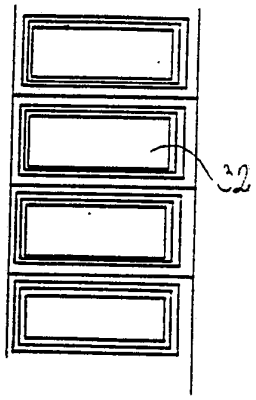


Fig. 5.

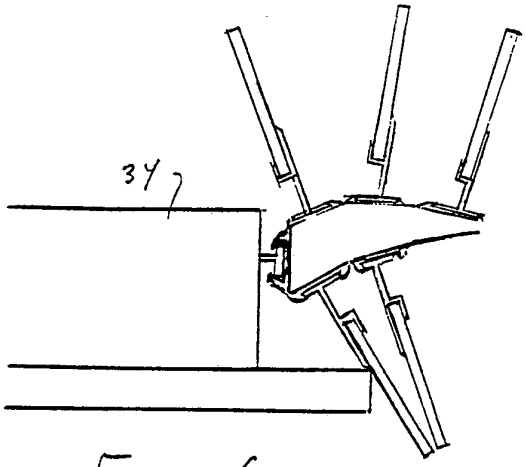


Fig. 6

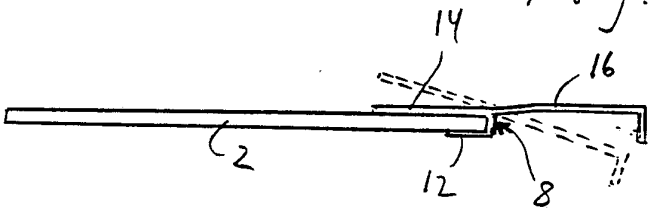


Fig. 7

Fig. 8

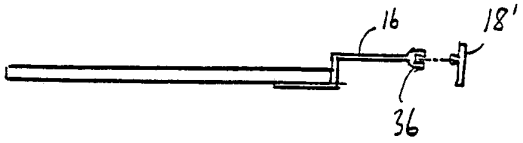


Fig. 9

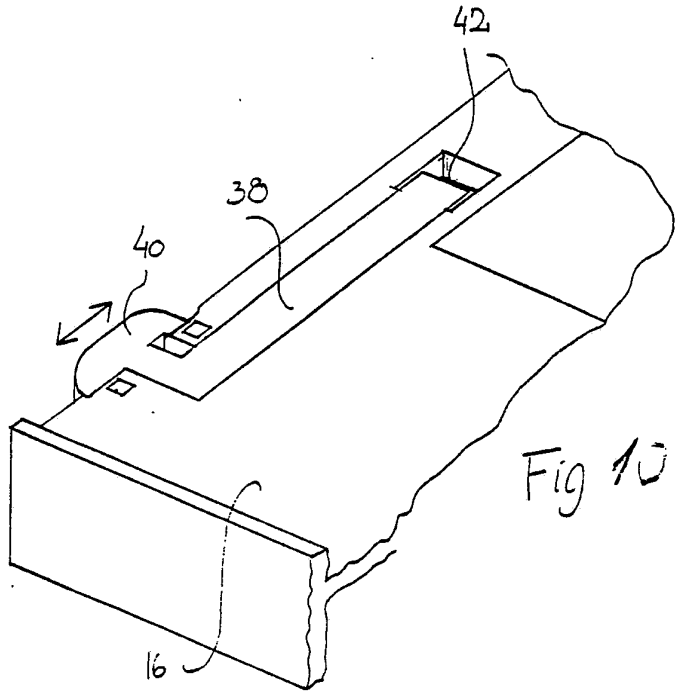


Fig 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 93/00091

A. CLASSIFICATION OF SUBJECT MATTER

IPC5: G11B 23/03, G11B 23/38
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC5: G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, CLAIMS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE, A1, 3226472 (CANON DENSHI K.K.), 3 February 1983 (03.02.83), page 17, line 8 - page 18, line 4, figures 3,4	1,2

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Information on patent family members

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