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(54) **A method for the initial loading of a printing media into a printer, a printer which uses the said method, and a push-button and deflector combination for implementing the said method**

(57) The invention provides for the arrangement of means in the printer (1) for enabling the operator to introduce the end of the printing media (2) into the machine whilst observing sufficiently precisely the position of the front edge of the printing media during its introduction into the machine in order to ensure that it is correctly positioned, the printing-media entrainment rollers being stationary during this time and being set in motion only by manual activation by the operator after he has positioned the printing media and only at the moment when the operator estimates that the printing media is correctly positioned. The manual activation by the operator consists of the operation by the operator of a push-button (6) which starts the operation of the rollers for entraining the printing media into the machine.

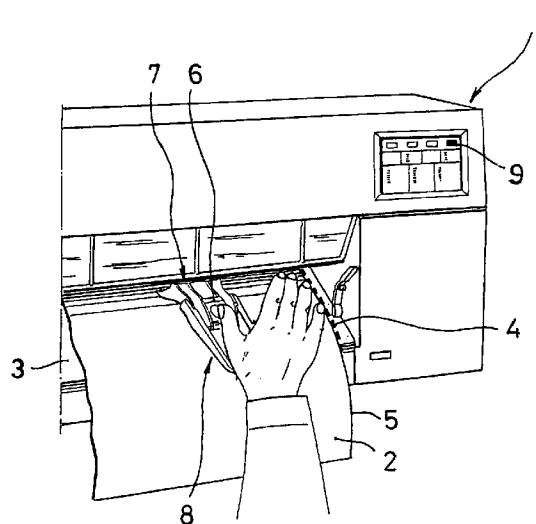


FIG. 3

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Description

[0001] The present invention relates to a method of loading a printing media into printers and also to a printer which uses the said method and to a combined push-button/deflector device for use in the said method.

[0002] At the moment, computer-controlled, large-capacity printers, also known as "plotters", for printing technical or large drawings on a printing media which is moved through the printer and is acted on by an ink-jet printing cartridge which moves transversely relative to the movement of the printing media, are supplied by moving the end of the printing media manually towards the input portion of the printer, the printing media usually being a roll of printing media or a sheet of printing media or the like, and the sheet of printing media being pushed manually until its front edge is gripped between the feed roller and the sheet-return or inversion roller which expels the sheet or advances the roll of printing media once printing has been carried out.

[0003] A problem which frequently arises in printers of this type is that, given that the manual guiding of the sheet of printing media or of the roll of printing media has to be carried out at a considerable distance from the front edge of the printing media, it is difficult to achieve good alignment of the printing media and, in many cases, this delays the operation of the printer when this operation has to be repeated, since the printer cannot tolerate appreciable deviation of the printing media from the theoretical position.

[0004] As is clear, the need for repetition of the said supply operation results in loss of time.

[0005] The present invention relates to a method which is intended to solve the problem mentioned above by providing means for considerably simplifying the initial loading of the printing media into the printer so that the misalignments mentioned do not occur.

[0006] Another subject of the present invention consists of the disclosure of a printer which incorporates means for implementing the method of the present invention.

[0007] Yet another subject of the present invention consists of the disclosure of a combined device including a deflector and guide for the printing media upon its output from the printer and a push-button for operation in a printer formed in accordance with the present invention.

[0008] A basic concept of the present invention lies in the fact that the method of loading the printing media into the printer provides for the operation of the rollers for advancing the printing media to be activated manually by the operator himself at the moment when the said printing media is introduced into the printer and at the moment when the operator estimates that the sheet of printing media is correctly positioned, without deviation. This basic concept prevents the present problem that, once the printing media has been introduced, the entrainment rollers advance the printing media at once,

almost without there being time for the operator to assess the alignment of the printing media, so that the operator has very little chance of manoeuvring to ensure beforehand that the printing media is supplied correctly without deviation.

[0009] According to the present invention, means are provided in the printer for enabling the operator to introduce the end of the printing media into the machine whilst observing sufficiently precisely the position of the front edge of the printing media during its introduction into the machine in order to ensure that it is correctly positioned, the entrainment rollers for the printing media being stationary during this time and being set in motion only by manual action by the operator after the printing media has been put in place and only at the moment when the operator estimates that the printing media is correctly positioned. The manual action by the operator consists of the operation by the operator of a push-button which starts the operation of the rollers which entrain the printing media towards the interior of the machine. An important feature of the present invention consequently consists of the arrangement of the push-button for manual operation by the operator in a position which is convenient for its operation, bearing in mind that the operator is in a position to present the printing media and to align it in the input region of the printer. For this reason, the arrangement of a push-button in a region as close as possible to that in which the operator's hands are situated during the operation to introduce the printing media into the machine is preferable, although, as can be understood, for other functional reasons, the said operating push-button may be moved to any other convenient point on the printer.

[0010] More precisely, the method of the present invention comprises the following successive steps:

- a) manual presentation of the front edge of the printing media at the input of the printer, causing it to slide over the support platen situated at the input of the machine, all of this taking place whilst the feed rollers of the printer for entraining the printing media are stationary;
- b) manual alignment of one of the side edges of the printing media with a rectilinear reference alignment of the machine situated at one of the sides, preferably the right-hand side, of the platen for receiving the printing media;
- c) activation of the operation of the rollers for feeding the printing media towards the printer by manual operation of an activation push-button;
- d) starting of the feeding of the printing media towards the interior of the printer;
- e) automatic detection of the slant of the printing media, giving rise to:
- f) continuation of the working cycle of the copier, or
- g) interruption of the feeding of the printing media, requiring realignment of the printing media.

[0011] In order to implement the present invention, the printer is characterized in that it has means for the manual operation of the printing-media feed rollers in order for the print cycle to be able to start, with regard to the activation of the remaining members of the machine, the printer having separate manual means for setting the printing-media feed rollers of the printer in motion independently and by manual operation. For this purpose, the printer has a system for supplying the drive motor of the printing-media feed rollers, the initial activation of the system prior to a printing cycle being brought about by means of a manually-operated push-button the operation of which is essential for initially setting in motion the drive motor of the said printing-media feed rollers. The position of the said push-button may vary according to the precise configuration of the printer and its manner of operation, but a preferred arrangement consists of its incorporation in a position very close to that in which one or both of the operator's hands are situated at the moment when the printing media is introduced into the printer.

[0012] In a preferred embodiment, the printer has a combined device for deflecting the printing media at the output, once the printing operation has been carried out, the device being disposed in the front portion of the printer partially covering the printing media in the input region and incorporating the manual push-button for activating the printing-media feed rollers. The said combined device can preferably also support the device for detecting the presence and/or absence of the laminar printing media.

[0013] For a better understanding, some drawings corresponding to a printer which incorporates the present invention are appended by way of non-limiting example.

Figure 1 is a partial perspective view of the front portion of the printer which incorporates the present invention, showing the position of the printing media relative to the input portion of the printer. Figure 2 shows the position of the front portion of the printing media as a whole during its manual introduction into the machine.

Figure 3 shows a detail of the manual alignment of the printing media and of the operation of the push-button for activating the feed rollers.

Figure 4 is a schematic view of the arrangement of elements for use in the present invention.

Figures 5 and 6 are a side elevational view and a plan view, respectively, of a combined deflector and push-button assembly according to the present invention.

Figures 7 and 8 are a disassembled and an assembled perspective view, respectively, of a deflector and push-button assembly according to the present invention.

Figure 9 is a side elevational view of the push-button with the side cover removed.

Figure 10 is a perspective view of the set of members which make up the combined deflector and push-button device.

[0014] As can be appreciated from the drawings, the present invention is applicable to a printer, indicated 1, into which the printing media 2, which may be constituted by a roll or by individual sheets of printing media or other similar material, is fed. The front guide platen 3 for the printing media 2 has, on one side, an alignment of reference marks 4 which may be formed by small holes, for enabling the corresponding side edge 5 of the printing media 2 to be aligned at the moment when it is introduced into the front portion of the printer 1. The manual feeding operation for loading the printing media into the machine therefore involves the alignment of the edge 5 with the reference line 4, see Figure 2, the operator ensuring that the front edge of the printing media is suitably arranged, without deviation. This entire operation takes place with the printing-media entrainment rollers stationary to allow the operator to manipulate the printing media properly as it enters the machine. Only when the operator has ensured that the printing media is suitably positioned at the input of the machine does he operate a push-button for activating the drive motor of the printing-media entrainment rollers. In the embodiment shown in the drawings, the push-button 6 is incorporated in a combined assembly 7 which acts as a deflector for the output of the printing media and which has a removable front frame 8 for permitting the said guiding, the assembly being mounted above the input for the printing media into the machine, as indicated in the drawings. This arrangement considerably facilitates the manual operation of the activation push-button. However, the said push-button may be disposed in any other position on the machine, for example, on the instrument panel 9 or in another suitable place, as appropriate for the general configuration of the machine or for the way in which it operates.

[0015] As can be seen from Figure 4, the printing media can proceed from a roll 10 to the guide plate 11 of the printer beneath the deflector and push-button assemblies 12, and is then guided by the main roller 13 towards the output path 14.

[0016] As can be seen from Figures 5 to 8, the combined deflector and push-button assembly comprises a narrow body 7 which is disposed at the input to the copier, above the printing media during its input into the printer, and which has an upper face for guiding the printing media upon its output from the printer, with a removable front frame 8 and central push-button 6, the assembly being mounted above the printing media upon its input into the printer so that the lever 15 of the detector for detecting the presence or absence of the printing media is disposed in the lower portion of the said assembly, acting on the face of the printing media which will not receive the printing.

[0017] As can be seen in Figures 7 and 8, the frame 8

has two arms 16 and 17 which are intended to extend the area for guiding the printing media and which can be coupled releasably to the body 7 of the deflector by means of lateral projections 18 and recesses 19 in the body 7, or by another suitable arrangement.

[0018] The switch 20 operated by the push-button and the detector 21 for detecting the presence or absence of the printing media, which is operated by a pivoting element 22, are disposed inside the assembly comprising the deflector 7 and the push-button 6, as can be seen in Figure 9.

[0019] As can be seen in Figure 10, the body 7 of the deflector and push-button assembly comprises two component parts 21 and 22 which fit into one another and include the elements mentioned above and, in particular, the push-button 6 which is coupled in a housing 23 by means of a region of matching shape 24, and which is pivotable on the said housing.

[0020] Although the present invention has been described with reference to the appended drawings, it will be understood that its characteristics are not limited to this embodiment which may be subject to variations of any type introduced by experts in the art, without departing from the scope of the appended claims.

Claims

1. In a computer-controlled printer for printing technical or large drawings on a printing media which is moved through the printer and is acted on by an ink-jet printing cartridge which moves transversely relative to the movement of the printing media, the method for the initial loading of the printing media which comprises,
 - a) manual presentation of the front edge of the printing media at the input of the printer, causing it to slide over the support platen situated at the input of the machine, all of this taking place whilst the feed rollers of the printer for entraining the printing media are stationary,
 - b) activation of the operation of the rollers for feeding the printing media towards the printer, by manual operation of an activation push-button,
 - c) starting of the feeding of the printing media towards the interior of the printer,
2. A method according to claim 1, in which in the presentation of the front edge of the printing media at the input of the printer the following further step is carried out,
 - d) manual alignment of one of the side edges of the printing media with a rectilinear reference alignment of the machine situated on one of the sides, preferably the right-hand side, of the platen for receiving the printing media,
3. A method according to claims 1 and 2, in which the following further steps are carried out:
 - e) automatic detection of the slant of the printing media, giving rise to:
 - f) continuation of the working cycle of the printer, or
 - g) interruption of the feeding of the printing media, requiring realignment of the printing media.
4. A method according to previous claims 1 to 3, in which the manual push-button for activating the printing-media feed rollers is disposed in the vicinity of the region for the manual supply of the printing media and can be operated by the same hand which supports one of the edges of the printing media during the supply thereof.
5. A printer which uses the method of supplying the printing media according to previous claims 1 to 4, which has a manually-operated push-button for activating the operation of the printing-media feed rollers.
6. A printer according to claim 5, in which the manual push-button for activating the printing-media feed rollers is arranged adjacent the region in which the feed substrate is introduced.
7. A printer according to claim 5, in which the manual push-button for activating the printing-media feed rollers is arranged on the general control panel of the printer.
8. A printer according to claim 5, in which the manual push-button for activating the printing-media feed rollers is arranged in any position on the printer accessible to the operator carrying out the initial supply of the printing media.
9. A push-button and deflector combination for implementing the method of claims 1 to 4, which comprises, integrated in a single element, a deflector for guiding the printing media during its output from the printer and the push-button for the manual activation of the rollers for feeding the printing media towards the interior of the printer.
10. A combination according to claim 9, which comprises a narrow body which is disposed at the input to the printer, above the printing media during its input into the printer, and which has an upper face for guiding the printing media upon its output from the printer, on which upper face the push-button for activating the printing-media feed rollers is disposed.

11. A combination according to claim 9, in which the deflector body carrying the manual push-button is coupled releasably to a front extension frame for extending the area for guiding the printing media.

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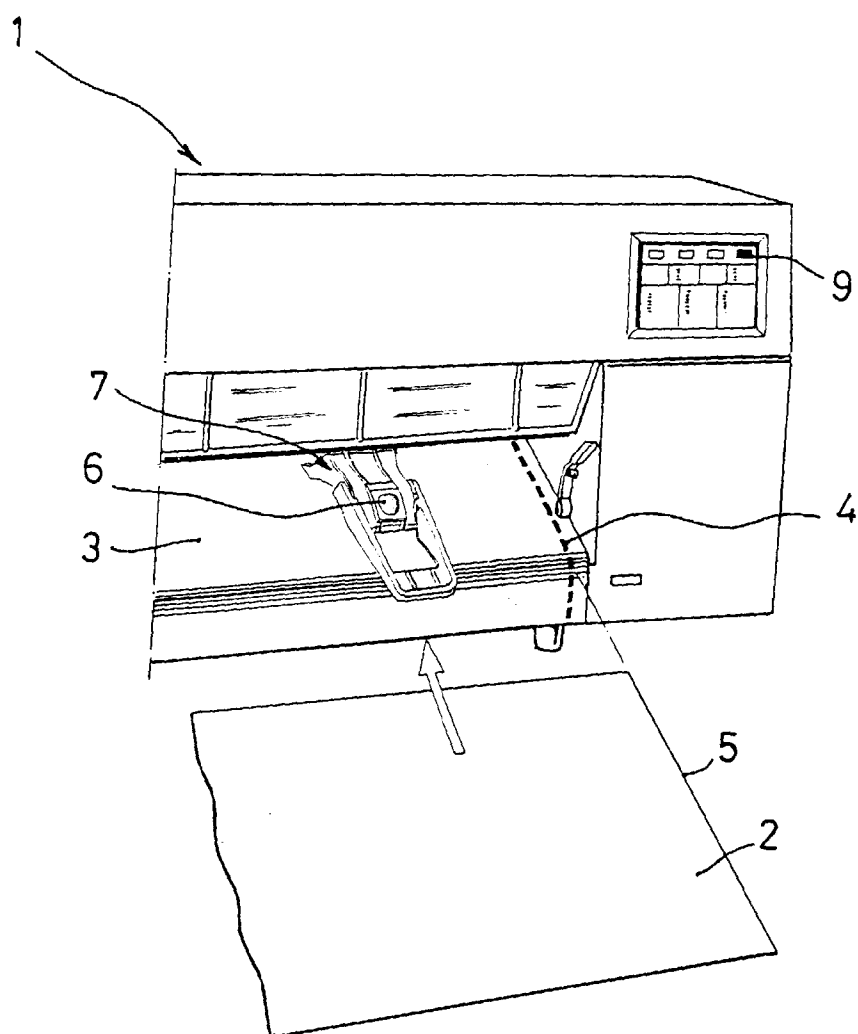


FIG. 1

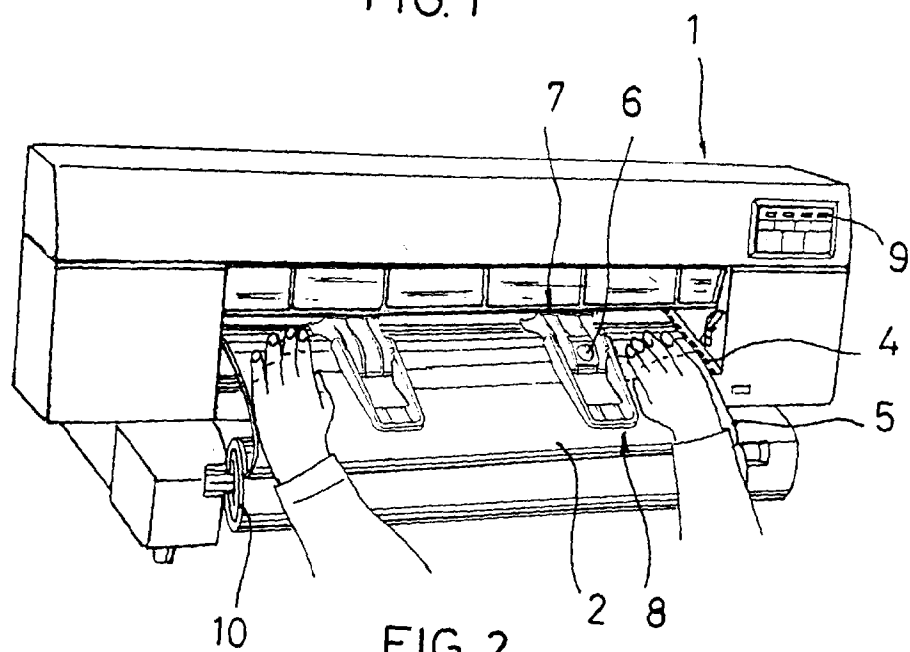


FIG. 2

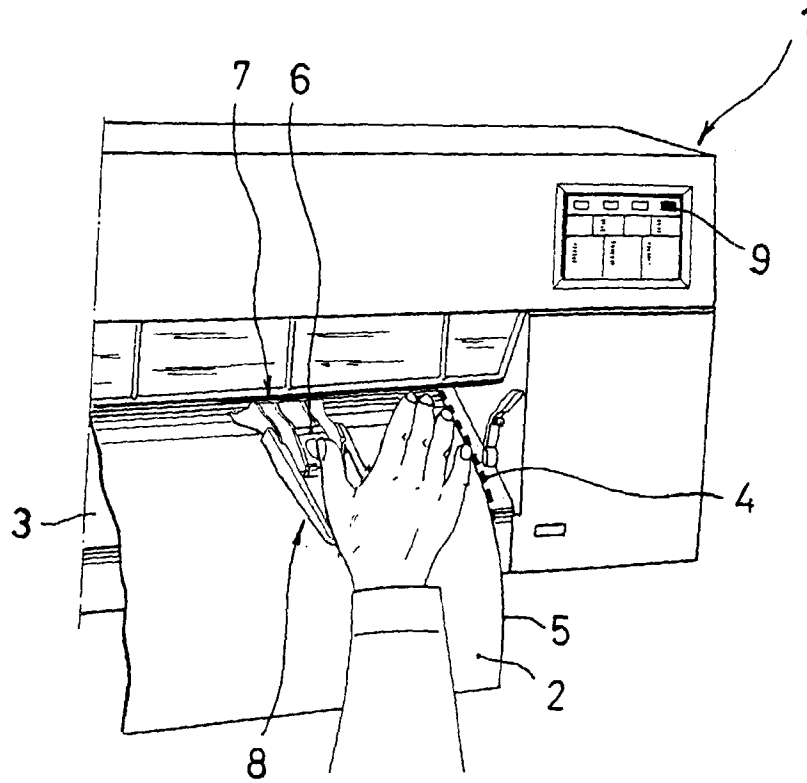


FIG. 3

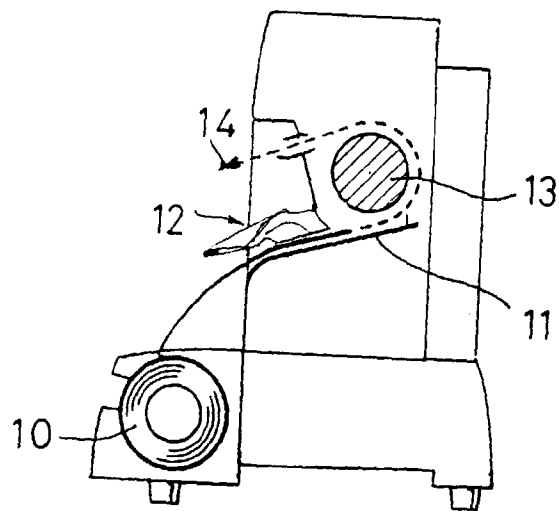
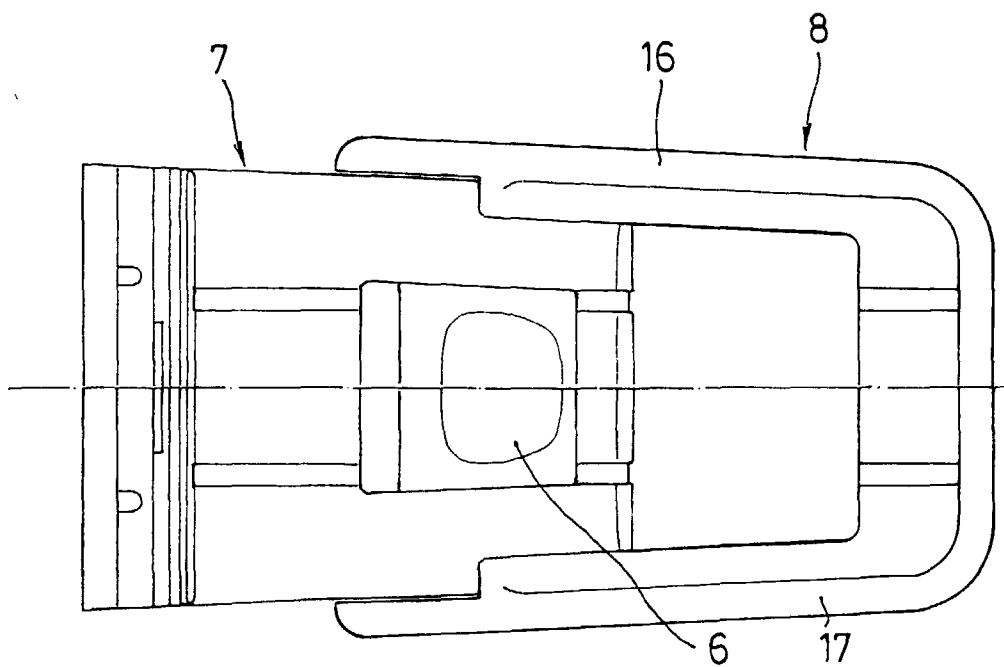
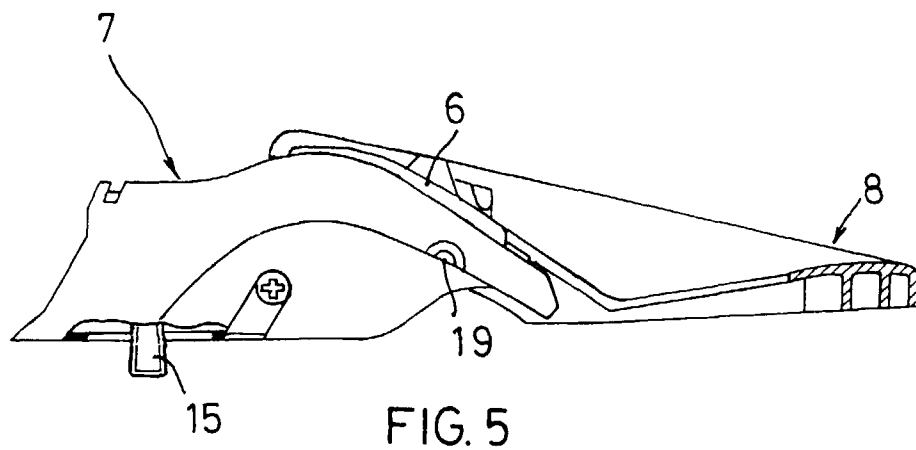
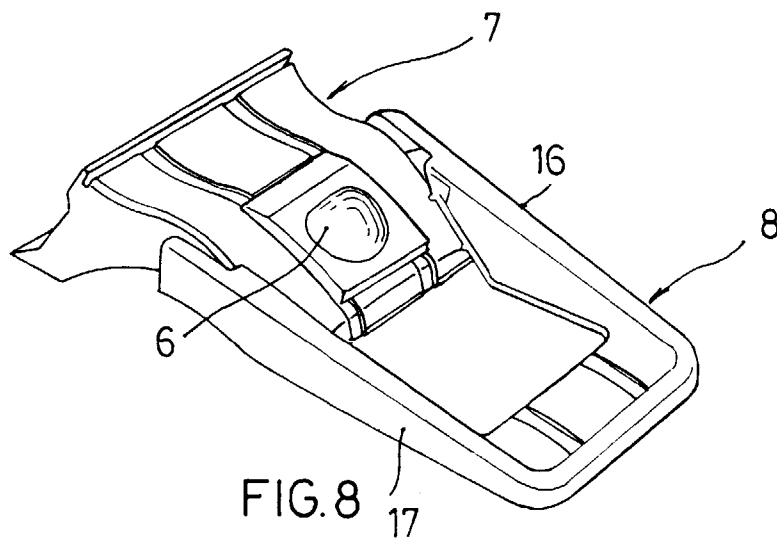
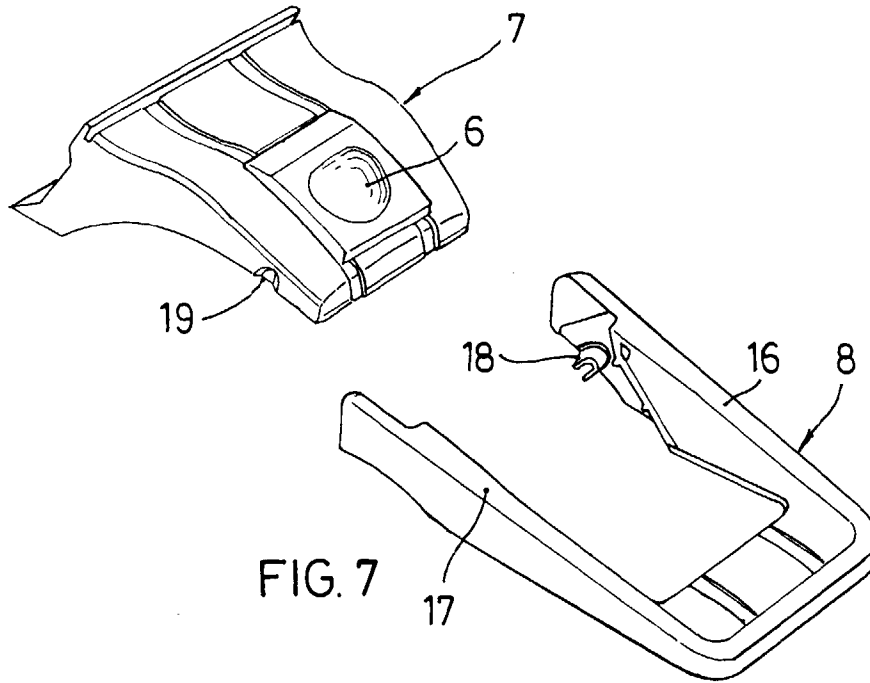


FIG. 4





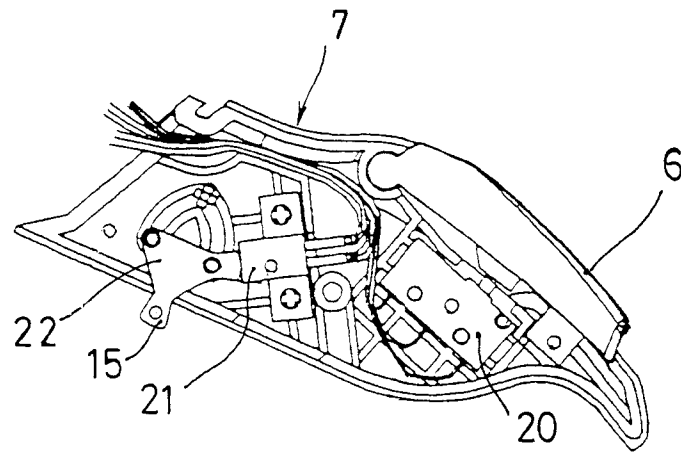


FIG. 9

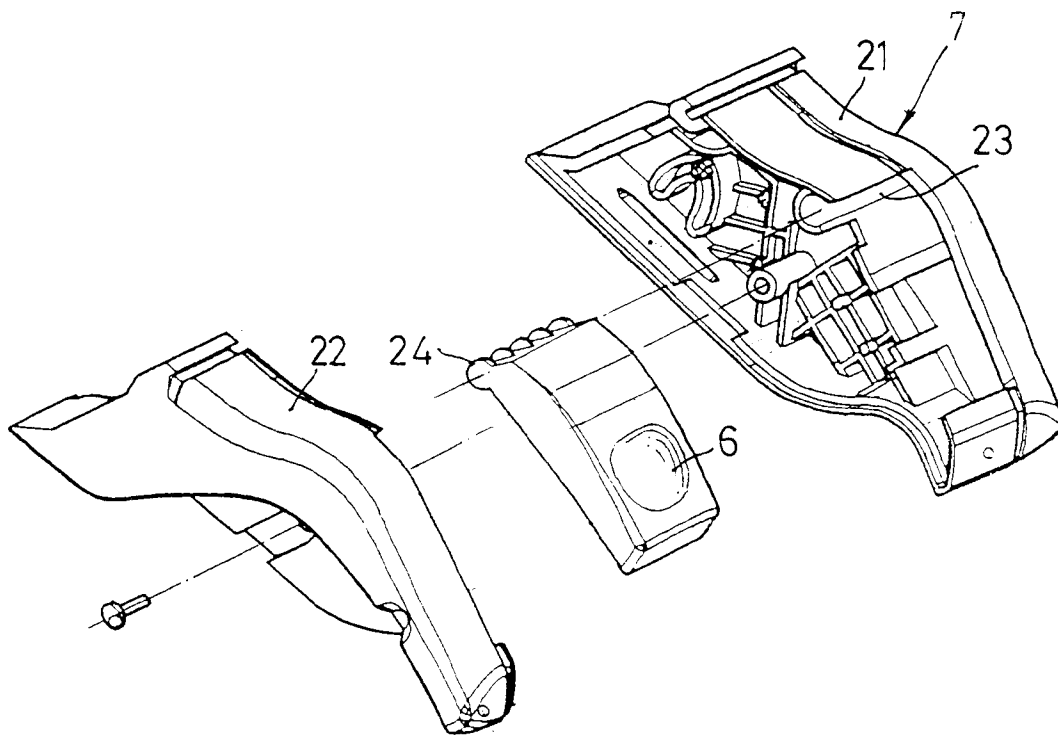


FIG. 10



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EUROPEAN SEARCH REPORT

Application Number
EP 97 50 0153

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 5 379 998 A (NAKAGAWA SHIN) 10 January 1995 * abstract; figure 5 * * column 6, line 44 - line 52 * ---	1,2,4-6, 8	B41J11/38 B41J13/10
A	US 5 101 473 A (KOTAKI KOZI) 31 March 1992 * claims 1,3; figure 1 * -----	3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B41J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 January 1998	Examiner Wehr, W
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