(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 497 805 B1**

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification :
15.09.93 Bulletin 93/37

(51) Int. Cl.[5] : **B41J 13/00,** B65H 31/24

(21) Application number : **90915419.7**

(22) Date of filing : **24.10.90**

(86) International application number :
PCT/DK90/00274

(87) International publication number :
WO 91/06431 16.05.91 Gazette 91/11

(54) **SORTER APPARATUS FOR AN ELECTRONICALLY CONTROLLED PRINTER.**

(30) Priority : **24.10.89 DK 5265/89**

(43) Date of publication of application :
12.08.92 Bulletin 92/33

(45) Publication of the grant of the patent :
15.09.93 Bulletin 93/37

(84) Designated Contracting States :
CH DE FR GB IT LI NL

(56) References cited :
EP-A- 0 241 273
DE-A- 3 508 502
DE-C- 3 021 504

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EP 0 497 805 B1

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Description

The invention relates to a sheet sorter apparatus for an electronically controlled sheet printer in a multi-user data or word processing system, in which the sheet sorter apparatus comprises addressable sorting bins in the form of substantially parallel and spaced apart shelves constituting together a unity shielded along two adjacent lateral faces and connected to a sheet feeder and distributor unit at a third lateral face and provided with discharge openings for removing the printed ant sorted sheets at the fourth lateral face, and in which a door is pivotally journalled about an axis so that it is movable between a lockable position in which the door bars the access to the discharge opening of a bin, and a neutral position with unimpeded access to remove sheets from the bins.

E.g. in data or word processing systems where many users share a single centrally placed sheet printer, everybody is frequently admitted to read the printed material. One example is a word processing system in the office block of a company where the employees who happen to be in the proximity of the printer for the period during which the material is being printed and sorted into the bins and finally removed by the person who started the printing, today have free access to read the printed material, even if it relates to managers' letters, accountings or other potentially delicate material.

In data systems, e.g. used for science-related calculations, more users generally share a single printer frequently positioned in a separate printer room because the printing yields a high noise level which would otherwise bother the users. In larger systems there may be a queue of information waiting for printing and the users then frequently go ahead with other work after having commanded printing and, later on, when taking a convenient break, remove the printed material which is meanwhile freely accessible on a shelf in the sheet sorter apparatus connected to the printer.

Due to geographic time difference between transmitter and receiver the printing of facsimile messages involves a particular problem because they are often printed at times when the normal staff of the receiver firm is off duty, whereas cleaning staff, watchmen and others in casual relation with the firm may instead be present. In existing telecopier systems there is therefore an inherent risk that the transmitted message is read by others than the intended receiver.

EP-A-241 273 deals with a sorter apparatus of the above mentioned type in which a lockable door blocks the access to several bins. At its bottom edge the door is pivotally journalled about an axis extending in parallel with the lowermost of the inclined, lockable doors so that the door may be tilted down when copies are to be removed from the bins. The bottom-hinged door impedes the removal of sheets from the lower lockable bin. In the multi-user system only one person at a time can command sheets to be sorted into the locked bins and it is not possible to alter the number of locked bins in response to the instantaneous need. Moreover, the flexibility of the sorter apparatus in a multi-user system is reduced in that the sheet printer can be initiated only when all doors are locked.

It is an object of the invention to eliminate the above drawbacks and to provide a sheet sorter apparatus with such a modular structure that the individual user as required may be allocated one or more lockable bins.

This is obtained in that the apparatus according to the invention is characterized in that several lockable bins have each a respective door the bearing axis of which is perpendicular to the plane of the shelf and that some doors may optionally by a coupling means be interconnected so as to pivot in common about the bearing axis when some shelves associated with the respective doors are allocated to a single user.

The use of a side-hinged door for each of the lockable bins allows of unimpeded authorized access to grip and remove sheets from a single shelf whose door has been pivoted sideways, irrespective of whether the remaining shelves are locked. The option of inter-connecting more doors, according to desire, offers an easy operation and a high flexibility when conforming the sorter apparatus to user's instantaneous requirement for lockable bins.

The simple operation of the sheet sorting apparatus is in a preferred embodiment of the invention promoted in that the doors which are interconnected to be pivoted in common are lockable by means of a common lock, thereby only requiring unlocking of one lock for emptying the shelves allocated to a specific user. Concurrently with the interconnection of two doors the lock pertaining to the one door may be inactivated so that both doors are lockable by means of the lock of the other door.

An embodiment of the invention will now be explained in detail with reference to the schematical drawings, in which

Fig. 1 illustrates a sheet printer with a sorter apparatus of a known type,

Fig. 2 illustrates a sectional, perspective view of a sorter apparatus according to the invention,

Fig. 3 is an illustration of the locking device according to the invention,

Figs 4 and 5 are perspective views of a second embodiment of the doors of the locking device with associated fixtures, and

Figs 6 to 9 are sections and cross-sections of doors and fixtures, resp., in a third and fourth embodiment of the locking device.

The sheet printer 1 shown in Fig. 1 may be of any arbitrary, known type, such as a printer or an offset

apparatus for printing originals or multiplication of a document. The sheet printer supplies single sheets, e.g. in A4 size, to a sheet sorter apparatus 2 consisting of sorting bins 3 and a sheet feeder and distributor unit 4 sorting the sheets into the individual bins in dependence on the electronical control codes given to the printer and the sorter apparatus from the user apparatus together with the remaining part of the signal sequence to control the printing.

It is generally known that specific bins in the apparatus 2 may be allocated to the indvidual user and also that the user may alternatively have the possibility of addressing the print to a specific bin.

The individual bins are designed as shelves 5 that are parallel and spaced apart, one above the other. The bins are laterally confined on three sides by distributor unit 4 and a shielding 6 consisting for instance of thin sheet metal or plastics. There is free access to the shelves from the fourth site ant the discharge opening of each bin is thus confined in the vertical direction by the actual shelf and the superjacent shelf and in the horizontal direction by shielding 6 and unit 4.

Fig. 2 illustrates the sorter apparatus according to the invention of which parts with the same function as above are given the same reference numerals.

On the fourth lateral face 7 each of the four upper bins is provided with a locking device in the form of a door 8 which through a hinge 9 positioned at one end area of the door is pivotally journalled by a shaft 10 supported in two projections 11 in the frame of the sorter apparatus. Door 8 may be secured in the vertical direction by a Seeger circlip (not shown) inserted in a recess in the shaft 10 and engaging the lower edge of hinge 9.

In the end area opposite hinge 9 each door carries one part 12 of a releasable locking device whose other part 13 is firmly mounted in the shielding 6. The other part may be a combination lock of the type known from briefcases.

Alternatively, hinge 9 may accommodate a spring which biasses door 8 to move in the closing direction and the locking device may be a latch lock to be released with a key.

Door 8, see Fig. 3, is advantageously made from transparent plastics so as to ascertain visually whether there are unsorted sheets in the actual bin even if the door is closed. The door has a flat front member 14 and two inward projecting flange members 15 which in the closed position of the door are positioned by and large opposite the associated shelves 5.

In the central portion of the edging face the shelves may have a recess ant the unsorted sheets will then project a little beyond the shelf edge, thereby being more easily grasped when manually emptying the bin. With the view of facilitating the access to remove sheets from a shell positioned above a locked shelf, the flange 15 may in a preferred embodiment possess the substantial, but not necessary feature that flange 15 has a corresponding central projection 16 with a slot 17 allowing to grasp a sorted stack of sheets in the superposed bin, even if door 8 is closed.

The upper and lower flange 15 may each carry a respective part of a snap lock member 18 which according to wish may be used to interconnect more doors 8 so that they can be pivoted as a unity about shaft 10 and only require a single locking device 12 in order to be locked. This is advantageous if more bins are allocated to a single user station, the unlocking being then effected by actuating only one lock. The snap lock member 18 may alternatively be designed as holes in flanges 15 and a loose rod-shaped insert component which by insertion into superposed holes in flanges 15 may be snap-locked therein, which in a simple manner allows to adjust the doors corresponding to changes in the allocation of the shelves by removing or inserting the insert member and possibly to adjust the associated locks.

If the sheet sorter apparatus is used in connection with a facsimile printer, the fax is generally allocated to one specific bin provided with a closing device according to the invention. It must, however, be foreseen that with one and the same telecopier there may be a need for advancing the printed message directly to a locked bin allocated to one specific member of the staff, whereas other messages must be immediately accessible to everybody in the receiver firm, thereby complying with the needs for confidential letters as well as for urgent messages of non-confidential nature. This is simply done with the apparatus according to the invention in that the facsimile printer is capable of receiving an addressing signal leading the printed message to a specific shelf in the sorter apparatus.

Alternative embodiments of doors and coupling means will now be described with reference to Figs 4 to 9 illustrating only details that differ from previously described embodiments, i.e. only sections of a random number of doors and the associated coupling means. It is obvious that the various embodiments of doors may be used in connection with numerous different lock designs and numerous different means for pivotally journalling the doors about an axis perpendicular to the shelves.

The doors 108 shown in Fig. 4 have comparatively deep flanges 116 and side members 120 which at one side of the door may carry a journal member seizing around the shaft 110 and at the other side of the door may carry a locking device. The journal member may be designed so that the doors upon pivoting to an extreme position outside the normal turning area of the doors may be mounted on or dismounted from the shaft 110 or may be displaced in the longitudinal direction of the shaft, thereby providing for inserting between the individual doors a coupling means 121 shown on a larger scale in Fig. 5.

The coupling means 121 consists of a sheet member 122 that may be moulded and which from either side of the plate has two protruding snap lock members 123 in the form of a slotted oblong body with two sideways projecting collars 124. In the upper and lower flanges 116 of the doors there are provided holes 125 disposed in correspondence with members 123, so that the two upward protruding members may be squeezed through and locked firmly to the lower flange of a door whereas the two downward protruding members 123 may be squeezed through and locked firmly to the upper flange of a subjacent door, thereby interlocking the doors to perform a common movement about shaft 110.

If sheet member 122 is to be removed because a shelf is allocated to another user, the biasing collars 124 on either of the locking devices 123 are squeezed towards each other so that the collars get clear of the rim of the associated hole 125, following which the plate member may be removed from flange 116.

In the embodiment illustrated in Fig. 6 and 7 the front member 214 of doors 208 is at the end facing away from the bearing shaft provided with a recess 226 having a depth which exactly allows of receiving the body plate 227 of a coupling means 221. Body plate 227 merges into an angularly bent catching web 228 serving as a handle for the door(s) on which the coupling means is mounted. Body plate 227 has on its rear side two snap lock members 223 of approximately the same type as members 123. Members 223 fit into two holes in the recess of each door so that the body plate by snap locking to a single door may by and large fill in the whole recess 226. The distance between the two holes in one door corresponds to the distance between the lowermost hole in a door and the uppermost hole in the subjacent door so that the coupling means may be placed option.ally on only one door or may interconnect two doors as illustrated in Fig. 6. Each hole 225 is preferably positioned at a distance of about one fourth of the height of the door from the nearest door edge.

The embodiment illustrated in Figs 8 and 9 differs from the latter described embodiment in that the holes 325 are positioned in the side members 320 and that the coupling means is provided with a supplementary flange 329 carrying the snap lock members 323 and covering, when mounted, side member 320.

It is further possible to design the coupling means without the flange 327 and in that case the recess 326 may be cancelled as well.

Claims

1. A sheet sorter apparatus (2) for an electronically controlled sheet printer in a multi-user data or word processing system (1), in which the sheet sorter apparatus (2) comprises addressable sorting bins In the form of substantially parallel and spaced apart shelves (5) constituting together a unit shielded along two adjacent lateral faces (6) and connected to a sheet feeder and distributor unit (4) at a third lateral face and provided with discharge openings for removing the printed and sorted sheets at the fourth lateral face, and in which a door (8) is pivotally journalled about an axis so that it is movable between a lockable position in which the door (8) bars the access to the discharge opening of a bin, and a neutral position with unimpeded access to remove sheets from the bins, characterized in that several lockable bins have each a respective door (8) the bearing axis of which is perpendicular to the plane of the shelf (5) and that some doors may optionally by a coupling means be interconnected so as to pivot in common about the bearing axis when some shelves associated with the respective doors are allocated to a single user.

2. A sheet sorter apparatus as claimed in claim 1, characterized in that the doors which are interconnected to be simultaneously pivoted are lockable by means of a common lock.

3. A sheet sorter apparatus as claimed in claim 1 or 2, characterized in that the coupling means includes a body plate (122; 227; 329) with projecting snap lock members (123; 223; 323) to engage corresponding holes (125; 225; 325) in one or more doors.

4. A sheet sorter apparatus as claimed in claim 3, characterized in that the coupling means (221; 321) includes a catching web (228; 328) serving as a handle when opening and closing the doors.

5. A sheet sorter apparatus as claimed in claim 3, characterized in that the mutual distance between two snap lock members substantially corresponds to the half of the height of a door, and that each door has two holes positioned at a distance of substantially one fourth of a door height from the closest upper edge or lower edge of a door.

Patentansprüche

1. Blattsortiergerät (2) für einen elektronisch gesteuerten Drucker in einem Mehrbenutzer Daten- oder Textbehandlungssystem, wobei das Blattsortiergerät (2) adressierbare Fächer in Form im wesentlichen paralleler und in gegenseitigem Abstand angeordneter Böden (5) umfasst, die zusammen eine Einheit bilden, die entlang zwei angrenzenden Seitenflächen (6) abge-

schirmt und an eine Blattvorschub- und Verteilereinheit (4) bei einer dritten Seitenfläche angeschlossen ist und Entnahmeöffnungen zum Entfernen der gedruckten und sortierten Blätter bei der vierten Seitenfläche aufweist, und in welchem Gerät eine Klappe (8) um eine Achse derart drehbar angeordnet ist, dass sie zwischen einer verschliessbaren Stellung, wo die Klappe (8) dem Zutritt zu der Entnahmeöffnung eines Faches sperrt, und einer neutralen Stellung mit ungehindertem Zutritt zum Entfernen von Blättern von den Fächern bewegt werden kann, dadurch **gekennzeichnet,** dass mehrere verschliessbare Fächer ihre entsprechende Klappe (8) aufweisen, deren Lagerachse rechtwinkelig zur Ebene des Bodens (5) ist, und dass mehrere Klappen wahlweise mittels eines Kopplungsorgans zu einem gemeinsamen Drehen um die Lagerachse zusammengekoppelt werden können, wenn mehrere der zu den betreffenden Klappen gehörigen Fächer einem einzigen Benutzer zugeteilt werden.

2. Blattsortiergerät nach Anspruch 1, dadurch **gekennzeichnet,** dass die zum gemeinsamen Drehen zusammengekoppelten Klappen mit Hilfe eines gemeinsamen Schlosses abschliessbar sind.

3. Blattsortiergerät nach Anspruch 1 oder 2, dadurch **gekennzeichnet,** dass das Kopplungsorgan eine Grundplatte (122; 227; 329) mit vorspringenden Schnappschlossteilen (123; 223; 323), die in zugehörige Löcher (125; 225; 325) in einem oder mehrere der Klappen eingreifen, umfasst.

4. Blattsortiergerät nach Anspruch 3, dadurch **gekennzeichnet,** dass das Kopplungsorgan (221; 321) einen Greifflansch (228; 328) umfasst, der als Handgriff beim öffnen und Schliessen der Klappen dient.

5. Blattsortiergerät nach Anspruch 3, dadurch **gekennzeichnet,** dass der gegenseitige Abstand zwischen zwei Schnappschlossteilen im wesentlichen der Hälfte der Höhe einer Klappe entspricht, und dass jede Klappe zwei Löcher aufweist, die in einem Abstand von annäherend einem Viertel einer Klappenhöhe von der am nächsten liegenden oberen oder unteren Klappenkante angeordnet sind.

Revendications

1. Appareil de triage de feuilles (2) pour imprimante à commande électronique dans un système (1) de traitement de données ou de texte à utilisateurs multiples, ledit appareil de triage (2) comportant des casiers adressables de triage sous la forme d'étagères (5) essentiellement parallèles et mutuellement espacées, formant ensemble une unité fermée sur deux faces latérales adjacentes (6) et reliée à un ensemble (4) d'alimentation et de distribution de feuilles sur une troisième face latérale, et pourvue, sur la quatrième face latérale, d'ouvertures de sortie pour l'extraction des feuilles imprimées et triées, appareil dans lequel une porte (8) est montée à pivotement autour d'un axe de telle manière qu'elle peut être déplacée entre une position verrouillable, dans laquelle elle interdit l'accès à l'ouverture de sortie d'un casier, et une position neutre d'accès pour l'extraction des feuilles hors des casiers, caractérisé en ce que plusieurs casiers verrouillables comportent chacun leur porte respective (8), dont l'axe de support est perpendiculaire au plan de l'étagère (5) et en ce que certaines portes au choix peuvent être interconnectées par un moyen d'accouplement pour pouvoir, en commun, pivoter autour de l'axe de support lorsque certaines étagères avec leur portes respectives sont allouées à un seul utilisateur.

2. Appareil de triage de feuilles selon la revendication 1, caractérisé en ce que les portes qui sont interconnectées pour pivotement simultané, sont verrouillables à l'aide d'un verrou commun.

3. Appareil de triage de feuilles selon les revendications 1 ou 2, caractérisé en ce que le moyen d'accouplement comprend un corps de plaque (122; 227; 329) comportant des organes en saillie (123; 223; 323) de verrouillage rapide prévus pour venir s'engager dans des orifices correspondants (125; 225; 325) dans une ou plusieurs portes.

4. Appareil de triage de feuilles selon la revendication 3, caractérisé en ce que le moyen d'accouplement (221; 321) comprend une plaquette de prise (228; 328) servant de poignée lors de l'ouverture et de la fermeture des portes.

5. Appareil de triage de feuilles selon la revendication 3, caractérisé en ce que la distance mutuelle entre deux organes de verrouillage rapide correspond essentiellement à la moitié de la hauteur d'une porte, et en ce que chaque porte présente deux orifices situés à une distance du plus proche bord supérieur ou inférieur d'une porte correspondant essentiellement au quart de la hauteur de la porte.

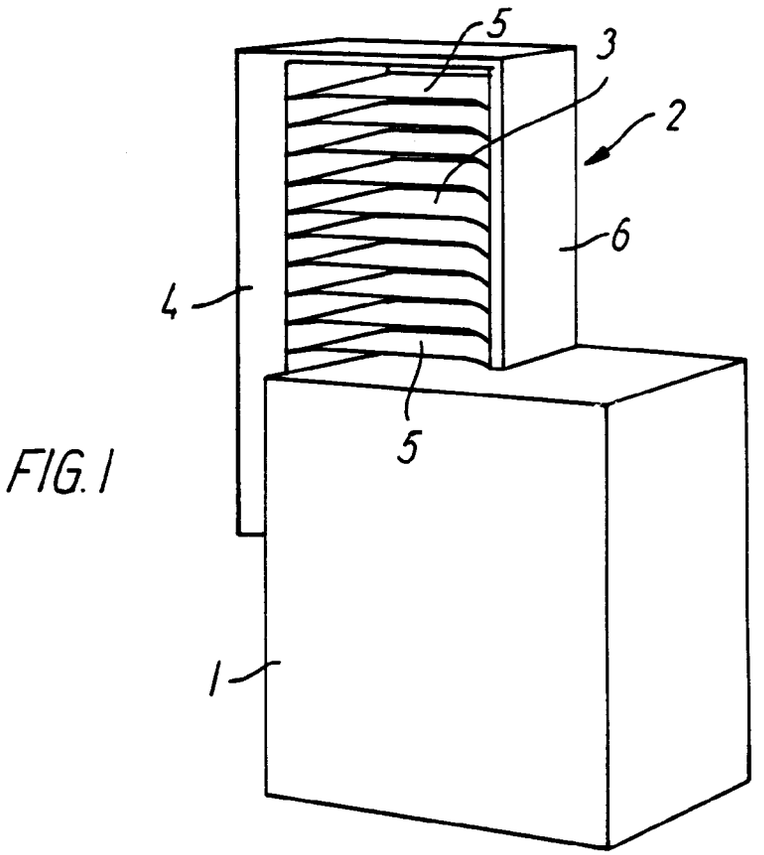


FIG. 1

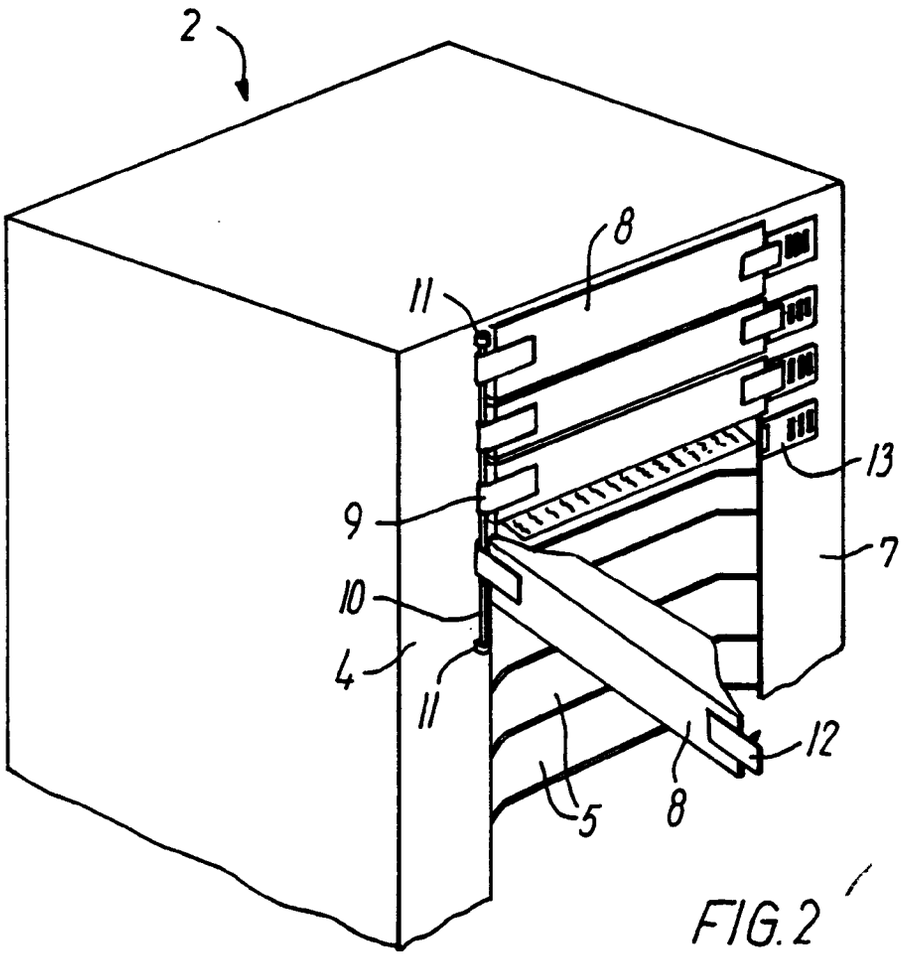


FIG. 2

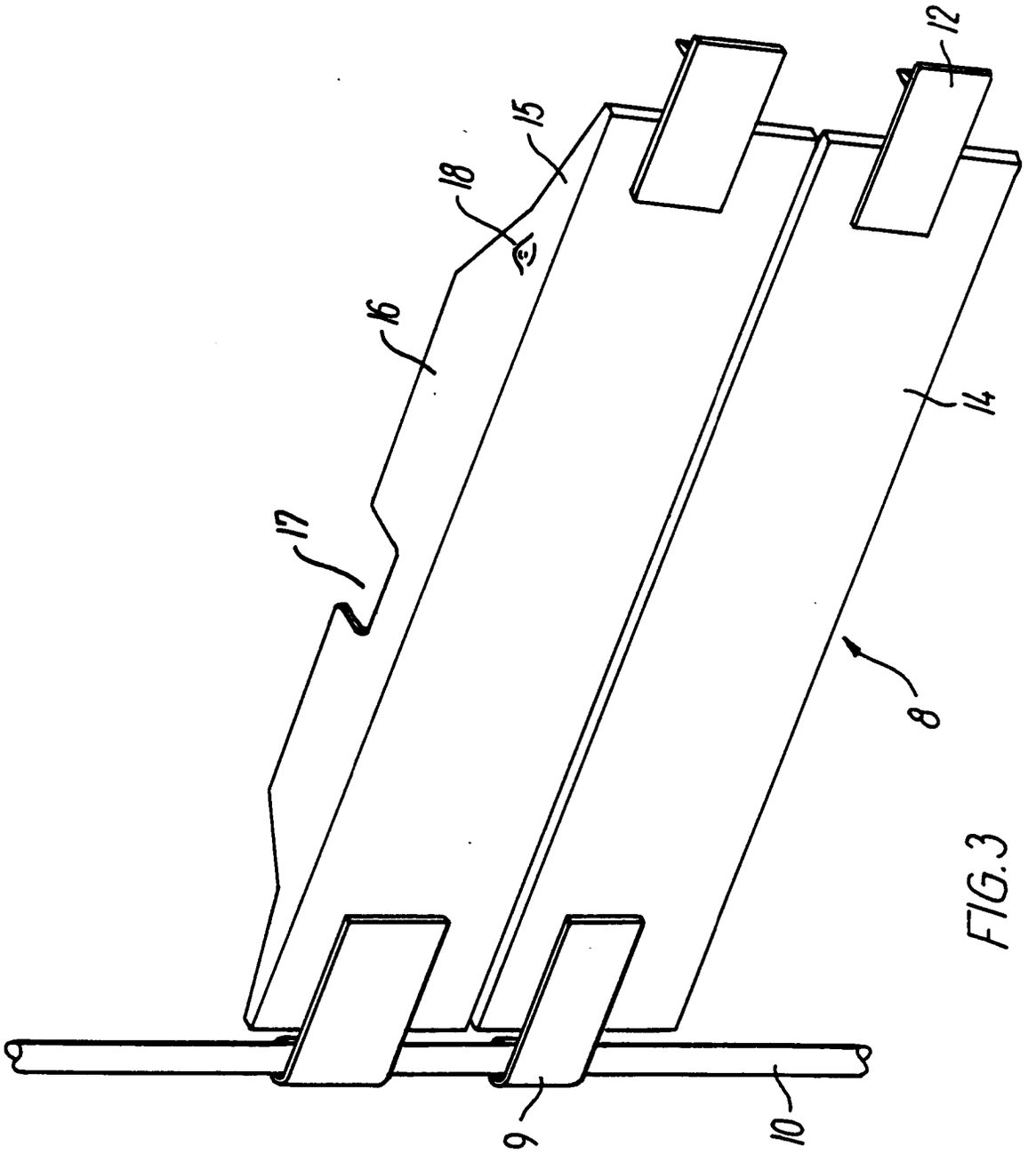


FIG.3

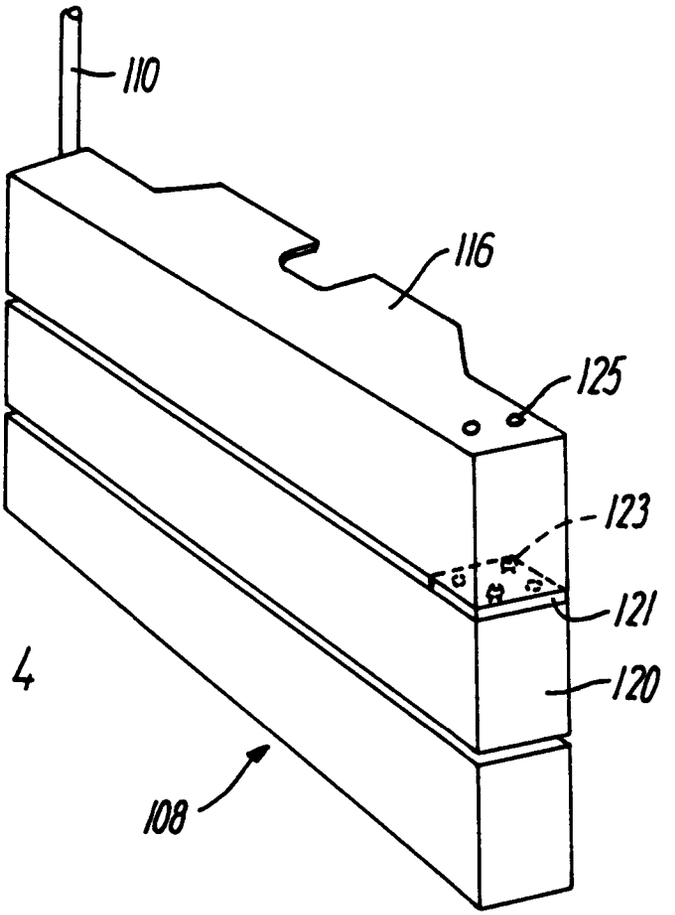


FIG. 4

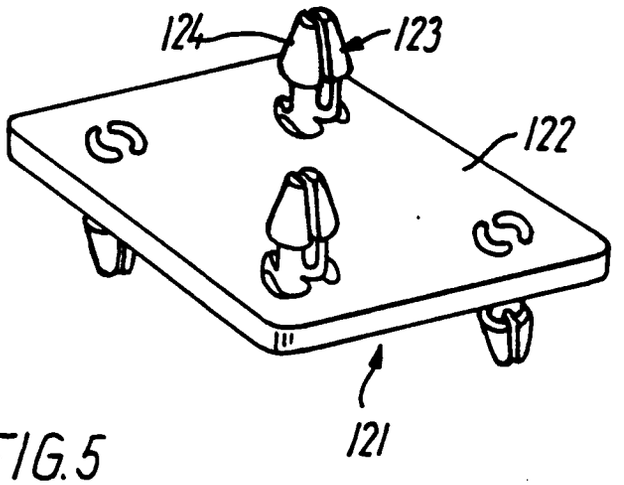


FIG. 5

FIG. 6

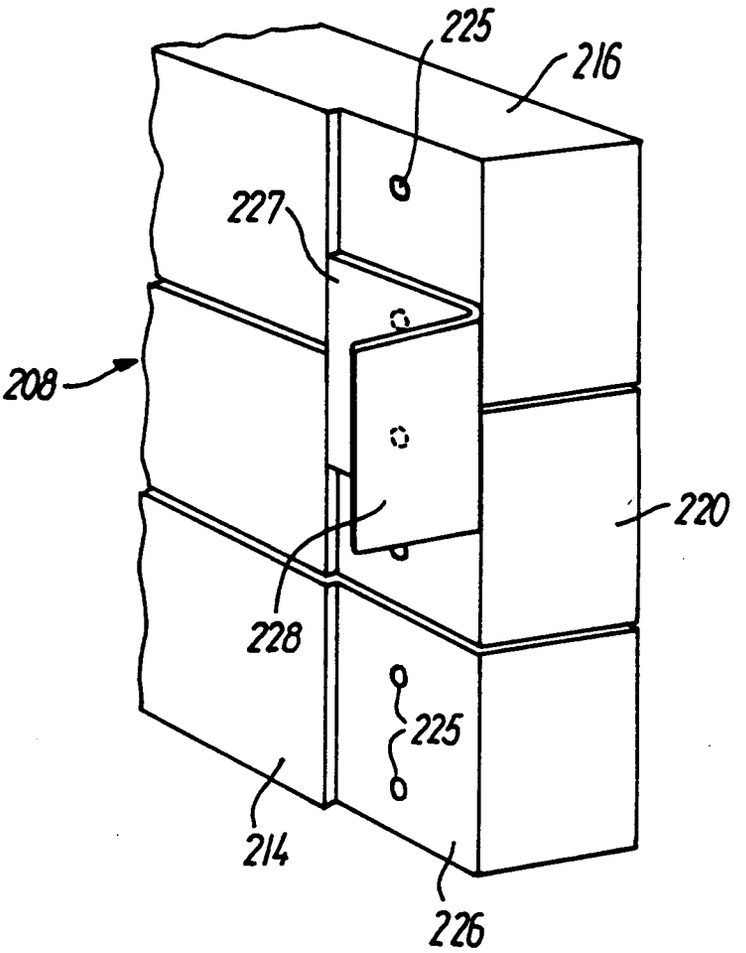
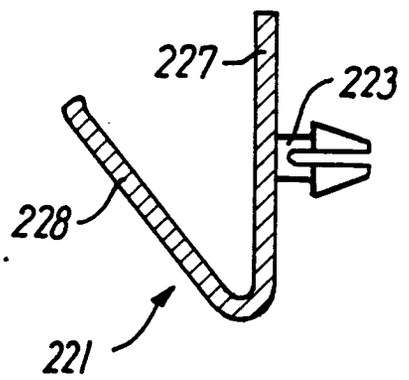


FIG. 7



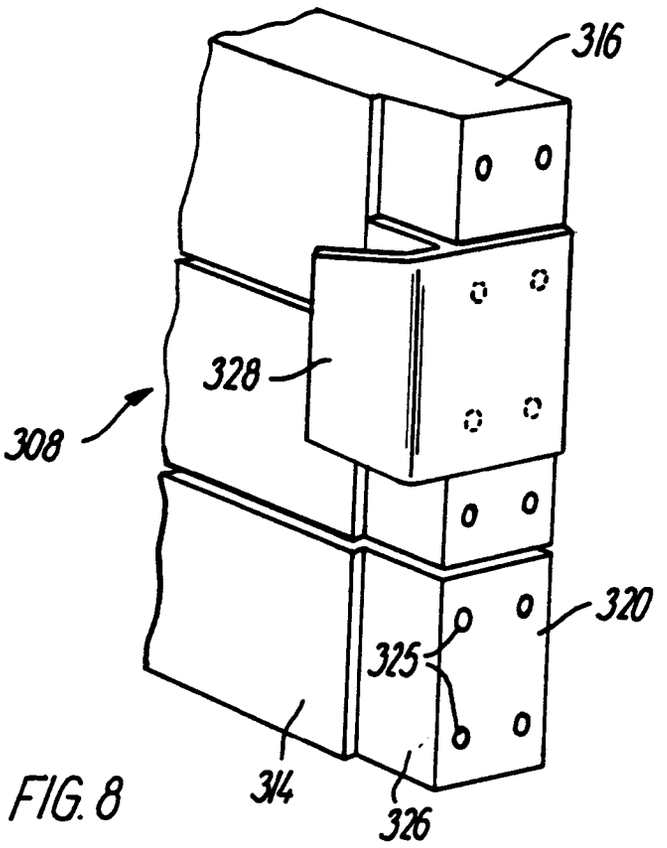


FIG. 8

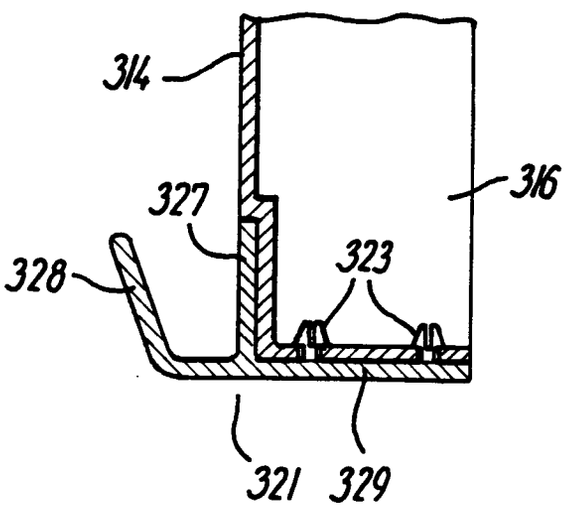


FIG. 9