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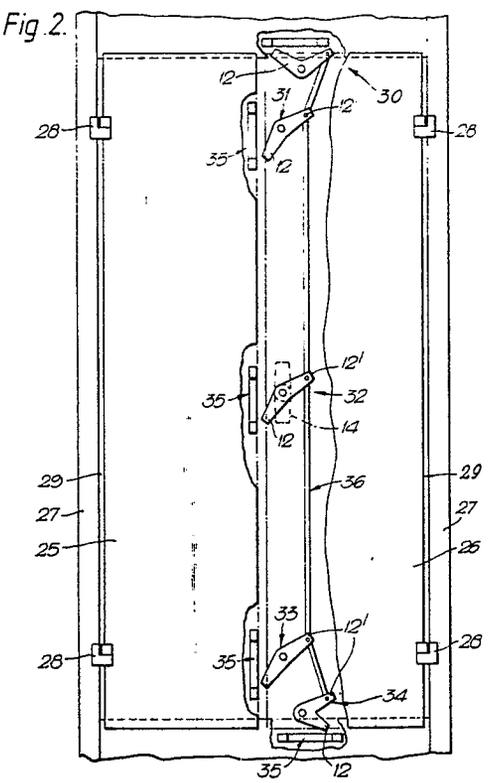
(54) Sealed cabinet.

(57) The invention concerns a cabinet for protecting electronic equipment from Electromagnetic Interference (EMI). The cabinet comprises at least one door with the door and cabinet having associated sealing means which come into electric contact around the periphery of the door when the latter is in its closed position, the door being provided with a plurality of latches each having a pawl, each pawl being initially moveable from a retracted position within the door to an extended latching position and subsequently moveable towards the plane of the door to apply compression to said sealing means. The latches (30-34) are interconnected by linking means (36) whereby operation of one latch causes initial movement of all said pawls (12) to their extended positions, subsequent movement of said one latch only causing the pawl (12) of that latch to move towards the door.

Fig.2.



EP 0 326 252 A1

SEALED CABINET

The present invention concerns racks and cabinets in which electronic equipment can be mounted. A particular, though not exclusive, use for such cabinets is the mounting of digital telephone exchange equipment. It is important that such equipment should be shielded from electromagnetic interference (EMI) as such interference can cause malfunctions in the delicate electronic circuitry. Conversely it is also important, and may even be a legal requisite that a cabinet of electronic equipment should itself not radiate EMI.

In order to achieve a cabinet the interior of which is protected against EMI, it is known to surround the edges of the cabinet door and its frame with seals which bridge the gap between the door and frame or between the gap between two doors. For such seals to work effectively it is important that the amount of compression applied to the seals should be controlled within certain limits. On the one hand the compression should be high enough to ensure a continuous electrical contact over the full perimeter of the door or doors. On the other hand it should not be so extreme as to overstress the seal. There are existing rotary latch mechanisms which for the first part of the rotation of a handle a pawl is moved through an arc from a position where it is retracted inside the door to a position projecting at right angles from the edge of the door. Further rotation of the handle then causes the pawl to move axially towards the handle thereby compressing the EMI seal. For doors of substantial size a number of latches are required to provide adequate sealing around the full perimeter and these are normally arranged vertically near the mating edge of the door. The pawls can then project, when in their latching state, behind striker plates in the door frame or corresponding mating edge of a double door. Similar latches will be required at the top and bottom edges of double doors, to pull them onto the frame to complete the seal. However, such arrangements have the problem that if the latches are allowed to operate independently, it is possible for the door or doors to be pushed shut with one or more latch pawls projecting and possibly causing distortion of the door when the latches which can engage properly apply compression.

The present invention has for an object to reduce the possibility of this happending.

Accordingly the present invention consists in a cabinet for protecting electronic equipment from EMI, the cabinet having at least one door and the door and the cabinet having respective sealing means which come into electric contact around the periphery of the door when the latter is in its closed position, and wherein the door is provided with a plurality of latches each having a pawl, initially moveable from a retracted position within the door to an extended latching position and subsequently moveable towards the plane of the door to apply compression to the sealing means, said latches being interconnected whereby operation of one latch causes initial movement of all said pawls to their extended positions, subsequent operation of the said one latch only causing the pawl of that latch to move towards the door.

In order that the present invention may be more readily understood, an embodiment thereof will now be described by way of example and with reference to the accompanying drawings, in which:

Figures 1(a), (b) and (c) show stages in the operation of a single latch of a known kind, and

Figure 2 is a plan view of a cabinet having a double door with a latching system according to the present invention.

Referring now to the drawings Figure 1(a) shows a single latch 10 mounted in a door 11 and having a pawl 12. The pawl 12 is mounted on a spindle 13 which can be rotated by a handle 14. In figure 1(a) the pawl 12 is shown in its retracted or non-operative state.

Referring now to Figure 1(b) rotation of handle 14 in the direction of arrow 15 initially moves pawl 12 to its extended or latching state. It will be seen that handle 14 has been rotated for less than 90°. In this condition the door will be held lightly shut. Figure 1(c) shows the result of rotating handle 14 through 180°. The angular position of pawl 12 has remained the same. However, the pawl has moved axially with respect to spindle 13 towards the handle 14 as is shown by arrow 16. This second movement of the pawl 12 causes the requisite compression of any EMI seal between the door and its mounting.

Referring now to Figure 2 of the drawings, this shows double doors 25, 26 mounted in a frame 27 by hinges 28. Appropriate EMI Seals 29 are provided between the doors 25, 26 and frame 27. Door 26 carries five latches 30, 31,32,33 and 34 of the general kind described with reference to figures 1(a), 1(b) and 1(c). However it will be seen that each of the latches 30-34 has its pawl 12 extended by a portion 12′ which provides an additional arm. All the arms 12″ of the various pawls are linked by pivotally connected linking rods 36. In this figure the pawls 12 are all shown in their retracted state. It will be seen that there are three different types of pawl, namely those associated with latches, 31, 32 and 33 and those respectively associated with the

upper and lower latches 29 and 34. These differences are due to the geometry of the linking system and the desired directions of movement of the various pawls.

In figure 2 the handle 14 of latch 32 is shown. The handles of all the other latches are now shown but are similarly oriented. If handle 14 is now rotated in the manner shown first in Figure 1(b), then its pawl 12 will be moved into its extended position engaging behind the associated striker plate 35 of door 25. At the same time the linking rods 36, under the action of the arm 12′ of central latch 32 will move the pawls 12 of the other latches into their extended states behind their associated striker plates 35. However continued rotation of handle 14 of central latch 32 will not be transmitted to the other latches, as the movement of its pawl 12 will now be only of axial with respect to its spindle 13. The linking rods 36 are not capable of transmitting this relatively small degree of movement. To complete locking, and sealing of the door it will then be necessary to turn individually each of the handles of the other latches. In this way it is ensured that no attempt can be made to shut and lock the doors with a pawl still in its extended position. To obtain full compression the operator has to turn all the handles 14 into their locking position. This also ensures that the load required to fully compress the door seals is spread over each of the five handles. Similarly to open the doors the operator will have to release the compressive force from each of the latches by turning their handles individually. Once this has been done the pawls can be retracted by using a single handle.

The arrangement just disclosed has the advantage that the chances of accidental damage to the doors or associated seals is reduced whilst ensuring that a correct degree of compression can be applied to the seals.

Claims

1. A cabinet for protecting electronic equipment from Electromagnetic Interference (EMI), the cabinet comprising at least one door with the door and cabinet having associated sealing means which come into electric contact around the periphery of the door when the latter is in its closed position, the door being provided with a plurality of latches each having a pawl, each paul being initially moveable from a retracted position within the door to an extended latching position and subsequently moveable towards the plane of the door to apply compression to the sealing means, and characterised in that said latches (30-34) are interconnected by linking means (36) whereby operation of one latch causes initial movement of all said pawls (12) to their extended positions, subsequent movement of said one latch only causing the pawl (12) of that latch to move towards the door.

2. A cabinet as claimed in Claim 1, and further characterised in that each latch (30-34) has an extension (12′), the extensions being interconnected by pivotally connected rods (36)

Fig. 1(a).

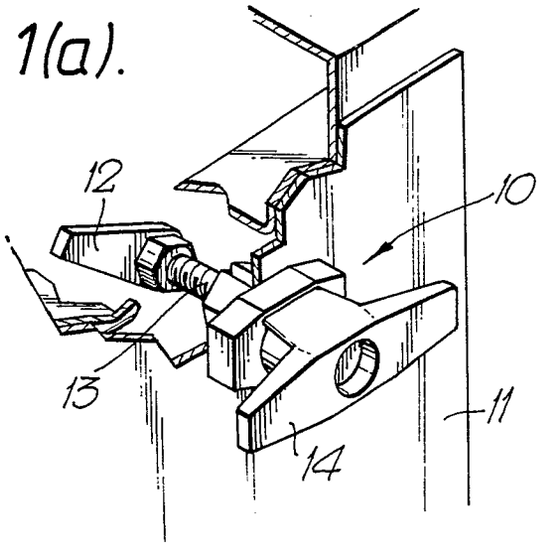


Fig. 1(b).

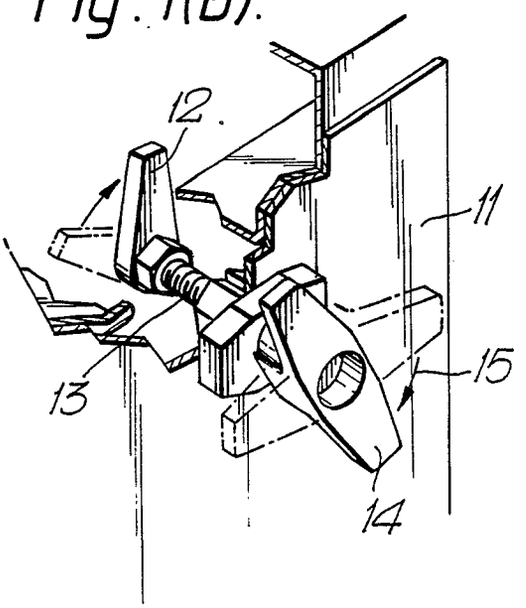


Fig. 1(c).

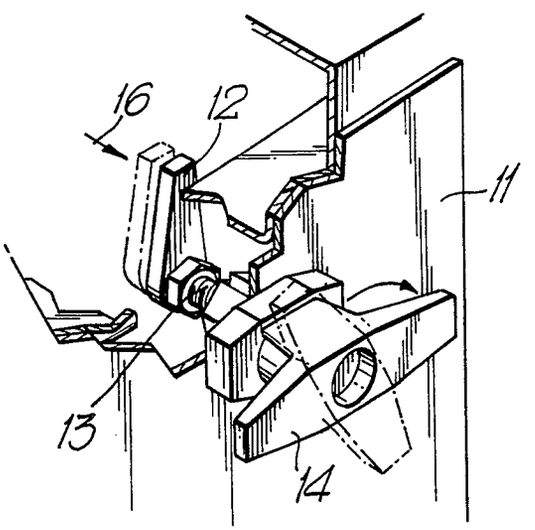
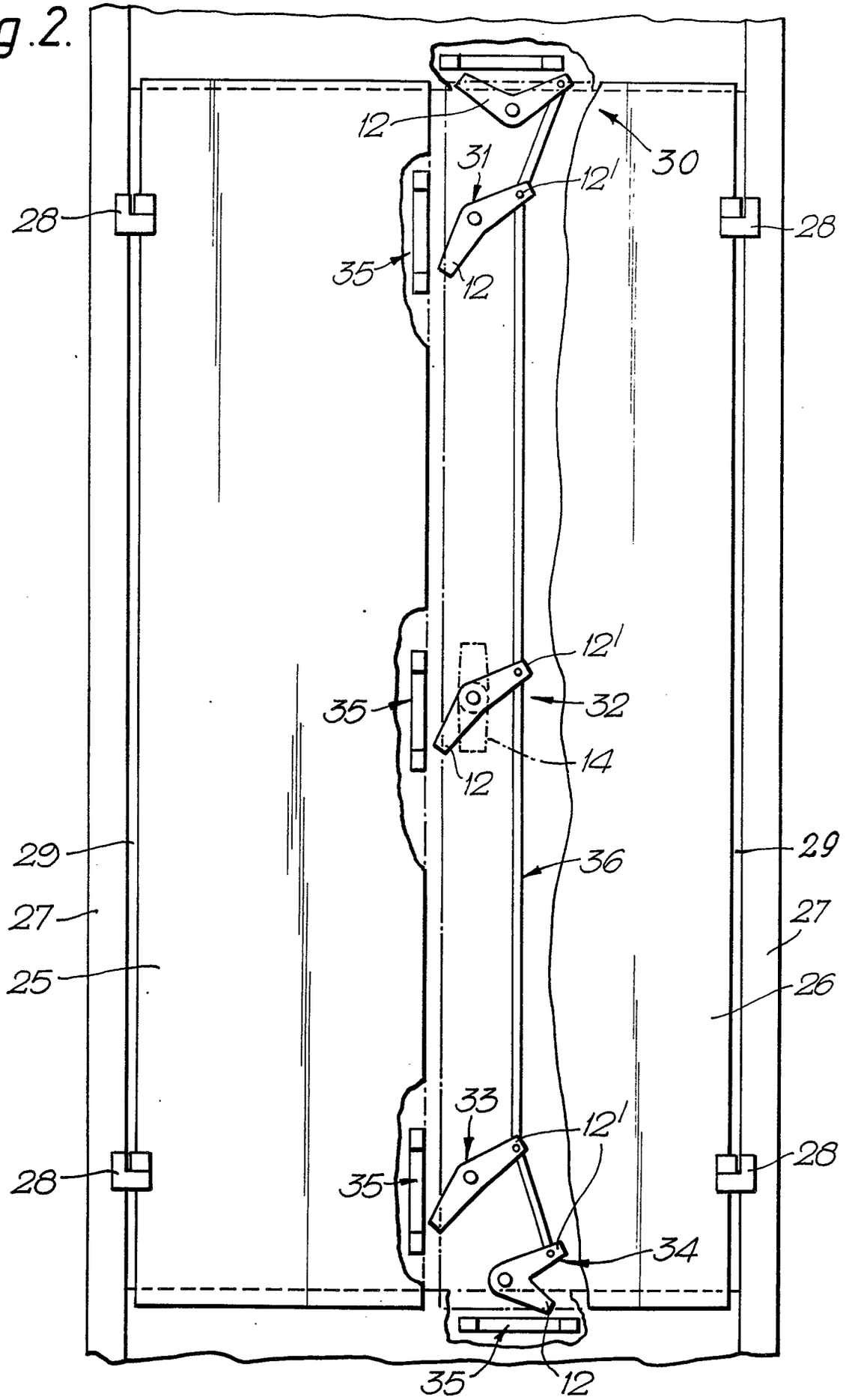


Fig.2.



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EUROPEAN SEARCH REPORT

Application Number

EP 89 30 0299

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.4)
A	FR-A- 862 487 (MARCHAL)		E 05 C 9/02 E 05 C 9/18
A	US-A-2 460 961 (WILSON)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

E 05 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	08-05-1989	VAN BOGAERT J.A.M.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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