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(54) **Improved couple of hinge particularly applied to refrigerators**

(57) Improved couple of hinge particularly applied to refrigerators constituted by respective plates (A) and (A1) engaging on the body of the refrigeration cell (FC) on which (A-A1) are engaged by pins (P1-P2) respective small arms (12-13 and 22-23) that are connected to the arms (11) always by the pins (P1 and P2) going them (11) to engage with the door (P) of closure of the refrigeration cell (CF) and at least one of the two small arms (22-23) of the hinge (2) has on a preferred zone a slot (C) for the housing of the needle (Ru) that will have the function of an element of resistance and holding, of the hinge (2), to the vertical solicitations generally and particularly to that due to the weight of the door (P), leaning and moving in sliding by rotation on the face of the plate (A1) to it (Ru) corresponding.

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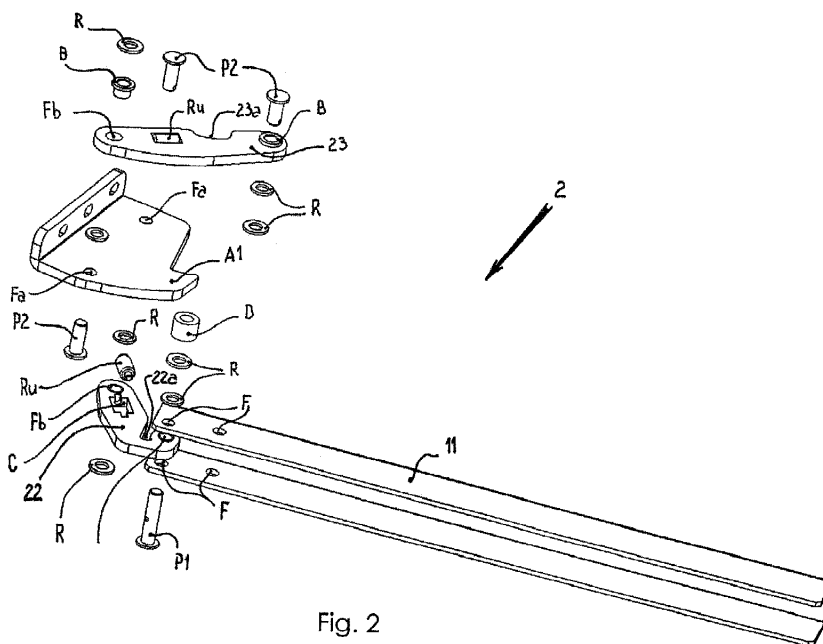


Fig. 2

Description

[0001] The present invention has as object an improved couple of hinges that can be applied in a preferred way to doors of refrigerators. Said hinges resulting to permit an ample and optimal variation in the opening of the doors of refrigerators, them both giving the possibility of an opening with an orthogonal angle or a blunt angle and furthermore them permits, thanks to idoneous sliding elements, a relevant longitudinal stability in the daily use less wear of the single mechanical parts placed in movement and/or rotation and then a longer life of the whole.

[0002] The various types of hinges with double arms, for the most various types of applications, are known, this hinges operates in the manner that the door to them connected doesn't rotate around an axis, but that it is subjected to a roto-translation that takes the external edge of the door next to to said hinge to move, or rather to translate, in the internal direction of the square of the door during his rotation.

[0003] This system permits to place, install, etc., armors, refrigerations cells, and all that could be provided of doors having "hinge" in positions or places proximal to surfaces closer to them, that can be for example walls, that with a traditional pivot hinge cannot be opened.

[0004] The commonly used hinges in this sector of application are hinges of very complicated kind and all them results limited in their operation because all them works exclusively on pivot and/or on bush, or rather the charges due to the weight of the door and of the eventual objects on it placed download their weight on this increasing then the wear and decreasing in this way their life, or rather the cycles of opening and closure of the hinges and consequently of the same doors.

[0005] Practically the hinges known results constructed in a manner that them works on pivots, bush and whatever else charging them in a manner that them will be subjected to a great wear and with functional defects often big like the possibility of seizing due to the wear of the pivot part.

[0006] The object of the present invention is therefore to surmount the aforesaid known drawbacks and this is achieved through the present couple of hinge that forms object of the present invention

[0007] For better understand the characteristics and the functional advantages of the present invention, the whole in a preferred realizative conformation and only by way of nonlimiting example with reference to the enclosed drawings in which:

- the figure 1 is an "exploded" view of the superior hinge, with double arm, making part of the couple of hinge of the present invention;
- the figure 2 is always an "exploded" view, but of the inferior hinge that results a little different respect to the superior hinge, but always making part of the present invention;

- the figure 3 is a "plant" view of the superior hinge in the closed position ;
- the figure 4 is a "plant" view of the inferior hinge in the closed position as the hinge of figure 3
- the figure 5 is a "plant" view of the superior hinge in the open position with a right-angle;
- the figure 6 is a "plant" view of the inferior hinge in the open position with a right angle;
- the figure 7 is a "plant" view of the superior hinge in the open position with a blunt angle i.e, more than a right angle;
- the figure 8 is a "plant" view of the inferior hinge in the open position with a blunt angle as the hinge of figure 7;
- the figure 9 shows a perspective view of the superior and inferior hinges applied closed to a possible element refrigerator cell-door that is in evidence with a thin line and fullfilled with many little spots;
- the figure 10 shows always with a perspective view of the superior and inferior hinges applied opened with a right angle of opening to a possible element refrigerator cell-door that is in evidence with a thin line and fullfilled with many little spots;
- the figure 11 in the end shows always with a perspective view of the superior and inferior hinges applied opened with a blunt angle of opening to a possible element refrigerator cell-door that is in evidence with a thin line and fullfilled with many little spots;

[0008] Is placed in evidence that the common particulars will be identified with the same references, furthermore some particulars are presents in both inges and then they'll have the same reference in the respective figures that evidences them.

[0009] With a particular reference to the figure 1 it will be noted that the superior hinge 1 will be constituted by an arm 11 with a "C" section profile to fix the same to the door of the refrigerator. This arm 11 will be provided of holes F which will go to engages with some pins P1 and P2 (the pins P1 resulting longer than pins P2) with a conformation as a "head" that will be preferably rivet to fix with it. Nothing forbid to apply, in substitution of the rivet, other equivalent might to lock of the pins P1 and P2 having a conformation as a "head" (split pins, sieger rings, etc.) to fix them to the various particulars of the hinge. Always with reference to figure 1 it will be noted that the two small arms 12 and 13 are opportunely shaped and drilled. The small arm 12 will have a rounded conformation as an hook which sunked part of it will 12a will have an remarkable importance in the phase of opening of the door with a blunt angle. Said small arm 12 will be furthermore provided at his extremity of two holes Fb for the accomodation of idoneous bushes B inside which will engage the pins P1 and P2. Inferioursly to the small arm 12 will be placed the small arm 13 shaped as a "λ" with a sunked part 13a that permits the opening with a blunt angle to the door. Inferioursly to the small arm 12 will be furthermore provided of a spacer D, but previous inter-

position of a washer R, that in the maximum opening of the door, i.e. with a blunt angle, it will works as a stop for the opening going to the sunken part 13a of the inferior small arm 13. Inferioursly to said elements arm 11 and small arms 12 and 13 will be provided a plate A provided of idoneous holes Fa for the pins P1 and P2 that will go to engage in bushes B at their time fixed into the holes Fb maked into the small arms 12 and 13. Said plate A being provided of holes and slots of fixing, known and then, because of this not described, to the body of the refrigerator cell CF. All the bushes B and the spacer D results to be in interposition, between them (B and D), the plate A and the arm 11 of fixing to the door PO, some washer R in the function of anti-friction agents. Furthermore said hinge constituted throught the above mentioned elements will have also a recall spring M that will go to engages by his rings M1 and M2 with the hooking screw of anchorage V1 and V2 that respectively them result to engage by screwing, the longer V1 into the hole F1 of the plate 1 provided of a screw nut D for the unamovable fixing of said screw V1, while the second V2 will engage by screwing in the threaded hole F2 in the zone corresponding to the rear arm of the "λ" of the small arm just shaped as a "λ".

[0010] Clearly the above mentioned parcticoulars, so as described, will be joint between them to obtain the hinge with double superior arm that will operates as an hinge of recall because provided of a recall spiring M.

[0011] Parcticular attention will be placed to the figure 2 in which it results in evidence the exploded vief of the inferior hinge 2. Said inferior hinge 2 will be constituted, as for the superior 1, by an arm 11 of fixing to the door PO, with a "C" shaped section, it is provided of holes F i which will go to engages some pins P1and P2 shaped as "head" that will be preferably rivet to fix it to the complete hinge 2.

[0012] Always referring to figure 2 it will be noted that the two small arms 22 and 23 are opportunely shaped and drilled. The small arm 22 will have it too, as the 12 a rounded conformation as an hook which has a sunken part 22a which will have a remarkable importance in the opening phase of the door with a blunt angle. Said small arm 22 will be furthermore provided at his extremity of holes Fb for the housing of idoneous bushes B in which will engages the pins P1 and P2. Furthermore on his (22) superior surface, in an idoneous zone will be obtained a "slot" C for the housing of the needle Ru. Superiorsly to the small arm 22 will be placed the small arm 23 shaped as a "bisquit" with a sunken part 32a to permit the opening of the door with a blunt angle. Inferioursly to the small arm 23 will be furthermore provided a "slot" C that is identical for shape and dimensions to the "slot" C of the small arm 22 and placed into an idoneous zone of said small arm 23. In said hinge 2 will be provided, as in the hinge 1, a spacer D that in the maximum opening of the door, i.e. with a blunt angle, it will works as a stop for the opening going to impact against to the sunken part 23a of the superior small arm 23. Inferioursly to said elements 11,

22 and 23 will be provided a plate A1 opportunely shaped, provided od idoneous holes of fixing (not described because known) and holes Fa for pins P1 and P2 that successively (P1-P2) will go to engages in bushes B at their time fixed into the holes Fb. All the bushes B and the spacers D results to have, placed between them, the plate A2 and the fixing arm 11 to the door of the washer R having anti-friction function. Clearly the above mentioned particulars, so as described, will be joint between them to obtain an inferiour double arm hinge that will works as a holder and bearing hinge with his needles Ru that moves on the orizontal surfaces of the plate A1. Also the hinge 2 will engage with his plate A1, by knewn systems and then because of this not described, placed into holes or engagement might knewn obtained on said plate A1.

[0013] It is to relevate that it has not been a longer and detailed description of the singles particulars because the particulars are doing a function knewn and then not important at the end of this invention. To the end to describe the fundamental object of the present invention and understand as it works it has been done references tothe figures from3 to 11.

[0014] With a parcticoular reference to the figures 3, 5 and 7 referred to the superior hinge 1 it will be remarked that the three points of placement of it (1), that can be defined as "fundamental positions" and also as will be moved the various parcticoulars that constitute it, while said superior hinge 1 passes from the closed position of figure 3 to the open position of figure 5 with a right angle and after in figure 7 with a blunt angle. Are not described the passages and the positions of the singles particulars because are clear and evident. It is placed in edvidence only that in the three positions of the figures 3, 5 and 7 the spring M hooked with the anchorage screws V1 and V2, with his rings M1 and M2, will goes to charges and then will be placed in a recall closing "tension" of the door P against the cell C to which (1) is applied (as consequently shown in the above mentioned figures), said hinge 1. The three positions will shown, as above mentioned, furthermore than the moving of the small arms 12 and 13 the fact also that their (12-13) particular conformation is realized in this way at the end to hide the mechanical anaestheticism of the hinge and furthermore to permit, thanks to their parcticoular conformation, an opening with a blunt angle, i.e. the opening corresponding to the position of figure 7.

[0015] With reference to the figures 4, 6 and 8 it can be remarked that as for the superior hinge 1, the inferior hinge 2 that passes it also by the three above mentioned positions and is in evidence as the small arms 22 and 23 comprising the needle Ru, moving on the orizontal faces of the plate A1, placed in the slots C, that are the fundamentally part of the invention, they will passes for the various positions doing their function of holding to the charge due to the weight of the door P.

[0016] Precisely, the needle Ru, of the small arm 23, placed into the slot C realized in his (23) inferior face, in

the opening movement of the hinge 2, it will hold the weight that is acting on it (Ru) and due to the weight of the door of the refrigerator cell, downloading said weight on the shaped plate A1, while the second needle Ru inserted in the slot C, obtained on the superior face of the small arm 22, will works as an element of guide and a stabilization to the vertical solicitations that could happens more than to the force of the weight of the door P of the refrigeration cell CF.

[0017] Concluding, the needles Ru, inserted in the slots C of the small arms 22 and 23 will be the vertical stabilization elements to the solicitations due to the weight of the door P and to eventual vertical solicitations of all kinds, for example in various or accidental vertical movings of the door.

[0018] Is to point the attention that the particulolar conformation which has been done reference could be changed without perhaps to go out from the constructive and functional field of this above mentioned invention.

[0019] Is to add to this that the couple of hinges so as described can be applied to several solutions of utilization and in furnishing fields, as for example the utilization as hinges for wardrobes/cupboards doors, or other furnitures to them applicable.

[0020] Well is comprised that this and other veriation of the matter of the invention could be applied without perhaps going out from the field of how above described and consequently claimed and then from the dominion of the present invention

Claims

1. Improved couple of hinge particularly applied to refrigerators constituted by respetive plates (A) and (A1) engaging on the body of the refrigeration cell (FC) on which (A-A1) are engaged by pins (P1-P2) respective small arms (12-13 and 22-23) that are connected to the arms (11) always by the pins (P1 and P2) going them (11) to engage with the door (P) of closure of the refrigeration cell (CF) charaterized by the fact that at least one of the two small arms (22-23) of the hinge (2) has on a preferred zone a slot (C) for the housing of the needle (Ru) that will have the function of an element of resistance and holding, of the hinge (2), to the vertical sollicitations generally and particularly to that due to the weight of the door (P), leaning and moving in sliding by rotation on the face of the plate (A1) to it (Ru) corresponding.

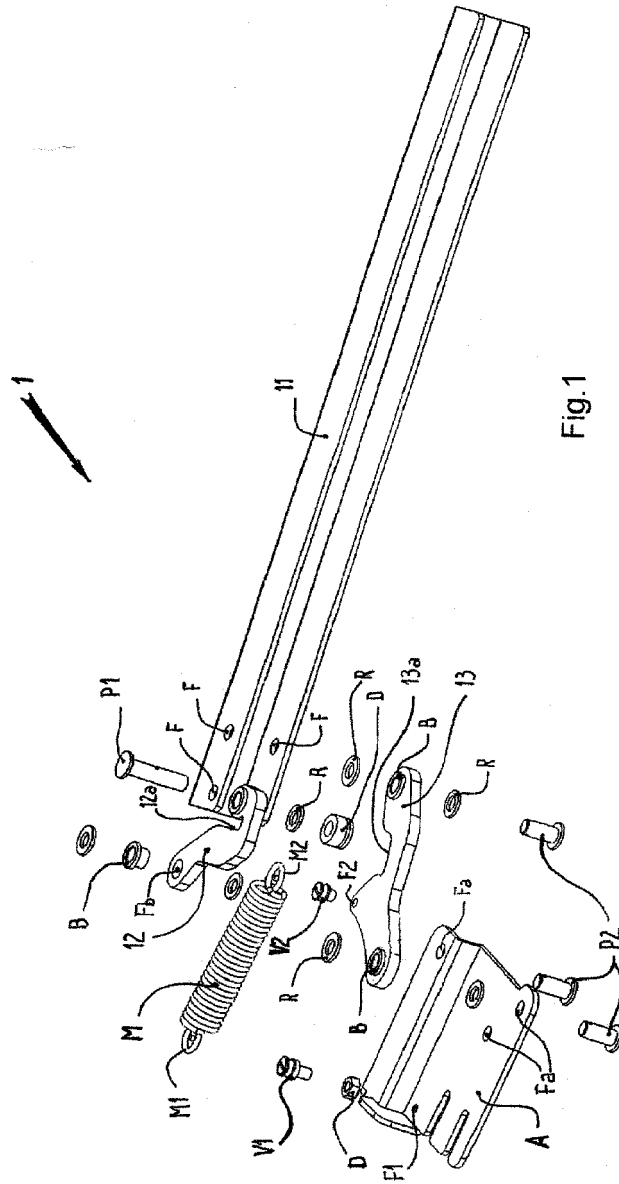


Fig.1

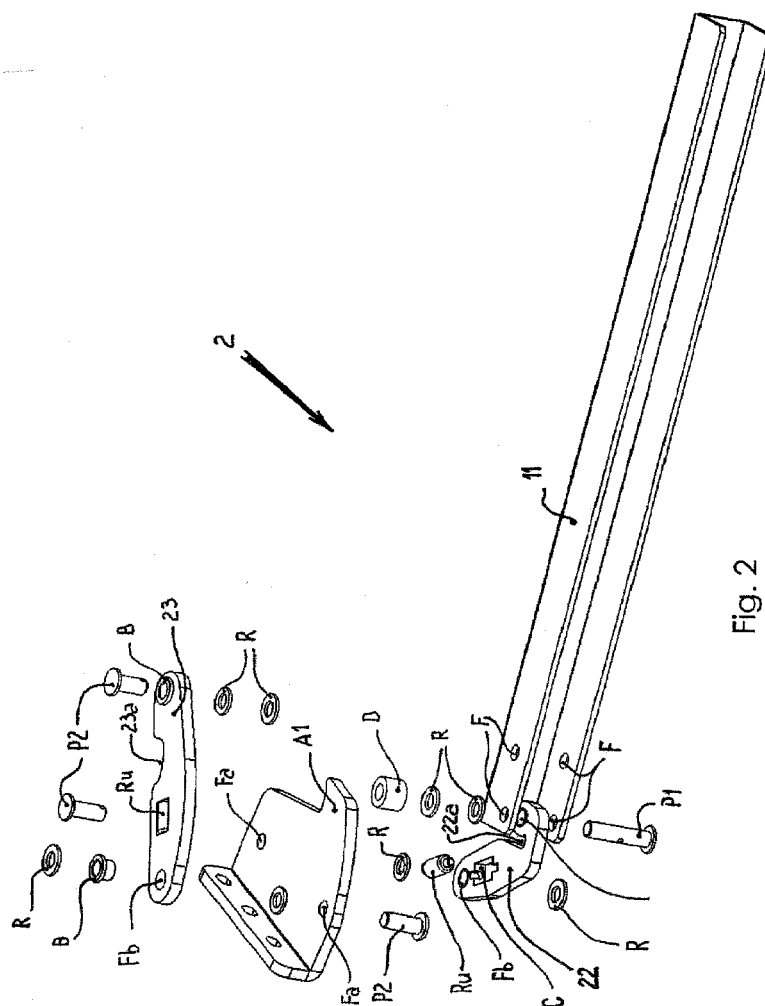


Fig. 2

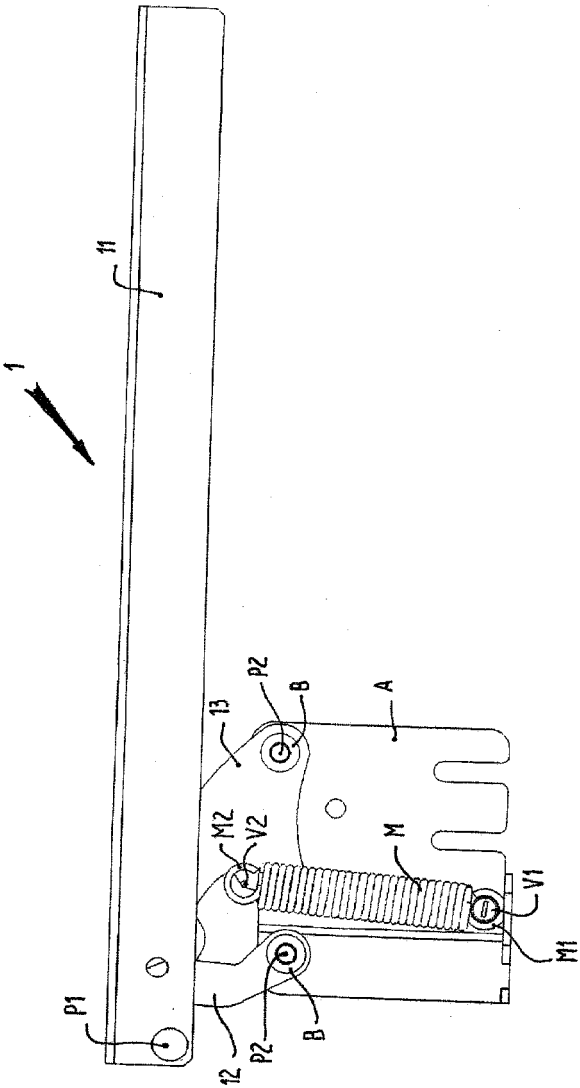


Fig. 3

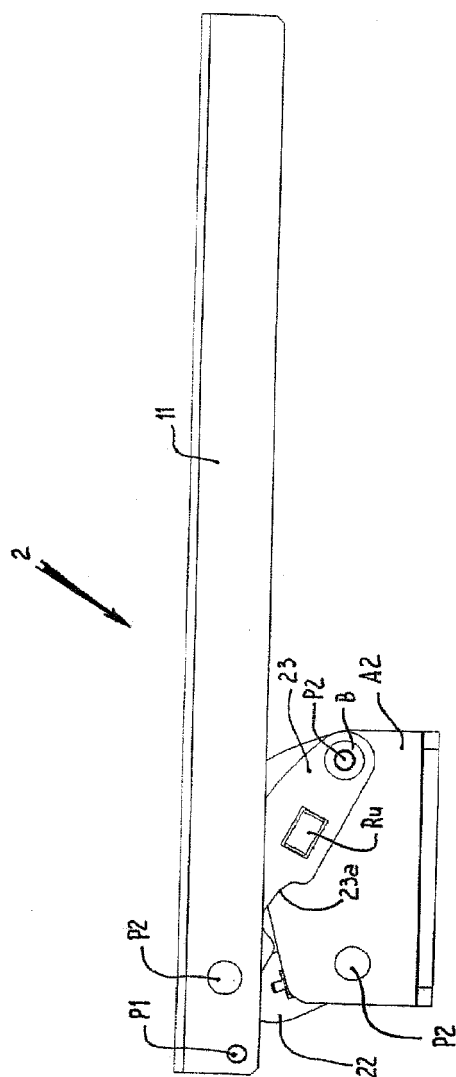


Fig. 4

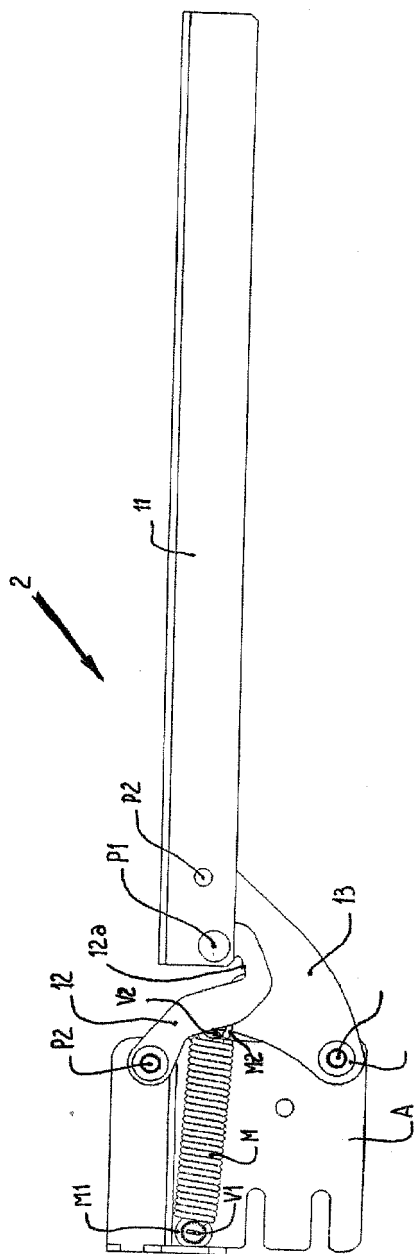


Fig. 5

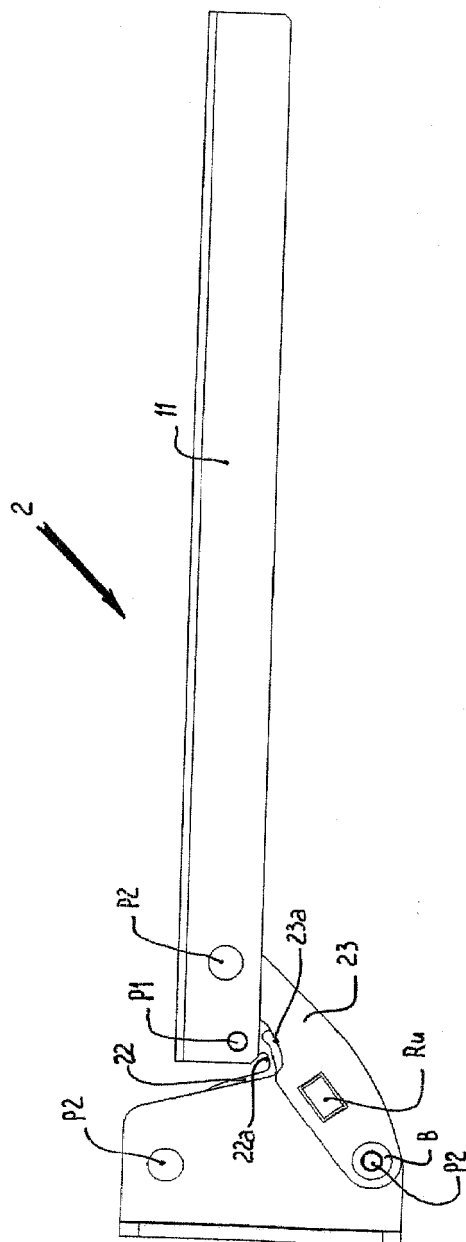


Fig. 6

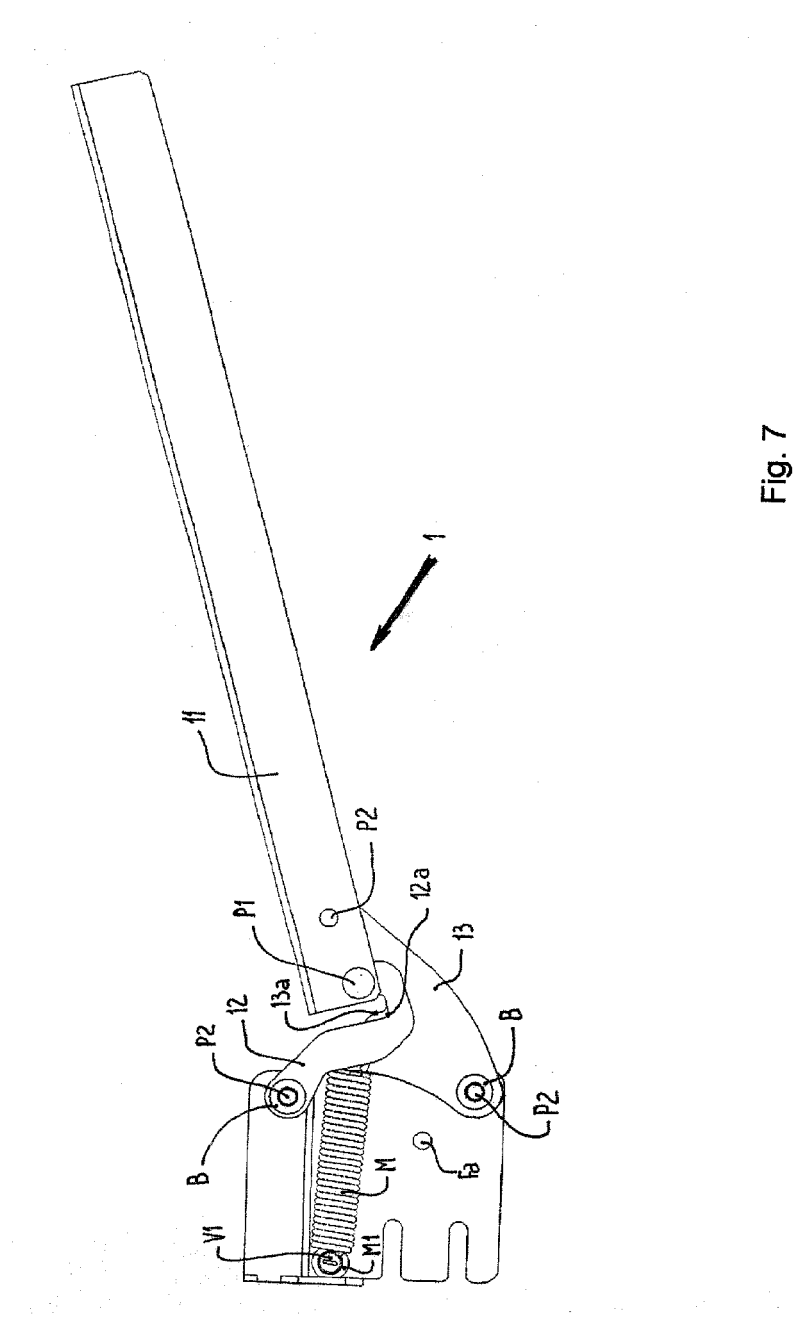


Fig. 7

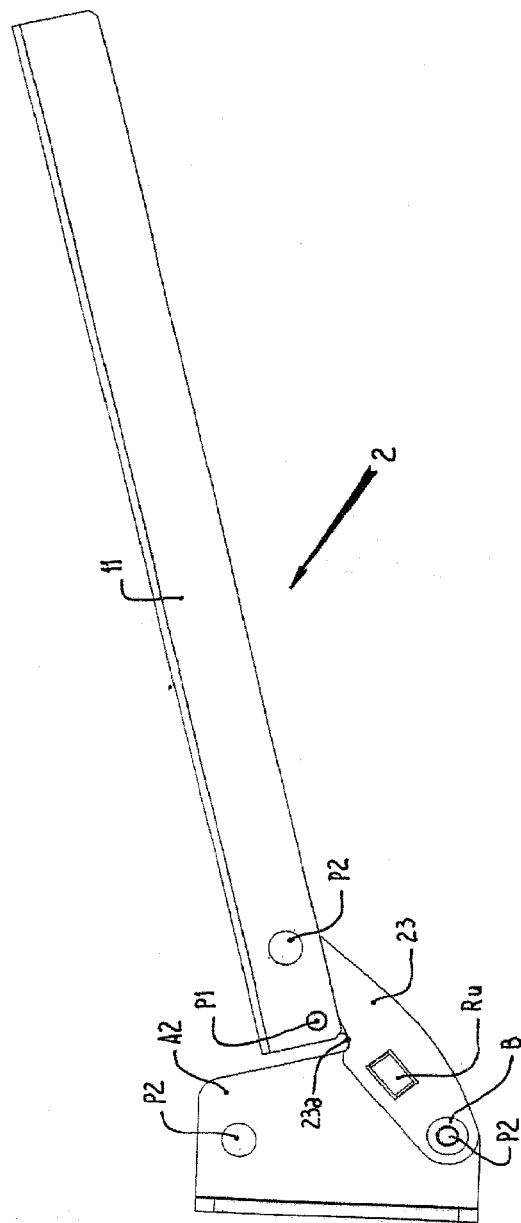


Fig. 8

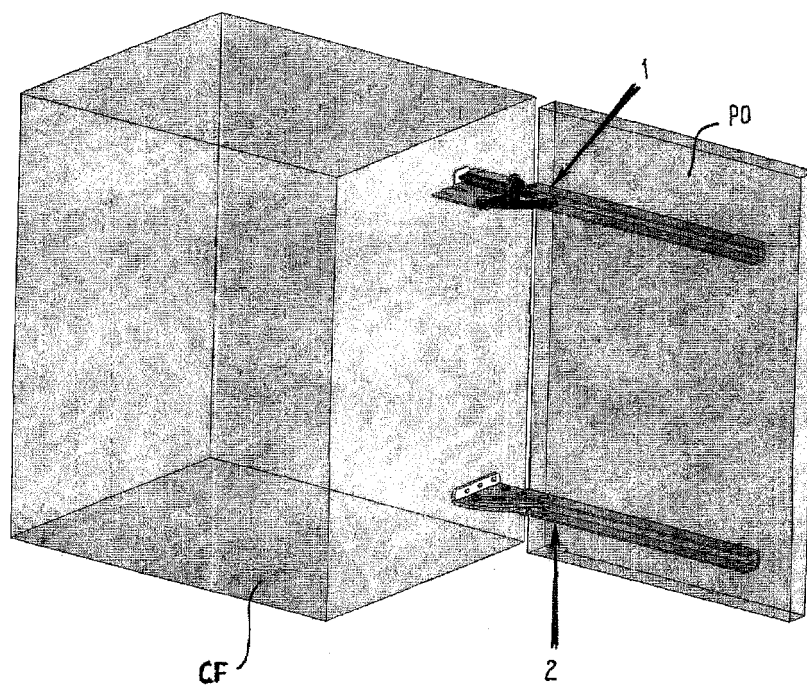


Fig. 9

