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(71) Applicant:
**Handelsmaatschappij Boumans Benschop B.V.
3401 MZ IJsselstein (NL)**

(72) Inventor:
**Boumans, Johannes Adrianus
3401 MZ IJsselstein (NL)**

(74) Representative:
**Ferguson, Alexander
Octrooibureau Vriesendorp & Gaade,
P.O. Box 266
2501 AW Den Haag (NL)**

(54) **Closing bowl assembly**

(57) Closing bowl assembly for a closing bolt, such as a door latch or a dead bolt, for a door leaf or window leaf, comprising a closing bowl (1,201) to be attached in the accompanying casing with the help of closing bowl fastening means, which closing bowl (1,201) has a receiving space (8,208) for the bolt and a stop means (10,100,210) attached to it for limiting the receiving space (8,208) to the leaf side, in which the stop means (10,100,210) is attached to the closing bowl (1,201) by means of stop fastening means, in which furthermore adjustment means (30,230) are provided for adjusting the position of the stop means (10,100,210) on the closing bowl (1,201) in swing direction of the leaf, in which the adjustment means (30,230) comprise an eccentric body (31,231), which is provided with a passage having a centre line for leading through the stop fastening means and planes running concentrically about a centre line, in which furthermore means (34,234) are provided for providing a rotation bearing for the concentric planes of the eccentric body (31,231) for rotation about the centre line, in which the stop means (10,100,210) are provided with elongated holes (14,114,214) extending in swing direction.

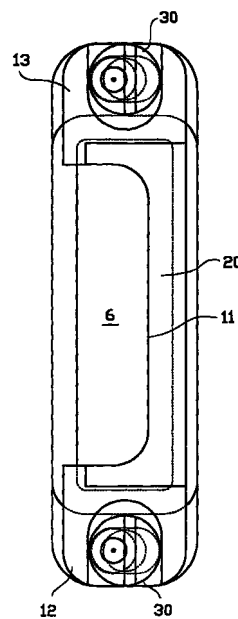


FIG. 5A

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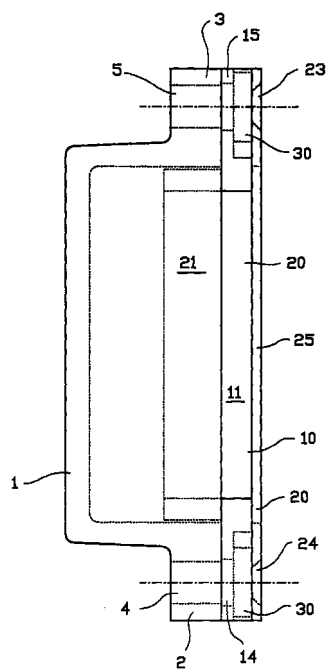


FIG. 5B

Description

[0001] The invention relates to a closing bowl assembly for a closing bolt, such as a door latch or a dead bolt, for a door leaf or window leaf.

[0002] Such closing bowl assemblies are generally known. The closing bowl is accommodated in a recess in the post of a casing for the leaf, at some distance from the closing edge, that is to say the edge in the casing which forms a boundary for the closing swing movement of the leaf.

[0003] The closing bowl has an edge or a wall which is situated at the opening side and constitutes a fixed or rigid stop for the bolt concerned, so that it cannot unintentionally and only through authorized operation, when retracting the bolt from the receiving space of the closing bowl, be moved to the outside along the surface facing the clear of the casing portion concerned.

[0004] For good closure it is necessary that there is correspondence between the distance of the edge of the leaf which abuts the closing edge of the casing and the surface of the bolt concerned facing the opening side. If said distance is equal to the distance between closing edge and stop, then the closure is free of play. As a result of different thicknesses of the bolts available on the market and of the warping in the leaves over the years due to changes in the moisture content this is an illusion however. A fixed adjustment of the stop will as a result - if suitable for the door or window lock concerned - allow for play after a while.

[0005] In a known embodiment this is improved upon, the closing bowl being attached to an adjustable stop plate, provided with a toothing which engages on a toothing on the closing bowl. The whole is covered by a little cover or closing plate. When the bolt starts to bang first the screws with which the cover plate is secured to the closing bowl and the closing bowl itself to the casing are removed and the closing plate is removed. Subsequently the screw with which the stop plate has been attached to the closing bowl is somewhat loosened, and to such an extent that the stop plate can be manually lifted and manually moved to another position in relation to the closing bowl, after which said screws are tightened again. A disadvantage of this is that the adjustment cannot take place continuously, but is determined by the tooth pitch, but moreover requires manual manipulation, which requires the necessary precision and control. The manufacturing and assembly of said known closing bowl assembly furthermore requires relatively much effort.

[0006] In another known embodiment the closing bowl is designed double for reception of both the dead bolt and the door latch. The closing bowls are secured in the casing also by means of a screw extending through the bottom of one of the closing bowls. The closing bowls are movably in swing direction attached to the closing plate by means of eccentric latches arranged on the closing plate and provided with a

socket head hole. With the help of a little screw the position of the closing bowls on the closing plate is fixed. When adjusting, first said little screw is loosened and subsequently the closing bowls are moved over the wanted distance, while rotating the eccentric latches, after which the little screw is tightened again. A drawback here is that the screw, with which the closing bowls are secured to the casing, impedes the moving and therefore may have to be loosened as well. Said closing bowl assembly further requires a lot of effort to manufacture and therefore is relatively expensive.

[0007] The invention has the object to provide a closing bowl assembly which is simple and can be adjusted continuously. To that end a closing bowl assembly is provided for a closing bolt, such as a door latch or a dead bolt, for a door leaf or window leaf, comprising a closing bowl to be attached in the accompanying casing with the help of closing bowl fastening means, which closing bowl has a receiving space for the bolt and a stop means attached to it for limiting the receiving space to the leaf side, in which the stop means is attached to the closing bowl by means of stop fastening means, in which furthermore adjustment means are provided for adjusting the position of the stop means on the closing bowl in swing direction of the leaf, in which the adjustment means comprise an eccentric body, which is provided with a passage having a centre line for leading through the stop fastening means and with planes running concentrically about a centre line, in which furthermore means are provided for providing a rotation bearing for the concentric planes of the eccentric body for rotation about the centre line, in which the stop means are provided with elongated holes extending in swing direction.

[0008] In this way a continuous, unimpeded adjustment of the stop is possible and the number of separate connections is saved on.

[0009] When a cover plate is absent the stop fastening means only need to be loosened a little, after which the adjustment can take place at the same location, in which the eccentric body can be kept in its place by the stop fastening means.

[0010] In a first further development of the closing bowl assembly according to the invention the rotation bearing means are at least partially formed by the stop fastening means, which with their heads fittingly engage in circular or conical surfaces in the eccentric body which are a part of the aforementioned concentric planes. The stop fastening means, such as screws, in particular their (conical) head here themselves form in a simple manner the point of rotation for the eccentric bodies. The length over which these screws may engage in the closing bowl may be maximal here.

[0011] Alternatively the rotation bearing means comprise a bush portion on the eccentric body, which snugly fits into an attachment hole of the closing bowl. As a result the stop means can also be kept in its place against the closing bowl during adjusting when the

screw or the like is - temporarily - absent. The concentric planes can here be formed by the outer surface of the bush portion.

[0012] Preferably the stop fastening means itself or the eccentric body with said bush portion extends in the elongated holes and is guided by it in swing direction. As a result the stop fastening means or the bush portion and thus the eccentric body remain in their places in vertical direction in a secure manner.

[0013] Preferably the adjustment means comprise surfaces on the stop means engaging the eccentric body on both sides -as seen in swing direction- , in particular two parallel vertical edges of a bowl-shaped receiving space for the eccentric body.

[0014] In an advantageous further development of the closing bowl assembly according to the invention the eccentric body is provided with a receiving space for the end of a screw driver, in which the receiving space is situated adjacent to the passage, in particular adjacent to the space for the stop fastening means. The adjustment of the eccentric body can as a result take place after the stop fastening means are only loosened a little.

[0015] Preferably the eccentric body has a bore hole for fittingly leading through a fastening means such as a screw. The inner surfaces of the bore hole may function here (as well) as the aforementioned concentric planes, possibly in addition to the planes abutting the head planes of the screw in radial direction.

[0016] Preferably the stop means are formed on an elongated stop plate, which near its ends is provided with the stop fastening means and adjustment means.

[0017] The stop plate may be provided with a flanged stop extending in the closing bowl, in order to be able to offer a large stop surface, which is able to function reliably also after some usage deformation.

[0018] The stop plate preferably has been provided with an edge which at least extends over the closing bowl in longitudinal direction, behind which a hook-shaped bolt can engage. In this way it is achieved that the closing bowl assembly can also be used in contemporary window closure constructions, in which during the rotation of the handle of the window one or several catches rotate into an accompanying closing bowl. Here the bolt has an additional enclosing function in the form of a hook, which hooks behind the stop plate in the closing bowl and in opening direction is stopped by a stop plate adjusted at the correct position, so that banging is prevented.

[0019] Preferably the stop plate is provided with such an edge at two opposite sides, so that the same closing bowl assembly -in contrast to the state of the art - is suitable for windows swinging to both the left or to the right.

[0020] Further simplification according to the invention is achieved in that the stop fastening means are part of the closing bowl fastening means.

[0021] Yet a further simplification is achieved in

case there is a cover plate for the covering of the closing bowl and the stop means, said cover plate is detachably attached to the eccentric body or to the stop fastening means.

[0022] Preferably the stop fastening means are screws.

[0023] The invention will now be elucidated on the basis of the exemplary embodiments shown in the attached drawings, in which:

Figures 1A-C show a front view, a side view and an end view, respectively, of a closing bowl for a first embodiment of the closing bowl assembly according to the invention;

Figures 2A-C show a front view, a side view and an end view, respectively, of an adjustable bolt stop plate for a first embodiment of the closing bowl assembly according to the invention;

Figures 3A and 3B show a bottom view and a side view respectively, of an eccentric adjustment cam for the first embodiment of the closing bowl assembly according to the invention;

Figure 4 shows a cover plate for a closing bowl assembly according to the invention;

Figure 5A and 5B show a front view and a side view, respectively, of an assembled closing bowl assembly according to the invention, in which the components shown in the preceding figures have been included;

Figure 6 shows an alternative stop plate, destined for the hook-shaped window bolts;

Figures 7A-C show a front view, a side view and perspective view, respectively, of a closing bowl for a second embodiment of the closing bowl assembly according to the invention;

Figures 8A-C show a front view, a side view and an end view, respectively, of an adjustable bolt stop plate for the second embodiment of the closing bowl assembly according to the invention;

Figures 9A and 9B show a top view and a side view, respectively, of an eccentric adjustment cam for the second embodiment of the closing bowl assembly according to the invention.

[0024] The metal closing bowl 1 shown in the figures 1A-1C, defines a receiving space or bowl 8 for a (dead) bolt of a door, which bowl 8 can be surrounded by a circumferential wall 7 and is downwardly bounded by a bottom 6. At the opening side of the circumferential wall 7 two flanges 2 and 3 are formed, which are each

provided with a hole 4, 5 for a fastening means, such as a screw for attaching the closing bowl in a casing. As will be discussed below the holes 4 and 5 however, have a diameter which is larger than usual.

[0025] The stop plate 10 shown in the figures 2A-C is destined to be placed on the closing bowl 1 at its opening side, and is also made of metal. The stop plate 10 has two flat end parts 12, 13 in which seats 16, 17 are recessed, which are bounded by raised edges 18, 19 which comprise two parallel, vertical, straight edges 18a, 18b and 19a, 19b and circular bent edges 18c and 19c. In the seats 16, 17 elongated holes 14, 15 have been made which extend in the direction A.

[0026] Both end parts 12, 13 are connected to each other by an intermediate or stop part 20, which comprises a raised longitudinal wall 21, as well as flanged end walls 21a, 21b. The inwardly turned surface 11 of the wall 21 serves as stop for the dead bolt.

[0027] In figures 3A and 3B one of the two identical eccentric adjustment cams 30 is shown, which each comprise a plate 31 and a bush 32 and which have been made of metal. In the plate 31 and the bush 32 a continuous circle cylindrical bore hole 33 is arranged. At the side of the plate 31 an enlarged recess 34 is arranged in the entrance of the bore hole 33, in which recess the head of a screw can be accommodated, so that said screw does not project from the plate 31. The plate 31 is furthermore provided with a slot 35, in which the head of a screw driver fits.

[0028] Finally, in figure 4 a cover plate 22 is shown, which is flat and made of metal, and is provided with a central passage 25 for a bolt and with two holes 23 and 24 for a fastening means such as a screw.

[0029] In the assembled situation, shown in figures 5A and 5B the stop plate 10 is placed on the closing bowl 1, and the adjustment cams 30 are placed such that they extend through the elongated holes 14, 15 and in the holes 4, 5 with their bushes. The bushes 32 have such a diameter that they are accommodated in the holes 4, 5 in a snugly fitting manner. The plates 31 of the adjustment cams 30 here lie on the seats 16, 17, with a - seen in the direction A - snug fitting between the opposite portions of the raised edges 18, 19. The walls 19a-c extend until in the bowl 8. In figure 5A the closing bowl assembly is shown without cover plate 22, and in figure 5B with cover plate 22.

[0030] During use the various components mentioned of the closing bowl assembly according to the invention are kept together by means of screws, which are screwed concentrically through the holes 23, 24 of the possible cover plate 20, through the bore holes 33 of the adjustment cams 30, into the wood of the casing, and which also extend concentrically through the holes 4, 5 and also through the holes 14, 15 when passing through the bore holes 33.

[0031] The adjustment or setting of the position of the stop plane 11 in relation to the closing edge in the casing can take place in various manners. According to

a first manner, when a cover plate is present, both said screws are removed in order to be able to remove the cover plate. Because the adjustment cams 30 extend in the holes 4, 5 with their bushes 32 and the closing bowl 1 as usual will have been accommodated in the casing with some friction, in which the closing bowl 8 itself will also be supported in the casing, the closing bowl 1 and the stop plate 10 will remain in their places. Subsequently a screw driver is taken and its end is inserted in the slots 35 of the adjustment cams 30, in order to rotate the adjustment cams to an equal extent, as a result of which the stop plane 11 will be moved in the direction A, while retaining its alignment. A calibration may be indicated on the adjustment cams for indicating the number of millimetres that the stop plane 11 is being moved when rotating at a certain angle. During rotation of the adjustment cams 30 the bush portion 32 remains in its place in the direction A and a direction perpendicular to it seen in relation to the closing bowl, in particular the holes 4, 5, and in the direction perpendicular to the direction A in relation to the stop plate 10 in its place as a result of the snug fitting between the longitudinal edges of elongated holes 14, 15. As a result of the eccentric arrangement of the plate 31 in relation to the bush 32 and the abutment with the edges 18, 19 the stop plate 10 is indeed moved in the direction A. After the correct position has been reached the screwdriver is removed and the cover plate 22 is placed on the stop plate 10 again and subsequently the screws are screwed in and tightened again.

[0032] Where a cover plate 22 is not necessary and the screws lie directly on and in the adjustment cams 30, the screws only need to be loosened a little until the adjustment cams can be rotated. Any risk of parts falling out is prevented in that way. After the adjustment cams 30 have been rotated at the desired angle with the help of the screw driver, both screws are tightened again.

[0033] The embodiment of a stop plate having portions for attachment to the closing bowl at both ends, renders it possible to adapt it for use in a window closure in which the window handle or the system of window handles has been provided with hook-shaped bolts. For that purpose both end members 112, 113, as shown in figure 6, are further continued to the inside, in order to form a wall in mounted situation extending into the closing bowl in front of the opening, behind which wall the hook-shaped bolt can engage. The stop plane 111 may be adjusted to the correct position again here in the manner described above. By providing such a confining wall both at the upper end and the lower end, such a stop plate 100 can be used for windows swinging to both the left or to the right, with the correct position of the stop plane.

[0034] In the alternative embodiment shown in figure 7-9 some alterations have been introduced with respect to the embodiment shown in the previous figures. Comparable parts have the same reference numbers, increased by either 100 or 200.

[0035] In the figures 7A-7C a synthetic closing bowl 201 is shown, which is formed in an elongated manner having longitudinal ends 202 and 203, in which screw holes 204 and 205 are present. The holes 204 and 205 might have a broadened upper end, for reception of the bush 32 of an eccentric body 30. Below the enlarged upper end the holes 204 and 205 form a narrow passage for the attachment screws, which are secured there by self-tapping. The holes 204, 205 are continuous here so that the attachment screws are also able to engage in the wood of the casing underneath it.

[0036] It can be seen that the closing bowl 201 forms a trough-shaped bowl 208, of which the bottom 206 is closed. At the longitudinal sides, the bowl 208 is bounded by walls 207, which connect the end members 202 and 203 to each other. At the outer longitudinal side the closing bowl 201 is also provided with ribs 241, as well as with holes 240 along one longitudinal wall 207 for screws extending through the casing with which screws the closing bowl, if necessary, is (additionally) secured to the casing.

[0037] The closing plate or stop plate 210 shown in figures 8A-C is flat and therefore does not have a portion extending in the bowl 208. The stop plate 210 has an elongated continuous opening 210a for for instance a bolt, and is bounded towards two longitudinal sides by stop edges 211.

[0038] On both longitudinal ends recesses 216, 217 are formed, which in this example are entirely bounded by an edge 218 and 219, respectively, which each consist of two opposite (vertical) straight edge portions 218a, 218b and 219a, 219b, respectively, for horizontally confining the eccentric bodies and their vertical guidance during rotation, and two opposite circular edge portions 218c, 218d and 219c, 219d, respectively.

[0039] In the recesses 216, 217 elongated holes 214, 215 are formed, which are more narrow than the elongated holes 14 and 15 of the example given earlier. The width of the elongated hole is adjusted such to the screw that it can extend through it in a snugly fitting manner. The centre point of the curve of the edge members 218c, 219c lies on the opposite edge of the elongated hole 214, 215.

[0040] In the figures 9A and 9B the eccentric body 230 is shown, which is formed by a flat disk 231, without a protruding bush, and is provided with a receiving space 233 determined by a conical circumferential edge 234, which receiving space is meant for a conical screw head, and apart from that is provided with a slot 235 closed at the ends for the accommodation of the head of a screw driver. The diameter of the disk 231 is similar to the mutual distance between the edges 218a, 218b and 219a, 219b, respectively. The axis N of the passage for the screw is at an eccentricity e in relation to the centre point M of the disk 231.

[0041] The arc of the circle of the disk 231 is similar to the arcs of circle of the edge portions 218c, d and 219c, d. By way of example: the radii may be 7.25

mm here, e 2 mm and the length of the edge portions 218a, b and 219a, b 4 mm, that is to say 2e. The passage in the disk 231 has a diameter of 5 mm at the bottom and a diameter of 9.5 mm at the top. The screw used here has a similar head and a shank of for instance 4.5 mm outer diameter.

[0042] After assembling the closing bowl 201, the stop plate 210 and two eccentric bodies 230, they are secured to each other by screwing while self-tapping of attachment screws having an oblique head. After placing the closing bowl assembly thus obtained in the hole provided to that end in a casing, the attachment screws can be further tightened in order to also secure the closing bowl to the casing in that way. When it is desired to alter the position - seen in swing rotation of the door - of the stop edge 211, the attachment screws are very slightly rotated backwards (for instance a quarter of a turn) until the eccentric bodies 230 can be rotated. With a common screw driver engaging in the slots 235 the eccentric disks 231 are brought into the position in which the stop edge 211 has ended up in a position in which it will not bang. The rotation of the eccentric disks 231 here takes place about the attachment screws themselves, in which the conical plane 234 and the complementary conical plane of the screw head function as a bearing. After reaching the correct position of the stop plate 210 the attachment screws are secured again.

Claims

1. Closing bowl assembly for a closing bolt, such as a door latch or a dead bolt, for a door leaf or window leaf, comprising a closing bowl to be attached in the accompanying casing with the help of closing bowl fastening means, which closing bowl has a receiving space for the bolt and a stop means attached to it for limiting the receiving space to the leaf side, in which the stop means is attached to the closing bowl by means of stop fastening means, in which furthermore adjustment means are provided for adjusting the position of the stop means on the closing bowl in swing direction of the leaf, in which the adjustment means comprise an eccentric body, which is provided with a passage having a centre line for leading through the stop fastening means and planes running concentrically about a centre line, in which furthermore means are provided for providing a rotation bearing for the concentric planes of the eccentric body for rotation about the centre line, in which the stop means are provided with elongated holes extending in swing direction.
2. Closing bowl assembly according to claim 1, in which the rotation bearing means are at least partially formed by the stop fastening means, which with their heads fittingly engage in circular or conical surfaces in the eccentric body which are a part

of the aforementioned concentric planes.

3. Closing bowl assembly according to claim 1, in which the rotation bearing means comprise a bush portion on the eccentric body, which snugly fits into an attachment hole of the closing bowl. 5
4. Closing bowl assembly according to claim 2 or 3, in which the stop fastening means itself or the eccentric body with said bush portion extends in the elongated holes and is guided by it in swing direction. 10
5. Closing bowl assembly according to any one of the claims 1-4, in which the adjustment means comprise surfaces on the stop means engaging the eccentric body on both sides -as seen in swing direction-. 15
6. Closing bowl assembly according to any one of the claims 1-5, in which the eccentric body is provided with a receiving space for the end of a screw driver, in which the receiving space is situated adjacent to the passage, in particular adjacent to the space for the stop fastening means. 20
7. Closing bowl assembly according to any one of the preceding claims, in which the eccentric body has a bore hole for fittingly leading through a fastening means such as a screw, in particular for fitting, journalled accommodation of its head, which head preferably is conical. 25 30
8. Closing bowl assembly according to any one of the preceding claims, in which the stop means are formed on an elongated stop plate, which near its ends is provided with the stop fastening means and adjustment means. 35
9. Closing bowl assembly according to claim 8, in which the stop plate is provided with a flanged stop extending in the closing bowl. 40
10. Closing bowl assembly according to claim 8 or 9, in which the stop plate is provided with an edge which at least extends over the closing bowl in longitudinal direction, behind which a hook-shaped bolt can engage. 45
11. Closing bowl assembly according to claim 10, in which the stop plate is provided with such an edge at two opposite sides. 50
12. Closing bowl assembly according to any one of the preceding claims, in which the stop fastening means are part of the closing bowl fastening means. 55
13. Closing bowl assembly according to any one of the

preceding claims, in which the stop fastening means are screws.

14. Closing bowl assembly according to any one of the preceding claims, in which the closing bowl is made of synthetic material.
15. Closing bowl assembly according to claim 14, in which the closing bowl is provided with bore holes for attaching accommodation of the stop fastening means.
16. Stop plate for a bolt, suitable for the closing bowl assembly according to any one of the preceding claims.

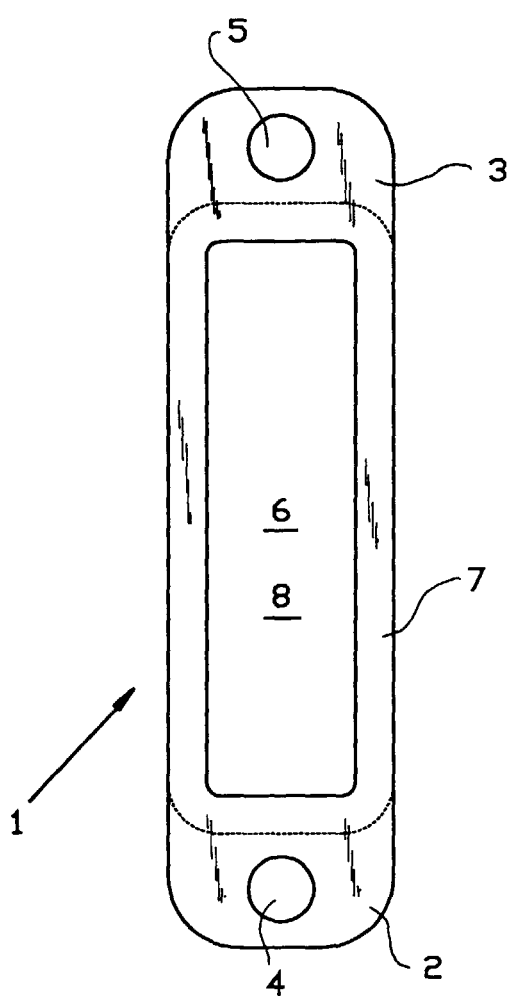


FIG. 1A

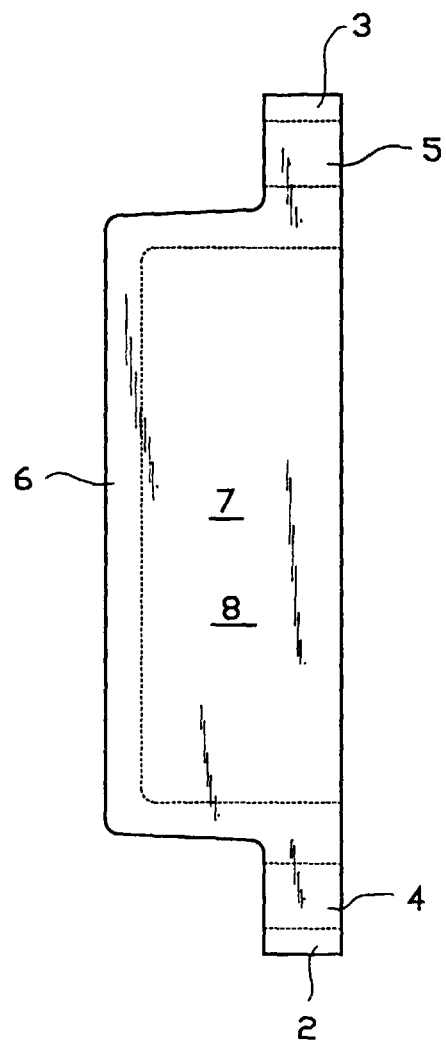


FIG. 1B

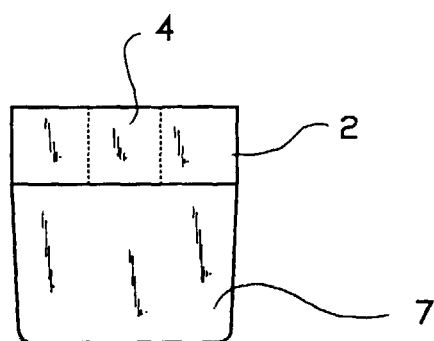


FIG. 1C

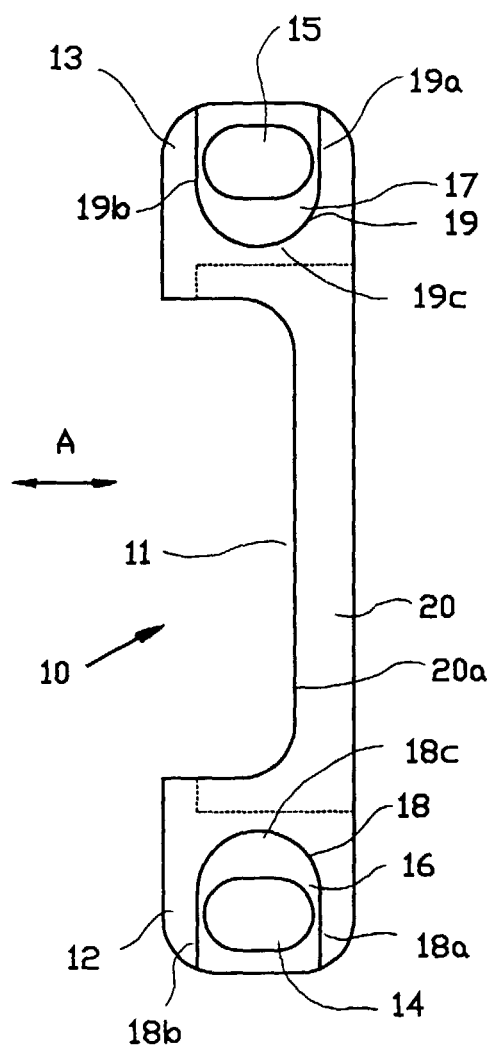


FIG. 2A

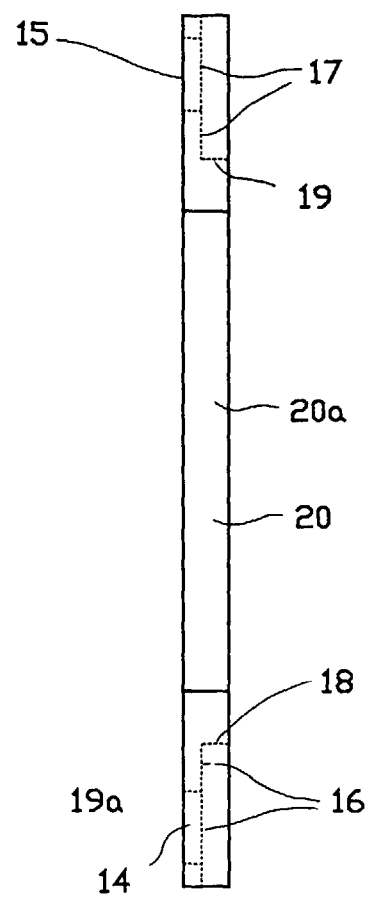


FIG. 2B

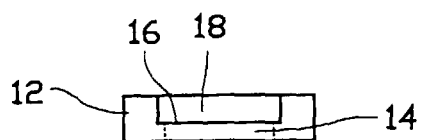
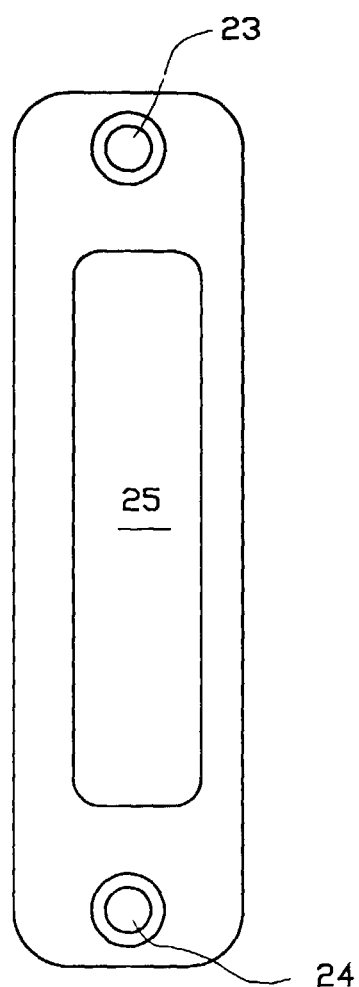
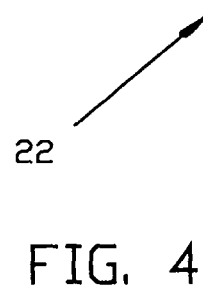
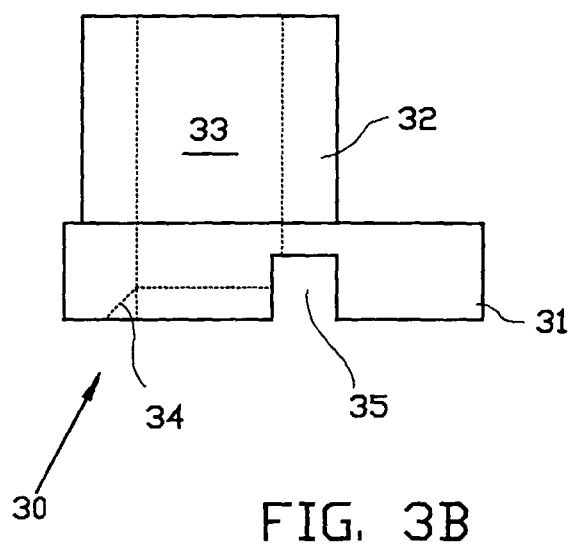
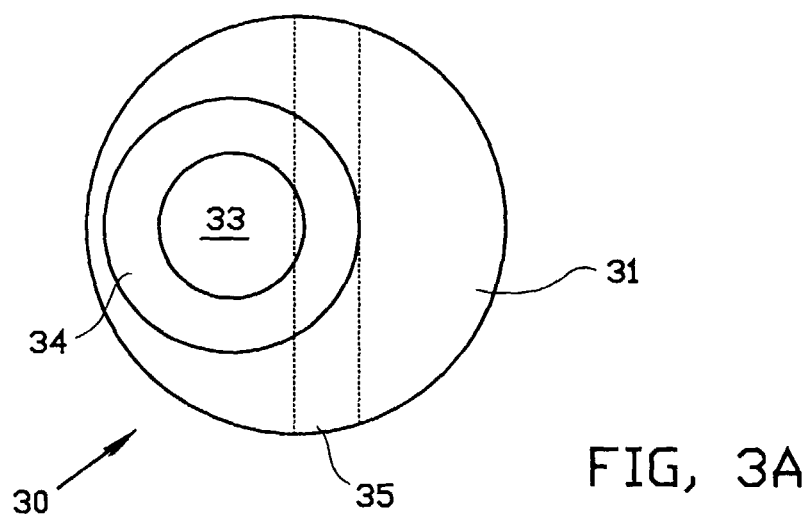


FIG. 2C



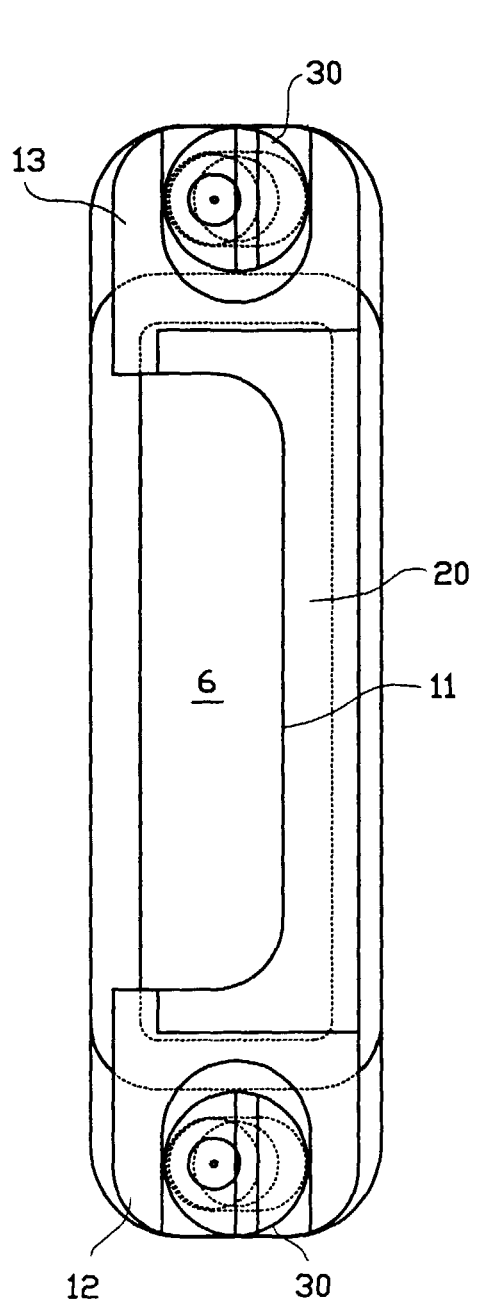


FIG. 5A

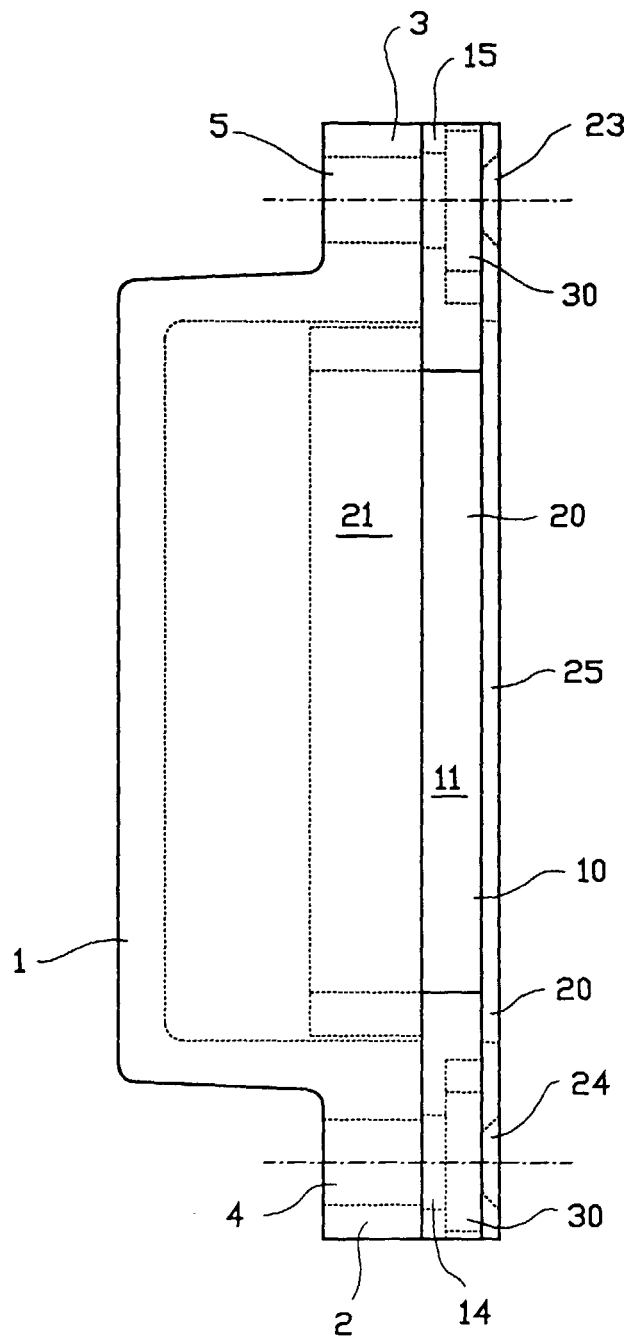


FIG. 5B

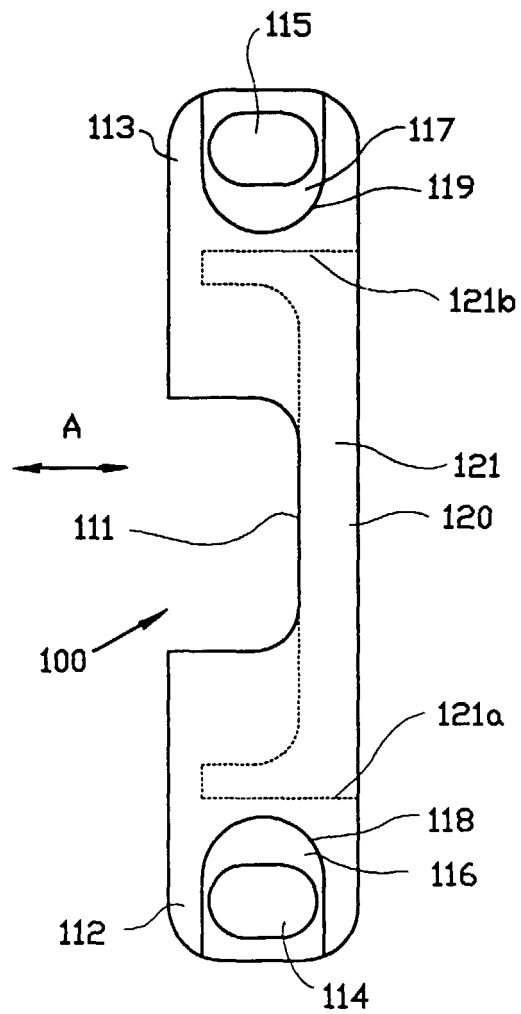


FIG. 6

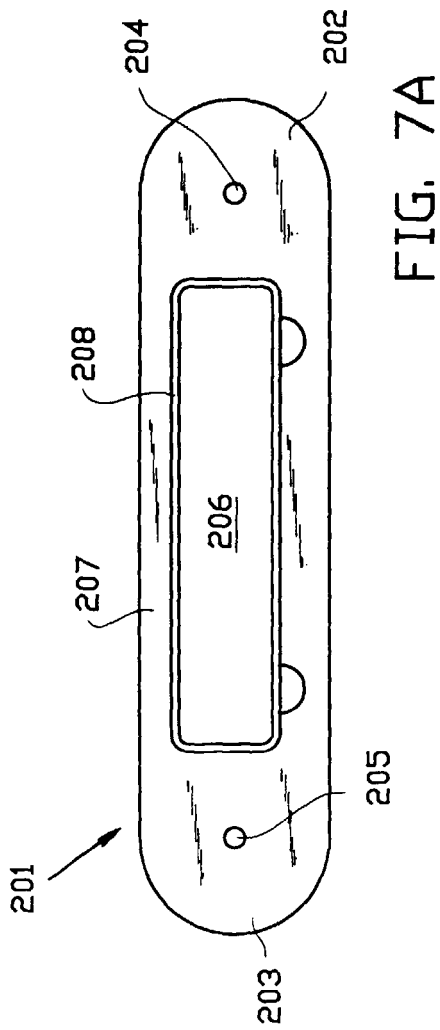


FIG. 7A

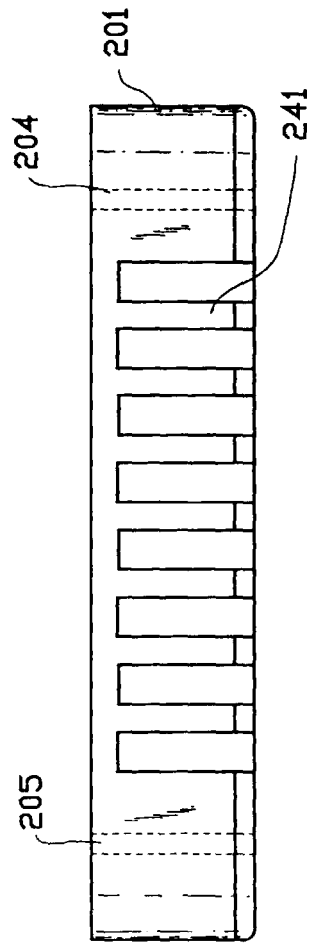


FIG. 7B

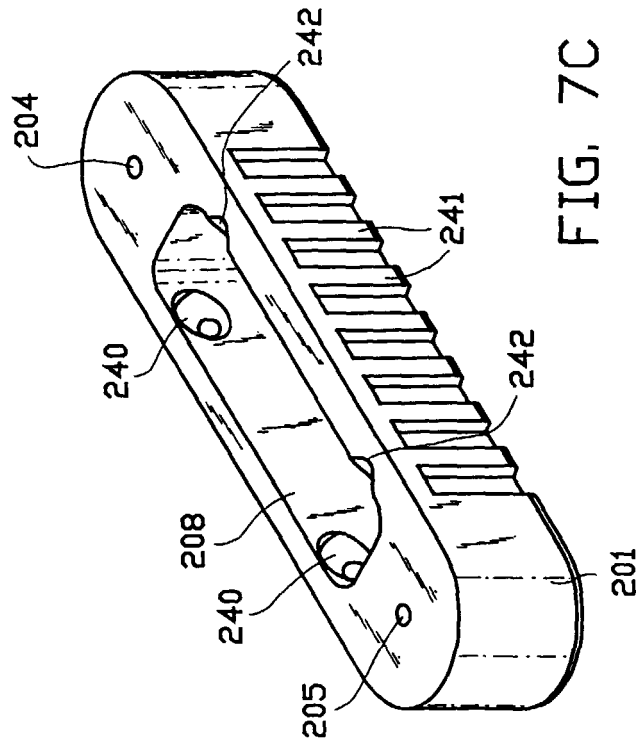
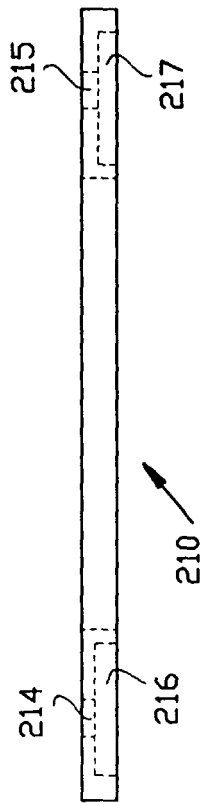
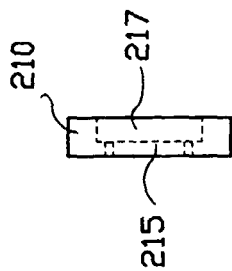
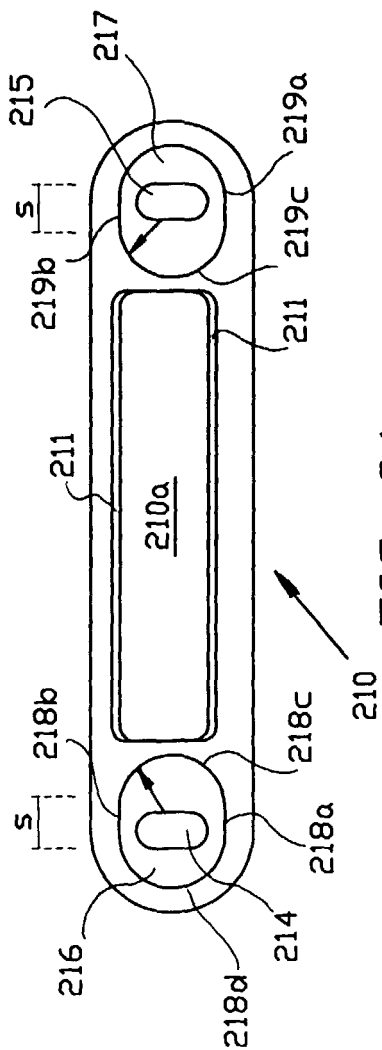


FIG. 7C



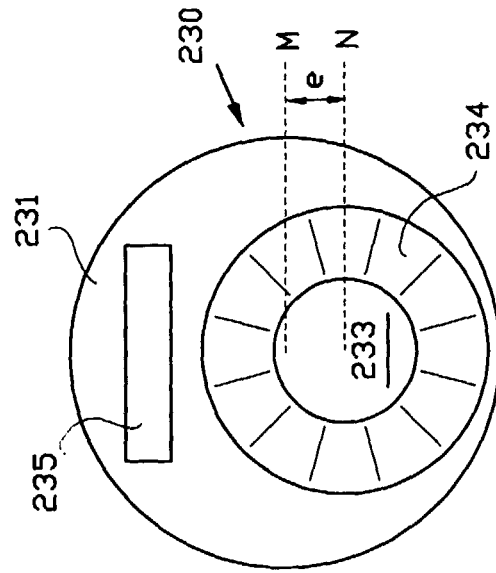


FIG. 9B

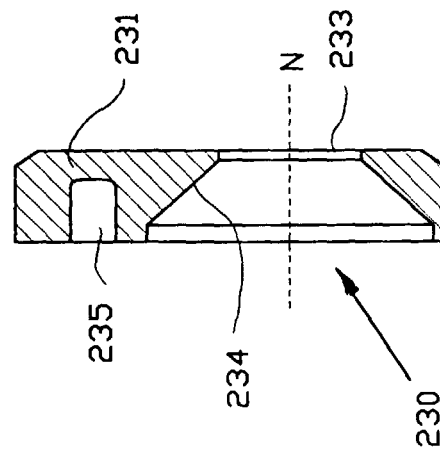


FIG. 9A



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 20 0268

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.7)
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