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(54) **OFFICE CHAIR**

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FAUTEUIL DE BUREAU

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Description

US 6 234 573, NL 7 907 725, WO 00/22961, EP 1258208, EP 1258210, US 2005156453.

OBJECT OF THE INVENTION

[0001] The present invention relates to an office chair, of the type structured on the basis of a rolling leg on which a seat-backrest assembly is assembled, which can be adjusted in height and in seat and backrest inclination in order to adapt to the specific requirements of each user.

[0002] The object of the invention is achieve a marked asymmetry between the pivoting of the seat and of the backrest, such that the pivoting of the latter is of the order of four times greater than that of the seat, all of this maintaining the height of the front edge of the seat virtually unaltered so that in such pivoting operations there is no front level difference of the chair, which may give rise to the user's feet hanging in certain positions, and furthermore a positional adjustment of the seat in relation to the backrest as regards separation, all of this with a simple structure in which a single gas cylinder and a mechanical spring participate.

BACKGROUND OF THE INVENTION

[0003] Several office chairs with different mechanisms for the positional adjustment of their elements are known, including European Patent EP 1 468 633, in which the underframe of the chair is formed from a star leg and a central column allowing, with a gas spring, the upward/downward movement for the seat support, the mentioned seat being assembled in a pivoting manner on such support through its front area with the cooperation of intermediate link rods and a second gas cylinder, whereas at the rear part the backrest extends in lower arms bent obtusely forwards, which arms are articulated to the seat and are coupled to the mentioned seat support through their free end, and are also connected in said free end to the seat through mechanical springs

[0004] This solution has drawbacks that are mainly focused on the following aspects:

- The backrest accompanies the seat in its pivoting movements, which virtually occur with the same amplitude or with a very similar amplitude, such that pivoting which may be insufficient in a backrest entail excessive pivoting.
- The seat pivots through its front edge, such that from a position for the underframe and for the seat support, in which the front edge of the latter is suitable for the size of the user of the chair, said seat can move frontally downwards in an excessive manner or can rise making the user's legs hang, i.e. losing the contact with the floor, which is uncomfortable.
- The seat and the backrest are separated by a pre-determined and invariable magnitude, which on many occasions it would be desirable to increase or reduce for greater comfort. Further state of the art documents are :

DESCRIPTION OF THE INVENTION

[0005] The office chair proposed by the invention has been designed and structured in order to fully and satisfactorily solve the aforementioned drawbacks in each and every discussed aspect.

[0006] To that end and more specifically, said chair is structured from the classic star leg, seat support and with height adjustment means for such seat, with the particularity that said seat support is formed as a base in which two articulated parts participate, one part corresponding to the seat and solidly connected in a non-removable manner to the rolling leg or column, and another part articulated to the first part, projected backwards and forming a markedly obtuse angle therewith, the second part being intended to receive the backrest.

[0007] The first part incorporates a housing for a cross-piece finishing the rod of a gas cylinder, which crosspiece is fixed by means of a bridge-support suitably screwed to the base part, the other end of the gas cylinder being intended to be fixed to an upper runner, which will be discussed below.

[0008] A control carrier is arranged and fixed by screwing on the first part of the mentioned base, which control carrier acts as a cover for said part, which is traversed by the gas cylinder and incorporates a lateral lever for acting on the gas cylinder.

[0009] This lever acts on a lug of the gas cylinder, such that the latter acts continuously instead of working at regular intervals as is conventional, being blocked at any movement point for its piston upon acting on the mentioned lug thereof.

[0010] A runner is assembled on the described assembly, which runner is articulated at its rear end by means of perforated tabs to the rear part of the base, whereas at its front end it is also articulated to the corresponding end of the gas cylinder, which runner incorporates at its front end area a pair of lateral openings in which respective sliding shoes solidly connected to the lower base move, such that at the level of this front end area the runner can only move horizontally but cannot change its height position in relation to the fixed base

[0011] This runner further incorporates a lateral rack in which a sort of a pivoted comb can be selectively locked, which comb is assembled on the actual seat in order to allow the front-rear movement of said seat, as will be seen below.

[0012] This movement is carried out against a robust spring arranged inside the mentioned runner, coaxially assembled on a sort of screw, the tension of which spring can be adjusted with the cooperation of a screw-nut transmission mechanism which can be externally actuated by means of another lateral control and through a rod traversing the also lateral wall of the runner.

[0013] The actual seat is finally assembled by screwing

on said runner, which seat is suitably padded and on the lateral wall of which, in an opening operatively arranged for that purpose, the mentioned pivoted comb for locking the rack is located.

[0014] It must finally only be added that the backrest is fixed to the rear part of the base with the cooperation of a pair of screws, a maximum pivoting of 17 ° for said backrest having been provided, which is in turn accompanied by a maximum pivoting of 4 ° for the seat.

DESCRIPTION OF THE DRAWINGS

[0015] To complement the description which is being made and with the aim of aiding to better understand the features of the invention according to a preferred exemplary embodiment thereof, a set of drawings is attached as an integral part of said description, in which the following has been shown with an illustrative and non-limiting character:

Figure 1 shows a perspective exploded view of the rear part of the type participating in the base corresponding to the seat of an office chair carried out according to the object of the present invention.

Figure 2 also shows a perspective view of the assembly of the previous figure duly assembled and in a coupling situation with the other part of the base.

Figure 3 shows a perspective view of the control carrier intended to be coupled to the base part of Figure 1.

Figure 4 also shows a perspective view of the assembly of Figure 2 duly assembled and receiving the control carrier of Figure 3.

Figure 5 also shows a perspective view of the assembly of Figure 4 in which the intermediate runner is disassembled.

Figure 6 shows a lateral perspective view of the assembly shown in Figure 5.

Figure 7 shows another lateral-upper perspective view of the assembly of Figure 5, in contrast to that of said figure.

Figure 8 shows a perspective view opposite to that of Figure 7, in which the helical spring is inside the runner.

Figures 9, 10, 11 and 12 show respective perspective views of the assembly shown in Figure 8 in successive stages of incorporating the pressure control means of the mentioned spring to the runner.

Figure 13 shows a perspective exploded view of the actual base of the seat, duly opposing the assembly of the previous figures.

Figure 14 also shows a perspective view of the assembly of Figure 13 duly assembled.

Figure 15 shows a perspective view of the assembly of Figure 14 in which the actual seat appears in an exploded view.

Figure 16 shows a partial lower perspective view of the base part of Figure 9, at its lower face or the face

for the coupling to the runner and in which the control for blocking the rack is disassembled.

Figure 17 finally shows a perspective view of the assembly shown in Figure 11, duly assembled, in contrast to that of said figure and next to which the complementary backrest appears.

Figure 18 shows a general rear-lower perspective view of the entire seat.

10 PREFERRED EMBODIMENT OF THE INVENTION

[0016] In view of the indicated figures, it can be observed that the office chair proposed by the invention incorporates, at the level of its seat, a base structured by means of two parts, a fixed part (1) intended to be coupled to the star leg of the chair through a cylindrical bushing (2), and a moving part (3) which is joined in a pivoted manner to the fixed part (1) by means of bushings (4). Said fixed part (1) has a seat for the crosspiece (5) of a gas cylinder (6), which is fixed through said crosspiece with the cooperation of a bridge-part (7) anchored to the base part (1) by means of trilobular screws (8). These elements are covered by a sort of cover (9), really forming a control carrier, which is fixed in turn by means of screws (10) to the base part (1) and incorporates a pair of lateral controls (11-11'), the shafts (12) of which are tubular and wedged by means of a pin (13), said controls (11-11') having stops (14-14') for actuating on the frontal lug (15) of the gas cylinder (6) arranged in the base part (1) itself or on the gas cylinder of the support star leg, not shown in the drawings.

[0017] The second part (3) of the base of the seat incorporates a pair of perforated tabs (16) through which it receives a runner (17) in an articulated manner, which runner is formed as a sort of tray having tabs (18) complementary to the previous tabs for the passage of respective pivoting shafts (19) formed as screws assisted by bushings, and simultaneously having at its opposite area and also at the lower part other tabs (20) which, with the cooperation of a pin (21), allow fixing said runner (17) to the free end of the gas cylinder (6), as especially observed in Figure 6.

[0018] The runner (17) forms a sort of tray open at its upper part, provided at its bottom and at its front end with two lateral openings (22), in which respective shoes (23) screwed to projections (24) of the base part (1) move such that the runner (17) can slide in a front-rear direction and can be fixed in any position chosen therefor and as will be seen below, by means of a lateral rack (25) and a blocking element therefor.

[0019] The runner (17) incorporates, in correspondence with its imaginary longitudinal axis, a front bracket (26) with a hole (27) for coupling a long screw (28) on which there is assembled a helical spring (29) against which the runner can move, said screw having a helical gear (30) on which there acts a worm screw (30') finishing in a lateral rod (31) which is finished in turn in an actuation control (32), this assembly being fixed with the cooper-

ation of a screwed lid (33). With this gearspindle system, the effective length of the spring (29), and subsequently the power that must be overcome to achieve the movement of the seat, can be doubled at will.

[0020] The outer casing (34) of the actual seat is assembled on the runner (17), which seat is provided with a wide recess (34') opposing the receptacle configured by the runner (17), to which it is fixed by means of screws (35) sliding on longitudinal guides or grooves (35') allowing the mobility of said casing or actual seat in relation to the runner and against the tension of the spring (29). This casing (34) laterally has a channel (36) with a spring (37) at its bottom, on which there is assembled with a pivoted character against said spring (37) a control (38) penetrating the recess (34') of the casing and finishing in a comb (39) for blocking the seat in relation to the runner through the rack (25) of the latter.

[0021] A padded body (40) configuring the surface of the actual seat is located on the casing (34), which body perimetrically incorporates snap-fit engagements (41) at the lower part, which engagements are fitted in a tongue and groove manner and under pressure in complementary engagements (42) of the casing (34).

[0022] It must finally and only be indicated, as shown in Figures 17 and 18, that the backrest (44) is fixed by means of a pair of long screws (43) to the raised front end area of the part (3) participating in the base of the seat, the backrest is thus rigidly joined to the base structure of the seat in its moving part, but is physically independent of the actual seat.

Claims

1. An office chair, of the type incorporating a support leg finish in a rolling and star structure, said leg incorporating a gas cylinder facilitating the vertical movement of the seat backrest assembly, **characterized in that** a base formed in two parts participates therein, a fixed base part (1) that is fixed to the support leg and a part with a pivoted movement (3) joined in to the rear area of the fixed base part (1) with a cylindrical bushing (2) and intended in turn to solidly receive the backrest (44) of the chair at its rear end, it having been provided that a gas cylinder (6) is located on the fixed base part (1), which gas cylinder is fixed at one of its ends to said fixed base part (1) and at its other end to a runner (17) in the front area thereof, whereas through the rear area of said runner (17) it is articulated to part with a pivoted movement (3), said runner (17) further being connected to the fixed base part (1) by means of sliding shoes (23) solidly connected to the marginal rear area of the fixed base part (1), which shoes move in lateral wide openings (22) of the rear end area of the runner (17), it having been provided that a spring (29) provided with tension regulation means is arranged on said runner (17), through which spring the

casing (34) of the actual seat is connected to the runner (17), which casing can move horizontally in relation to the runner (17) and can be fixed in multiple relative positions with the cooperation of a control (38) finished in a sort of comb (39) which is locked in a lateral rack (25) of the runner (17).

2. An office chair according to claim 1, **characterized in that** the gas cylinder (6) arranged on the fixed base part (1) incorporates at the free end of its rod a crosspiece (5) through which said base part (1) is fixed with the cooperation of a bridge (7) screwed thereto, said rod finishing in a lug (15) for actuating the gas cylinder, to adjust the effective length thereof, it having been provided that said gas cylinder (6), like the gas cylinder belonging to the support leg of the fixed base part (1), are actuated by means of respective lateral levers (11-11') belonging to a control carrier (9) assembled as a cover on the fixed base part (1), to which it is fixed by screwing, said controls (11-11') having coaxial bushings (12) between which a coaxial coupling pin (13) is arranged and said bushings (12) finishing in respective stops (14-14') for actuating on the respective gas cylinders.
3. An office chair according to the previous claims, **characterized in that** the part with a pivoted movement (3) is articulated to the fixed base part (1) by means of articulation lateral bushings (4) and has perforated tabs (16) through which it is connected with rear-lower tabs (18) of the runner (17), with the cooperation of shafts (19) formed as screws with their corresponding bushings.
4. An office chair according to the previous claims, **characterized in that** the runner (17) configures a sort of receptacle open at the upper part, provided at its front and middle area with a perforated bracket (26) through which a screw (28) with a considerable length is coupled thereto, on which screw there is assembled a helical spring (29) with an adjustable tension through a helical gear (30) and a spindle (30'), the latter being extended in a rod (31) emerging outside the runner and finished in a control (32), the lower casing (34) of the actual seat (40) acting against said spring (29), which casing (34) is fixed to the runner (17) by means of screws (35) moving in turn in grooves (35) of said casing (34), with a suitable length for the maximum run provided for the seat.
5. An office chair according to the previous claims, **characterized in that** the part with a pivoted movement (3) of the base structure of the seat receives at its rear end the lower end of the backrest (44) with the cooperation of screws (43).

Patentansprüche

1. Ein Bürostuhl des Typs mit eingebautem Stützfu-
ßende in einer Roll- und Sternstruktur, wobei der be-
sagte Fuß einen Gaszylinder integriert, der die ver-
tikale Bewegung der Rückenlehnenmontage er-
leichtert, **dadurch gekennzeichnet, dass** eine aus
zwei Teilen geformte Basis daran beteiligt ist, ein
festes Basisteil (1), das am Stützfuß befestigt ist und
ein Teil mit einer Schwenkbewegung (3), das mit
dem hinteren Bereich des festen Basisteils (1) mit-
tels einer zylindrischen Buchse (2) verbunden ist,
welche dazu bestimmt ist, wiederum die Rückenleh-
ne (44) des Stuhls an seinem hinteren Ende sicher
aufzunehmen, wofür ein Gaszylinder (6) an dem fe-
sten Basisteil (1) vorgesehen ist, dessen Gaszylin-
der an einem seiner Enden an dem besagten festen
Basisteil (1) befestigt ist und an seinem anderen En-
de mit einem Gleitelement (17) in dessen vorderen
Bereich, während es über den hinteren Bereich des
Gleitelements (17) gelenkig zur Ausführung einer
Schwenkbewegung (3) verbunden ist, wobei das be-
sagte Gleitelement (17) ferner mit dem festen Teil
(1) mittels Gleitschuhen (23) fest mit dem seitlichen
Endbereich des festen Teils (1) verbunden ist, des-
sen Schuhe sich in seitlichen breiten Öffnungen (22)
des hinteren Endbereichs des Gleitelements (17)
bewegen, wobei vorgesehen ist, dass eine mit Span-
nungsregelmitteln versehene Feder (29) an dem be-
sagten Gleitelement (17) angebracht ist, mittels des-
sen Feder das Gehäuse (34) des eigentlichen Sitzes
mit dem besagten Gleitelement (17) verbunden ist,
angeordnet ist, dessen Gehäuse sich horizontal in
Bezug auf das Gleitelement (17) bewegen und in
mehrere Positionen im Zusammenwirken mit einem
Regler (38) befestigt werden kann, welcher in einer
Art Kamm (39) endet, der in einer seitlichen Zahn-
stange (25) des Gleitelements (17) verschlossen ist.
2. Ein Bürostuhl nach Anspruch 1, **dadurch gekenn-
zeichnet, dass** der Gaszylinder (6), welcher auf dem
festen Basisteil (1) angebracht ist, am freien Ende
dessen Stange ein Kreuzstück (5) enthält, dank des-
sen das besagte Basisteil (1) im Zusammenwirken
mit einer daran angeschraubten Brücke (7) befestigt
ist, wobei die Stange in einer Lasche (15) zur Betä-
tigung des Gaszylinders endet, um dessen eigentli-
che Länge einzustellen, wobei vorgesehen ist, dass
der Gaszylinder (6), wie der Gaszylinders am Stütz-
bein des festen Teils (1), mit Hilfe von entsprechen-
den seitlichen Hebeln (11-11') betätigt wird, die zu
einem Kontrollführer (9) gehören, welcher als Ab-
deckung an dem feststehenden Basisteil (1) montiert
ist, an die dieser durch Verschraubung befestigt ist,
wobei besagte Bedienelemente (11-11') über ko-
axiale Buchsen (12) verfügen, zwischen denen ein
koaxialer Kupplungsbolzen (13) angeordnet ist und
die besagten Buchsen (12) in den jeweiligen An-

schlägen (14-14') zur Betätigung der jeweiligen Gas-
zylinder enden.

3. Bürostuhl nach den vorherigen Ansprüchen, **da-
durch gekennzeichnet, dass** das Teil mit
Schwenkbewegung (3) an das feste Basisteil (1) mit-
tels seitlichen Gelenkbuchsen (4) angelenkt ist und
über perforierte Laschen (16) verfügt, dank derer es
mit den hinteren unteren Laschen (18) des Gleitele-
ments (17) verbunden ist, im Zusammenwirken mit
Schaften (19), welche als Schrauben mit ihren ent-
sprechenden Buchsen gebildet sind.
4. Ein Bürostuhl nach den vorherigen Ansprüchen, **da-
durch gekennzeichnet, dass** das Gleitelement (17)
am oberen Teil eine Art offenes Behältnis bildet, wel-
ches an seinem vorderen und mittleren Bereich mit
einem perforierten Halterung (26) ausgestattet ist,
mittels derer eine Schraube (28) beträchtlicher Län-
ge daran gekoppelt ist, an dessen Schraube eine
Schraubenfeder (29) mit einer mittels eines Schrau-
benrads (30) und einer Spindel (30') verstellbaren
Spannung angebracht ist, wobei Letztere sich in ei-
ner Stange (31) erweitert, die aus dem Gleitelement
hervortritt und in einem Regler (32) endet, wobei das
untere Gehäuse (34) des eigentlichen Sitzes (40)
gegen die besagte Feder (29) wirkt, deren Gehäuse
(34) am Gleitelement (17) mittels Schrauben (35)
befestigt ist, die sich wiederum in Nuten (35) des
besagten Gehäuses (34) bewegen, mit einer ange-
messenen Länge für den für den Sitz maximal vor-
gesehenen Lauf.
5. Ein Bürostuhl nach den vorherigen Ansprüchen, **da-
durch gekennzeichnet, dass** das Teil mit einer
Schwenkbewegung (3) der Grundstruktur des Sitzes
an seinem hinteren Ende das untere Ende der Rük-
kenlehne (44) im Zusammenwirken mit Schrauben
(43) aufnimmt.

Revendications

1. Un fauteuil de bureau, incorporant une finition avec
pied d'appui sur une structure roulante en étoile, ledit
pied incorporant un vérin pneumatique qui permet
le mouvement vertical du dossier du fauteuil, **carac-
térisé par le fait qu'**une base formée de deux parties
y participe, une partie de base fixe (1), fixée au pied
de support et une partie à mouvement pivotant (3)
jointe à l'arrière à la partie de base fixe (1) avec une
bague cylindrique (2) et prévue pour tourner pour
recevoir solidement le dossier (44) du fauteuil sur
son extrémité arrière, étant équipée d'un vérin pneu-
matique (6) situé sur la partie de base fixe (1), dont
le vérin pneumatique est fixé sur l'une des extrémités
de ladite partie de base fixe (1) et à son autre extré-
mité à une roue (17) sur l'avant, tandis qu'à travers

l'arrière de ladite roue (17), il est articulé à la partie avec un mouvement de pivotement (3), ladite roue (17) est ensuite reliée à la partie de base fixe (1) au moyen de patins glissants (23) solidement reliés à l'aire arrière marginale de la partie de base fixe (1), dont les patins se déplacent dans de larges ouvertures latérales (22) de l'extrémité arrière de la roue (17), équipée d'un ressort (29) avec un moyen de réglage de la tension installé sur la roue (17), ressort auquel le boîtier (34) du fauteuil réel est relié à la roue (17), boîtier qui peut se déplacer horizontalement par rapport à la roue (17) et peut être fixé sur plusieurs positions relatives avec l'aide d'une commande (38) finissant en forme de peigne (39), située dans une crémaillère latérale (25) de la roue (17).

2. Un fauteuil de bureau conformément à la revendication 1, **caractérisée par le fait que** le vérin pneumatique (6) installé sur la partie de base fixe (1) est équipé sur son extrémité libre de sa tige, une croix (5) à laquelle cette partie de base fixe (1) est fixée à l'aide d'une traverse (7) qui y est vissée, dite tige finissant en une saillie (15) pour l'actionnement du vérin pneumatique (6), comme le vérin pneumatique appartenant au pied de support de la partie de base fixe (1), sont actionnés au moyen des leviers latéraux respectifs (11-11') appartenant à la porteuse de commande (9) montée comme couvercle sur la partie de base fixe (1), à laquelle elle est fixée par vissage, lesdites commandes (11-11') ayant des bagues (12) entre lesquelles une tige à couplage coaxial (13) est installée et lesdites bagues (12) terminant en leurs extrémités respectives (14-14') pour l'actionnement des vérins pneumatique respectifs.
3. Un fauteuil de bureau conformément aux revendications qui précèdent, **caractérisé par le fait que** la partie pivotante (3) est articulée à la partie de base fixe (1) au moyen de bagues latérales d'articulation (4) et comporte des onglets perforés (16) à travers lesquels elle est reliée aux onglets arrière inférieurs (18) de la roue (17), à l'aide d'arbres (19) formés de vis avec leurs paliers correspondants.
4. Un fauteuil de bureau conformément aux revendications qui précèdent, **caractérisé par le fait que** la roue (17) forme une sorte de réceptacle ouvert sur sa partie supérieure et intermédiaire avec un support perforé (26) à travers lequel une vis (28) d'une longueur considérable est accouplée, sur cette vis est monté un ressort hélicoïdal (29) à tension réglable au moyen d'une roue hélicoïdale (30) et d'une broche (30') émergeant de l'extérieur de la roue et terminée par une commande (32), le boîtier inférieur (34) du fauteuil (40), agissant contre ledit ressort (29), dont le boîtier (34) est fixé à la roue (17) au moyen de vis (35), bougeant dans les rainures (35) dudit boîtier (34), avec la longueur appropriée pour

la course maximale du fauteuil.

5. Un fauteuil de bureau conformément aux revendications qui précèdent, **caractérisé par le fait que** la partie à mouvement pivotant (3) de la structure de la base du fauteuil reçoit à l'arrière l'extrémité inférieure du dossier (44) à l'aide de vis (43).

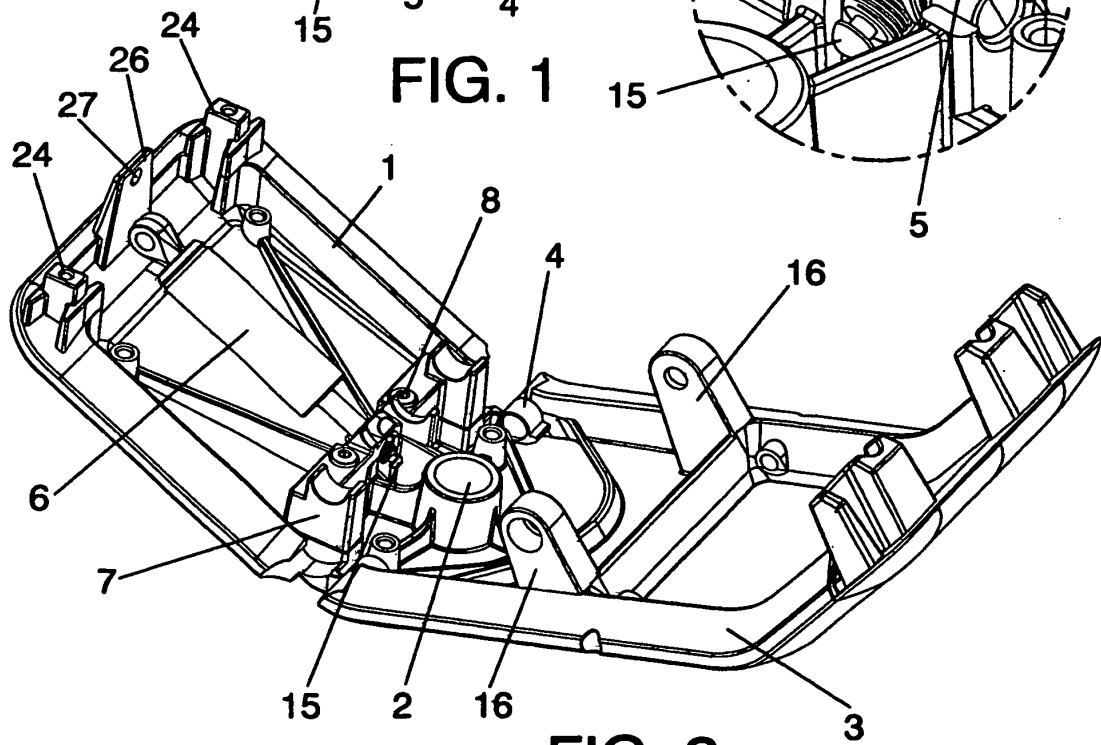
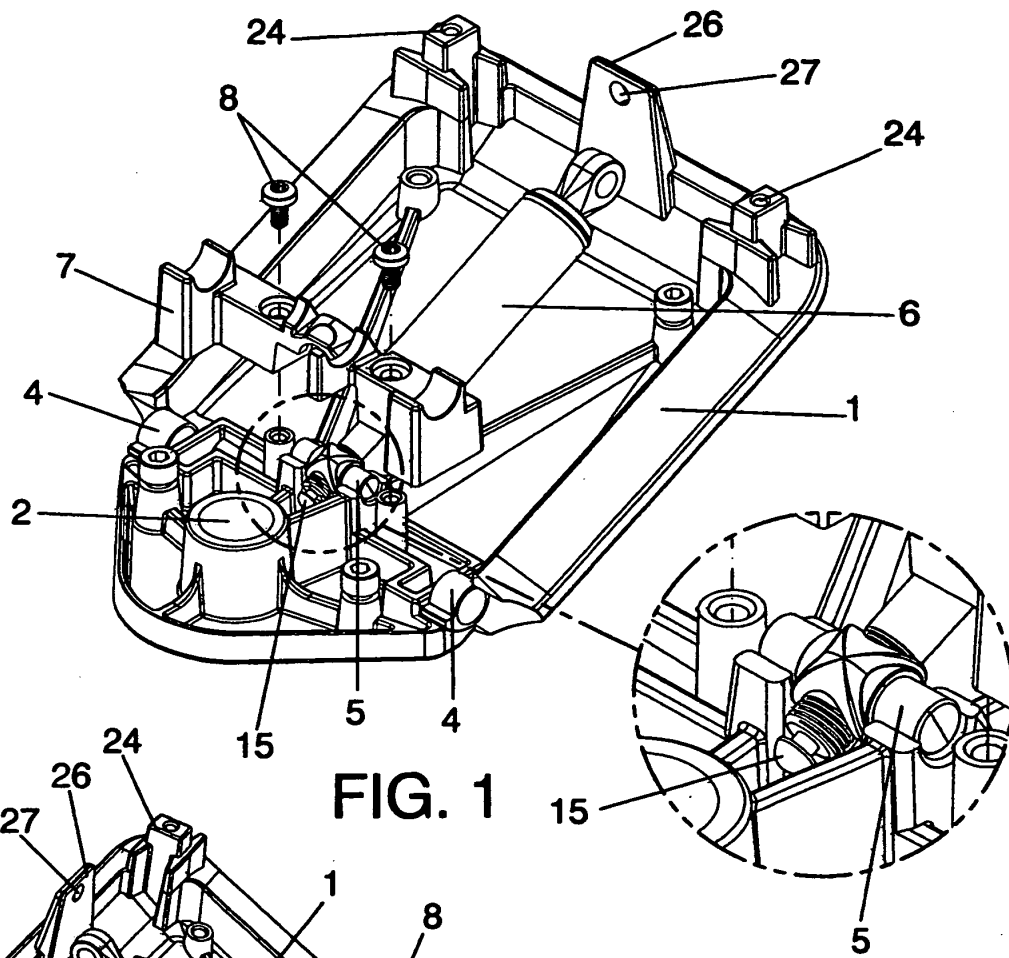
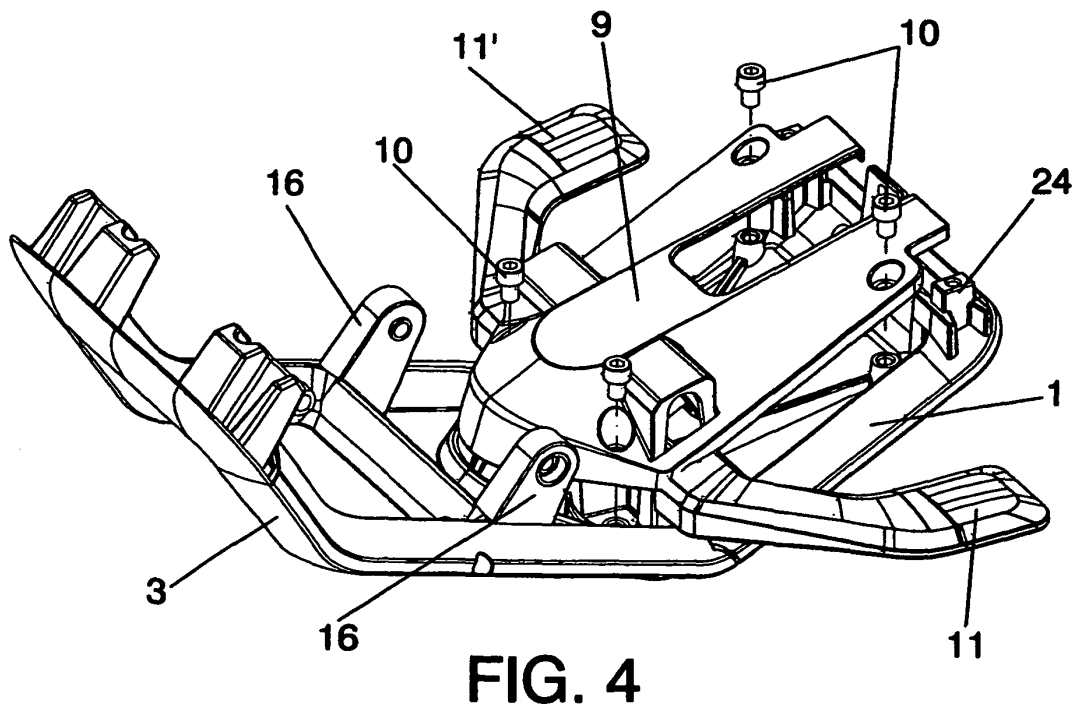
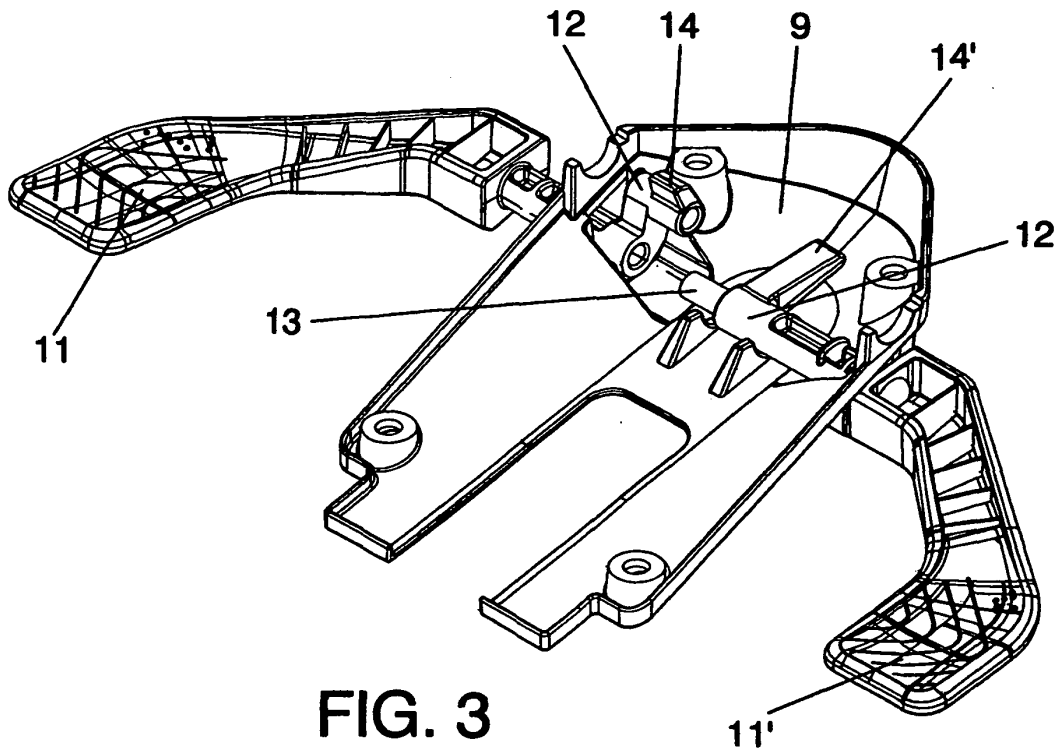
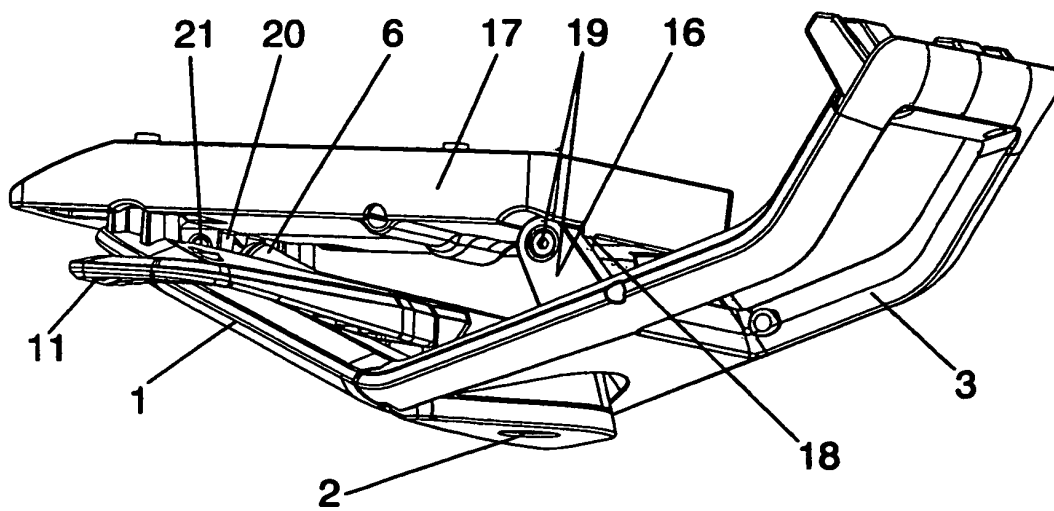
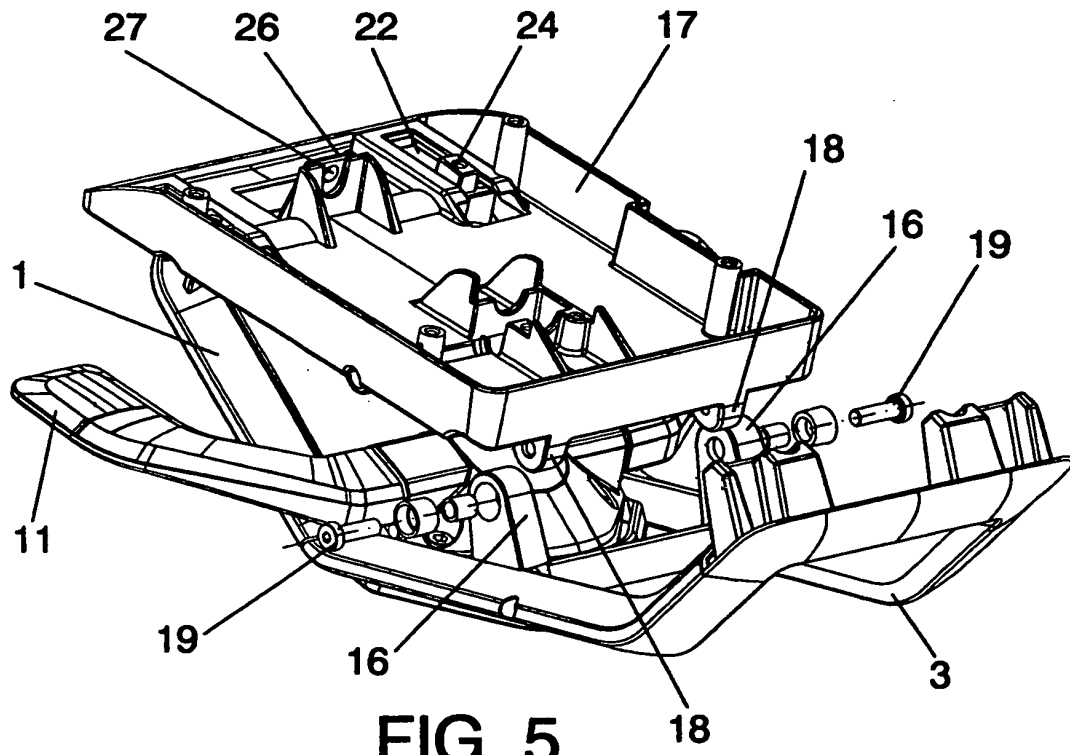
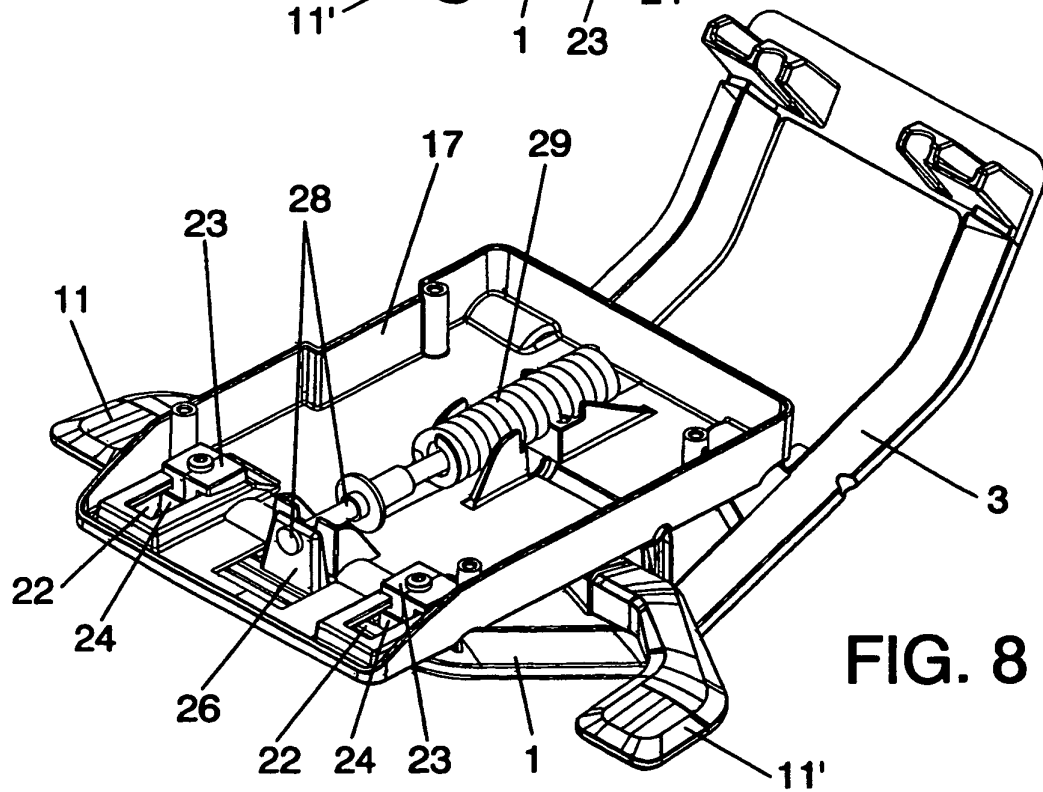
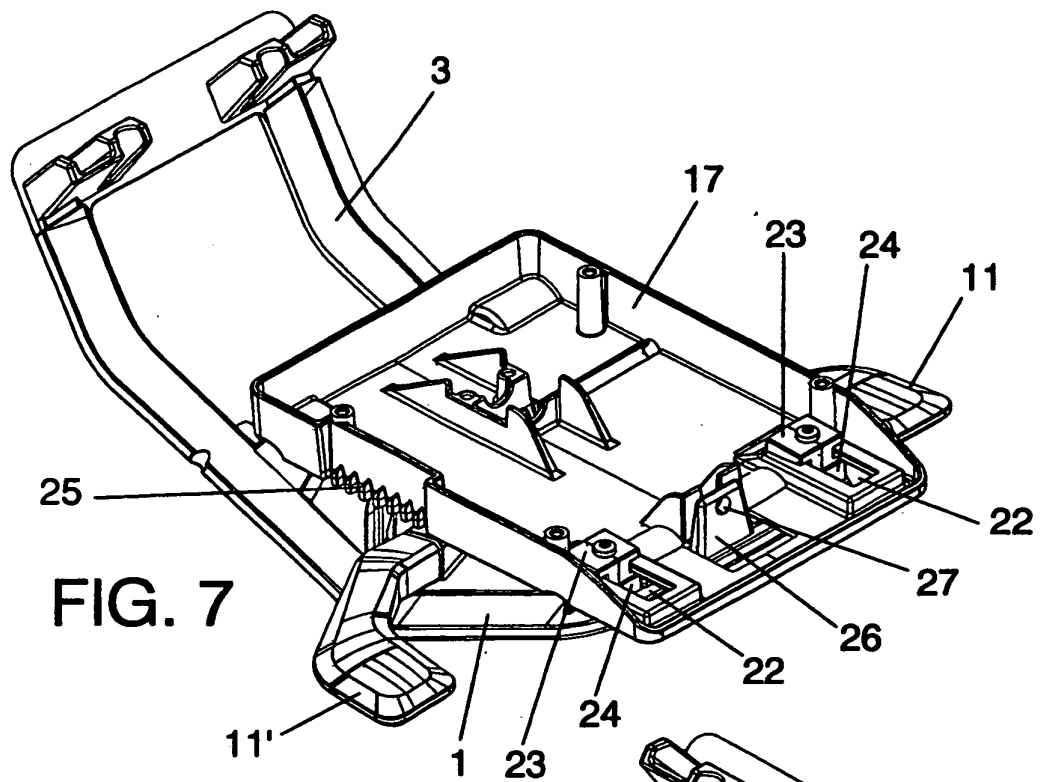
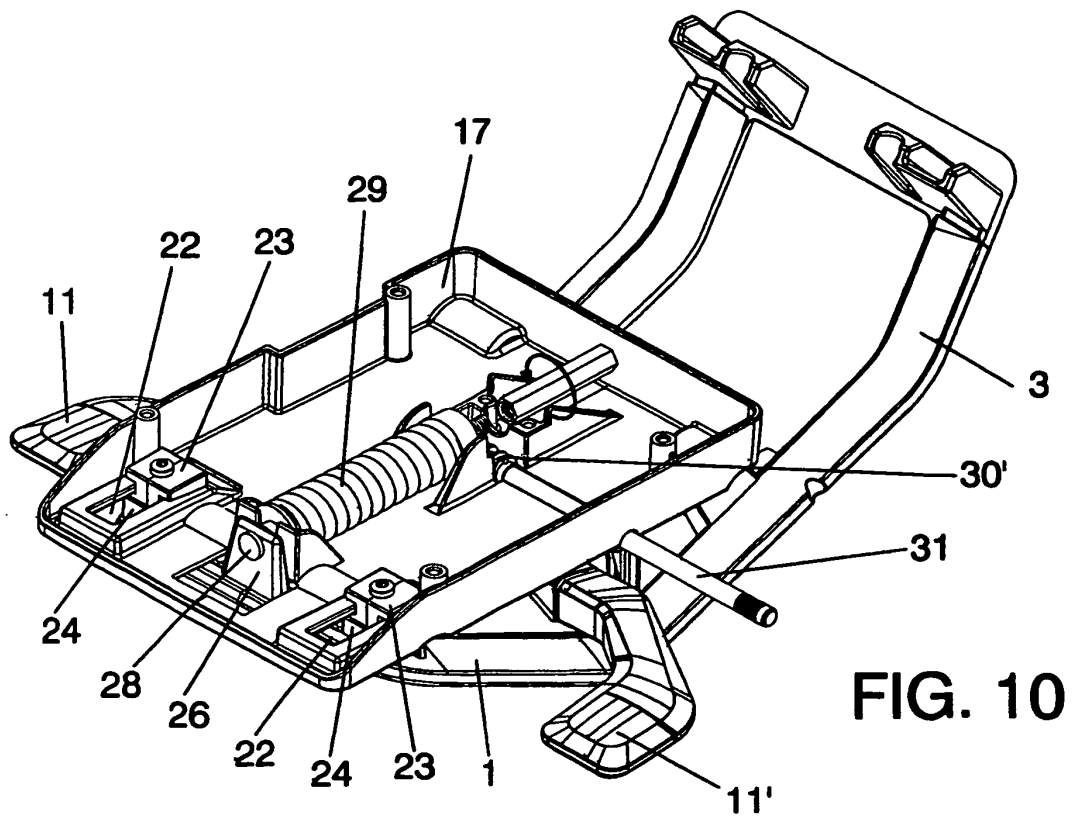
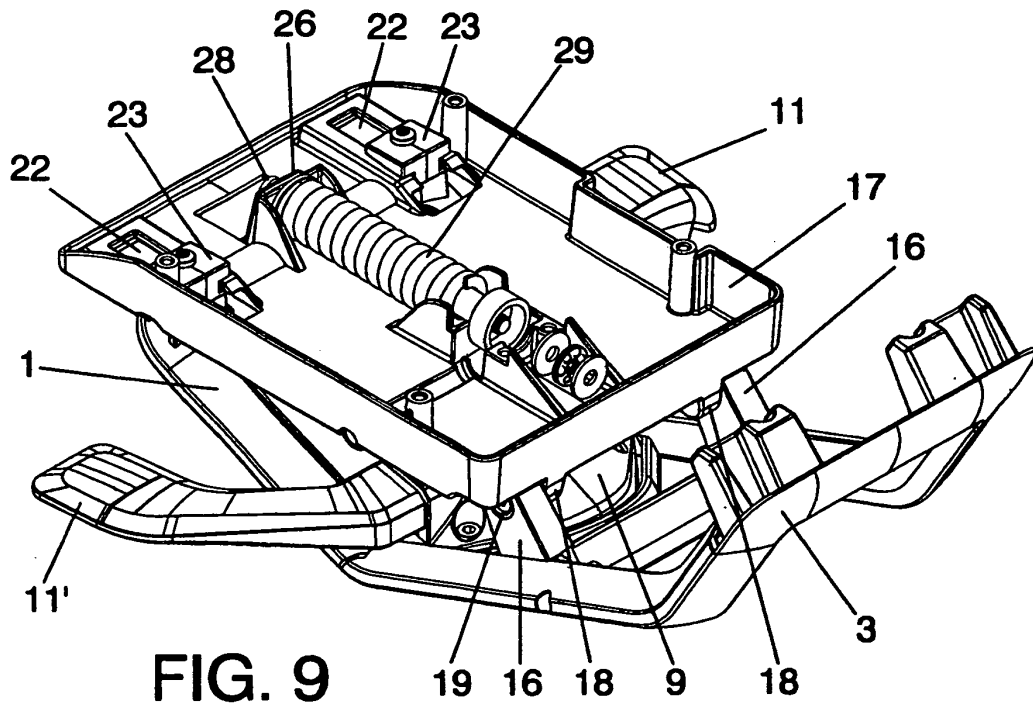


FIG. 2









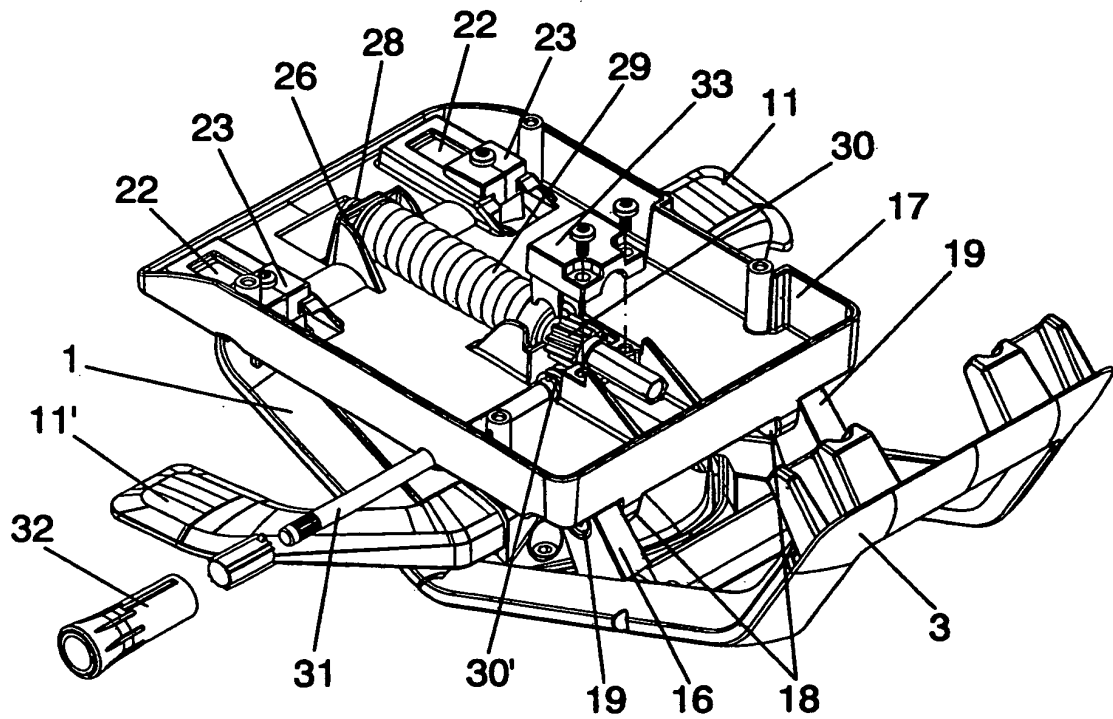


FIG. 11

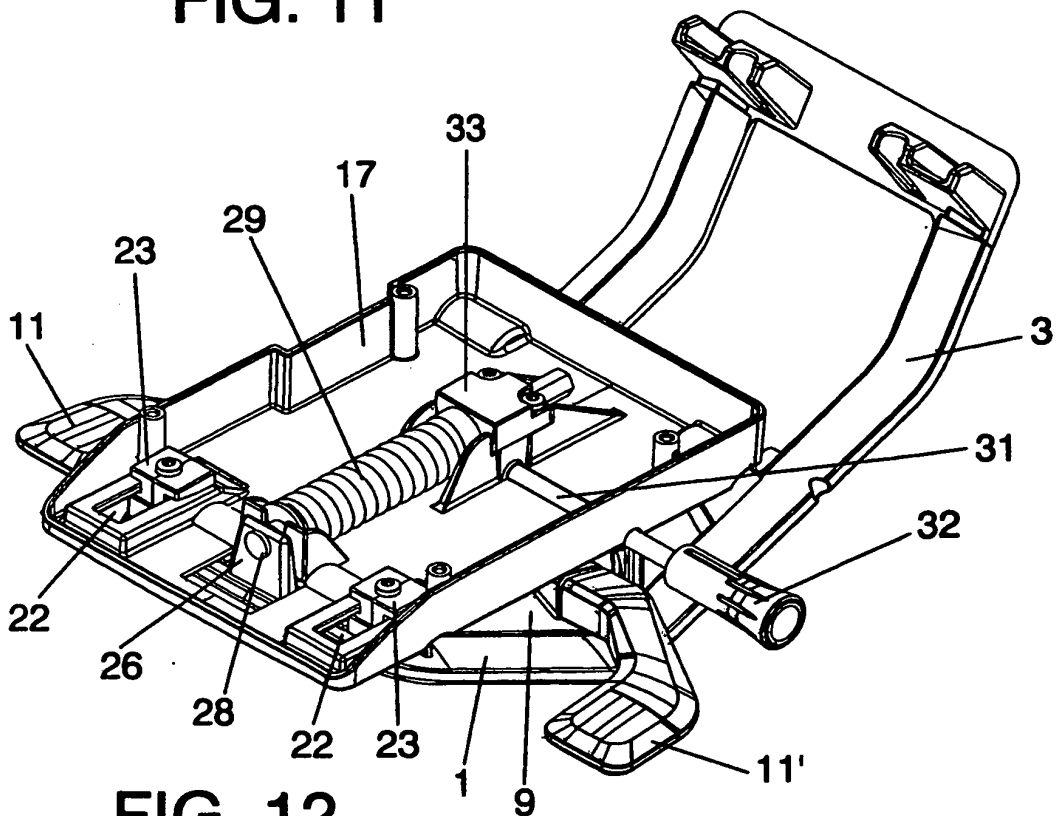
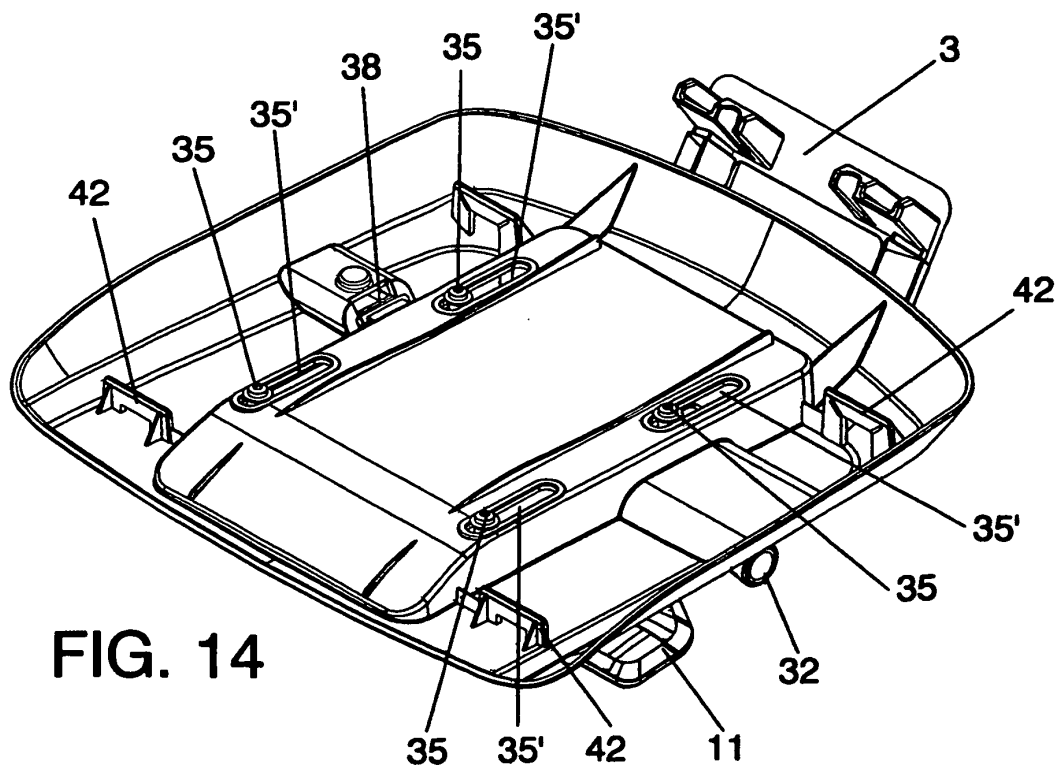
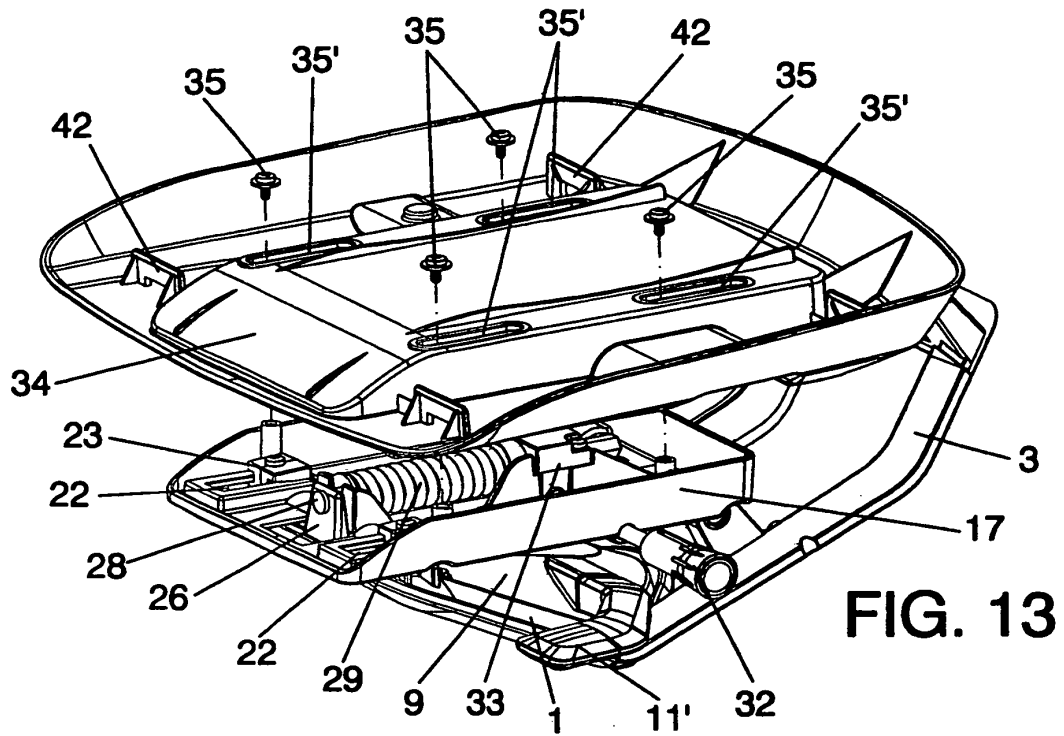


FIG. 12



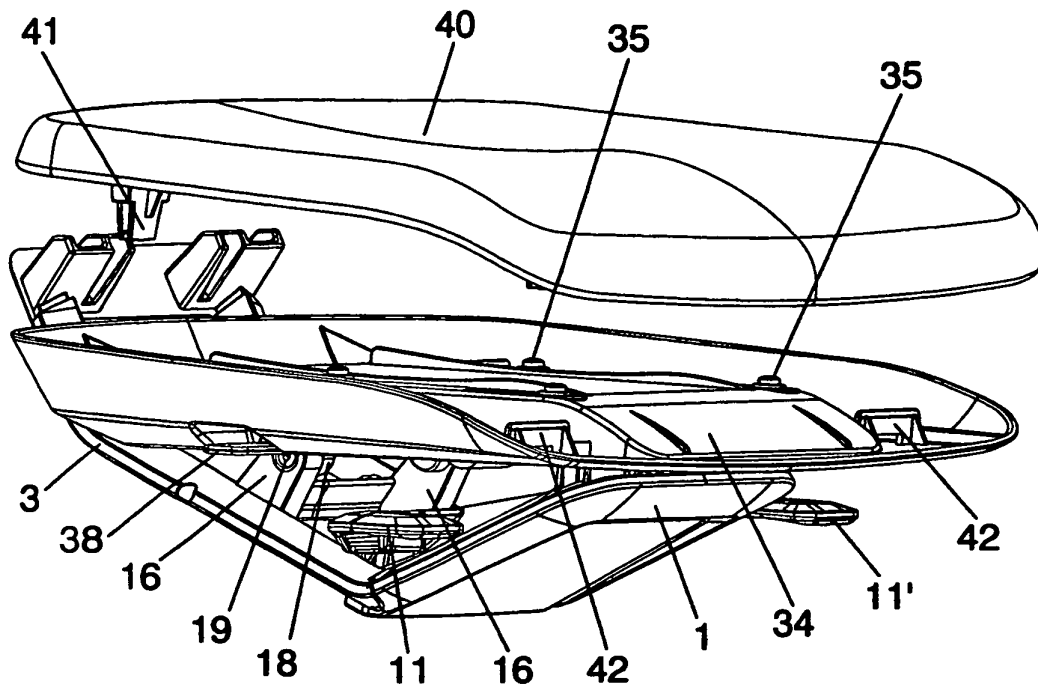


FIG. 15

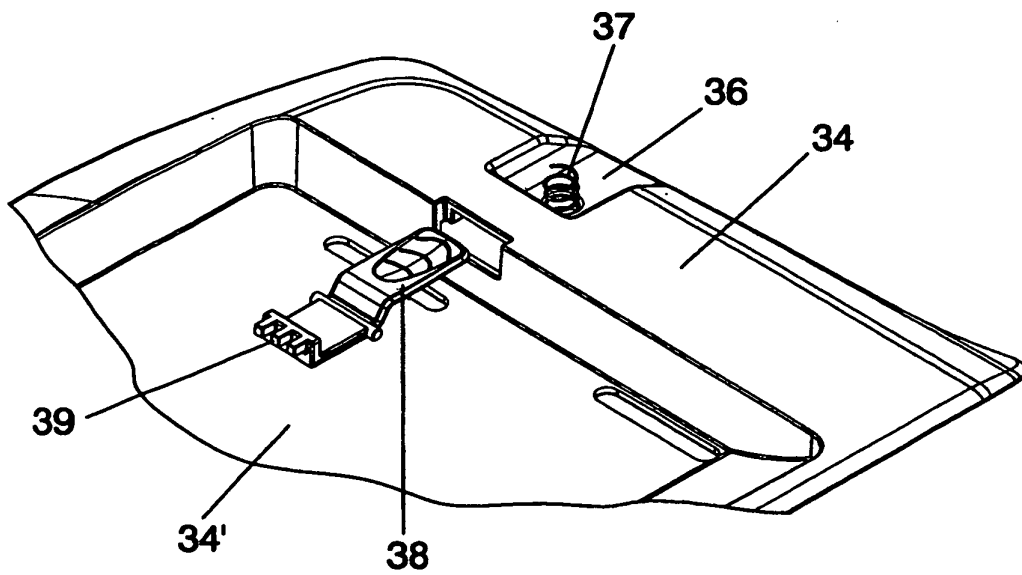
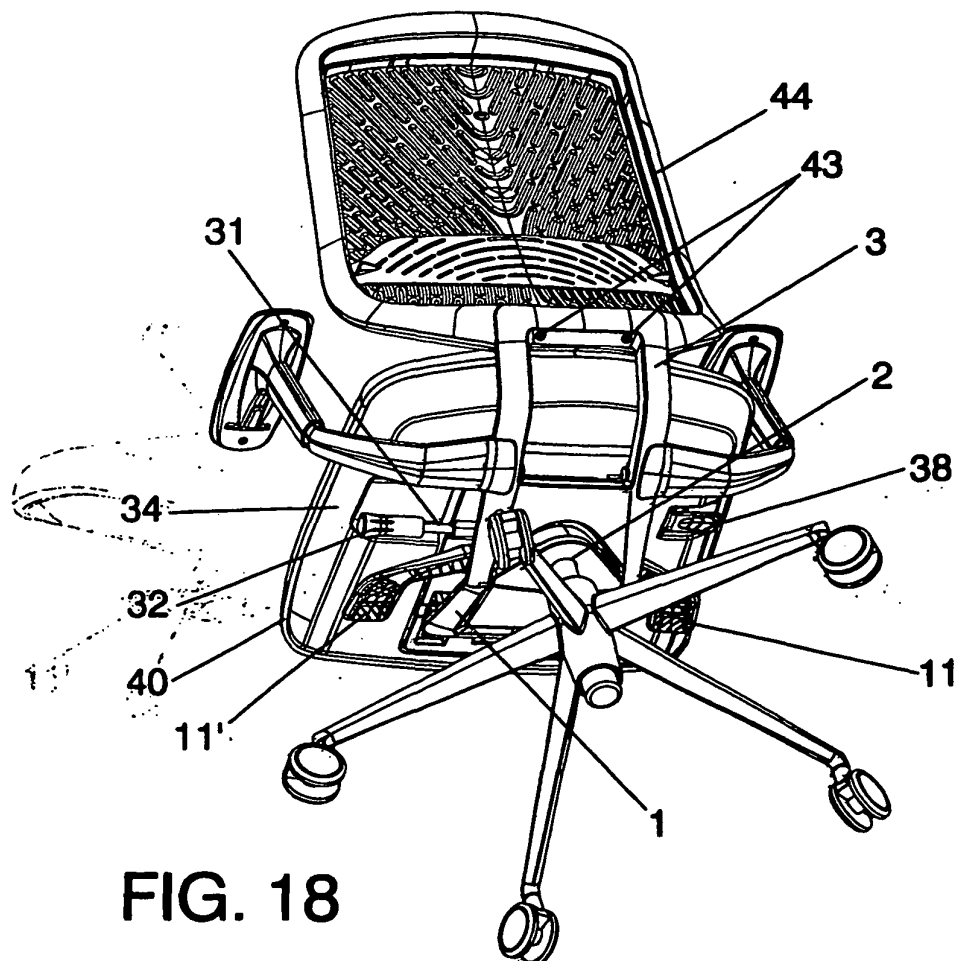
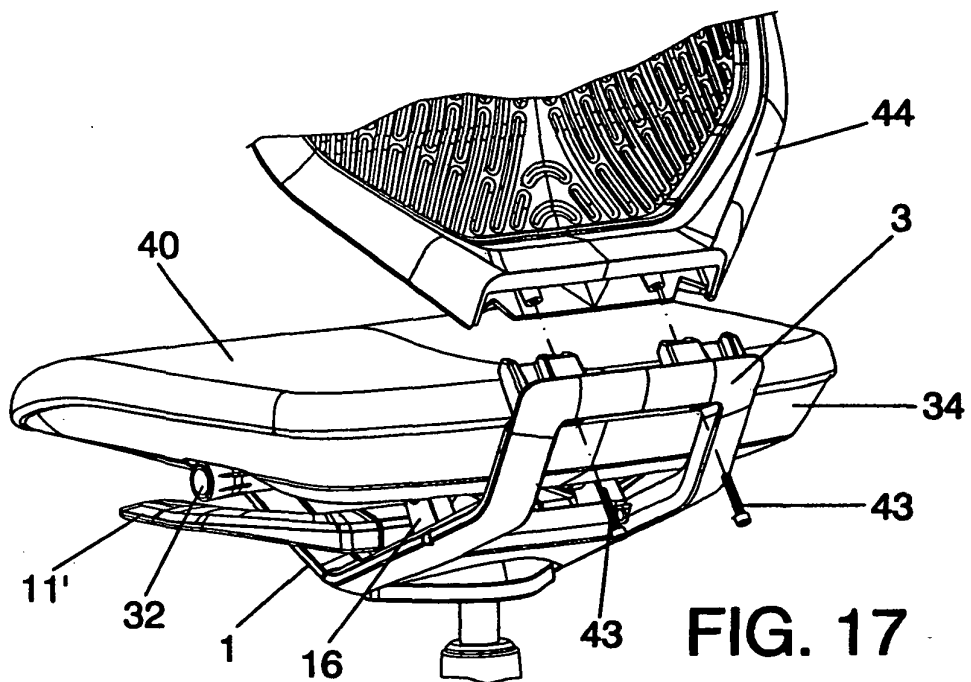


FIG. 16



REFERENCES CITED IN THE DESCRIPTION

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