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(54) **Assembly suitable to facilitate lowering and lifting manoeuvres of rolling shutters**

(57) The present invention refers to an assembly (1; 101; 201), suitable to facilitate lowering and lifting manoeuvres of rolling shutters, equipped with a handle (10; 110; 210), unblocking means (20; 120; 220) fit for unblocking the rolling shutter strap brake (B), seizing means (30; 130; 230) fit for seizing the strap (S) and controlling it, by sliding friction, during lowering, said seizing means (30; 130; 230) being actuated by actuating means (70; 170; 270); the assembly (1; 101; 201) further comprises a support plate (50; 150; 250) provided with an appropriate at least one seat (40; 140; 240) to hold the handle (10; 110; 210).

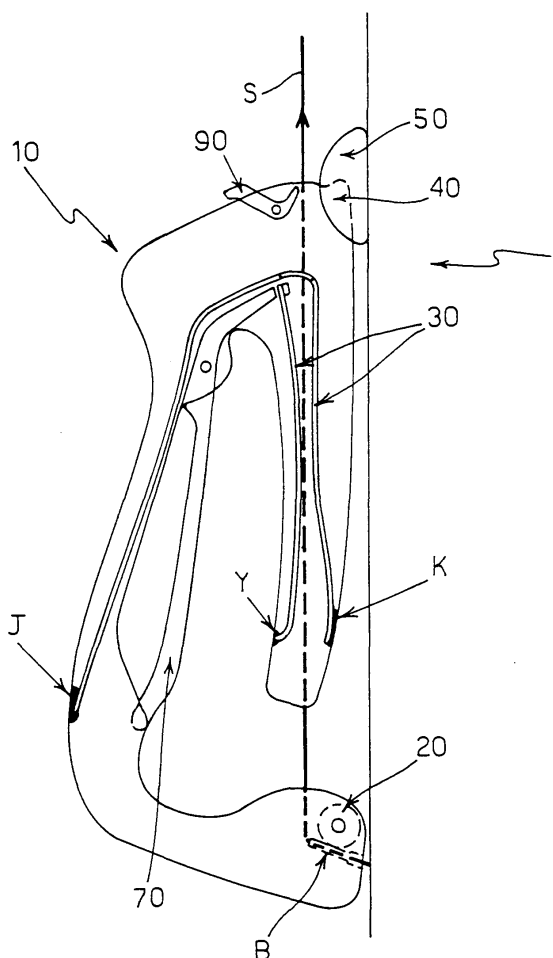


FIG. 2A

Description

[0001] The present invention refers to assemblies suitable to facilitate lowering and lifting manoeuvres of rolling shutters.

[0002] More particularly, the present invention refers to an assembly, suitable to facilitate lowering and lifting manoeuvres of rolling shutters, equipped with a handle, a support plate provided with at least one seat to hold the handle, unblocking means fit for unblocking the rolling shutter strap brake, seizing means fit for seizing the strap and controlling it, by sliding friction, during lowering, and actuating means fit for actuating the seizing means.

[0003] It is commonly known that rolling shutters, having the primary function of rooms darkening, are generally formed by shaped slats, preferably made of wood, plastics, metals or metal alloys, mutually connected through metallic joints or, even though more rarely, through elements of metal sheet hinged one to another.

[0004] When darkening is needed, the rolling shutter is completely or partially shut down; on the contrary, when darkening is not needed, the rolling shutter is usually rolled up upon a roller housed into an appropriate hollow casing, generally horizontal, obtained in the wall above the window opening, being the upper end of the rolling shutter fastened to the roller. The lowering and lifting manoeuvres are usually carried out manually, by sliding - respectively, upwards and downwards - a strap, with which rolling shutters are typically equipped.

[0005] The rolling shutter strap upper end is usually connected to a pulley coupled to the roller mentioned above, while the rolling shutter strap lower end is usually connected to a winder.

[0006] An example of winder W according to the prior art is shown in Figure 1 attached hereto.

[0007] The winder W contains inside it a spring mechanism able to hold the strap S tight; the winder W is also provided with a strap brake B able to restrain the strap S itself.

[0008] The winder W is housed in an appropriate vertical slit obtained in the wall and a cover plate C, usually made of metal, is provided to cover the slit, said cover plate C being fastened to the wall by means of screws.

[0009] The difficulty in the manual seizing of the rolling shutter straps for performing the sliding and the traction during, respectively, the lowering and the lifting manoeuvres of rolling shutters is well known.

[0010] As a matter of fact, common experience teaches that, notwithstanding the rolling shutters widespread diffusion, no significant improvement has been made in their use since their invention; apart from complicated and expensive electromechanical equipment, no simple and cheap and also effective devices exist up to now for making the manoeuvres of shutting down and rolling up easier.

[0011] A manual grasping mechanism is known from DE 80 13 932 U1.

[0012] The manual grasping mechanism disclosed in the above-mentioned document is an operation handle provided with an appropriate clamp device, said clamp device being operated by a lever co-operating with a spring.

[0013] Such an operation handle can perform an efficient grasping action during the lifting of the rolling shutter, since the rolling shutter strap is firmly seized between the clamp device and the rollers arranged on the opposite side of said strap with respect to said clamp device.

[0014] On the contrary, a drawback of such an operation handle resides in that it is not equally efficient during the lowering of the rolling shutter, since the sliding friction force is not easily weighed out; furthermore, in order to allow the rolling shutter to start shutting down, a second hand has to be employed to unblock the rolling shutter strap brake.

[0015] It is therefore the main purpose of the present invention to provide an assembly equipped with a comfortable manual handle, a support plate provided with at least one seat to hold the handle, unblocking means fit for unblocking the rolling shutter strap brake, seizing means fit for seizing the strap and controlling it, by sliding friction, so facilitating the lowering manoeuvre of rolling shutters, and actuating means fit for actuating the seizing means.

[0016] Moreover, it is a complementary purpose of the present invention to provide an assembly and, more specifically, a handle also suitable to facilitate the lifting manoeuvre of rolling shutters.

[0017] Moreover, it is a further purpose of the present invention to provide an assembly easily usable by any kind of user, such as disabled people or the elderly, being required neither the use of a second hand nor the performance of complicated manoeuvres nor the employ of much energy.

[0018] Moreover, it is a further purpose of the present invention to provide an assembly having safety features so to prevent accidental sudden rolling shutters shutting down as well as consequent possible injuries.

[0019] The aforementioned and further purposes of the invention are achieved by the assembly as defined in the attached claims.

[0020] Thanks to the assembly according to the invention, which is equipped with a handle, a support plate provided with at least one seat to hold the handle, unblocking means fit for unblocking the rolling shutter strap brake, seizing means fit for seizing the strap and controlling it, by sliding friction, and actuating means fit for actuating the seizing means, the advantage of facilitating the lowering manoeuvre of rolling shutters is achieved as well as of easily weighing out the sliding friction force on the rolling shutter strap so to avoid possible damages to the rolling shutters.

[0021] Furthermore, the advantage of facilitating the lifting manoeuvre of rolling shutters is also achieved.

[0022] Furthermore, advantageously, a second hand

has not to be employed, thus without performing complicated manoeuvres, for both the rolling up and the shutting down of the rolling shutters, so making both said manoeuvres easier.

[0023] Furthermore, advantageously, the assembly and, more specifically, the handle according to the invention allows to make use of less energy, due to grasping along the rolling shutter strap, this in consequence making the handle itself easily usable by, for instance, disabled people and the elderly.

[0024] Furthermore, advantageously, the assembly according to the invention is also provided with safety devices and mechanisms so to prevent accidental sudden rolling shutters shutting downs as well as consequent possible injuries in case, for example, a child tries to activate the assembly itself.

[0025] Furthermore, advantageously, the assembly according to the invention can be manufactured by employing easily available and not particularly valuable materials, such as plastics, through well known technologies, so resulting in a cheap device.

[0026] Further features and advantages will become evident from the description of three preferred embodiments of the present invention, which will be better disclosed with reference to the accompanying drawings, in which:

- Figure 1 a perspective view of a winder coupled to a conventional cover plate according to the prior art;
- Figure 2A is a lateral view of the assembly according to a first preferred embodiment of the invention in a resting position, partially in phantom so as to depict the rolling shutter strap brake unblocking means, the handle seizing means and the support plate provided with the seat to hold the handle;
- Figure 2B is a lateral view of the assembly according to a second preferred embodiment of the invention in a resting position, partially in phantom so as to depict the rolling shutter strap brake unblocking means, the handle head seizing means and the twin seats for the handle provided in the support plate;
- Figure 2C is a lateral view of the assembly according to a third preferred embodiment of the invention in a resting position, partially in phantom so as to depict the rolling shutter strap brake unblocking means, the handle head seizing means and the twin seats for the handle provided in the support plate;
- Figure 3A is an exploded perspective view of the handle according to the first preferred embodiment of the invention shown in Figure 2A;
- Figure 3B is an exploded perspective view of the assembly according to the second preferred embodiment of the invention shown in Figure 2B;
- Figure 3C is an exploded perspective view of the assembly according to the third preferred embodiment of the invention shown in Figure 2C;
- Figure 4 is a perspective view of the handle according to the first preferred embodiment of the inven-

tion, partially in phantom so as to depict the rolling shutter strap brake unblocking means coupled to the strap brake and the safety device;

- Figure 5 is a lateral view of the handle seizing means coupled to the strap according to the first preferred embodiment of the invention;
- Figure 6 is a lateral view of the support plate provided with the seat to hold the handle according to the first preferred embodiment of the invention;
- Figure 7-I is a perspective view of the rolling shutter strap brake unblocking means coupled to the strap brake according to the second preferred embodiment of the invention;
- Figure 7-II is a perspective view of the rolling shutter strap brake unblocking means coupled to the strap brake according to the third preferred embodiment of the invention;
- Figure 8 is a partial perspective view of the support plate according to the second preferred embodiment of the invention;
- Figure 9 is a partial perspective view of the support plate according to the third preferred embodiment of the invention;
- Figure 10 is a lateral view of the rollers fit for moving the strap away from the wall according to both the second and the third preferred embodiments of the invention.

[0027] With reference to Figure 2A, an assembly 1 according to a first preferred embodiment of the invention is shown, in a resting position, basically composed by a handle 10, unblocking means 20 fit for unblocking the rolling shutter strap brake B, handle seizing means 30 fit for seizing the rolling shutter strap S, actuating means 70 fit for actuating the seizing means 30, a safety device 90 and a support plate 50 provided with a seat 40 fit for holding the handle 10.

[0028] Referring now to Figure 3A, the main elements of handle 10 are shown in detail.

[0029] The handle comprises a casing 60 having an ergonomic shape so to allow any user to easily hold it.

[0030] The casing 60 can be formed by two halves to be joined, preferably after assembling them on opposite sides of the strap S, by known methods such as, for instance, gluing or welding or simply by inserting properly provided pins in corresponding proper seats; alternatively, said casing 60 could be formed either by a hollow one-piece moulded element and a relevant plane covering or by two portions, the first one substantially consisting in the handle head and the second one substantially consisting in the handle grip area.

[0031] The casing 60 is provided with proper openings 61 and 63 to insert the rolling shutter strap S and to guide its sliding movement; said casing 60 is also provided with a proper protuberance 65 to secure said handle 10 inside said seat 40.

[0032] Said casing 60 is preferably made of plastics, but different materials, such as metals or metal alloys,

can also be employed.

[0033] Inside the casing 60 the handle seizing means 30 are placed, said seizing means 30 being formed by at least a first element 31 and a second element 33; alternatively, said seizing means 30 can be formed by a single piece, therefore being said first element 31 and said second element 33 respectively a first portion and a second portion of the single piece seizing means.

[0034] Said first element 31 of the handle seizing means 30 is secured onto the casing 60 at two points K and J, respectively in the handle head and in the rear part of the handle 10, as visible in Figure 2A.

[0035] Said first element 31 has an uneven surface, for instance with bulges or seams, and it is preferably made of metal; said first element 31 is also provided with a proper opening 35 to let the strap S pass through; in case the alternative single piece seizing means 30 are provided, a further opening is provided in the connecting part of said first and second portions.

[0036] Also said second element 33 is secured onto the casing 60, at point Y, as visible in Figure 2A; said second element 33, preferably made of metal, has an uneven surface too, for instance with pits or grooves corresponding to bulges or seams of the first element 31.

[0037] The actuating means 70 are hinged to the casing 60 by a pivot 67 at point P and it can therefore rotate when it is manually pressed; to facilitate the handle grip, a finger-shaped plate 80, preferably made of rubber, is provided to be assembled onto said actuating means 70.

[0038] By making said rotation, the upper end 78 of the actuating means 70 pushes towards the strap S said second element 33 of the handle seizing means 30 while, by simultaneously gripping the handle 10, the first element 31 is pulled towards the strap S; in consequence of these push and pull movements, said first and second elements come close to each other, so gradually seizing the strap S up to completely clamping it.

[0039] The mutual movements above described are well illustrated in Figure 5, which will be expounded hereinafter.

[0040] Again with reference to Figure 3A, it is visible the unblocking means 20 fit for unblocking the rolling shutter strap brake B; said unblocking means 20 is preferably a roller provided with a pin 22 on each of its two bases.

[0041] Said pins 22 are arranged into corresponding holes 69 provided in the lower section of the casing 60, so that the unblocking means 20 are movably connected to said casing 60.

[0042] Figure 4 clearly shows how said unblocking means 20 are arranged with respect to the rolling shutter strap brake B, and specifically just onto, or alternatively a few millimetres upon, said strap brake B and placed between said strap S and its relevant winder.

[0043] The safety device 90 is further illustrated; said safety device 90 is hinged to the internal surface of the handle 10 and it is provided with an actuating button.

[0044] When the handle is in a resting position, said safety device 90 can be put in its ON position by means of said button, whereby it locks the strap S so preventing accidental sudden rolling shutters shutting downs as well as consequent possible injuries in case, for example, a child tries to activate the assembly itself by pulling it.

[0045] The safety device 90 is easily returned to its OFF position by releasing said actuating button.

[0046] Figure 6 shows the support plate 50 provided with a seat 40 fit for holding the handle 10; many different configurations can be designed for both said support plate 50 and said seat 40, mainly depending on the handle design.

[0047] Said support plate 50 and said seat 40 thereof are located above the strap brake B and behind the strap S.

[0048] The support plate 50 is fastened to a plane surface preferably by means of screws, said surface being either a wall, or a door jamb or a conventional cover plate C already installed.

[0049] When resting as well as during the lowering manoeuvre of a rolling shutter, handle 10 is firmly housed inside the support plate 50 and, specifically, inside seat 40.

[0050] Referring now again to Figure 5, the use of handle 10 during the lowering and the lifting manoeuvres of rolling shutters will be explained.

[0051] When darkening is needed, a user grips the handle 10, which has compulsory to be hold inside its seat 40 provided in the support plate 50, and slightly pulls said handle 10 towards himself/herself at the same time starting to press the actuating means 70 according to arrow AA.

[0052] Due to the pull movement, unblocking means 20 slightly move in a direction substantially perpendicular to the wall and opposite to the wall itself so pushing in the same direction the strap S that, this way, releases the rolling shutter strap brake B; said strap S is prevented to suddenly slide upwards, also avoiding the consequent sudden rolling shutters shutting down, thanks to the fact that the user, by pressing said actuating means 70, gradually seizes the strap S and manages to easily weigh out the sliding friction force during lowering of the rolling shutter.

[0053] More particularly, due to the rotation of said actuating means 70 around point P, the actuating means upper end 78 pushes towards the strap S, according to arrow AB, the seizing means second element 33 that consequently moves towards the strap S according to arrow AC; at the same time, said rotation of said actuating means 70 around point P pushes in the direction of arrow AD the rear part of the seizing means first element 31, which results in a movement towards the strap S according to arrow AE.

[0054] On the contrary, when lightening is needed, a user grips the handle 10, which has in this case to be pulled out from its seat 40 provided in the support plate

50, and places said handle 10 as high as he/she can; he/she then firmly press the actuating means 70 so to completely clamp the strap S and brings downwards the handle 10 so performing a traction movement that makes the rolling shutter be lifted.

[0055] The above action is then repeated as many times as it is needed to raise the rolling shutter up to the desired position.

[0056] It has to be noted that one hand only is required to perform both the lowering and the lifting manoeuvres of rolling shutters.

[0057] It is also worthy to say that the first preferred embodiment of the invention disclosed hereinbefore is of particular interest and advantage, due to the fact that handle 10 can be applied to any conventional cover plate C according to the known prior art, and, notably, to cover plates already installed, thus without need of compulsorily changing them.

[0058] With reference to Figure 2B, an assembly 101 according to a second preferred embodiment of the invention is shown, in a resting position, basically composed by a handle 110, unblocking means 120 fit for unblocking the rolling shutter strap brake B, handle head seizing means 130 fit for seizing the rolling shutter strap S, actuating means 170 fit for actuating the seizing means 130 and twin seats 140, provided in the support plate 150, fit for holding the handle 110.

[0059] Referring now to Figure 3B, the above-mentioned elements are shown in detail.

[0060] As far as the handle 110 is concerned, it is formed by at least an external shell 160, a central arm or actuating means 170 and an internal finger-shaped plate 180.

[0061] The external shell 160 is manufactured by moulding as a hollow one-piece element having an ergonomic shape so to allow any user to easily hold it.

[0062] Said external shell 160 comprises at least a head 165, a fixed protuberance 161 and twin peninsular elements 163 fit for inserting the handle 110 into corresponding twin seats 140 obtained in the support plate 150.

[0063] Said external shell 160 is preferably made of plastics, but different materials, such as metals or metal alloys, can also be employed.

[0064] The central arm 170 is properly shaped so to perfectly adapt into the external shell 160 and it is preferably made of metal.

[0065] Said central arm 170 is hinged to the external shell 160 and it is movable when pushed towards a spring 167; in order to facilitate the handle grip, the internal finger-shaped plate 180, preferably made of rubber, is provided to be assembled onto said central arm 170.

[0066] Said central arm 170 comprises a cylindrical, rotating around a pivot pin, corrugated element 175 that forms, together with a corresponding corrugated element 177, a seizing means 130.

[0067] Said seizing means 130 are placed inside the

handle head 165 and, particularly, said cylindrical rotating corrugated element 175 and said corresponding corrugated element 177 are placed on the opposite sides of the strap S; the interaction by contrast of said elements 175 and 177, activated by the movement of the said central arm 170, allows the control of the strap S, by sliding friction, during lowering and facilitates the lifting manoeuvre, by traction, of the strap S itself.

[0068] As far as the rolling shutter strap brake unblocking means 120 are concerned, it is formed by an upper cylindrical element 121 and a lower element 122, arranged in parallel, whose ends are correspondingly connected to each other through twin thin plates 123 having an "L" shape.

[0069] Said means 120 are able to swing between a resting vertical position and a inclined working position, said swinging between said two positions being led by said protuberance 161; in particular, said means 120 swing from the resting vertical position to the inclined working position when pushed by said protuberance 161 provided in said handle 110, so unblocking the rolling shutter strap brake B.

[0070] Also referring to Figure 7-I, the way said brake unblocking means 120 are positioned with respect to both the strap S and to the strap brake B, is shown.

[0071] Said upper cylindrical element 121 of said means 120 are positioned behind the strap S and, more precisely, between said strap S and its relevant winder, while said lower element 122 of said means 120 are positioned ahead the strap S; said upper cylindrical element 121 is also positioned just onto, or alternatively a few millimetres upon, the strap brake B.

[0072] As far as the support plate 150 is concerned, it is located behind the strap S and the twin seats 140 thereof are located below the strap brake B; said support plate 150 is fastened to a plane surface preferably by means of screws.

[0073] When resting as well as during the lowering manoeuvre of a rolling shutter, handle 110 is firmly housed inside the support plate 150 and, specifically, inside the twin seats 140.

[0074] The support plate 150, besides the twin seats 140 obtained in the support plate 150 fit for inserting the handle 110, further comprises subsidiary means fit for holding both the handle head 165 and the rolling shutter strap brake unblocking means 120.

[0075] In particular, and with reference to Figure 8, said support plate 150 is provided with first subsidiary means 151 fit for holding said rolling shutter strap brake unblocking means 120 and it is further provided with second subsidiary means 153 fit for holding said handle head 165.

[0076] Two holes 197 can be additionally provided in the support plate 150.

[0077] Referring to Figure 10, two rollers 97 are shown, said rollers 97 being parallel to each other; said holes 197 are provided for holding said rollers 97.

[0078] Said rollers 97 maintain the strap S at a proper

distance from the wall, the first one being positioned beside the strap S and the second one being positioned ahead the strap S.

[0079] With reference to Figure 2C, an assembly 201 according to a third preferred embodiment of the invention is shown, in a resting position, basically composed by a handle 210, unblocking means 220 fit for unblocking the rolling shutter strap brake B, handle head seizing means 230 fit for seizing the rolling shutter strap S, actuating means 270 fit for actuating the seizing means 230 and twin seats 240, provided in the support plate 250, fit for holding the handle 210.

[0080] Referring now to Figure 3C, the above-mentioned elements are shown in detail.

[0081] As far as the handle 210 is concerned, it is formed by at least an external shell 260, a central arm or actuating means 270 and an internal finger-shaped plate 280.

[0082] The external shell 260 is manufactured by moulding as a hollow one-piece element having an ergonomic shape so to allow any user to easily hold it.

[0083] Said external shell 260 comprises at least a head 265 and twin peninsular elements 263 fit for hooking the handle 210 onto corresponding twin seats 240 of the support plate 250.

[0084] Said external shell 260 is preferably made of plastics, but different materials, such as metals or metal alloys, can also be employed.

[0085] The central arm 270 is properly shaped so to perfectly adapt into the external shell 260 and it is preferably made of metal.

[0086] Said central arm 270 comprises a protuberance 261 movable around a pivot; said central arm 270 is hinged to the external shell 260 and it is movable in its turn when pushed towards a spring 267; in order to facilitate the handle grip, the internal finger-shaped plate 280, preferably made of rubber, is provided to be assembled onto said central arm 270.

[0087] Said central arm 270 further comprises a cylindrical, rotating around a pivot pin, corrugated element 275 that forms, together with a corresponding corrugated element 277, a seizing means 230.

[0088] Said seizing means 230 are placed inside the handle head 265 and, particularly, said cylindrical rotating corrugated element 275 and said corresponding corrugated element 277 are placed on the opposite sides of the strap S; the interaction by contrast of said elements 275 and 277, activated by the movement of the said central arm 270, allows the control of the strap S, by sliding friction, during lowering and facilitates the lifting manoeuvre, by traction, of the strap S itself.

[0089] Said movable protuberance 261 and said cylindrical rotating corrugated element 275 are both mounted on said central arm 270 of the handle 210 and are, in consequence, activated at the same time, so releasing the strap brake B while starting controlling the upwards sliding movement of the strap S.

[0090] As far as the rolling shutter strap brake un-

blocking means 220 are concerned, it is formed by an upper cylindrical element 221 and a lower element 222, arranged in parallel, whose ends are correspondingly connected to each other through twin thin plates 223 having an "L" shape.

[0091] Said means 220 are able to swing between a resting vertical position and a inclined working position, said swinging between said two positions being led by said protuberance 261; in particular, said means 220 swing from the resting vertical position to the inclined working position when pushed by said protuberance 261 provided in said handle 210, so unblocking the rolling shutter strap brake B.

[0092] Thanks to the provision of the movable protuberance 261, which provides an additional movement to the movement of the central arm 270, the unblocking operation of the rolling shutter strap brake B is made easier as well as more effective.

[0093] Also referring to Figure 7-II, the way said brake unblocking means 220 are positioned with respect to both the strap S and to the strap brake B, is shown.

[0094] Said upper cylindrical element 221 of said means 220 are positioned behind the strap S and, more precisely, between said strap S and its relevant winder, while said lower element 222 of said means 220 are positioned ahead the strap S; said upper cylindrical element 221 is also positioned just onto, or alternatively a few millimetres upon, the strap brake B.

[0095] As far as the support plate 250 is concerned, it is located behind the strap S and the twin seats 240 thereof are located below the strap brake B; said support plate 250 is fastened to a plane surface preferably by means of screws.

[0096] When resting as well as during the lowering manoeuvre of a rolling shutter, handle 210 is firmly housed inside the support plate 250 and, specifically, inside the twin seats 240.

[0097] The support plate 250, besides the twin seats 240 of the support plate 250 fit for hooking the handle 210, further comprises subsidiary means fit for holding both the handle head 265 and the rolling shutter strap brake unblocking means 220.

[0098] In particular, and with reference to Figure 9, said support plate 250 is provided with first subsidiary means 251 fit for holding said rolling shutter strap brake unblocking means 220; it is further provided with second subsidiary means 253 and third subsidiary means 255 respectively fit for holding said handle head 265 and said handle 210 through said peninsular elements 263.

[0099] Two holes 297 can be additionally provided in the support plate 250.

[0100] Referring to Figure 10, two rollers 97 are shown, said rollers 97 being parallel to each other; said holes 297 are provided for holding said rollers 97.

[0101] Said rollers 97 maintain the strap S at a proper distance from the wall, the first one being positioned beside the strap S and the second one being positioned ahead the strap S.

[0102] The lowering and the lifting manoeuvres of rolling shutters will be now described in detail when using both the handle 110 according to the second preferred embodiment of the invention and the handle 210 according to the third preferred embodiment of the invention. When darkening is needed, a user grips the handle 110; 210, which has compulsory to be hold inside its twin seats 140;240 provided in the support plate 150;250, and slightly pulls downwards said handle 110;210 at the same time starting to press the internal finger-shaped plate 180;280 coupled to the actuating means 170;270.

[0103] Due to the pull movement, the unblocking means 120;220 slightly move downwards so pushing in the same downward direction the rolling shutter strap brake B that, this way, releases the strap S; said strap S is prevented to suddenly slide upwards, also avoiding the consequent sudden rolling shutters shutting down, thanks to the fact that the user, by pressing said internal finger-shaped plate 180;280 coupled to the actuating means 170;270, gradually seizes the strap S and manages to easily weigh out the sliding friction force during lowering of the rolling shutter.

[0104] On the contrary, when lightening is needed, a user grips the handle 110;210, which has in this case to be pulled out from its twin seats 140;240 provided in the support plate 150;250, and places said handle 110;210 as high as he/she can; he/she then firmly press the internal finger-shaped plate 180;280 coupled to the actuating means 170;270 so to completely clamp the strap S and brings downwards the handle 110;210 so performing a traction movement that makes the rolling shutter be lifted.

[0105] The above action is then repeated as many times as it is needed to raise the rolling shutter up to the desired position.

[0106] It has to be noted that one hand only is required to perform both the lowering and the lifting manoeuvres of rolling shutters.

[0107] The evident advantages of the assembly according to the present invention consist in its high effectiveness, in its huge simplicity and practicality of use, in its cheapness.

[0108] Notwithstanding the invention has been disclosed with reference to preferred embodiments, it is in general susceptible of further applications and variations that are intended to be included within the protective scope, as it will be evident for the expert of the field.

[0109] In particular, notwithstanding the invention has been disclosed with reference (i) to specific designs with respect to the handle shape, (ii) to specific arrangements with respect to the seizing means located inside the handle or handle head, (iii) to specific configurations with respect to the at least one seat fit for holding the handle provided in the support plate and (iv) to specific configurations with respect to the support plate, similar applications and results can be achieved in case, respectively (I) other shapes are designed for the handle, (II) alternative seizing means are chosen to be located

inside said handle or handle head, (III) other configurations are provided for the at least one seat fit for holding the handle provided in the support plate and (IV) other configurations are provided for the support plate in order, for instance, to meet definite ergonomic and/or aesthetic and/or functional requirements.

Claims

1. An assembly (1; 101; 201), suitable to facilitate lowering and lifting manoeuvres of rolling shutters, said rolling shutters being of the type equipped with a rolling shutter strap (S) for the manual lowering and lifting manoeuvres thereof and with a winder (W) to hold the strap (S) under strain, said winder (W) being provided with a strap brake (B) able to restrain the strap (S), said assembly (1; 101; 201) comprising a handle (10; 110; 210) for performing the lowering and lifting manoeuvres of the rolling shutters, seizing means (30; 130; 230) for seizing said strap (S), actuating means (70; 170; 270) for actuating said seizing means (30; 130; 230) by co-operating with said handle (10; 110; 210), **characterised in that** it further comprises a support plate (50; 150; 250) for releasably holding said handle (10; 110; 210).
2. An assembly (1; 101; 201) according to claim 1, wherein said support plate (50; 150; 250) is a stand-alone element provided with at least one seat (40; 140; 240) fit for holding the handle (10; 110; 210).
3. An assembly (1; 101; 201) according to claim 2, wherein said support plate (50; 150; 250) is located behind the strap (S) and wherein said at least one seat (40; 140; 240) is located either above or below the strap brake (B).
4. An assembly (1; 101; 201) according to claim 1, **characterised in that** it further comprises unblocking means (20; 120; 220) fit for unblocking the rolling shutter strap brake (B) when said actuating means (70; 170; 270) are operated and said seizing means (30; 130; 230) are actuated, and said handle (10; 110; 210) is firmly secured to said at least one seat (40; 140; 240), whereby said strap (S) easily unwinds from said winder (W) at a weighed out sliding rate.
5. An assembly (1; 101; 201) according to claim 4, wherein said unblocking means (20; 120; 220) are placed upon said strap brake (B) and between the strap (S) and the winder (W).
6. An assembly (1) according to claim 1, wherein said handle (10) further comprises a casing (60), provided with openings (61, 63) to insert the rolling shutter

strap (S).

7. An assembly (1) according to claim 1, wherein said seizing means (30) comprise a first element (31) and a second element (33) that co-operate to seize said strap (S). 5
8. An assembly (1; 101; 201) according to claim 1, wherein said actuating means (70; 170; 270) are provided with a finger-shaped plate (80; 180; 280). 10
9. An assembly (1) according to claims 1 and 6, wherein said actuating means (70) are hinged to said casing (60) by a pivot (67), so being movable. 15
10. An assembly (1) according to claim 1, wherein said handle (10) further comprises a safety device (90). 20
11. An assembly (101; 201) according to claims 2 and 4, **characterised in that** said support plate (150; 250) is further provided with first subsidiary means (151; 251) fit for holding said unblocking means (120; 220), second subsidiary means (153; 253) fit for holding said handle head (165; 265), and two holes (197; 297) for holding two rollers (97) parallel to each other, the first one being positioned beside the strap (S) and the second one positioned ahead the strap (S). 25
12. An assembly (101; 201) according to claim 11, wherein said unblocking means (120; 220) comprise an upper cylindrical element (121; 221) and a lower element (122; 222), arranged in parallel, whose ends are correspondingly connected to each other through thin plates (123; 223) having an "L" shape, wherein said upper cylindrical element (121; 221) of said unblocking means (120; 220) is positioned behind the strap (S) upon the strap brake (B) while said lower element (122; 222) of said unblocking means (120; 220) is positioned ahead the strap (S), and wherein said unblocking means (120; 220) are able to swing between a resting vertical position and a inclined working position. 30
35
40
13. An assembly (101; 201) according to claim 12, wherein said handle (110; 210) further comprises an external shell (160; 260), provided with twin peninsular elements (163; 263) to hang said handle (110; 210) to said corresponding at least one seat (140; 240) obtained in said support plate (150; 250), and wherein either said external shell (160) or said central arm or actuating means (270) is provided with a protuberance (161; 261) fit for making said unblocking means (120; 220) to swing between a resting vertical position and a inclined working position, so unblocking the rolling shutter strap brake (B) when said protuberance (161; 261) pushes said unblocking means (120; 220). 45
50
55
14. An assembly (101; 201) according to claim 11, wherein said seizing means (130; 230) comprise a cylindrical, rotating around a pivot pin, corrugated element (175; 275) and a corresponding corrugated element (177; 277) that co-operate to seize said strap (S).

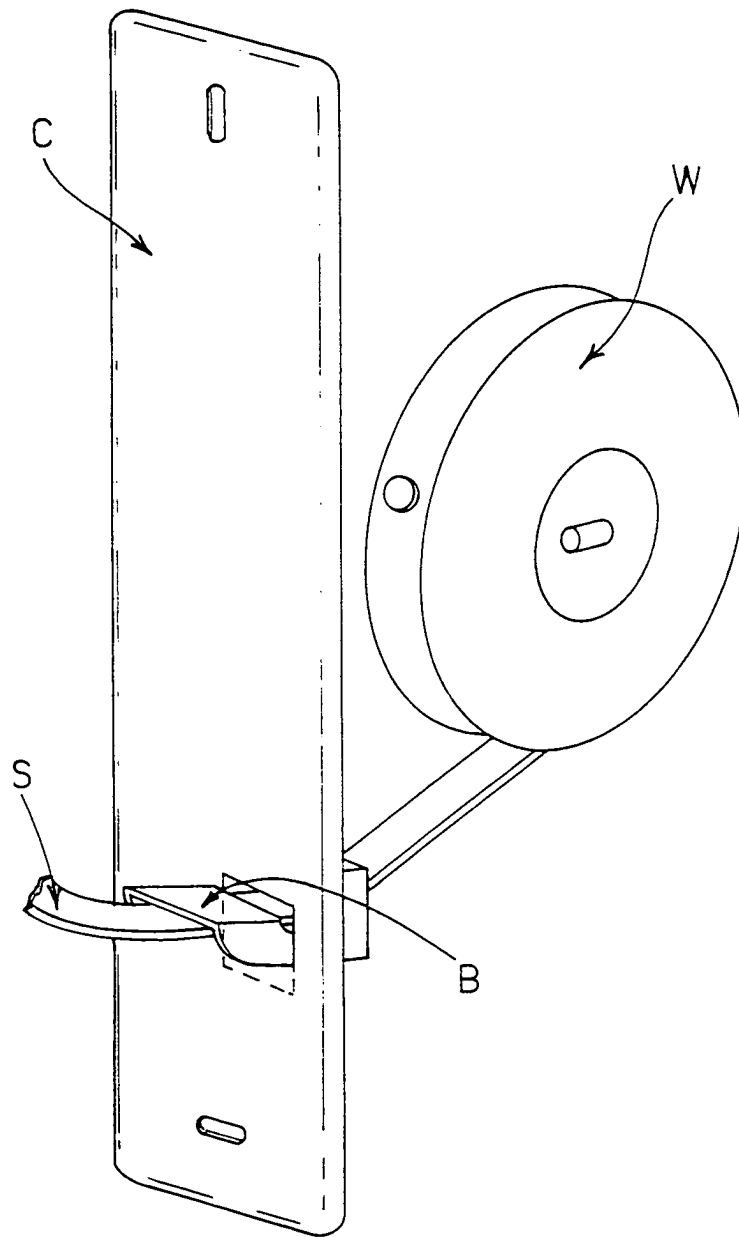


FIG. 1

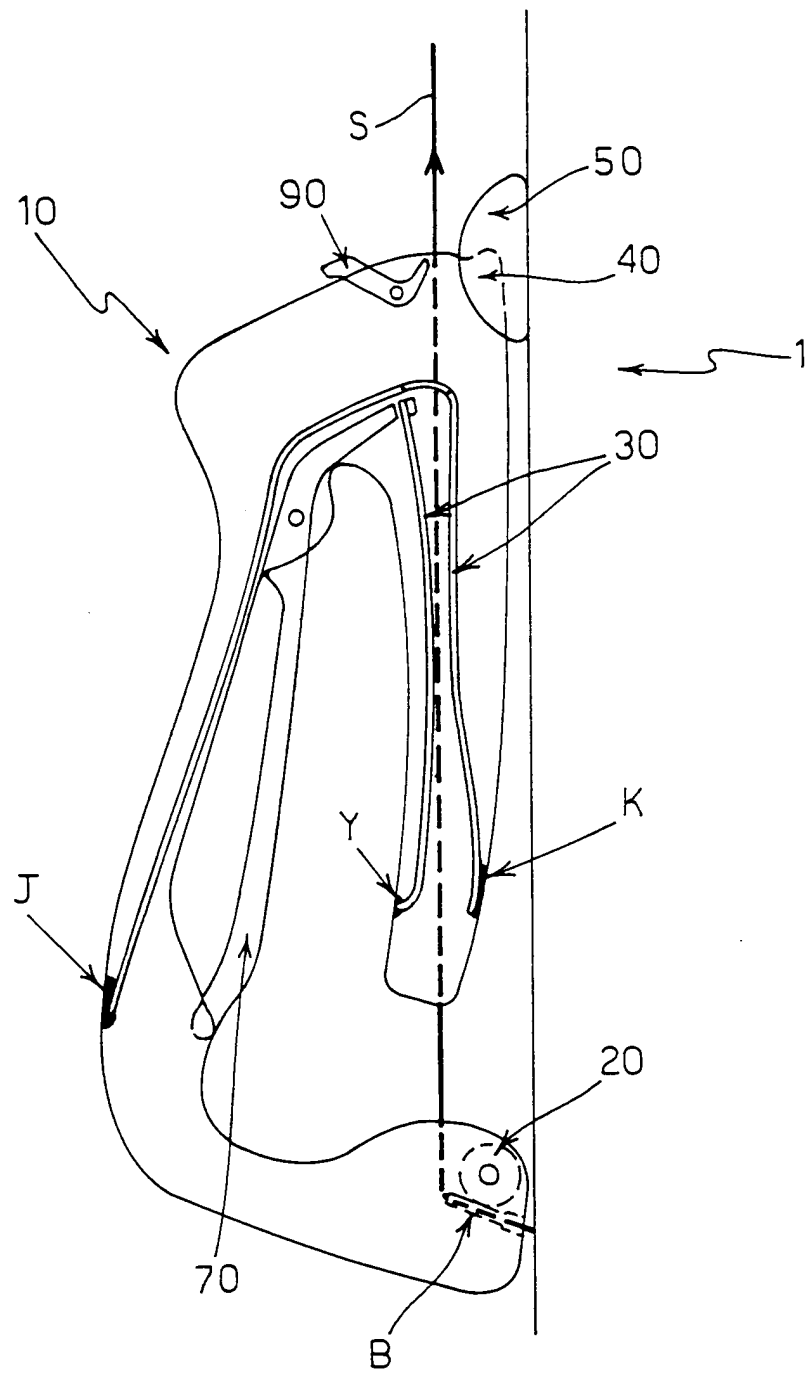


FIG. 2A

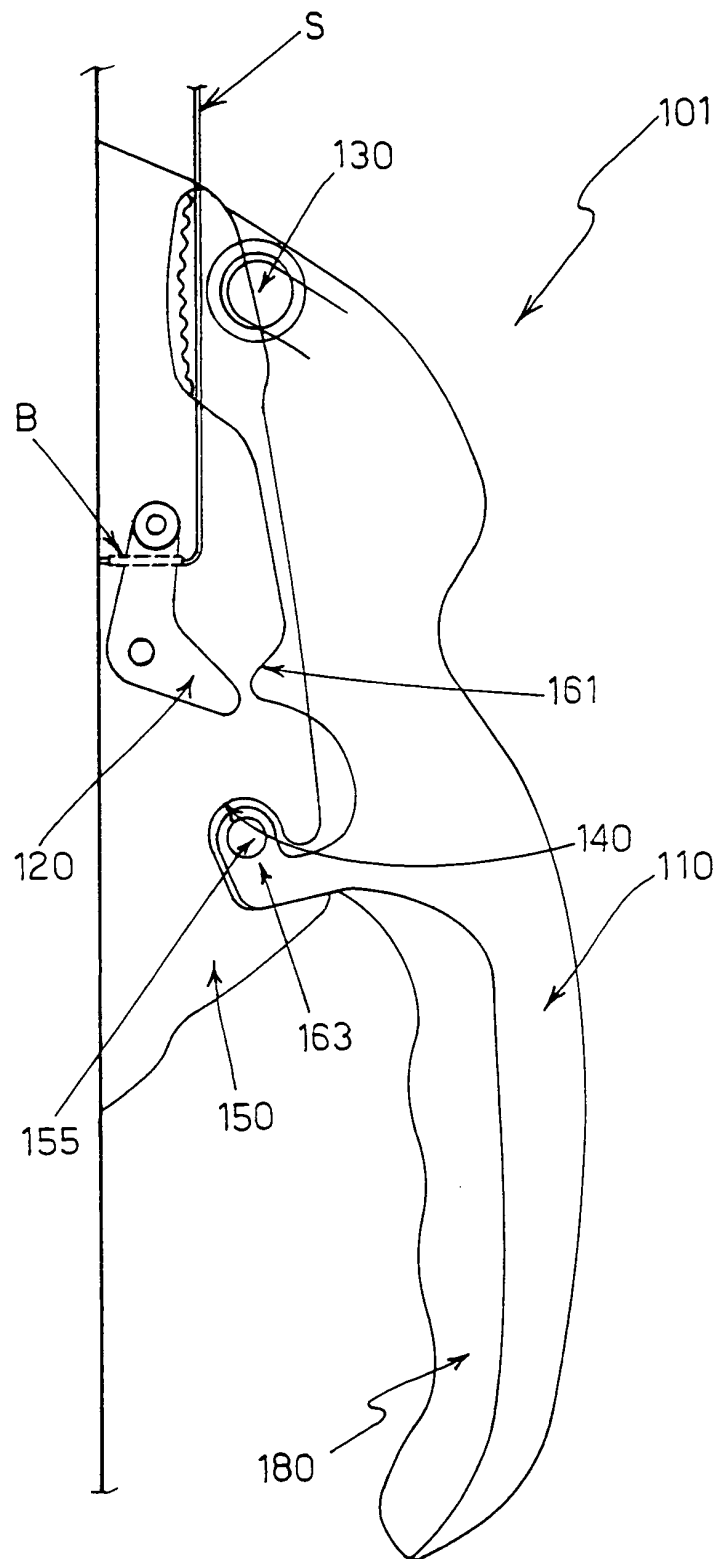


FIG. 2B

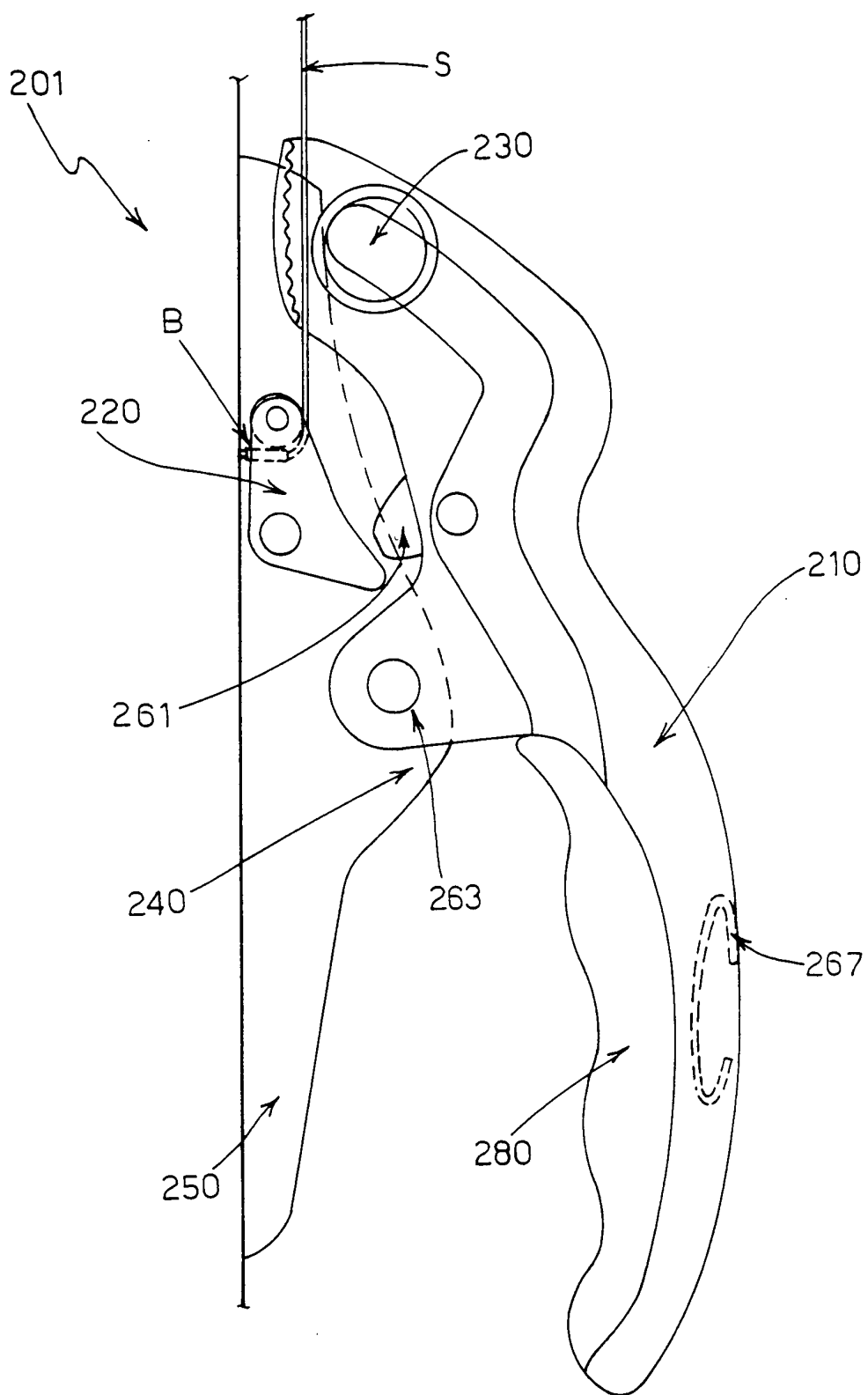


FIG. 2C

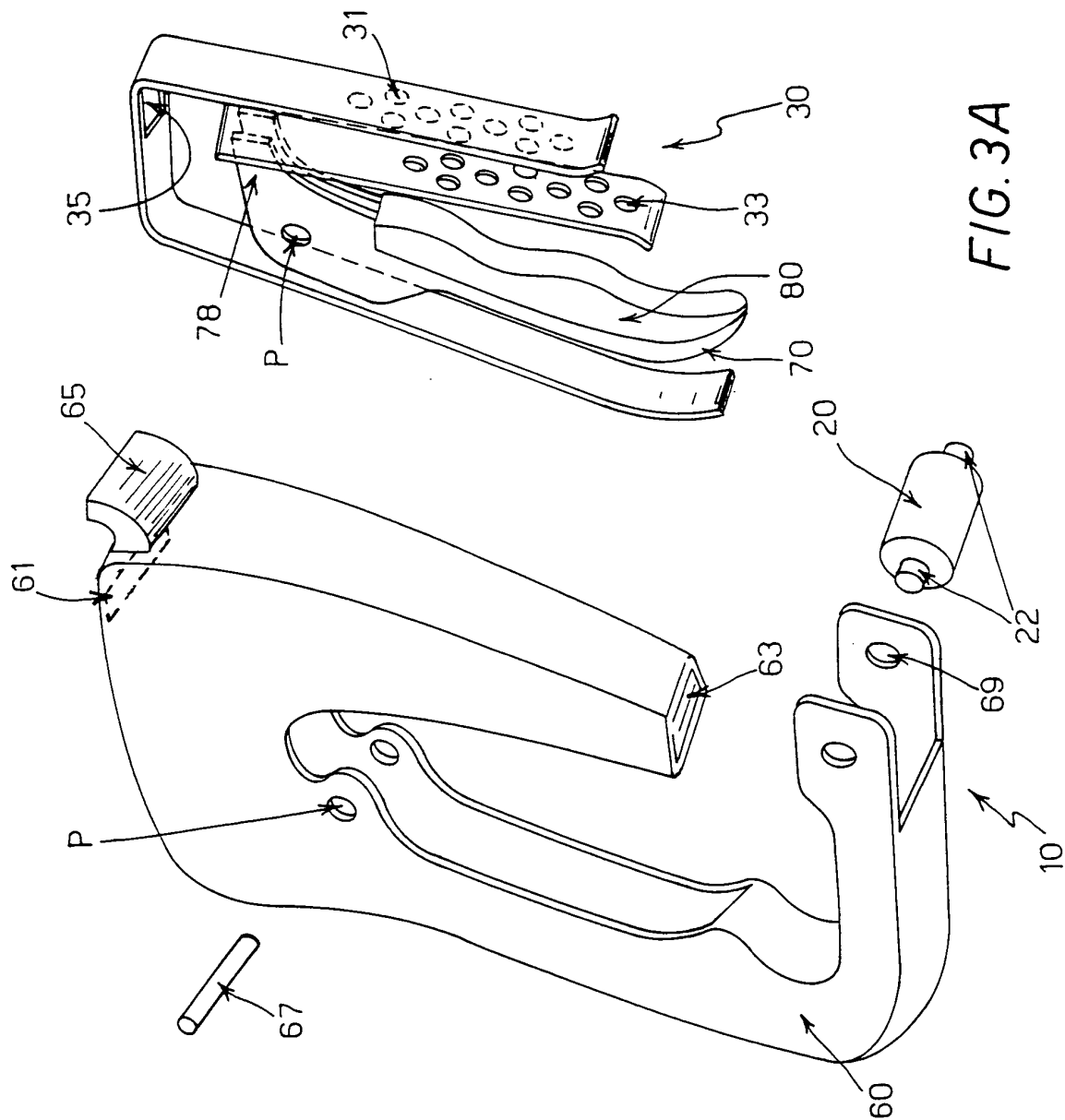


FIG. 3A

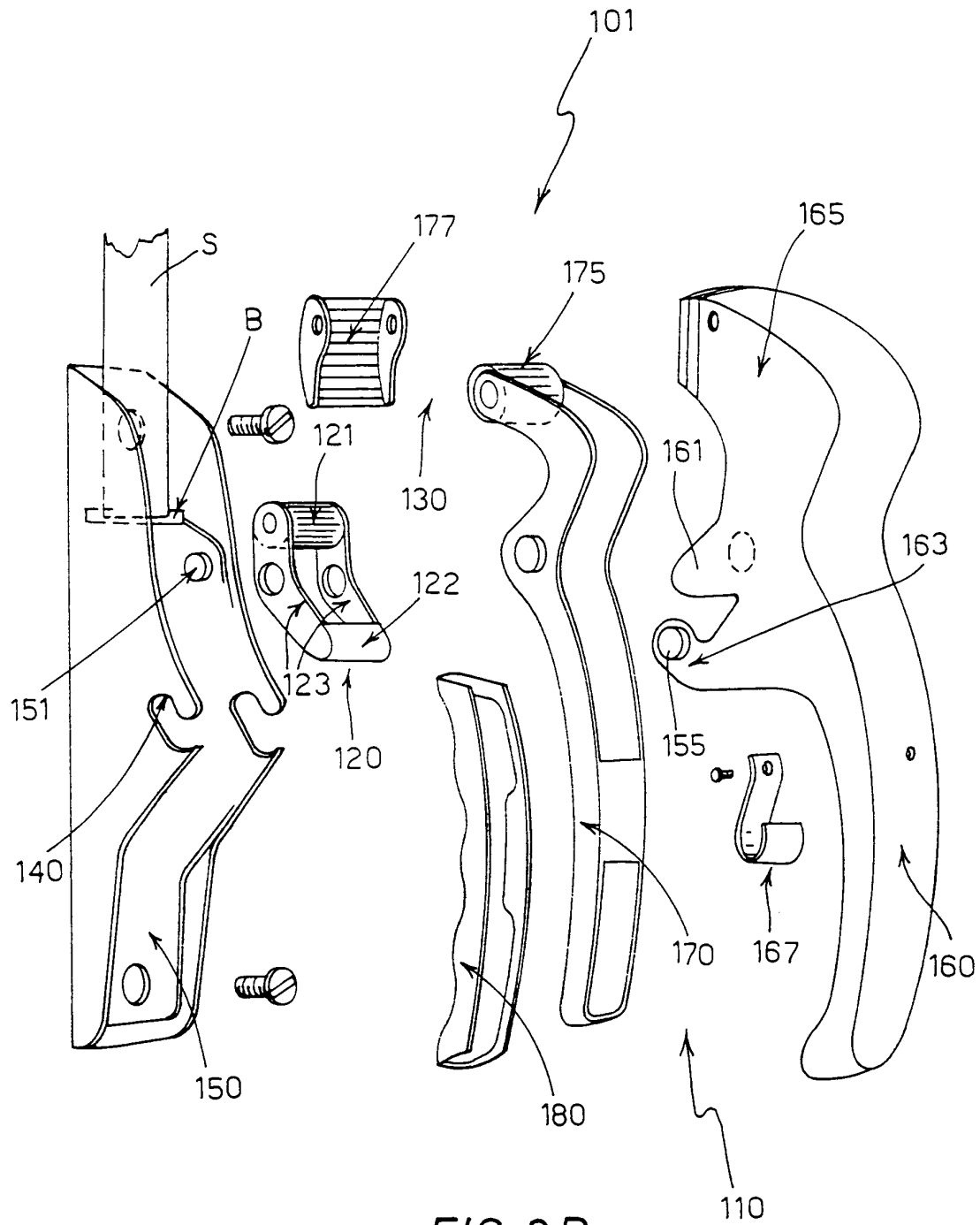


FIG. 3B

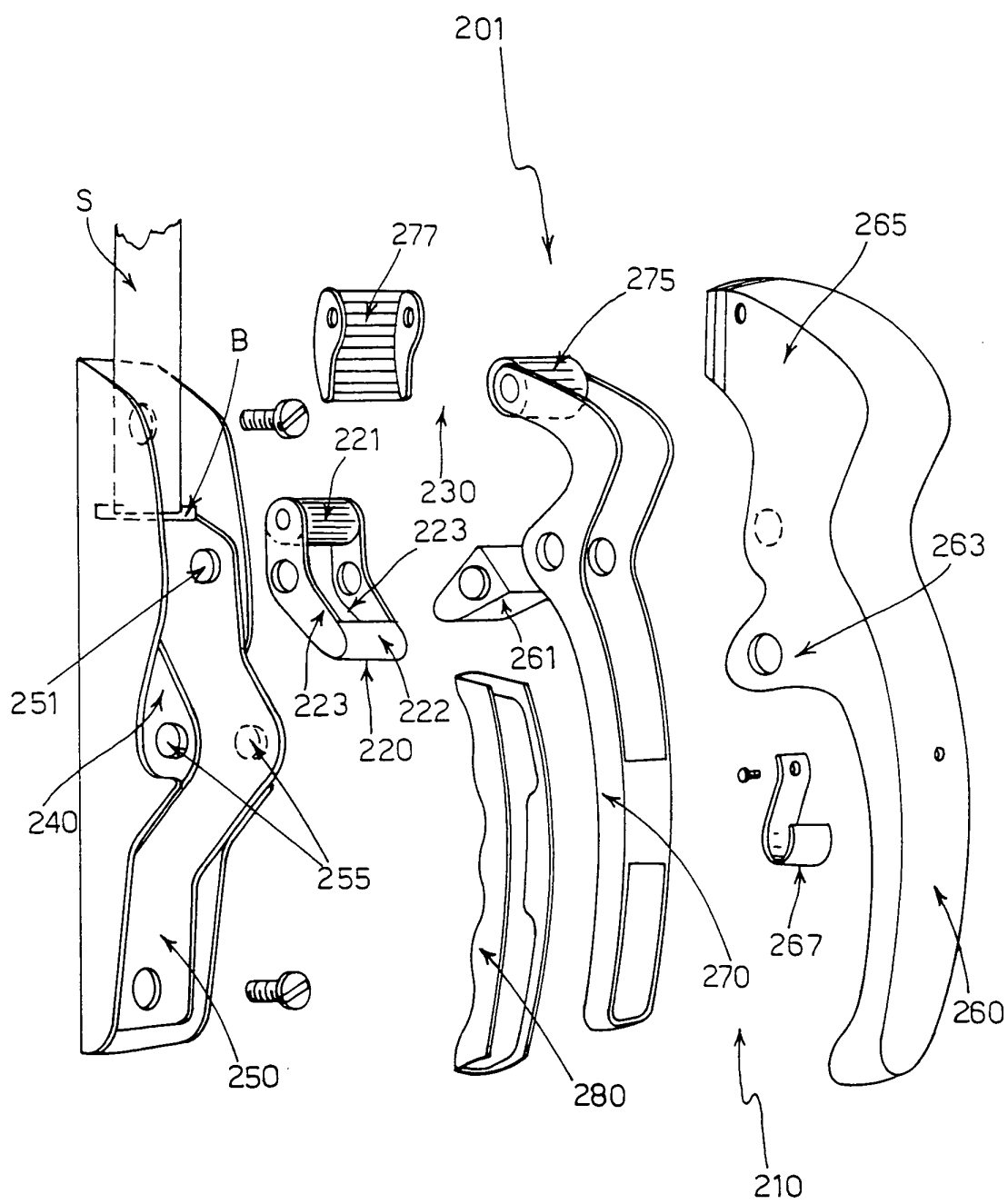


FIG. 3C

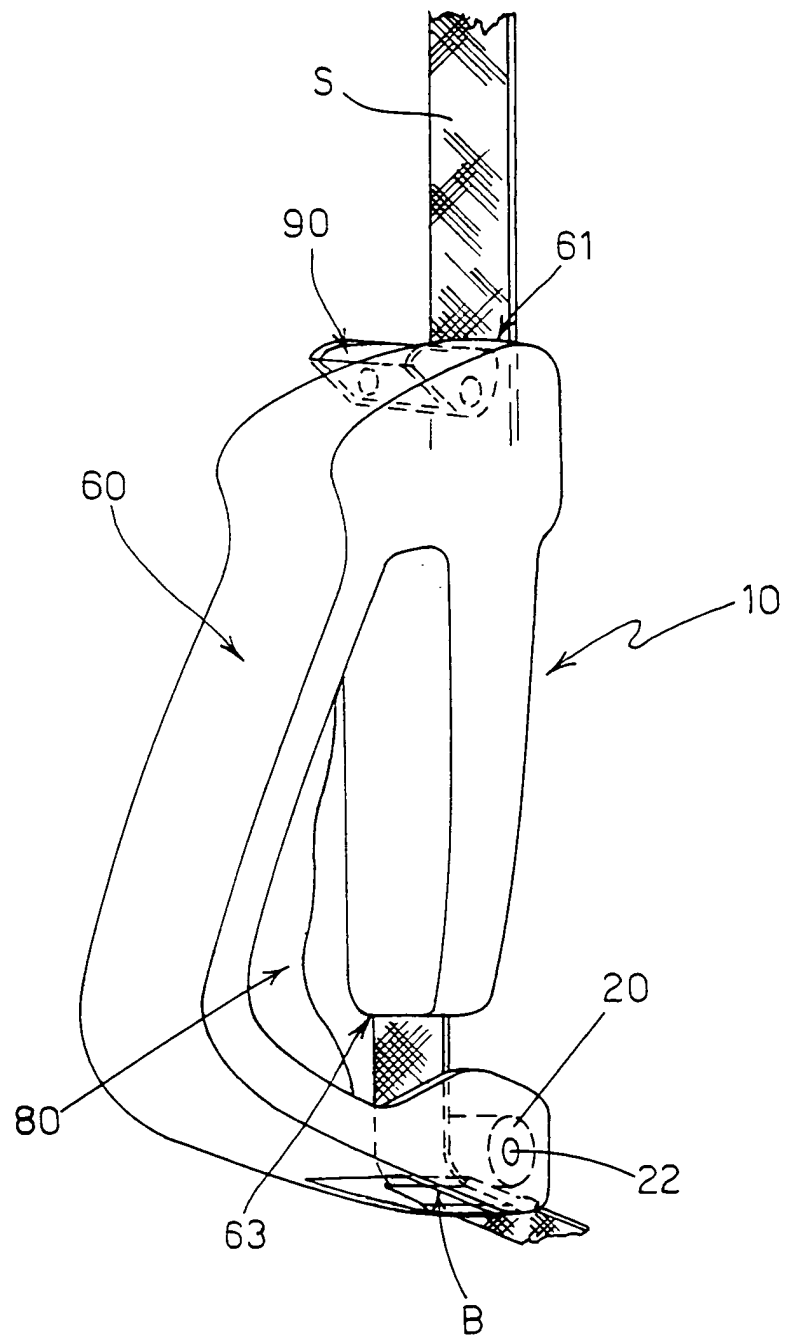


FIG. 4

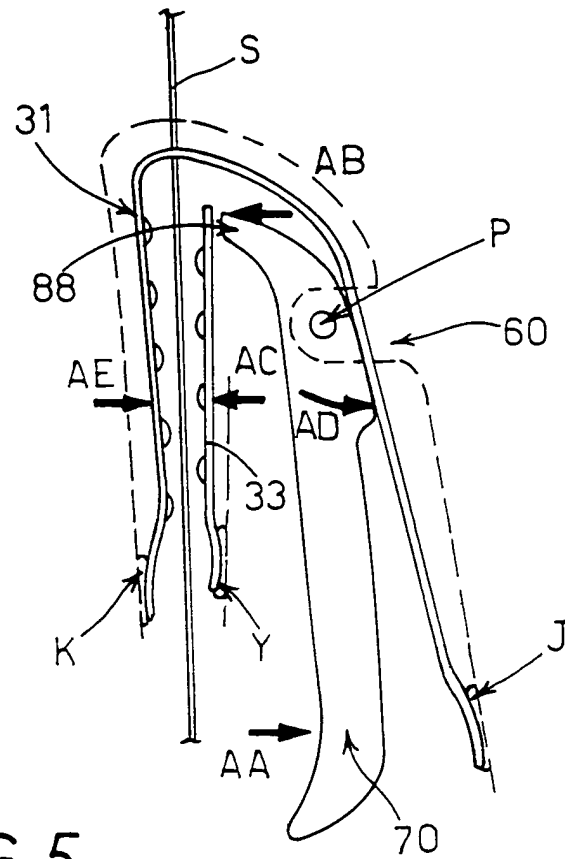


FIG. 5

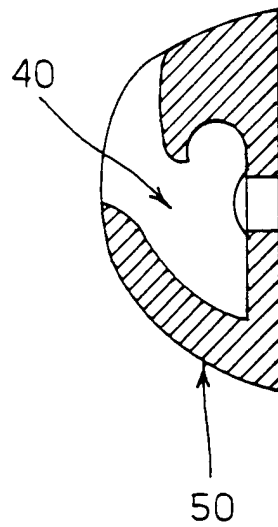
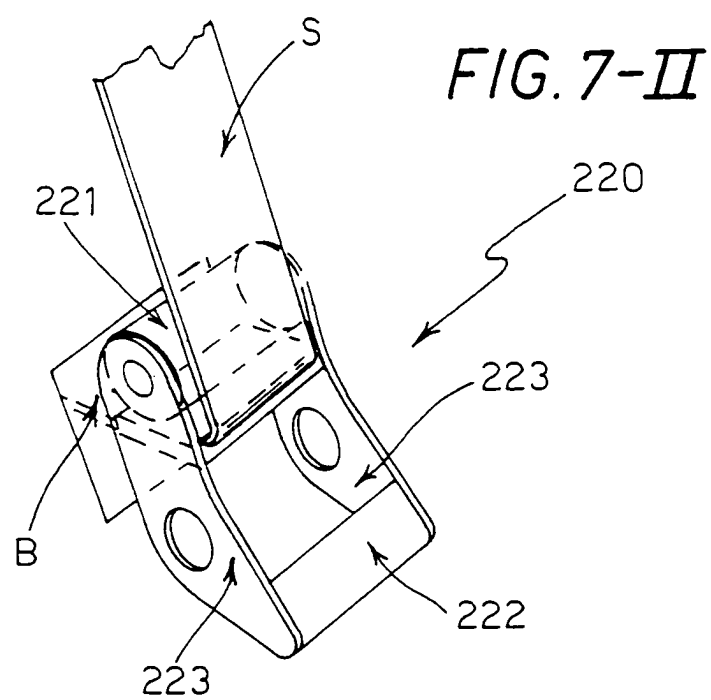
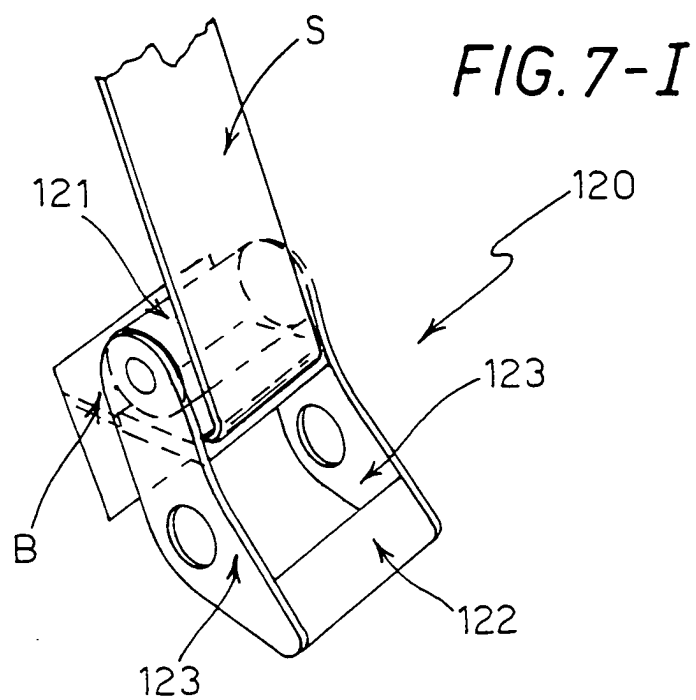


FIG. 6



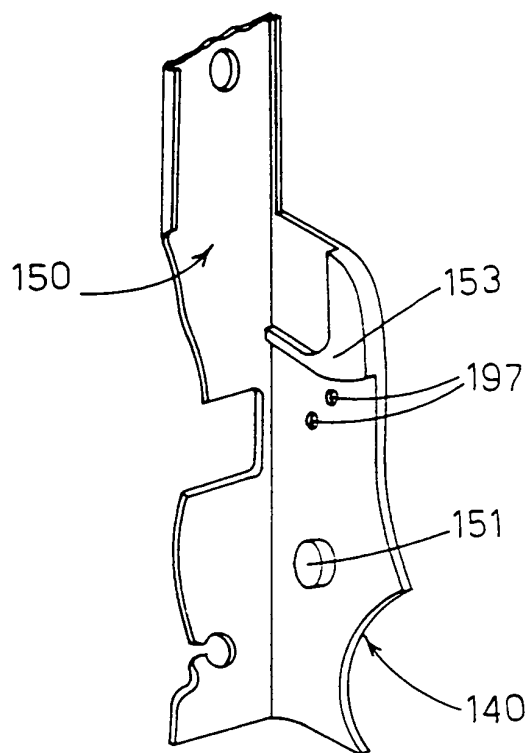


FIG. 8

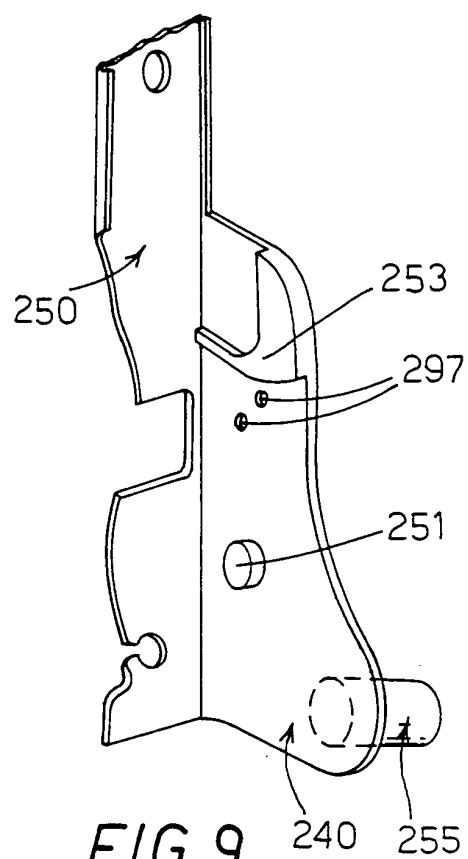


FIG. 9

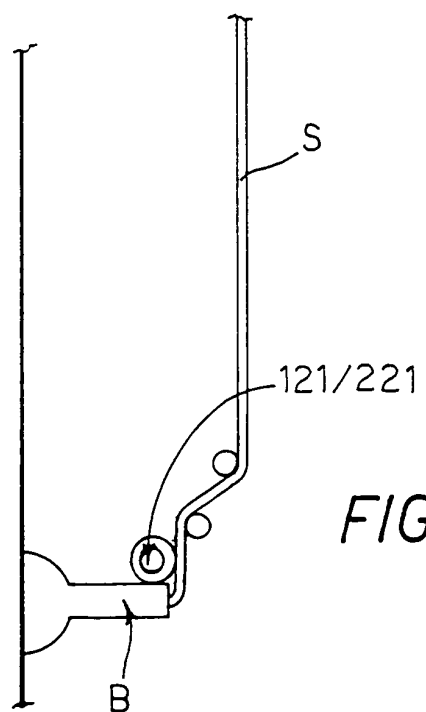


FIG. 10