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(54) **Auto-retractable side table for folding seats**

(57) The present invention relates to an auto-retractable side table for folding seats, in which the side table (1) is integrally joined to a shaft (4) assembled in a movable and rotatable manner with respect to a tubular arm (5), with a spring (16) locating the side table (1) in the operative position, a transverse pin (8) having been provided which operates in a window (7) of the tubular arm

(5) and traverses the shaft (4) to cause the locking by means of a catch (19) in the retracted or folded position, such that in the operative position the side table (1) is located stably in the horizontal position due to the interlocking carried out by the inner end of the shaft (4) on an upper interlock (12) formed in a main body or casing (9), further including a spring (14) acting as a brake in the retraction movement of the side table (1).

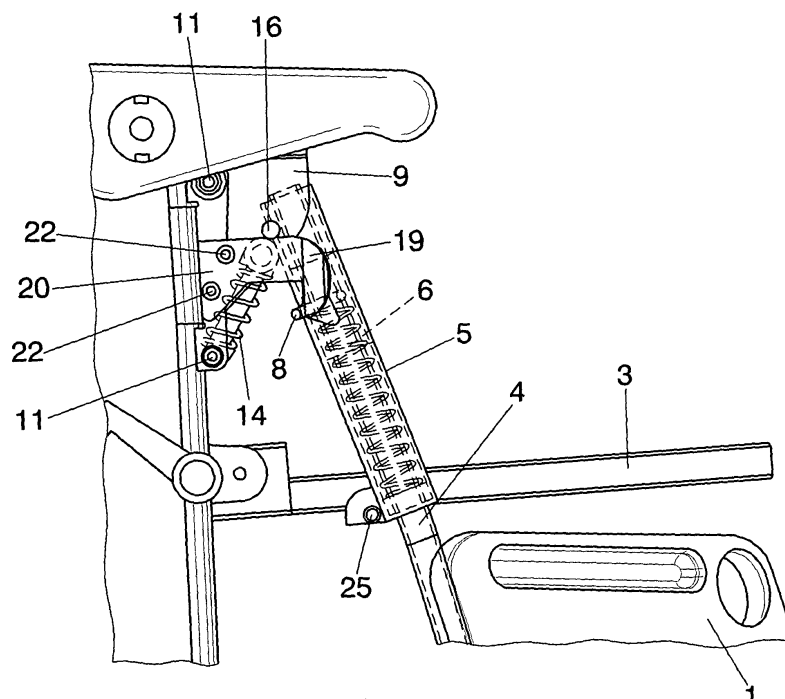


FIG. 6

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Description

OBJECT OF THE INVENTION

[0001] The present invention relates to an auto-retractable side table for folding seats, which table constitutes a desk support known as a "writing tablet" type, which can be completely retracted automatically allowing the user to choose to use it or not, remaining concealed if not in use and being incorporated to the design of the assembly of the seat in which it is applied when it is in the folded or closed position.

[0002] Another object of the invention is for the side table to be of the type referred to as "anti-panic" tables, given that if the user gets out of the seat quickly or suddenly, slightly pushing or pressing against the side table assembly will automatically withdraw the table, allowing the user to get out of the seat with no obstacles and with complete freedom.

[0003] Another object of the invention is to provide a side table that is applicable to the most different seat systems, allowing any user or manufacturer to benefit from it.

BACKGROUND OF THE INVENTION

[0004] It is known that folding seats or chairs which are foldable when they are not being used, and that are used in certain places, such as classrooms, conference halls, etc., incorporate on one of their sides or armrests a side table as a support base for taking notes and to support a laptop computer or for any other similar function, therefore constituting a side table of the seat or chair and being built in the latter.

[0005] However, when the seats are folded, the options existing in relation to the adaptability and incorporation of the side table are scarce, if any, given that the drawbacks relating to the complete and automatic withdrawal of the table, to the anti-panic function of the latter, to being able to access the sitting area, to not invading the adjacent space, and in relation to other less relevant drawbacks are not fully resolved.

[0006] However, some seats are known having the side table with virtually all the previously mentioned functions but incorporated to the seat or adapted thereto in a rather unorthodox manner, given that some times the aesthetic appearance of the seat itself has been reduced, and most times it offers a function which borders on ineffectiveness of the assembly.

[0007] It is obvious that said side tables must be associated to mechanisms which allow maintaining and assuring a stable operative position both due to the deposited objects and the normal stress and strain to which they are subjected by the user during use, in turn they must assure the anti-panic effect so the user does not feel trapped by having to release the system in order to get out of the seat in moments of panic due to an emergency situation.

[0008] All these peculiarities and functions are not efficiently met by side tables incorporated today in some types of folding seats.

[0009] Therefore it would be appropriate for the side table to automatically retract with by slightly touching it, without invading the space of the adjacent user, and which also complied with the fact that it could be restrained in its withdrawal so as to reduce its inertia and prevent it from abruptly striking against the structure or harm the user.

DESCRIPTION OF THE INVENTION

[0010] The side table which is proposed has been designed to solve the drawbacks set forth above and to carry out the functions mentioned in the last paragraph of the previous section, resulting in a low-cost, very simple, easy-to-adapt, useful and easy-to-apply assembly, i.e. with the mechanism associated thereto, for any type of seats and with no maintenance costs.

[0011] More specifically, the side table of the invention is assembled on the end of a tubular arm which swivels up and down, such that inside said tubular arm a shaft is assembled inside said tubular arm with axial and rotational movement ability, which shaft extends at the front end beyond the arm to be integrally joined to the side table itself, whereas close to the rear end said shaft is traversed by a pin located in a triangular window made for that purpose in the tubular arm, between the pin of which and front end of such tubular arm a spring is arranged which constantly extends towards the rear position of the shaft to which the table is integrally joined. Close to its rear end, the tubular arm has an outer roller transverse thereto, as well as a short rotating shaft for the swiveling of such arm, both the roller and the rotating shaft being arranged in a casing or main body fixed between two side flat bars, and where respective interlockings have been provided, an upper one and a lower one, one of them, the lower one, acting as a stop for a spring arranged between the former and the support roller integrating it to the tubular arm, whereas the upper interlock constitutes a stop for the end of the shaft integral with the side table itself, thereby allowing keeping said side table stable and horizontal or in the use position as the rear or inner end of the mentioned shaft acts as a stop with the mentioned upper interlock, all this such that a slight rotation of the side table against the spring located inside the tubular arm or an outward axial movement of the side table implies a slight retraction in the mentioned shaft and therefore the release with respect to the interlock, thereby allowing the automatic retraction of such side table.

[0012] The assembly of the mechanism described for the side table is complemented with a catch on which the rotating shaft of the tubular arm rests during its swiveling movements, and which further constitutes a locking element for the pin of the shaft which the side table is integrally joined to in order to keep the latter in the inoperative

or retracted position under the seat in which the assembly is applied, it have been provided that said catch, constituted of a flat bar with a front lower extension, can swivel outwardly against the action of a transverse spring in order to accurately allow the unlocking of the transverse pin which is positioned in the window of the tubular arm and implying the corresponding swiveling movement in the operative position of the side table.

[0013] The described assembly can be applied to any type of folding seat, such as those used in classrooms, conference halls, etc., and it can be applied in correspondence with either of both sides of the seat or of the support arms thereof, thereby enabling use for both right-handed and left-handed people.

DESCRIPTION OF THE DRAWINGS

[0014] To complement the description being made and for the purpose of aiding in better understanding the features of the invention according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description, in which the following has been represented with an illustrative and non-limiting character.

[0015] Figure 1 shows a perspective view of a seat with the side table of the invention in the use position.

[0016] Figure 2 shows a side elevational view of the assembly shown in the previous figure.

[0017] Figure 3 shows an enlarged view of the set of elements or mechanisms involved in the movements for positioning the side table in the use or operative position or in the inoperative or retracted position under the sitting area of the seat.

[0018] Figure 4 shows a perspective view of the folded position of the seat and the retracted position of the side table of the invention.

[0019] Figure 5 shows a side elevational view of a folded seat with the side table in the intermediate folding position.

[0020] Figure 6 finally shows an enlarged side elevational view of the assembly of the mechanism in the position corresponding to the one shown in the previous figure.

PREFERRED EMBODIMENT OF THE INVENTION

[0021] In view of the figures described, the side table (1) of the type referred to as a "writing tablet" can be seen in an application on a seat (2) the sitting area (3) of which is folding.

[0022] The mentioned side table (1) is integrally joined to a shaft (4) concentrically assembled on a tubular arm (5), which shaft (4) is able to partially rotate inside said tubular arm (5) as well as move axially, logically the table (1) also being able to carry out such movements as it is integrally joined to the mentioned shaft (4).

[0023] A spring (6) is arranged inside the tubular arm (5) and is linked to said shaft (4), such spring moving

such that the table (1) occupies an orthogonal position with respect to the general structure.

[0024] It has also been provided that the tubular arm (5) has a window (7) in which an outwardly projecting pin (8) is arranged, which pin (8) traverses the support shaft (4) of the table (1), the foregoing having the functions that will be explained below.

[0025] The assembly further includes a general support (9) in the shape of a casing open at the front part and on the underside, as can be seen in Figure 3, which is fixed between two flat bars or side plates (10) through corresponding transverse screws (11) between which an upper interlock (12) and a lower interlock (13) have been provided.

[0026] The mechanism of the side table (1) also comprises a spring (14) located between the lower interlock (13) and a roller (15) transversally integrally joined to the outer side surface of the tubular arm (5), a rotating shaft (16) also having been provided for swiveling the mentioned tubular arm (5), the latter being tangentially integrally joined and transversally joined to said shaft (16) at its end.

[0027] The assembly is complemented with a catch (19) forming part of a plate (20) located on the side and which can swivel against a pair of springs (21) provided transversally to the plate (20), the plate being fixed by means of corresponding screws (22).

[0028] On its lower end, the spring (14) is guided in a support (23) while the shaft (4) for the integral joining to the side table (1) is assembled on respective sleeves (24) provided concentrically between said shaft (4) and the tubular arm (5).

[0029] Finally, it has been provided that on one side of the sitting area (3), specifically on the side where the side table (1) is to be arranged, a projection or cylindrical stop (25) is arranged, the function of which will be explained below.

[0030] According to the described features, the operation is as follows:

[0031] In the normal operative or use position of the side table (1), as shown in Figures 1 and 2, said side table (1) is arranged horizontally and kept stable in this position due to fact that the rear or inner end of the shaft (4) to which said table (1) is integrally joined abuts under the upper interlock (12), as clearly shown in the detail in Figure 3.

[0032] From this position, if the user wants to get out of the seat (2), he/she will retract said side table (1), and this operation can be done in two ways: by means of pushing the table (1) forwards, causing the shaft (4) to move and therefore releasing it from the interlock (12), making it possible to fold it downwards, or by slightly rotating the shaft (4) and therefore the folding table (1), which rotation can be done through the shaft (16), all this such that in the swiveling position to fold the auxiliary table (1) and therefore the arm (5) downwards, a progressive braking is caused by the spring (14) arranged between the roller (13) or support (23) associated thereto

and the upper roller (15), the latter integrally joined to the tubular arm (5) as previously mentioned.

[0033] Therefore, the first function of the side table of the invention is to achieve the automatic retraction or folding thereof, whether it is intentionally by the user or accidentally by simply pushing it when attempting to quickly get out of the seat, in which case, as previously mentioned, the side table (1) can be involuntarily pushed forwards or rotated so that in either case the shaft (4) is released from the upper interlock (12) and the automatic retraction of the side table thus being obtained.

[0034] From the retraction position of the side table (1) and from the folded position of the sitting area (3), as shown in Figure 4, when the sitting area (3) is pushed down for unfolding, the arm (5) resting on the cylindrical stop (25) provided on the side of the mentioned sitting area (3) is dragged or pushed upwards, thereby beginning the unfolding towards the operative position of the side table (1), but the side table can be maintained under the sitting area (3) unless the user introduces his/her hand under the sitting area and, after slightly rotating the side table (1) to release the transverse pin (3) from the catch (19), subsequently swivels the arm (5) and therefore the side table (1) to the use or operative position shown in Figures 1 and 2.

[0035] Obviously, the window (7) has been provided for the retracted and unfolded positions of the side table (1), or in other words for locking and releasing the latter from the catch (19), in which window the transverse locking pin (8) is positioned, which pin functions in this window (7) in the swiveling movements so as to allow the release from the catch (19) on one hand after pushing the plate (20) outwardly against the springs (21), or to slide along the outer edge of said catch (19) so as to lock the side table in the withdrawn or retracted position.

Claims

1. An auto-retractable side table for folding seats, being of the type referred to as a "writing tablet", formed by a board arranged on one of the sides of a seat (2), **characterized in that** the side table (1) itself is integrally joined to a shaft (4) that is able to rotate and move axially with respect to a tubular arm (5), close to the rear end of which two rollers have been provided, a support roller (15) and another swiveling roller (16) for said arm (5), and therefore for the side table (1); a casing (9) open at the top and bottom having been provided, being arranged between a pair of plates (10) fixed by means of transverse screws (11) with a transversal upper interlock (12) and another transverse lower interlock (13), with the particularity that the upper interlock (12) constitutes a stop for the inner rear end of the shaft (4) to which the side table (1) is integrally joined so as to keep the latter in a horizontal or use position; the tubular arm (5) having a triangular window (7) in which a

transverse pin (8) is located which traverses the shaft (4), which pin (8) can slide along the outer edge of a catch (19) belonging to a side plate (20), being locked in the retraction position by means of said catch (19), the assembly being completed with a spring (14) arranged between the lower interlock (13) and the roller (16) integrally joined to the tubular arm (5), which spring (14) determines a break in most of the swiveling path towards the retraction position of the arm (5) and therefore of the side table (1), and a means keeping the latter in a complete folded retraction position under the sitting area (3) of the seat (2).

2. An auto-retractable side table for folding seats according to claim 1, **characterized in that** the swiveling of the arm (5) and therefore of the axis (4) with the side table (1) is carried out through a shaft (16) integrally joined to the upper end of the tubular arm (5), the latter concentrically including a pair of end sleeves (24) for supporting and guiding the shaft (4), the latter being able to rotate and move axially with respect to the tubular arm (5) against the action of a spring (6) housed inside said tubular arm (5).
3. An auto-retractable side table for folding seats according to the previous claims, **characterized in that** the plate (20) bearing the locking catch (19) is laterally fixed by means of respective screws (22) and led to the operative position by means of springs (21), against which the plate (20) can swivel so as to release the catch (19) with respect to the transverse locking pin (8).
4. An auto-retractable side table for folding seats according to the previous claims, **characterized in that** a cylindrical pivot (25) has been provided on the side of the sitting area (3) of the seat (2) which defines a stop, which drags the arm (5) and therefore the side table (1) to the unfolded position when the sitting area (3) is unfolded from its folded position.

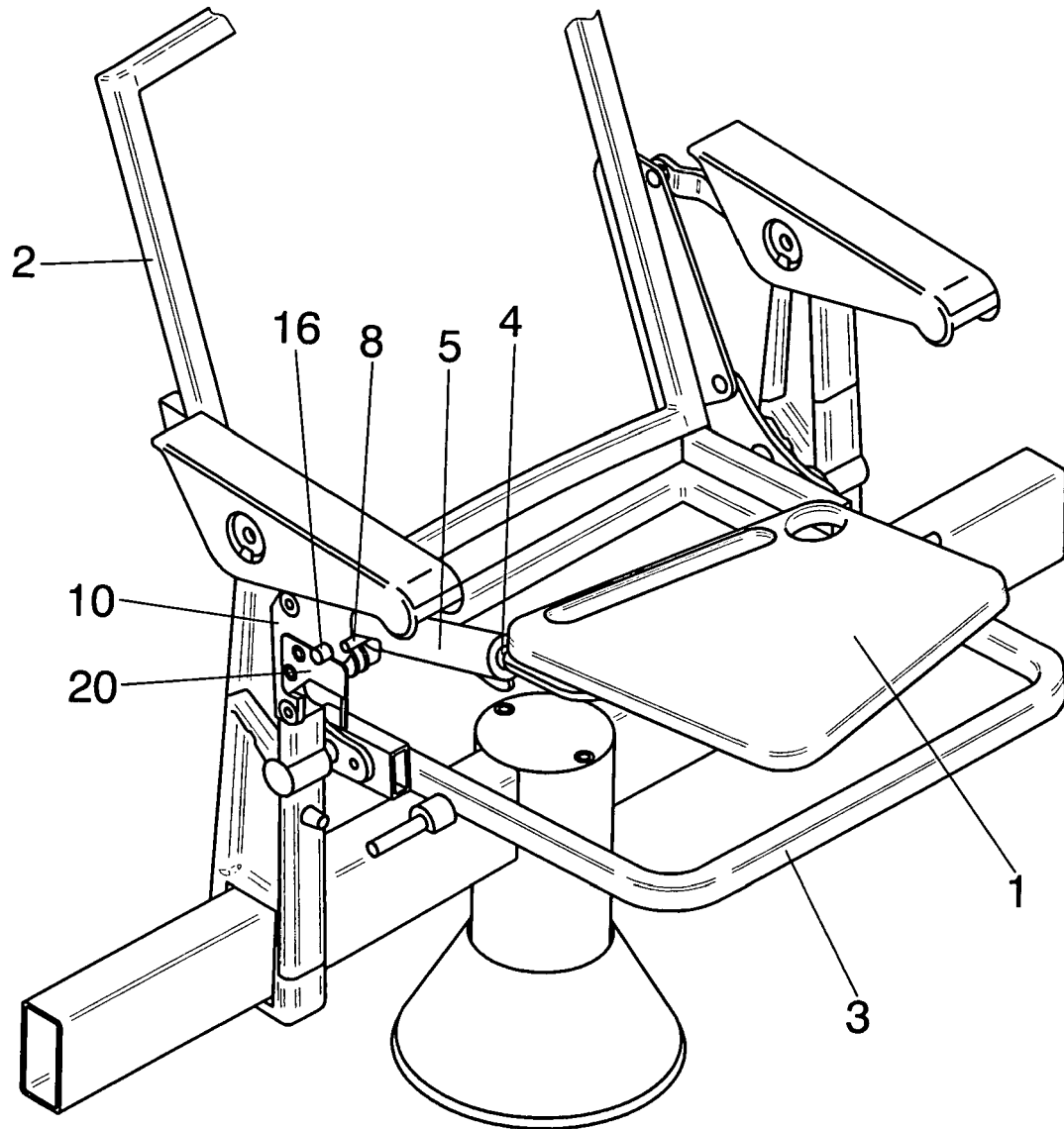


FIG. 1

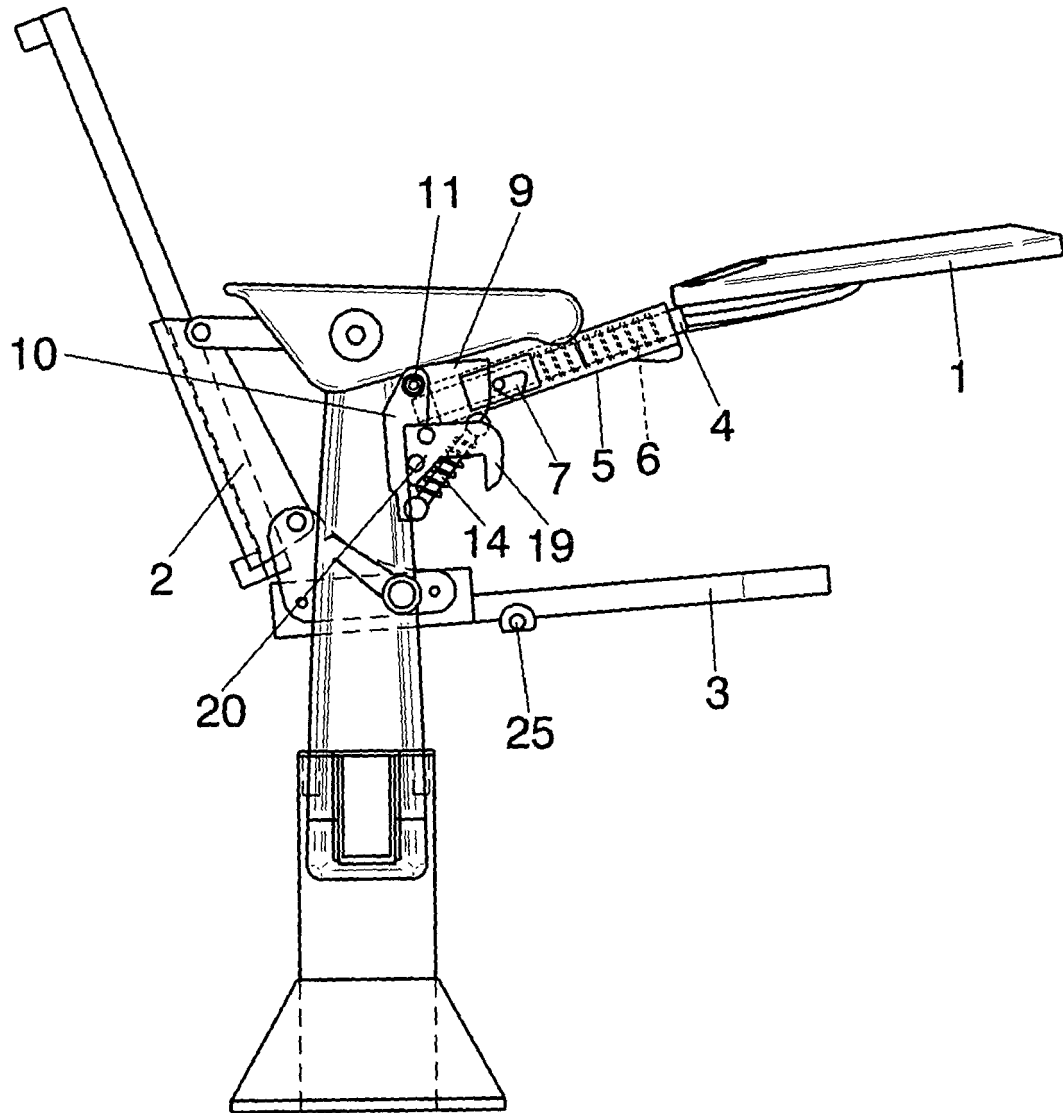
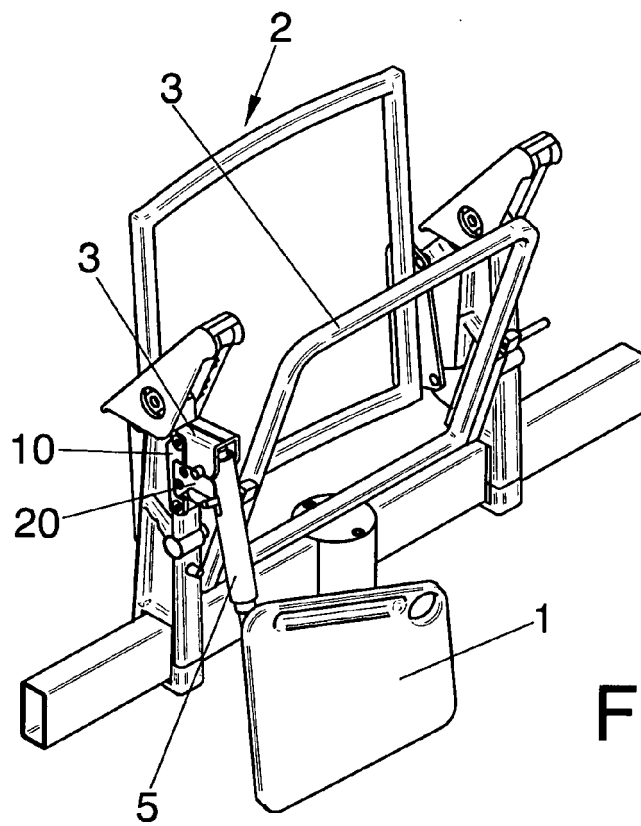
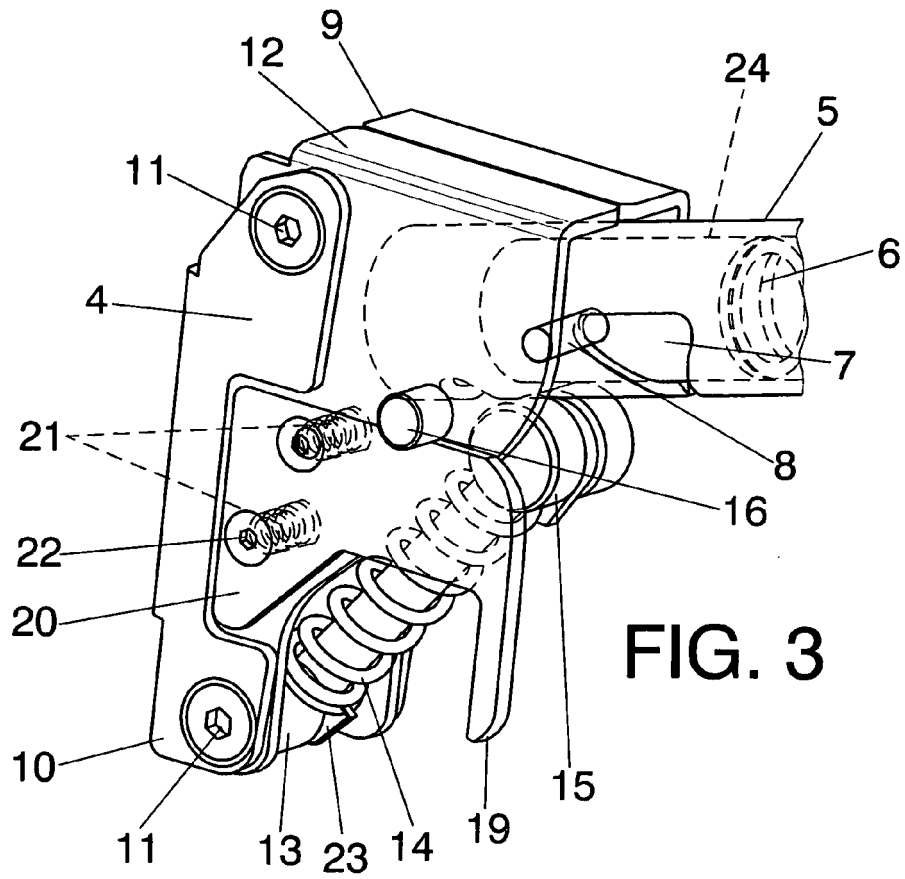


FIG. 2



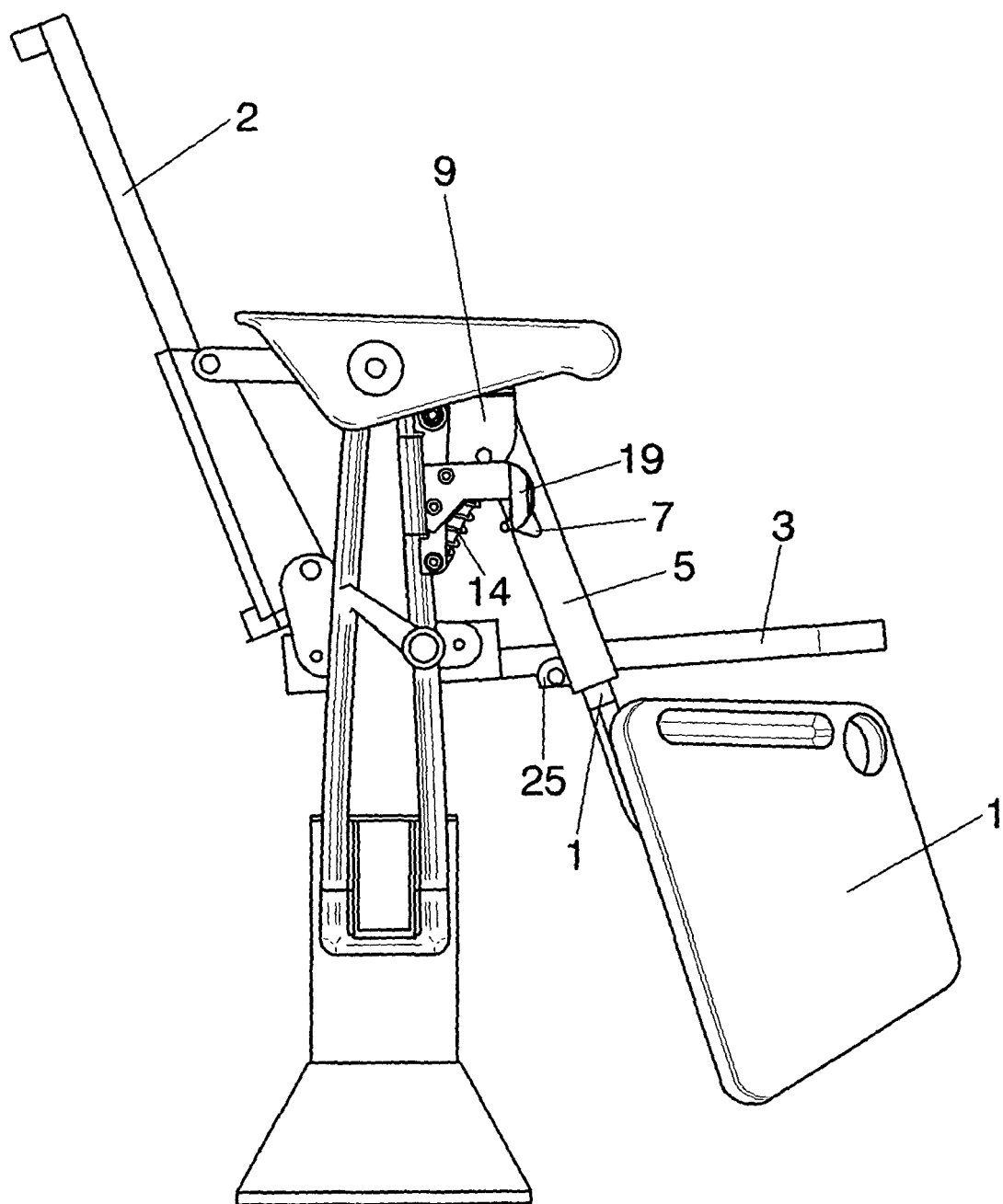


FIG. 5

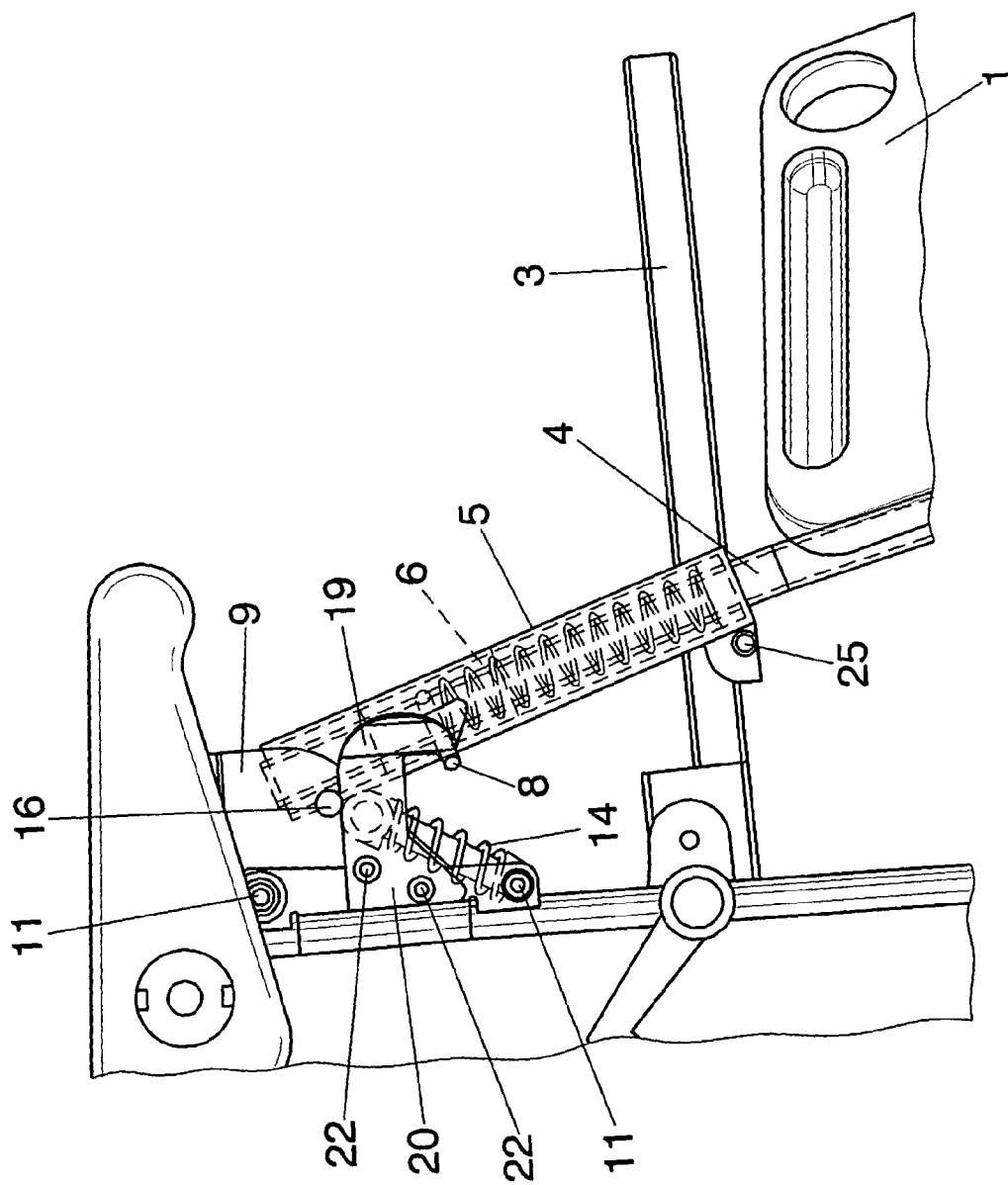


FIG. 6