Nov. 25, 1952 B. T. GUYTON ET AL 2,619,157

ANTIBUFFET SEAT

Filed Jan. 30, 1948 5 Sheets-Sheet 1

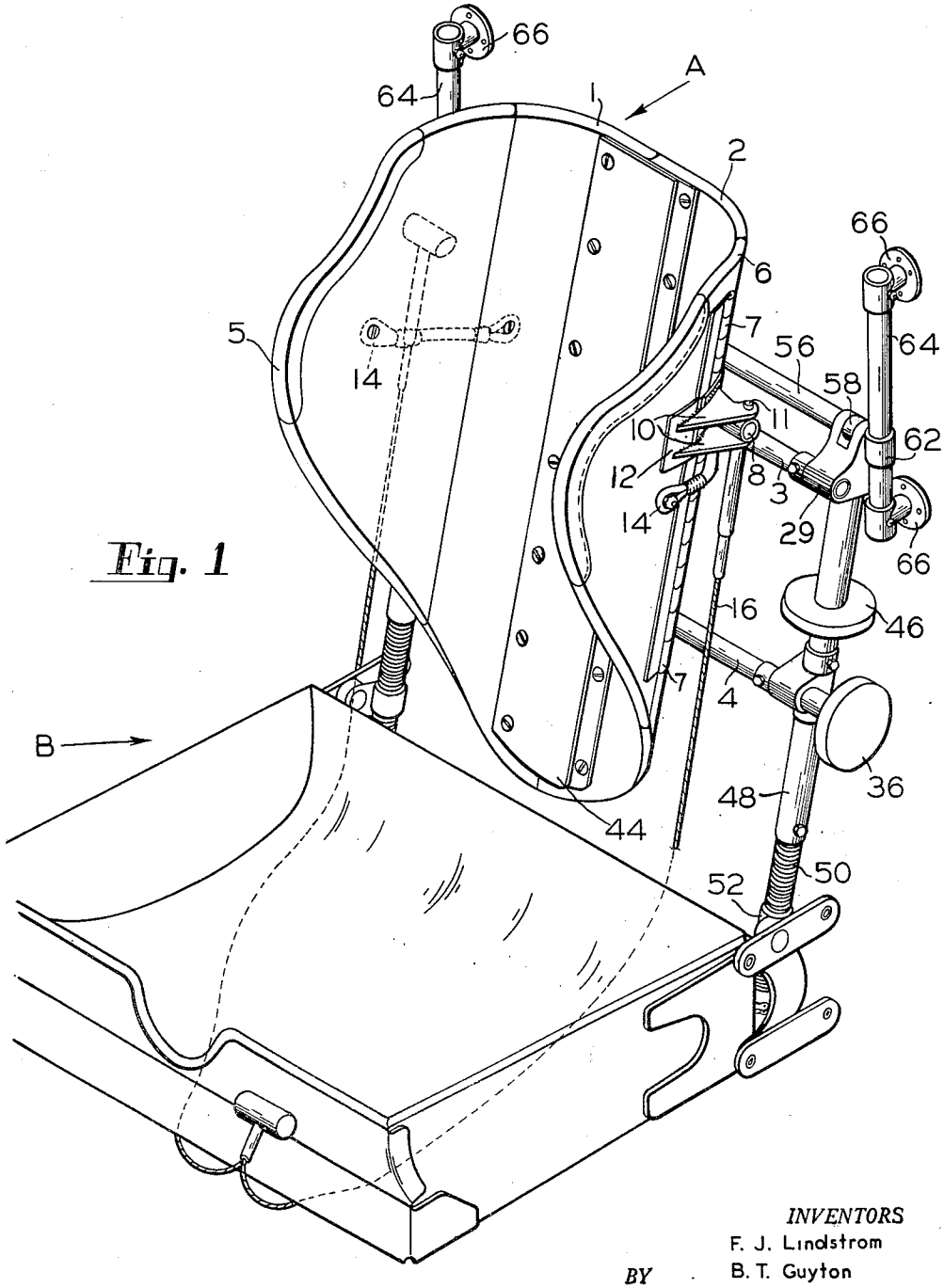


Fig. 1

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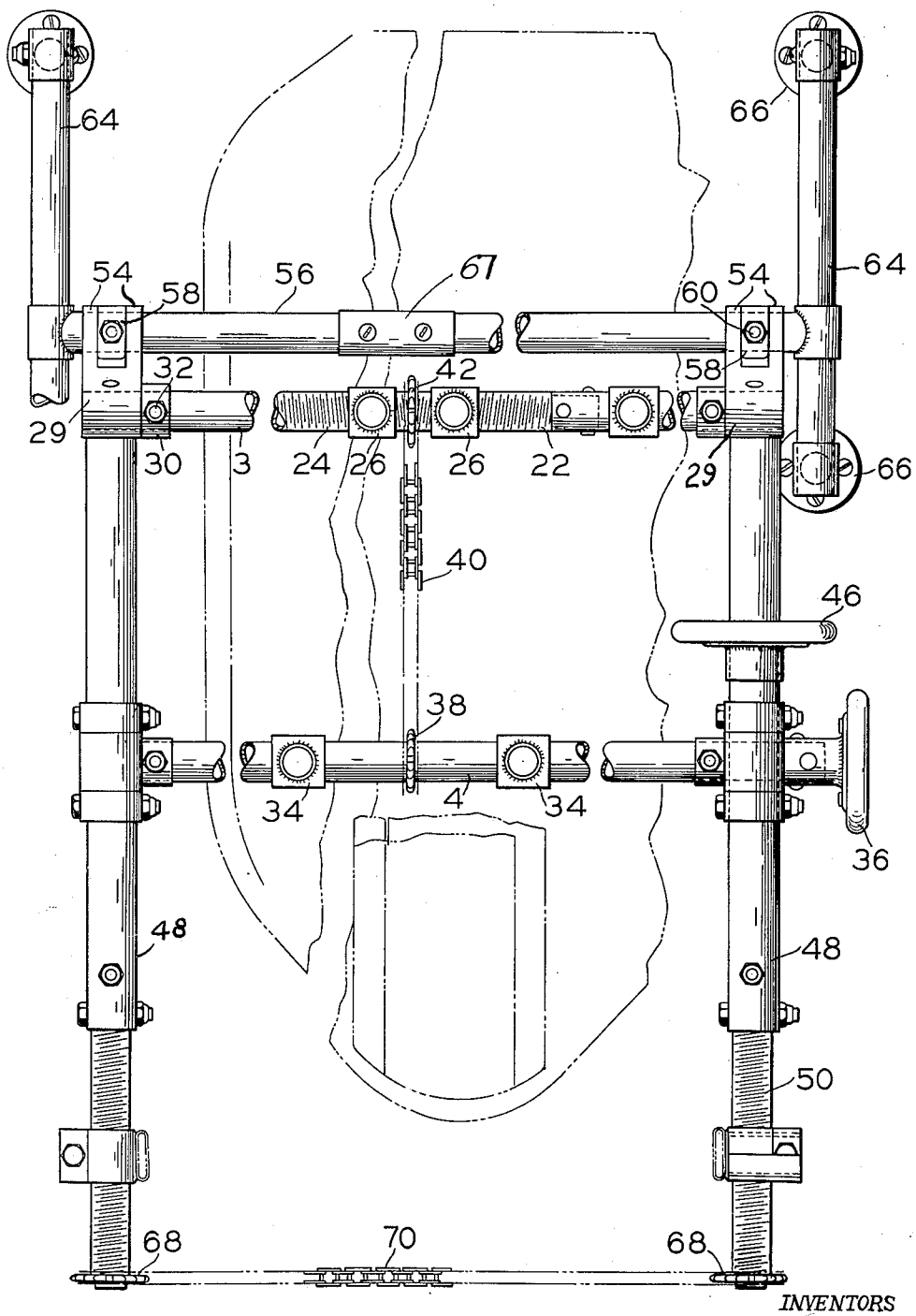


Fig. 2

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Filed Jan. 30, 1948 5 Sheets-Sheet 3

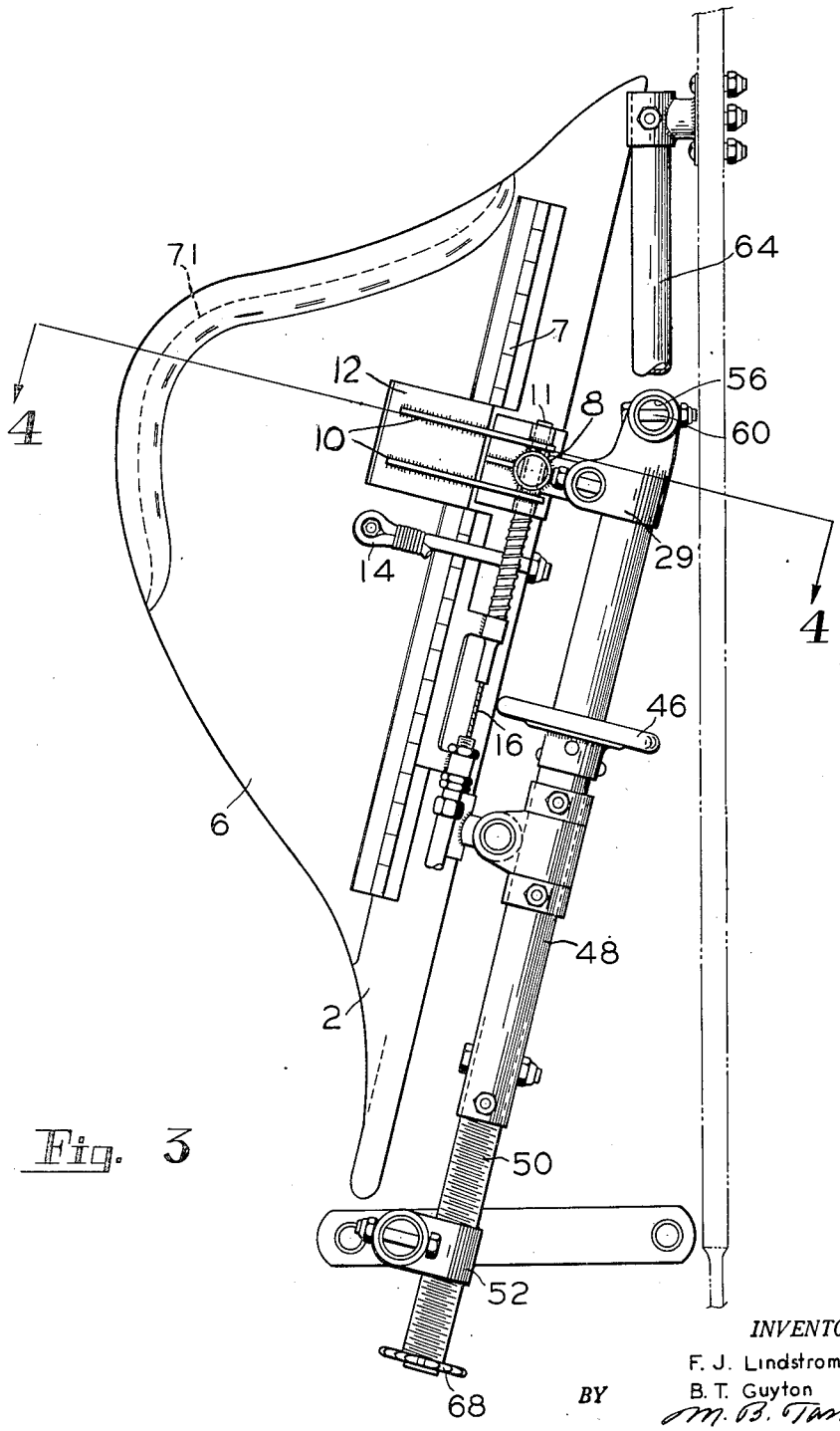


Fig. 3

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ANTIBUFFET SEAT

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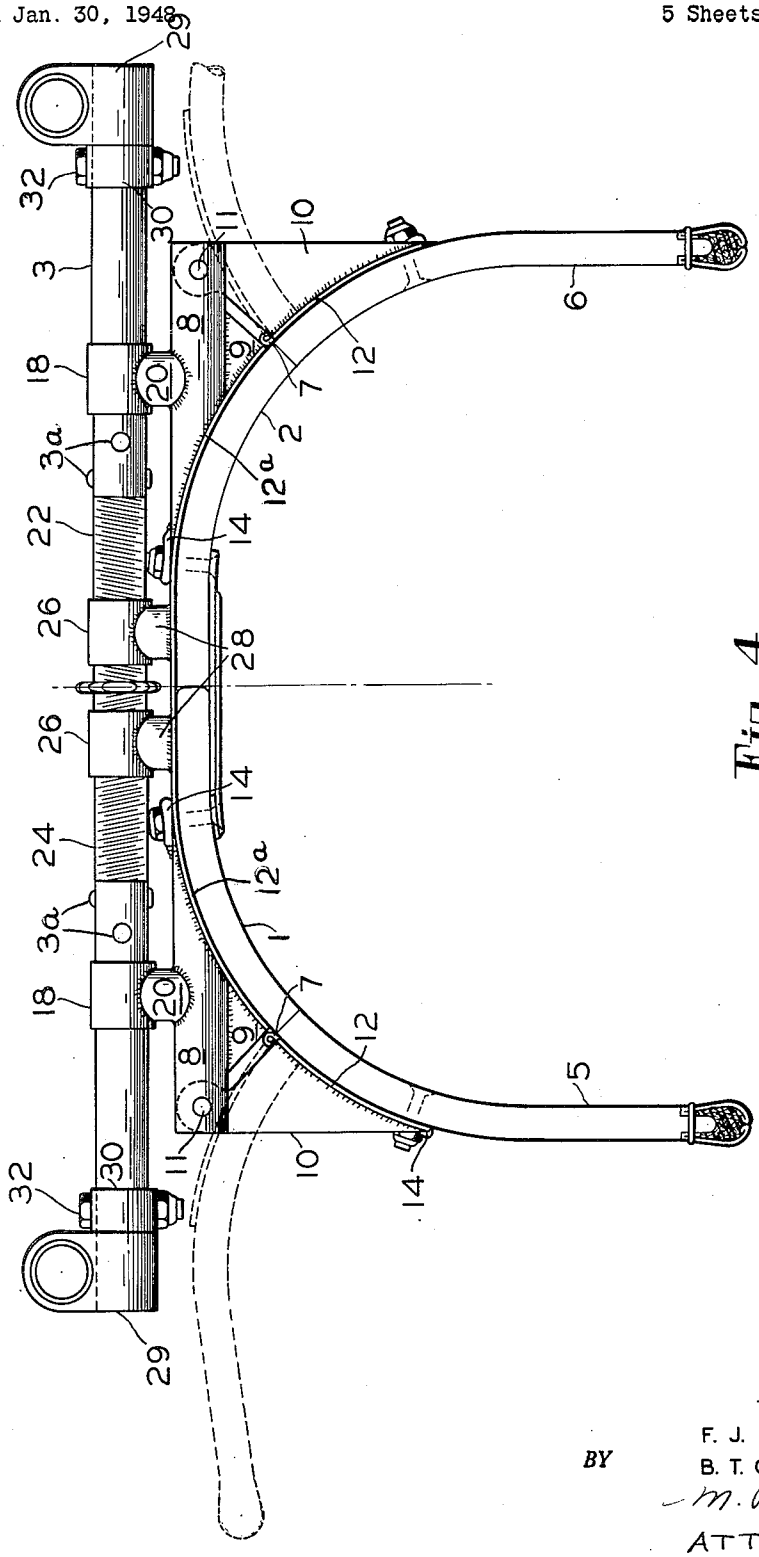


Fig. 4

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ANTIBUFFET SEAT

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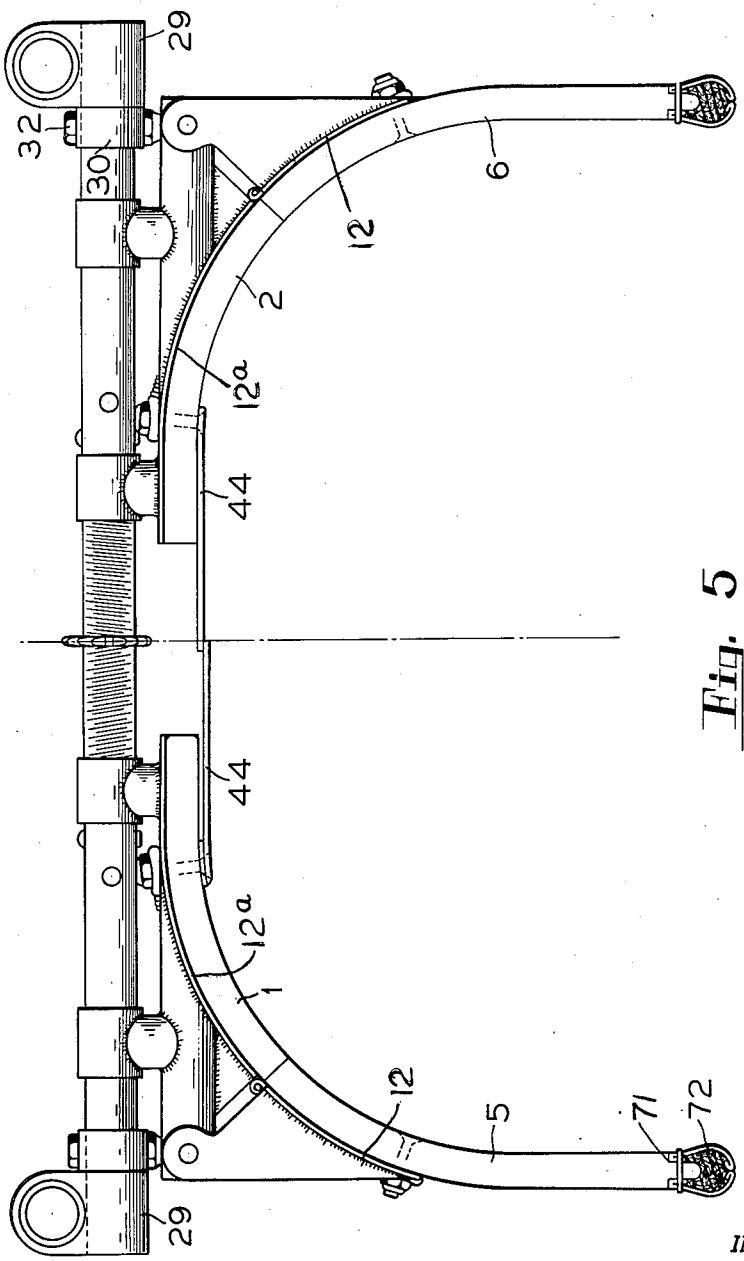


Fig. 5

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UNITED STATES PATENT OFFICE

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ANTIBUFFET SEAT

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Application January 30, 1948, Serial No. 5,418

4 Claims. (Cl. 155—189)

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This invention relates to anti-buffet seats for airplanes and more particularly to pilot seats for high performance aircraft.

In addition to the already familiar causes of pilot fatigue in long range combat there are the important hazards and strains resulting from the buffeting of an aircraft, in storms or violent atmospheric conditions, during violent maneuvers in flight, and during inadvertent hard landings and landing crashes. Buffeting is also characteristic of some high speed aircraft when certain maneuvers are performed at great speed. Consequently, it is desirable to provide a seat which will properly secure the pilot and prevent his being violently shaken or suddenly dashed against the sides of the cockpit enclosure. Also, by eliminating the necessity of maintaining the muscular tension ordinarily required to hold himself safely seated, the pilot's physical exertion is reduced, thereby allowing him to remain near peak efficiency for longer periods.

An object of this invention is to provide a pilot's seat which supports the pilot firmly in his seat, while affording him maximum freedom, comfort and protection from buffeting hazards.

A further object of this invention is to provide a seat with wing-like projections symmetrical with the seat back, which supports both the back and sides of the pilot's torso.

Another object of the invention is to provide a seat having a back provided with wing-like projections which can be adjusted laterally and vertically to snugly fit the bodies of varied sized pilots.

A further object of the invention is to provide a seat having a back provided with such wing-like projections and means operable by a pilot while seated in the seat to adjust these projections both vertically relative to the bottom of the seat and laterally relative to each other to fit his body.

More specifically, it is an object of the invention to provide an improved seat and mechanism for adjusting the back portion relative to the bottom portion; to more firmly secure the pilot by increased area support, and to provide a release which causes the side supporting projections to snap back and free the pilot of any restriction during emergency exit.

These and other objects of the invention will become apparent from the following detailed description of the accompanying drawings which illustrate one embodiment of the invention.

In these drawings;

Fig. 1 is a perspective view of a seat embodying the invention;

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Fig. 2 is a front view of the back structure of the seat with the seat back in phantom showing the mechanism immediately aft of the seat back;

Fig. 3 is a side elevation of the entire seat back as mounted;

Fig. 4 is a cross section on line 4—4 of Fig. 3 showing the seat back in its smallest lateral adjustment and with the emergency position of the seat back projections shown in dotted lines; and

Fig. 5 is a view similar to Fig. 4 with the seat back panels adjusted to the fully extended lateral position.

Referring to Fig. 1, the seat of this invention comprises a curved seat back generally indicated by the letter A and a seat bottom B. Either the back A or the bottom B can be modified to house the particular type parachute and related equipment which the pilot usually carries whether said parachute is a seat pack, back pack or chest pack.

The back A of the seat is comprised of back and side panels including partially curved rear sections 1 and 2, adjustably attached to upper and lower horizontal bars 3 and 4. Symmetrical, wing-like flanges 5 and 6 are attached to the curved adjacent sections 1 and 2, respectively, by piano type hinges 7 to form the side panels of the relatively U-shaped back assembly.

As can be seen more clearly in Fig. 4, panels 1 and 2 have horizontally mounted tubes 8 attached thereto aft of said panels, about one-third from the top and parallel to the flat of the seat back assembly, which are reinforced by gussets 9. Panels 5 and 6 carry bifurcated brackets 10 which straddle the ends of tubes 8 and in the normal, full line position of the panels are connected to tubes 8 by retractable pins 11 which are spring loaded to enter aligned holes in the brackets 10 and tubes 8. Brackets 10 are suitably attached to the panels 5 and 6 by mounting plates 12 which conform to and are suitably, permanently secured to the panels. Bungee cords 14 (Fig. 1) are attached behind the seat back between panels 5 and 1 and panels 6 and 2 to exert tension which will tend to swing panels 5 and 6 outwardly into the open positions thereof shown dotted in Fig. 4. By attaching a suitable pull cable 16 to the retractable pins 11, it is possible to withdraw pins 11 against the action of their springs and disengage the brackets 10 from the bars 8 and allow the bungee cords to swing wings 5 and 6 outwardly about hinges 7. With panels 5 and 6 in this open position the pilot is

free to leave the aircraft in emergency without the danger of catching his clothes or equipment on the supporting panels 5 and 6. When the panels 5 and 6 are open they are thus automatically held open by the tension of the bungee cords 14. Because the pins 11 are spring loaded, in the open position of panels 5 and 6 the upper ends of these pins engage the lower surfaces of brackets 10 ready to snap into the holes in the brackets and the tubes when the panels are again closed. It will thus be evident that the side panels 5 and 6 when in their normal closed positions always have the same angular relation to their supporting back panels 1 and 2.

Panels 1 and 2 (Fig. 4) are horizontally slidably mounted on bar 3 by means of sleeves 18 and integral butts 20 welded to tubes 8. In addition, panels 1 and 2 are mounted on the opposing right and left hand threaded portions 24 and 22 respectively of bar 3 by correspondingly threaded sleeves 26 integral with butts 28 welded to mounting plates 12a which are suitably fastened to the panels 1 and 2 in the vicinity of bar 3. The threaded portions 22 and 24 are of one piece and form the center portion of bar 3, being attached to the outer bearing portions of the bar by spaced rivets 3a set at 90° to each other. Bar 3 is rotatably mounted in the brackets 29 and held in position by collars 30 and bolts 32. As best seen in Fig. 2, panels 1 and 2 are also attached to bar 4 by horizontally slidable sleeves 34. By rotating the adjusting knob 36, which is located on shaft 4 within easy reach of the seat occupant, the shaft 4 turns the affixed sprocket 38 which by means of the chain 40 rotates sprocket 42, fixed to shaft 3, and the opposite threaded portions 22, 24 of bar 3 thereby giving opposite lateral motion to sleeves 26. Sleeves 26, being attached to panels 1 and 2, transmit their lateral movement to the latter thus affording width adjustment of the seat back. To prevent an aperture (Fig. 5) from existing between panels 1 and 2 when separated, vertical laterally overlapping strips 44 are mounted thereon by screws or other means.

In order to comfortably position pilots of any stature, a vertical adjusting mechanism is provided by a jack screw assembly consisting of a knob 46 (Fig. 3) mounted on a vertical bar 48, the lower extremity of which has attached thereto a threaded shaft 50 which mates with the female threaded portion of a sleeve 52 rotatably secured to the seat bottom supporting structure. The upper end of the bar 48 is rotatably mounted in a socket in the lower portion of bracket 29. Bracket 29 has a vertical forked section (best seen in Fig. 2) forming double sleeves 54 which receive a horizontal bar 56. Collars 58 located between sleeves 54 are secured to bar 56 by bolts 60 and serve to position brackets 29 while permitting pivotal movement on bar 56. Sleeve 67 permits bar 56 to be separated intermediate its ends to permit installation of sleeves 54 and collars 58 on the bar. Near each lateral extremity, bar 56 has a vertical sleeve 62 attached thereto, as by welding, which slides vertically on jack screw guide rods 64. The guide rod 64 also serves as the support for the seat back since it is firmly secured at its vertical extremities to structure in the aircraft by suitable pedestals 66.

To prevent misalignment of the seat on the jack screw guides 64, identical jack screw mechanisms are provided on each side of the seat back, these jack screw mechanisms being interconnected by sprockets 68 and a chain 70. It is therefore apparent that rotation of the vertical adjusting knob 46 rotates the screw 50 in the sleeve 52 thereby producing vertical motion of the shafts 48 and thereby the seat back proper.

The upper edegs of the wing-like projections 5 and 6 are grooved on both sides (Fig. 5) to provide a recess 71 for installation of padding 72 to afford comfort under the pilot's arms and eliminate sharpness. Such padding may be formed of a leather cover with suitable resilient filling stitched together in place or this padding may consist entirely of molded rubber.

The seat bottom B can be of a standard type with a flat or bucket type upper surface to house a cushion or related parachute equipment.

In using the seat the pilot will turn knob 36 to properly adjust the width of the seat back and turn knob 46 to raise the seat back until the padding 72 fits snugly under his armpits if so desired. A chain driven, screw threaded adjusting means is used to insure retention of the seat in its adjusted position.

This new type back will afford the pilot ample protection gainst buffeting and will also permit easy and rapid egress from the cockpit in the event of emergency since the pivoting wing portions will readily snap back when the pins 11 are released by pulling release cable 16. The release cable may be connected to some other emergency exit release mechanism so that all operations will be performed simultaneously.

It should be noted that in addition to the width and height adjustments of the flanges on the seat back, the anti-buffet seat will contain the conventional seat adjusting means including fore and aft seat movements and vertical adjustment of the entire seat.

While only one embodiment of the invention has been shown and described, it will be evident that various changes may be made in the construction and the arrangement of the parts without departing from the scope of the invention as defined by the claims.

What it is desired to secure by Letters Patent is:

1. An adjustable seat including a bottom portion, a back portion having pivoted wing-like projections adapted to occupy a forward generally parallel position in which they support the sides of an occupant of the seat and a released position in which they are swung about their pivots out of supporting relation, resilient means for biasing said projections into released position, self-locking latch means for releasably locking each of said projections whenever they are moved into supporting position, mechanism in position to be controlled by the occupant while sitting in the seat for adjusting said projections laterally relative to each other while the latter remain locked, and means readily accessible to the occupant while sitting in the seat for simultaneously releasing said latch means whereby said projections are simultaneously biased by said resilient means into released position.

2. An adjustable seat including a bottom portion, a back portion having pivoted wing-like projections adapted to occupy a forward generally parallel position in which they support the sides of an occupant of the seat and a released position in which they are swung about their pivots out of supporting relation, means for individually releasably locking each of said projections in its respective supporting position,

means for constantly biasing said projections out of supporting relation, self-locking mechanism for adjusting said projections bodily laterally relative to each other while in their supporting position into firm engagement with the sides of the occupant, and a single control means operatively associated with each of said locking means and readily accessible to the occupant while supported by said projections for releasing said locking means whereby said projections are simultaneously moved by said biasing means into their released positions.

3. In an airplane pilot's seat, a bottom, a back, means for firmly securing the back and sides of the pilot against side motion including wing-like projections pivoted on said back and extending forward about the sides of the pilot, self-locking latch means for locking each of said projections releasably in said forward pilot supporting position, self-locking means for adjusting said projections bodily toward and from each other while in said position, self-locking means for adjusting said back vertically whereby said projections are brought into supporting positions under the armpits of the pilot, and means readily accessible to a pilot in the seat for effecting instant release of said latch means.

4. In an adjustable pilot seat, a bottom portion, a back vertically divided into two portions, each of which has a forwardly projecting wing pivotally mounted thereon, self-locking latch means for releasably securing said wings rigidly to said back portions against pivotal movement in their forwardly projecting position, resilient

means associated with each of said wings for biasing the same away from their forwardly projecting positions, means accessible to a pilot seated in the seat for moving said back portions laterally relative to each other to adjust said wings bodily toward and away from each other into engagement with his sides while said wings remain rigidly secured to said to said back portions, adjustable means accessible to a pilot seated in the seat for moving said back portions vertically to provide support under the pilot's armpits while said wings remain rigidly secured to said back portions, and means readily acces- to the the pilot while seated in said seat and supported by said wings for releasing said latch means.

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