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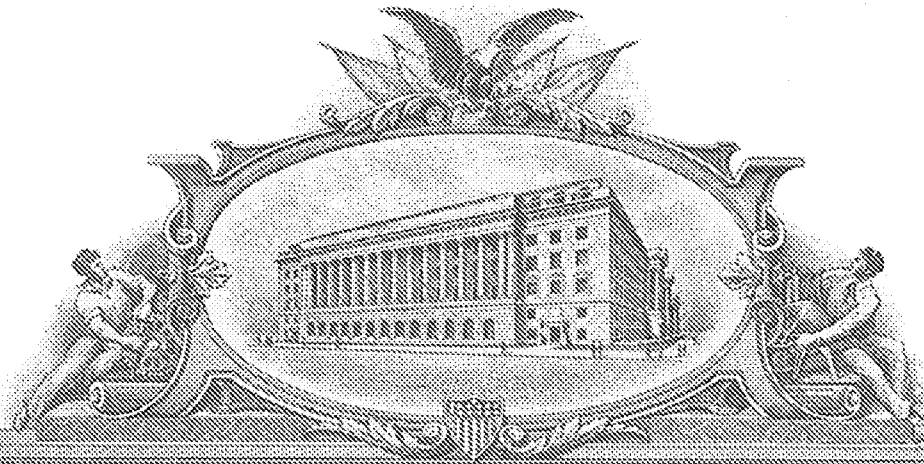
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FILING DATE: *March 22, 2005*

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THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS *US60/664,126*



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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

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INVENTOR(S)

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Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)**SPINAL PROTECTION SYSTEM FOR AUTOMOTIVE SEAT**Direct all correspondence to: **CORRESPONDENCE ADDRESS** Customer Number

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ENCLOSED APPLICATION PARTS (check all that apply) Specification Number of Pages

3

 CD(s), Number _____ Drawing(s) Number of Sheets

3

 Other (specify) _____ Application Data Sheet. See 37 CFR 1.76**METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT** Applicant claims small entity status. See 37 CFR 1.27. A check or money order is enclosed to cover the filing feesFILING FEE
Amount (\$) The Director is hereby authorized to charge filing

fees or credit any overpayment to Deposit Account Number: 08-0750

200.00

 Payment by credit card. Form PTO-2038 is attached.

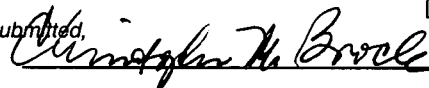
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

 No. Yes, the name of the U.S. Government agency and the Government contract number are: _____

[Page 1 of 2]

Respectfully submitted,

SIGNATURE



Date March 22, 2005

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Docket Number:

0739D-000125/PS1

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



032205

22764 U.S. PTO

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60/664126

032205

SPINAL PROTECTION SYSTEM FOR AUTOMOTIVE SEAT

FIELD OF THE INVENTION

The present invention relates to automotive seating and in particular to an energy absorbing system for protecting the occupant of an automotive seat in a rear impact.

SUMMARY OF THE INVENTION

The present spinal protection system has been designed to offer improved occupant protection during a rear impact. The articulating seatback, in combination with the close range head restraint, limits the relative movement between the occupant's head and thoracic spine region. An energy absorbing mechanism built into the articulating frame, further reduces the acceleration of the torso into the seat. Because more energy is absorbed during the event, the amount of load applied to the occupant and the rebound that normally occurs during a rear impact event, is significantly reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a front perspective view of a vehicle seatback assembly incorporating the spinal protection system according to the present invention;

Figure 2 is a rear perspective view of the vehicle seatback assembly shown in Figure 1; and

Figure 3 is an exploded perspective view of the torsion bar clutch subsystem incorporated into the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The system is comprised of an articulating frame (2) that pivots inside a seatback frame (8). The articulating frame (2) contains a cross plate (1) that provides lateral stability and an attachment for the lumbar (9). Cross plate (7) attaches to the seatback frame (8) to provide structural stability for the seat. The articulating frame (2) is connected to the seatback (8) via links (4,5) located in the lower third and upper half of the seatback frame (8). Stop Rivets (12) connected to the frame via plates (11) limit the motion of the articulating frame (2).

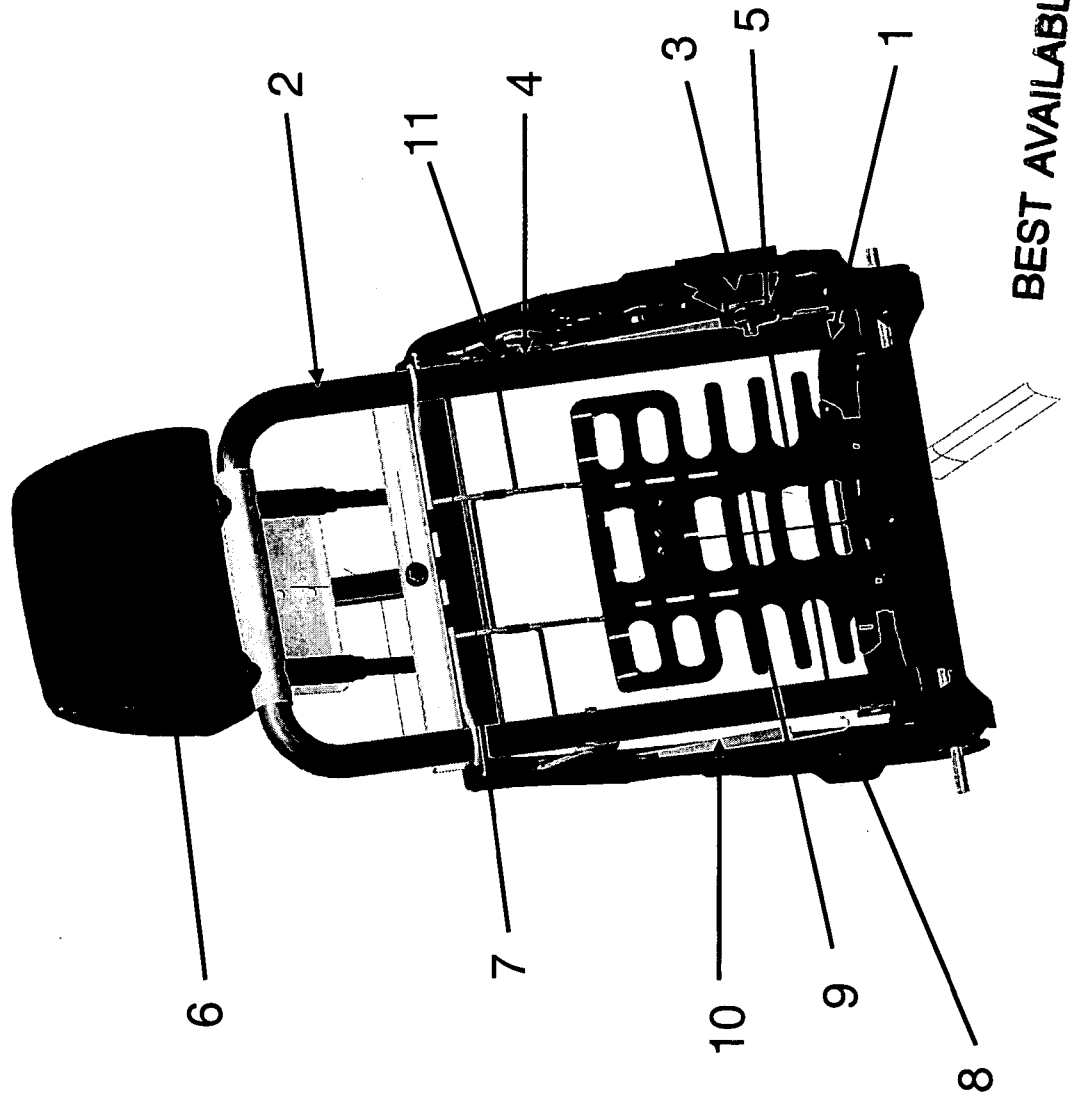
Attached to the articulating frame (2) is the close range head restraint system (6) that was described in Application Serial No. 60/639,764, which is incorporated herein by reference. The close range head restraint maintains the "backset" between the occupant's head and the head restraint even as the seat is reclined to a position other than design position.

The primary feature that differentiates the present invention from other similar systems is its ability to absorb additional occupant energy prior to the rebound phase of the rear impact. The system according to the present invention allows relatively free rearward translation of the occupant into the seat. Extension springs (10) provide some resistance to rearward movement and also reduce the chuck in the system. The articulating frame moves up and forward to

position the occupant and further reduce the "backset" between the occupant's head and the head restraint. As the occupant translates rearward into the seat, the occupant load is gradually transferred to the upper third of the seatback. At that point, the one-way torsion bar-clutch system (3) is engaged. The driving torque imposed by the occupant exceeds the torsion bar elastic yield point and deforms the torsion bar to absorb energy. The torsion bar-clutch system is comprised of a torsion bar (3f), a gear (3g), a pawl (3h), three plates (3c,3e, & 3i), rivets (3d), linkages (3b,3j), a bushing (3a), and a clock spring (3l). The torsion bar (3f) absorbs occupant energy as the occupant force returns the articulating frame (2) back to its pre-activated position. The system can be re-set by activating the release lever (3j) located on the side of the seat.

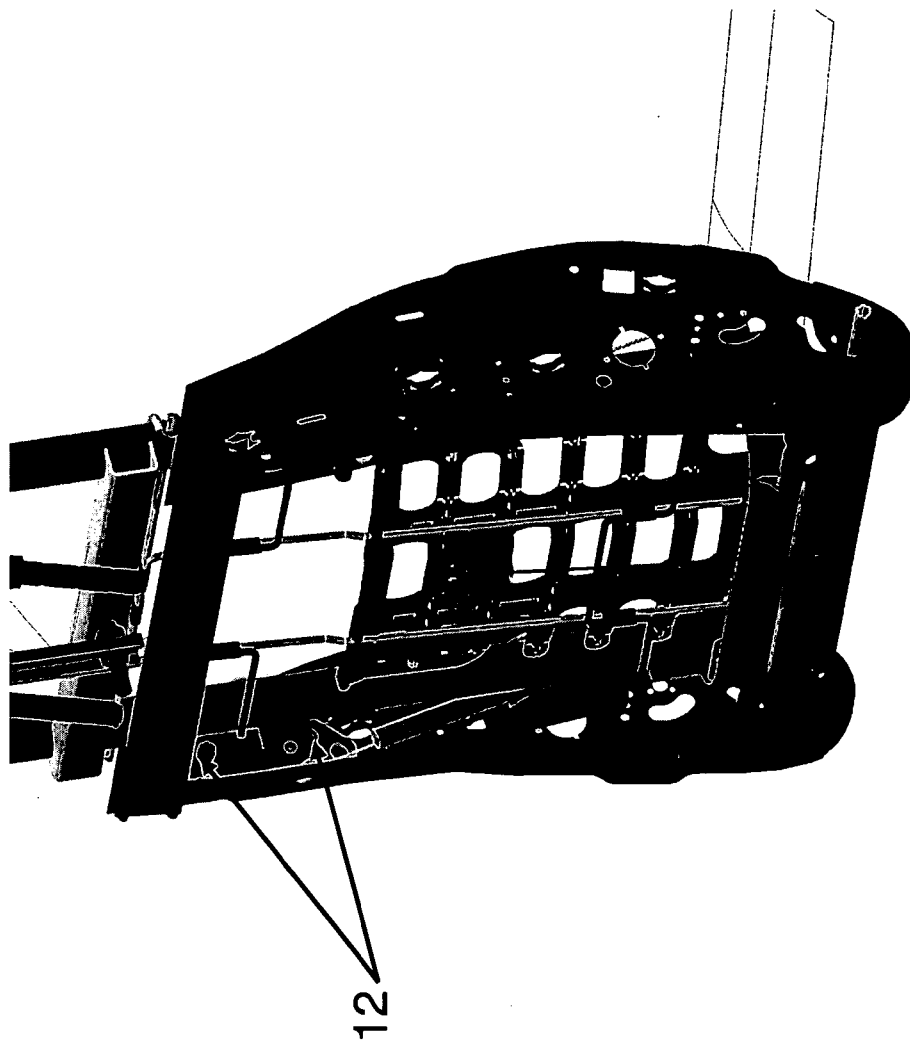
The spinal protection system according to the present invention is designed to accept multiple low impact hits before requiring service.

Figure 1



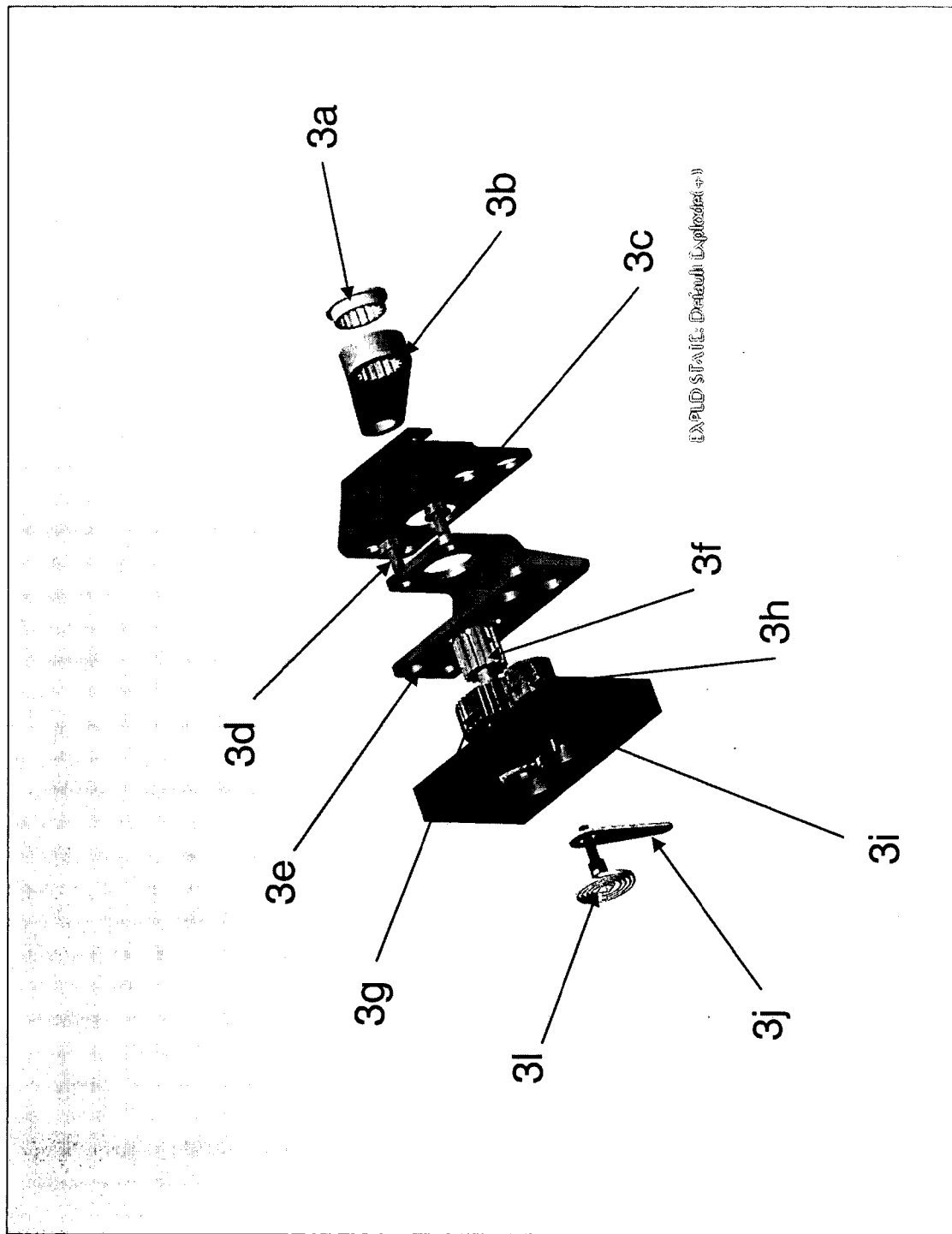
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Figure 2



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Figure 3



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APPLICATION INFORMATION

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