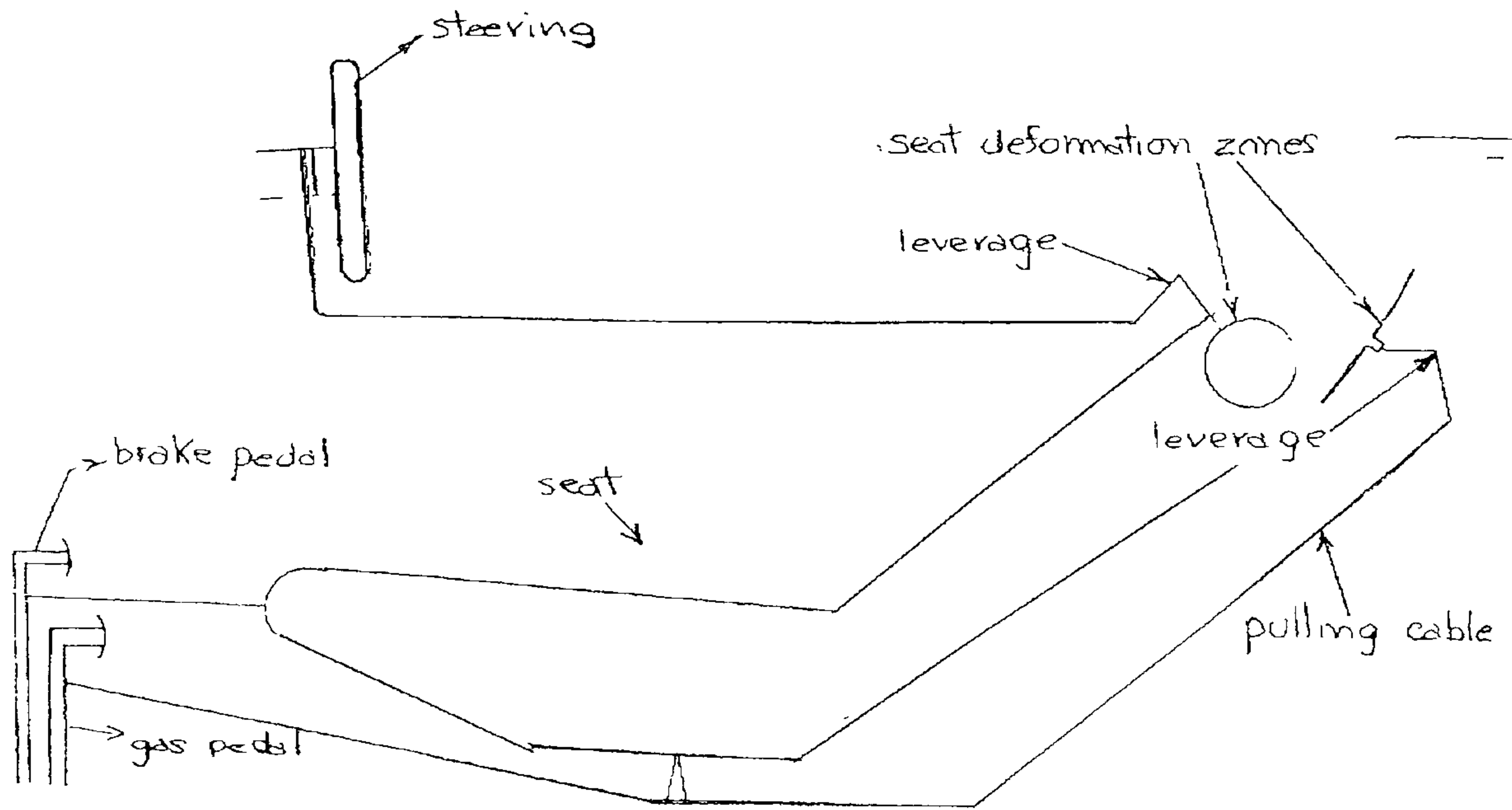




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(54) Titre : SIMULATION DE FORCE G POUR COURSE AUTOMOBILE
(54) Title: GFORCE SIMULATION FOR AUTOMOBILE RACING



GFORCE SIMULATION FOR AUTOMOBILE RACING

The present invention relates to a simulation apparatus and more particularly, relates to a simulation apparatus suitable for use with a video game.

Many video games involve the sport of automobile racing. Typically, the player of the game is required to manipulate one or more controls while driving a vehicle on a course defined by the video game. Such video games are very popular and are practiced both on home computers and also in arcades or the like.

However, one of the elements lacking in such video games is a feedback to the person playing the game. Thus, the only feedback generally provided is visual from the screen of the display unit.

It is an object of the present invention to provide a simulation apparatus which will provide a plurality of sensory feedback to the user of the game.

Some of the elements of the simulation apparatus according to the present invention are illustrated in the drawings wherein:

Figure 1 is a schematic drawing illustrating a sensory feedback to the seat of the game player;

Figure 1a is a schematic drawing illustrating a method of providing sensory feedback to the seat from a steering wheel;

Figure 2 is a schematic diagram illustrating sensory feedback from the operation of the throttle pedal to the player's seat;

Figure 3 is a schematic drawing illustrating sensory feedback from the steering wheel to the seat;

Figure 4 is a schematic drawing illustrating a further arrangement wherein sensory

feedback may be provided from either the accelerator pedal or steering wheel;

Figure 5 is a schematic drawing illustrating sensory feedback from either the throttle and/or steering wheel to the head portion of the player.

This product is a faithful reproduction of a racing automobile which, when combined with a computer video game, will provide Gforces simulation to complement the visual effects of the game. The object of this patent application concerns Gforces simulation provided by the deformation of the driver's seat. That deformation is activated either from the accelerator pedal or from the steering motion. (See general drawing #1)

When the accelerator pedal is depressed, the seat geometry is altered in the back, increasing the pressure upon the occupant's back. This increase in pressure provides a sensation similar to what an occupant experiences during acceleration of an automobile. The seat deformation pressure is proportional to the pressure applied to pedal. Examples of the mechanisms used for altering the seat geometry are either a pressure plate or an inflatable hydraulic bag. The pressure plate is activated from cables driven by the accelerator. (See drawings #2)

Likewise, side deformations of the seat are activated when the steering is turned with a left turn causing a pressure increase on the right side of the occupant and vice-versa. The resulting pressure upon the occupant's side is proportional to the extend of the steering's rotation and activated by a cable system linking to the steering to a pressure plate on the seat sides. These deformations simulate the Gforces an automobile driver experiences when cornering. In this case as well, examples of the mechanisms used for altering the seat geometry are either a pressure plate or an inflatable hydraulic bag. (See drawing #3)

The pressure plates described above may be a cut off of the seat, hinged on one side and activated by a lever linked to the cables from the accelerator or steering. (See drawing #4)

Furthermore, the steering rotation, as well as the throttle movement, may also be transferred by a cable system to a helmet worn by the driver, with or without an amplification of the movement, providing a simulation of the Gforces affecting the head of the driver when cornering. The head is then pulled to the right when turning left and vice-versa, and thrust backwards during acceleration. (See drawing #5)

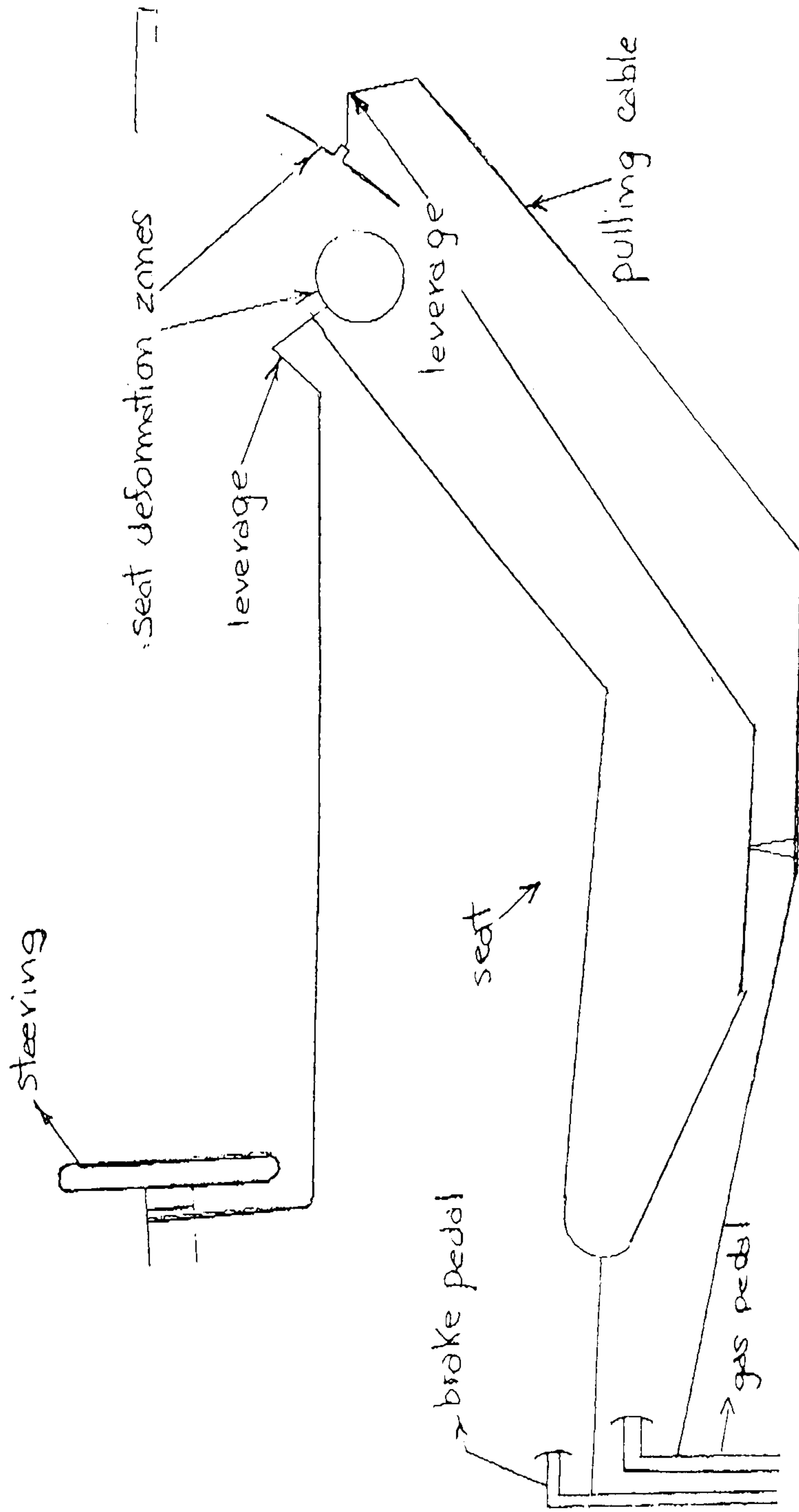
The above will be combined with two additional effects:

a forward rocking of the seat activated when the brake pedal is pressed, thus providing the full spectrum of forward and aft as well as lateral Gforces experienced by a driver in a racing automobile.

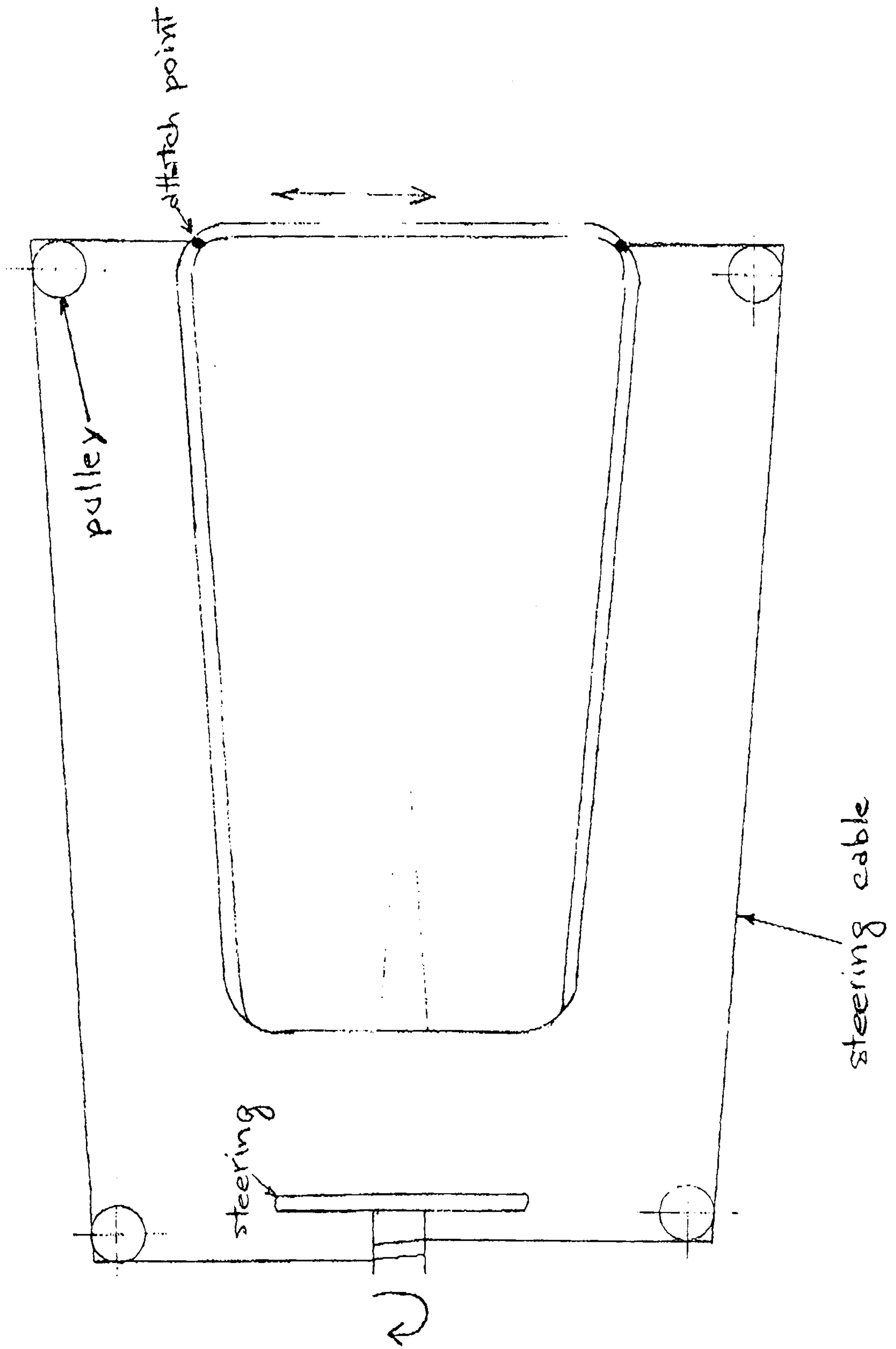
The installation of a transducer against the back of the seat with the transducer directly linked to the voice card of the computer thus providing a simulation of the vibrations experiences by the driver when racing an automobile, proportional to the level of pressure applied on the accelerator. A transducer converts electrical impulses from the voice card to physical vibrations.

It will be understood that the above described embodiment is for purposes of illustration only and that changes or modifications may be made thereto without departing from the spirit and scope of the invention.

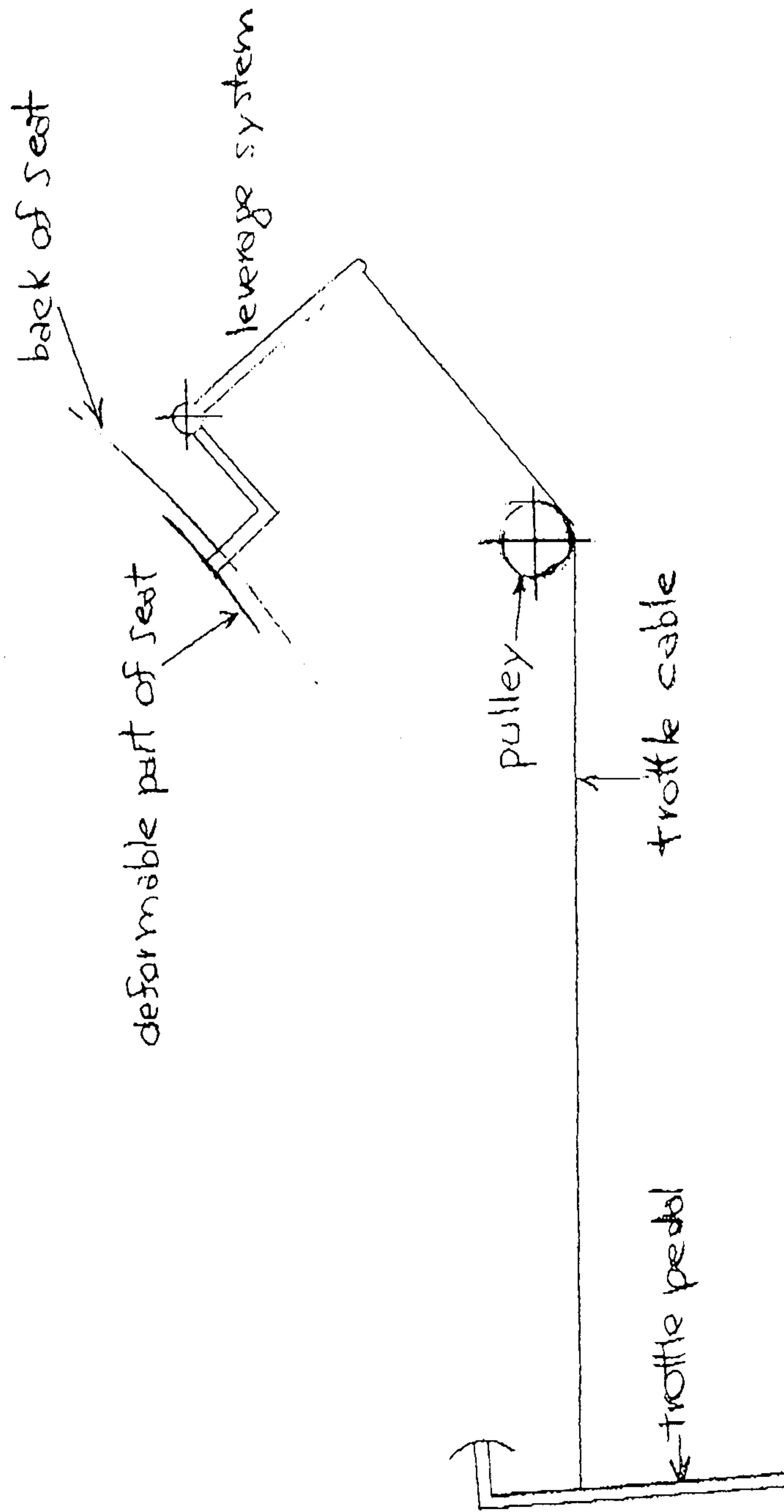
Drawing #1



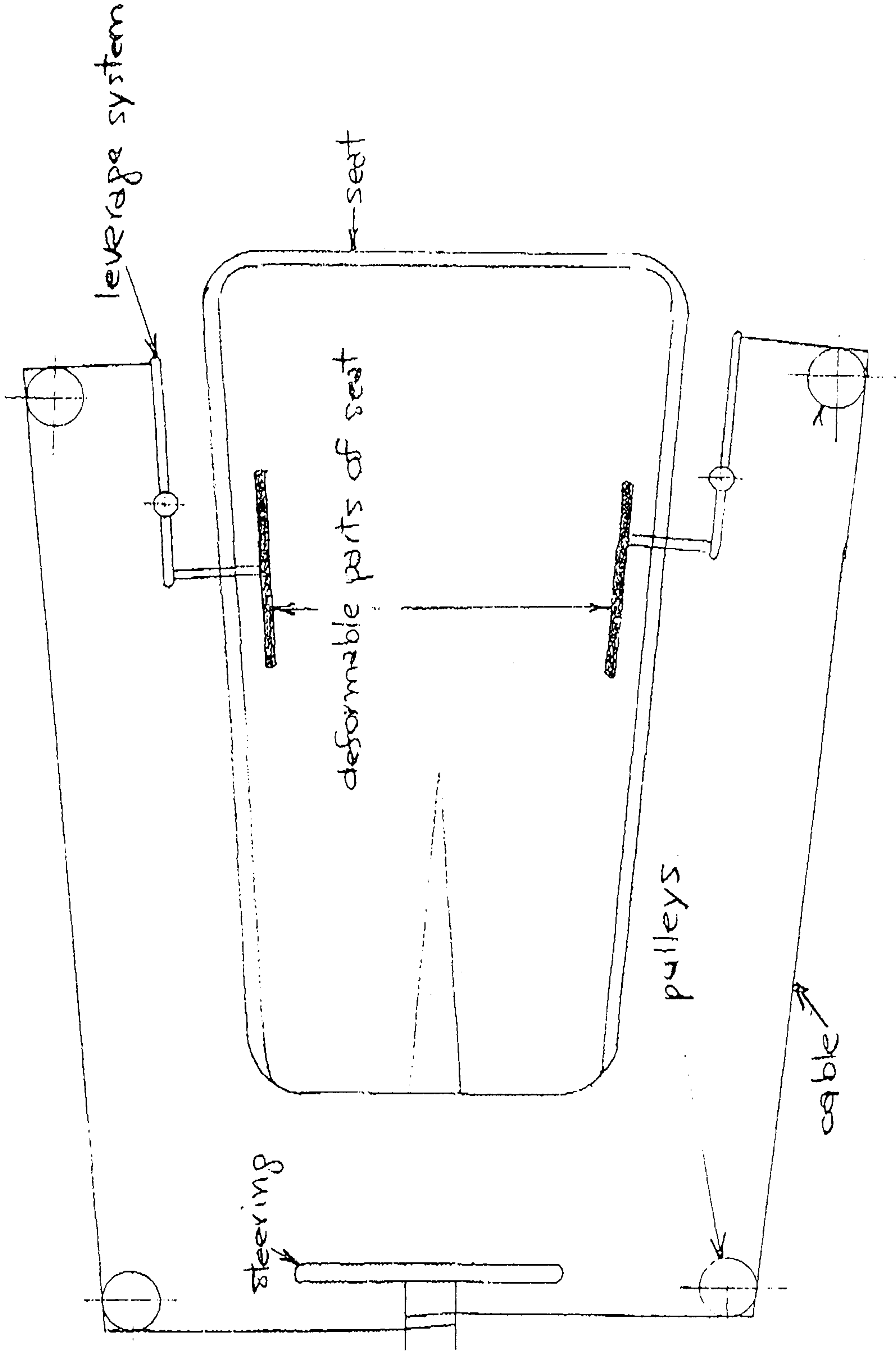
Drawing 1d



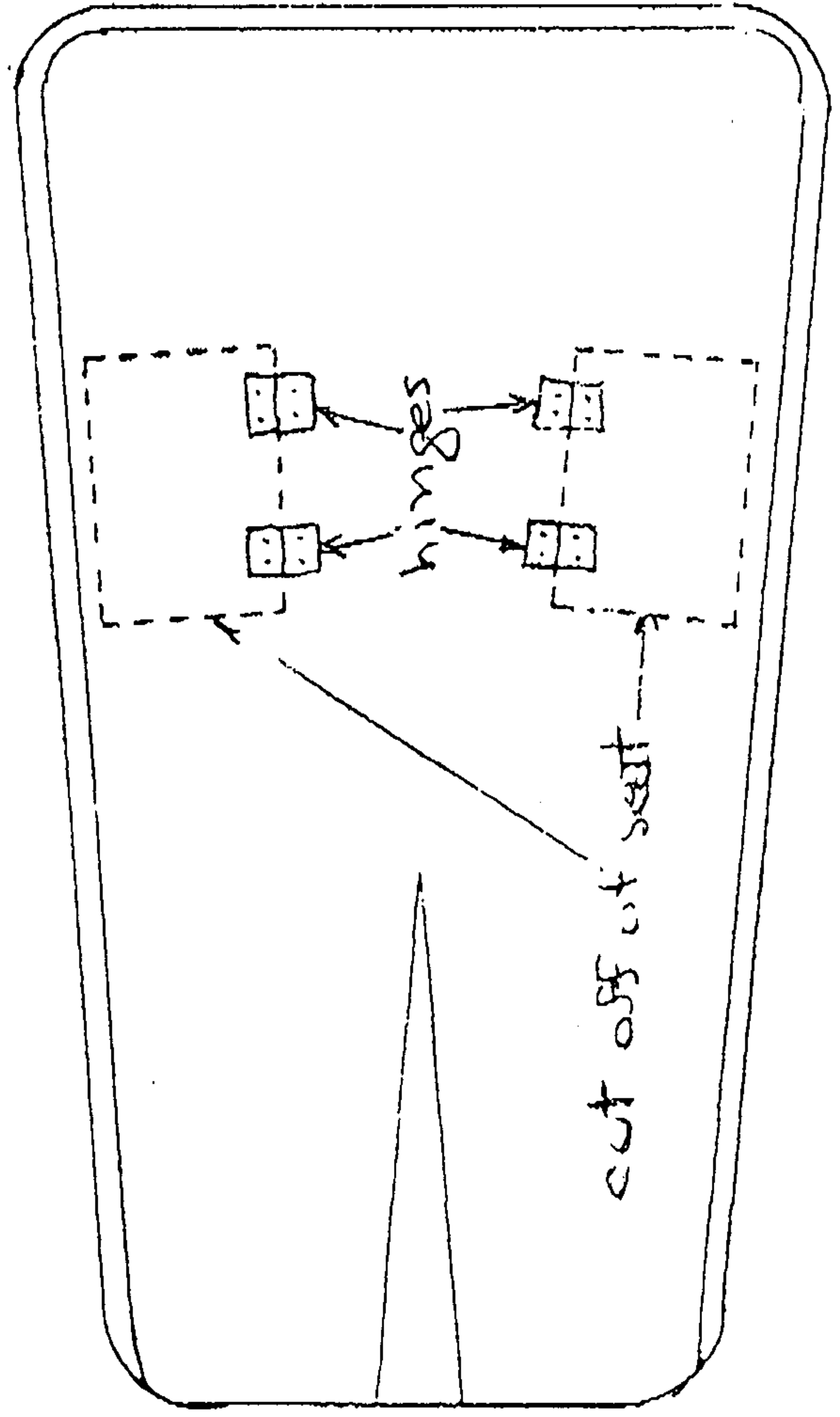
Drawing # 2



Drawing #3



Drawing #4



Drawing # 5

