

3 may be components which are known per se, which are each provided with an eccentric or with a rotor which has unbalance, and which generate vibrations.

[0029] The active region **5** of the vibration element in which the surface or side face of the eccentric is emphasized in a periodically stronger or weaker fashion during a rotation or in which perceptible vibrations are transmitted to an external surface of the vibration element, is arranged in each case in such a way that the vibrations and their changes in frequency are sensed clearly when the steering wheel is gripped. In the example in **FIG. 1** there are two vibration elements present, but basically any desired number is possible.

[0030] The actual vibration element **3** may be covered with respect to the external surface of the steering wheel rim by means of a deformable, in particular elastic, material to clad the steering wheel rim **1**, through which material the vibrations can be transmitted to the outside. Instead of this it is also possible to provide an opening or a slot in the steering wheel rim instead of the respective eccentric.

[0031] The vibration frequency of the vibration element is preferably set and changed electronically. Braking the vibrations or the rotation of the eccentric by means of the driver's hand results in a changed power drain which is detected in an evaluation circuit and, after having been interpreted as a switching command, can be converted into a change in a function or setting of the vehicle.

[0032] The described arrangement is only one possible example of an embodiment of the eccentric system which is described further above. Instead of the steering wheel it is possible to equip a grip or some other control device or switching device with it.

[0033] **FIG. 2** is a diagram of an arrangement of movable needles which, for example, can be integrated into the outer surface of a steering wheel rim instead of the vibration elements. The needles **6** are provided with magnets **7** which are moved in the magnetic field of a respective coil **8** of an electrical conductor, in particular made to vibrate.

[0034] In order to generate a restoring force or to adapt a resonant frequency, spring elements are preferably provided which are indicated in **FIG. 2** by springs **9** which are shown in simplified form. The precise configuration of such an arrangement for which other driving means are possible, for example a piezoelectric excitation, can be adapted, on the basis of the relevant specialist knowledge, to the requirements in accordance with the respective steering wheel, grip or switching lever.

[0035] When a pressure needle system or an extension needle system is implemented, a small region of the outside of the steering wheel rim may be provided with a matrix-like arrangement of the miniaturized needles. In each case one of these arrangements composed of needles is preferably mounted in regions of the steering wheel in which the driver usually grips the steering wheel in the basic position when traveling straight ahead, for example between the positions which correspond to two o'clock and three o'clock or nine o'clock and ten o'clock on the dial of an analog clock.

[0036] **FIG. 3** is a basic diagram of the means of actuation. The data records are transmitted via a network **10**. A transformer **12** (interface) receives the data and makes it

available to the programmable processing module **14**. The processing module **14** processes the transmitted information using the memory **11**. The memory **11** contains all the parameters and data necessary to operate the interactive haptic information element or control element, for example the driver-specific stimulation threshold, vibration rhythms and the like, and makes it available at least to one actuator driver **15** which is present, and if appropriate to at least one sensor driver **16** which is present.

[0037] An actuator driver **15** permits the haptic element **17** to be controlled; in the case of matrix systems an actuator driver performs, in particular, the actuation of rows and columns of the arrangement. At least one sensor driver **16** may be present in order to transmit the driver information received from the haptic element **17**, for example a pressure which is exerted or an electrical skin resistance, into the processing module **14**. In matrix systems it performs the interrogation of rows and columns.

[0038] The voltages which are necessary to operate the interactive haptic information element are transmitted and prepared from the on-board voltage system of the vehicle via an on-board voltage system module **13**. The voltage supply is indicated in **FIG. 3** by single branching arrows, while the contoured arrows which are not filled in represent the transmission of information.

[0039] The information element may be connected in an arrangement to at least one device of the vehicle which is provided for generating an information signal which serves to actuate the means of the information element which stimulate the sense of touch. Such a device is, in particular, a sensor or detector from the group of distance radar for monitoring the distance from a vehicle traveling in front or traveling behind, distance radar for the distance from an edge of the roadway, a load change detector, a frost detector and a biometric sensor for monitoring the driver.

[0040] An electronic circuit unit, which permits operating parameters of the information element to be matched to the respective driver, is preferably provided. It is thus possible to determine, in particular, an individual stimulation threshold of a driver and to adapt the level of effectiveness of the means of the information element which stimulate the sense of touch thereto. The reaction of the driver to the haptic stimulations can be programmed into the system in such a way that the necessary stimulation intensity can be set individually.

1. A control element for vehicles, comprising:

an operator control element for controlling or for switching a vehicle or vehicle component,

means for transmitting information about a state of the vehicle or traffic to a driver, the means for transmitting being mounted on or in the operator control element so as to be at least temporarily contactable by the driver and comprising stimulating means for mechanically, chemically or electrically stimulating the driver's sense of touch.

2. The control element according to claim 1, further comprising means for transmitting stimulation signals, which stimulate a sense of touch, as warning signals or information signals with a variable strength when predefined conditions occur.