(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 632 503 A8**

(12) **CORRECTED EUROPEAN PATENT APPLICATION**

(15) Correction information:
Corrected version no 1 (W1 A1)
Corrections, see
Bibliography INID code(s) 30

(48) Corrigendum issued on:
10.06.2020 Bulletin 2020/24

(43) Date of publication:
08.04.2020 Bulletin 2020/15

(21) Application number: **18197958.4**

(22) Date of filing: **01.10.2018**

(51) Int Cl.:
A61N 1/05 *(2006.01)* ***A61N 1/36*** *(2006.01)*
A61N 1/375 *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **31.08.2018 EP 18192027**

(71) Applicant: **Nederlands Herseninstituut**
1105 BA Amsterdam (NL)

(72) Inventors:
- **ROELFSEMA, Pieter R.**
  1105 BA AMSTERDAM (NL)
- **CHEN, Xing**
  1105 BA AMSTERDAM (NL)

(74) Representative: **Algemeen Octrooi- en Merkenbureau B.V.**
P.O. Box 645
5600 AP Eindhoven (NL)

(54) **A NEUROPROSTHETIC SYSTEM AND METHOD FOR SUBSTITUTING A SENSORY MODALITY OF A MAMMAL BY HIGH-DENSITY ELECTRICAL STIMULATION OF A REGION OF THE CEREBRAL CORTEX**

(57) An aspect of the present disclosure relates to a neuroprosthetic system for substituting a sensory modality of a mammal by electrical stimulation of a region of the cerebral cortex of said mammal corresponding to said neural modality to be substituted, said system comprising: at least one sensor, for use by said mammal, arranged for generating a sensed data feed by sensing a neural modality to be substituted; an electrode unit, comprised of a plurality of three-dimensional arrays of flexible, elongated electrode shafts, arranged for intracortical implantation for a dense occupation of such region of the cerebral cortex of said mammal arranged for providing functional coverage of the sensory modality, each shaft comprising multiple electrical contacts, for electrical stimulation of subsets of locations in said region of the cerebral cortex; a rigid electrode support structure, arranged for simultaneously guiding said flexible electrode shafts of an array into said region of the cerebral cortex of said mammal during intracortical implantation, and for retracting said support structure after implantation of an array of flexible electrode shafts; a driving unit, arranged for electrically driving said electrode unit for stimulating said subsets of locations in said region of the cerebral cortex; a recording unit, arranged obtaining neural recording through said electrode unit in said region of the cerebral cortex; a processing unit, arranged for analysing said sensed data feed for providing stimulation patterns for electrically driving groups of electrical contacts of said electrode unit corresponding to subsets of locations in said region of the cerebral cortex, for substituting said sensory modality.

EP 3 632 503 A8

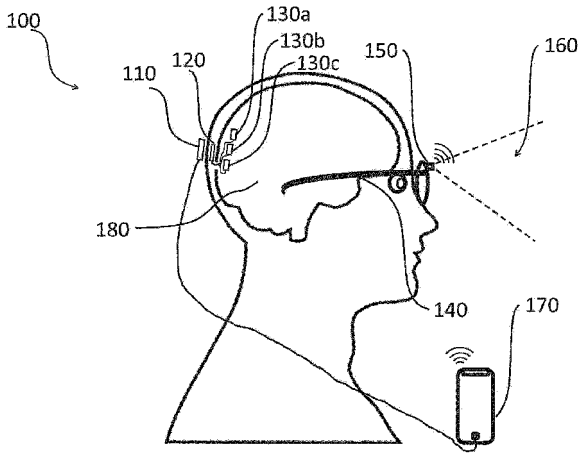

Fig. 1