Description

Drive mechanism for a drug delivery device

The present invention relates to a drive mechanism for a drug delivery device and to a drug delivery device comprising the drive mechanism.

Portable drug delivery devices are used for the administration of a drug that is suitable for self-administration by a patient. A drug delivery device is especially useful in the shape of a pen, which can be handled easily and kept everywhere available.

A type of drug delivery device is constructed to be refillable and reusable many times. A drug is delivered by means of a drive mechanism, which may also serve to set the dose or amount to be delivered.

DE 102 37 258 B4 describes a drug delivery device in the shape of an injection pen having a drive mechanism, which allows to deliver a plurality of different prescribed doses. The drive mechanism comprises elements which are rotated relatively to one another around a common axis.

Various embodiments seek~~It is an object of the present invention~~ to facilitate provision of a new drive mechanism for a drug delivery device or of a new drug delivery device.

~~This object is achieved by a drive mechanism according to claim 1. Further objects are achieved by variants and embodiments according to the dependent claims.~~

The drive mechanism for a drug delivery device comprises a body having a distal end and a proximal end, spaced apart in the direction of a first axis and a second axis that is parallel to the first axis. A first input member and a second input member are arranged within the body along the first axis and coupled in such a manner that a movement of the first input member along the first axis is converted into a rotational movement of the second input member with respect to the body. A first output member and a second output member are arranged within the body along the second axis and coupled in such a manner that a rotational movement of the first output member is converted into a

movement of the second output member along the second axis with respect to the body. The second input member and the first output member are releasably rotationally coupled. when the first input member (6) is moved in the distal direction (20). A pinion member (11) releasably rotationally couples the second input member (7) and the first output member (8), a pawl member (12) engages with the pinion member allowing rotation of the pinion member in only one direction. A clutch (13) couples the second input member with the pinion member in a releasable fashion.

The body can be any housing or any component that forms part of a housing, for example. The body can also be some kind of an insert connected with an exterior housing. The body may be designed to enable the safe, correct, and/or easy handling of the device and/or to protect it from harmful liquids, dust or dirt. The body can be unitary or a multipart component of tubular or non-tubular shape. The body may house a cartridge, from which doses of a drug can be dispensed. The body can especially have the shape of an injection pen.

The term "distal end" refers to a part of the body or housing which is intended to be arranged at a portion of the drug delivery device from which a drug is dispensed. The term "proximal end" refers to a part of the body or housing which is remote from the distal end. The term "distal direction" refers to a movement in the same direction as a movement from the proximal end towards the distal end, not specifying a point of departure nor an end point, so that the movement may go beyond the distal end. The term "proximal direction" refers to a movement in the direction opposite to the distal direction.

The drive mechanism can be used to expel a drug from a receptacle or cartridge inserted in the body of a drug delivery device. The drug delivery device can be a disposable or re-usable device designed to dispense a dose of a drug, especially a liquid, which may be insulin, a growth hormone, a heparin, or an analogue and/or a derivative thereof, for example. The drug may be administered by a needle, or the device may be needle-free. The device may be further designed to monitor physiological properties like blood glucose levels, for example. Each time the second output member is shifted in the distal direction with respect to the body, a dose of the drug is expelled from the drug delivery device.

In an embodiment of the drive mechanism, a shift of the first input member in the distal direction produces a shift of the second output member in the distal direction.