Kinematic chain for flexion-extension

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Invention

Wearable robotics in recent years is becoming increasingly popular. It is now not uncommon to see examples in everyday life of using robots, prostheses or exoskeletons. Surely the phenomenon will increase given the growing trend of technologies that are increasingly presented in this area, especially in the clinical setting (eg: rehabilitation, passive mobilization, assistance).

A much-felt challenge today in this sense is that of hand rehabilitation, where its complex constitution makes the use of a robot for traditional assistance much more difficult.

This industrial patent proposes an apparently simple geometry (a degree of freedom) capable of arching by moving the center of instantaneous rotation of the end effector as a function of the input angle.This kinematic chain is extremely effective in hand exoskeletons to assist the flexion and extension of a finger when positioned on the dorsal part. In this way it is possible to implement more fingers by appropriately replicating the mechanism.

Main advantages are:

- Discreet lateral dimensions
- Single DOF
- Floating center of instantaneous rotation

Drawings
& pictures

Fig. 1

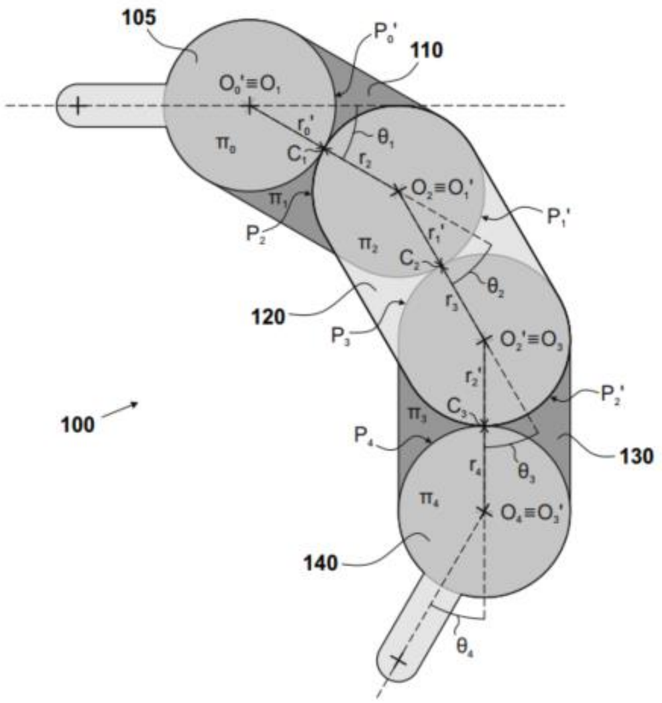
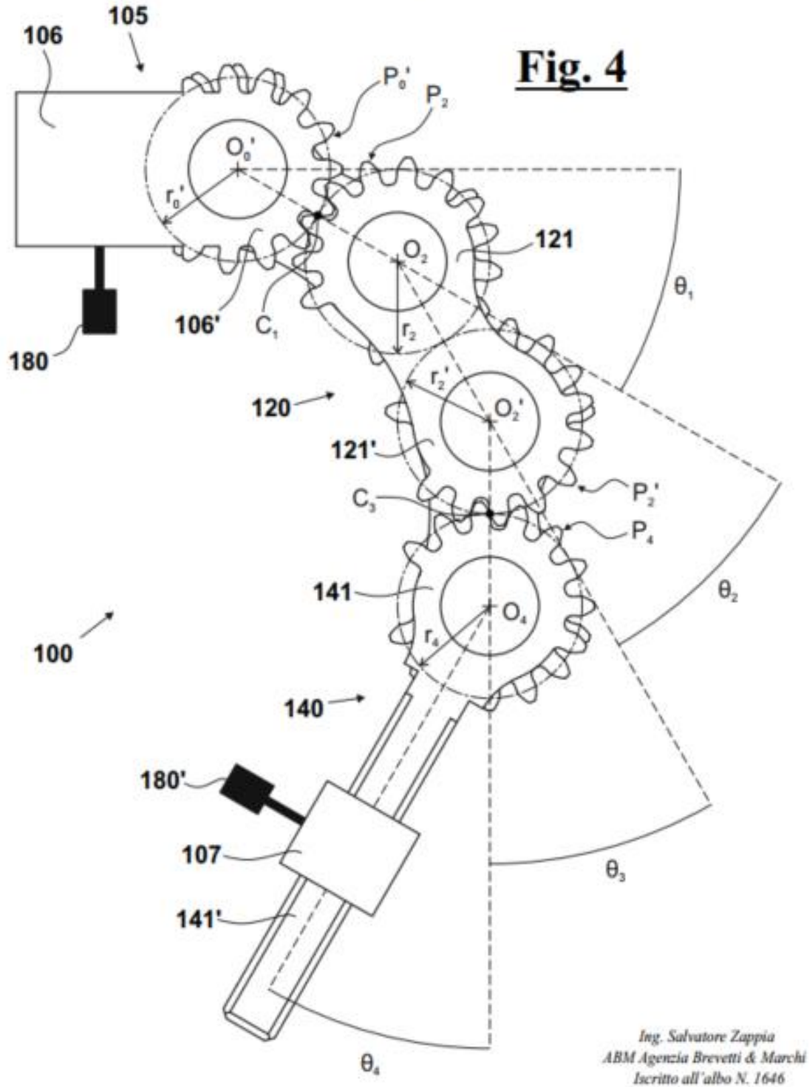


Fig. 4



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Industrial applications

The main industrial applications are:

- Kinematic applications with mobile instantaneous rotation center
- Exoskeletons
- Complex hinges

Possible developments

The technology underlying the patent is in a development phase that is not yet fully mature for the market with the respective products.

The TRL is still to be considered low (eg: 2/3) suitable for experimental validation prototypes but has a great potential to enable the technology.

Still numerous other insights are needed by the research team to make the technology effectively applicable to a product.

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