Magnetically guided robotic device for endoscopic procedures

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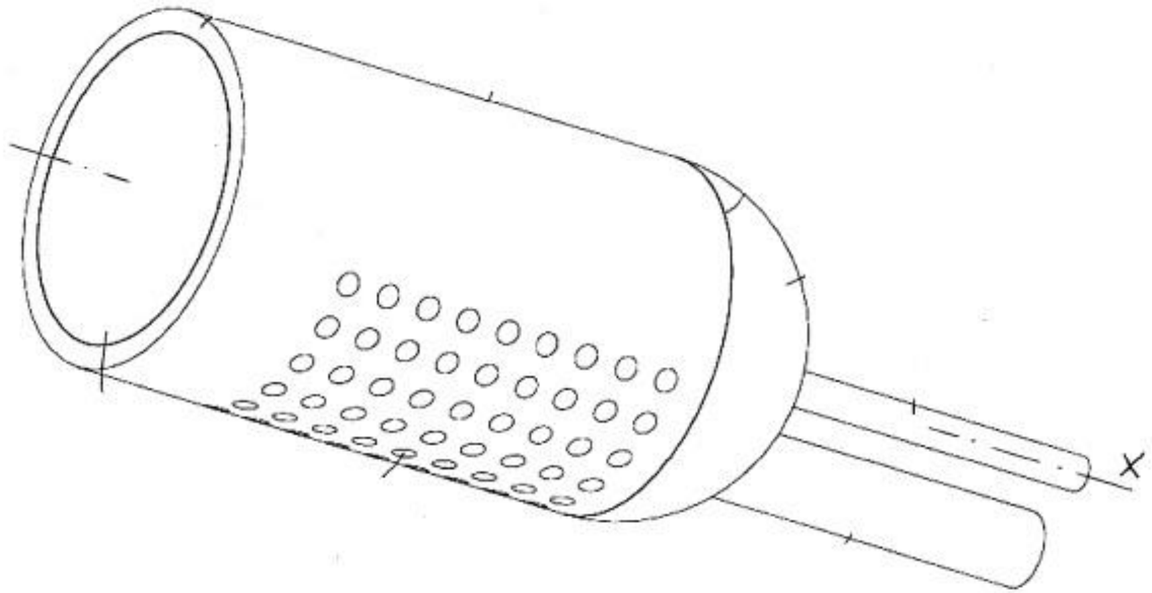
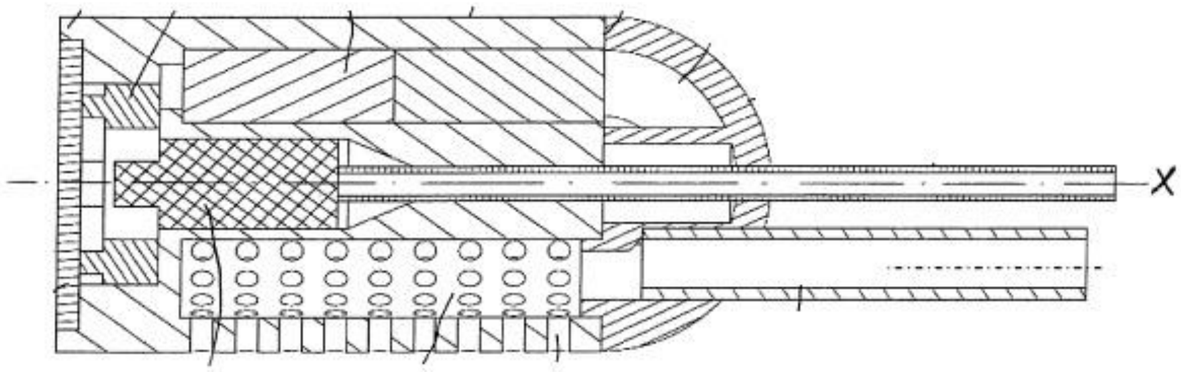
Invention

The present invention relates in general to the field of endoscopic devices. More precisely, the invention relates to a magnetically-guided robotic device of the capsular type to carry out endoscopic procedures, in particular in the gastrointestinal tract.

Endoscopic procedures of the gastrointestinal tract use flexible fiber optic probes equipped with powerful lens systems, a light source and operating channels for diagnostic inspection of the digestive lumen and possibly for the passage of drugs or instruments suitable for performing local therapeutic and / or surgical treatments. Although this medical technique represents the only minimally invasive procedure available to date for the diagnosis and treatment of pathologies of the gastrointestinal tract with high efficiency and reliability, it is generally poorly tolerated by patients as the insertion of the endoscopic flexible probe, although performed through a natural orifice, and the blowing of air generates pain. Pain is the most frequent complication that occurs during this diagnostic examination. In particular, it can be caused not only by an excessive insufflation of air, but also and above all by the formation of loops that stretch the mesentery, causing pain. In fact, if the operator fails to make the instrument progress correctly along the intestinal lumen, it is possible that it over-deforms the intestine causing considerable pain to the patient. In addition, traditional endoscopy can give rise to complications related to sedation, cardio-pulmonary complications and the inability to perform diagnostic tests of certain portions of the digestive system, such as the small intestine.

Drawings
& pictures





Industrial applications

Application: endoscopic devices.

The innovation introduced by this patent allowsto minimize the drawbacks typically associated with endoscopic probes in use today (pain, need for sedation, etc.)

Possible developments

The research group is interested in obtaining industrial collaborations aimed at increasing the technological maturity of the present invention or industrial partners interested in taking the license of the technology object of this patent.

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