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(54) **ELECTRIC DREDGER**

(57) An electric dredger includes a shaft rod and a helical reeling piece. The shaft rod has a shaft sleeve made of micro-soft iron connected to the first end thereof. The helical reeling piece is connected to a central shaft

hole of the shaft sleeve. An external end surface of the shaft sleeve is provided with an inclined surface. A connecting rod is connected to a second end of the shaft rod and connected to an electric drilling tool.

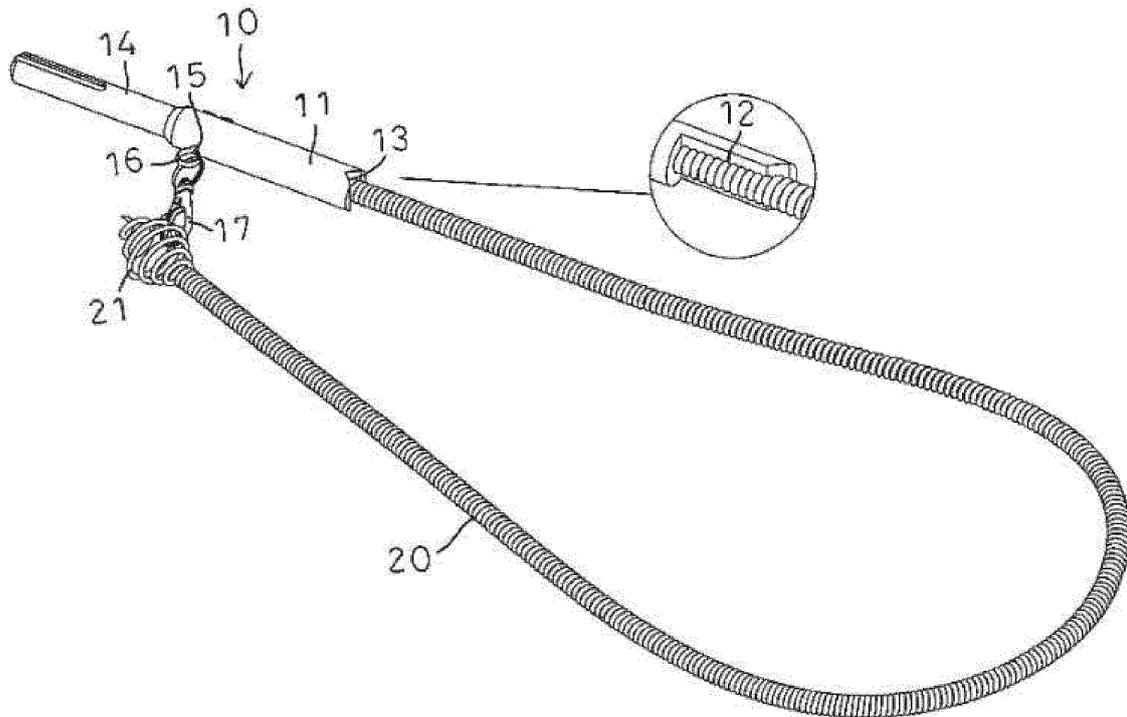


FIG. 1

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DescriptionBACKGROUND OF THE INVENTION

1. Fields of the invention

[0001] The present invention relates to an electric dredger for removing obstructions clogged in pipes such as toilet pipes, sink pipes and drain pipes.

2. Descriptions of Related Art

[0002] The conventional dredgers are manually operated to rotate within the clogged pipes so as to remove the clogged hairs and other objects in the pipe. However, it takes time and has to operate it with a lot of force. The conventional dredgers usually assembled by way of welding or threading, the parts may be loosened or separated from each other. The conventional dredgers need to be improved.

[0003] The present invention intends to provide an electric dredger to eliminate the shortcomings mentioned above.

SUMMARY OF THE INVENTION

[0004] The present invention relates to an electric dredger and comprises a shaft rod and a helical reeling piece. The shaft rod has a shaft sleeve connected to the first end thereof. The shaft sleeve is made of micro-soft iron and has a central shaft hole defined in the distal end thereof. The helical reeling piece has its first end connected to the central shaft hole of the shaft sleeve. The external end surface of the shaft sleeve has two V-shaped and spaced inclined surfaces. When assembling, the helical reeling piece has its first end inserted into the central shaft hole of the shaft sleeve, and the shaft sleeve is pressed externally and deformed to secure the helical reeling piece in the central shaft hole of the shaft sleeve. The shaft rod has a connecting rod connected to the second end thereof, and the connecting rod is connected to and driven by an electric drilling tool. The helical reeling piece is made by helically wound flexible metal wire so as to form a hollow piece. The second end of the helical reeling piece has an operation end connected thereto. The operation end cleans obstructions in a pipe. The helical reeling piece is connected to the shaft rod by way of pressing which improves the shortcomings of welding and threading.

[0005] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006]

Fig. 1 is a perspective view to show the electric dredger of the present invention;

Fig. 2 is a cross sectional view to show the helical reeling piece is to be connected to the central shaft hole of the shaft sleeve;

Fig. 3 is a cross sectional view to show that the helical reeling piece is inserted into the central shaft hole of the shaft sleeve, and the shaft sleeve is to be pressed to secure the helical reeling piece, and

Fig. 4 is a cross sectional view to show that the helical reeling piece secure in the shaft sleeve after the shaft sleeve is pressed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0007] Referring to Figs. 1 and 4, the electric dredger of the present invention comprises a shaft rod 10 and a helical reeling piece 20. The shaft rod 10 has a shaft sleeve 11 connected to the first end thereof. The shaft sleeve 11 is made of micro-soft iron which is deformed when external pressure is applied thereto. A central shaft hole 12 is defined in the distal end of the shaft sleeve 11, and the helical reeling piece 20 has the first end thereof connected to the central shaft hole 12 of the shaft sleeve 11. The external end surface of the shaft sleeve 11 has two V-shaped spaced inclined surfaces 13 which prevent the shaft sleeve 11 being broken when being pressed. The shaft rod 10 has a connecting rod 14 connected to the second end thereof. The connecting rod 14 is to be connected to and driven by an electric drilling tool which rotates the shaft rod 10. The shaft rod 10 includes a through hole 15 defined radially therethrough. A pin 16 extends through the through hole 15 and is connected with a clip 17. The helical reeling piece 20 is removably connected with the clip 17 to reduce the space occupied by the helical reeling piece 20.

[0008] The helical reeling piece 20 is made by helically wound flexible metal wire so as to form a hollow piece. The first end of the helical reeling piece 20 is connected to the central shaft hole 12 of the shaft sleeve 11, and the second end of the helical reeling piece 20 has an operation end 21 connected thereto. The operation end 21 is a helical end and used to clean obstructions in a pipe.

[0009] When assembling, as shown in Figs. 2, 3 and 4, the first end of the helical reeling piece 20 is inserted into the central shaft hole 12 of the shaft sleeve 11, and the shaft sleeve 11 is pressed externally to deform the shaft sleeve 11 to secure the helical reeling piece 20 in the central shaft hole 12.

[0010] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

Claims

1. An electric dredger comprising:

a shaft rod and a helical reeling piece, the shaft rod having a shaft sleeve connected to a first end thereof, the shaft sleeve made of micro-soft iron and having a central shaft hole defined in a distal end thereof, the helical reeling piece having a first end thereof connected to the central shaft hole of the shaft sleeve, an external end surface of the shaft sleeve having multiple spaced inclined surfaces, and the helical reeling piece being made by helically wound flexible metal wire so as to form a hollow piece, a second end of the helical reeling piece having an operation end connected thereto, the operation end adapted to clean obstructions in a pipe.

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2. The electric dredger as claimed in claim 1, wherein the shaft rod includes a through hole defined radially therethrough, a pin extends through the through hole and is connected with a clip, the helical reeling piece is removably connected with the clip to transfer the helical reeling piece into a compact size.

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3. The electric dredger as claimed in claim 1, wherein the shaft rod has a connecting rod connected to a second end thereof, the connecting rod is adapted to be connected to and driven by an electric drilling tool.

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4. The electric dredger as claimed in claim 1, wherein the operation end of the helical reeling piece is a helical end.

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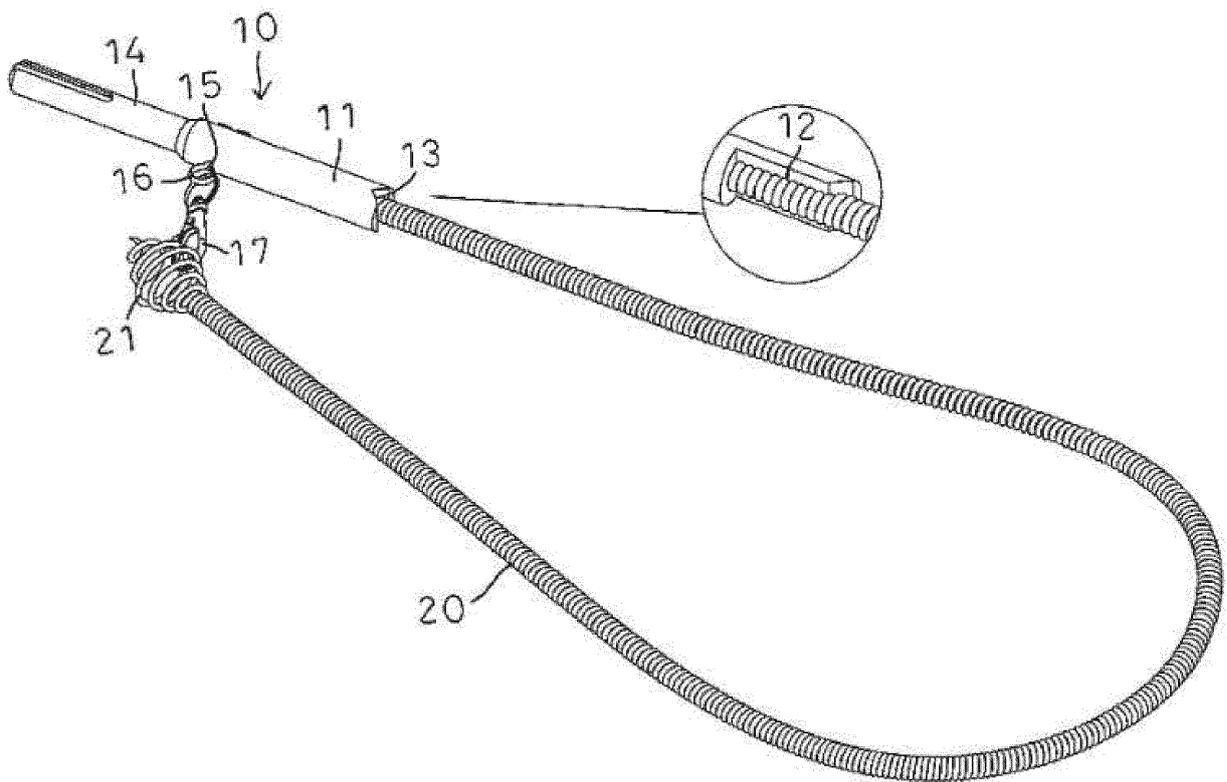


FIG. 1

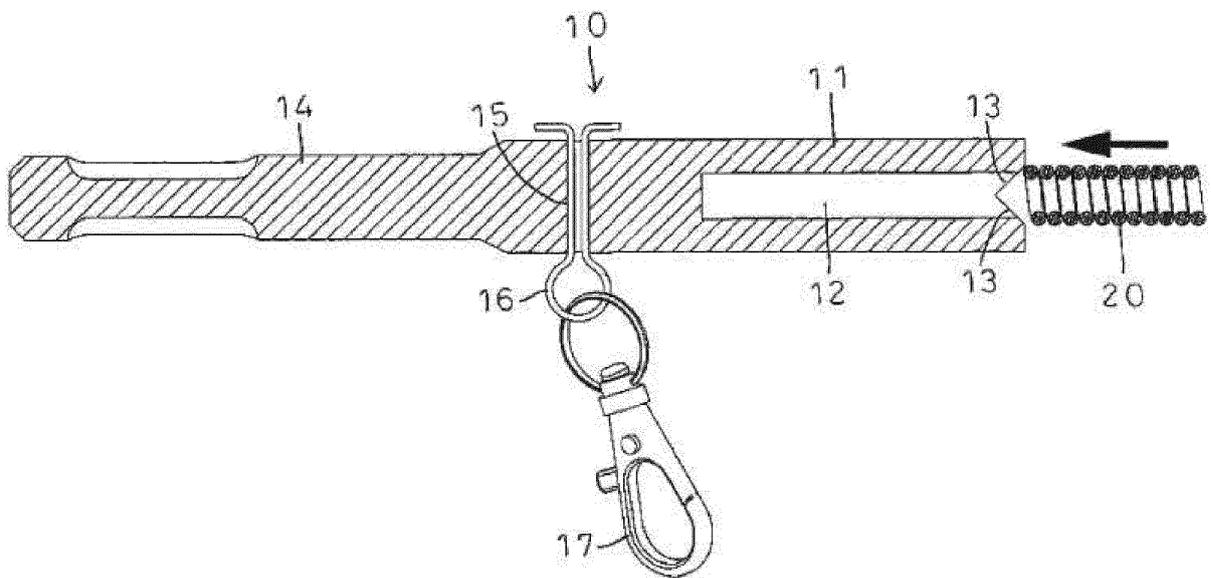


FIG. 2

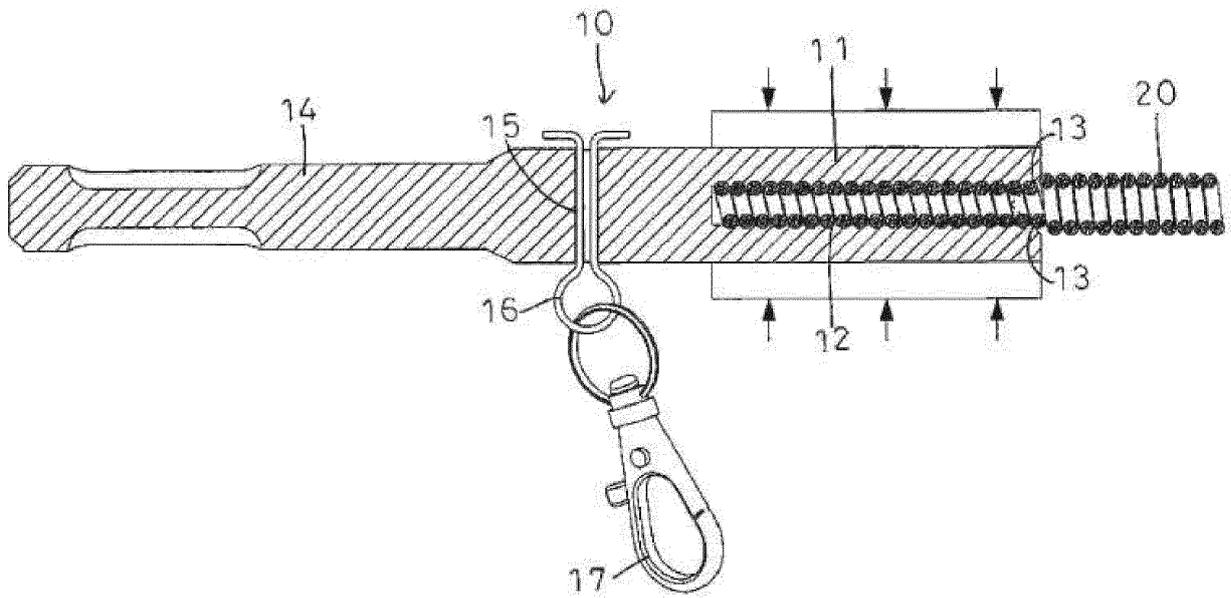


FIG. 3

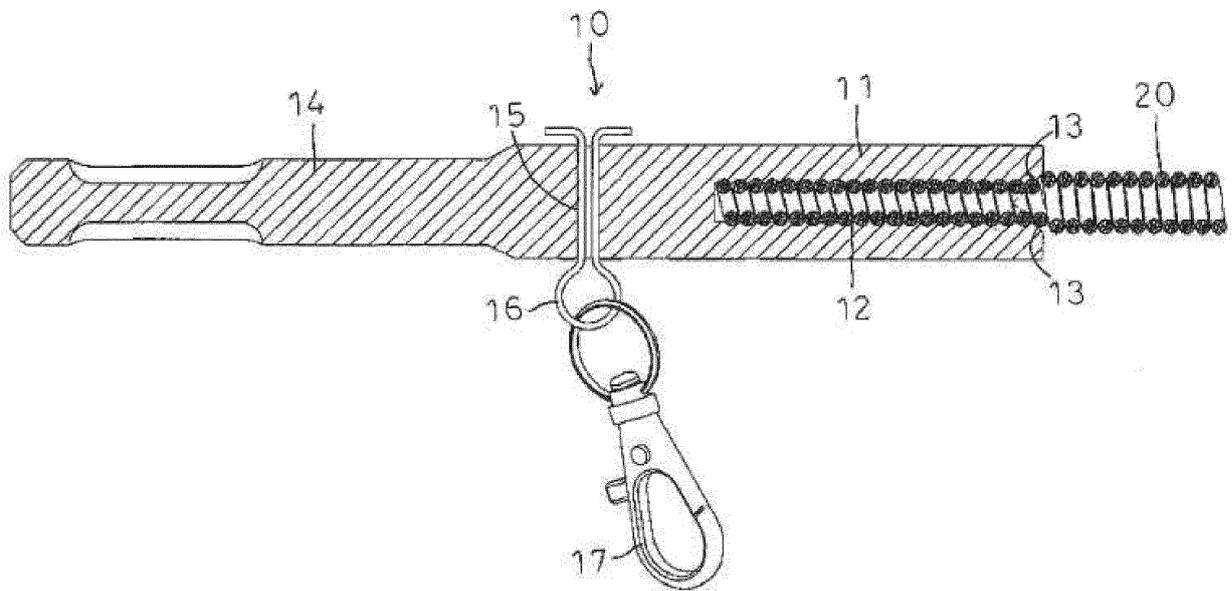


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2014/070466

A. CLASSIFICATION OF SUBJECT MATTER

E03C 1/302 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E03C 1/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT, CNKI, WPI, EPODOC: YU, Mucun; dredger, spiral, iron, electric, dredge, coil, soft, flexible, metal, coherer, gap, bevel

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 203129280 U (YU, Mucun), 14 August 2013 (14.08.2013), description, paragraphs 38-44, and figures 1-2	1-4
Y	CN 2545265 Y (GAO, Xinhe), 16 April 2003 (16.04.2003), description, 4 th paragraph from the bottom, and figure 1	1-4
E	CN 203669051 U (YU, Mucun), 25 June 2014 (25.06.2014), claims 1-4	1-4
A	US 2010/0313351 A1 (WOOTEN, D.W.), 16 December 2010 (16.12.2010), the whole document	1-4

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
“A” document defining the general state of the art which is not considered to be of particular relevance	“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
“E” earlier application or patent but published on or after the international filing date	“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	“&” document member of the same patent family
“O” document referring to an oral disclosure, use, exhibition or other means	
“P” document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 08 August 2014 (08.08.2014)	Date of mailing of the international search report 24 October 2014 (24.10.2014)
Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer CHAI, Guorong Telephone No.: (86-10) 62084951

INTERNATIONAL SEARCH REPORT
 Information on patent family members

International application No.
PCT/CN2014/070466

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Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 203129280 U	14 August 2013	TW M449173 U	21 March 2013
CN 2545265 Y	16 April 2003	None	
CN 203669051 U	25 June 2014	None	
US 2010/0313351 A1	16 December 2010	WO 2010/144178 A1	16 December 2010