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K. D. CLAYSON
TORQUE-TRANSMITTING TOOL HAVING ROTATABLE
HOUSING AND BENDABLE BUT STATIONARY CORE
Filed Aug. 7, 1953

2,704,005

Fig. 1.

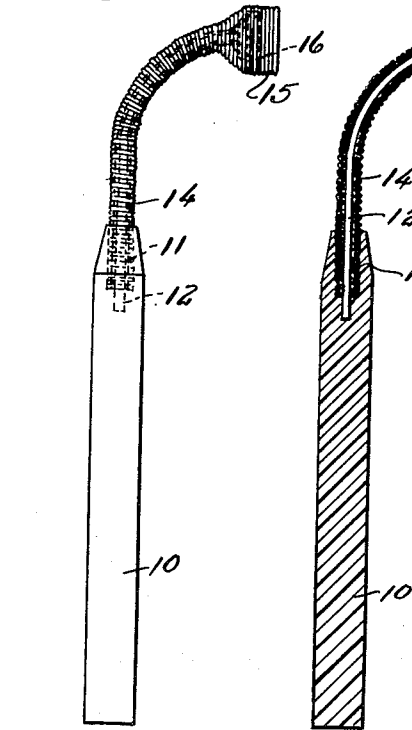


Fig. 2.

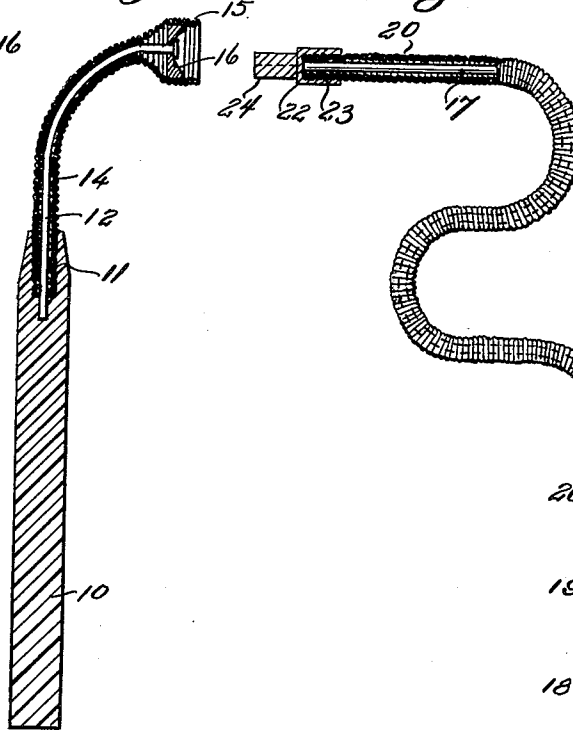


Fig. 3.

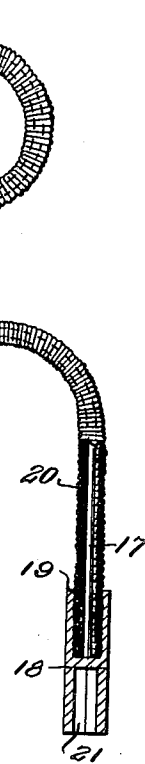


Fig. 4.

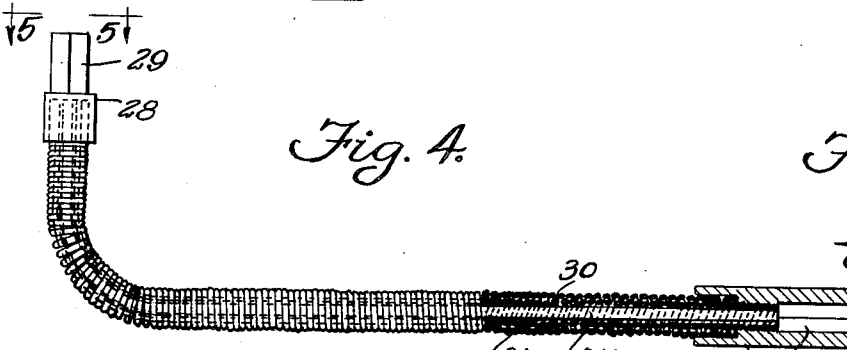


Fig. 6.

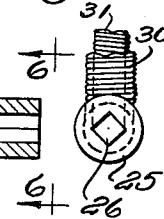
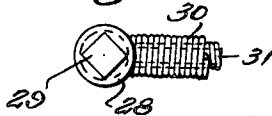


Fig. 5.



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TORQUE-TRANSMITTING TOOL HAVING ROTATABLE HOUSING AND BENDABLE BUT STATIONARY CORE

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Application August 7, 1953, Serial No. 372,830

4 Claims. (Cl. 81-177)

This invention relates to a tool, and more particularly to a tool including a bendable stationary core and a flexible rotatable sleeve.

The object of the invention is to provide a tool including a bendable stationary core having its ends extended partly into rotatable end members connected for unitary movement by a flexible sleeve which may include one or more spiral spring members, so that the tool can be bent into any special shape and will retain such shape until the tool is bent to another desired shape, whereby the tool can be used for transmitting torque around a corner, or around a series of corners to reach a job in an inaccessible location.

A further object of the invention is to provide a tool which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a side elevational view of the tool of the present invention, wherein there is provided a spring for revolving around a stationary shaft.

Figure 2 is a view similar to Figure 1, but with parts broken away and in section.

Figure 3 is a side elevational view of a modified form of the invention, with parts broken away and in section, and a plurality of curves are provided and wherein a wrench head is arranged on one end of the device and a socket on the other end.

Figure 4 is a side elevational view of another modified form of the invention wherein two springs are provided, there being a socket on one end and a wrench head on the other end of the springs.

Figure 5 is a fragmentary plan view, as seen from the viewing line 5-5 of Figure 4.

Figure 6 is an end elevation, as seen from the viewing line 6-6 of Figure 4.

Referring in detail to the drawings, the numeral 10 designates a handle which may be made of any suitable material such as plastic, and formed in one end of the handle 10 is a recess 11. A stationary but bendable core 12 extends into the recess 11, so that the handle 10 can be rotated on the core 12.

Rotatably mounted on the core 12 is a spiral spring 14, the end of the spring 14 being seated in the recess 11 in the handle 10, and being secured to the handle 10 in any suitable manner. The other end of the spring 14 is enlarged to provide a socket 15 for receiving a suitable securing element such as a nut that is to be manipulated in an inaccessible location, and positioned within the socket 15 and rotatably mounted on the end of the shaft 12 is a head 16. In the form of the invention shown in Figures 1 and 2, the spring 14, its socket extension 15, the head 16 and the handle 10 form a unitary housing that is rotatably mounted on the stationary core 12. The construction of the spiral spring 14 is such that the nut or other securing element can be rotated only in one direction with the form of the invention shown in Figures 1 and 2.

Referring to Figure 3 of the drawings there is shown a modified tool which includes a stationary core 17 that is bent to provide a series of curves. A body member 18 is provided with a recess 19 for receiving an end of a spiral spring member 20, and the spring member 20 is secured to the body member 18 in any suitable manner.

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The body member 18 is further provided with a socket 21 for receiving any suitable element therein. The other end of the spring 20 is secured in a recess 23 that is formed in a support member 22, and the support member 22 is provided with a wrench head 24. By means of the form of the invention shown in Figure 3 torque can be transmitted between any two members that engage the wrench head 24 and socket 21. In this form of the invention the spring 20, the member 22 and the socket 21 form a housing that can rotate as a unit about the stationary core 17.

Referring to Figures 4, 5 and 6 of the drawings there is shown still another modified form of the invention. In this form of the invention the torque-transmission unit includes a support member 28 having a wrench head 29 on its outer end, a body member 25 having a socket 26 in its outer end, a stationary but bendable core 27 that extends into recesses in inner ends of the body member 25 and the support member 28, a pair of concentrically arranged spring members 30 and 31 surrounding said core and being secured in said recesses to said members 25 and 28. The provision of the pair of concentrically arranged oppositely extending spiral springs 30 and 31 permits rotation of a nut or other securing element in either direction whereas when only one spring is used as in Figures 1, 2 and 3, the securing element can be rotated only in one direction.

From the foregoing it is apparent that a tool has been provided which is especially suitable for transmitting torque to inaccessible locations, and which can be used either for starting nuts or for releasing nuts from bolts and the like. Instead of using the spiral springs, other flexible housings can be used which can be rotated around a stationary core of rigid or semi-rigid material. The core is not fastened at either end to either the housing or spring. The core can be bent to assume any desired shape for transmitting torque around a corner or series of corners to reach a job in an inaccessible location and it may retain its shape until bent to another shape. The drawings show some of the shapes that might be assumed by a unit and the core may be of the type that retains its shape indefinitely or may be of the type that can be bent to another shape as desired. When the two springs 30 and 31 are used, as in Figures 4, 5 and 6, torque can be transmitted in either direction, whereas in Figures 1, 2 and 3, torque can be transmitted in one direction only. The springs 30 and 31 are wound in opposing directions in order to transmit force either to the right or left as required.

I claim:

1. In a tool for transmitting torque, an inner core bendable to provide a rigid guide, said core remaining stationary while the tool is transmitting torque, an outer flexible sleeve circumposed on said inner core and mounted for rotation thereon, and an end member on each end of said sleeve and core, each of said end members being connected to said sleeve so as to rotate therewith and around said stationary core, and each end of said core extending only partly into the end member rotatable thereon, whereby said sleeve and end members form a rotatable housing for said core that extends beyond each end of the core.

2. The tool as defined in claim 1, wherein said sleeve includes a pair of concentrically arranged oppositely extending springs.

3. The tool as defined in claim 1, wherein said sleeve includes a spring member, and said end members include a male socket and a female socket.

4. The tool as defined in claim 1, wherein said sleeve includes a spring, one of said end members comprising a socket, and the other of said end members comprising a handle.

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