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E. C. MAYER

FLEXIBLE ELECTROMAGNET

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Fig. 1.

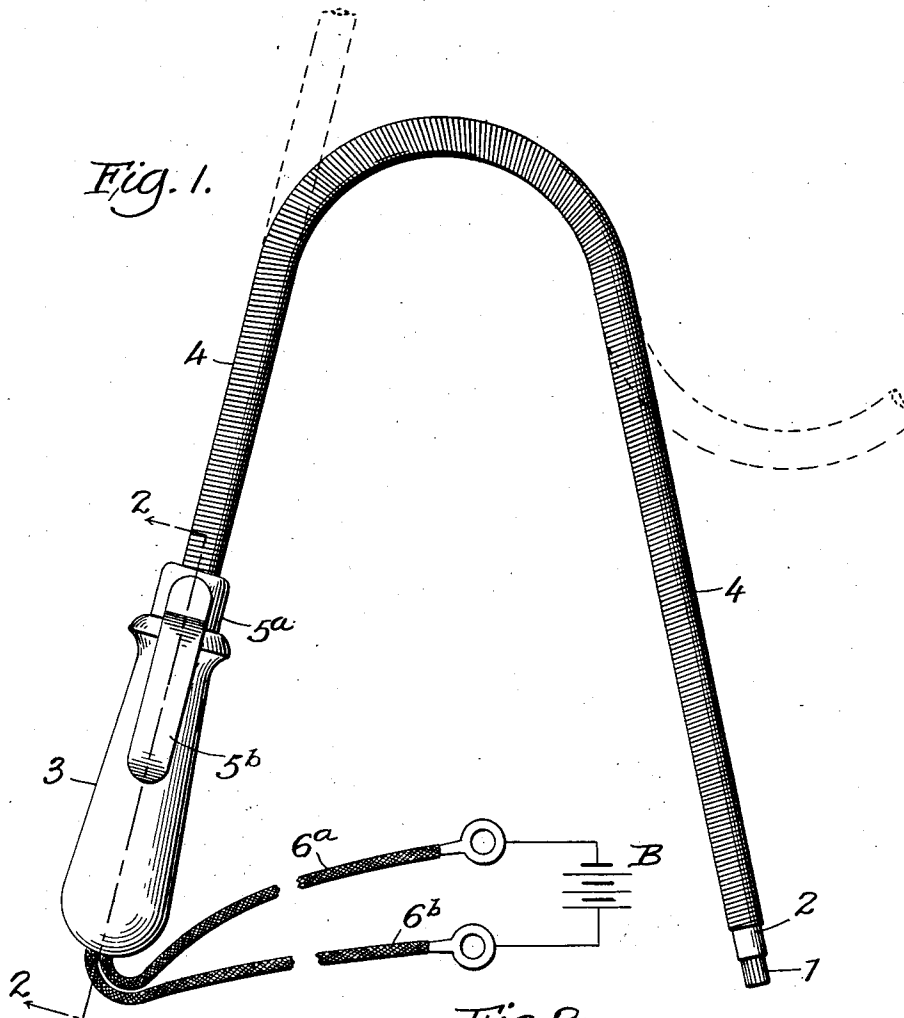
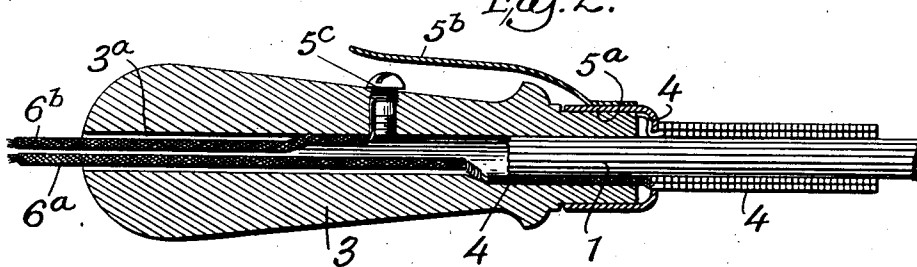


Fig. 2.



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FLEXIBLE ELECTROMAGNET.

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To all whom it may concern:

Be it known that I, EDWARD C. MAYER, a citizen of the United States, residing at Butte, in the county of Silverbow and State of Montana, have invented certain new and useful Improvements in Flexible Electromagnets; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings which form part of this specification.

This invention relates to electro-magnets and the object of the invention is to provide a flexible electro-magnet which may be bent in any desired manner or shape to enable it to be introduced into inaccessible places and get around obstructions to enable the end of the magnet to reach objects which cannot be seen, or reached by an ordinary rigid magnet.

The invention is particularly adapted for extracting nuts, bolts, or other small pieces of metal which might fall into the crank case, transmission, or other not easily accessible parts of an automobile, while the same is undergoing repairs, and thereby save the time and expense of taking down the crank case or other parts, as the case might be, in order to recover the lost article.

In the accompanying drawings I have illustrated one practical embodiment of the invention, and will describe the same with reference thereto to enable others to understand and use the same, and then summarize in the claim the essentials of the invention, and novel features thereof, for which protection is desired.

In the drawings:

Fig. 1 is a view showing the electro-magnet bent into one form in full lines, and also indicating in dotted lines other forms into which it may be bent.

Fig. 2 is a sectional view on the line 2—2 Fig. 1.

The magnet comprises a flexible core 1 preferably composed of a number of parallel strands of soft flexible iron wire of suitable length bunched together without twisting and a coil of suitable wire closely wrapped around the core in such manner as to permit the core and coil to be flexed or bent without injury to either. At the outer end of the core a copper collar 2 may be provided for the purpose of clamping the outer ends of the core strands together.

Said collar 2 may be soldered or otherwise attached to the core so as not to prevent twisting or bending of the core.

To the other end of the core 1 is attached, in any desired manner, a handle 3, which is preferably of wood or other non-conducting material. As shown the handle 3 is provided with an axial bore 3^a and one end of the core 1 is inserted into one end of the bore 3^a and securely fastened thereto in any desired manner.

Between the handle 3 and the collar 2, as shown the core 1 is closely wrapped with suitable insulated wire 4, forming the coil by which the core 1 is magnetized when said coil is excited by an electric current, in the well-known manner. The outer surface of the coil 4 may be coated with a layer of shellac or other water proof insulating material to protect and insulate the spreads of the coil and prevent short-circuiting of the coil. The coil 4 is preferably so wrapped on the core that both terminals of the coil are adjacent the handle 3.

On the handle is preferably mounted a switch of any suitable kind for making and breaking the circuit through the coil, and preferably such as may be readily operated by the user's thumb. As shown one terminal of the coil 4 is connected to the underside of a copper collar 5^a (as shown in Fig. 2) securely mounted on the front end of the handle 3; and the other terminal of the coil 4 extends into the axial bore in the handle 3 slightly beyond the inner end of the core 1, and is connected within the handle 3 to a conductor 6^a, which enters the bore 3^a at the outer end of the handle 3 and is adapted to be connected with one pole of a suitable source of electricity. Mounted on the collar 5^a is a spring tongue 5^b which extends longitudinally of the handle 3 and is adapted to be pressed toward the handle by the thumb of the operator. Said tongue 5^b when pressed toward the handle contacts with a screw 5^c secured in the handle 3 opposite the rear end of the tongue 5^b. Screw 5^c is connected to a conductor 6^b which enters the axial bore 3^a at the rear end of the handle 3, and is securely attached in any desired manner to the screw 5^c. Conductor 6^b is adapted to be connected with the other terminal of the source of electricity (not shown). As shown the outer extremities of lead wires 6^a and 6^b

may be provided with ordinary terminals for attachment of the wires to dry cells or the battery on the automobile, or to any suitable source of electricity.

- 5 The said flexible electromagnet can be easily carried in the machine tool box and can be readily connected to the battery B of the machine, or to a battery of dry cells, or other convenient source of electricity
- 10 when it is desired to use the magnet. If it is desired to recover a metallic object from an inaccessible place, such as an automobile crank case, the magnet may be bent or twisted into any desired form so that its
- 15 end can be inserted into the case to get around any obstructions therein which could not be reached by a straight magnet. When the operator presses the switch tongue 5^b into contact with the screw 5^c the coil 4
- 20 will be electrically excited, and the core

magnetized, thus enabling the lost articles to be recovered.

The magnet will work equally well under water, in oil, or even in heavy grease; and the flexibility of the magnet enables it to 25 be readily bent into such shape as will avoid and pass around any obstructions, which might be present, or to reach objects in places invisible to the eye.

What I claim is:

A portable electro-magnet comprising a slender pliable core formed of a number of parallel strands of soft flexible magnetic wire, and a conductor coil wrapped around said core, said core being adapted to be read- 30 ily bent to any desired form.

In testimony that I claim the foregoing as my own, I affix my signature.

EDWARD C. MAYER.