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PATENTED FEB. 24, 1903.

G. H. YOUNG.

ELECTROMAGNET FOR SEPARATING METALS.

APPLICATION FILED FEB. 12, 1902.

NO MODEL.

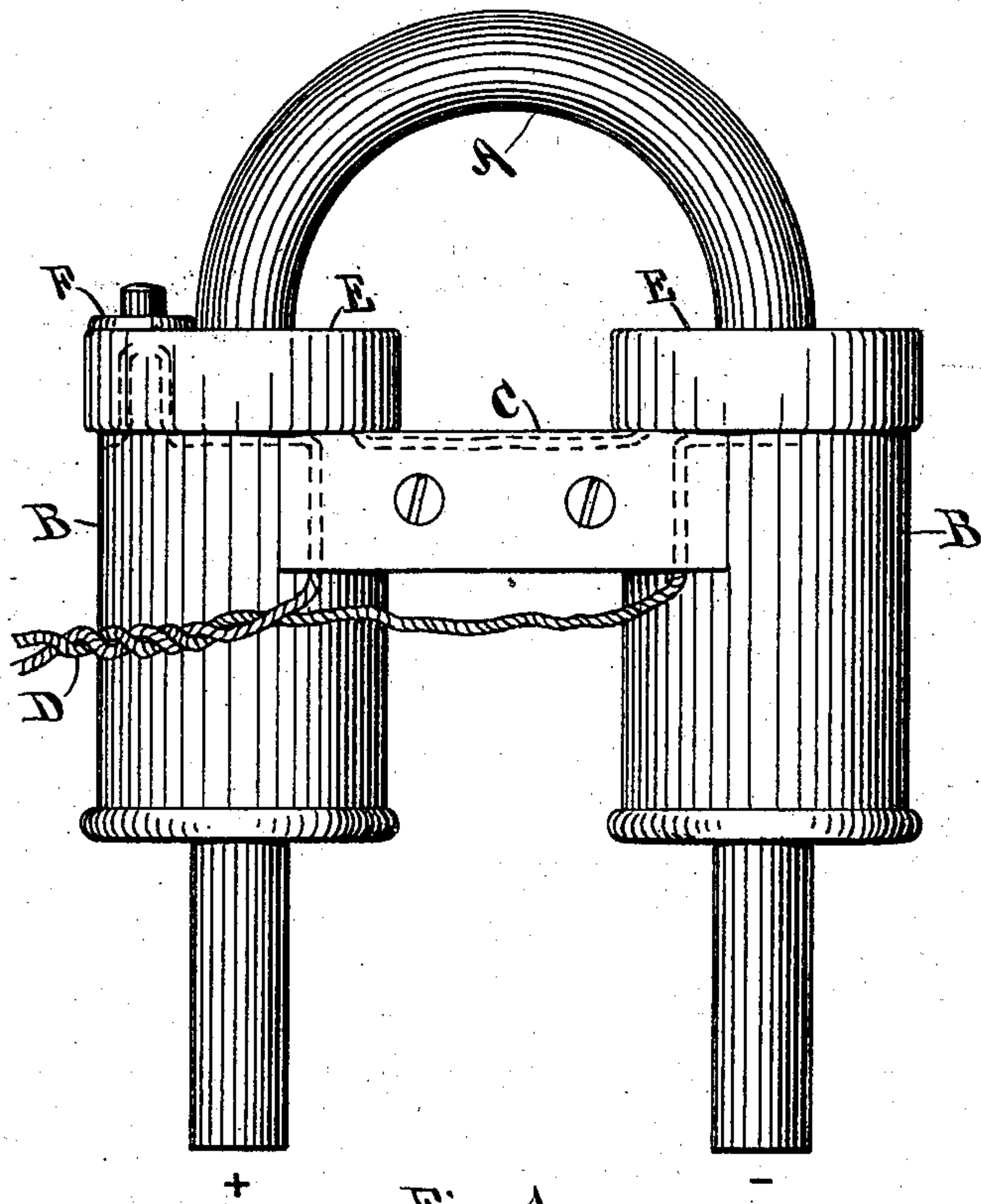


Fig. 1.

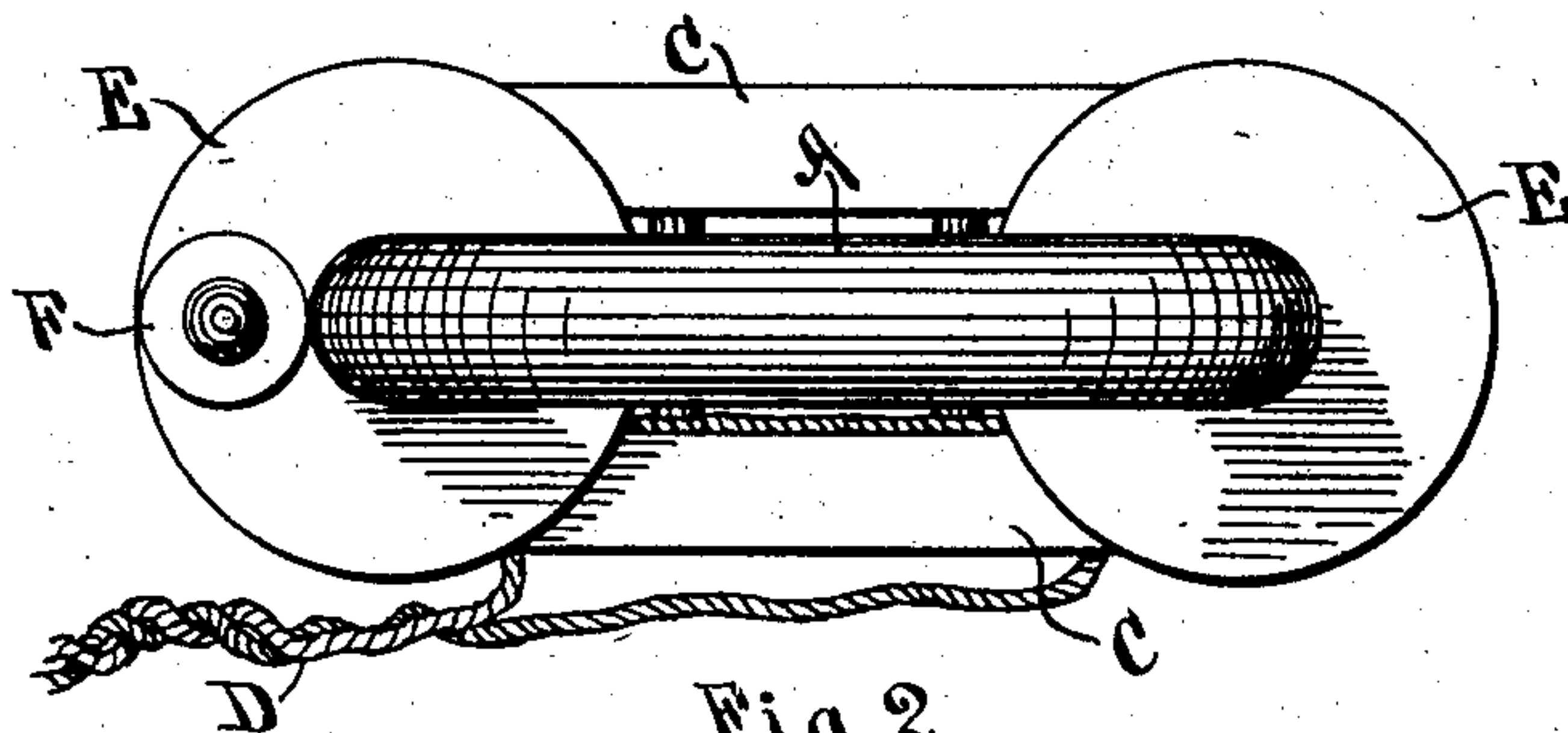


Fig. 2.

WITNESSES:

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ELECTROMAGNET FOR SEPARATING METALS.

SPECIFICATION forming part of Letters Patent No. 721,490, dated February 24, 1903.

Application filed February 12, 1902. Serial No. 93,704. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. YOUNG, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Electromagnets for Separating Metals, of which the following is a specification.

My invention relates to improvements in hand-manipulated magnetic separators; and the object of my invention is to provide a powerful and effective electromagnet at a low cost for separating iron or steel filings, cuttings, dust, and the like from brass or other substances, compositions, &c., in which they may be loosely held or intermixed, and to so construct the tool that it may be readily manipulated by one hand for the quick separation of such metals and other substances.

I attain my object by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of my device, and Fig. 2 a plan view of the same.

Similar letters refer to like parts in the two views.

A represents a steel or soft-iron bar, preferably round in cross-section, bent into the form of a U, or, in other words, horseshoe-shaped. This bar forms the core of the magnet, the two ends forming the positive and negative poles thereof. Upon each leg of this bar is a spool B, wound with wire in the usual way, the outer coils of the wire being covered by a moisture-proof jacket of any suitable material.

C C represent two wooden blocks clamped together between the spools, and the two ends of the wire cable D are led into the spools through suitable grooves provided in the ends of one of these wooden blocks. The wire running from one spool to the other is carried along the inside of one of said blocks, and thereby the ends of the wires and the connecting-wire are protected from breakage or other damage.

E E represent two washers of fiber or other non-conductive material at the top ends of the spools, said washers being of some little thickness, and at the outward part of one of these washers in a suitable socket formed therein is located a push-button switch F for

making and breaking the circuit in the wire passing out from that spool. The course of the wires to and from the spools and switch is indicated in broken lines, and the switch may be of any of the usual push-button types, the socket in the washer E being suitably formed to receive it.

The bend of the core-bar A forms the handle of the magnet, and the location of the push-button is such that it may be readily manipulated by the thumb or finger of the hand when grasping the handle.

In operation the wire cable leading to the magnet is attached to any source of electric-current supply, either to a dry-cell or other battery or to an electric-light circuit of either direct or alternating current. The handle is then grasped by the hand with the thumb or finger pressed on the push-button to establish the current through the magnet-coils, thereby exciting the poles of the magnet. The magnet is then moved to and fro through the material or substance containing the iron or steel particles, which particles are drawn to the poles in accumulations of more or less extent according to the strength of the magnet produced by the passing current. After a sufficient quantity has been gathered upon the ends of the magnet it is removed to a place of deposit, and upon releasing the push-button and breaking the current the particles will drop away immediately from the magnet. By repeating the process a sufficient number of times every particle of iron or steel down to the finest dust will be removed from the substance to be cleaned.

I am aware that heretofore an electromagnetic separator to be manipulated by hand has been devised, and I do not claim such, broadly, as my invention. By using a two-pole magnet and arranging the parts as I have illustrated them, utilizing the bend of the magnet-core for the handle and locating the switch for controlling the current so that the entire tool may be manipulated by one hand, I attain improved results and a much greater speed in the separation process.

Having thus described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. An electromagnetic separator for hand manipulation comprising a steel or iron core

of U shape having a spool of wire wound upon each leg thereof, the wire in said spools running from one spool to the other and the ends being carried through suitable cable to a source of current-supply, the bend of the core-piece forming a handle, and a button or other switch located in proximity to said handle whereby the current may be switched on or off by the hand which grasps the instrument.

2. An electromagnetic separator for hand manipulation comprising a U-shaped core-piece, a spool of wire wound upon each leg thereof, the wire from one spool running to

the other and the ends of the wire being conducted through a cable to a source of current-supply, a fiber or other non-conductive washer at the top of one of the spools and a push-button switch located in a suitable socket in said washer, the wire leading from that spool being broken at said switch, as and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

G. H. YOUNG.

Witnesses:

M. E. VERBECK,
EDITH L. MILLER.