

(No Model.)

2 Sheets—Sheet 1.

H. H. WHITACRE & A. C. WOLFE.  
SEPARATING METALS FROM FOREIGN SUBSTANCES.

No. 542,911.

Patented July 16, 1895.

Fig. 1.

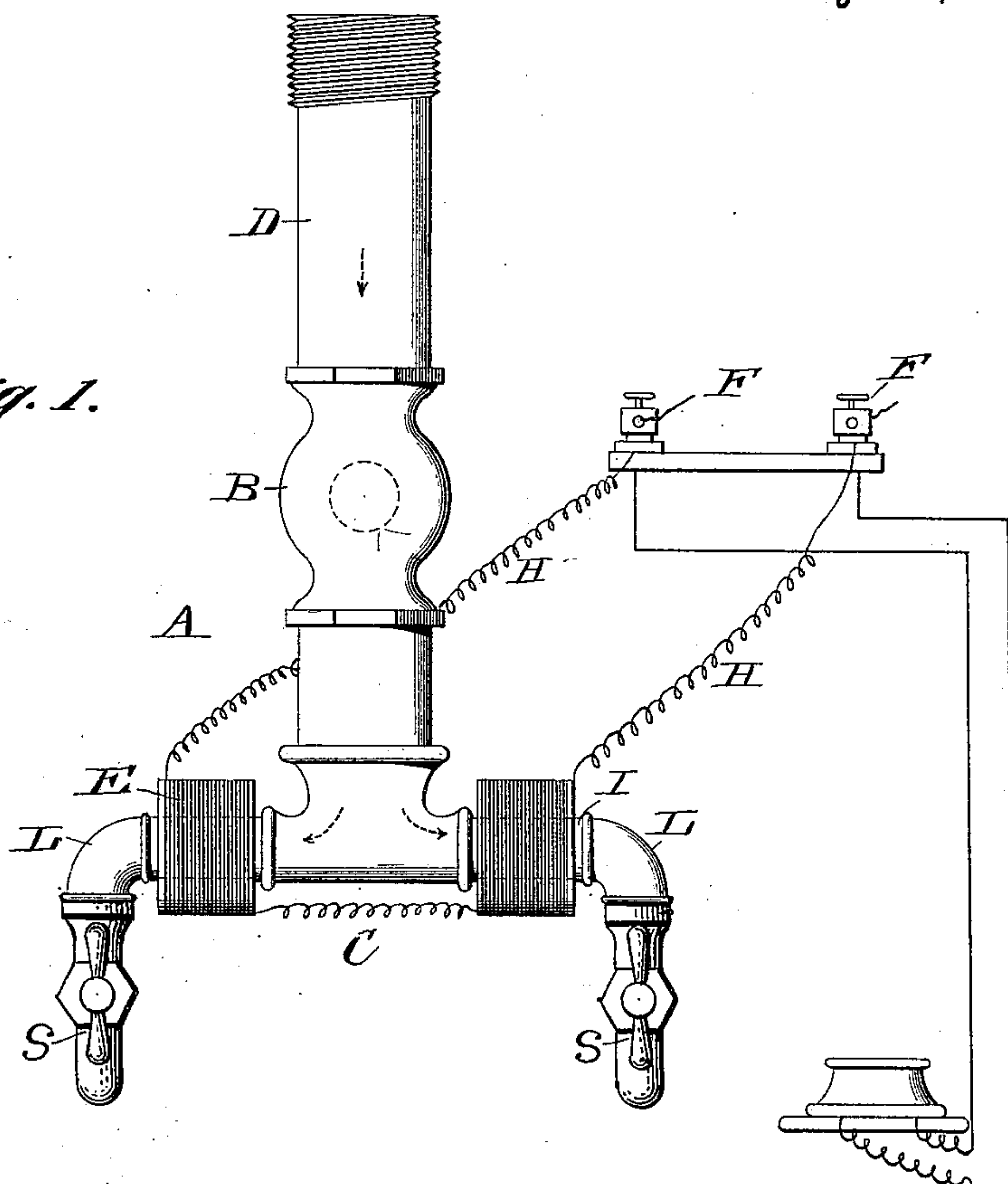
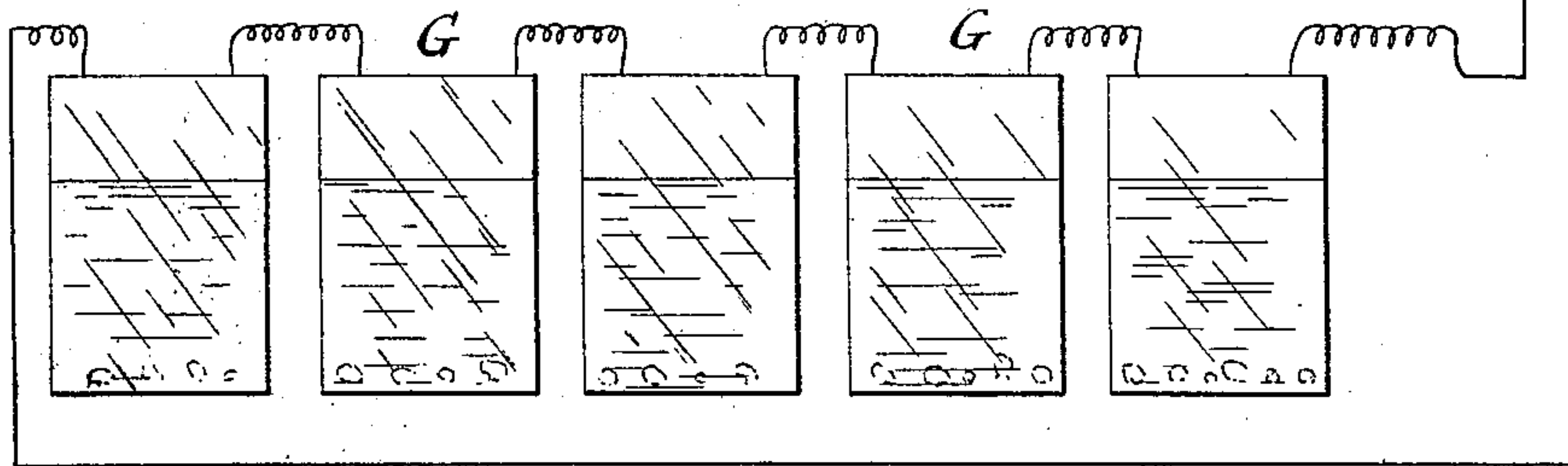
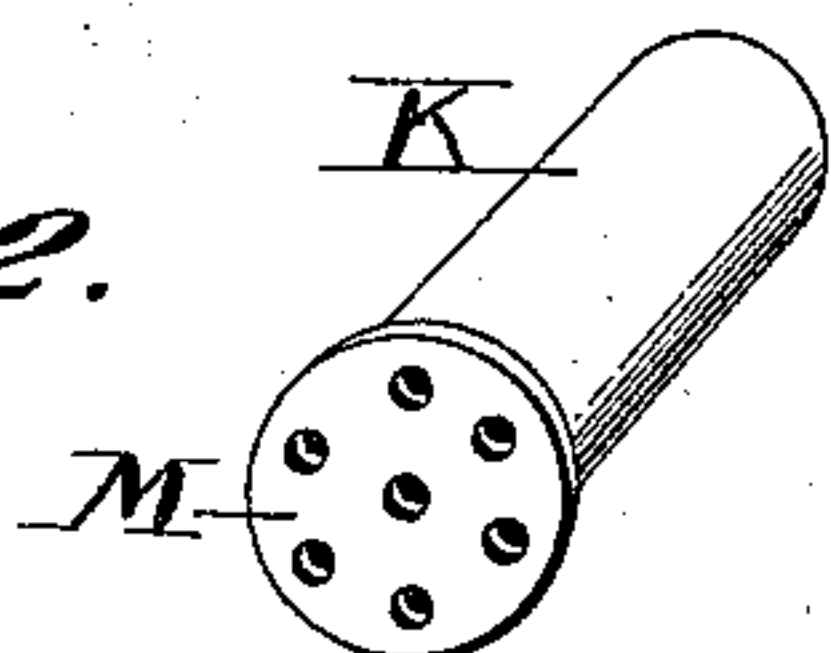


Fig. 2.



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C. W. Davis

H. H. Whitacre and  
A. C. Wolfe  
Inventors  
by Lucien B. Brock  
Att'y

(No Model.)

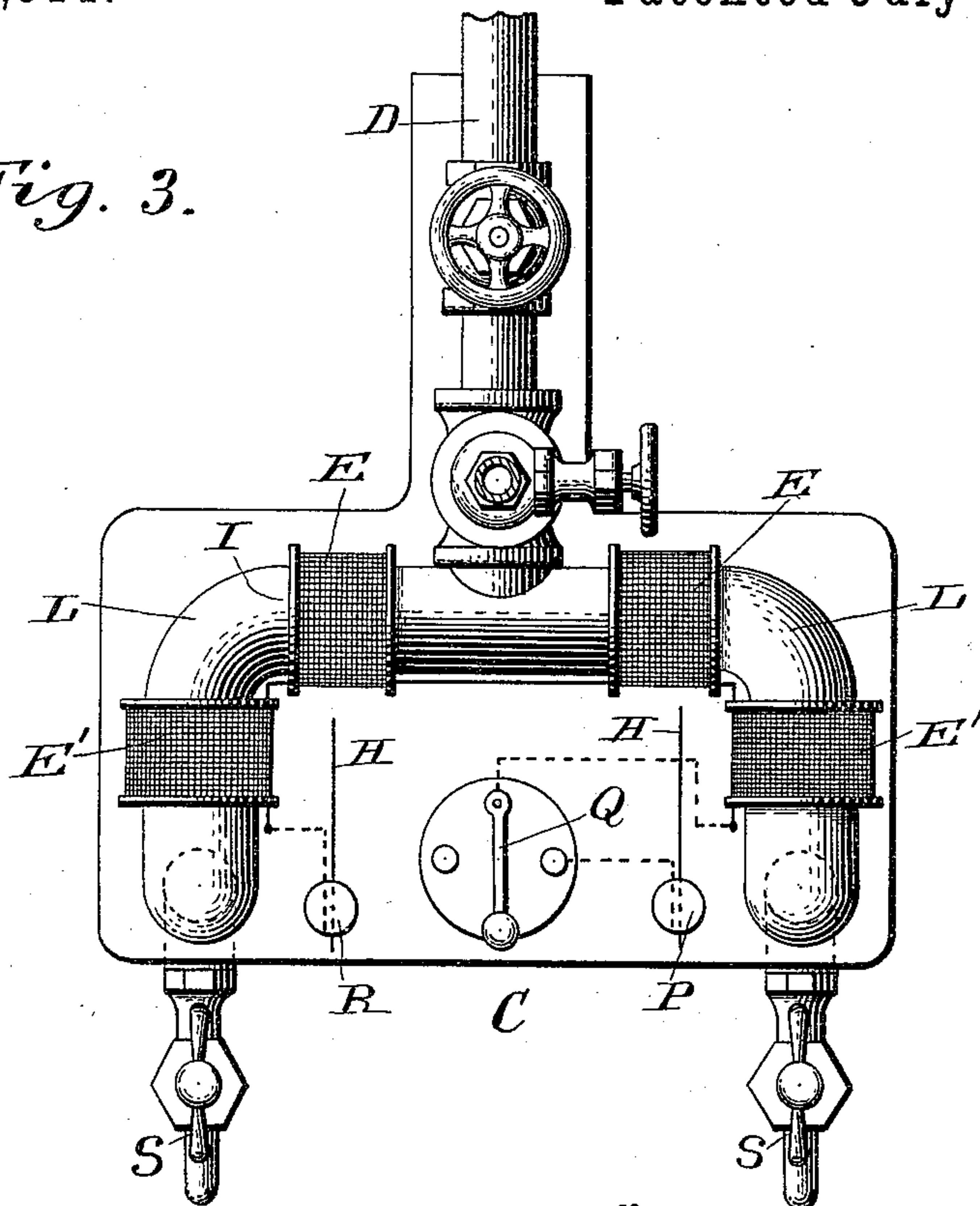
2 Sheets—Sheet 2.

H. H. WHITACRE & A. C. WOLFE.  
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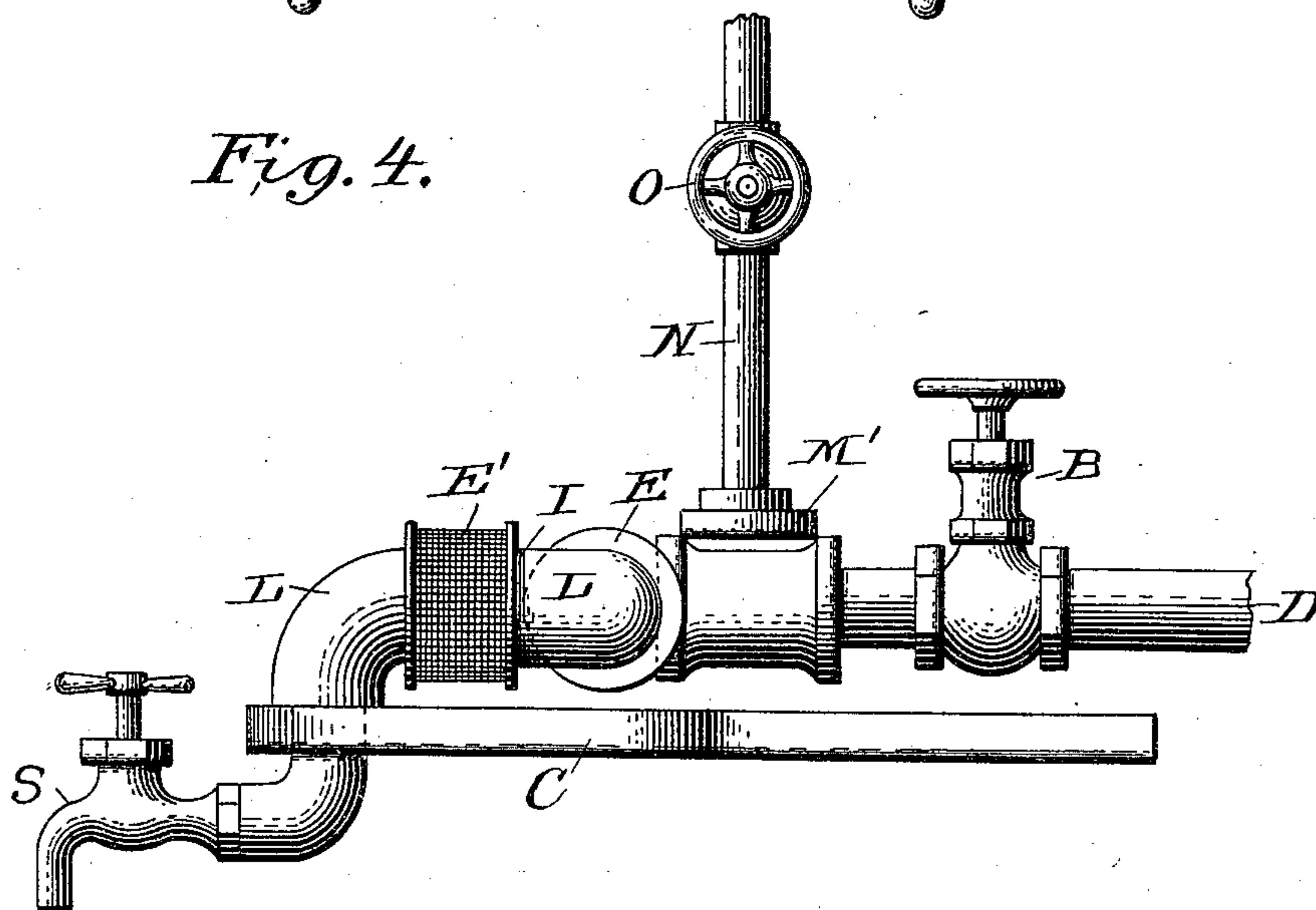
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*Fig. 3.*



*Fig. 4.*



Witnesses:

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Inventors.

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Attorney.



# UNITED STATES PATENT OFFICE.

HARVEY HILLARD WHITACRE AND ANDREW CURTIN WOLFE, OF WELLSVILLE, OHIO.

## SEPARATING METALS FROM FOREIGN SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 542,911, dated July 16, 1895.

Application filed February 14, 1895. Serial No. 538,386. (No model.)

*To all whom it may concern:*

Be it known that we, HARVEY HILLARD WHITACRE and ANDREW CURTIN WOLFE, citizens of the United States, residing at Wellsville, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Separating Metals from Foreign Substances; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the letters of reference marked on the accompanying drawings, which form a part of this specification.

Figure 1 represents a plan view of our improved electric faucet in connection with a battery, showing the battery and wires in diagram. Fig. 2 is a detail perspective view of one of the detachable tubes. Fig. 3 is a plan view of the modified form of our invention, and Fig. 4 a side elevation of the same.

The object of our improvements is to extract from any liquid or viscid matter which is caused to pass through the faucet all steel or iron particles or filings which may be held in solution or caused to pass therethrough.

With this object in view our invention consists in the following construction and combination of parts, the details of which will first be fully described, and the features of novelty then be set forth and claimed.

In the drawings, A represents our improved faucet provided with a valve B.

C is a horseshoe-shaped double delivery from the faucet.

D is a pipe connection, through which the liquid is brought and discharged through the electric faucet.

E are electromagnets, one surrounding each of the delivery-branches of the faucet, the wires of which are led to binding-posts F, which are in electrical connection with any source of electrical energy—such, for instance, as batteries G and wires H.

That portion of the pipes I of the faucet which form in effect the cores of the magnets E is made of iron, while the valve and valve-casing B and the pipe connecting the same

with the horseshoe or double-branch delivery are made of brass or other non-magnetic metal.

S are faucets connected to the cores of the electromagnets by elbows L.

K are delivery ends having perforated diaphragms M, as shown in Fig. 2, which telescope on the extremity of the faucets.

Any liquid holding iron or steel particles therein in passing through this faucet when the electromagnets E are excited or energized will have such iron or steel particles instantly arrested and attracted within the hollow cores of the magnets and thereby effectually separated from the solution. After a certain amount of the accumulated iron or steel has been arrested within the faucet the delivery ends are removed and such accumulation easily abstracted, the parts again replaced, and the operation of the device indefinitely continued.

This faucet or machine is constructed so that it can be easily taken apart and cleaned.

It will be understood that the magnetic spools are slipped on over the iron pipes I, the latter constituting the cores of the electromagnets.

Other forms than that of a faucet may be substituted and adopted without departing from the principle of our invention.

In Figs. 3 and 4 we have shown our electrical separator provided with a branch pipe for washing out the gathered material at stated intervals, and also additional electromagnets, as shown. Between the valve B and the electromagnets is a T-coupling M', and N is a pipe connected therewith, leading to any source of water-supply, provided with a valve O for controlling the water passing there-through.

E' are additional electromagnets located beyond the magnets E toward the delivery ends of the machine and are disposed in the same manner as are the magnets E. The series of magnets E and E' are connected together preferably in series, the wire H leading from the binding-post P through the switch Q, through each of the magnets, back to the binding-post R, both posts being connected



with the line-wires H. The switch Q may be of any desired pattern for breaking and making the circuit.

When the solution containing the metal particles is flowing through the machine the valve B is open and the valve O closed. The switch Q has been shifted to close the circuit and the electric current flows through and energizes the series of magnets. The valves S are also open, though one may be closed if desired.

When it is desired to recover the metal particles which have been attracted to the interior cores forming the pipes of the machine the valve B is closed, and the valve O connected with the water-main or other source of supply is open, the switch having been previously turned, so as to break the circuit and demagnetize the electromagnets. Under these conditions the metal particles, having

ceased to become attracted by the energized magnets, are swept away by the rush of water through the valve or valves S, where they are collected and properly drained from the water.

We claim—

The combination of a supply pipe, a double branch pipe having electro-magnetic coils wound thereon and faucets at the free ends thereof, a valve in said supply pipe, and a pipe for cleansing connected to said supply pipe between the said valve and said branch pipe connection, substantially as and for the purposes set forth.

In testimony whereof we affix our signatures in the presence of two witnesses.

HARVEY HILLARD WHITACRE.

ANDREW CURTIN WOLFE.

Witnesses:

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