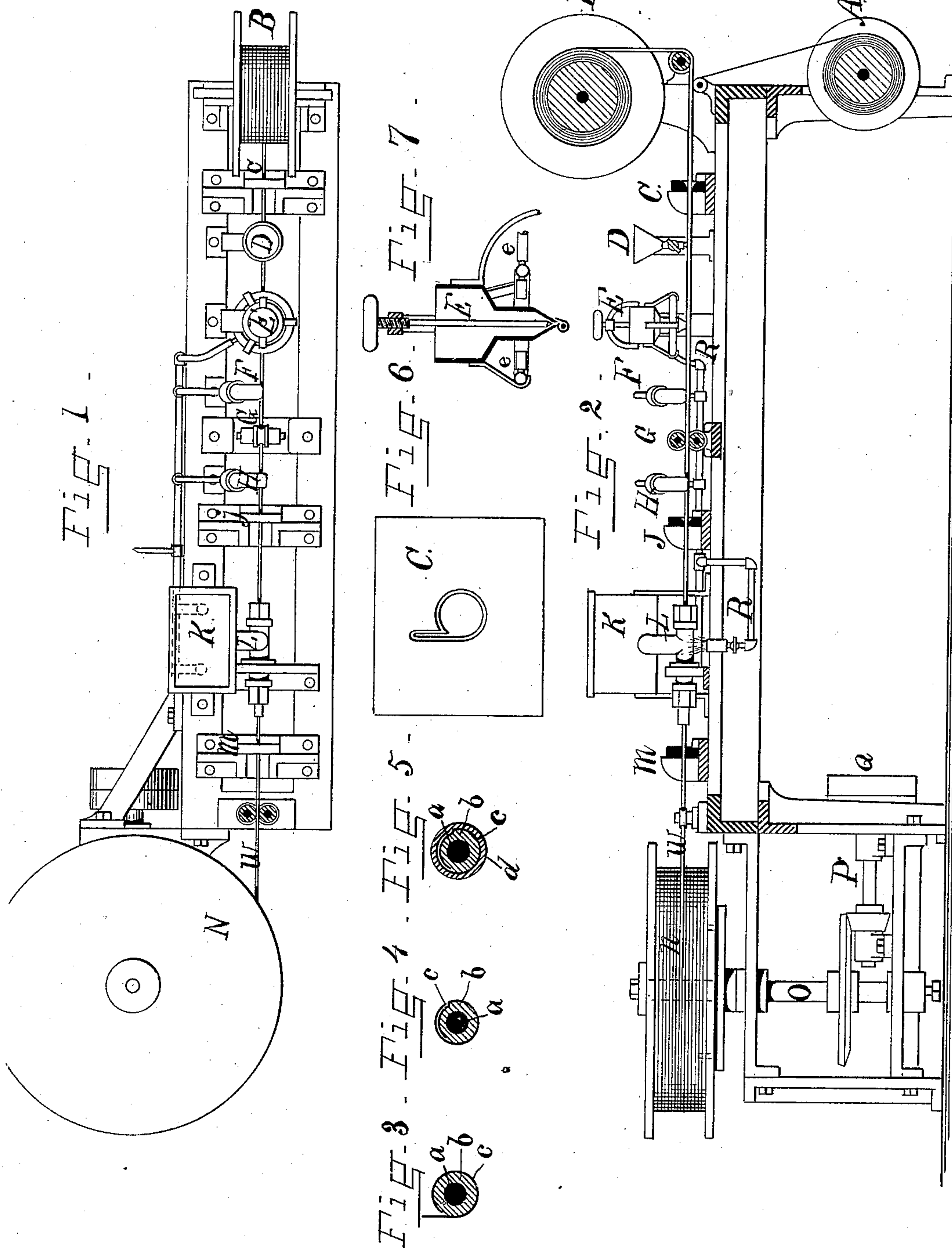


W. HALKYARD.

MACHINE FOR COVERING ELECTRIC WIRE.

No. 278,009.

Patented May 22, 1883.



WITNESSES:

C. H. Leather Jr

Wm. L. Cook

INVENTOR:

William Halkyard
by Joseph A. Miller & Co
Attys

(No Model.)

2 Sheets—Sheet 2.

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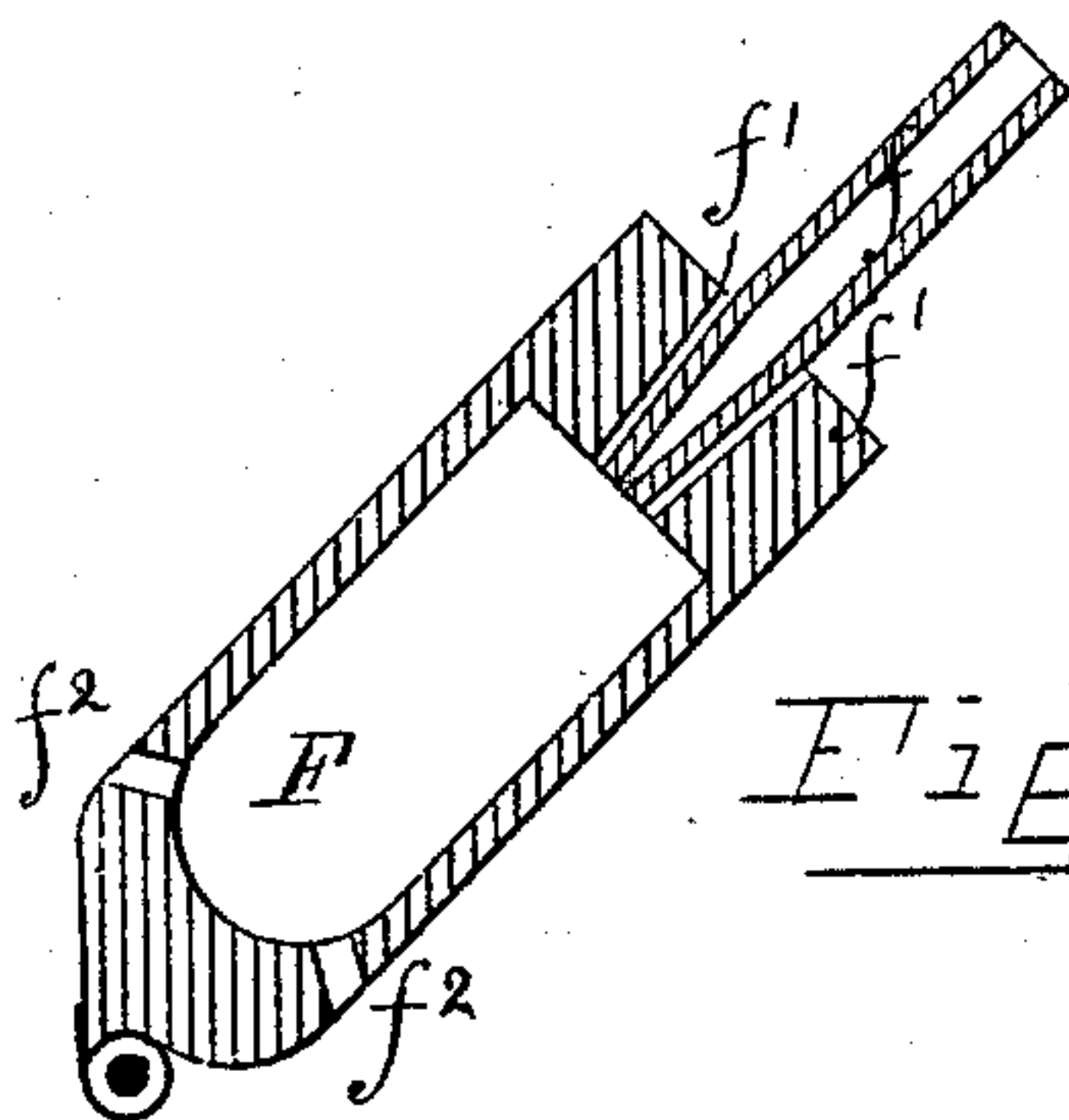


Fig. 8.

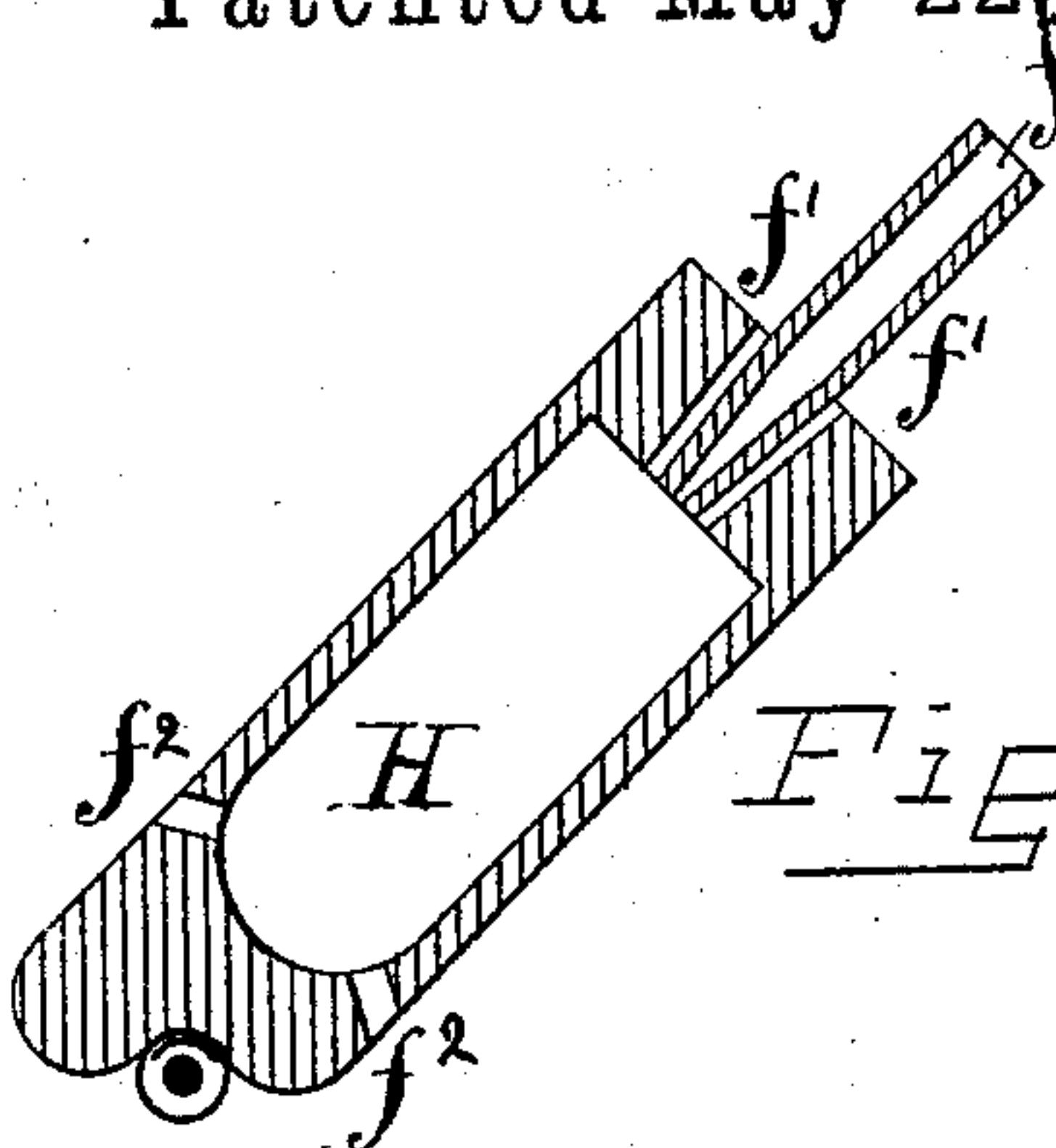


Fig. 9.

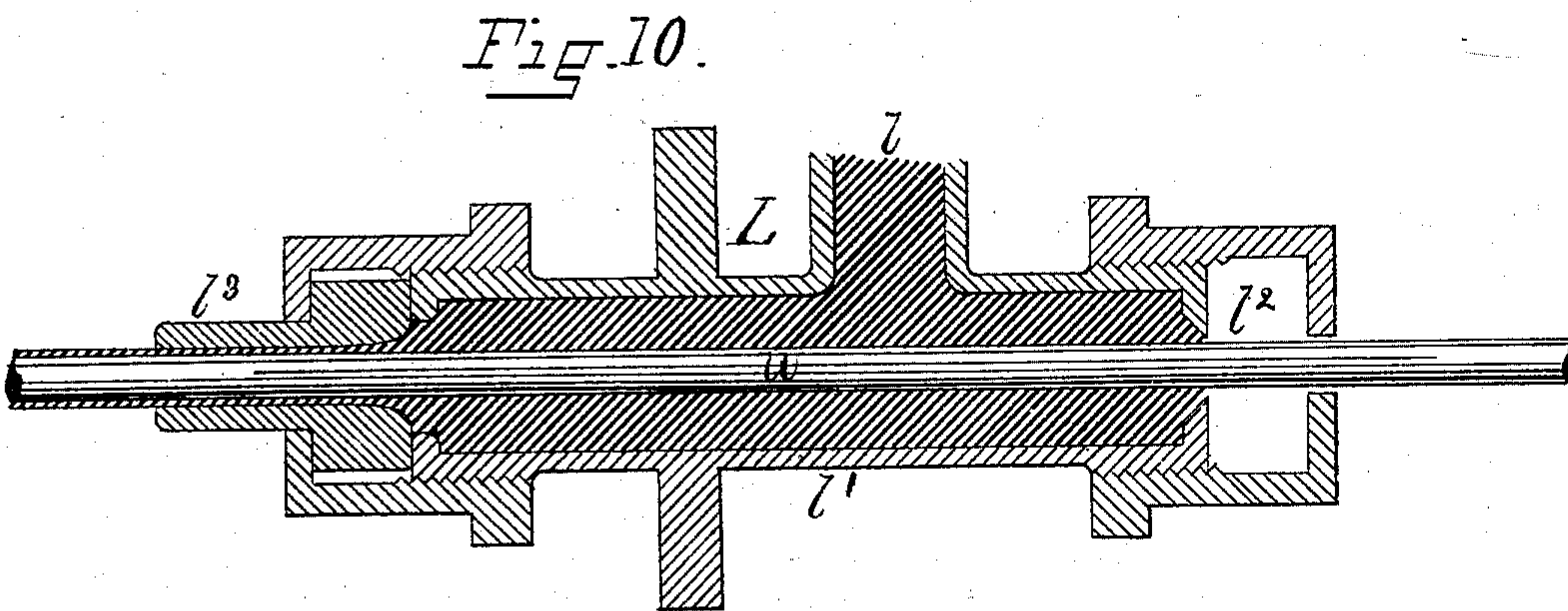
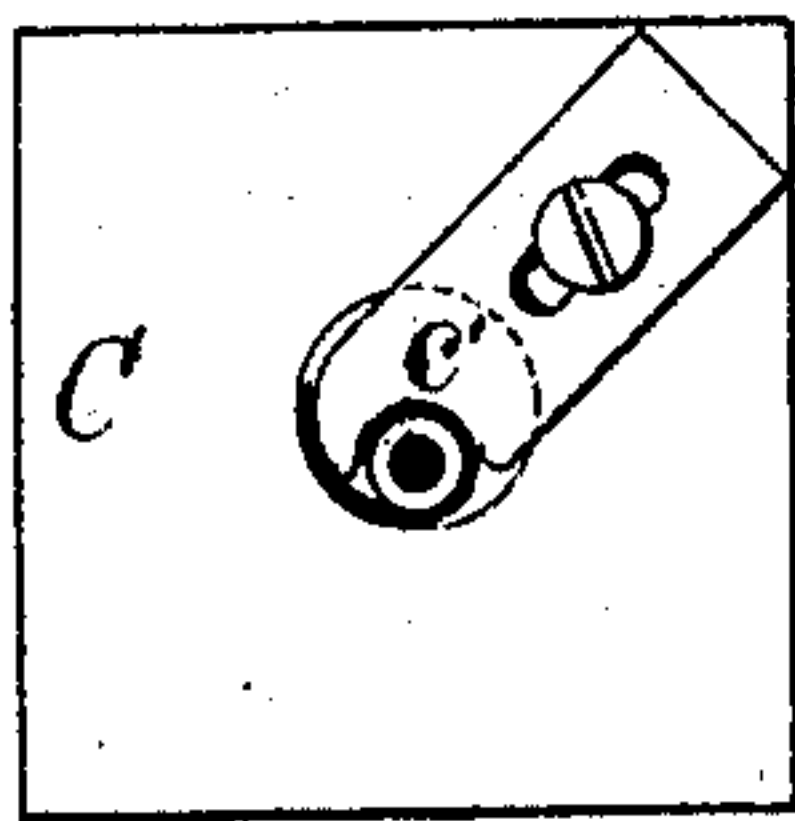


Fig. 10.

Fig. 11.



WITNESSES:

C. H. Luther Jr.
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INVENTOR:

William Halkyard
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UNITED STATES PATENT OFFICE.

WILLIAM HALKYARD, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF
ONE-HALF TO HENRY A. CHURCH, OF SAME PLACE.

MACHINE FOR COVERING ELECTRIC WIRE.

SPECIFICATION forming part of Letters Patent No. 278,009, dated May 22, 1883.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HALKYARD, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Machines for Covering Electric Wire; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement on a machine for covering electric conducting-wire with metallic armor, for which Letters Patent were granted to me February 14, 1882, which Letters Patent are numbered 253,529.

The invention consists in supplying the solder to the joint only as the wire passes through the machine, and in the peculiar construction of the device for covering the wire with fluid metal, as will be more fully set forth hereinafter.

Figure 1 is a top view of my improved machine. Fig. 2 is a side view of the same. Fig. 3 is a sectional view of the wire after it has passed the first draw-plate. Fig. 4 is a sectional view of the armored wire. Fig. 5 is a sectional view of the armored wire covered with metal. Fig. 6 is a view of the die-plate by which the sheet is drawn around the insulated wire, with the seam extending tangentially. Fig. 7 is an enlarged view of the solder-reservoir. Fig. 8 is a sectional view of the heating-iron by which the solder is spread. Fig. 9 is a sectional view of the soldering-iron. Fig. 10 is an enlarged sectional view of the draw-pipe, in which the armored wire is covered by tin or other material. Fig. 11 is a view of an adjustable draw-plate for forming the sheet metal around the insulated wire.

This machine differs from the machine previously patented by me, to which reference has been made, in that the strip of metal is not tinned, or, at least, need not be tinned, before it is formed in the draw-plate, but is supplied with either hot liquid solder or a thread of solder. The other differences consist in the devices used.

In the drawings, *a* is the electric conducting-wire. *b* is the insulating material. *c* is the

sheet-metal armor, and *d* the covering metal or composition.

W is the completed wire.

A is the reel from which the insulated wire is supplied; *B*, the reel from which the sheet-metal strip is delivered.

C is the die-plate, through which the sheet-metal strip and the insulated wire are drawn.

D is a reservoir of soldering fluid provided with a delivering-nozzle, which can be graduated so as to deliver the exact quantity required.

E is a vessel in which the solder is kept, provided with a contracted outlet regulated by a spindle, as shown in Fig. 7. It is surrounded by a gas-pipe having burners, by which the solder is maintained fluid. As there is very little strain on the sheet-covering, a soft solder is used, and, if desired, a bismuth-solder may be used. In place, however, of the device *E* delivering heated solder, threads of cold solder may be laid by the device into the joint.

F is a heated iron. (Shown enlarged in Fig. 8.) The end is formed to fit the joint, so as to spread the solder evenly over the surface of the joint. It is heated by gas.

f is the gas-inlet pipe; *f'* *f'*, air-openings to supply the air for the combustion of the gas, and *f''* *f''* openings for discharging the products of combustion.

G is a train of rolls by which the tangential lip of the sheet *c* is rolled down, as shown in Fig. 4.

H is the heated iron shown in Fig. 9. It differs from the one shown in Fig. 8 only in the form of the end, and is used to heat the joint and solder the same.

J is a draw-plate by which the armored wire is slightly condensed. From the die-plate *J* the wire may at once be wound on the reel and is ready for use; but it is desirable to cover such wire with a coat of tin or other metal, and at times with some composition by which it is protected against atmospheric action. When the armored wire is to be covered with tin or any composition of metal the same has to be maintained in a fluid state, and as the wire passes through the metal the same must have time to cool around the wire.

K is a reservoir of the covering compound or metal. It is maintained in a fluid state by gas or other heat.

L is the draw-pipe, connected with and supplied by the reservoir. It is shown enlarged in Fig. 10. *l* is the pipe connecting it with the reservoir K.

l' is the pipe proper, through the axis of which the wire W is drawn. The ends of the pipe *l'* are contracted.

l'' is a stuffing-box filled with asbestos or other heat-resisting elastic material, so as to prevent the loss of fluid metal.

l''' is an elongated nozzle or draw-pipe, which may be made to project any desired distance beyond the pipe *l'*, so that the film of metal formed on the wire will have time to cool and leave the pipe *l'''* in a solid state.

M is a finishing draw-plate, by which the metal placed on the wire is condensed and the wire finished.

N is the drawing-reel, by which the wire is drawn through the machine and is reeled up for use. The reel is turned by the shaft O, to which motion is imparted from the shaft F by beveled gears, the machine being connected with some motor by a belt placed on the loose and tight pulleys Q. R R are gas-pipes supplying gas to the various burners used in the machine.

All the operations of the machine are continuous, so that the wire drawn through the same will be successively operated upon by the various devices, and the finished wire reeled up at the delivery end of the machine.

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

1. In a machine for covering electric wire with armor, the combination, with the reels for supplying the strip of sheet metal and the insulated wire, of a draw-plate to form the strip partially around the wire, as described, a device for supplying solder to the joint, a device for spreading the solder, a joint-closing device, a device for heating and soldering the joint, and means for drawing the wire through the machine, as described.

2. In a machine for covering electric wire with sheet armor, the combination, with the dies for forming the sheet around the wire, of a device, substantially as described for depositing the solder into the joint, and a heating device constructed to heat and solder the joint, as described.

3. In a machine for covering electric wire with a metal armor, the combination, with the reservoir K, of the pipe L, provided with the stuffing-box *l''*, and the extended nozzle *l'''*, constructed to cool the metal around the wire, as described.

4. In a machine for covering electric wire with sheet-metal armor, the combination, with the devices for soldering the joint, of the draw-plate C, provided with the adjustable former *c'*, constructed to guide the strip of metal and form the same, as described.

WILLIAM HALKYARD.

Witnesses:

JOSEPH A. MILLER,
J. A. MILLER, Jr.