

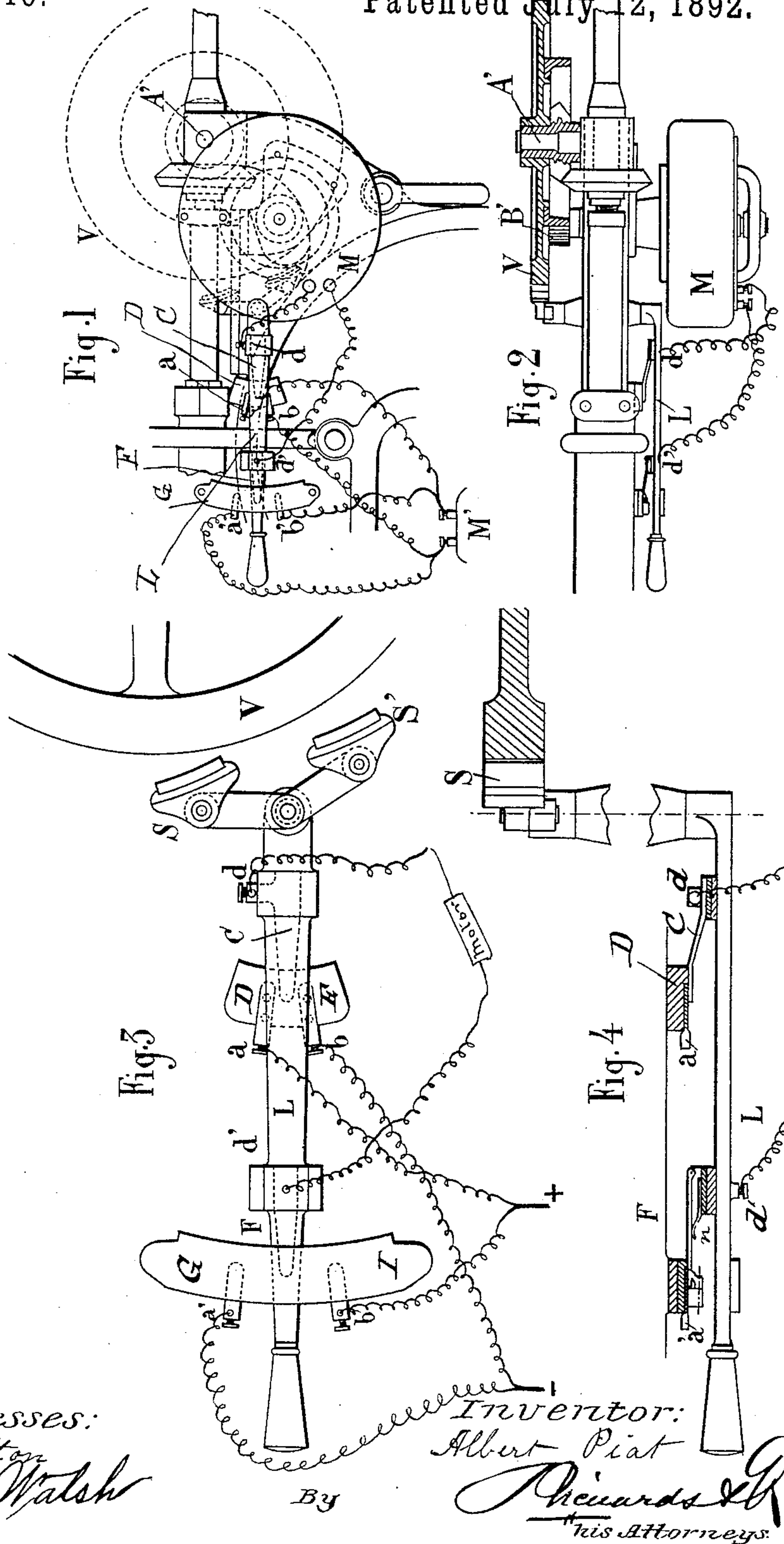
(No Model.)

2 Sheets—Sheet 1.

A. PIAT.  
ELECTRO MECHANICAL APPARATUS FOR STARTING OR REVERSING  
MACHINERY.

No. 478,816.

Patented July 12, 1892.



(No Model.)

2 Sheets—Sheet 2.

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Fig.5

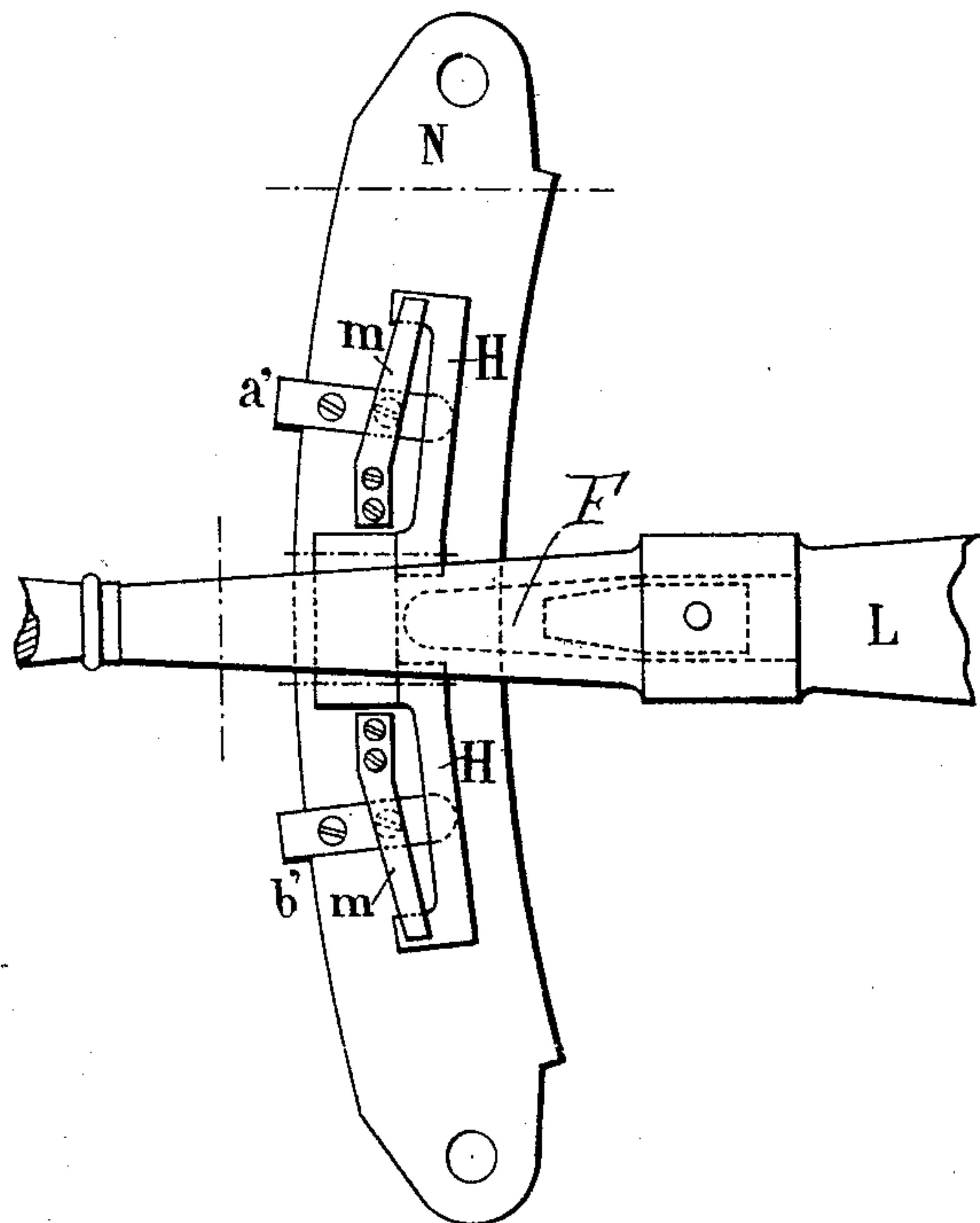


Fig.6

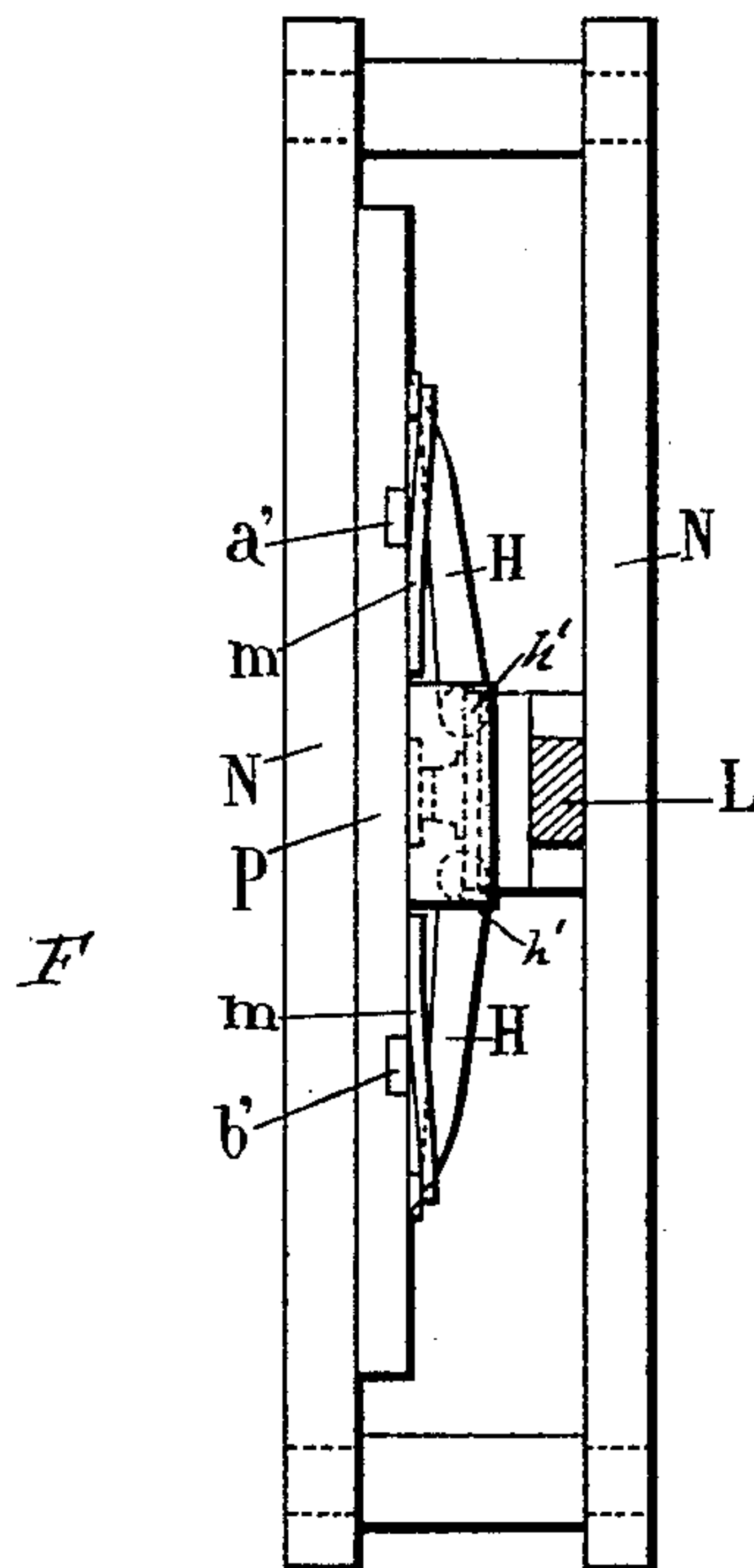
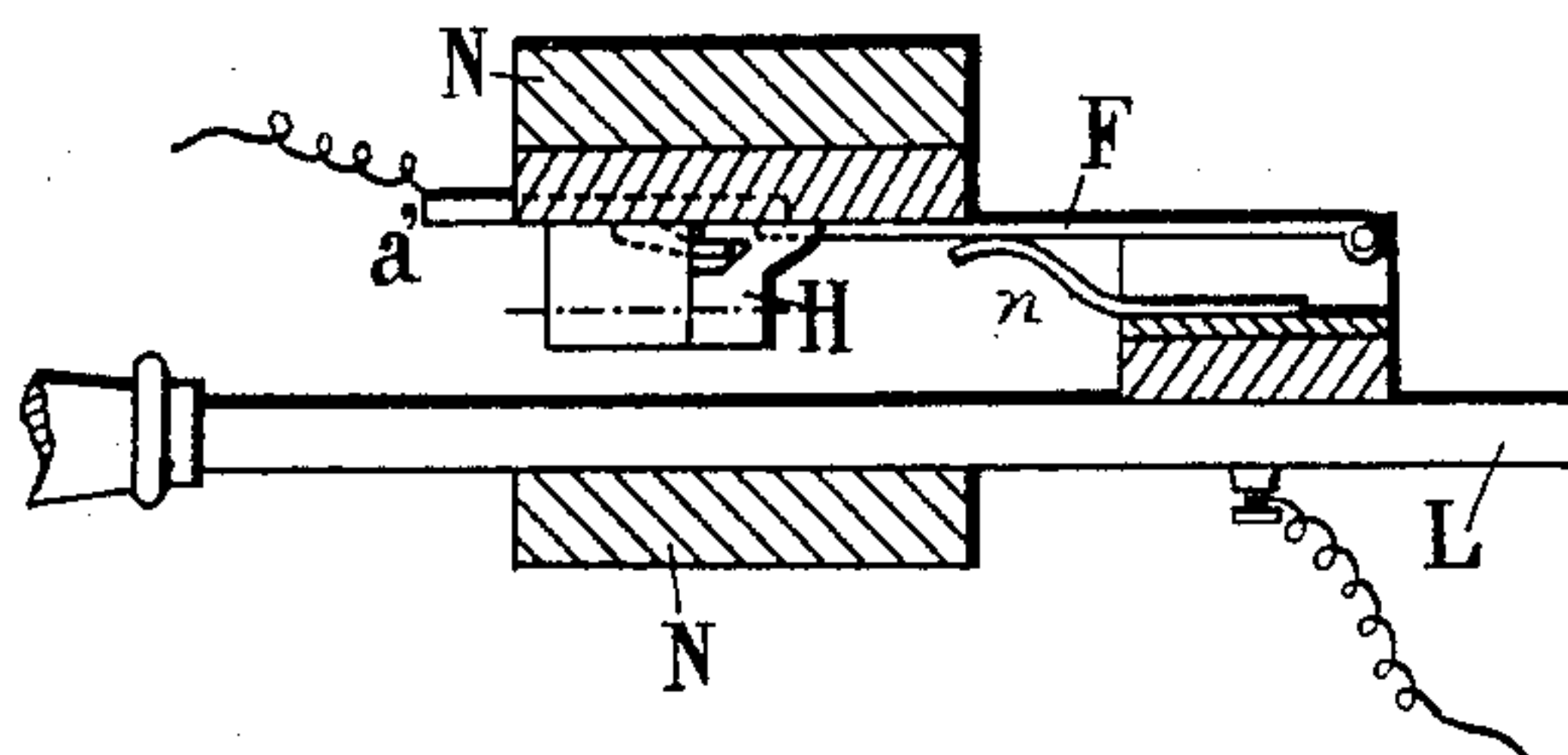


Fig.7



Witnesses:

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# UNITED STATES PATENT OFFICE.

ALBERT PIAT, OF PARIS, FRANCE.

ELECTRO-MECHANICAL APPARATUS FOR STARTING OR REVERSING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 478,816, dated July 12, 1892.

Application filed April 2, 1890. Serial No. 346,311. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT PIAT, of Paris, in the Republic of France, have invented a new and useful Electro-Mechanical Apparatus for Starting, Stopping, and Reversing the Movements of Machinery, which is fully set forth in the following specification.

My invention has for its object an electro-mechanical apparatus intended to give motion to any machine, stop it, or reverse it.

Figure 1 shows an application of my apparatus. Fig. 2 is a plan view. Figs. 3 and 4 are elevation and plan views, on a larger scale, of the working lever. Figs. 5, 6, and 7 are detail views of the elevation, profile, and plan view of the system of establishing the contacts.

The apparatus consists of a lever L, connected with an electric motor M, set upon the frame of the machine which is to be put in motion. This lever is combined with shoe-brakes S S', acting on a fly-wheel V, keyed to the mechanical-motor shaft A', receiving its motion by the pinion B', keyed on the shaft of the electric motor, and transmitting this movement to the machine which is to be worked. The motor receives the current from the generator by means of terminals *a a' b b'*, fixed contacts D E G I, and contacts C F, arranged on the lever L and movable with it. Suppose the lever L to be in its middle position, as shown in Fig. 1. To obtain a forward movement, the lever is progressively lifted until the contact C comes into contact with the contact D, which is fixed on an isolating-support and connected by the terminal *a* to the wire coming from the generator. At the same time the contact F comes into contact with contact G, bearing the terminal *a'*, which receives the wire going to the generator M'. The current thus enters at *a*, passes through D and C into the lever L, whose axis is mounted on an isolating-plate, which forces the current to pass by the terminal *d* to the motor, where it determines the necessary movement, and from there it returns to the lever L by the terminal *d'*, and from there by means of the contact F, the contact G, and the terminal *a'* it goes back to the generator. To produce a stop, the movement of the lever in the same direction is continued. The contact F raises the hinge H,

which under the action of the spring *m* falls back as soon as the contact has passed. At the same moment the shoes which are fastened to the end of the joint-axle of the lever come in contact with the fly-wheel, and, acting as a brake, facilitate the stopping. The contacts exist no more and no current passes. This hinge H is hinged at *h'* and rests with its outer ends on plate P and is normally held thereon by springs *m*, also fastened to plate P. The lever is then brought back to its middle position; but then the contact C passes well over contact D, but the contact F does not come back to contact G, for it is raised in its turn by the hinge H, on which it mounts, and the current is not closed. After having passed the contact G the contact F is not supported any more by the hinge H and falls back under the action of the spring *m* onto the isolating-plate P. The reversing of the movement is effected by identical means, only the lever is lowered instead of raised. C and F come into contact with E and I and the same movement is reproduced. The lever L moves between two plates N N', of which the one N is fixed to the frame of the machine and bears the system of contacts G I and the hinge H.

I claim—

1. In machines actuated by an electric motor, the combination, with the motor, of a lever for controlling the current to the motor, contacts C F on the lever, electrical connections between said contacts and the motor, fixed contacts D G, arranged at one side of the lever in the path of the movable contacts, fixed contacts arranged at the other side of the lever in the path of the movable contacts, electrical connections between the contacts D I and the positive pole of the generator and between the contacts E G and the negative pole of the generator, hinged levers H, and springs *m*, the combination being and operating substantially as and for the purpose set forth.

2. In machines actuated by an electric motor, the combination, with the lever L for controlling the current and the motor, contact F, arranged on the under side of said lever, fixed contacts G I, arranged on each side of the lever and in the path of the contact F, hinged levers H, and springs *m*, whereby a

movement of the lever will cause the contact  
F to move under and raise one of said hinges  
until the same shall have been passed and a  
reverse movement of the lever will cause the  
5 same to travel above the contact, for the pur-  
pose set forth.

In testimony whereof I have signed this

specification in the presence of the subscrib-  
ing witnesses.

ALBERT PIAT.

Witnesses:

J. DUPONT,  
CH. CASALONGA,  
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