A. SHEDLOCK.

ELECTRO-MAGNETIC MOTOR.

No. 177,359. Patented May 16, 1876.

Fig. 1.

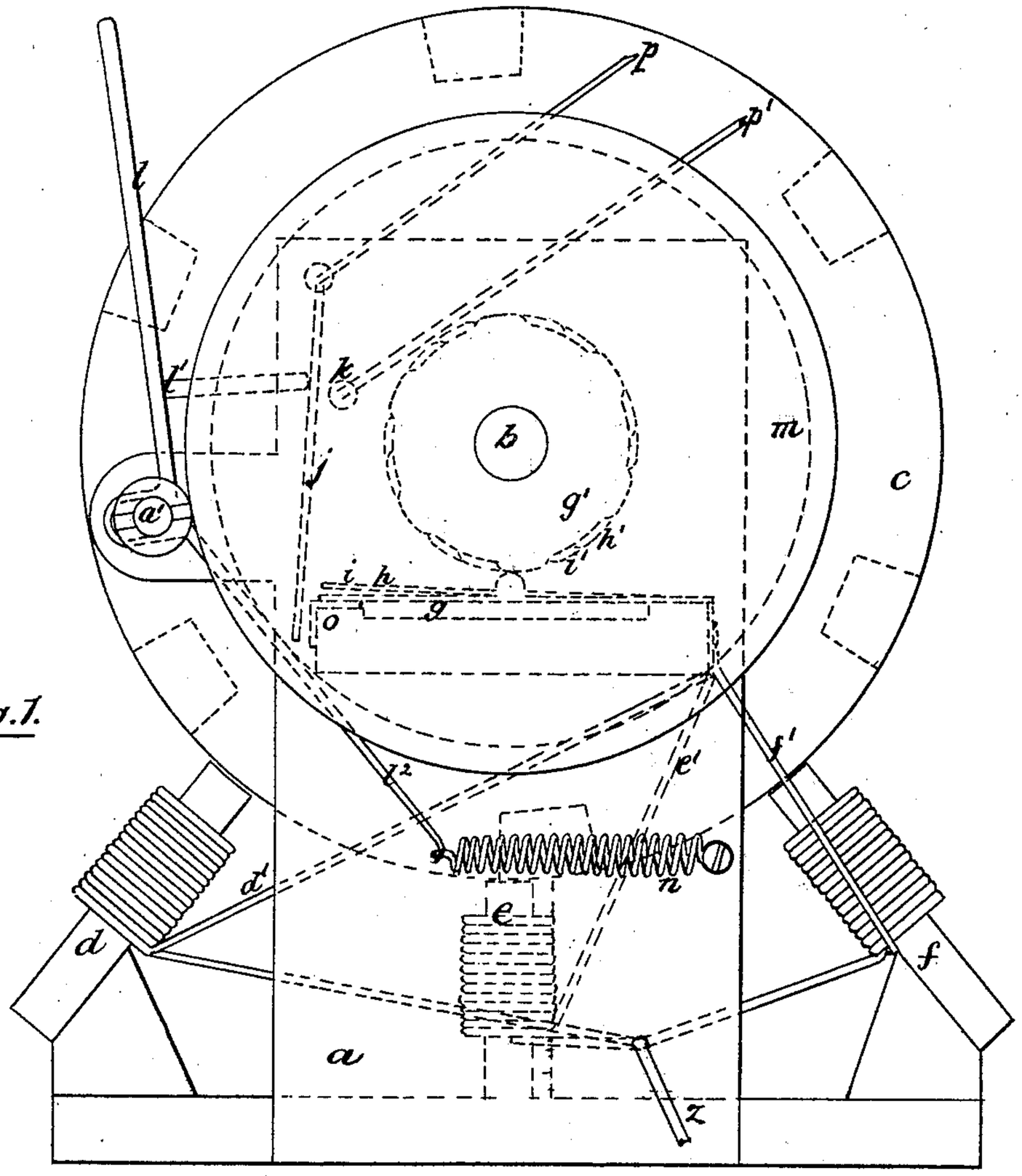
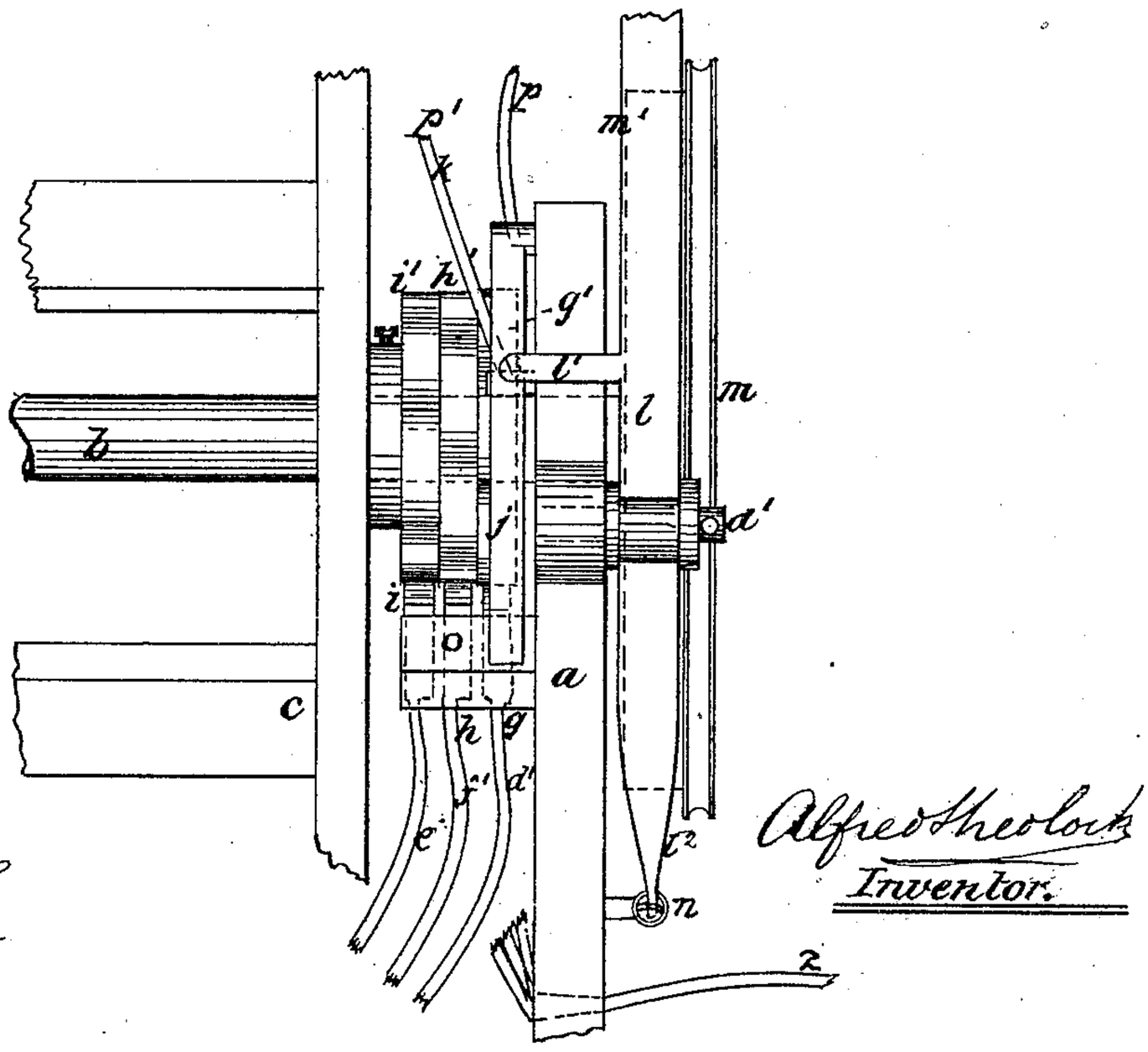


Fig. 2.



Witnesses.

William Shedlock

John S. Dayton

Alfred Shedlock

Inventor.

UNITED STATES PATENT OFFICE.

ALFRED SHEDLOCK, OF NEW YORK, N. Y.

IMPROVEMENT IN ELECTRO-MAGNETIC MOTORS.

Specification forming part of Letters Patent No. **177,359**, dated May 16, 1876; application filed February 12, 1876.

To all whom it may concern:

Be it known that I, ALFRED SHEDLOCK, of the city of New York, county and State of New York, have invented certain Improvements in Electro-Magnetic Motors, of which the following is a specification:

This invention relates to improvements in electro-magnetic motors, and consists of a rheotome, or circuit-breaker, composed of three straight flat springs soldered to one of the ends of the wire coils of the three magnets. The springs are fastened to a block of wood, the wood being secured to the frame of the machine by three disks, with as many ridges on their peripheries as there are armatures in the wheel. These disks are fastened to a hub fitted on the shaft of the armature-wheel, and a plate of copper fastened to the wood just under the loose ends of the springs. The connecting-wires, bearing the positive current of two batteries, are brought into contact with this plate by being held in insulated posts from which springs project. The negative wires of the batteries are attached to the other ends of the coils of the magnets. The springs from the insulated posts are pressed against the plate by an arm projecting from a lever, to which a spring is attached in such a manner as to cause it to act as a brake by bearing against a brake-wheel when the pressure is removed therefrom. This brake-lever is operated by the knee or foot, thus leaving both hands free to work the machine driven by the motor. The springs do not leave the plate at the same time, and one of them is in contact with it after the brake bears on the wheel, so that the speed of the machine is governed to a nicety. On the three flat springs are rollers or rounded projections of wood or other good non-conducting material, which bear against the ridged disks. These disks may also be made of wood, and may be one solid cylindrical piece, with the ridges formed thereon. The object of making them of one piece, or securing the three disks to the hub, is to facilitate the adjustment of the machine. By setting it to close and open the circuit for one magnet at the right time, it will be set for all of them. All the springs and connections over which the electric current passes are made of copper, and are insulated from the frame of the machine, and consequently the current is not retarded.

In the accompanying drawings, forming part of this specification, Figure 1 is an end view of my improvements in electro-magnetic motors, and Fig. 2 is a front view of the same.

a represents the frame, in which the shaft *b* has bearings. On the shaft *b* is the armature-wheel *c*, having six armatures. The magnets *d e f* are secured to the bed of the frame *a*, and one of each of the wire coils of the magnets *d e f* are brought together, as shown at *z*, to which one of the wires from the battery is attached. The other ends *d′ e′ f′* of the wire coils are fastened to the flat springs *g h i*, which are secured at one end to a piece of wood, so as not to touch one another, the wood being secured to the side frame of the motor. The other ends of the springs *g h i* project over the plate *o*, and they are made to touch the plate *o* by the ridged disks *g′ h′ i′*, which are so set on the shaft *b* that they act on the springs *g h i*, so as to cause the electric current to pass through the magnets and be cut off from them at the right time. The circuit is completed by fastening the wire from the other pole of the battery to the spring *j*, as shown at *p*. The spring *j* is pressed against the plate *o* by the arm l^1 from the lever *l*, which rocks on the stud *a′*. The hole in the lever *l*, through which the stud *a′* passes, is slotted, so that when the upper part of the lever *l* is pushed in toward the machine, the arm l^1 will couse the spring *j* to bear against the plate *o* before the part l^2 of the lever leaves the brake-wheel *m′*, which is part of the driving-pulley *m*. The part l^2 of the lever is caused to bear against the wheel *m′* by the action of the spring *n*, one end of which is fastened to the frame *a*. To the stud *k* is attached the wire *p′* from the auxiliary battery, and the current from this battery is caused to pass through the magnets by pressing on the lever *l* sufficiently to press the spring *j* against the stud *k*, the spring *j* still bearing against plate *o*. In removing the pressure of the knee or foot from the lever *l*, the spring *j* first leaves the stud *k*, the brake l^2 is brought in contact with the wheel *m′*, and finally the spring *j* leaves the plate *o*.

I do not wish to confine myself to the exact

position of the springs *g h i*, as they may be operated by one disk, having ridges on its face, by placing them at right angles to their position shown in the drawings, the projections on the springs being so arranged that the ridges will work them alternately; but

What I claim, and desire to secure by Letters Patent, is—

1. The combination of the springs *g h i*, secured to the insulating-block, the rigid conducting-plate *o*, and the cylinder formed with the series of ridges *g' h' i'*, the bearing-point of the ridges on the springs being between the block and plate, substantially as hereinbefore set forth.

2. The combination of the magnets *d e f*, springs *g h i*, disks *g' h' i'*, plate *o*, and spring *j*, substantially as hereinbefore set forth.

3. In combination with an electro-magnetic motor, the lever *l*, constructed and operating substantially as described, so as to close the circuit before the brake is released from the brake-wheel *m'*, as and for the purposes hereinbefore set forth.

4. The combination of the lever *l*, spring *j*, and stud *k* with the rheotome of an electro-magnetic motor, substantially as and for the purposes hereinbefore set forth.

ALFRED SHEDLOCK.

Witnesses:

JOHN S. TAYLOR,

WILLIAM SHEDLOCK.