2 Sheets--Sheet 1.

J. E. SMITH.

Printing Telegraphs.

No. 157,880. Patented Dec. 15, 1874.

Fig: 1

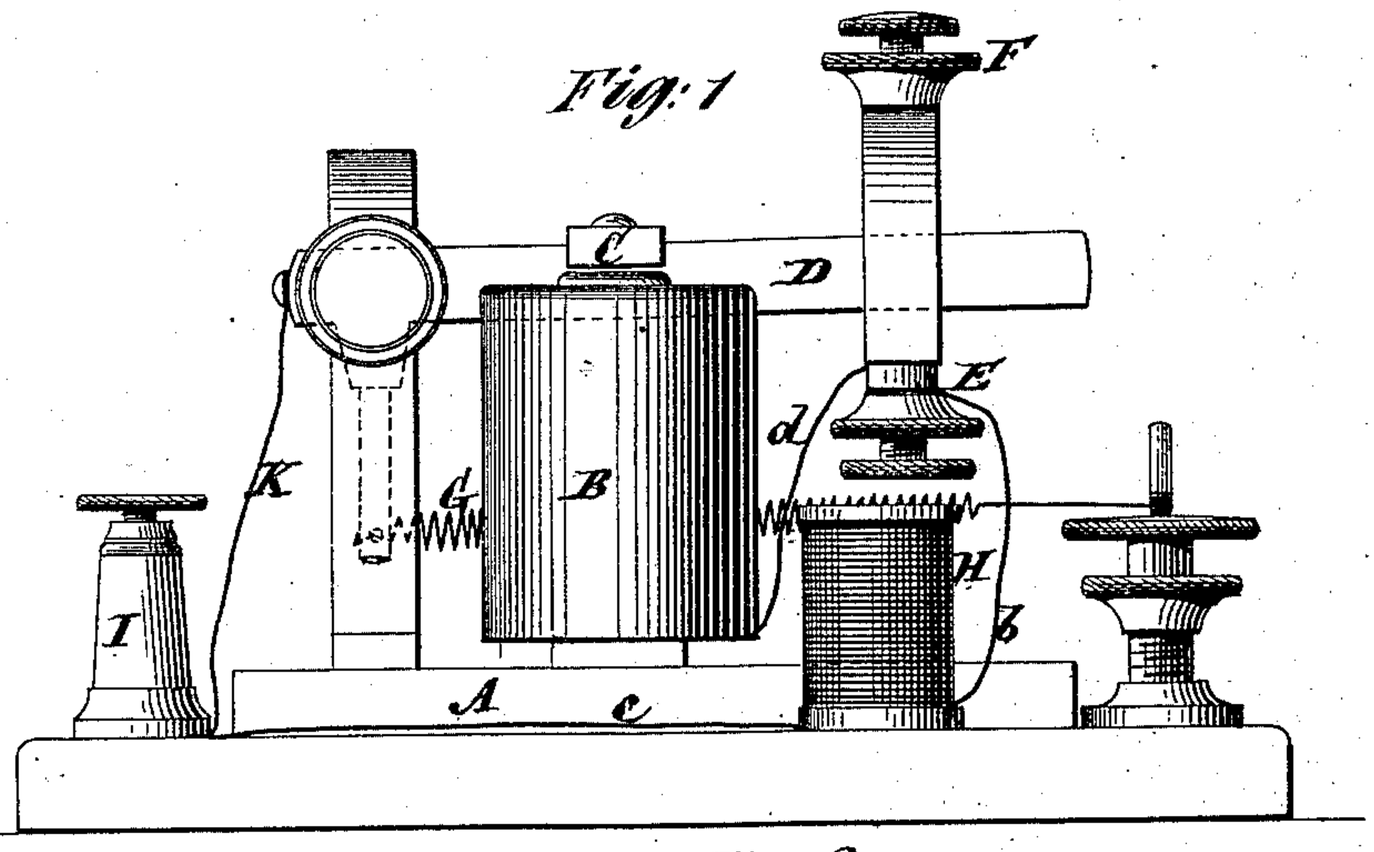


Fig: 2

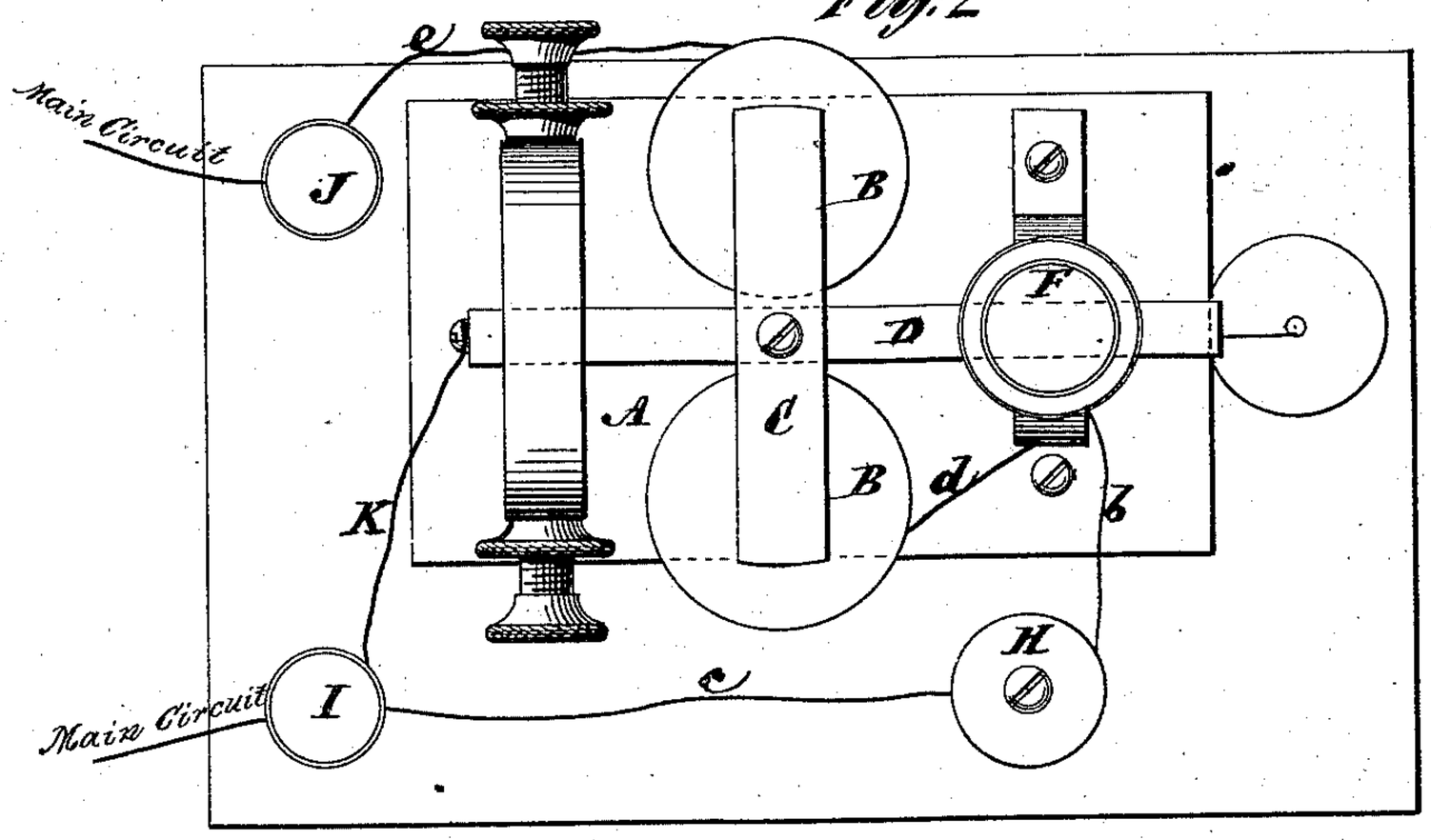
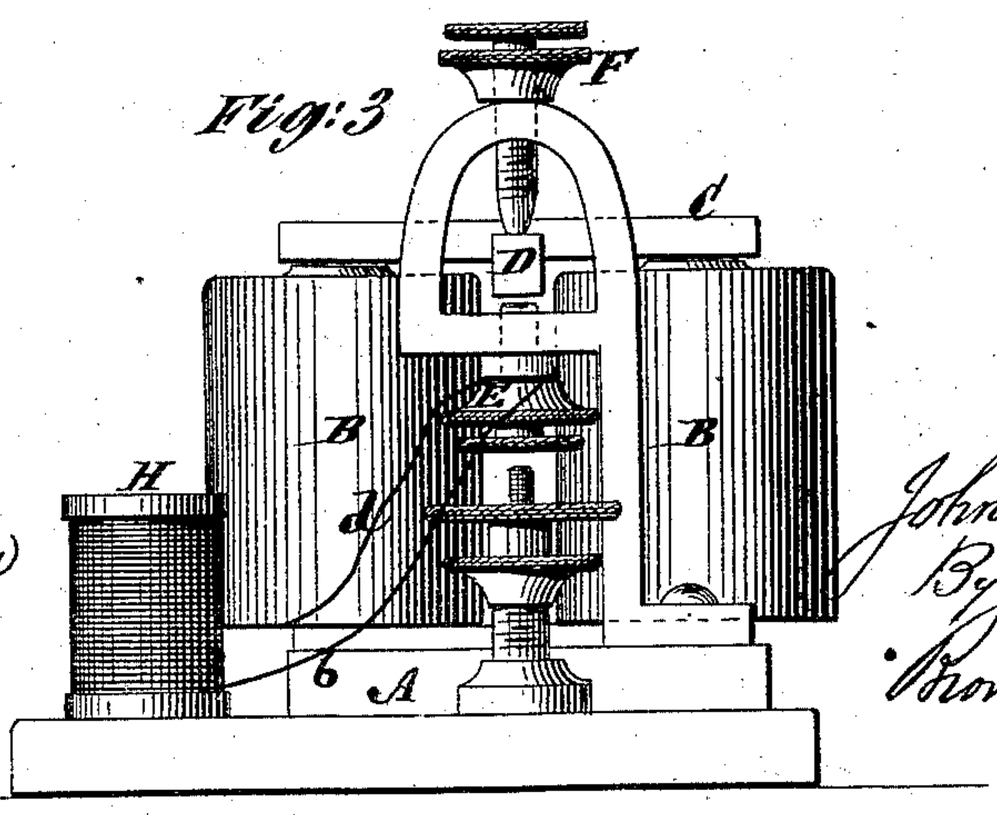


Fig: 3



Witnesses:

Michael Ryan

Fred Haynes

John E. Smith
By his attorneys
Brown & Allen

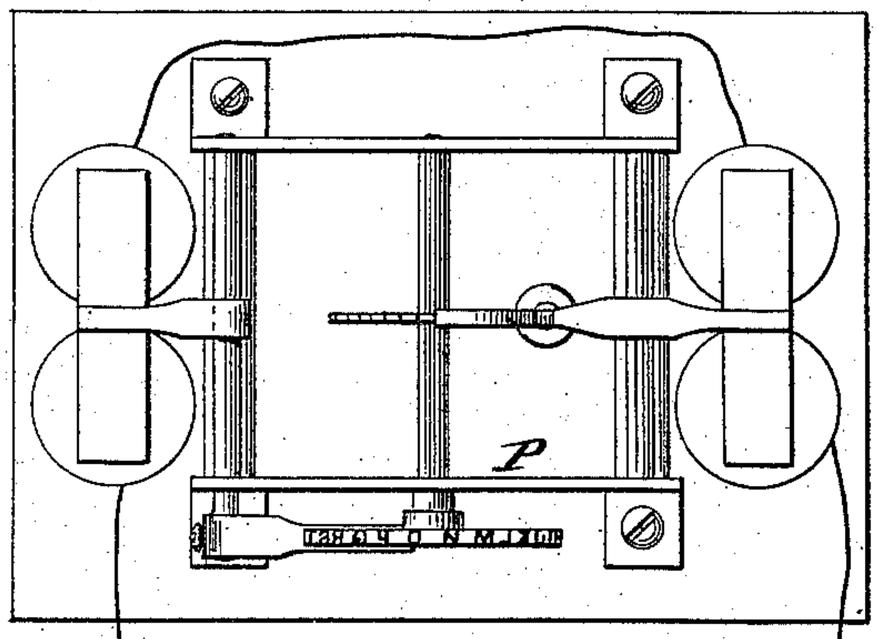
THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

J. E. SMITH.

Printing Telegraphs.

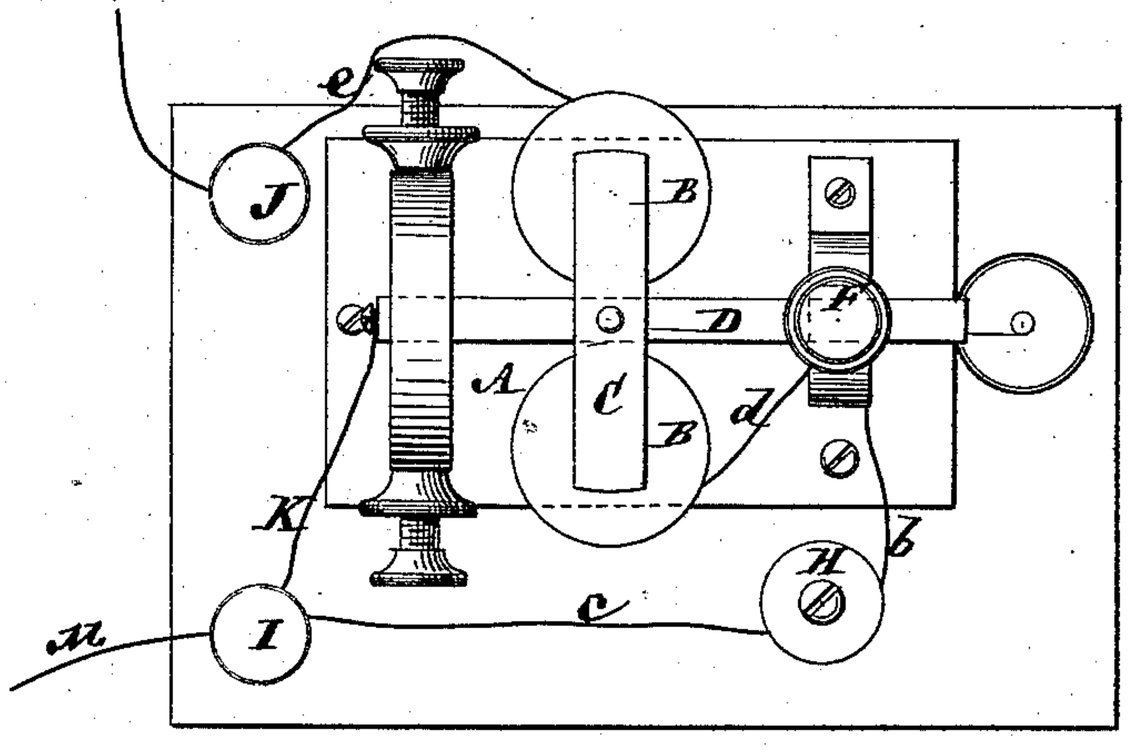
No. 157,880. Patented Dec. 15, 1874.



M

M

Fig: 1



Witnesses;
Michael Ryan
Fred Haynes

John E. Smith
by his Attorneys
Brown & Allen

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JOHN E. SMITH, OF NEW YORK, N. Y.

IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. **157,880**, dated December 15, 1874; application filed November 12, 1873.

To all whom it may concern:

Be it known that I, JOHN E. SMITH, of the city, county, and State of New York, have invented an Improved Attachment to the Main Circuits of Printing-Telegraphs, of which the following is a specification:

This invention is designed for use in connection with printing-telegraph instruments whose type-wheel magnets and printing-magnets are constantly located in and form part of the same main circuit; and it consists in the location, in such circuit, of a resistance-coil or rheostat and an electro-magnet, whose armature-lever, by a prolonged current on the stoppage of the type-wheels, is made to shunt said coil or rheostat, thereby augmenting the line-wire current sufficiently to actuate the printing-magnets.

Figure 1 represents a side elevation of my improved apparatus or attachment; Fig. 2, a plan of the same, and Fig. 3 an end view thereof. Fig. 4 is a plan of an apparatus in combination with a main circuit and one of a series or any number of ordinary printing telegraphic instruments in the same circuit.

Similar letters of reference indicate corresponding parts.

Upon any suitable base, A, is mounted an electro-magnet, B, whose soft-iron armature C is attached to a lever, D. This lever, when moved by the magnet B, is stopped by an insulated set-screw, E, and is checked by a set-screw, F, when withdrawn from the magnet B by a retracting-spring, G. H is a resistance coil or medium, one terminal, *b*, of which connects with the insulated set-screw E, and the other terminal, *c*, with a binding-screw, I. This resistance may be of any well-known variable or adjustable form—such, for instance, as any rheostat employed in electrical measurements, in order that it may be easily varied according to the number of printers in circuit with it. One end, *d*, of the wire of magnet B connects with the screw E, while the other end, *e*, of the same is clamped by the binding-screw J. The lever D is put in direct electrical communication with binding-screw I by means of a wire, K. The instrument is located in the main circuit by the wires of the latter connecting with the binding-screws I J.

From this description it will be seen that from screw J, through magnet B, to screw E there is but one route for the current, while two routes exist from screw E to screw I, one of which is through the resistance H, and the other over the wire K and lever D, whenever the latter is in contact with screw E. In other words, the route D K is a shunt to the resistance H, said shunt-route being opened and closed by the action of magnet B and spring G.

When an instrument of this description is properly adjusted and located in a main circuit of printing-telegraph instruments whose printing-magnets form part of such circuit, and said circuit is provided with battery not quite powerful enough to actuate the printing-mechanism while the current passes through the resistance H, the combination will operate as follows: While rapid electric pulsations actuate the type-wheel magnets, the shunting-magnet B will not become highly enough magnetized to overcome the retracting-spring G; therefore, as the lever D is not in contact with screw E while the type-wheels rotate, all of the current which passes over the line will go through the resistance H as well as magnet B, so that during the rotation of the type-wheels the printing portion of the receiving-instruments will remain inactive; but when the current is prolonged by a momentary pause in the circuit-breaker of the transmitter, the magnet B, in consequence of such prolonged current, will become sufficiently energized to move the lever D into contact with screw E, when the current will pass from E to I, principally by way of the shunt-route D K. By virtue of this reduced resistance in the circuit, the current will instantly become sufficiently augmented to actuate the printing-magnets. Thus the type-wheel magnets are actuated directly by short pulsations—the shunting-magnet by a prolonged current, and the printing-magnets by an augmented current.

It will be seen that the instrument herein described properly forms no part of a printing-telegraph instrument, nor of the transmitter; that but one such instrument is required in a whole line of printers and transmitters; that it may be connected in such a circuit wherever it can be most conveniently supervised;

that it may be used in connection with printing-telegraphs the same, whether their type-wheels are liberated by electricity or are impelled by the direct action of electro-magnetism, whether the electric pulsations are all of one polarity or partly of both polarities, or whether the printing-levers are operated directly by electro-magnets or by mechanism released by electro-magnetism.

In Fig. 4 of the drawing, M represents a main circuit with which the apparatus hereinbefore described connects, and in which are any number of printing telegraphic instruments, one only, marked P, here being shown.

I claim as my invention—

A resistance-coil or rheostat and a shunting-magnet and connections, substantially as herein described, in combination with a main circuit in which are placed the printing and the type-wheel magnets of any number of telegraph-instruments, for the purpose of making the current for operating the printing-magnets more powerful than is necessary for rotating the type-wheels.

J. E. SMITH.

Witnesses:

MICHAEL RYAN,

FRED. HAYNES.