D. Flanery's Printing Telegraph Instrument.

116826

PATENTED JUL 11 1871

Fig: 1.

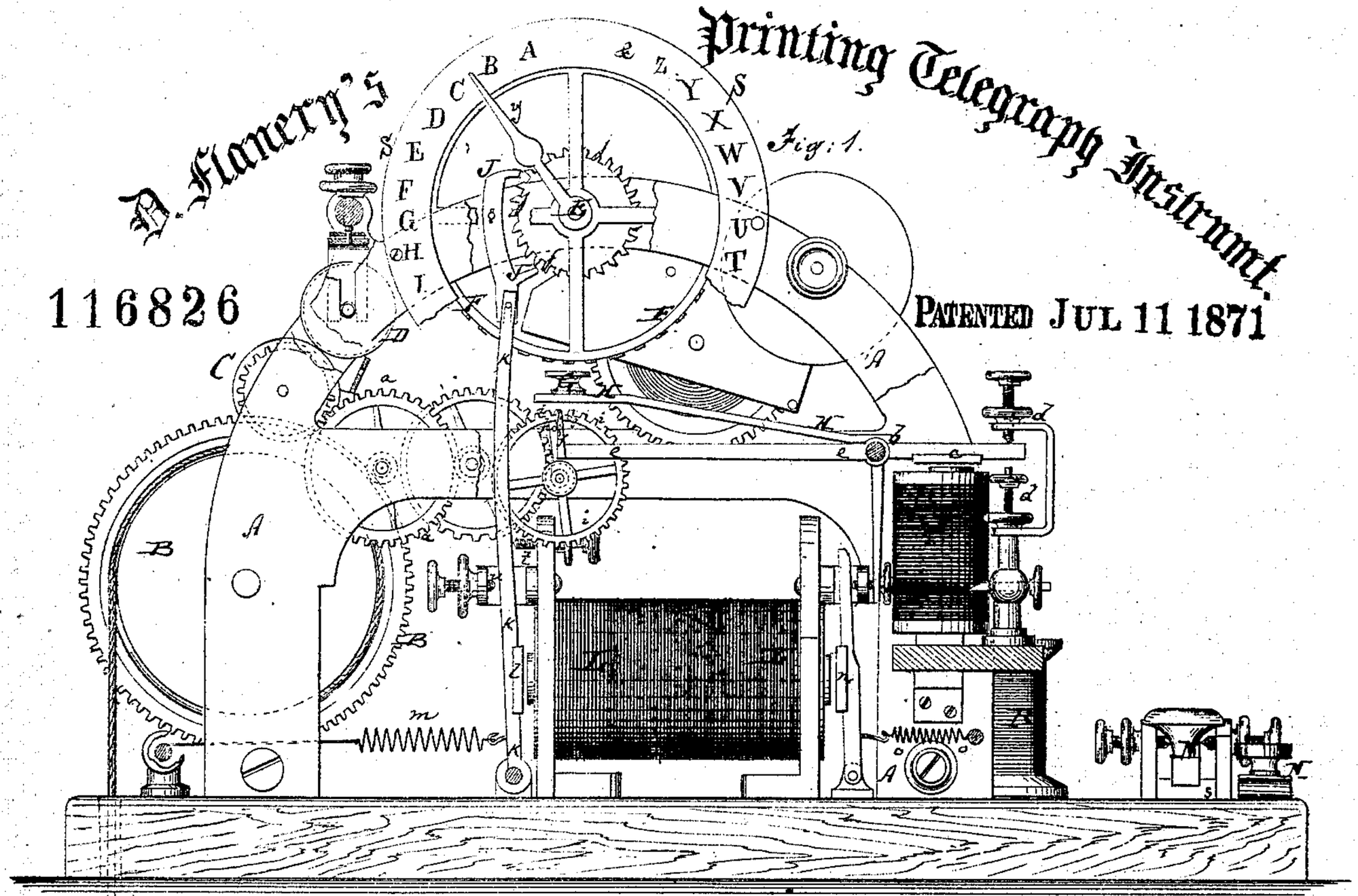


Fig: 2

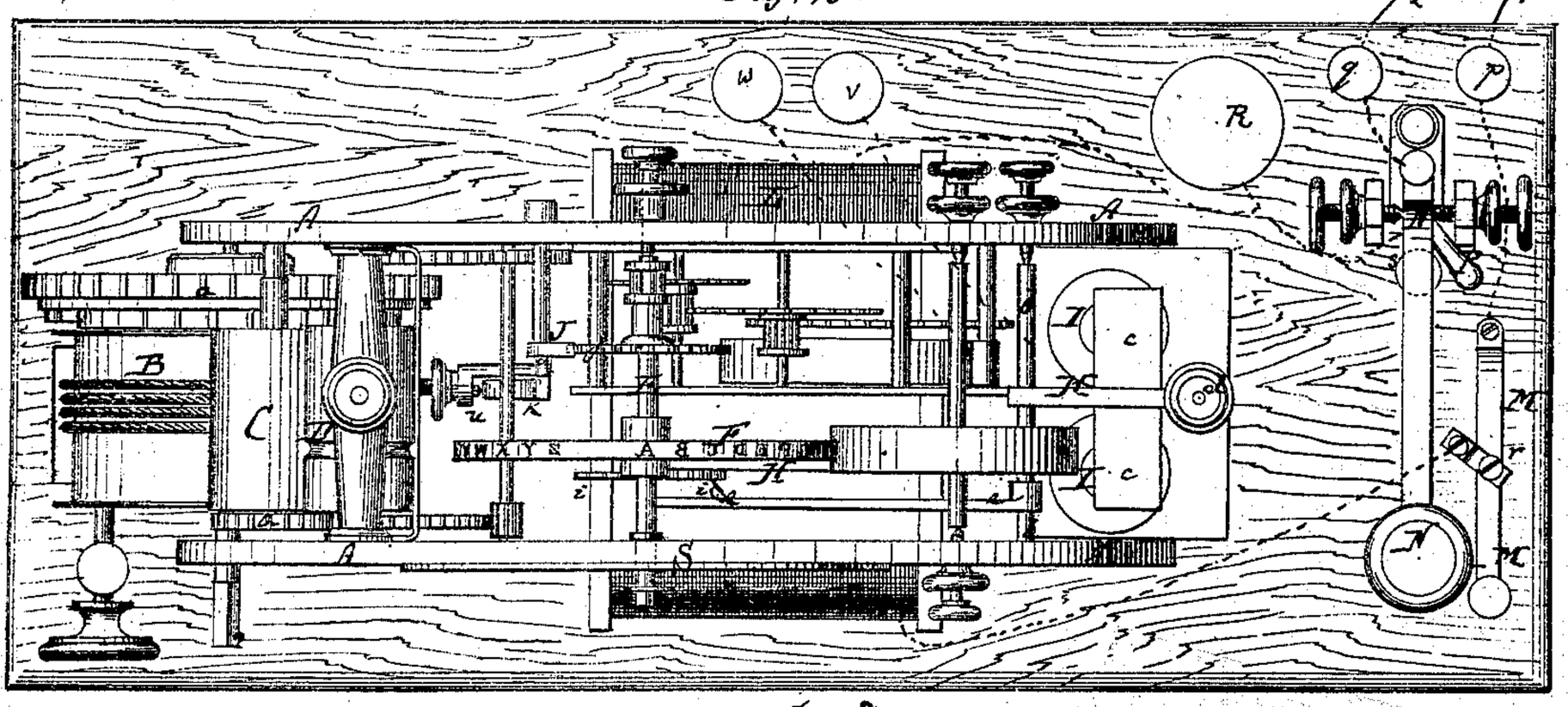
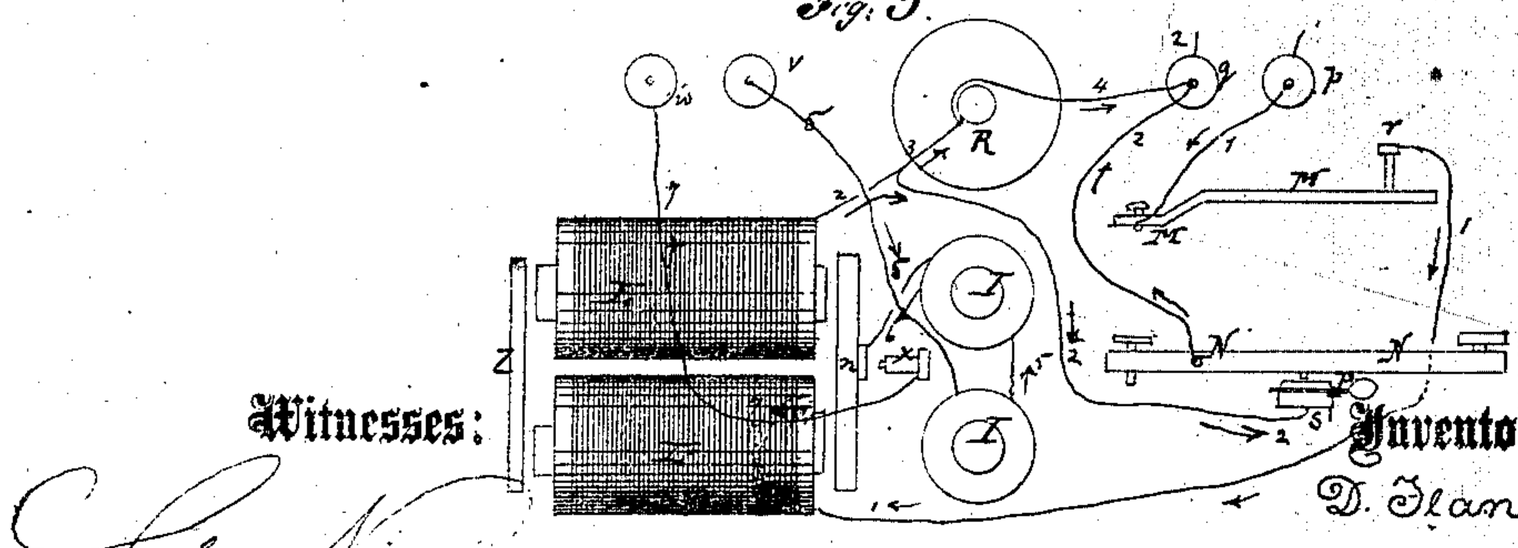


Fig: 3.



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UNITED STATES PATENT OFFICE.

DAVID FLANERY, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN PRINTING-TELEGRAPHS.

Specification forming part of Letters Patent No. 116,826, dated July 11, 1871.

To all whom it may concern:

Be it known that I, DAVID FLANERY, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Printing-Telegraph Instrument; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a side elevation, partly in section, of my improved printing-telegraph instrument. Fig. 2 is a plan or top view of the same. Fig. 3 is a diagram illustrating the position of the wires.

Similar letters of reference indicate corresponding parts.

This invention relates to a new telegraph instrument for printing messages upon strips of paper, and has for its object to simplify the electric as well as the mechanical appliances of the apparatus.

The devices heretofore in use for the same purpose were generally either too complicated and costly to become generally introduced, or too slender in construction and therefore easily out of order.

My apparatus requires but one main battery at the terminuses of each circuit or at one terminus, and employs no polarized or permanent magnets which are liable to change. It has but one series of wires, where heretofore two or three were required. It operates without requiring the reversal of the battery and without throwing excessive strain on the same. My invention consists in a novel arrangement and construction of electro-magnets; in a new arrangement and disposition of the wire which constitutes the circuit; in the application of the apparatus of resistance-coils, whereby the course of the current is changed; and in the combination of certain keys for regulating and controlling the currents of electricity. Finally, the invention consists in a new combination of mechanism, which constitutes the printing machinery and the devices for feeding the paper, all as hereinafter more fully described.

A in the drawing represents the frame of the machine. It is made of metal or other material, of suitable shape, and strong enough to sustain the devices connected with the printing mechanism. In the frame is hung a drum, B, which is to impart motion to the feed mechanism for the paper, and is connected with a spring or weight, from which it derives its rotary motion. By intermediate gearing *a a* the drum B connects with a transverse roller, *c*. D is another roller, held by spring or weight against the periphery of the roller C, and constituting, together with the same, the feed for the paper. Upon a transverse shaft, E, hung in the frame A, is mounted the printing-wheel F, which, on its circumference, carries the projecting types or devices wherewith the impressions are to be made. Under the wheel F is arranged the printing-cushion G, which rests on a vibrating lever, A, pivoted, by a pin, *b*, to the frame. The lever H carries, also, an armature-plate, *c*, which is opposite a pair of magnets or coils, I I, so that when the armature is attracted the cushion G will be applied to the wheel F. The vibration of the lever H can be regulated by means of set-screws *d d*, shown in Fig. 1. From the pivot *b* projects also a lever, *e*, which carries a notched pallet, *f*, at one end. This pallet is constantly in the way of one of two pins, *g* and *h*, that project from a wheel, *i*, which forms part of the train connected with the drum B, which feeds the paper. When the cushion is moved up to print, the pallet will also be elevated to bring its notch in line with the upper pin *g*, of the wheel *i*, which, with the power of the weight or spring on B constantly applied to it, will be turned till the pin *h* strikes the pallet. This said motion of the wheel *i* is quite short and rapid, so that the paper is fed slightly before the cushion reaches it. As the cushion descends after printing, the notch of the pallet is brought opposite the lower pin *h*, and the wheel turned till the pin *g* again strikes the pallet. The said pallet constitutes, therefore, together with the pins *g h*, an escapement for the feed mechanism, providing the displacement of paper after each impression necessary to give the requisite spaces between the letters. The shaft E carries an escapement-wheel, *j*, similar to the kind used on clocks. Into the same are thrown the pallets of a vibrating anchor, J. This anchor derives its oscillating motion from a lever, *k*, which carries an armature, *l*, opposite the coils L L of the main magnet. A spring, *m*, tends to draw the armature off the coils, and the coils attract it

when charged. Thus the anchor can be vibrated to allow intermittent rotary motion to the shaft E, power being applied to the latter by a suitable spring, weight, or other means. Opposite the armature *l* is placed, against the coils L, another armature, *n*, which is drawn off by a spring, O.

I will now describe the operation of the mechanism and at the same time furnish a statement as to the arrangement of wires, keys, and coils. To the binding-screws *p q* are attached the wires 1 2 from the battery and line, or from the poles of a two cup Daniel battery, which works the instrument. The direction of current along the wire 1, through the cup *p*, is shown by the arrow in Fig. 3. The current flows along said wire to a spring-lever, M, and through the same to a screw, *r*, above it, and thence to the main magnet L. Passing through the coils of the magnet L, the current travels to the anvil *s* of a key, N. This key contains a pivoted lever, P, which can be pushed between the ledge of the anvil and lower part of the key, as in all ordinary Morse keys. When the lever P is thus between anvil and lower part of key, the current flows directly to the screw-cup *q*, and the circuit is formed. The iron cores of the coils L are then magnetized, and the armatures *l n* attracted to them. The armature *l* is adjusted by and between screws *t u*, so as to give it the requisite play; the screw *t* will not allow it to touch the cores. The armature *n* is adjusted by but one screw, which prevents its being drawn too far back by the spring *o*, but it is allowed to touch the cores; hence it has no adjusting-screw in front. The cores can thus be united by the armature *n*, which becomes a connecting or neutral piece, and they (the coils) form a strong magnet. Now, if the lever P is moved off the anvil of the key N, the connection is broken, and the current, starting from *p*, follows the wire 1, through M *r* L L, to the resistance-coil R, as at 3, and thence by the wire 4 to *q*. The resistance-coil is set up in a suitable part of the frame A. In flowing along this route 3 R 4, the resistance being so much greater than the route 2 N *s* 2, just broken, the current becomes enfeebled, so that the main magnet will lose the greater part of its power. The spring *m*, being properly adjusted, will now be stronger than the magnets, keeping the armature *l* off the cores, while during the shore circuit it was weaker than the magnets. The armature *n*, however, is still attracted to the cores, as its spring *o* has a comparatively low adjustment. Now, if the lever N (the Morse key) is pressed down, the current flows, by the short route 2, through key and coils, the magnets L become powerful, and the armature *l* will be attracted. As the lever N is let up the short route is broken, the long one 3 4 taken again, and the main magnet weakened, so that the armature *l* falls back. Thus motion is given to the armature *l* by oscillating the lever N, and thereby also to the anchor, which regulates the movement of the type-wheel F. Whenever the letter to be printed is above the cushion G, between which and the type-wheel the ribbon of paper is held, the lever H is swung to produce the desired print. Before describing how the lever H is moved, I will state that the desired letter of the type-wheel is above the printing-pad just while the key N is open, and that the type-wheel is advanced by half letters during its several movements. The two cups of Daniel's or of a local battery are attached to screw-cups *v* and *w*. Whenever the key M is pressed down the main circuit is completely broken and no route at all left for the current. The main magnet loses all its power and the armature *n* falls back against a screw or pin *x*. The wire 5 from the cup *v* extends to the coils I; thence it reaches, at 6, to the armature *n*, while the wire 7 from the cup *w* connects with the pin *x*. When the armature *n* falls back against the pin *x*, as stated, the local circuit 5 I 6 *n x* 7 is closed, and the local magnet brings the printing-lever up against the type-wheel to print the letter. At the same time the lever *e* is moved up and then down to produce the feed-motion of the paper in the manner above described. As soon as an impression has been taken the pressure is taken off the lever M, so that the same will again close the main circuit, whereby the coils L will be charged to cause the attraction of the armature *n*, and a consequent interruption of the local current. By operating the lever N the type-wheel is again moved until the desired letter is over G, when a pressure upon M will produce the impression. When this instrument is placed at a terminal or intermediate office and properly connected, and the lever P closed, the line will be ready for use. Then, when any office wants to transmit, it opens its key N, throwing in the resistance-coil, which, in every line, should be proportioned to the length of the same. The aforementioned operation can then be carried on. The shaft E carries a pointer, *y*, which moves over a marked dial, S, to show which letter is over the printing-cushion, enabling the operator to arrest the motion of the key N and press down the key M at the proper time. A suitable inking-roller, T, is used on the type-wheel to provide the same with the necessary color for impression.

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

1. The keys M and N applied to the main wire of an electric apparatus to control the current through the same, substantially as herein shown and described.

2. In combination with wheel F, the cushion G, vibrating lever H, armature-plate *c*, and coils I I, all arranged as specified, and for the purpose set forth.

3. The paper-feeding device C D and the wheel *i*, having pins *g h*, both connected by intermediate mechanism to the common spring-drum B, combined with the notched pallet *f* on the end of lever *e*, the armatured lever H, and

the coils I I, for the purpose of causing the feed to move the paper just before the cushion reaches it.

4. In combination with paper-feeding and printing mechanism, the one main battery at the terminus of a circuit, the one series of wires, the resistance-coils, and the keys, all arranged and operated as described.

5. The printing-lever H, combined with the lever *e* and pallet *f*, substantially as and for the purpose herein shown and described.

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