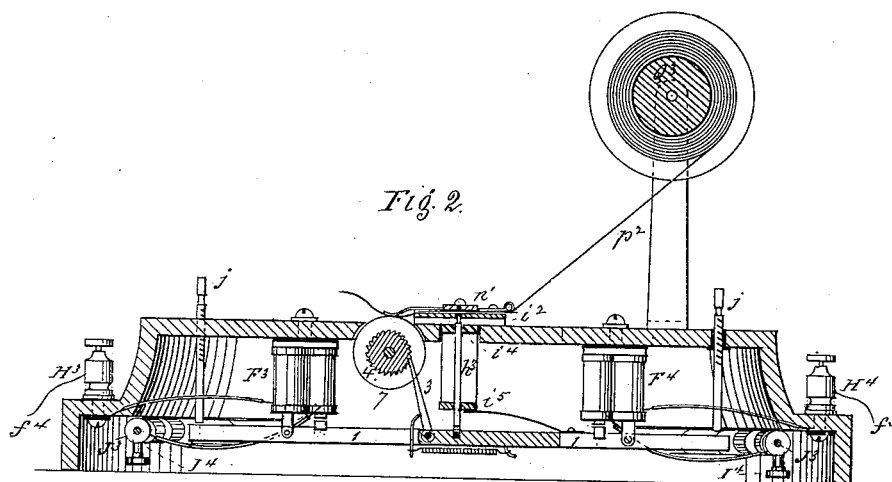
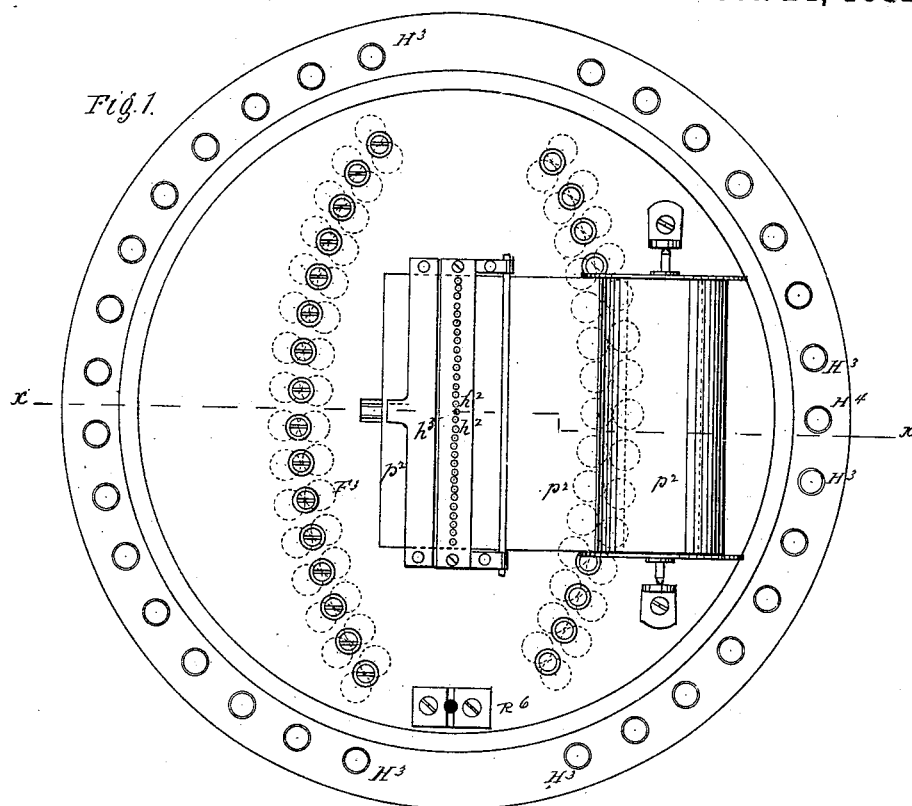


A. F. & F. B. JOHNSON.

PERFORATOR FOR AUTOMATIC PRINTING TELEGRAPHS.

No. 266,593.

Patented Oct. 24, 1882.



Witnesses:  
M. H. Hickey  
G. R. Riley

Inventors:  
Albert F. Johnson,  
Frank B. Johnson,  
By their Atty.  
John S. Thornton

(No Model.)

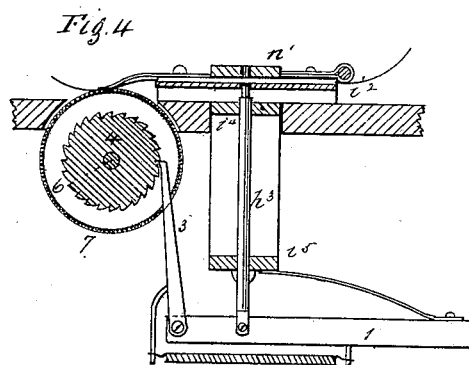
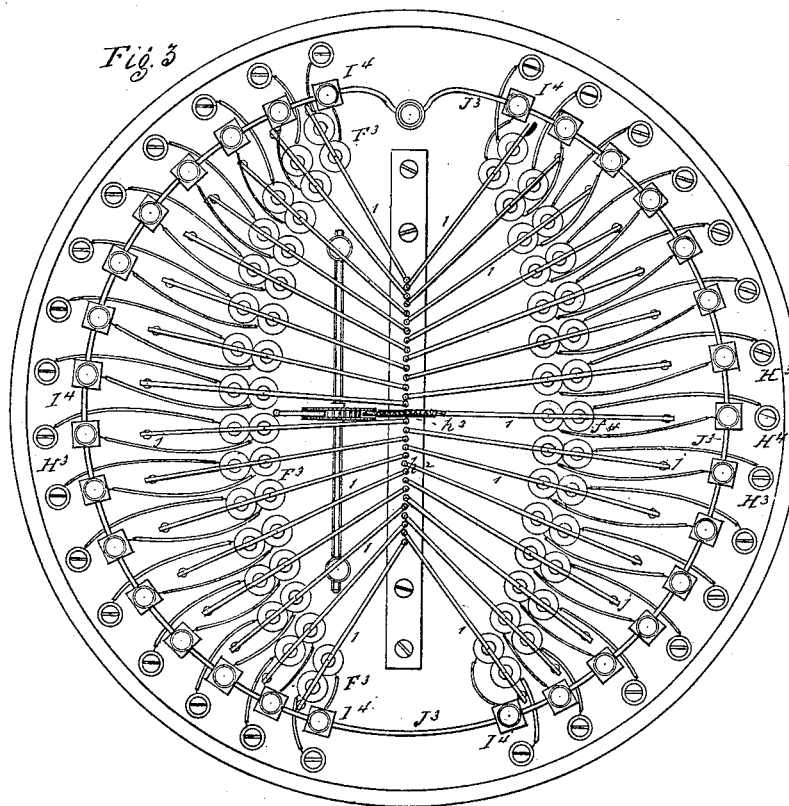
3 Sheets—Sheet 2.

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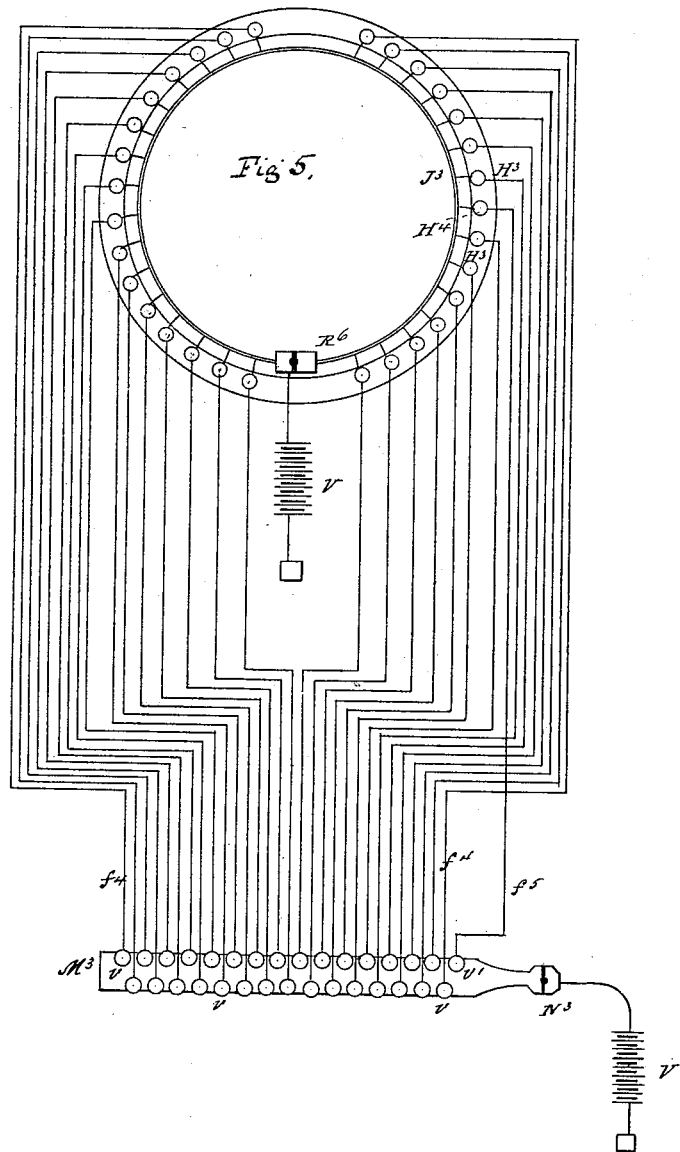
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Witnesses:  
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Inventors:  
Albert F. Johnson,  
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John S. Thornton

# UNITED STATES PATENT OFFICE.

ALBERT F. JOHNSON AND FRANK B. JOHNSON, OF BROOKLYN, N. Y., ASSIGNORS TO THE JOHNSON MANUFACTURING COMPANY, OF SAME PLACE.

## PERFORATOR FOR AUTOMATIC PRINTING-TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 266,593, dated October 24, 1882.

Application filed February 23, 1882. (No model.) Patented in England March 29, 1882, in Austria April 7, 1882, in France April 15, 1882, in Belgium April 17, 1882, and in Germany April 18, 1882.

*To all whom it may concern:*

Be it known that we, ALBERT F. JOHNSON and FRANK B. JOHNSON, citizens of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented an Improved Electric Perforator for Automatic Printing-Telegraphs; and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, (on three sheets,) which form a part of this specification.

This invention forms part of the mechanism embraced in our improvements in automatic printing-telegraphs described in our specification marked "A," filed simultaneously herewith.

The object of this invention is twofold—namely, first, to enable a person to perforate his message, and thereby put it into a form in which it is intelligible on inspection at a telegraph-office while he is at a distance from such office; and, second, to reproduce at any station a perforated message for further transmission when the station at which the message is to be received and printed is not in circuit with the place or station from whence the message is sent—that is to say, whenever a message is to be sent to a station not in circuit with the sending-station this perforator is used to reproduce the prepared message at some station which is in circuit with the sending-station, and with the station at which the message is to be received; or, if there is no station in circuit with both then said message is thereby successively reproduced at different stations until it reaches one which is in circuit with that at which the message is to be received and printed.

The invention consists in the improved constructions and combinations of parts, as hereinafter particularly described, whereby these several objects are attained.

In the accompanying drawings, Figure 1 represents a plan view of the perforator; Fig. 2, a vertical section of the same on the line  $xx$ ; Fig. 3, a plan of the under side of the same, and Fig. 4 a sectional view of the feed mechanism. Fig. 5 is a plan view of the perforator,

key-board, and circuits on a scale twice the size of the other figures.

Similar letters of reference indicate the same parts in all the several figures.

$h^2$  are punching-rods for the purpose of making perforations, each representing one particular letter or character used in transmitting messages upon a strip or sheet of paper,  $p^2$ , which is fed through the instrument by means of the feed mechanism hereinafter described, while said perforations are being made, and  $h^3$  is a similar rod for making perforations, which, when the perforated strip is passed through a suitable transmitter, close the circuit with the magnet on the receiver that operates the feed mechanism of the latter. These punching-rods are placed in the same relative position as those in the hand-perforator described in said specification "A," so that when one of the perforated strips or messages made by this instrument is passed through one of our transmitters (also described in said specification "A") it will operate to successively close the same circuits with the receiving-instrument, and in the same order as if it had been made by said hand-perforator.

$F^3$  and  $F^4$  are magnets for operating said rods  $h^2$  and  $h^3$ , respectively. The armatures of these magnets are made in the form of levers, which are fulcrumed on the cores of the outer coils of the magnets, and to their inner ends are pivoted the punching-rods above mentioned, and the throw of said levers is adjusted by means of set-screws  $j^4$ .

The armature of the magnet  $F^4$  has pivoted at the extremity of its inner end (which is longer than the other) a pawl, 3, which rotates a ratchet-wheel, 4, the space of one tooth each time said armature is attracted; and fixed upon the same shaft, 6, which carries this ratchet-wheel 4, are a pair of serrated disks, 7, forming a feed-roller to move the paper  $p^2$  forward to receive the perforations. The paper  $p^2$  is held on a reel,  $Q^3$ , and from thence passed between plates  $n'$  and  $i^2$ , which are perforated to allow the ends of the rods to pass through them, and the rods  $h^2$  and  $h^3$  are held in a vertical position by means of horizontal guide plates or

bars  $i^4$   $i^5$ , secured to the frame by suitable means, and provided with perforations to receive said rods. These plates  $i^2$ ,  $i^4$ ,  $i^5$ , and  $n'$  are substantially similar to those in the hand-perforator above mentioned and for similar purposes. The plate  $i^2$  is for the purpose of stripping the paper from the ends of the rods when a perforation is made. The outer coils of the magnets  $F^3$  and  $F^4$  are each connected with a corresponding binding-post,  $H^3$   $H^4$ , and thence by a separate line-wire with the instrument, by means of which this instrument is operated, and their inner coils are each connected with a copper wire,  $J^3$ , through the medium of binding-screws  $I^4$ , and thence with a local battery,  $V$ , and the earth; and along these line-wires electric impulses are sent from the station at which the instrument is operated. Each of the rods  $h^2$  makes a perforation that represents one particular letter or character, and when passed through a transmitter, through the medium of properly-arranged electric circuits, causes the receiving-instrument at the receiving-station to print that particular letter; and the rod  $h^3$  makes perforations, which, when passed through such transmitter, operate the feed mechanism of said receiver, and said rods are placed at the same distance apart and in the same relative position as its corresponding rod in the hand-perforator instrument above mentioned, so that a perforated message prepared by said hand-perforator, when passed through one of our said transmitters connected with this perforator by properly-arranged electric circuits, will operate the same from a distance, and cause it to produce an exact fac-simile of such message; and this fac-simile, when passed through a similar transmitter, may be made to represent said fac-simile at another distant station in the same manner, so that in sending the message for long distances it may be successively reproduced until it reaches a station which is in circuit with the station at which the message is to be finally received and printed.

The ring  $J^3$  is divided, and its two ends respectively connected with the two sections of a switch,  $R^6$ , for throwing the instrument into and out of circuit.

This electric perforator, in addition to being employed for reproducing messages for further transmission through the medium of one of our transmitters, as just described, may also be employed by private parties for the purpose of preparing their messages in unintelligible form at a distance. For this purpose the key-board described in our said specification "A" is employed, and an outline of the same is shown in the diagram on Sheet No. 3. It is provided with a series of press-buttons,  $v$ , each of which is marked with a particular letter, and connected by line-wire  $f^4$  with the magnet  $F^3$ , that operates the rod  $h^2$ , which makes a perforation to represent that particular letter, and also provided with a press-button,  $v'$ , connected by line-wire  $f^5$  with the magnet that operates

the rod  $h^3$ , which makes a perforation to operate the feed mechanism of the receiving-instrument. In said diagram an outline of the perforator is shown, each of the binding-posts  $H^3$  being connected with one of the magnets  $F^3$  and the binding-post  $H^4$  with the magnet  $F^4$ , and the said magnets being each connected with a battery through the medium of the ring  $J^3$  and binding-screws  $I^4$ .

The press-buttons  $v$  and  $v'$  are respectively arranged to make contact (when depressed) with a metal plate,  $M^3$ , and are thence connected with a battery,  $V'$ , and ground-wire, and suitable means are employed for causing the press-button  $v'$  to make such contact each time one of the press-buttons  $v$  is depressed, and also to admit of its having an independent movement for the purpose of operating the rod  $h^3$  separately to make perforations for operating the feed mechanism of the receiving-instrument.

The operation to perforate a message at the distant station is as follows: The press-button  $v$ , that has marked upon it the first letter in the message, is depressed, which closes the circuit with the magnet  $F^3$ , which operates the rod  $h^2$ , that represents that particular letter, and also by means of the press-button  $v'$  brings into circuit the magnet  $F^4$  to make a perforation for feeding forward the message-strip in the receiving-instrument. Then the press-button having marked upon it the next letter of the message is depressed, with like effect, and so on until the first word is completed, when the press-button  $v'$  is depressed once to make a space between that word and the next on said message-strip. These movements are repeated until the end of the message proper is reached, when the press-button  $v'$  is depressed a number of times to leave a suitable space between the subject-matter of the message and the address on said message-strip. After this is done the press-buttons are successively depressed in the same manner to print the words and letters composing the address.  $N^3$  is a switch for closing and opening the circuit. By these means a person having one of these key-boards in his office, connected by properly-arranged electric circuits with the nearest telegraph-office having one of these electric perforators, may prepare his message in such telegraph-office while sitting in his own office.

We wish it to be understood that we do not claim the key-board above described as part of our present invention, but that we introduce said description and the representation thereof in the drawings for the purpose of explaining the operation of our improved perforator.

The pawl 3 is arranged so that it shall be disengaged from the ratchet 4 by the succeeding tooth before the lever 1 has made its full stroke in order to stop the feed of the paper while the perforation is being made.

We are aware that an electrically-operated perforator for automatic printing-telegraphs has heretofore been used, as shown in the pat-

ent of T. A. Edison, dated August 12, 1873, and numbered 141,775, and therefore we do not claim that; but the said perforator was for the purpose merely of rendering the manipulation easier for the operator, and was located at the place where the perforations were being made, whereas our electric perforator is operated at a distance, to save time and expense, and by mechanism essentially different from that described in said patent.

What we claim as our invention is—

In an electrically-operated perforator for automatic printing-telegraphs, the combination herein shown and described of the series of punching-rods  $h^2$ , each representing one particular letter or character, the punching-rod  $h^3$  for making a separate series of perforations

to operate the feed mechanism of a receiving-instrument, the feeding device composed of the pawl 3, ratchet 4, and rollers or disks 7, to feed forward the paper  $p^2$ , and the electro-magnets  $F^3 F^4$ , each provided with a lever-armature, 1, constructed as described, to operate said rods  $h^2 h^3$ , and having one of its coils connected with one of the line-wires  $f^4 f^5$  and its other coil connected with a local battery through the medium of the copper ring  $J^3$ , the whole being constructed as described, for the purposes specified.

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Witnesses:

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