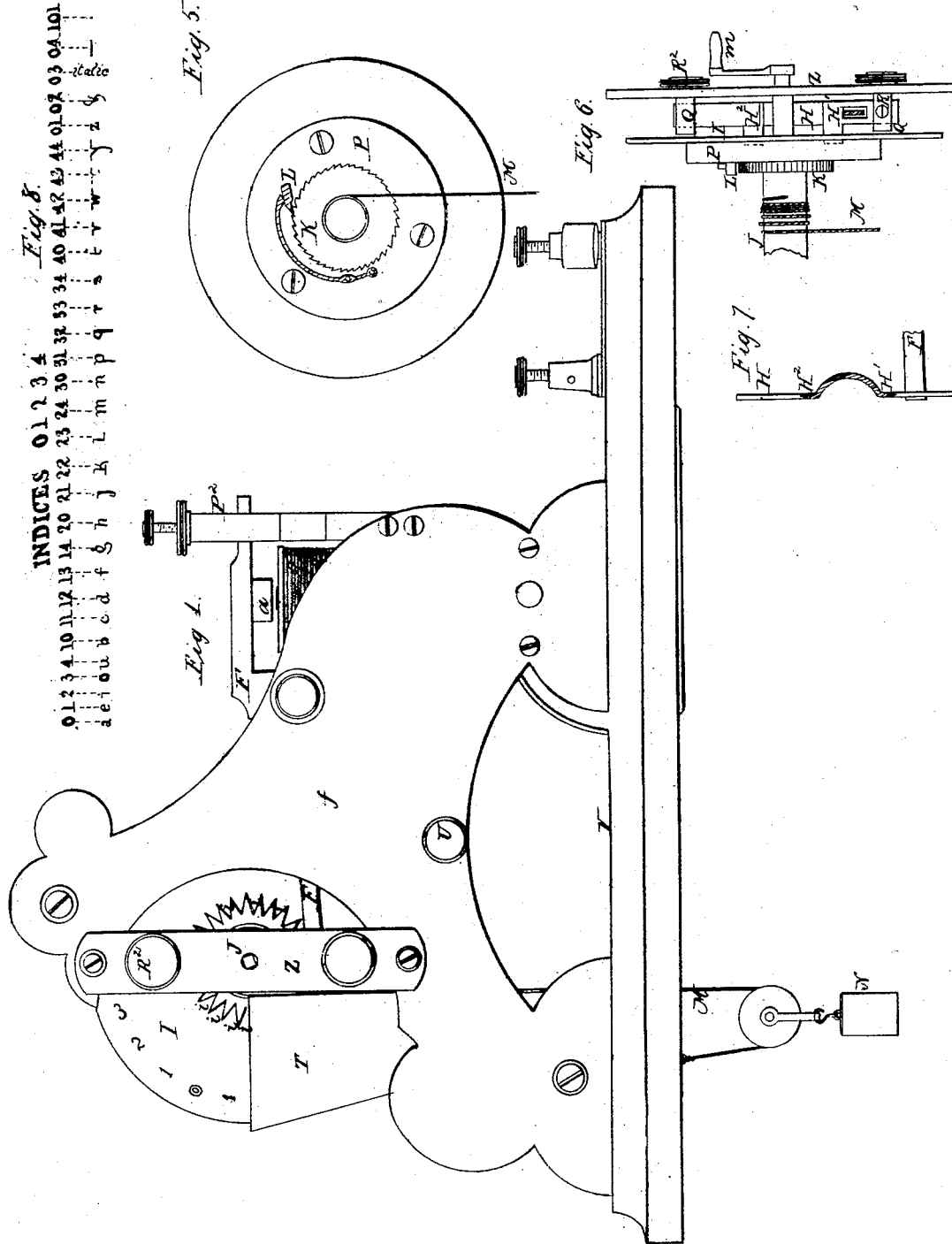


L. G. CURTISS.  
INDICATING TELEGRAPH.

3 SHEETS—SHEET 1.



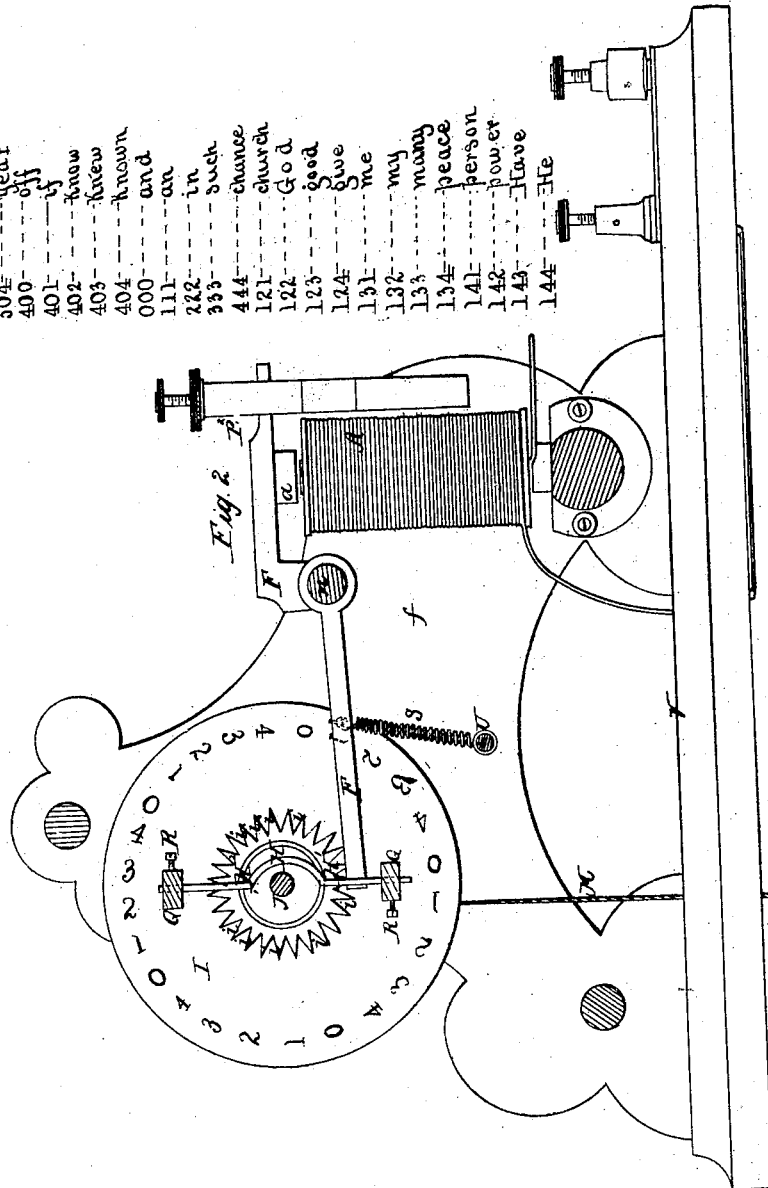
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INDICATING TELEGRAPH.

3 SHEETS—SHEET 2.

220 .....conscious  
221 .....had  
222 .....be  
223 .....by  
224 .....been  
225 .....judicious  
226 .....lord  
227 .....all  
228 .....love  
229 .....with  
230 .....why  
231 .....which  
232 .....who  
233 .....example  
234 .....except  
235 .....accept  
236 .....shall  
237 .....shalt  
238 .....should  
239 .....The  
240 .....they  
241 .....that  
242 .....you  
243 .....your  
244 .....him

Fig. 9

100 .....his  
101 .....is  
102 .....us  
103 .....us  
104 .....into  
105 .....unto  
106 .....it  
107 .....do  
108 .....did  
109 .....done  
110 .....are  
111 .....our  
112 .....or  
113 .....of  
114 .....year  
115 .....off  
116 .....by  
117 .....know  
118 .....knew  
119 .....known  
120 .....and  
121 .....an  
122 .....in  
123 .....such  
124 .....chance  
125 .....church  
126 .....God  
127 .....good  
128 .....gave  
129 .....me  
130 .....my  
131 .....many  
132 .....peace  
133 .....person  
134 .....power  
135 .....Have  
136 .....He

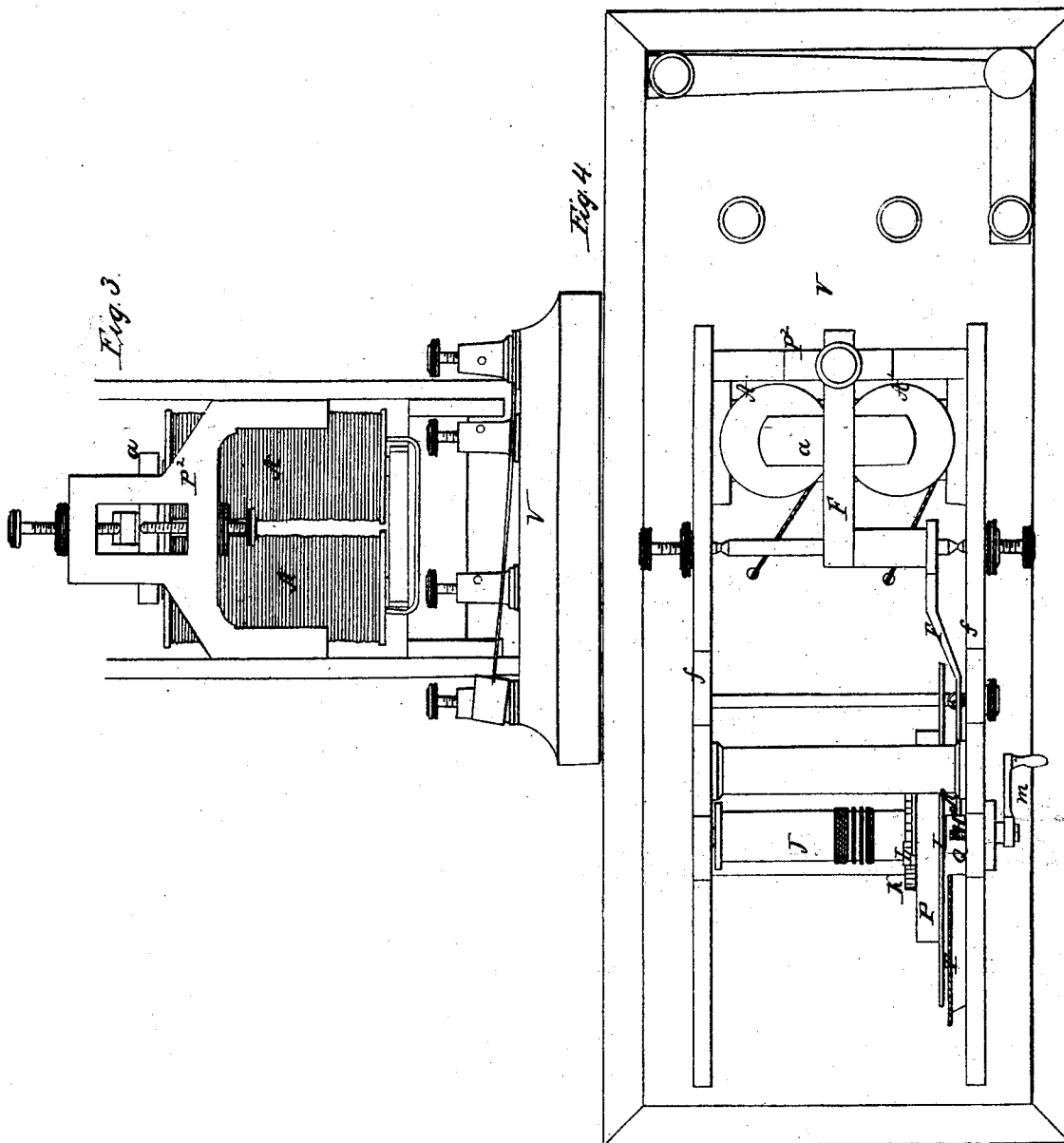


No. 6,040.

PATENTED JAN. 16, 1849.

L. G. CURTISS.  
INDICATING TELEGRAPH.

3 SHEETS—SHEET 3.



# UNITED STATES PATENT OFFICE.

L. G. CURTISS, OF CINCINNATI, OHIO.

## IMPROVEMENT IN INDICATING-TELEGRAPH.

Specification forming part of Letters Patent No. 6,040, dated January 16, 1849.

*To all whom it may concern:*

Be it known that I, LUCIUS G. CURTISS, of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Telegraphing, called "Curtiss's American Indicating-Disk Telegraph," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is an elevation of the machine. Fig. 2 is also an elevation, the front plate being removed in order to show the parts concealed by said plate in Fig. 1. Fig. 3 is an end elevation next the magnet. Fig. 4 is a top view of the machine. Fig. 5 is a view of the back of the dial-plate. Fig. 6 is an edge view of the dial-plate and crank for winding the cord. Fig. 7 is a plan of the pallet-bar and pallets. Fig. 8 represents a table of numerals indicating the alphabet, &c. Fig. 9 is a table in which certain combinations of said numerals represent common words.

Similar letters in the several figures refer to corresponding parts.

Telegraphing is successfully carried on in this country by means of a combination of electro-magnetism and machinery for marking characters or signs on paper, also in Europe by means of a combination of electro-magnetism and machinery used for indicating letters, &c., between distant points.

The basis of the American indicating-disk telegraph invented by me is upon these principles—viz., electro-magnetism, machinery, figures, and signs, and their combination, all combined so as to produce rapid indications between distant points. This end is obtained by means of a revolving disk or dial-plate marked with successive series of numerals 0 1 2 3 4, arranged in a circle or otherwise, said dial-plate being revolved by degrees as the galvanic current is completed, and broken by the alternate vibration of the lever to which the pallets, armature, and springs are attached.

The battery, the magnet, the conducting-wires, the armature, and the lever, all being so well understood, need not be described.

My machine is constructed in the following manner:

An electro-magnet, A, is placed near one

end of a frame. From this magnet a lever, F, extends to the sliding pallet-bar H, Fig. 2, with which it is connected by an oblong mortise, into which the end of the levers is inserted and by which the pallets are successively raised and lowered. The pallet-bar is kept in its true position by means of guides Q Q, Fig. 2, supported by the upright piece z, Fig. 1, in which guides it moves up and down to determine the irregular motion of the dial-plate I.

J is a horizontal shaft passing through the center of the dial-plate I and turning in suitable bearings in the parallel plates or frame f.

K, Fig. 5, is a ratchet-wheel, and L is a pawl by which the dial-plate is locked to the shaft as in ordinary clock-work.

M is a cord, and N a weight for turning the shaft and dial-plate. The dial-plate has a circular opening in the center, which is notched around its inner circumference, forming a circle of triangular teeth, i, against which the pallets H' H<sup>2</sup> act to arrest the rotary motion of the dial-plate at intervals, which is turned by the gravity of the weight N when not arrested by the pallets coming in contact with the teeth. The aforesaid circular-toothed opening in the dial-plate is covered with a circular or cylinder cap, P, fastened to the dial-plate on the back, and to which the pawl L of the ratchet-wheel K is affixed, and through which cap the shaft J passes. The ratchet-wheel K is affixed to and turns with the shaft. The pallet-bar H is bent at the middle, so as to clear the shaft J in its perpendicular movements.

H' and H<sup>2</sup> are two pallets on the pallet-bar H, that strike against the triangular teeth i of the dial-plate for arresting its motion at regular intervals. Q are boxes or guides fastened to the plate Z, which is secured to the frame f, through which the pallet-bar H slides.

R R R<sup>2</sup> are set-screws for setting the pallet-bar H so as to cause the pallets H' H<sup>2</sup> to strike the triangular teeth i at any required angle for producing the desired result.

S is a spring attached to the long arm of the armature-lever F and to a graduating friction-roller, U, for raising the armature from the magnet and for vibrating the lever in order to bring the lower pallet in contact with

a tooth of the dial-plate when the current is broken.

P<sup>2</sup> is a mortised piece in which are placed set-screws for adjusting the armature *a*. The side plates, *f*, are held in their position by horizontal transverse connecting-bars, one at the top of the frame and two at the bottom, and through the latter screws penetrate, holding the whole firm to the wood-work V and supporting the magnet.

A machine of like construction is placed at each end of the telegraphic line. The breaking and forming a circuit of electricity moves the dial-plates in exact accordance and simultaneously, however distant, indicating at the same instant the same figure, letter, or sign. The operator, or the person sending the message, halts momentarily at the letter or figure that is to be written off at the other station or end of the line, then moves on again to another figure, and so on, the numerals singly and in combination representing letters of the alphabet, as shown in Fig. 8. To particularize more fully. On the dial are placed the figures 0 1 2 3 4, 0 1 2 3 4, 0 1 2 3 4, 0 1 2 3 4, &c., successively around in a circle on the face of the dial to place of beginning. To operate, a machine thus constructed is placed before the operators at each point, connecting the circuit of electricity, the magnets moving the armatures, and the levers effecting simultaneous escapements, the weights causing movements of the dials each the distance of half a tooth, bringing above the edge of a stationary plate or pointer, T, the figure desired, and alike on each machine. If it be figure 4 on the dial, it will be understood by both the operators at the point sending and at the point receiving as the letter u, as this figure represents in the table, Fig. 8, the letter u. If 0, it will be understood as a. The figures 2 4 would signify m; 4 0, the letter t; 0 3, italic; 1 0 1, the period, and so on, thus representing at will the twenty-six letters of the alphabet or other signs by the five figures 0 1 2 3 4 and their combinations. It will be observed that the vowels a, e, i, o, and u are represented singly by the numerals 0 1 2 3 4. The remaining letters of the alphabet are represented by combinations, as shown at drawing Fig. 8. Now, to know when a letter is made by a single figure or the combination is complete, a temporary halt is made at the figure, and then another temporary halt by moving the dial half a tooth and halting temporarily on the space between the figures, it being observed that when the current of electricity is perfect or unbroken both dials, being in unison, will stand at blanks (or spaces) above the pointer T. For example, place 0 above the pointer on each machine, (0 is indicated,) representing a, (the current unbroken,) and to know that a is meant connect the circuit, and both machines stand on or indicate space. Break the circuit again and both dials move simultaneously, as before, to figure 1, representing e. Connect

the circuit, and both machines stand on or indicate space, showing that e is meant, and so on through the vowels, which having been represented once over, the dials are again at 0 and ready to repeat the operation indefinitely. To make b, move the dials by breaking and connecting the circuit each to figure 1. Then halt to indicate it. Then, as before, move the dials to 0, halt, and then to space first above, showing that the combination is completed and that the number 10 is indicated, and the operators know from the drawing Fig. 8 that 10 represents b. Other letters are similarly formed.

The operators, soon becoming skilled, and retaining in the memory the numerals and combinations of numerals representing the alphabet and mode of making the communications, can rapidly and correctly transmit to or from one station to another any desired information, the receiving operator taking down with pen or pencil the indications as they are sent.

This process of telegraphing may be carried on over short distances by other motive power than electricity.

*m* is a crank for winding the cord M, to which the weight is suspended.

*n* is the fulcrum of the armature-lever.

I use other signs in a similar way as I do the numerals 0 1 2 3 4, and I use 0 1 2 3 4 not only in combination to represent letters, but also to represent words, or even sentences, as shown in Fig. 9.

What I claim as my invention and improvement, and desire to secure by Letters Patent, is—

1. The mode of conveying intelligence at distances by means of a revolving toothed dial-plate marked, in the manner set forth, with the several successive repetitions of the series of numerals, 0 1 2 3 4, arranged in a circle on the face of the same, for representing the letters of the alphabet, said dial-plate being turned by degrees, as required, by the combination of the escapement, cord, and weight, the pallets, lever, and spring, the armature and lever being actuated by the electro-magnet by breaking and forming the circuit, the whole forming what I call "the American indicating-disk telegraph."

2. The peculiar construction and invention of the escapement, as herein described, for actuating the dial-plate, consisting of the combination of the pallet-bar, the pallets, the triangular teeth, the whole work being confined to the inside, instead of being on the periphery, of wheels, as pallets and teeth of escapements heretofore have been constructed.

3. The system of signs consisting of the combination of the numerals 0 1 2 3 4, for indicating all the letters of the alphabet and words and sentences, by the use of which the necessity of having the whole or any part of the alphabet on the revolving disk, and of turning it a revolution, or nearly so, in order to indicate a particular letter, is dispensed with, it being only

necessary to turn the dial-plate a segment or so of a circle at each combination of figures to indicate a letter, which is done instantly by simply forming and breaking the circuit, and having thus formed the letters, it is evident that words can be spelled with great rapidity, substantially as herein set forth.

In testimony whereof I have hereunto signed my name, before two subscribing witnesses, this 8th day of August, A. D. 1848.

L. G. CURTISS.

Witnesses :

WM. P. ELLIOT,

A. E. H. JOHNSON.