J. DAVIS.

2 Sheets—Sheet 1.

Dial Telegraph.

No. 10,292.

Patented Dec. 6, 1853.

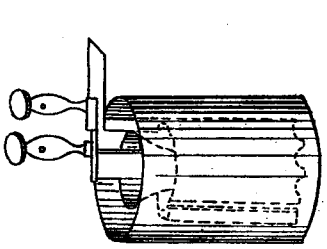

Fig. 3

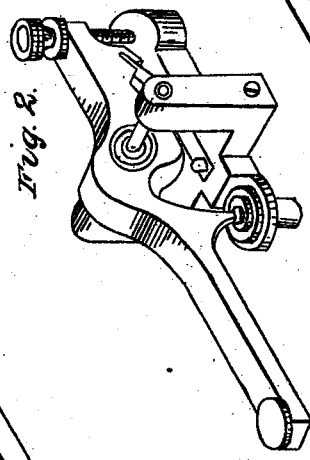

Fig. 2.

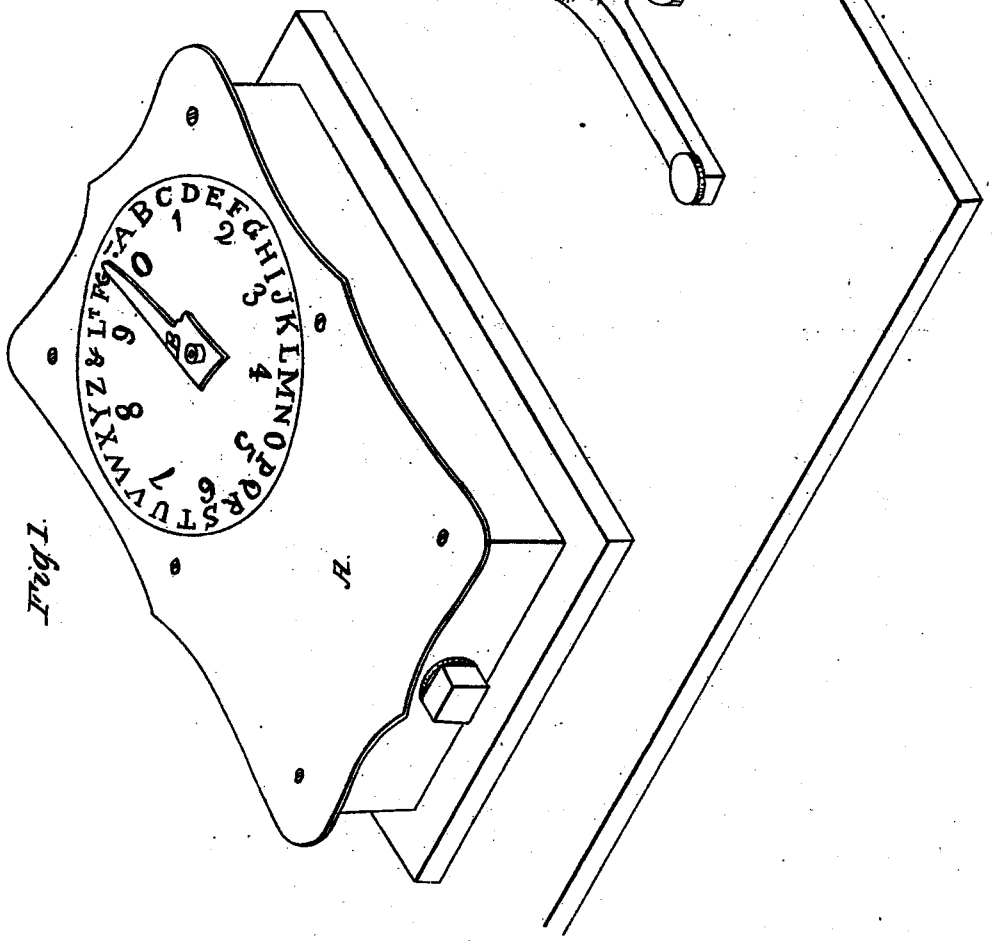

Fig. 1.

2 Sheets—Sheet 2.

J. DAVIS.

Dial Telegraph.

No. 10,292.

Patented Dec. 6, 1853.

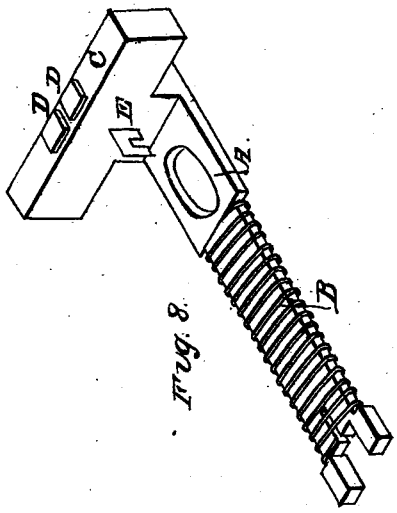

Fig. 8.

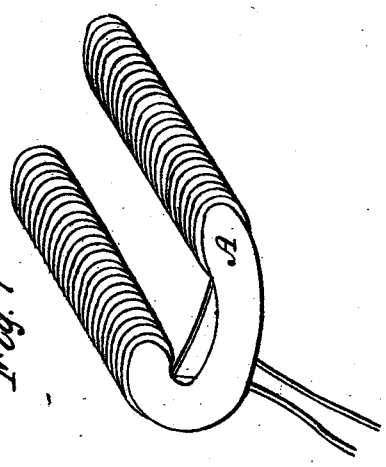

Fig. 7.

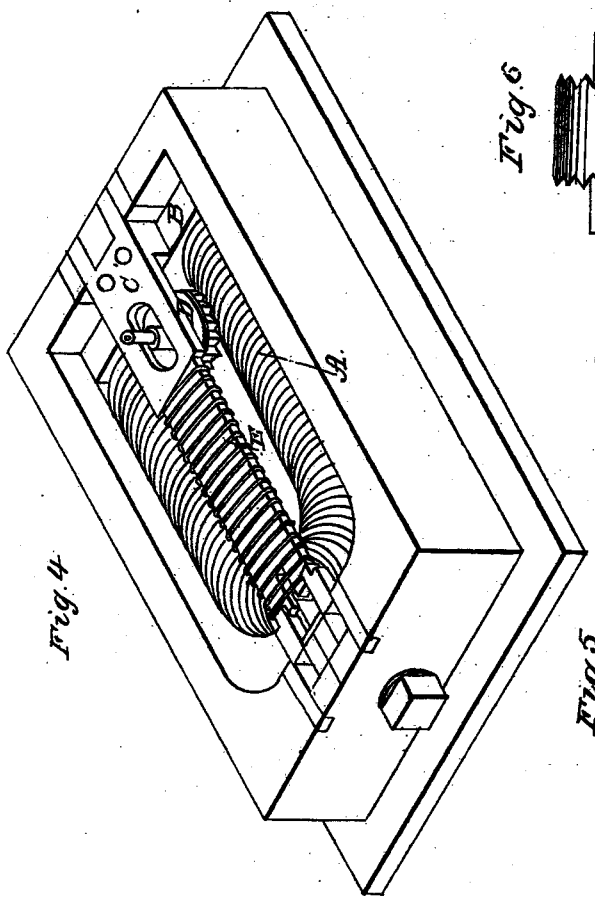

Fig. 4.

Fig. 6.

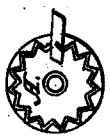

Fig. 5.

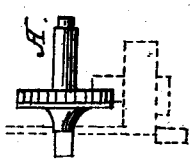

Fig. 5.

UNITED STATES PATENT OFFICE.

JOHN DAVIS, OF NEW BEDFORD, MASSACHUSETTS.

IMPROVEMENT IN INDICATING ELECTRO-MAGNETIC TELEGRAPHS.

Specification forming part of Letters Patent No. **10,292**, dated December 6, 1853.

To all whom it may concern:

Be it known that I, JOHN DAVIS, of New Bedford, in the county of Bristol and Commonwealth of Massachusetts, have invented a new and useful Improvement in Operating the Electro-Magnetic Telegraph; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a box or case containing the machinery; Fig. 2, the magnetic lever or key; Fig. 3, the galvanic battery; Fig. 4, the machinery in the box or case when the top or dial-plate is removed; Fig. 5, the index or escape wheel; Fig. 6, another wheel for the same purpose, of a different form; Fig. 7, the electro-magnet when removed from the box or case; Fig. 8, the slider, armature, and impeller.

On the top of Fig. 1 is a brass plate, A, in which is stamped, in a circular form, the letters of the alphabet and the arithmetical figures, the letters and figures, with a stop-mark and cipher, being equidistant in two circles. B is an index pointing to the letters, &c.

Fig. 2 is the well-known magnetic lever or key in common use, and its parts need not be designated in this specification.

Fig. 3 is the galvanic battery, which is also well known and need not be described.

Fig. 4 represents the machinery in the box or case when the top or dial-plate is removed; A, the electro-magnet, placed horizontally at the bottom of the box or case; B, the armature; C, the slider; D, the index or escape wheel; E, the spiral spring.

In Fig. 5 A is the brass index or escape wheel, consisting of fifteen external inclined planes and fifteen acute external angles and fifteen internal inclined plancs and fifteen acute internal angles. The external angles are flush with the periphery of the plate of said wheel, and both the external and internal angles and inclined planes are cast with it, forming a kind of "zigzag rib." The internal angles are in advance of the external sufficient to admit the respective edges of the slit or "crutch" in the impeller to pass the angles of the external and internal inclined planes. The diameter of said wheel is one and one-quarter inch. It rotates in a horizontal plane under the brass slide and over the electro-magnet, its axis passing through an aperture in the brass slide revolving in the bottom and top of said box or case. These angles of the escape-wheel, above described, are not like cogs or teeth in a wheel in common machinery, for in practical effect they form a succession of endless inclined planes, not only on the outer but the inner side of the zigzag rib, one-fourth of an inch wide and one-fourth of an inch on the inclined sides, these dimensions to be varied to any size that may be required.

Fig. 6 represents another form of the index or escape wheel, the parts of which have been already described, and is placed beside Fig. 5 to show the difference between them. The circumference of this wheel is formed by a metallic plate or hoop about one-eighth of an inch thick and one inch wide, and of the same diameter as the other, and forms, in appearance, a kind of drum. In each side of this plate are cut the teeth or angles, the angles alternating with those of the other. The axis of this wheel lies in a horizontal plane. The angles and inclined planes are external and solid. The impeller must be fitted to traverse these teeth or inclined planes, and the motion will be produced as on the other index or escape wheel.

In Fig. 7 A represents the well-known U-shaped soft-iron electro-magnet when removed from the box or case, five inches long and about forty-five ounces in weight, encircled with insulated copper wire to form a connection with the battery. Its particular construction and operation, as the particular construction and operation of the galvanic-battery, being so universally known, need no further specification.

Fig. 8 represents the brass slide, the iron armature, the steel impeller, and the brass spiral spring. A is the slide, of the length of the case, about one inch wide and one-eighth of an inch thick, with two branches at each end, resting and sliding in metallic grooves fitted in the center of each end of the box or case at the top, under the brass dial plate or cover. B is the brass spiral spring round the slide, and fixed to it and to the end of the box or case, the slide being made narrower where the spring is placed. This spring assists the electro-magnet in giving reciprocation to the armature, slider, and impeller as the magnetic communication is formed and broken in the

operation of the magnetic lever. C is the armature of the magnet, secured to a projection in the under side of the brass slide with two screw-bolts, D D, immediately back of the forward branches of it, where they rest in metallic grooves, as aforesaid. This is one-half an inch thick, and its length and height correspond to the diameter and the distance of the two poles of the magnet. E is the impeller, composed of a thin plate of steel one thirty-second part of an inch thick and five-eighths of an inch wide, passing, in part, the lower edge of the brass projection of the slide to which the armature is secured, and extending forward to within one-fourth of an inch of the axis of the index or escape wheel, more or less, as the motion of the slide may be more or less extended. At about one-fourth of an inch distance from the brass face of the armature, in the under side of the impeller, is a slit or crutch, sufficient in width and depth to admit the inclined planes of the index or escape wheel to move easily. The bottom of said slit or crutch in the impeller is filed at right angles with the impeller. Each side of said slit or crutch is beveled, so as to admit the angles of the index or escape wheel to alternate and to secure strength in the impeller, so that when one side of the slit or crutch escapes an angle, either of the external or internal inclined planes, it will enter on the next inclined plane, and thus give a regular motion to the index or escape wheel, produced by the reciprocating motions of the slider and impeller.

The above parts of the electro-magnetic telegraph being put together in their proper connection, the dial-plate fastened to the case, the index hand being fixed to the top of the axis of the index or escape wheel in a socket, like the hands of a clock, the magnetic wires being connected with the battery, the case, with the machinery in it, placed on its appropriate bench or table, and the magnetic lever or key affixed in the common and well-known manner, the operation then may commence by the operator striking the key in the usual manner, pressing and holding it down, thereby connecting the two poles of the battery and moving the index-hand over the dial-plate one letter—say from A to B—the electro-magnet moving the armature, slider, and impeller forward, which causes one side of the slit or crutch in the impeller to slide on one side of one of the inclined planes of the index or escape wheel. Raise the finger from the key, and the spiral spring carries the armature, slider, and impeller back again. The opposite side of the slit or crutch in said impeller moving on the next plane, having passed its respective angle, moves the index-hand another letter—say from B to C. Thus by rapid strokes of the finger on the key the letters of the words to be communicated to a distance are soon pointed out. It may be mentioned that besides the alphabet on the dial, there is a symbol for stop, represented thus —, in the message to be communicated, and a symbol to designate when figures are meant instead of letters, and vice versa.

The invention above described of operating the electro-magnetic telegraph I do not confine to one electro-magnet, or to one slider or impeller; it may be operated by many. It may also be operated perpendicularly. I confine my invention solely to the operation of the electro-magnetic telegraph.

I claim as my invention—

Operating the electro-magnetic telegraph by means of the index or escape wheel, slider, and impeller, as set forth in this specification, and thereby spelling intelligence by pointing out the letters composing the words of the communication on a similar contrivance at the distant office to which the intelligence is sent by telegraph, disclaiming any right to other methods of telegraphing.

JNO. DAVIS.

Attest:

MORRILL ROBINSON, Jr.,

J. C. STONE.