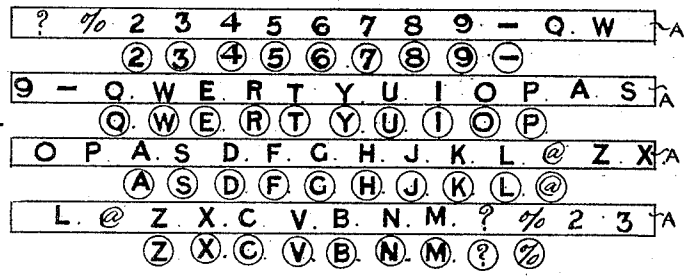
(No Model.) 2 Sheets—Sheet 1.

M. A. WIER.

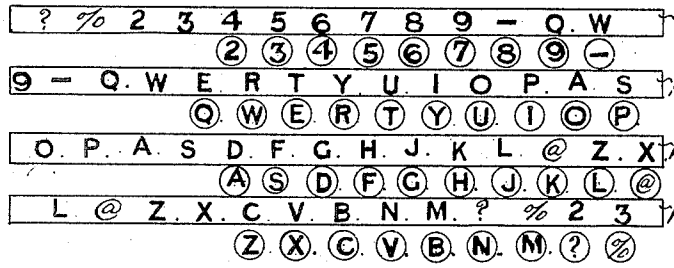
TYPE WRITER CIPHOGRAPH.

No. 442,674. Patented Dec. 16, 1890.

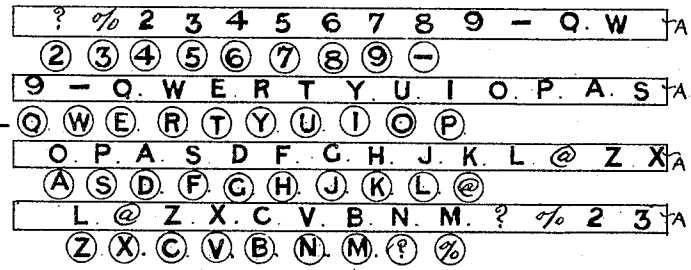
—FIG 1—



—FIG 2—

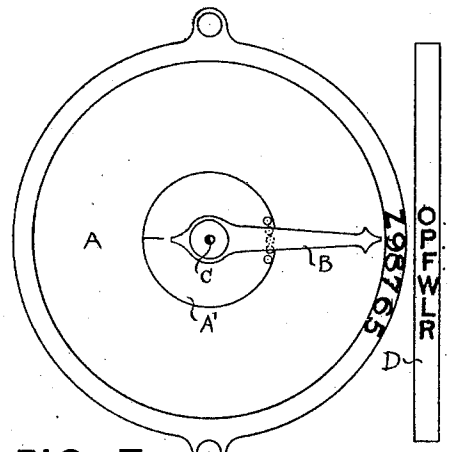


—FIG 3—

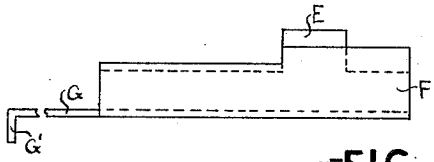




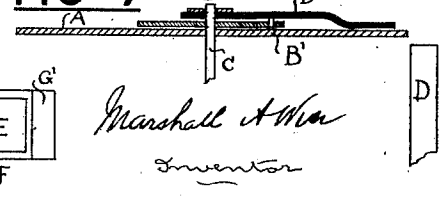
—FIG 9—

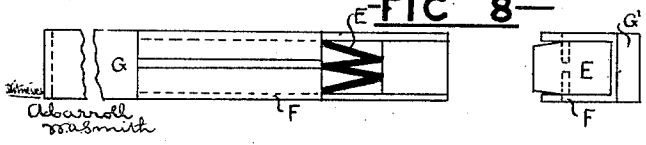


—FIG 7—



—FIG 8—





Witnesses
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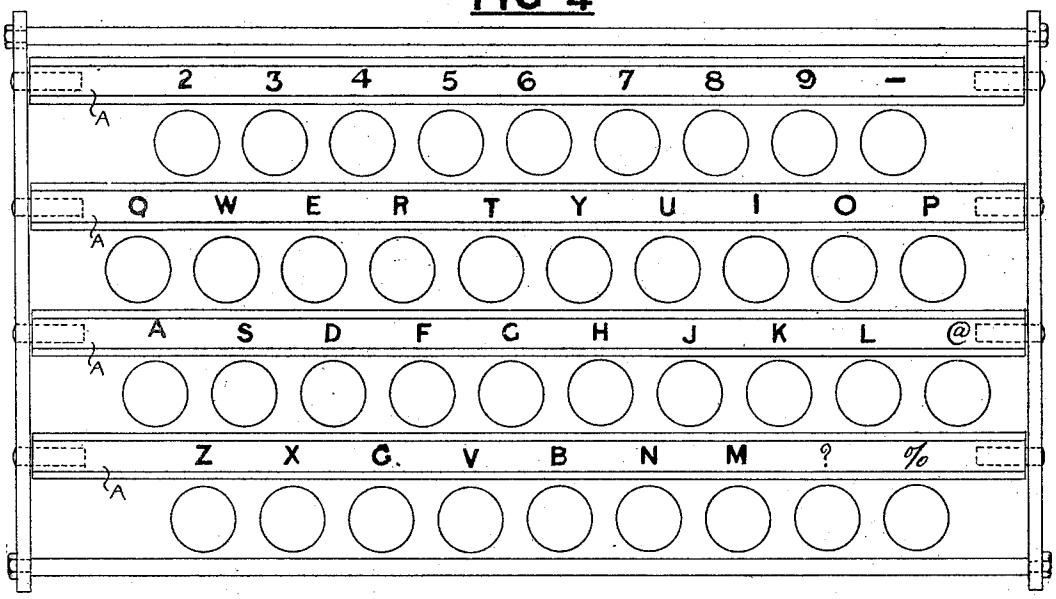
(No Model.) 2 Sheets—Sheet 2.

M. A. WIER.

TYPE WRITER CIPHOGRAPH.

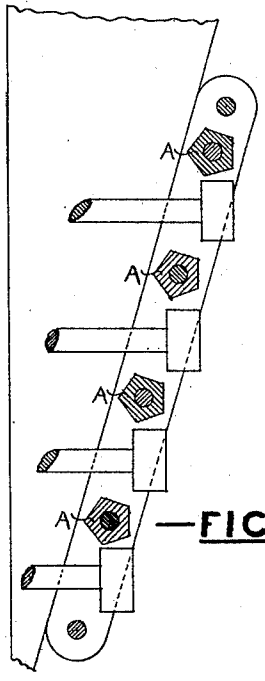
No. 442,674. Patented Dec. 16, 1890.

—FIC 4—



—FIC 6—

5	9	–	Q.	W	E.	R.	T	Y.	U.	I
4	–	Q.	W	E.	R.	T	Y.	U.	I.	O
1	Q	W	E.	R	T	Y.	U.	I	O	P.
2	W	E.	R	T	Y.	U.	I	O	P.	A
3	E	R	T	Y.	U.	I	O	P.	A	S



—FIC 5—

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UNITED STATES PATENT OFFICE.

MARSHALL A. WIER, OF UPPER NORWOOD, ENGLAND.

TYPE-WRITER CIPHOGRAPH.

SPECIFICATION forming part of Letters Patent No. 442,674, dated December 16, 1890.

Application filed August 22, 1888. Serial No. 283,461. (No model.) Patented in England August 19, 1887, No. 11,341, and July 18, 1888, No. 10,440; in France July 25, 1888, No. 192,038; in Germany August 11, 1888, No. 47,705; in Belgium September 1, 1888, No. 83,103, and in Spain December 10, 1888, No. 8,661.

To all whom it may concern:

Be it known that I, MARSHALL ARTHUR WIER, engineer, a subject of the Queen of Great Britain, residing at 3 Palace Grove, Upper Norwood, in the county of Surrey and Kingdom of Great Britain, have invented certain new and useful Improved Devices for Secret Writing, (for which I have received Letters Patent in England, dated August 19, A. D. 1887, No. 11,341, and July 18, 1888, No. 10,440; in France, dated July 25, 1888, No. 192,038; in Belgium, dated September 1, 1888, No. 83,103; in Germany, dated August 11, 1888, No. 47,705, and in Spain, dated December 10, 1888, No. 8,661,) of which the following is a specification.

This invention consists, in a cryptographic type-writing machine which is composed of the type-actuating or type-position-indicating devices, of an index, scale, dial, or pointer capable of being moved or adjusted to either side of its normal position with reference to such type-actuating or type-position-indicating devices, and type and type-holders so constructed that the type are interchangeable in such holders.

I employ any ordinary and suitable type-writing machines and adapt them for writing or printing in cipher and for deciphering the said cipher writing or printing in the following manner: I make the index, scale, dial, or pointer movable, so that it may be adjusted to stand in certain relations to the printing-type, or I make the printing-type movable, so that they may be adjusted to stand in certain relations to the index, scale, dial, or pointer—that is to say, when it is required to write in cipher the index, scale, dial or pointer can be shifted one or more characters or places to the left or to the right of the normal position with reference to the type, or the type can be shifted one or more characters or places to the left or to the right of the normal position with reference to the index, scale, dial, or pointer—so that when writing or printing with the machine in accordance with the indications of the index, scale, dial, or pointer the characters produced are different from those that would be produced with the machine when the index, scale, dial, pointer, or type is or are in its or their normal position. When it is required to decipher or translate the cipher writing, the index, scale, dial, or pointer or the type, as the case may be, is or are adjusted so as to stand as many characters to the left or right of the normal position as it or they stood to the right or left thereof when producing the cipher writing, so that on proceeding to write or print from the cipher writing the original words are printed by the machine instead of the cipher-writing.

Figures 1, 2, 3, and 4 of the drawings hereto annexed illustrate diagrammatically the key or finger board of an ordinary well-known type-writing machine—such as the Remington, for example—with my invention applied thereto, the keys being indicated by circles having the letters of the alphabet, the numbers, and the signs of punctuation marked thereon corresponding to the type which they respectively actuate. Fig. 5 is a sectional elevation taken at right angles to Fig. 4. Fig. 6 is a development of one of the prismatic rollers A shown in Fig. 4. Fig. 7 is a diagram showing the application of my invention to another kind of type-writing machine known as the "Columbia." Fig. 8 is an end elevation, plan, and section of the type-holder used in a type-writing machine in which the type-holders are arranged in the form of a comb, but constructed so as to allow the type of a type-writing machine used for the purposes of secret writing to be interchanged. Fig. 9 shows how the same result can be attained in the type-holder or printing-disk of the Columbia machine.

A A are scales or indices arranged so that they can be slid one or more places to the right or left of the normal position, as shown in Figs. 2 and 3. These scales or indices have the letters of the alphabet and other signs marked on them corresponding to those marked on the keys. If preferred, the signs need not be marked on the keys, but only on the scales or indices A. With the scales in their normal position, as shown in Fig. 1, the machine would be used as an ordinary type-

writing machine—that is to say, when the key opposite to the letter P, for example, on the scale A is depressed the letter P will be printed on the paper, and so for any other letter or sign; but when the scales or indices A are moved, say, two places to the left, as in Fig. 2, for example, on pressing down the key opposite to the letter P on the scale or index A the letter I will be printed on the paper instead of the letter P. Assuming, for example, that the word "patent" has to be written in cipher, it will be seen by reference to Fig. 2 that by pressing down successively the keys opposite to the letters "P A T E N T" on the scales or indices A the letters "I O E Q V E" will be found printed on the paper, being the cipher for the word "patent." When it is required to decipher or translate this cipher back into the original word, the scales or indices A are shifted as many spaces to the right of the normal as they were placed to the left thereof when printing the cipher. This brings the scales or indices into the position shown in Fig. 3, and it will be seen that by pressing down successively the keys which are opposite the letters I O E Q V E on the scales or indices A the original word "patent" will be found printed on the paper. Similarly, if in order to write the cipher of the same word "patent," the scales or indices A had been shifted two places to the right of the normal, as in Fig. 3, instead of two places to the left, as in Fig. 2, the cipher S D U T ? U would have been produced. Then by shifting the scales or indices two places to the left of the normal, as in Fig. 2, and pressing down successively the keys opposite to the letters and sign S D U T ? U the original word "patent" would be reproduced.

By varying the number of places to which the scales or indices are shifted to the left or to the right of the normal position, or by varying the order in which the type are arranged in the machine and their corresponding keys on the key-board, or by both means jointly, a very large number and variety of ciphers may be produced.

Fig. 4 is a diagram of a key-board of a type-writing machine somewhat similar to that illustrated in Figs. 1, 2, and 3, and Fig. 5 is a section of same. In this case the scales or indices A instead of being flat strips, as represented in Figs. 1, 2, and 3, are formed of prisms of any suitable number of sides (five, for example, as shown in Fig. 5,) and instead of sliding endwise, as in Figs. 1, 2, and 3, turn on axes, so that any one of their sides may be turned upward to correspond with the row of keys to which it belongs. On each of the sides of these prisms is printed the set of letters, figures, and signs corresponding to the keys to which they relate, as shown in the development of one of the said prisms, (see Fig. 6,) in which the side marked 1 is that which corresponds to the normal position and is turned upward when the machine is to be used as an ordinary type-writing machine. Each of the sides 2 and 3 has its letters, figures, or signs printed one step farther to the left than the preceding side, and each of the sides 4 and 5 has its letters, figures, or signs printed one step farther to the right than the preceding side, so that each prism can be set either to the normal position for printing ordinary type-writing or to any one of four positions for cipher writing—namely, two to the left of the normal (sides 2 and 3) and two to the right of the normal, (sides 4 and 5.) It is obvious that the prisms may have any number of sides, according to the number of ciphers it is desired to produce, the limit being dependent upon the number of keys used in a row and convenience of construction and use. It is also obvious that the alterations in the positions for cipher writing in the different rows may be varied to any extent, according to the will and arrangement of the operator.

Fig. 7 illustrates the application of my invention to another well-known kind of type-writing machine—such as that known as the "Columbia." In this case A is the usual fixed dial-plates with the letters, figures, and signs marked near the circumference thereof. B is the index, mounted on the axis C, which is connected to the type drum or wheel D by gearing in the usual way. This index-finger B, instead of being rigidly connected with the spindle C of the dial-plate A, is constructed so as to be loose upon it and connected therewith so as to be adjustable in various positions on the dial-plate A. In Fig. 7 I have shown it adjustable by a plate A′, having holes *a*, in which a spring-pin B′ on the under side of the index-finger B takes. When it is desired to use the machine as an ordinary type-writer, the index B is set as usual, so that when it points to a letter, figure, or sign on the dial A the corresponding letter, figure, or sign on the type drum or wheel D will be brought opposite the paper to be printed on; but when it is desired to produce a cipher the index B is shifted on its axis C and fixed in a position one or more places to the left, for example, of the normal position. Then to decipher or translate the cipher into the original the index B is shifted on its axis C and fixed in a position as many places to the right of the normal as it had been placed to the left thereof to produce the cipher; or, instead of moving the index B to the right or left of the normal position, the type drum or wheel D may itself be so shifted.

It is not necessary that the type-writing machine used for deciphering or translating the cipher should be of the same kind as that by which the cipher itself was produced. All that is necessary is that the type and corresponding keys or indications of the letters, figures, and signs shall be arranged in the same order in both machines, and that the receiver of the cipher shall know how many places to the left or right of the normal the scale, index, or pointer or the type, as the case may be, of his deciphering or translat-

ing machine must be placed in order to reproduce the original from the cipher.

The shifting of the index, scale, dial, or pointer or the type, as the case may be, to the left or to the right of the normal position gives a limited number of variations of ciphers; but other variations of ciphers can be obtained by varying the arrangement or order of the type among themselves, the arrangement or order of the letters on the scales or indices A in Figs. 1, 2, 3, 4, 5, and 6, or on the dial-plate, Fig. 7, being varied to correspond, and in order to facilitate this variation in the arrangement or order of the type I employ movable type, which are interchangeable in the type-holders. For example, Fig. 8 illustrates such a type with its holder suitable for use in a type-writing machine in which the type-holders are arranged in the form of a comb. E is the type, formed of type-metal, for example, much in the usual way, but adapted to slide into the sheath F, formed on the end of the holder G. The body of the type E is formed of the same size for each letter, figure, or sign, and the sheath F is made the same size and shape for each holder, so that any type of the series will fit into the sheath of any holder. G′ is a flange or tang-piece taking into a groove or recess G^2 in a fixed portion of the machine to resist the force required to pull the type E out of or to push it into the sheath F. Each sheath F is of elastic material and split along the top in order that it may conform readily to slight irregularities of the type. Therefore, assuming there are twenty-six letters, ten figures, and six punctuation-signs, or forty-two separate type in all in a given machine, such type may be arranged in as many different orders as it is possible to arrange forty-two things, and these variations, combined with the shifting of the index, scale, dial, or pointer or of the type, to the left or right of the normal enable an immense number of ciphers to be used with great facility and with little or no mental effort on any type-writing machine.

In machines where the type are arranged round the edge of a drum or wheel the type may be adapted to fit into dovetailed recesses, as shown in Fig. 9, for example, each type fitting into any one of the dovetailed recesses, so as to be interchangeable. Having arranged the type as required, a new index or scale may be made by printing off by the machine on a strip of paper, for example, in consecutive order the type as now arranged.

I claim—

In a cryptographic type-writing machine, the combination, with the type-actuating or type-position-indicating devices, of an index, scale, dial, or pointer capable of being moved or adjusted to either side of its normal position with reference to such type-actuating or type-position-indicating devices, and type and type-holders so constructed that the type are interchangeable in such holders, the aforesaid devices being adapted to and arranged for the purposes of cipher-writing and cipher-reading, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

MARSHALL A. WIER.

Witnesses:

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