

(No Model.)

G. STRÖMDAL.
CRYPTOGRAPH.

No. 546,035.

Patented Sept. 10, 1895.

Fig. 1.

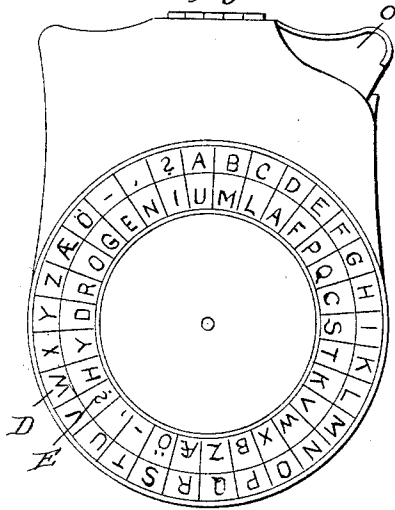


Fig. 3.

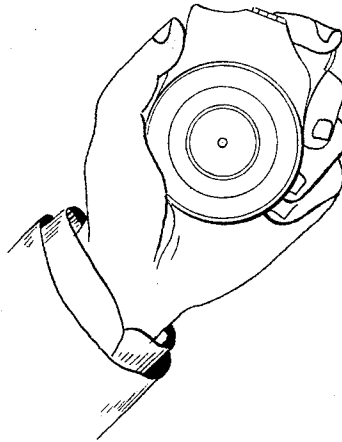


Fig. 4.

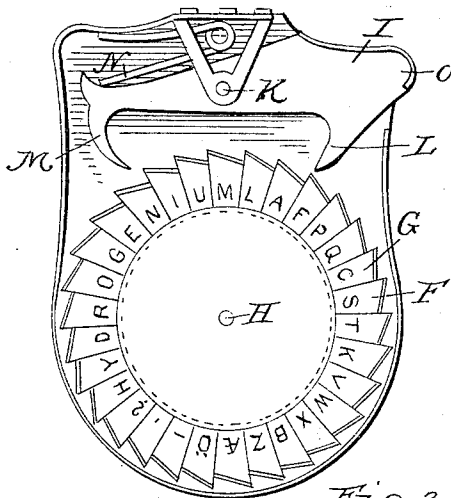
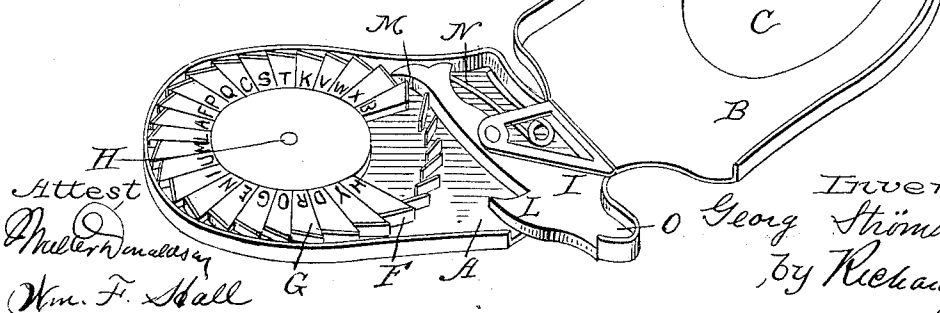


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORG STRÖMDAL, OF CHRISTIANIA, NORWAY.

CRYPTOGRAPH.

SPECIFICATION forming part of Letters Patent No. 546,035, dated September 10, 1895.

Application filed December 18, 1894. Serial No. 532,250. (No model.) Patented in Norway February 21, 1893, No. 3,121; in Germany March 9, 1893, No. 72,239; in Austria-Hungary July 4, 1893, No. 25,544 and No. 143,731; in Sweden August 5, 1893, No. 4,878; in France August 18, 1893, No. 232,236, and in Denmark October 11, 1893.

To all whom it may concern:

Be it known that I, GEORG STRÖMDAL, a subject of the King of Sweden and Norway, and a resident of Christiania, Norway, have invented certain new and useful Improvements in Cryptographs, (for which patents have been granted for this invention in Norway, No. 3,121, dated February 21, 1893; in Germany, No. 72,239, dated March 9, 1893; in Austria-Hungary, No. 25,544 and No. 143,731, dated July 4, 1893; in Sweden, No. 4,878, dated August 5, 1893; in France, No. 232,236, dated August 18, 1893, and in Denmark October 11, 1893,) of which the following is a specification.

This invention relates to apparatus to be used as a key for cryptographic letters, and has for its object to provide simple means for bringing the letters constituting the alphabets out of order, so as to make it impossible for any one to place the alphabets so that the instrument may be used to decipher a certain letter.

Figure 1 in annexed drawings shows a plan view of the instrument in question. Fig. 2 shows the same in open state in perspective. Fig. 3 shows the cryptograph in the hand of a person as it is held when used. Fig. 4 shows the instrument in plan uncovered.

The case A is provided with a cover B, having a circular opening C. Around this opening, on the outside of the cover, is arranged one alphabet D, the letters of which may be impressed in the material of the cover. Another alphabet E is placed inside the case on a disk which is rotatable on the pin H. On the periphery of this disk are as many teeth as there are letters in the alphabet. These letters may be printed or otherwise marked on small pieces G, which are loose and are held on their places by means of the lips F of the teeth on the disk. Between the said ro-

tatable alphabet-disk and the hinge-lid of the case is placed a lever I, which is pivoted at K and has two teeth M and L, one on each side of the pivot. The spring N keeps the tooth M in engagement with the teeth of the wheel, and the tooth L may be brought in such engagement by pressing on the end O of the lever reaching outside the casing through a hole in the same. By such pressing the tooth L pushes the wheel round a little less than the width of a tooth, and when the lever works back again the tooth M pushes the wheel the rest of the length of a tooth and locks the wheel.

The apparatus may be used in different ways, which will be understood by any one familiar with cryptograph instruments.

The object of making the letters of the inner alphabet loose is to enable the writer and reader of the cryptogram to arrange the letters in a certain predetermined order—so, for instance, as shown in the drawings, where the letters are intermixed so as to form the key-word "Hydrogenium."

The object of making one of the alphabets rotatable is to make it possible to shift the alphabet one or more letters in one and the same direction for each letter written down or deciphered. So, for instance, the instrument may be used as follows: If "Hydrogenium" be the key-word and the correspondents have agreed that the first letter of the communication is to be taken from the cryptograph when "U" in the movable alphabet corresponds with "A" in the fixed alphabet and that for each following letter the movable alphabet is to be pushed one letter ahead, which is done by depressing the lever at "O," the alphabets will have the following positions opposite each other, Fig. 1:

↓
A B C D E F G H I K L M N O P Q R S T U V W X Y Z — , ?
U M L A F P Q C S T K V W X B Z Æ O — , ? H Y D R O G E

At next letter the position will be:

↓
A B C D E F G H I K L M N O P Q R S T U V W X Y Z — , ?
U M L A F P Q C S T K V W X B Z Æ O — , ? H Y D R O G E

Then:

↓
A B C D E F G H I K L M N O P Q R S T U V W X Y Z — , ?
U M L A F P Q C S T K V W X B Z Æ O — , ? H Y D R O G E

Then:

A B C D E F G H I K L M N O P Q ↓ R S T U V W X Y Z — , ?
U M L A F P Q C S T K V W X B Z — , ? H Y D R O G E N I

If the letter begins with the word "Dear," this will then in the cryptogram read "Aplh." The receiver of the cryptogram has then to follow the same rule when he deciphers the letter.

- 5 Cryptograms written in this manner cannot be deciphered by any one not knowing both the key-word, the initial letter, and the rule for shifting the alphabets during the use. Instead of loose letters in the inner alphabet, 10 there may be used rings with certain key-words on and which may be exchanged, or the disk may be made of a material such as celluloid or ivory, on which the letters may be written with pencil.

15 I claim—

1. A cryptograph comprising a disk provided with a fixed circular alphabet, and a concentric rotary disk also provided with an alphabet, said alphabet being made up of letters on interchangeable blocks, the said rotary disk having seats or sockets for the said blocks, whereby the relation between the letters of the fixed disk and the letters of the rotary disk may be altered at pleasure and maintained in such relation, substantially as described. 25

2. A cryptograph comprising a disk pro-

vided with a fixed circular alphabet, a concentric rotary disk also provided with an alphabet, said alphabet being made up of letters on interchangeable blocks, the said rotary disk having seats for the said removable blocks, and having also lips forming teeth and serving to hold the removable blocks on their seats, and means for engaging the teeth and moving the disk step by step, substantially as described. 30 35

3. A cryptograph comprising a fixed circular alphabet, a concentric rotary disk also provided with an alphabet, said rotary disk having a series of teeth corresponding to the number of letters used and means for giving said movable disk a step by step movement comprising a lever pivoted within the case and having a push pawl and detent for engaging the teeth, said lever extending to the outside of the case to be operated directly by the hand of the user. 40 45

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORG STRÖMDAL.

Witnesses:

OSCAR WINGE,
ALFRED J. BRYN.