F. S. BALDWIN.

Cryptographic Device.

No. 197,199. Patented Nov. 20, 1877.

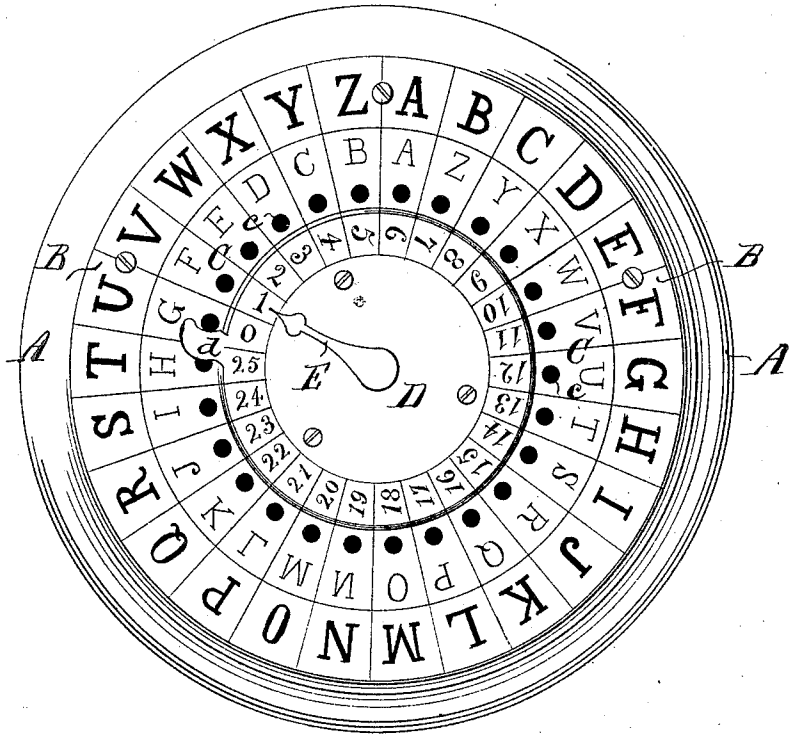

Fig. 1.

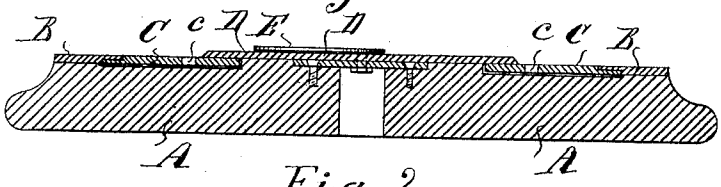

Fig. 2.

Witnesses;
J. W. Herthel.
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Inventor;
Frank S. Baldwin
per Herthel & Co
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UNITED STATES PATENT OFFICE.

FRANK S. BALDWIN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO JOHN L. STANAGE, OF SAME PLACE.

IMPROVEMENT IN CRYPTOGRAPHIC DEVICES.

Specification forming part of Letters Patent No. **197,199**, dated November 20, 1877; application filed June 15, 1877.

To all whom it may concern:

Be it known that I, FRANK S. BALDWIN, of St. Louis, in the county of St. Louis and State of Missouri, have invented an Improved Mechanical Cryptograph, of which the following is a specification:

It is the object of my invention to furnish a mechanical instrument or device to enable persons, through the medium of any of the well-known ways of correspondence, to communicate with each other by cipher, and which shall be undecipherable by parties who do not possess the combination or key.

Of the drawing, Figure 1 is a top plan of my device. Fig. 2 is a cross-section.

A is the frame, upon which the constructive parts are mounted. To the frame I secure the outer disk B. This contains upon its face the alphabet, the letters of which are arranged from left to right. (See Fig. 1.) Alongside of the disk B is a similar disk, C, having also upon its face the alphabet, the letters of which are, however, arranged from right to left. (See Fig. 1.) The disk C is arranged to revolve; hence its outer rim edge laps under the contiguous edge of the outer disk B, and the inner edge of C is similarly made to lap under the contiguous edge of the disk D. (See Fig. 2.) The frame A has the recessed bearing, fitted to receive the disk C. (See Fig. 2.) The disk C, thus mounted, can be revolved either way, by inserting a stile in any of the holes *c* which surround the inner edge of said disk. (See figures.) D, the center disk, is secured stationary to the frame A. Upon the face of the disk D is contained the numerals from 0 to 25, and, further, said disk has a projecting stop, *d*. (All shown in Fig. 1.) The alphabet on the disks B C, also the ciphers on D, are spaced off by radius-lines. (See Fig. 1.) E is the index, which is properly pivoted to the center.

The instrument being thus constructed, its manner of use is as follows: The combination or key is first agreed upon between the parties communicating. Supposing the key to be H 1 3 7 9 14, and supposing the message to be communicated is "Read This;" then, first, the message or dispatch is to be transformed into secret characters or into a cipher. Therefore, H being the initial letter of the key, by referring to the disk C the letter H will be seen, and the stile is therefore inserted in the hole opposite said letter H, and the disk made to revolve until the stile comes in contact with the stop. By next referring to the alphabet, on the outer disk B is the letter R of the dispatch; and at same time, by referring to the cipher-letter on the revolving disk opposite to said letter R is the letter K, which is the secret or cipher-letter, while the R is the true letter. The next figure of the key is 1. Place the index to 1, insert the stile in the hole opposite to 1, and revolve the disk C till it is estopped. By now referring to the dispatch, E is the second letter; find this on the outer disk B, and opposite to said letter will be cipher-letter W; hence W is the cipher equivalent to E, the true letter. The next figure of the key is 3. Place the index at 3, insert the stile in the hole opposite to 3, and revolve the disk C till it is estopped. Refer to the dispatch, and A is the letter to be found on the outer disk B, and opposite to this, on the disk C, is the cipher X, which, therefore, stands for A, the true letter. Proceed in the same manner with 7 9 14 until the dispatch has been converted into the cipher, and it will be found that K W X N O M K X is the cipher for "Read This," the dispatch. The cipher is therefore sent or communicated to the party.

In case the message or dispatch is longer than the key the latter is repeated; but in repetition begin with the numerals, as the key-letter (such as H) is simply to indicate the position for starting.

The party receiving the cipher interprets or deciphers the cipher in precisely the same manner, thus: Bring the key-letter H opposite the stop; then, by referring to the disk C for the letter K, opposite to this will be seen the letter R on the outer disk. By next moving the disk C one place (corresponding to the figure of the combination) the letter E will be found opposite the cipher-letter W. By moving the disk three places farther (corresponding to the second letter of the combination) the letter A will be found opposite the letter X, the third cipher-letter. The same method is there-

fore pursued to write the dispatch and to interpret it.

The use of the index or pointer E in either case is simply to assist the operator in recollecting the last number of the combination used.

The alphabet on the disks B and C being arranged in reverse order, all liability to error (either in writing or deciphering the cipher) is obviated, the same letters appearing opposite to each other; and for the same reason the cipher can be solved in precisely the same manner as it is written.

I do not claim a rotating disk having perforations and letters or other characters, in combination with a stop and ring, both ring and disk being provided with corresponding radial spacing-lines; but

What I do claim is—

1. The disk D, provided with letters or other characters, constituting a third series, with relation to and in combination with two disks, B and C, having the separate alphabets arranged in inverse order, as and for the purpose set forth.

2. The pivoted index or pointer E, in combination with the stationary disk D having letters in radial spacing-lines, as and for the purpose set forth.

In testimony of said invention I have hereunto set my hand.

FRANK S. BALDWIN.

Witnesses:
JOHN L. STANAGE,
WILLIAM W. HERTHEL.