

WAR DEPARTMENT
OFFICE OF THE CHIEF SIGNAL OFFICER
WASHINGTON

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February 15, 1936

1. In connection with a memorandum dated August 31, 1935, (copy attached) setting forth "certain facts in connection with the invention of several alternative means of providing an aperiodic displacement of the substitution cipher wheels of a cipher machine as granted in claim 17 of the patent specifications having reference to Converter Type M-134-T2," the following additional facts are made of record:

2. The principle of employing a set of juxtaposed rotating commutators as a means of selecting in an irregular, aperiodic manner, the successive alphabets (for encipherment or decipherment) from among a plurality of cipher alphabets is the contribution of Frank B. Rowlett.

3. The associated principle of controlling the stopping positions of a single substitution cipher wheel by a set of juxtaposed control cipher wheels is the contribution of William F. Friedman. Note: Thus, for example, in Friedman and Graham U. S. Patent No. 2,028,772 the cipher key transmitter and its associated mechanism would be replaced by a set of control cipher wheels, the 26 final contacts of which would be connected to pins which would stop the substitution commutator in the enciphering (or deciphering) position.

4. The idea as to the possibility of directly applying the foregoing principles to the stopping of a rotating printing wheel at cipher positions, the latter being superimposed upon the stopping position determined by the key depressed on the keyboard, is the equal and joint contribution of both William F. Friedman and Frank B. Rowlett. In this case, in order to prevent cumulative errors it is necessary to return the printing wheel to an initial position after each operation. The cipher stopping position of the printing wheel is determined after it has been stopped by the depression of a key of the keyboard.

William F. Friedman

William F. Friedman.

Witnesses:

Louise N. Miles

Chas. A. P.

Frank B. Rowlett

Frank B. Rowlett.

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August 31, 1935

1. This is to record certain facts in connection with the invention of several alternative means of providing an aperiodic displacement of the substitution cipher wheels of a cipher machine as granted in claim 17 of the patent specifications having reference to Converter Type M-134-T2. [Application Serial No. 682,096]

2. It is desired to record here that the fundamental principle of using one or more commutators in conjunction with a set of selector magnets as a means for effecting the aperiodic displacements discussed in par. 1 is the contribution of Frank B. Rowlett.

3. The subsidiary principle (subsidiary to that set forth in par. 2) of producing aperiodic displacements (discussed in par. 1) of the substitution cipher wheels by means of an independent set of commutators containing contacts equal in number to the number of substitution cipher wheels to be displaced, is the contribution of Frank B. Rowlett.

4. The subsidiary principle (subsidiary to that set forth in par. 2) of producing aperiodic displacements (discussed in par. 1) of the substitution cipher wheels by means of an independent set of cipher wheels, hereinafter called the control cipher wheels, and having the latter cipher wheels identical in number of contacts and construction with the former so that all cipher wheels are interchangeable, is the contribution of William F. Friedman.

5. The subsidiary principle (subsidiary to that set forth in par. 2) of producing the aperiodic displacements (discussed in par. 1) of the substitution cipher wheels by means of a second set of control contacts on each face of each of the substitution cipher wheels themselves, and providing appropriate electrical circuits for the control contacts to govern the operation of the displacement mechanism, is the contribution of Frank B. Rowlett.

6. The subsidiary principle (subsidiary to that set forth in par. 2) of producing the aperiodic displacements (discussed in par. 1) of the substitution cipher wheels by means of the same set of substitution contacts operating in connection with a gang switch which makes these contacts serve for substitution and control in alternate sequence, is the contribution of Frank B. Rowlett.

(The original of this is in Mr. Rowe's file

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7. The application of the principle of aperiodic displacement of substitution cipher wheels to cryptographs of the original Enigma type (in which the electrical circuit through the cipher wheels is reversed by means of a reversing cipher wheel and again conducted through the other cipher wheels before reaching the signaling element) is the contribution of William F. Friedman.

8. The foregoing facts will be used as a basis for evaluation and division of interest in all financial benefits which may accrue from the prosecution of the invention and its reduction to practice.

William F. Friedman
William F. Friedman.

Witnesses:

Frank B. Rowlett
Frank B. Rowlett

Louis N. Nelson
