

C O P Y

WAR DEPARTMENT
Office of the Chief Signal Officer
Washington

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June 13, 1936

MEMORANDUM FOR: Research & Development Division
(THRU: War Plans & Training Division.)

1. There are attached two schemes for enciphering matter electrically transmitted by facsimile or telephoto means. One of these schemes is the joint invention of Colonel J. O. Mauborgne and myself, conceived several years ago. The other is my own idea for use in connection with dot methods of facsimile transmission.

2. It is desired to file application for patent on these systems and apparatus.

William F. Friedman.

Attached:
2 schemes.

1st memo Ind.

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WP&T Div., OCSigO, June 15, 1936. To: Research and Development Division.

Witnesses: Frank Rowlett
disclosure to → Office Chief Signal Officer
Washington, D.C.
January 24, 1936.

Inventor: William F. Friedman
Washington, D.C.
January 24, 1936

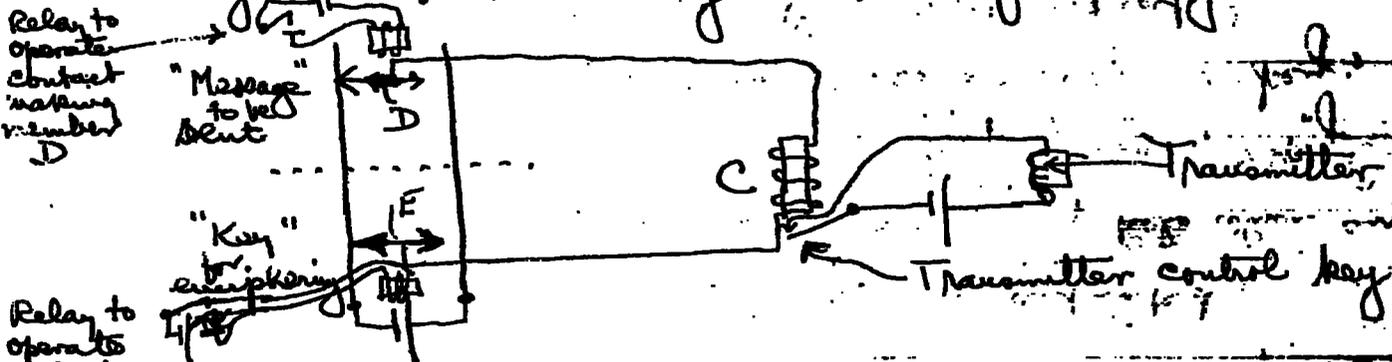
Invention of System and Apparatus for Enciphering and deciphering telephoto-transmitted messages, sketches, photographs, documents, etc.

Friedman 24 1936 4:15 PM

1. The document to be transmitted electrically is mounted upon A, one of two twin cylinders. On the other of the twin cylinders, B (driven by the same shaft) is mounted a "key" photo, consisting of any arbitrarily selected photo, sketch, drawing, arrangement of lines, points, etc., having no intelligibility in itself. This is the equivalent of a random, unintelligible key.



2. A twin scanning system is provided for the cylinders, according to the following circuit:

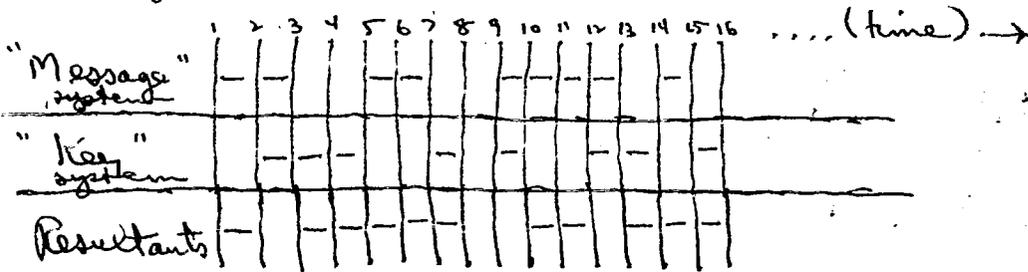


3. The "message" transmission elements consist of impulses as in usual forms, distributed in time. The "key" transmission elements also consist of ~~elements~~ impulses distributed in time. As shown in circuit diagram the relay C operates only when two of four possible

Conditions exist:

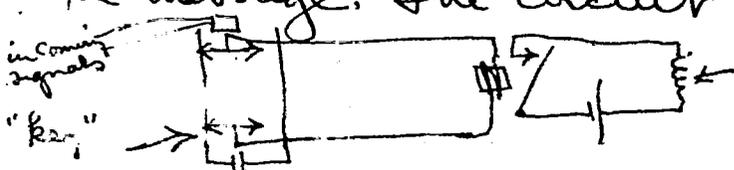
- 1) An impulse in "message" occurs simultaneously with an impulse in "key"; result, no operation of relay C.
- 2) An impulse in "message" meets no impulse in "key"; result, relay C is actuated.
- 3) No impulse in "message", ~~but~~ when an impulse is given by "key", result, relay C is actuated.
- 4) No impulse in either "message" or "key"; result, relay C is not actuated.

4. Diagrammatically, the foregoing is represented as follows, in which dashes indicate presence of impulses:



5. The impulses transmitted have no relation to the message to be conveyed, except through the intermediary of the impulses from the "key". Hence, at the receiving end an exact duplicate of the "key" at the transmitting end must be on hand. The two stations must of course be synchronized, as is now the case in prevailing systems.

6. At the receiving end the reciprocal arrangement of received impulses and key impulses results in deciphering the message. The circuit for this is shown



to styles operating mechanism on cylinder A' on which deciphered "message" reappears.