

## MEMO ROUTING SLIP

REF ID: A70040  
APPROVALS, DISAPPROVALS,  
CONCURRENCES, OR SIMILAR ACTIONS

1	NAME OR TITLE <i>Cmdr PENDERGRASS</i>	INITIALS		CIRCULATE
	ORGANIZATION AND LOCATION <i>TEC</i>	DATE		COORDINATION
2				FILE
				INFORMATION
3				NECESSARY ACTION
				NOTE AND RETURN
4				SEE ME
				SIGNATURE

## REMARKS

I would like to see a copy of each of the patents marked on the attached paper, if copy is available.

Approved for Release by NSA on 07-16-2014 pursuant to E.O. 13526

FROM NAME OR TITLE <i>Friedman</i>	DATE <i>4 Jan 54</i>
ORGANIZATION AND LOCATION	TELEPHONE

DD FORM 1 FEB 50 95

Replaces DA AGO Form 895, 1 Apr 48, and AFHQ Form 12, 10 Nov 47, which may be used.

10-48487-4 GPO ★

STANDARD FORM NO. 64

## Office Memorandum • UNITED STATES GOVERNMENT

TO : Mrs. Friedman

DATE: 8 Oct 1953

FROM :

SUBJECT:

1. Here is some material which is available in the unclassified files of the U.S. Patent Office.
2. Mr. Eldner of my group compiled this data. I hope it is what you want. If not, please call me.

J. Vendergras

A REFERENCE LIST OF CRYPTOGRAPHIC APPARATUS1. U.S. Army Cipher Disk

A cipher device used at one time by the U.S. Army, consisting of two concentric disks, one disk having a normal alphabet written around its edge, and the other bearing a reversed normal alphabet. The earliest known cipher disk is credited to Leon Batista Alberti, Italian cryptographer of the fifteenth century. An example of a device of this type is found in U.S. patent 1,500,077 (S.H. Huntington, 1 July 1924).

2. Saint Cyr Slide

A sliding-strip device using two normal alphabets, so named after the French military academy where its use was taught about 1880. A simple device of this type is shown in U.S. patent 847,767 (M. C. Harlan, 19 March 1907).

3. Wheatstone Cipher Device

A device consisting of a dial composed of two independent circles of letters, the outer ring having 27 equal segments and the inner ring having 26 equal segments. Two pointers are pivoted at the center, the longer hand serving the outer ring and the shorter the inner. These hands are so geared together that for each complete revolution of the longer, the smaller turns through one revolution and 1/26. The principle is credited to Sir Charles Wheatstone (1879), but it has been shown recently that an American, Decius Wadsworth, constructed an identical device in 1817. The Wheatstone principle is embodied in U.S. patent 801,964 (J.S. Beeman, 17 October 1905).

4. U.S. Army Cipher Device, Type M-94

An obsolete U.S. Army cipher device employing a cylinder consisting of 25 disks, each disk containing a different mixed alphabet. The principle of the device was first proposed by Thomas Jefferson (circa 1800). Jefferson's description was discovered in 1922 among his personal papers in the Library of Congress (vol. 232, item 41575, Jefferson's Papers). It was independently invented by a French cryptographer, Etienne Bazeries, in 1891, and still later (1914) by Capt. Parker Hitt, U.S. Army. The device is shown in British patent 1891-11,324 (E. Bazeries, 14 May 1892)..

5. Sphinx Cipher Device

A commercial device manufactured in France, consisting of ten sliding alphabet strips within an aluminum frame. The device is described in U.S. patent 1,956,384 (A. Gentet, 24 April 1934).

6. Kryha Cipher Device

A commercial, mechanical cipher device manufactured in Germany before World War II. It consists of two concentric disks bearing alphabets, the inner disk rotating against the outer, and a gear wheel which imparts a variable movement of the rotating disk after the encipherment of each letter. A description of the device appears in U.S. patent 1,744,347 (A. von Kryha, 21 January 1930).

7. Hagelin Cipher Machine (Models C-36 and C-38)

A small, commercial, tape-printing, mechanical cipher machine containing pin-wheels which, in effect, impart a variable movement to a normal alphabet sliding against a reversed normal alphabet. This machine is sold by the Aktiebolaget Cryptoteknik, Stockholm, Sweden. It is described in U.S. patent 2,089,603 (B. Hagelin, 10 August 1937).

8. B-211 Cipher Machine

An electro-mechanical, keyboard cipher machine, available commercially, which employs pin-wheels and a kind of rotor to encipher plain-text messages. Manufactured and sold by the Aktiebolaget Cryptoteknik, Stockholm, Sweden. See British patent 418,877 (B. Hagelin, 1 November 1934).

9. Enigma Cipher Machine

A commercial, electro-mechanical cipher machine containing a number of rotating electrically-wired wheels which encipher or decipher according to the keys which are struck on a keyboard. Manufactured in Germany before World War II by the Chiffriermaschinen Aktiengesellschaft, Berlin. See U.S. patent 1,705,641 (W. Korn, 19 March 1929).