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DEPARTMENT OF THE NAVY  
OFFICE OF THE JUDGE ADVOCATE GENERAL  
WASHINGTON, D.C.

16 December 1943

MEMORANDUM FOR CAPTAIN L. F. SAFFORD

Subj: Electric Ciphering Machines - Patent situation with regard thereto.

Ref: (a) Conf. memo from Captain Safford to Commander Fitzgerald, Op-20-S-5, dated 11 November 1943.  
(b) Hebern Patent #1,861,857 dated 7 June 1932.  
(c) Dana Patent #1,502,376 dated 22 July 1924.  
(d) Lamson and Holt Patent #2,116,683 dated 10 May 1938.  
(e) Noll Patent #2,116,731 dated 10 May 1938.  
(f) Hebern Patent #1,510,441 dated 30 September 1924.  
(g) Hebern Patent #1,683,072 dated 4 September 1928.

1. This memorandum is based upon a general consideration of references (b) to (g), but detailed analysis of all claims has not been made due to the large number thereof.

2. It should be noted that reference (c) antedates reference (b) by eight years, July 1924 to June 1932, rather than by two months. The conclusion expressed in paragraph 4 of reference (a) regarding the difference between the disclosures of references (b) and (c) is considered to be correct, as is also paragraph 5 of reference (a).

3. It is believed the broad term "coding and decoding machine" of reference (b) does not necessarily imply two machines, since the ECM can be used for both types of operation. However, claims 46, 47, and 48 of this patent must be read in the light of the description thereof, wherein it is clear that the "means for connecting the spacer bar to a coding symbol selector" in claim 46 is the hook 465, Fig. 12, of which there is no equivalent in the ECM. The "adjustable means for connecting" (claim 47) is the same. See lines 23 to 27, page 18. The "means adapted to incapsitate" of claim 48 is the split collar 561, described in lines 27 to 40, page 18. These claims are deemed not to be infringed by the ECM.

4. Claim 61 of reference (b). It appears that the conversion of a space-filling symbol in the coded message into a space in the decoded text is as fully "automatic" in the ECM as in the Hebern machine. In the former this function is governed by the setting of the "controller" or cryptographic circuit switch. In the latter it depends upon setting the reversing switch 186 so that, in the decode position, the hook 529 (Fig. 21) is positioned to engage the collar 490<sub>2</sub> on the core 488<sub>2</sub> of the Z solenoid, or upon the fixing of the collar 561 upon the core of the solenoid corresponding to the key which the hook 465 on space bar 459 is set to engage, if some letter other than Z is used to fill a space between words when coding. The Navy machines

do print both coded and decoded messages. The wording of claim 61 shows that it is not limited to the simultaneous printing of both. In the Hebern machine the operation of the space bar is necessary to print a character instead of a space while coding. The prevention of operation of a type bar when decoding results in automatic word spacing in Hebern.

5. It is believed that claim 61 of reference (b) reads on the ECM. However, it has been held in *Westinghouse v. Boyden Power Brake Company*, 170 U.S. 537, 568 and *Incandescent Lamp Patent*, 159 U.S. 465, 476, that while a claim may read in terms upon an alleged infringing device there is in fact no infringement unless the alleged infringing device is substantially the same as the patented device in both construction and mode of functioning. It is possible that this rule of law would be a sufficient defense against claim 61 of reference (b).

6. Paragraphs 7 (a), (b), and (c), of reference (a) all designate the same construction, although in different phraseologies, since there is only one cam profile or cam means shown in reference (b), i.e., 267'. Claims 53, 54, and 55, of reference (b) read upon Figure 8 of reference (g). See lines 78 to 128, page 2, of reference (b). These claims are also very similar in substance to claims 51 and 52 of reference (g). Claims 9 to 11 and 14 of reference (b) appear to read clearly on the CGM, as do also claims such as 38, 55, 56, and 57 of reference (g).

7. The claims of references (b) and (g), in many cases, read as well on the device of one patent as on the other. See claim 38 of the former and claim 9 of the latter. Many claims of these two patents are undoubtedly void for double patenting.

8. References (d) and (e) each involve two typewriters, the "primary and secondary machines." Reference (f) shows primary and secondary machines. If any claims of references (d) and (e) were construed broadly enough to cover the ECM they would most probably read upon the prior Hebern patents also, and hence be invalid.

9. Reference (b) discloses and claims meterwise operation of the coding wheels, i.e., a second wheel steps once for each revolution of a first wheel, a third steps once for each revolution of the second, etc. However, this is not so effective as such operation of the control wheels, since it imparts a regularity of sequence in the rotation of the coding wheels that makes the coded message less complex and more readily broken than is a message coded on the ECM McII. Some claims of reference (g) appear to cover, in this respect, the CGM. See, for example, claims 53, 55, 56 and 57.

10. This memorandum is not intended to be exhaustive, but merely to point out some general aspects of the subject patent situation. A critical study of the claims of the patents involved, in the light of the several disclosures, has not been undertaken in view of the statement in reference (a) that an opinion may be requested later. It is believed that a number of claims of

the Hebern patents will be found to be infringed by the ECM or the CCM, if such claims are valid. It is to be noted that reference (f) expired in 1941.

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Enc. 1  
Enc. (A) of ref. (a) and  
copies of refs. (f) and (g).

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