

AKTIEBOLAGET CRYPTOTEKNIK

STOCKHOLM 30



DIREKTIONEN

~~TOP SECRET~~

Sundsvik, August 9, 1950.

Dear Bill;

You have surely realized long ago that my "career" as a designer of ciphering devices has been rather spotty. I have taken my work more or less as a hobby, and I have not bothered too much about theory. On the other hand, it is a rather special field, and to combine a full knowledge of the art of ciphering and of decrypting, with a flair for design, is not always possible.

This may explain - to some extent, at least - why there have been no proof of my activities for quite a long time, although I have been talking about new inventions for several years.

From my memo of Aug. 5 you will have found that we <sup>have</sup> now at least two new machines past the talking stage; the so called "Cryptex" and a new mechanical machine (which I hope may supersede the M-209). Both machines are based on my new displacing mechanism, of which you will get a description at an early date.

When designing the "Cryptex" I had several alternatives in mind. They were;

- 1/ An auxiliary machine, like the Cryptex.
- 2/ An electric ciphering machine.
- 3/ A combination electric ciphering machine - ciphering telewriter.

For these machines I wanted to use (depending on the customer's preference) following ciphering mechanisms;

- a/ A mechanism, producing an inversion cipher,
- b/ A mechanism, producing a double substitution cipher,
- c/ A mechanism, producing a combined inversion-double substitution cipher.

All the above combinations and alternatives have been worked out on paper, and I know how I want to build the different machines. There will be standardized parts to a considerable extent, f.i. the displacing mechanism will be the same for all machines, also the sending- and receiving equipment for 1/ & 3/ ~~the~~ the keyboard and the printing mechanism for 2/ & 3/.

(as per my memo of Aug 5/.

At present we are working on the prototypes for the machine 1a, and I am working on the designs for the other types. The most difficult part is the printing mechanism, where we will use an old idea in a novel way.

With regard to the double substitution cipher machines, I am using there 4 ciphering cylinders, which are displaced with the aid of the new displacing mechanism. The cylinders will have very small dimensions, and all the connections can be changed without removing the cylinders from the machine.

As to weights and dimensions, the following figures are very approximate, and I hope that we can do better, when we have the designs completed.

N:o 1/	12 $\frac{1}{2}$ " x 10 x 6 $\frac{1}{2}$ "	40 lbs.
N:o 2/	12 $\frac{1}{2}$ " x 12 $\frac{1}{2}$ " x 6 $\frac{1}{2}$ "	50 lbs.
N:o 3/	12 $\frac{1}{2}$ " x 14 x 6 $\frac{1}{2}$ "	60 lbs.

Very best regards, from

Sincerely yours

*Arvid*

~~TOP SECRET~~