

WAR DEPARTMENT

## SIGNAL CORPS LABORATORIES

OFFICE OF THE OFFICER IN CHARGE

FORT MONMOUTH

IN REPLY REFER TO

OCEANPORT, NEW JERSEY

February 20, 1931.

Mr. William Friedman  
 Cipher Department  
 Office Chief Signal Officer  
 Washington, D.C.

My dear Friedman:

We are working on the light field printer as fast as circumstances will permit. A small portable typewriter has been procured, unnecessary details removed, and contacts being provided as a first step. A motor, lamps, etc. are being purchased and it is believed satisfactory progress will be made shortly.

In order that certain preliminary details may be worked out, it is requested that you mail me, personally, several circular, celluloid, cipher tapes. One of these should be the 26 letters of the alphabet in sequence, the others may be any cipher combination which you may think best.

As you no doubt will recall, our original plans for the contact combinations on the cipher disk itself consisted of the contacts mounted in diameters across the two faces which total 338 contacts for the top and 338 contacts for the bottom. The bridge arm brushes which work upon these contacts would number 26 above and 26 below. Under these circumstances and with every possible sequence of wiring, it seems that the number of possibilities for any given letter upon depressing a key would be 13. Another method has been suggested of simply placing 26 contacts about a circumference top and bottom of the disk. With these contacts interwired as per attached sketch, and with 26 upper and 26 lower brush contacts, the number of possibilities for any given letter seems again to be 13. Inasmuch as a disk with simply 26 contacts upper and lower is considerably easier to manufacture than one with 338 contacts upper and lower, and inasmuch as the number of possibilities seems to be the same, it is desirable that these disks be made in the simpler manner unless you have some objection.

All other details are essentially the same and an early reply from you on the above is requested.

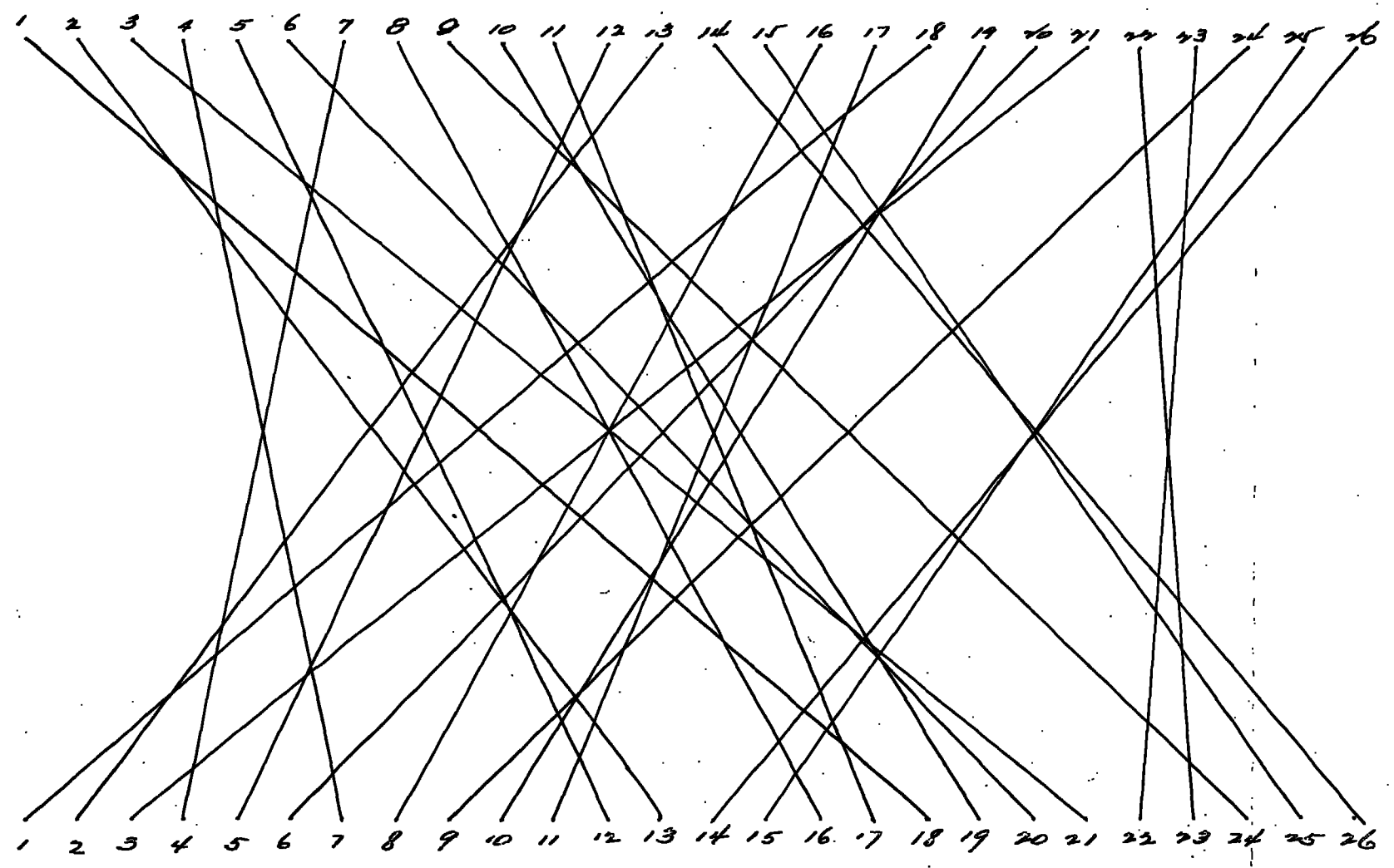
Very sincerely yours,



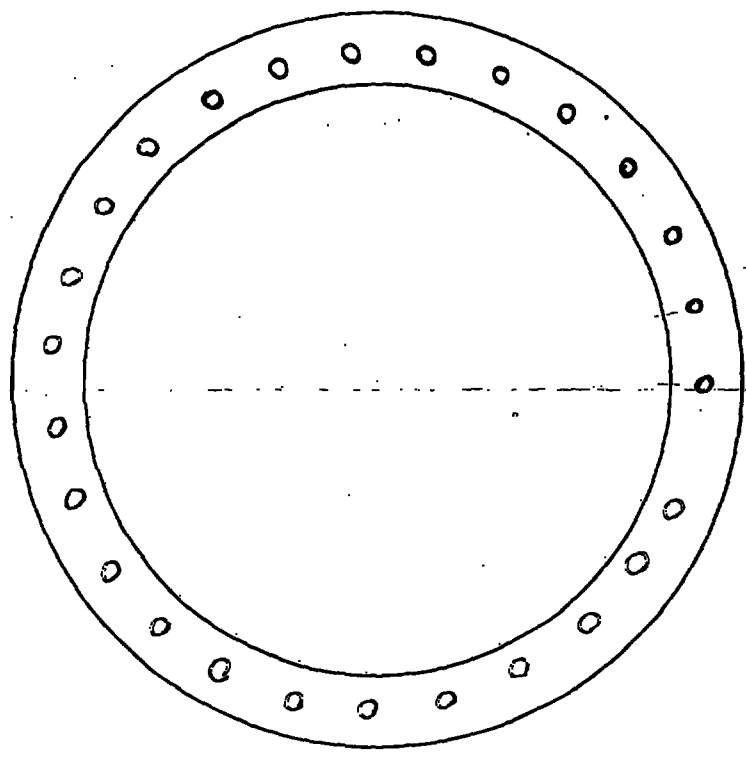
GEORGE A. GRAHAM  
 Electrical Engineer.

1 Incl. - Sketch.

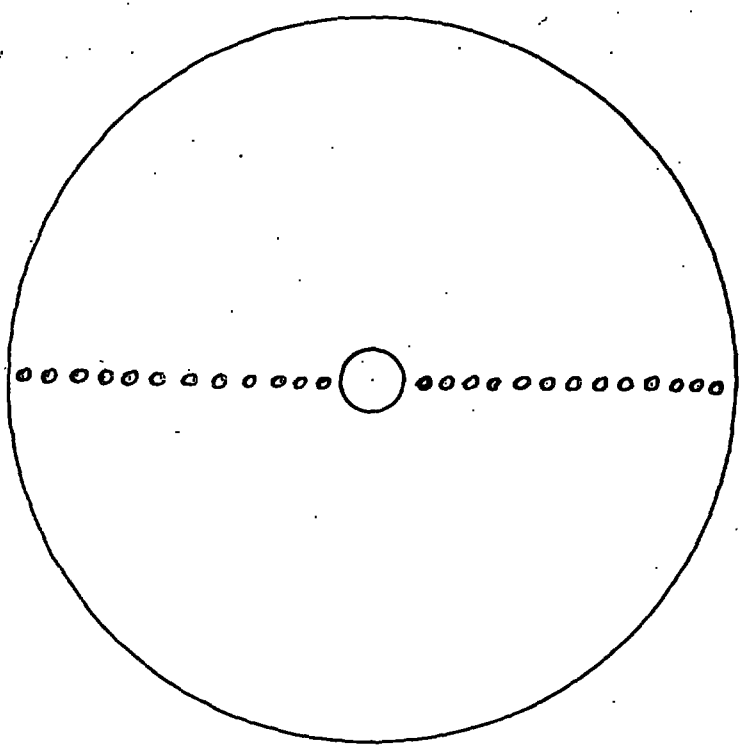
CAG:s



CONTACT WIRING FOR  
DISK A.



A



B

26 RADII OF 13  
CONTACTS EACH