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Indicating Device

SISDE-31

SIGNAL CORPS PATENT BOARD

MEETING NO. 3 May 26, 1936.

1. a. The Board met at 2 P.M. this date, in Room 3435, Munitions Building, Present: All members.

b. Mr. W. F. Friedman was called as a witness.

2. The purpose of this meeting was to take action and make recommendations with reference to the following inventions of Mr. W. F. Friedman:

a. Indicating Device - Invented March 20, 1936.

b. Improvement in Converter Type M-134-T-1- Invented March 11, 1936.

c. Stylus-operated Keyboard for a Small Portable Cryptograph - Invented August 1, 1935.

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3. a. The Board finds that the Indicating Device described in a drawing and attached paper, dated March 20, 1936, has no value to the Government.

b. The Board recommends that the invention covering the Indicating Device be returned to Mr. Friedman with a statement to the effect that such device has no military value, and that there is no objection to his applying for letters patent on this device, if such application is prosecuted without expense to the Government.

4. a. The Board finds that the Improvement in Converter M-134-T-1 as described in memorandum of April 29, 1936, is of value to the Government.

b. (1) The Board recommends that Mr. Friedman be instructed to submit specifications to the Patent Section for the necessary action with a view to obtaining letters patent under the provision of Section 4886 of the Revised Statutes.

(2) The Board recommends that the invention be not considered important in the National Defense, and that a non-exclusive license to the Government, in writing, be required.

5. a. The Board finds that the "Stylus-operated Keyboard for a Small Portable Cryptograph" as described on photostatic copy of drawing dated August 1, 1935, and attached description of Device dated April 21, 1936, is of value to the Government.

b. The Board recommends that:

(1) Mr. Friedman be instructed to submit specifications to the Patent Section for the necessary action, with a view to obtaining letters patent under the provisions of Section 4886 of the Revised Statutes.

(2) The invention be not considered important in the National Defense, and that a non-exclusive license to the Government, in writing, be required.

Roger B. Colton,
Lieut. Col., Signal Corps,
President.

George I. Back,
Captain, Signal Corps,
Member.

W. S. Rumbough,
Major, Signal Corps,
Member.

Walter C. Ellis,
Major, Signal Corps,
Recorder.

APPROVED:

J. B. Allison,
Major, General,
Chief Signal Officer of the Army.

~~CONFIDENTIAL~~

March 20, 1936

Indicating Device

1. The device to be described may be used for several purposes, of which the following are obvious:

a. For interconnecting two offices at a local headquarters, so that a keyboard operated at a calling station will indicate words, letters, numbers, or combinations thereof at the called station.

b. For advertising purposes, as a device for attracting attention by spelling out in letters and figures the advertisement.

2. The device is disclosed in the accompanying Fig. 1. The mechanism there shown is adapted to indicate the 26 letters of the alphabet and the digits 2, 3, 4, 5, 6, 7, and 8. (The letter "I" can serve for the digit "1"; the letter "O" for the digit "0".) But, for advertising purposes, additional characters may be employed, or even groupings of characters in the form of words, pictures, etc. How this is possible will become apparent from a consideration of the system.

3. In Fig. 1, a total of 34 characters is to be represented. A keyboard for setting up permutations in accordance with a 6-unit code is provided. Let the plural unit character code be as follows:

~~CONFIDENTIAL~~

+ + + + + + 2	+ + - - + + B	+ - + - - - 4
+ + + + + - K	+ + - - + - D	+ - - + + + M
+ + + + - + Q	+ + - - - + Z	+ - - + + - N
+ + + + - - U	+ + - - - - E	+ - - + - + H
+ + + - + + 3	+ - + + + + V	+ - - + - - 5
+ + + - + - J	+ - + + + - C	+ - - - + + O
+ + + - - + W	+ - + + - + P	+ - - - + - 6
+ + + - - - A	+ - + + - - I	+ - - - - + T
+ + - + + + X	+ - + - + + G	+ - - - - - 7
+ + - + + - F	+ - + - + - R	- + + + + + 8
+ + - + - + Y	+ - + - - + L	- + + + + - 9
+ + - + - - S		

(The permutations assigned to the letters of the alphabet correspond in their 2nd, 3rd, 4th, 5th, and 6th elements with the Baudot 5-unit code.) The 6 permutation pairs of the keyboard control the 6 contact levers shown at 1 of Fig. 1. They each have 2 contacts. At 2 there is shown a homologous set of 6 contact levers and associated pairs of contacts. These contact levers are controlled by pins which project from the periphery of an indicator wheel 3. Means are provided to keep the indicator wheel in constant rotation. The periphery of the indicator wheel has a translucent or transparent window running all around it and this window is divided up into 34 equal segments on each of which is painted

one of the 34 characters. For visual indications a lamp 6 is placed within the interior of the indicator wheel and close to the surface nearest the point of observation. It will be noted that this lamp will be illuminated only when the 2 sets of contact levers at 1 and 2 are in homologous positions with respect to their associated left and right contacts. As the keys corresponding to the successive characters to be indicated are depressed at the keyboard of the calling station, they are illuminated successively at the called station. Another method of operation would be to cause the comparison circuit to stop the indicator wheel in its rotation from a starting position, at the selected position determined at the keyboard.

The same basic mechanism may be employed for making a printed record. Instead of a transparent or translucent window in the periphery of the indicator wheel let this be replaced by a band containing embossed characters. Instead of the lamp let the comparison circuit actuate a magnet which causes a paper tape to be thrust against the type band at the instant the comparison circuit is completed and at the same time let the tape be advanced.

In the foregoing system there are 34 characters but with a 6-unit code it is possible to provide for the indication or recording of a total of 64 characters.

For connecting the calling station with the called station a 12-conductor cable will obviously be required. Since this system is intended for inter-

connecting local offices the length of such cable is not a serious disadvantage. The simplicity of the system, which requires no synchronization or complicated delicate mechanism, is to be counted in its favor as against the slight disadvantage of the 12-conductor cable necessitated by the method.

For advertising purposes, there is of course no objection in having the 12-conductor cable. Moreover, instead of a keyboard manually operated, which would require the employment of an operator, it is possible to operate the device by means of a perforated tape, passed through a transmitter, or by means of a rotating drum upon which pins can be set up to correspond to the successive characters to be indicated. Only the size of the drum will limit the length of the advertising data before repetition. The drum could be made with demountable pins, so that pin permutations corresponding to new data could be "set up" at will on the drum.

The device can also be used as a means for showing "spot news" visually in newspaper offices. The ends of words could be indicated by a dash; "comma" and "period" might be added, as well as other necessary characters.

William F. Friedman

William F. Friedman.

Witnessed Mar 23, 1930

Frank B. Rowlett,

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Solomon Kullback

5311 8th St NW

Wash DC

~~CONFIDENTIAL~~

April 21, 1936

Addendum to Invention of Indicating Device.

1. The system described above can be used for telegraphic purposes by more or less simple extension of the principles described, as noted below.

2. Suppose that the local and distant stations are provided with identical rotating wheels synchronized by start-stop impulse, so that the rotating drums start simultaneously and make their revolutions at practically the same rate of speed.

3. Let the comparison circuit then actuate a line or signal transmitter relay at the same instant that it shows or records a local signal. Then at the distant station, when the signal arrives it will cause the same indication or record to be made, since the two drums are in synchronous operation. At the called station, according to this method of operation, the comparison circuit is not in operation for receiving purposes; the comparison circuit is in operation for transmitting purposes only, and either station can operate in this respect, alternately.

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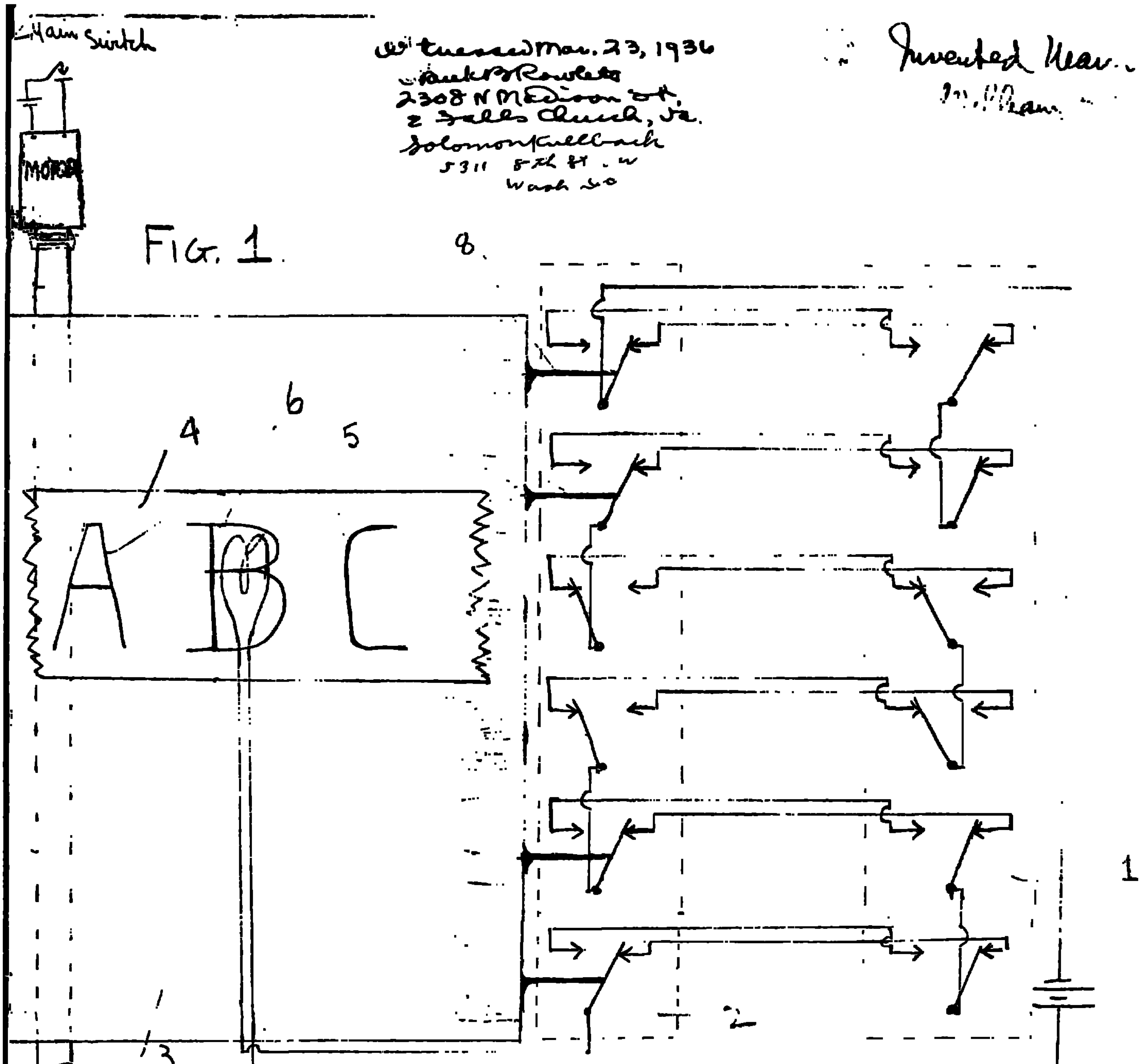
Invented Mar. 2[illegible]
[illegible]



A. For lamp or flashing indications;

1. Keyboard transmitter, 34 characters (A-Z, 2,3,4,5,6,7,8,9), 6-bars on keyboard
2. Indicator wheel transmitter, operated by pins 8 in periphery of 3.
3. Indicator wheel, in constant rotation, 34 segments, with 34 permutations of pins
4. Translucent window in periphery of indicator wheel
5. Lamp illuminated momentarily by comparison circuits 1, 2.
6. Characters painted on translucent window.

B. For printing: Let 4 be a 34-character embossed printing circle.
Let 5 be a print-stroke magnet directing a paper tape against the character indicated, and advancing the tape (Flying print method)

Main Switch

Witnessed Mar. 23, 1936
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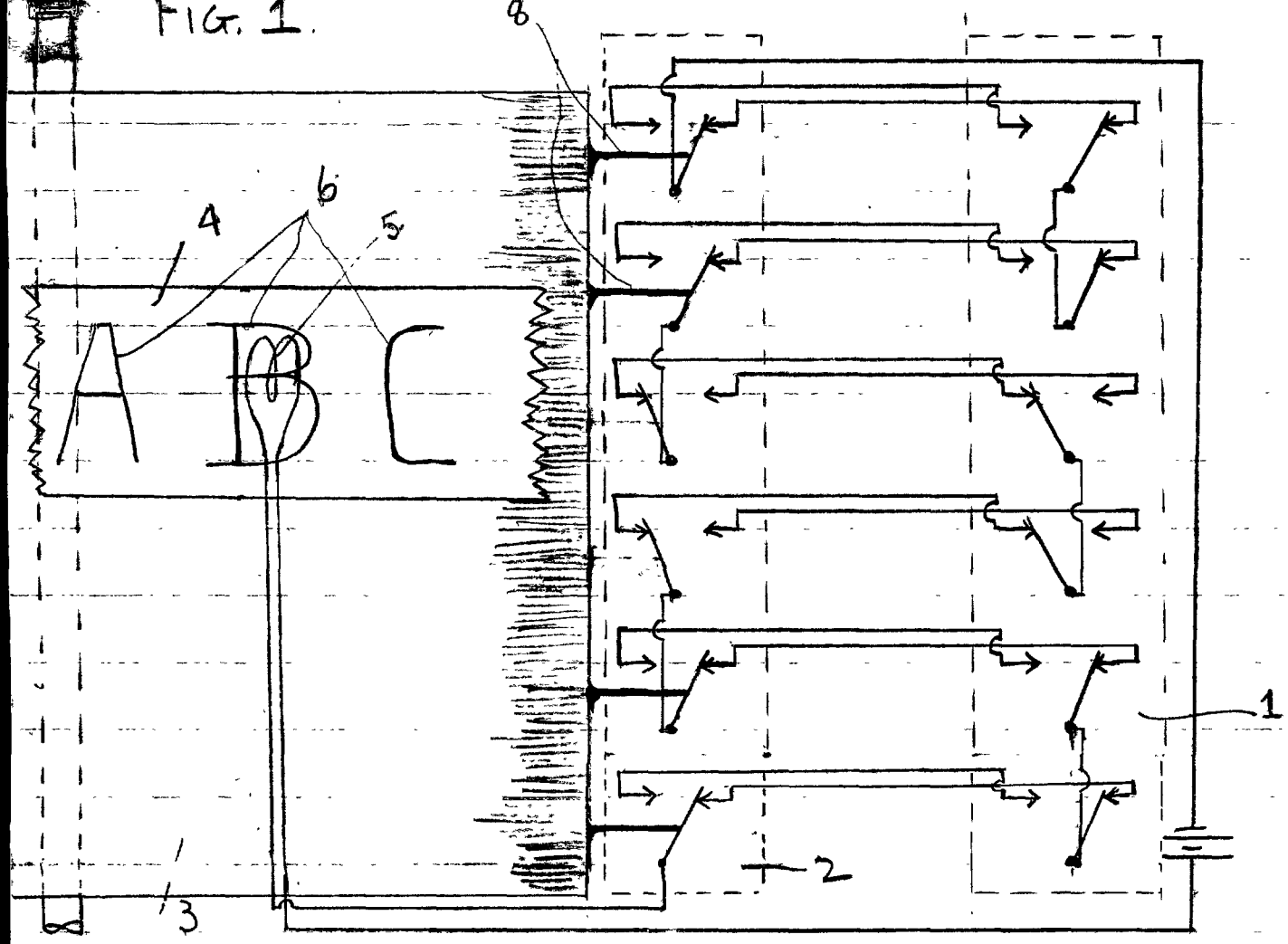
Invented March 20, 1936
William F. Friedman

FIG. 1.



A. For lamp or fleeting indications; keyboard

1. Keyboard transmitter, 34 characters (A-Z, 2,3,4,5,6,7,8,9), 6-bars on
2. Indicator wheel transmitter, operated by pins 8 in periphery of 3.
3. Indicator wheel, in constant rotation, 34 segments with 34 characters
4. Translucent window on periphery of indicator wheel
5. Lamp illuminated momentarily by comparison circuits 1, 2.
6. Characters painted on translucent window.

B. For printing: Let 4 be a ~~character~~ embossed printing circle
Let 5 be a print-stroke magnet directing a paper tape against the ~~character~~ indicated, and advancing the tape. (Flying print method)