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(Directive, correspondence, previous related report, etc., if applicable)
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(As official, personal observation, publication, press, conversation with— identify when practicable, etc.) A-1 to E-O etc. A8/EN 3-10; SER. 4312416—11-18-42
 Subject ARGENTINA Government Cryptography device
(Nation reported on) (Main title as per index guide) (Subtitles) (Make separate report for each title)

BRIEF.—(Here enter careful summary of report, containing substance succinctly stated; include important facts, names, places, dates, etc.)

Enclosure (A) Military Attaché, Arg. Secret Analysis of Cryptographic Machine Held by The Argentine Police - containing 4 pages and 12 attached photo figures.

Enclosure (A) is a description, together with pictures, of a German coding machine which was seized by the Argentine police about two months ago. The Argentine police turned the machine over to the U.S. Embassy for study, and enclosure (A) was prepared in the office of the U.S. Military Attaché.

COMMENT:

This coding machine is believed to have been used by Johann Siegfried Becker, recently arrested German espionage agent. It is of particular interest that the Argentine police made it available to the U. S. Embassy, as it is an indication of cooperation which hitherto has been non-existent. It is hoped that such cooperation can be fostered, and that the Argentines may make available to us such information as they may have gathered concerning Japanese activities.

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MILITARY ATTACHE
UNITED STATES EMBASSY
BUENOS AIRES, ARGENTINA

ANALYSIS OF CRYPTOGRAPHIC MACHINE HELD BY
THE ARGENTINE POLICE

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The machine is an electrically operated mechanical cipher device similar to the German "ENIGMA". It may be used for the purpose of enciphering and deciphering messages with accuracy and security. It is a portable machine of a very sturdy construction.

The machine operates as follows: Depression of a key (fig. II #12) energizes a circuit from the key through a stator (fig. II #6) and from right to left through the three intermediate rotors (fig. II #7) to a reversing rotor (fig. II #8), and back from left to right through the rotors into the stator and from there to the lamp which serves to designate the particular letter selected in the enciphering or deciphering operation. The rotors act as a set of switching commutators between the whole set of keyboard contacts and the associated lamps. The depression of any of the keys also serves to advance the rotors. If the rotors were to remain fixed, the resultants obtained from the operation of the keyboard contacts would yield a simple mono-alphabetic substitution. An external power supply of three volts is required to operate the machine.

A metal housing covers the machine, which is placed in a wooden box fitted with a leather carrying strap. In fig. I the machine is shown with the cover of the wooden box open. The following are the important points of the machine visible in this figure:

1. Clutch
2. Selector
3. Contacts for power supply
4. Windows for viewing alignment of rotors
5. Outer ring of rotors, used for advancing them in the process of alignment.
6. Counter
7. Lamps
8. Keys
9. Screws for fastening the metal cover.
10. Clasp for securing cover of the wooden box.
11. Handle for turning counter.
12. Sockets for storage of extra bulbs.

The clutch is used for engaging and disengaging the rotors. When the clutch is in the forward position the rotor feed pawls are in contact with the gears of the rotors, and the rotors can be moved by the depression of any one of the keys. When the clutch is moved backwards the rotor feed pawls are disengaged from the teeth of the rotors and leave them free. The individual rotors can then be moved in either direction by hand.

The selector may be moved to four different points. These read from

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left to right: "hell", "Batt. dkl.", "aus" and "Saxler". The purpose of the first three positions is not known. When the selector is placed on the fourth position, "Saxler", however, the circuits are complete and the depression of a key lights the associated lamp.

The counter is not of the usual type which can be quickly cleared. When clearing the counter is it necessary to use the handle found in the cover of the wooden box and to turn the counter either forward or backward through the individual numbers.

The purpose of the numbers and the typographical symbols appearing on the keys and the lamps is not known.

In fig. II the machine is shown with the cover open and the rotors engaged as they would be during actual operation. The main points visible in this photograph are:

1. Clutch in forward position.
2. Rotor feed pawls.
3. Selector
4. Springs attached to external power contacts.
5. Internal power contacts.
6. Stator
7. Intermediate rotors.
8. Reversing rotor.
9. Rotor pressure lock in the engaged position.
10. Counter
11. Counter drive shaft.

The machine with the intermediate rotors removed is shown in figure III. The essential points are:

1. Rotor feed pawls.
2. Rotor pressure lock in disengaged position.
3. Rotor shaft.
4. Points which support rotor shaft.
5. Serial number of the machine, 6260. This number also appears on the exterior of the wooden box, each intermediate rotor, the reversing rotor, and the stator.
6. Rubber rings.

In fig. IV the stator is shown in a close-up view. There are twenty six small copper contacts of a permanent nature. Each one of these contacts is wired to one of the keys and to the corresponding lamp. The contact with the small white dot over it (#3) is wired to the key "Q" and to the lamp "Q". The contacts on the stator were found to follow the same order as the letters on the keyboard but in a counter clockwise direction. Example: The first letter to the left of "Q" is "P", and the second letter to the left of "Q" is "R". Proceeding in a counter clockwise direction, therefore, the contacts on the stator are as follows:

W E H T Z U I O A E D F G H J K P Y X C V B N M L

There are contacts on both sides of the intermediate rotors. When placed in the machine the contacts on the right are of a point type with an attached spring, and those on the left are of the small plate type found on the stator.

The right side of the three intermediate rotors is shown in Fig. V. The teeth on the inner sprocket engage with the teeth of the rotor feed pawls, and the outer ring is the section which projects through the cover of the machine and is used in advancing the rotors by hand.

The plate contacts of the intermediate rotors are shown in Fig. VI. Also visible are the gears used in the stepping process. These gears will be described in detail below.

Another important feature of the intermediate and reversing rotors is the spring clip on the alphabet ring. These are shown in Fig. VIII #1. When the spring clip is released the alphabet ring will revolve and may be set at any desired position. This provides a quick and easy method of changing the designation of the contacts. In this same figure the rotor pressure lock is shown in the released position with the reversing rotor pushed back. This also gives a view of how the rotor shaft rides on the point projecting from the reversing rotor.

When the machine was received for examination the rotors had been placed on the rotor shaft in the following order, from left to right, #3, #2, #1. The spring clip of rotor #1 was set at "D", of #2 at "C", of #3 at "B", and of the reversing rotor at "D". The wiring of point to plate contacts while the alphabets were in the above positions was found to be as follows:

Rotor #1

| | |
|---------------|---|
| <u>Points</u> | A B C D E F G H I J K L M N O P Q R S T U V W X Y Z |
| <u>Plates</u> | H A G U P V Y S E O N T D X F K Z B W L I C Y J R M Q |

Rotor #2

| | |
|---------------|---|
| <u>Points</u> | A B C D E F G H I J K L M N O P Q R S T U V W X Y Z |
| <u>Plates</u> | S V Y Z G K D X R L Z C T U I P F N B M G A J W H |

Rotor #3

| | |
|---------------|---|
| <u>Points</u> | A B C D E F G H I J K L M N O P Q R S T U V W X Y Z |
| <u>Plates</u> | S Q W E I A F M T R N B Y P L Z J K O H D C V K U O |

The reversing rotor is shown in detail in Fig. VII. It has twenty six point contacts which are wired in the following manner:

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I | K | N | O | S | X |
| R | M | L | F | H | W | J | U | V | Z | Y | | | |

In view of the conditions under which the machine was obtained, it was not believed advisable to open up the rotors, and these tests were made by passing a current from the plate to the point contact. A bulb was placed in the circuit in order to determine when the circuit was complete.

Stepping of the Rotors

The outer ring of the stator (Fig. IV #1) is movable, while the inner section which contains the contacts is stationary. When a key is depressed the pawl (Fig. IV #4) engages the ratchet moving it forward one step. The teeth on the left side of the stator which are moved in unison with the ratchet cause the #1 rotor feed pawl to advance one step which in turn advances the #1 rotor one step. When the teeth on the left side of the #1 rotor, which are not continuous, engage the #2 rotor feed pawl the #2 rotor will advance one step. This same process applies to the #3 and reversing rotors.

Figures IX, X, and XI are individual views of the stepping gears on the intermediate rotors. Also forwarded under separate cover are wax impressions made of these gears.

Fig. XII shows the instructions found on the inside of the wooden cover, concerning penalties to be levied in case of compromise of the machine.

FIG I

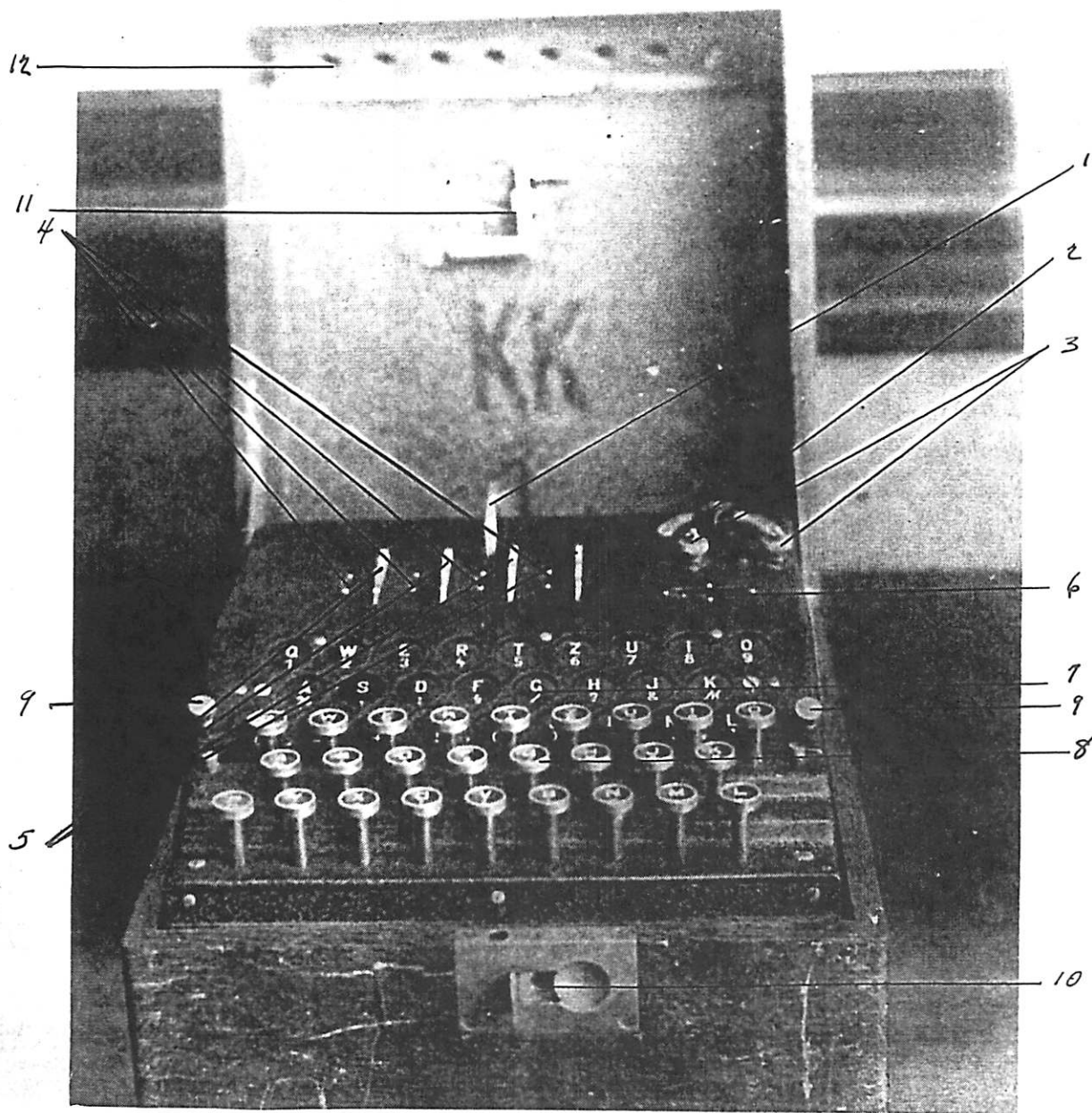


FIG II

4

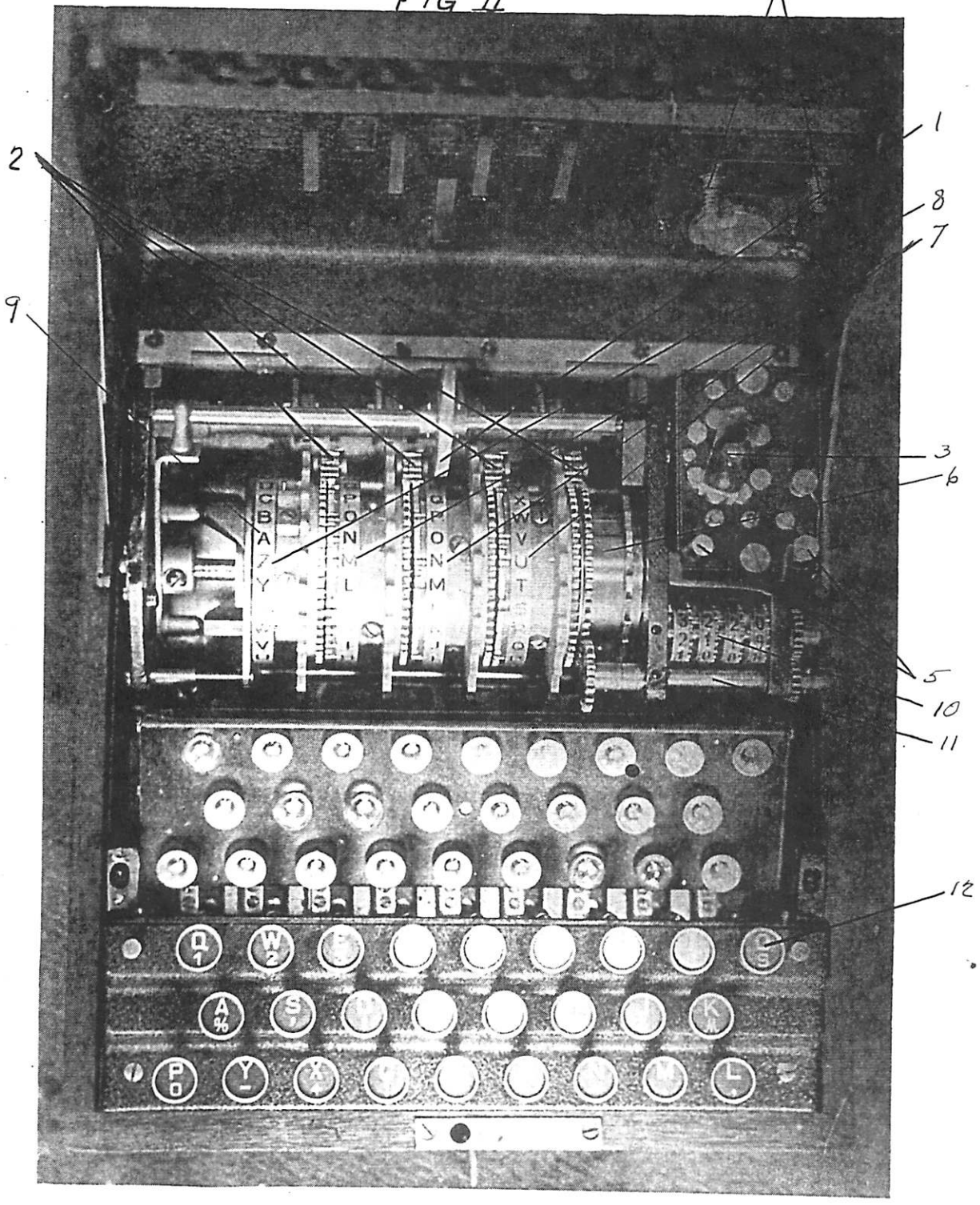


FIG III 4

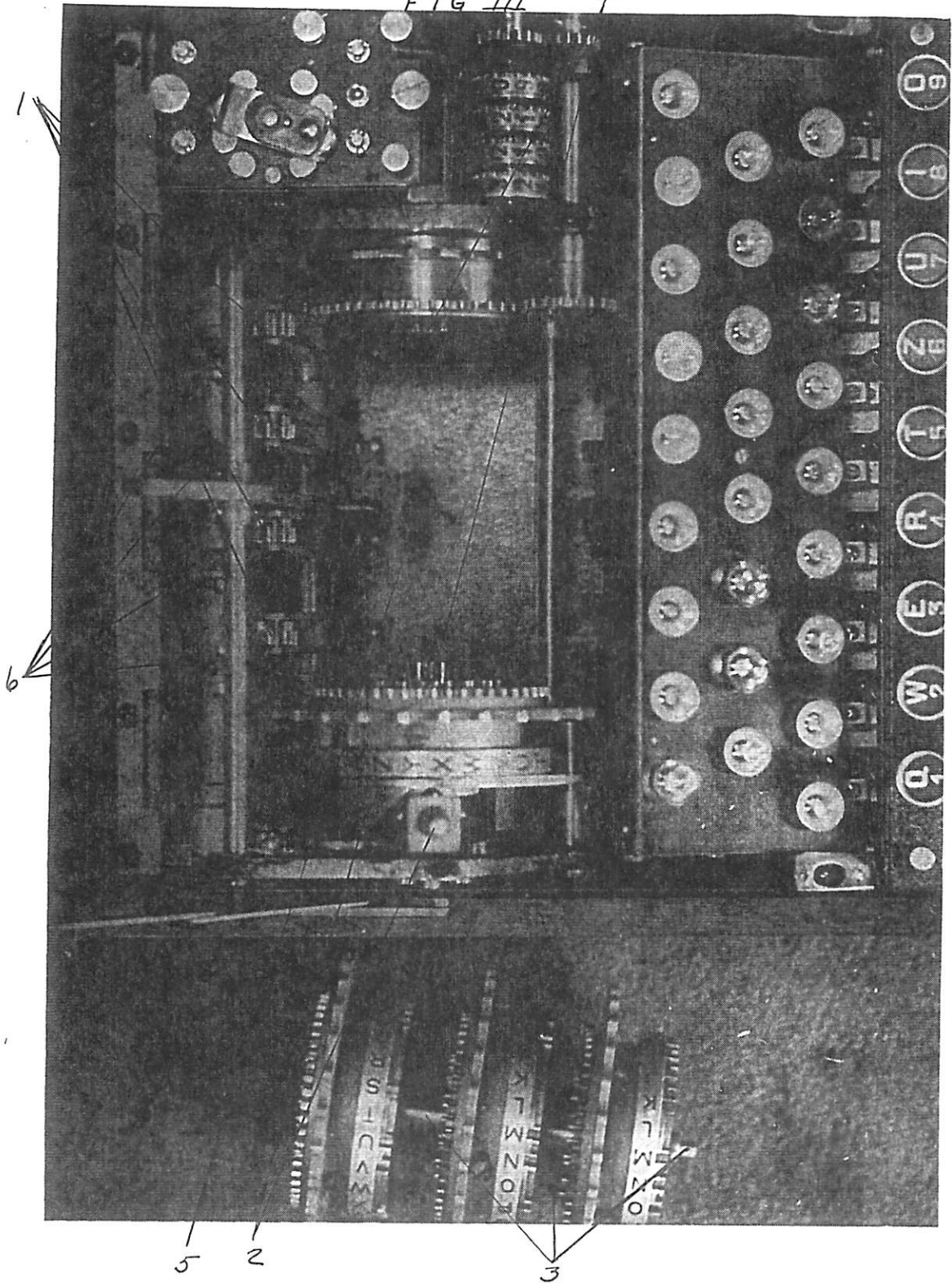


FIG IV

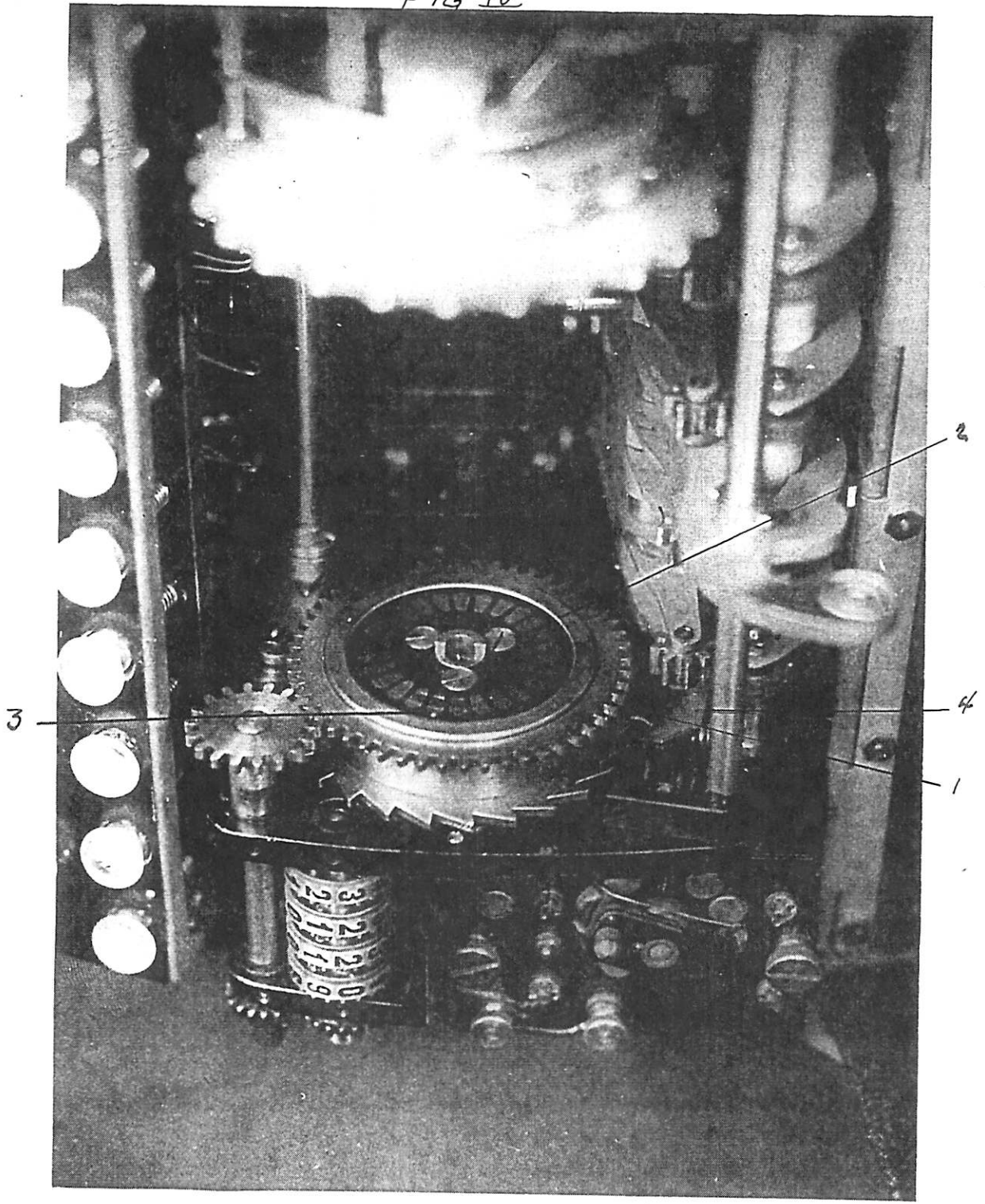


FIG V

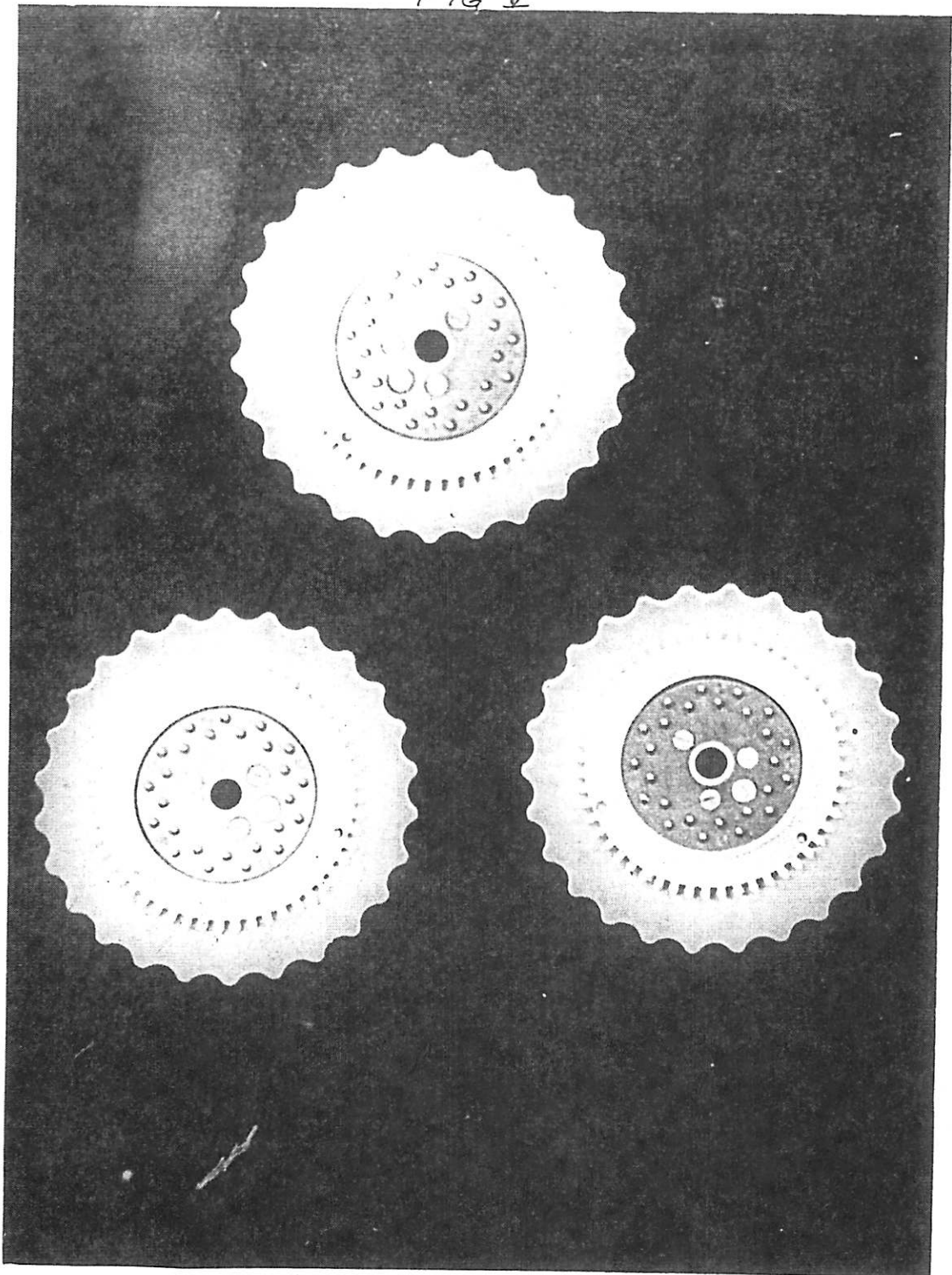


FIG VII

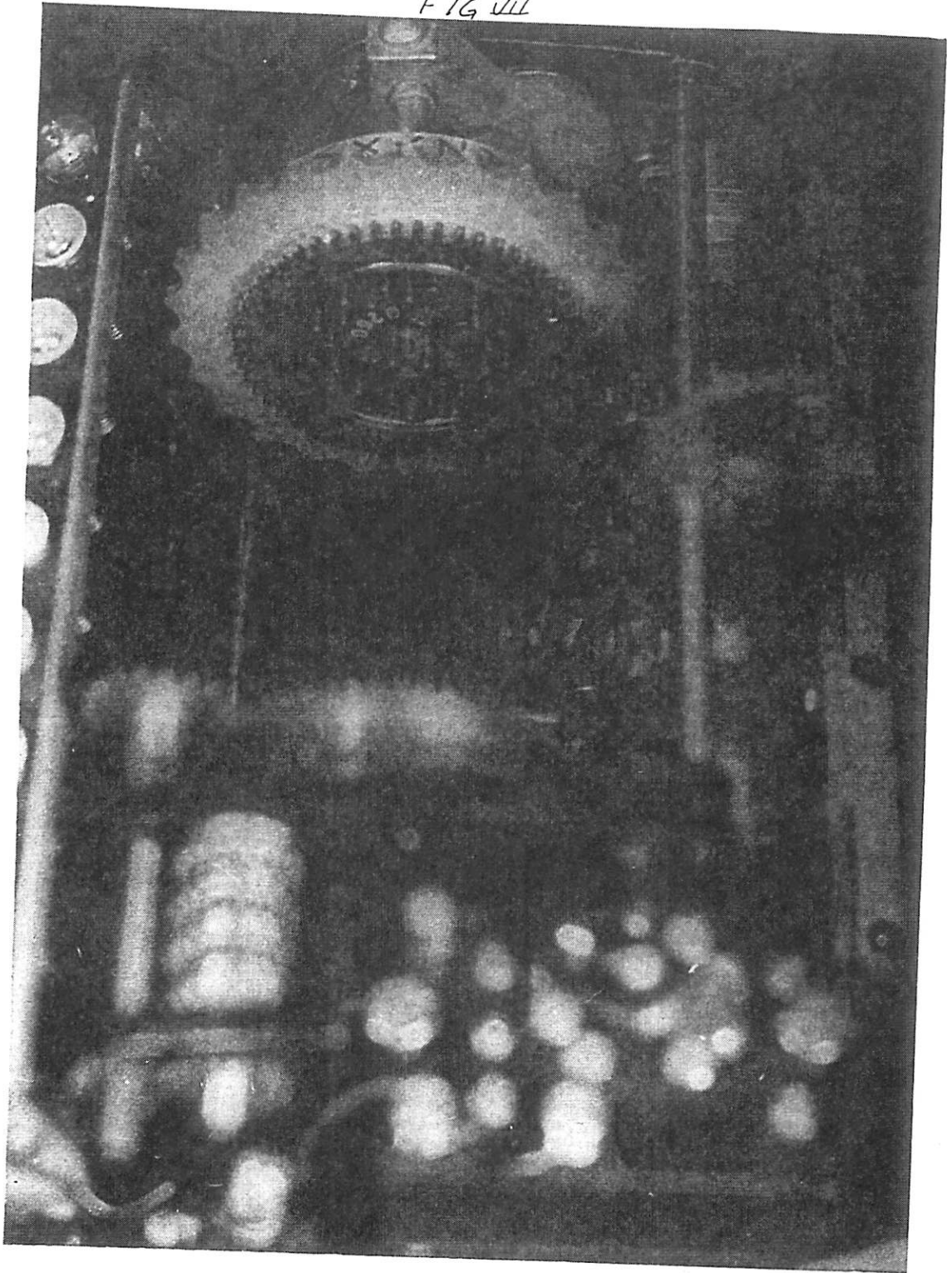


FIG VIII

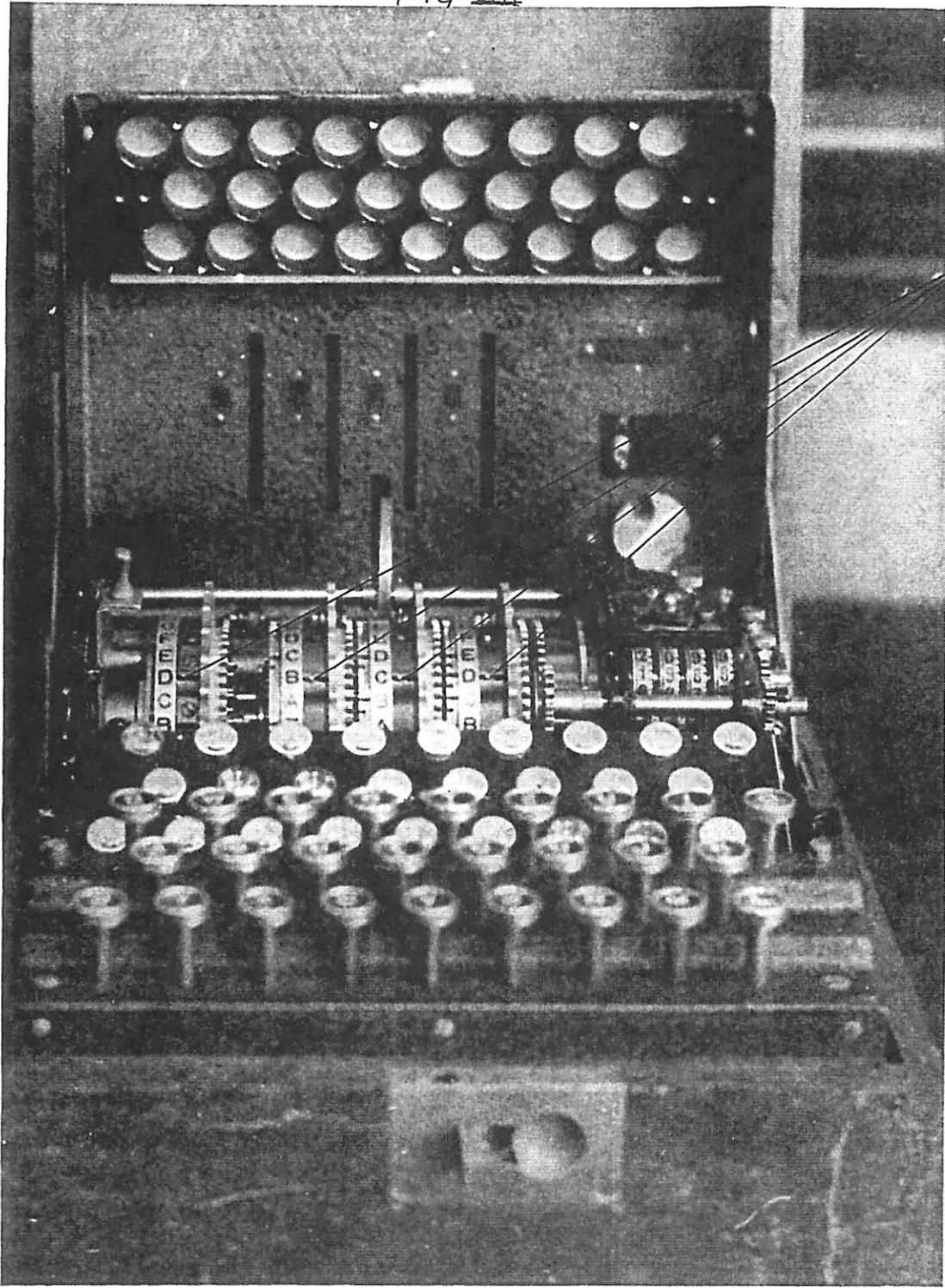


FIG IX

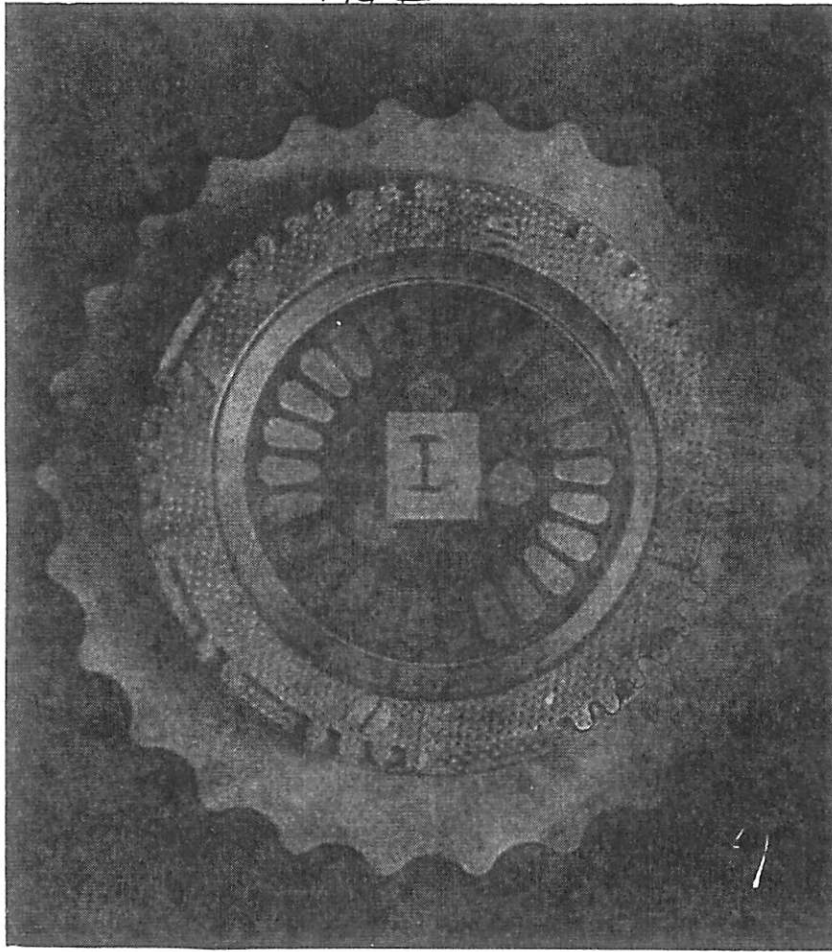
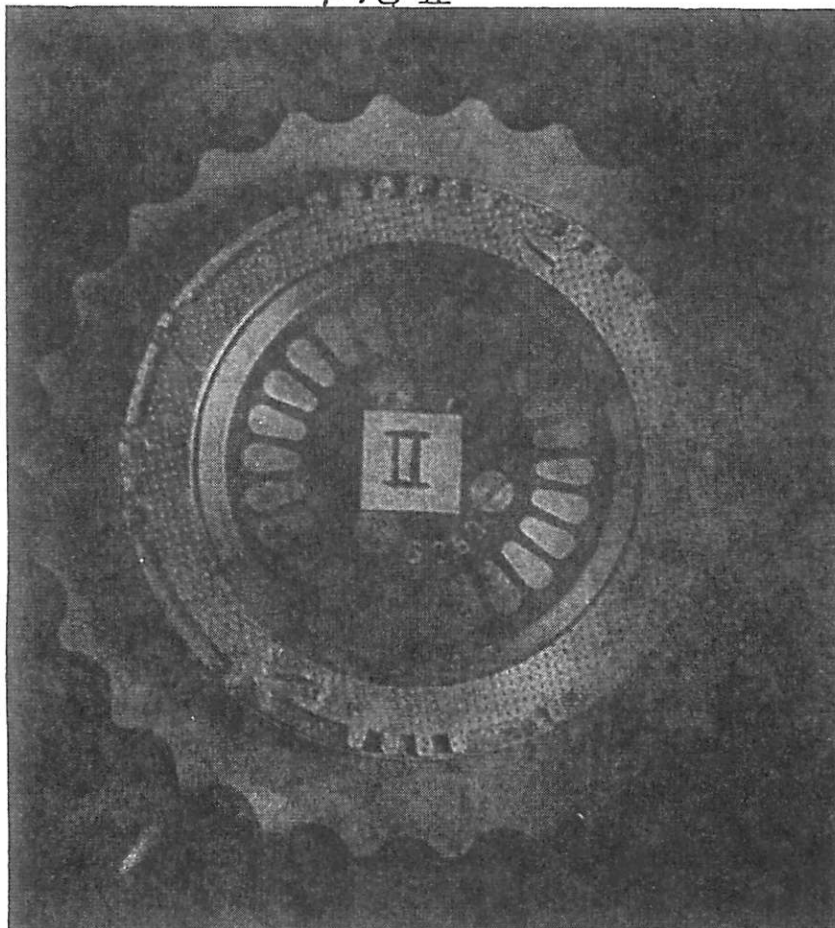


FIG X



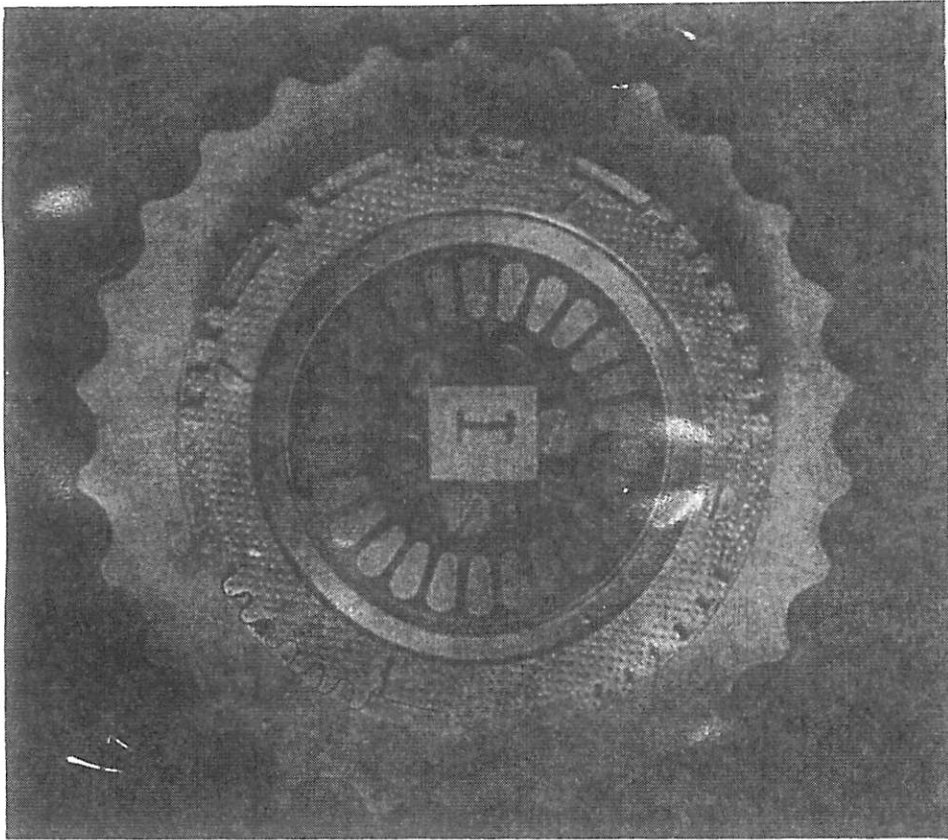


FIG IX

FIG X

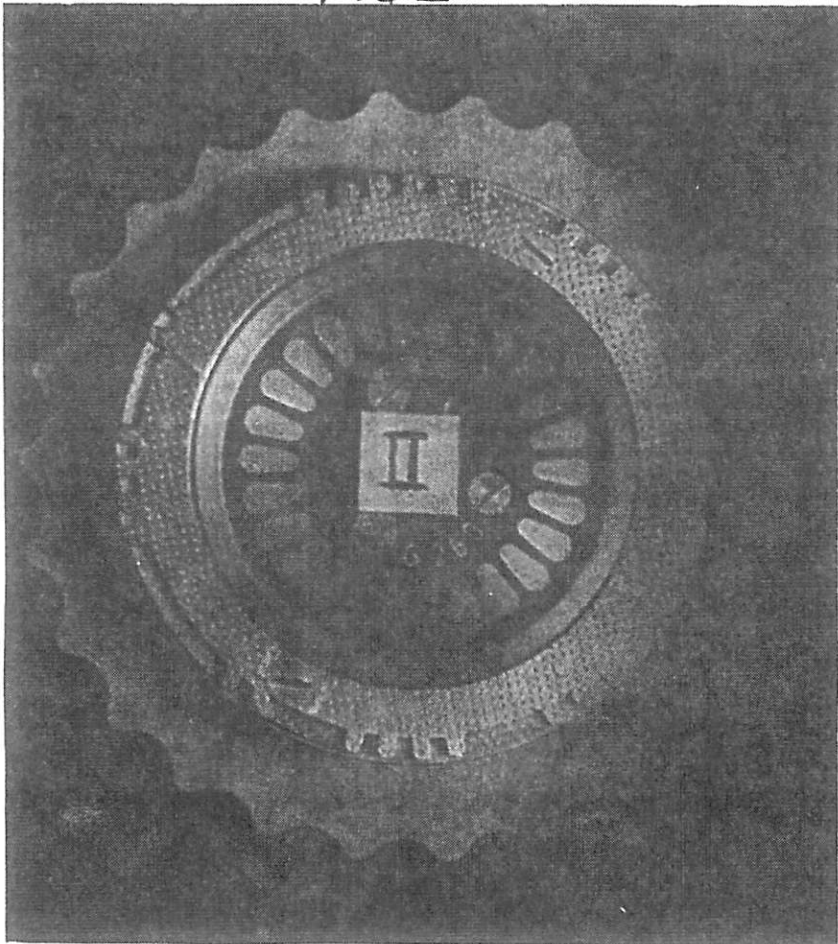


FIG X

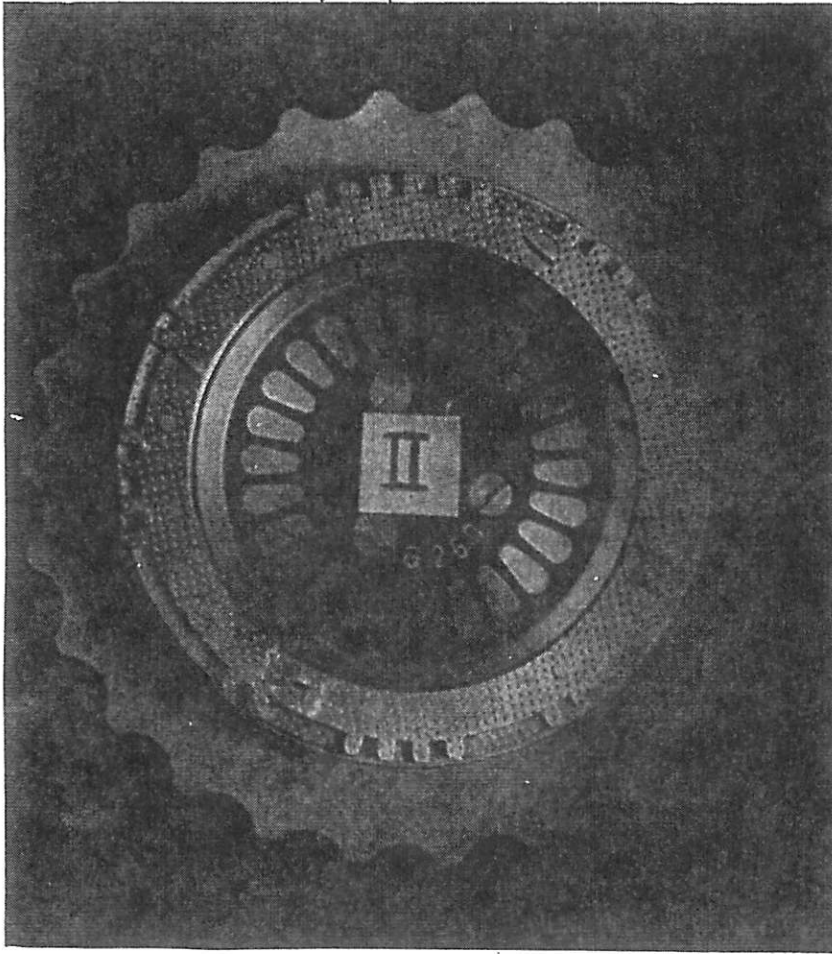


FIG XI

