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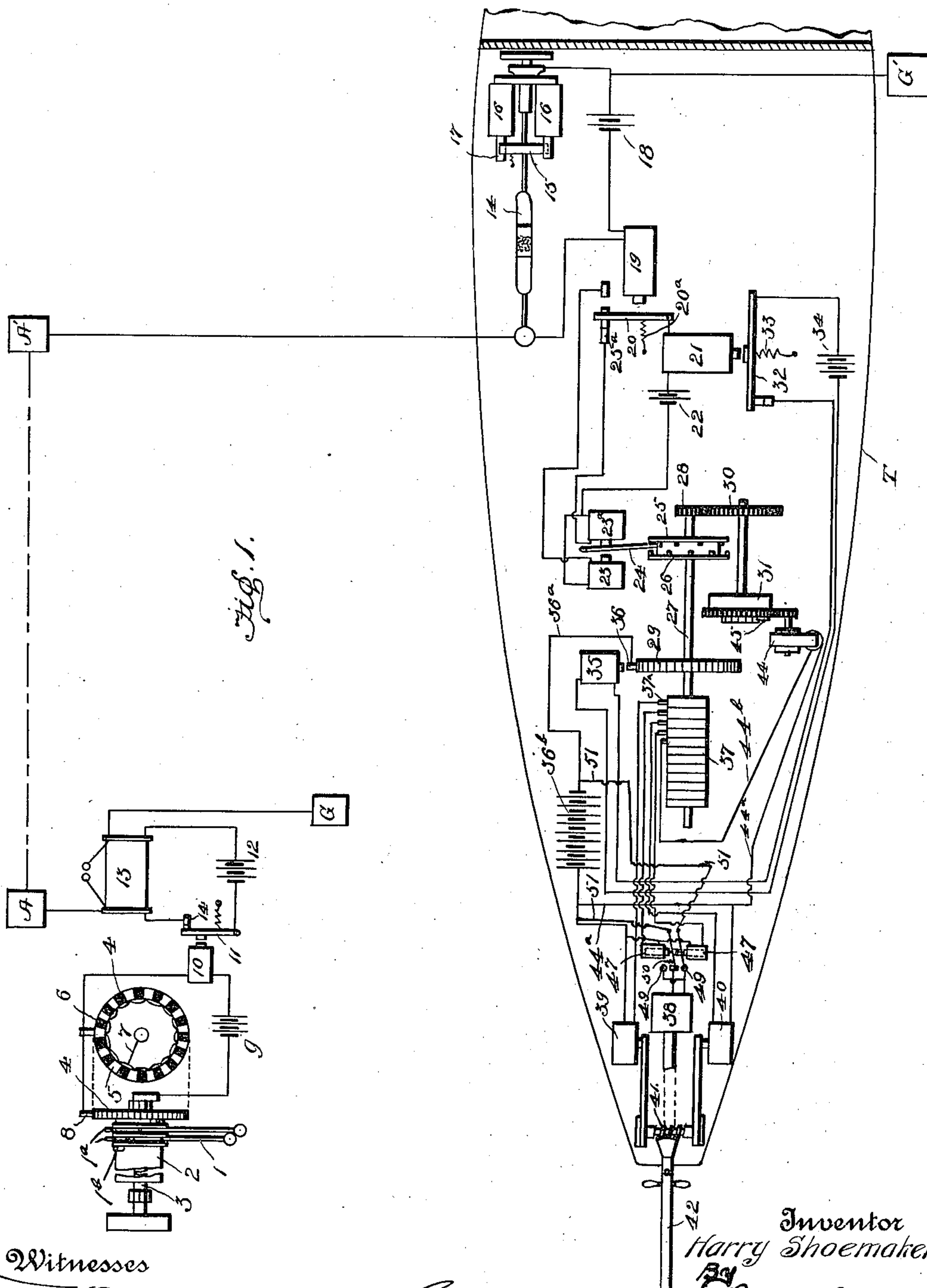
Patented Aug. 13, 1901.

H. SHOEMAKER.
AUTOTORPEDO.

(Application filed Feb. 1, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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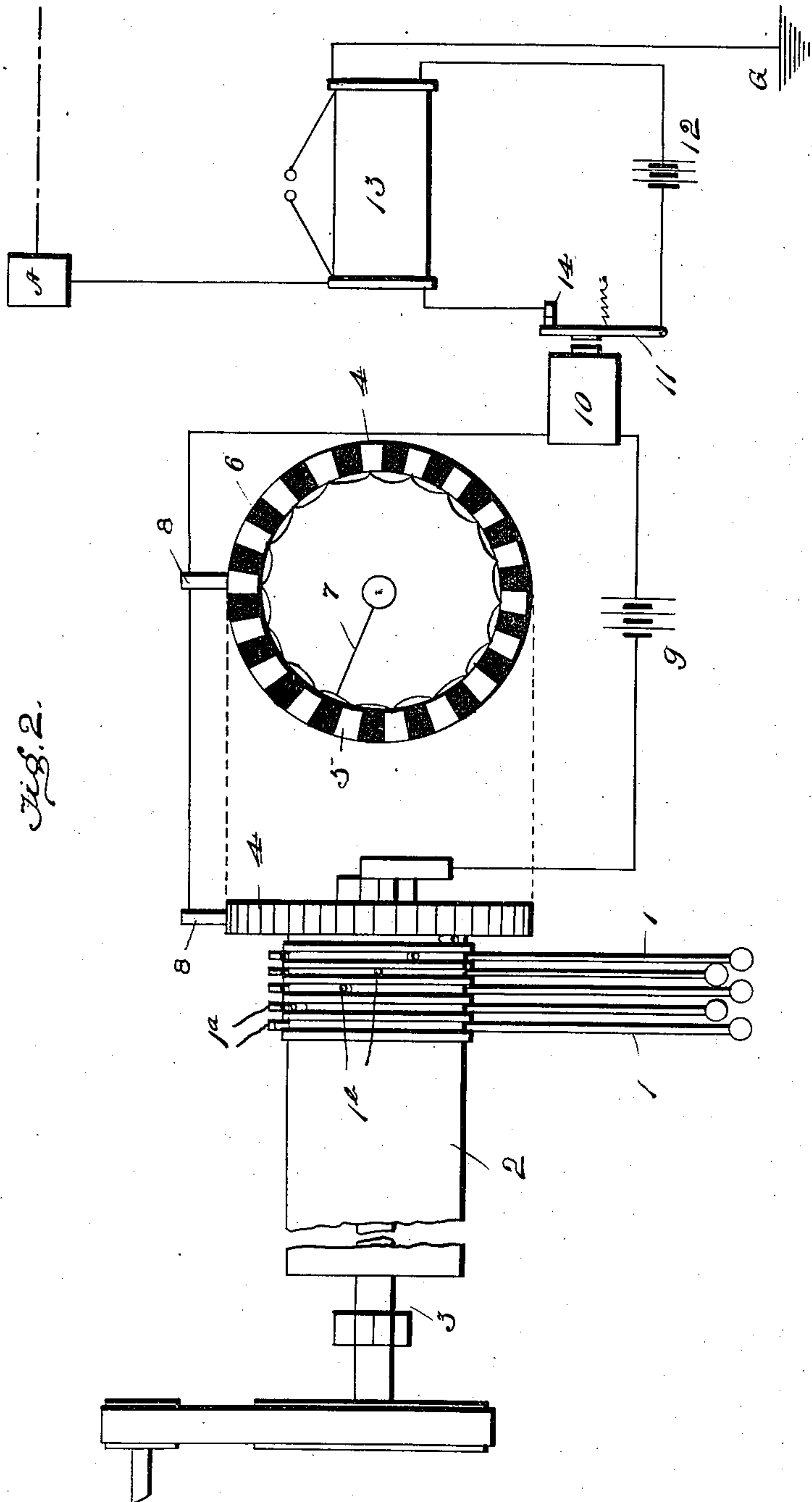
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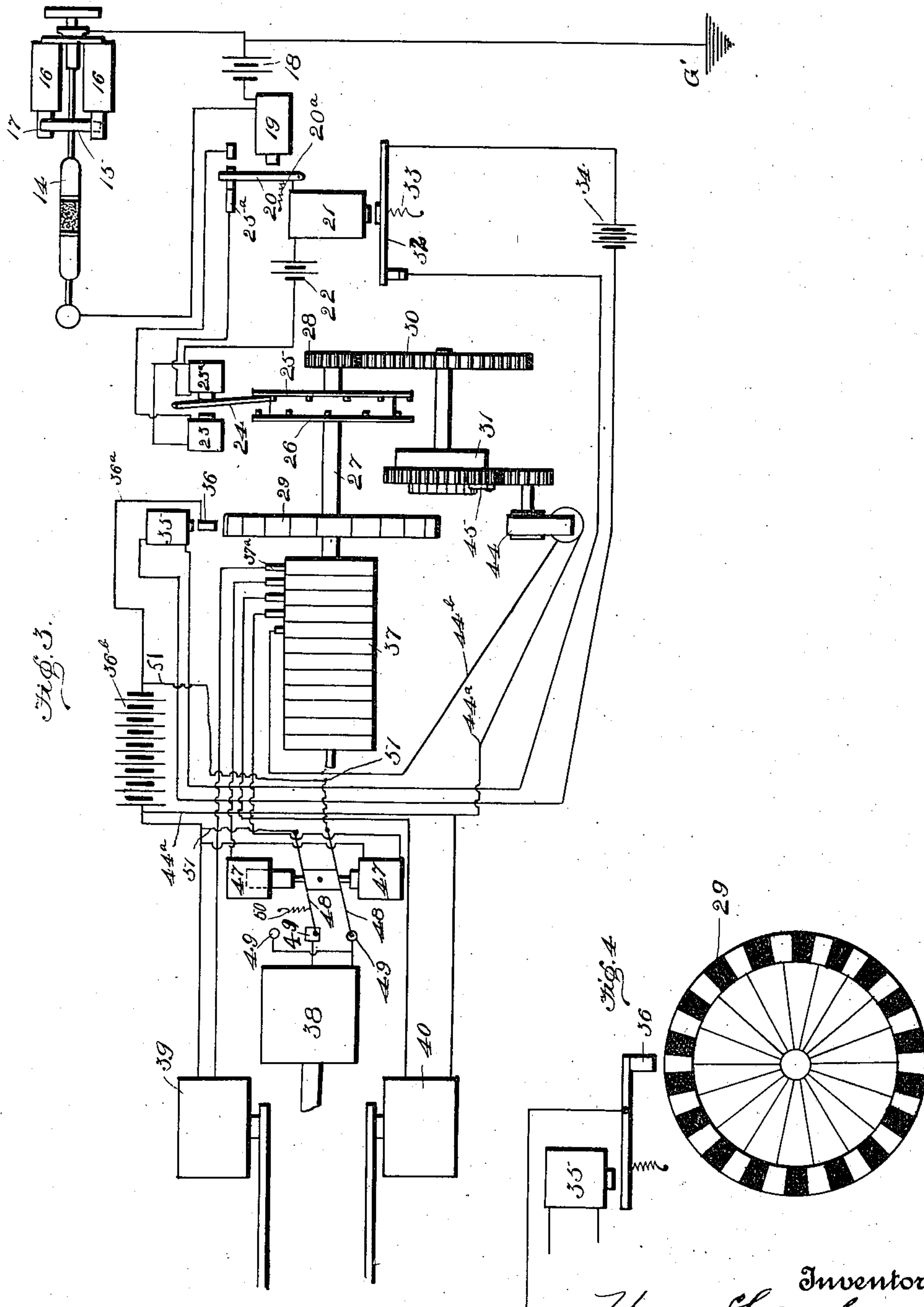
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UNITED STATES PATENT OFFICE.

HARRY SHOEMAKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
GUSTAVE P. GEHRING AND MARIE V. GEHRING, OF SAME PLACE.

AUTOTORPEDO.

SPECIFICATION forming part of Letters Patent No. 680,505, dated August 13, 1901.

Application filed February 1, 1901. Serial No. 45,585. (No model.)

To all whom it may concern:

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Autotorpedoes, of which the following is a specification.

This invention relates to improvements in autotorpedoes, and the main object of my invention is to employ a system of wireless telegraphy to control the motor, the steering apparatus, and the exploding of the torpedo, the torpedo containing the receiving-station of a wireless-telegraph system.

Another object of my invention is to provide a simple device which is operated by a keyboard at the transmitting-station to operate any desired mechanism located in the torpedo.

To attain the desired objects, the invention consists of a wireless-telegraph system, embodying a torpedo as its receiving-station therefor, having novel features of construction and combination of parts, substantially as disclosed herein.

In the drawings, Figure 1 is a diagrammatical view of the entire system, the forward compartment of the torpedo being cut away. Fig. 2 is an enlarged view of the transmitting apparatus. Fig. 3 is an enlarged view of the receiving apparatus removed from the torpedo-shell, and Fig. 4 is a detail view of the commutator of the receiving apparatus.

Referring to the drawings, the numeral 1 designates the key-bars of the keyboard, these bars being provided with projections 1^a, which are adapted to engage its proper pin 1^b upon the cylinder 2, this operation stopping the cylinder, and consequently its shaft 3 and the commutator 4. Any well-known power is employed to revolve this shaft, and as the commutator's periphery surface is composed of the conductor-blocks 5 and the insulators 6, said conductors being connected with the shaft by the wires 7, a circuit is made through the brush 8, the batteries 9, and the electromagnet 10. This circuit through the electromagnet 10 operates the lever 11, which when not attracted by said electromagnet 10 returns and makes another circuit with the

batteries 12 and the induction-coil 13 by contacting the post 14, the impulses thus being transmitted to the air and ground plates A and G. The magnet 10 and lever 11 act as an interrupter, which is controlled by the impulses sent by the commutator, which always is stopped upon a conductor-block, thus holding the contact open. This apparatus constitutes my transmitting-station. These impulses are received by the air and ground plates A' and G', which charge the coherer 14, which is oscillated by the armature 15, operated by the electromagnet 16 and the spring 17. A circuit comprising the aforementioned apparatus is made with the batteries 18 and electromagnet 19. All of this apparatus and the following are contained in the rear of the shell of the torpedo T.

The lever 20 is operated by the magnet 19, which makes a circuit with the electromagnet 21, batteries 22, and electromagnet 23, another circuit being made when the lever 20 contacts the post 25^a by reason of the spring 20^a, the circuit being the same, except that the electromagnet 23^a is brought into action. The outer end of the lever 24 is adapted to operate the flanged wheel 25, as with one impulse from the magnet 19 two impulses, one through the magnet 23 and one through the magnet 23^a, are caused, thus oscillating the lever 24, whose outer end contacts the under side of the pins 26 one at a time, said pins being upon the inner surface of the flanges of the wheel 25. Mounted upon the shaft 27 is this wheel 25, the cog-wheel 28, and the torpedo-operating wheel or commutator 29. The cog-wheel 28 meshes with the large gear-wheel 30, which is operated by the spring-motor 31, by which the shaft 27 is revolved. The periphery of the commutator 29 is divided into spaces, the same as the commutator 4, and when it is stopped the lever 32 is operated by the spring 33 to make a circuit with the batteries 34 and electromagnet 35. This magnet 35 operates the lever 36, whose point is brought into contact with the proper conductor-space upon the commutator 29, forming a circuit with the proper pin upon the cylinder 37, mounted upon the shaft 27. By this arrangement the lever 36 is caused

to alternately contact and recede from the commutator's face for every impulse transmitted. These circuits are adapted to operate at different times the propelling-motor 38 and the steering-motors 39 and 40. Any number of circuits can be made to accomplish any desired result without in any way departing from the spirit of my invention. The motor 39 is adapted to revolve the worm-gear 41, so that the rudder 42 is moved in one direction, and the motor 40 is adapted also to operate said worm-gear to move the rudder in the opposite direction. By the use of the keys and cylinder the motor 44 is operated to wind the spring-motor 31, a spring-dog 45 being employed to prevent any back motion of the motor. The motor 44 is operated by pressing the proper key at the keyboard, the commutators, which are in synchronous electrical movement, stop simultaneously, and the proper pin of the cylinder 37 is connected with the wire 44^b, which is connected to the motor, a wire 44^a also being connected with the motor, the batteries 36^b, wire 36^a, and to the lever 36, which contacts the proper conductor-block of the commutator 29, which is in circuit with the proper pin connected to the wire 44^b, thus causing the motor to revolve and wind the spring-motor 31.

The operation of my autotorpedo is readily understood from the foregoing description, taken in connection with the drawings, but, briefly stated, it is as follows: The commutator 4 is always revolved by means of the shaft and a motor connected therewith, and as this is revolving the commutator 29, which is in synchronous electrical movement with the first commutator, is operated also by means of the stepped flanged wheel 25. When a key is pressed upon, the commutator 4 is stopped. This stopping causes a circuit through the batteries 9 and electromagnet 10, which opens the coil's circuit, thus preventing any impulses or ether waves from being conducted to the receiving apparatus in the torpedo. These waves are always being sent while the commutator is revolved and the coil's circuit is being continuously opened and closed. Before the impulse is stopped the magnet 23 is magnetized, which causes the lever 24 to be attracted toward it, thus releasing the wheel 25 and stopping when the lever engages the pin upon the side where the magnet 23 is located. As soon as the impulse is stopped the magnet 23^a is magnetized and the lever 24 is attracted to it, so that the wheel 25 is allowed to move and be checked when the lever engages a pin upon the same side of the wheel as the magnet 23^a. The shaft 27, which has geared therewith the spring-motor 31, is revolved thereby, being checked in its movement by means of the pins 26 and the lever 24. This stoppage of the wheel 25 stops the shaft carrying the commutator 29, which makes the proper circuit to either start or stop the propelling motor or stop or start the steering-

motors, as may be desired. An electric light may be placed in each of the motor's circuits—that is, a white light in the propelling-motor's circuit to indicate that the torpedo is going straight ahead, a red light in the port-motor's circuit to indicate that the torpedo is going to port, and a green light in the starboard-motor's circuit to indicate that the torpedo is steering to starboard. The motor is started or reversed by simply pressing one key at a time, which causes a circuit to energize the proper one of the solenoids 47 to operate the armatures 48, which contact two of the three contact-points 49, and when neither of the keys are pressed the spring 50 holds the ends of the armatures in the spaces between the points, and thus breaks the motor-circuit, which is made through the batteries 36^b, wires 51, and the armatures 48. When this circuit is open, the motor is passive, and thus the motor is stopped.

With this system it will be seen that my torpedo can be used as an autotorpedo, or it can be placed in any desired position to be exploded at the proper time, such as placing them in a harbor to prevent the enemy's vessels from entering, and should they enter near one of the set torpedoes by pressing a key of the board the torpedo can be exploded.

It is evident that I provide a very useful and practical autotorpedo which is very simple in construction and which is entirely operated by a wireless-telegraph system, the torpedo itself containing the receiving apparatus. Should it be desired, however, a wire-telegraph system may be employed with my autotorpedo without departing from the spirit of my invention.

I claim—

1. In combination with a transmitting-station of a wireless-telegraph system, comprising a keyboard, a cylinder and commutator adapted to be stopped by one of the keys of said keyboard, means for rotating the commutator and cylinder, an induction or spark coil placed in open circuit when the commutator is stopped, and air and ground plates connected with said coil; a torpedo containing a receiving apparatus of a wireless-telegraph system adapted to be operated by said transmitting-station to propel the torpedo and operate it as desired.

2. In combination with a transmitting-station of a wireless-telegraph system, consisting of a keyboard, a cylinder and commutator adapted to be stopped by one of the keys of said keyboard, means for revolving the cylinder and commutator, an induction or spark coil placed in open circuit when the commutator is stopped, and air and ground plates connected to said coil; a torpedo consisting of an outer casing divided into a front and a rear chamber, said rear chamber containing a receiving-station of the system, said receiving-station comprising air and ground plates, a coherer, and an electromagnet in

circuit; said electromagnet causing to be operated proper mechanisms of the torpedo.

3. In combination with a transmitting-station, comprising a commutator adapted to be
5 revolved, means to stop said commutator, and a coil-circuit operated by said commutator, and adapted to be held open when the commutator is stopped, a torpedo having a re-

ceiving apparatus operated by said transmitting apparatus.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY SHOEMAKER.

Witnesses:

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M. WIEGAND.