

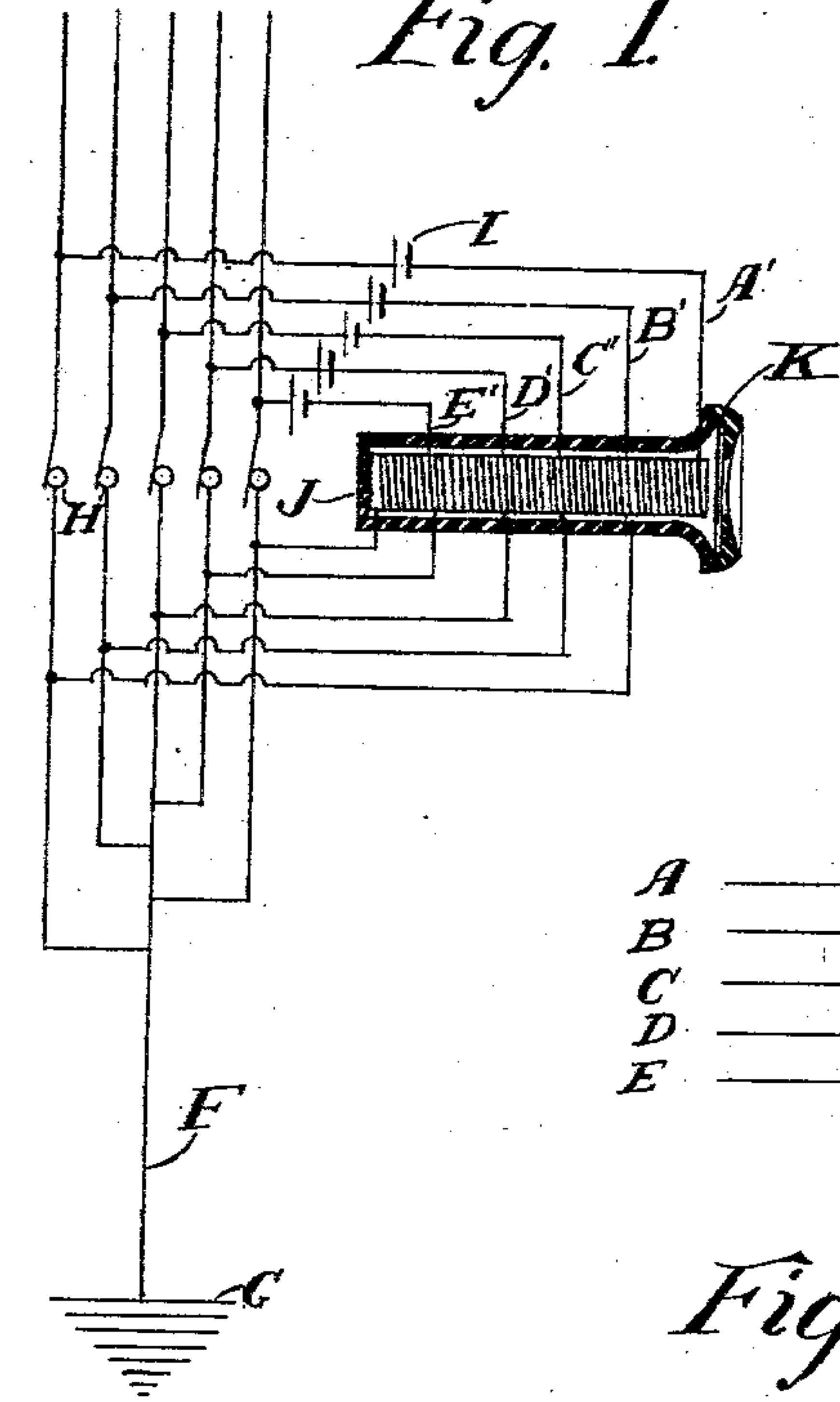
No. 745,463.

PATENTED DEC. 1, 1903.

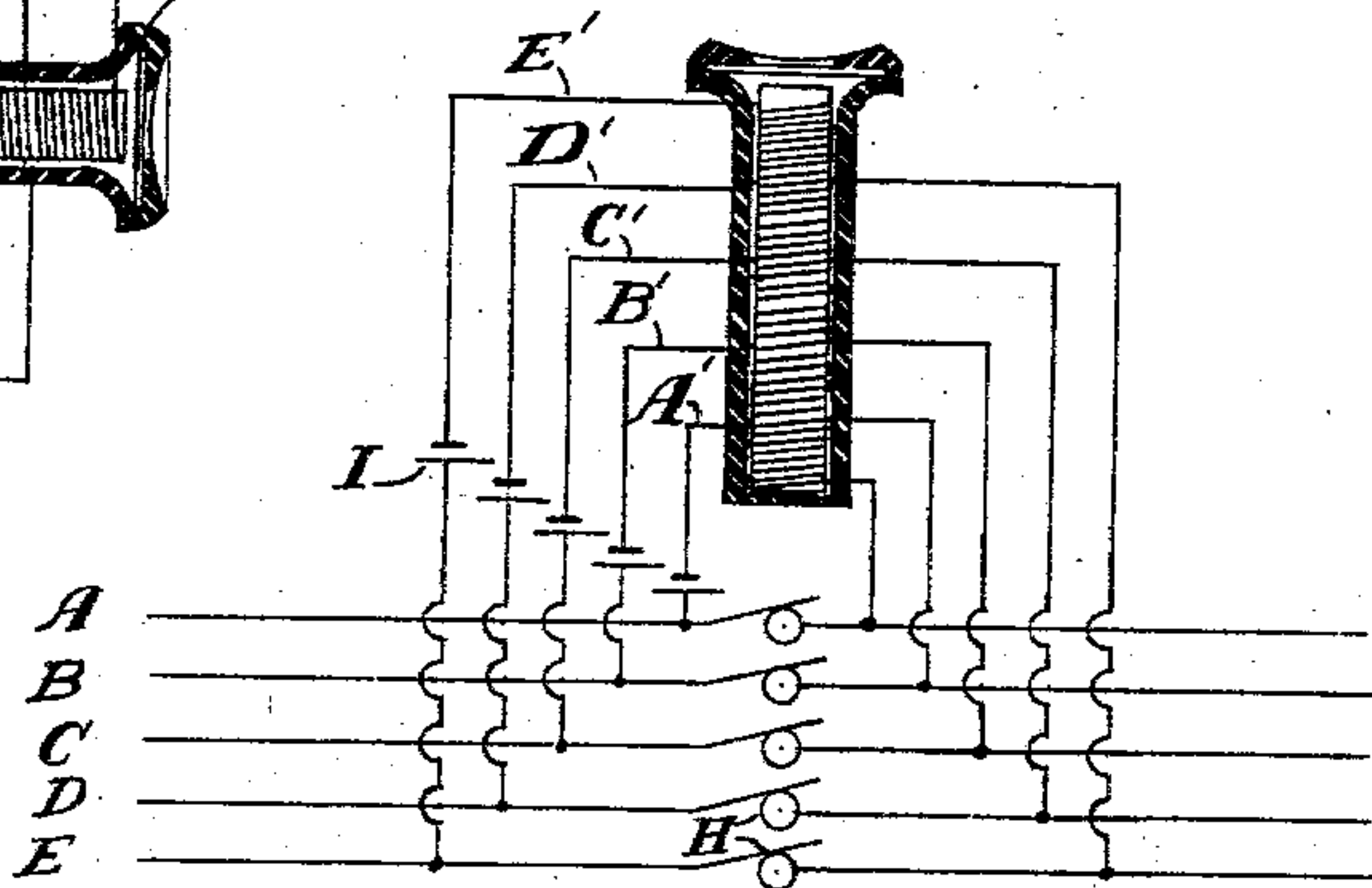
G. T. SWENSON.  
WIRELESS TELEGRAPH RECEIVER.  
APPLICATION FILED DEC. 23, 1902.

NO MODEL.

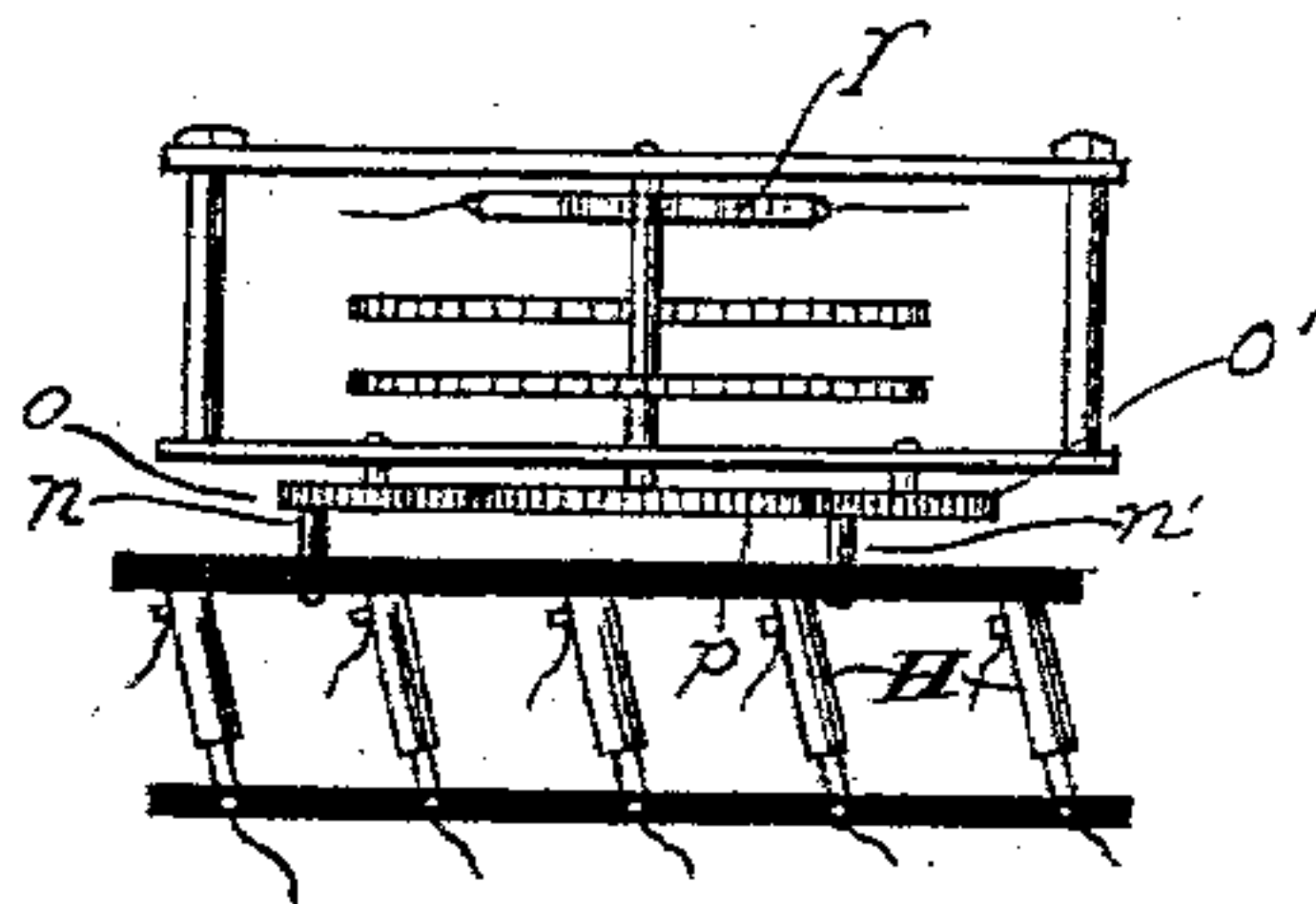
*Fig. 1.*



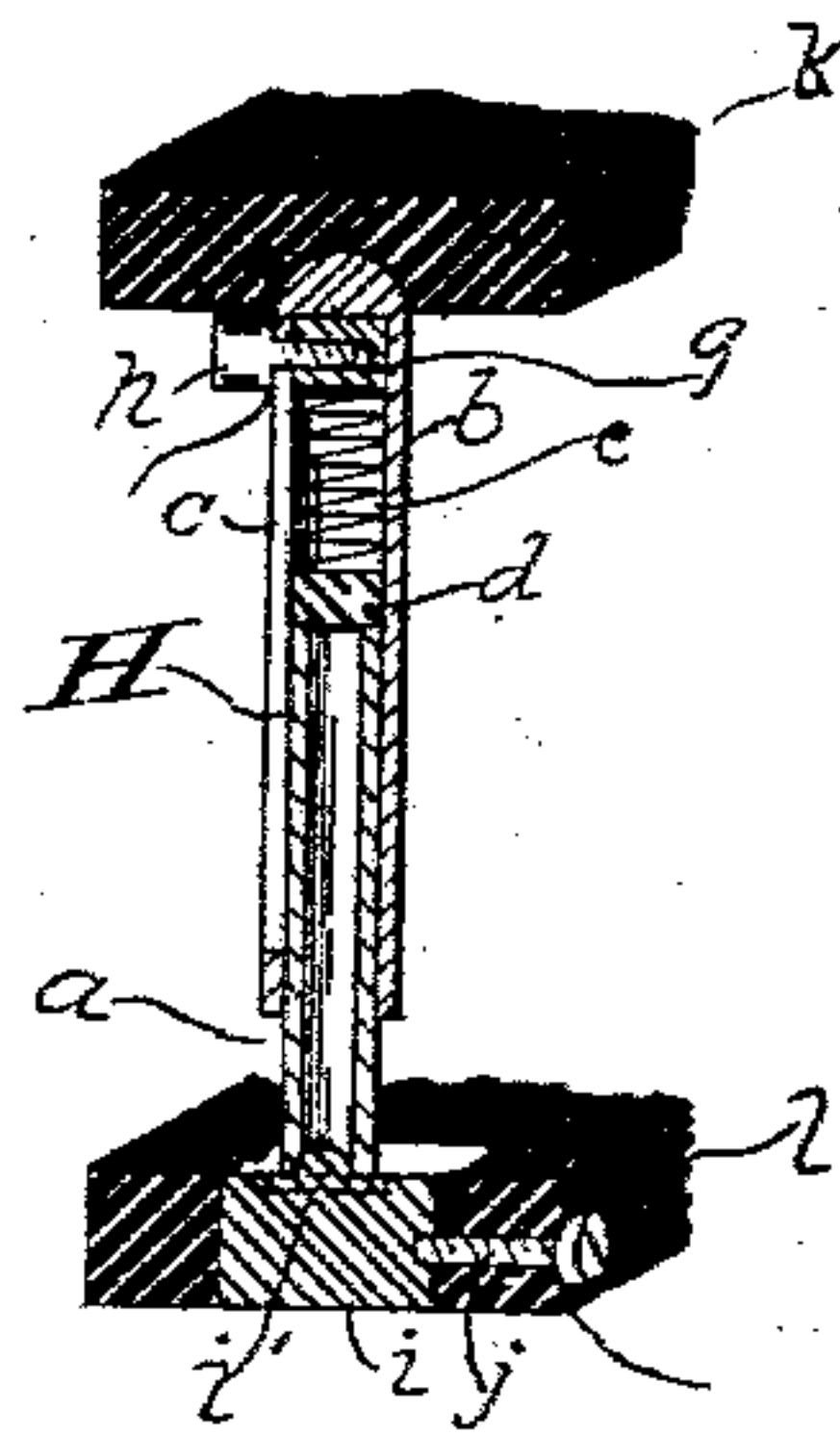
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witnesses  
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## UNITED STATES PATENT OFFICE.

GUSTAF T. SWENSON, OF NEAR SAN PEDRO, CALIFORNIA.

## WIRELESS-TELEGRAPH RECEIVER.

SPECIFICATION forming part of Letters Patent No. 745,463, dated December 1, 1903.

Application filed December 23, 1902. Serial No. 136,402. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAF T. SWENSON, a citizen of the United States, residing near San Pedro, in the county of Los Angeles and State of California, have invented new and useful Improvements in Wireless-Telegraph Receivers, of which the following is a specification.

My invention relates to instruments designed for receiving messages by the system denoted "wireless telegraphy;" and the objects thereof are to produce a simple device which will be operative in all positions and when used in conjunction with a telephone-receiver or other electrically-operated sound-producing instrument will produce therein audible impulses which can be readily understood by the operator and which may be used with a telegraphic receiving instrument. I accomplish these objects by the mechanism described herein and illustrated in the accompanying drawings, in which—

Figures 1 and 2 are diagrammatic representations illustrating my invention applied to a plurality of receiving-wires. Figs. 3 and 4 are details showing the preferable construction of some of the parts of my coherer.

In the drawings, A B C D E are the aerial or Hertzian wave collectors. In Fig. 1 they are shown connected to the wire F, which runs to ground G. In Fig. 2 these wires do not run to ground, but may be laid upon a side hill, being insulated therefrom, or may be stretched between poles, either horizontal or in any other direction desired, the object being to intercept as many waves as possible within practical limits. In the drawings I have shown five lines which I will call "aerial" lines; but the number may be greater or less. In practice I have found twelve a very satisfactory number, and with that number I have produced very satisfactory results, and I have found that even one wire produces a fair result. In each of these aerial lines is coherer H or other wave-detector. To each aerial line is connected on the opposite sides of the coherer a shunt-circuit A' B' C' D' E'. In each of these shunt-circuits is a battery I. Each of these shunt-circuits is wound upon the pole-piece J, which is adapted to operate the diaphragm K when magnetized, and thereby produce sound. This instrument is prac-

tically a telephone-receiver. My improved coherer consists of a carbon pencil *a*, which is preferably hollow. This pencil is mounted in a metallic tube *b*, having a slot *c* in one side thereof. On the top of pencil *a* is a follower *d*, which is pressed upon the top of the pencil by spring *e*, housed in the tube. The upper end of this spring bears against the movable stop *g*, which is held at any desired position in the tube by thumb set-screw *h*, by means of which any desired pressure may be put upon the pencil to hold it firmly in contact with the metallic base-block *i*, whose upper surface is preferably oxidized. This screw also acts as a binding-post to attach one side of the aerial wire. This base-block is preferably provided with a rounded projection *i'*, which projects into the hollow of the pencil to keep the lower end thereof from slipping on the base-block. This base-block is set into the stationary insulating base-piece *l* and is held in place by screw *j*, which also acts as a binding-post to attach one side of the aerial line thereto. The top of tube *b* is closed and rounded and sets into a recess in the top block *k*, which block is formed of insulating material. The block *k* is moved by studs *n* and *n'*, which pass therethrough. These studs are mounted on gears *o* *o'*, which mesh with gear *p* of a train of wheels, which train is operated by any suitable means which will impart a very slow movement to the top block. I have shown an electric motor *r* for that purpose, as it imparts a continuous motion, which I consider is the best motion. When motion is imparted to the top block, a gyratory motion is imparted to the pencil, thereby breaking the cohesion caused by the passage of the electrical waves between the pencil and the base it rests upon and bringing fresh surfaces into engagement. If desired, a cup-shaped depression might be made in the base-block (shown in dotted lines in Fig. 4) instead of the projection *i'* to keep the lower end of the pencil from slipping. In the use of a plurality of aerial lines and in the use of a separate coherer or other wave-detector for each line and in the use of a separate shunt-circuit having a like winding on a common pole-piece of a telephone-receiver I am able to increase the efficiency of the impulses produced therein by the Hertzian waves over that pro-



duced by a single line, and thereby get much louder, clearer, and more distinct sounds in the receiver than when a single line is used. A single aerial line with my improved coherer therein and a shunt-circuit wound on or connected to the primary of the pole-piece of the receiver produces fair results.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a system of wireless telegraphy in combination, a coherer comprising a stationary member, a carbon pencil in contact therewith, and means to give said pencil a gyrotorial motion.

2. In a system of wireless telegraphy; a receiving-circuit therefor comprising an aerial line, a wave-detector in said line comprising a stationary member and a carbon pencil in contact therewith, said pencil being adapted to gyrate; a sound-producing instrument; a shunt-circuit connected to the primary winding of the pole-piece of said sound-producing instrument and connected to said aerial line

on opposite sides of said wave-detector; a battery in said shunt-circuit.

3. In a system of wireless telegraphy a receiving-circuit therefor comprising a plurality of aerial lines; a wave-detector in each of said lines; a sound-producing instrument having a pole-piece; a plurality of shunt-circuits, each shunt-circuit being wound upon said pole-piece and, connected to a different aerial line on each side of the wave-detector therein.

4. In a system of wireless telegraphy, a receiving-circuit therefor comprising a plurality of aerial lines; a sound-producing instrument; a wave-detector in each of said aerial lines connected to and adapted to actuate said sound-producing instrument.

In witness that I claim the foregoing I have hereunto subscribed my name this 17th day of December, 1902.

GUSTAF T. SWENSON.

Witnesses:

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M. C. NICKELESON.