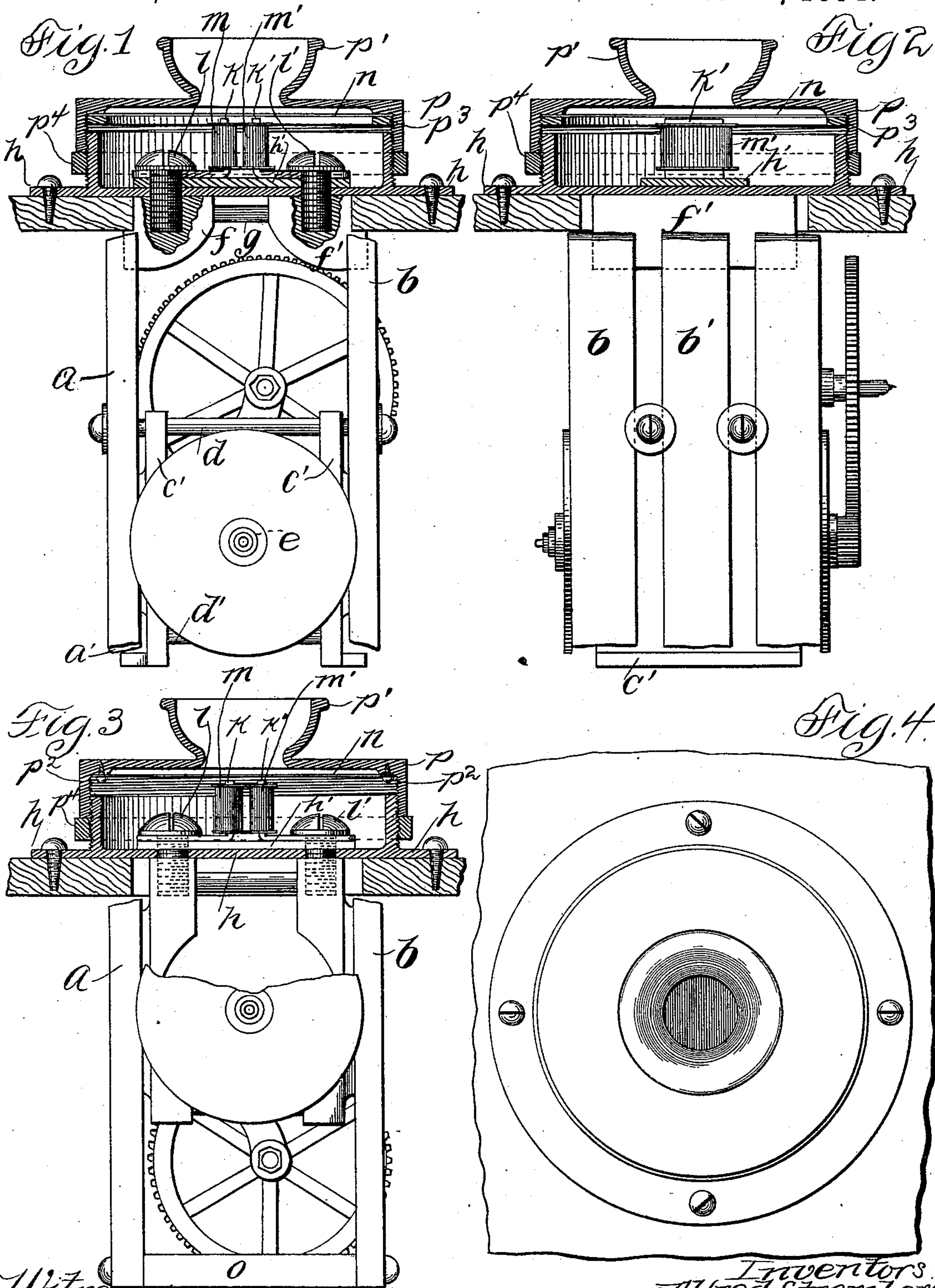


(No Model.)

A. STROMBERG & A. CARLSON.
MAGNETO TELEPHONE.

No. 521,188.

Patented June 12, 1894.



Witnesses:
George L. Cragg
George S. Bull

Inventors:
Alfred Stromberg
Andrew Carlson.
By Barton & Brown,
Attorneys

UNITED STATES PATENT OFFICE.

ALFRED STROMBERG AND ANDREW CARLSON, OF CHICAGO, ILLINOIS.

MAGNETO-TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 521,188, dated June 12, 1894.

Application filed March 9, 1894. Serial No. 503,044. (No model.)

To all whom it may concern:

Be it known that we, ALFRED STROMBERG and ANDREW CARLSON, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Magneto-Telephones, (Case No. 13,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to magneto telephones, and more particularly to improvements in a combined telephone and magneto generator described in Letters Patent No. 504,636, and its object is to produce a more economical construction and to provide means for preventing the diaphragm from getting out of adjustment.

In the Letters Patent above referred to, is shown a magneto generator provided with soft iron polar extensions around which the telephone coils are wound, and opposite the ends of which the diaphragm is located. Our invention herein contemplates the cheapening of this construction by constructing the magneto generator of parallel disposed bar magnets and providing between the magnets at one end, pole pieces, between which the armature is adapted to rotate. The soft iron polar extensions or cores may, in this construction, be provided either upon the ends at which the pole pieces are provided, or, when more convenient, at the opposite ends.

In the apparatus of said Letters Patent the magneto generator is secured to the inside of a wooden casing, while the metal casing which supports the diaphragm is secured to the outside of said wooden casing. A disadvantage arising from this construction is that, since a layer of wood, which varies considerably in thickness with changes of temperature and moisture, is interposed between the generator, upon which the core pieces are rigidly mounted, and the diaphragm support, any change of thickness of the layer of wood tends to throw the telephone out of adjustment. With this objection in view, our invention contemplates the mounting of the diaphragm support relatively to the gener-

ator upon which the core pieces are mounted so that the disadjustment of the telephone will be prevented.

Our invention contemplates further an improved adjustment for the diaphragm with means for locking the diaphragm support in its adjusted position, as will herein more fully be described.

We will describe our invention in connection with the accompanying drawings, in which—

Figure 1 is an elevation, partially in section, of a combined telephone and generator constructed after the manner of our invention. Fig. 2 is a view at right angles thereto. Fig. 3 is a view showing the soft iron cores mounted upon the ends of the bar magnets between which the pole pieces are mounted. Fig. 4 is a plan view of the telephone transmitter.

Like letters refer to like parts in the several figures.

Referring to Figs. 1 and 2, a number of bar magnets $a a'$, situated side by side are maintained parallel to a second series $b b'$ by proper distance pieces. The number of the magnets employed may be determined by the desired strength of magnetic field. Between the ends of the magnets are mounted the pole pieces c and c' , which may be of cast iron, and secured one to each of the series of magnets. Between the ends of the pole pieces are placed distance pieces $d d'$, of brass or other non-magnetic material. Between the pole pieces c and c' the armature e is adapted to be rotated. To the opposite ends of the magnets are secured the pieces $f f'$, preferably of cast iron, the same being maintained at the proper distance apart by distance pieces g which may be of magnetic or of non-magnetic material as it is desired to utilize the whole or a part of the magnetic field for the magneto telephone. Mounted upon the ends of the castings $f f'$ is the metallic casing h , upon which the diaphragm is adapted to be supported. The soft iron polar extensions $k k'$ are located with their ends a short distance apart and separated from the bottom of casing h by non-magnetic filling pieces h' , the said polar extensions being maintained in position by

screws $l\ l'$ of magnetic material, which pass through the casing h and fillers h' and extend into the cast iron pieces $f\ f'$. The polar extensions are thus magnetically connected with the bar magnets. The telephone coils $m\ m'$ are placed over the polar extensions and the diaphragm n properly mounted. If the distance pieces g be non-magnetic, all of the lines of force of the magnets, except such as may leak across the air space, will thread the polar extensions and the diaphragm, and the field of the telephone will be of maximum strength. Should a field of less strength be desired, the distance pieces g may be made of magnetic material, or a magnetic shunt of any other form may be provided about the polar extensions.

In Fig. 3 the polar extensions are shown as mounted upon the same ends of the magnets as are the pole pieces, a yoke piece o being provided between the opposite ends to complete the magnetic circuit.

It will be noted that the diaphragm support is metallically connected with the bar magnets as well as the core pieces, and that, in consequence, changes of temperature or moisture will not throw the diaphragm out of adjustment as would be the case were the wooden casing interposed between the diaphragm support and the magnets as in the patent heretofore referred to. In the claims the expression "metallically mounted" is used in the sense that no material capable of expansion under changes of temperature and moisture is interposed between the diaphragm support and the magnets.

To provide for adjustment of the diaphragm toward and from the polar extensions or cores $k\ k'$, a cap p is provided carrying a mouth piece p' , the cap being provided with an internally threaded flange adapted to be screwed upon the casing h . The diaphragm may be secured to the under side of the cap by screws p^2 , Fig. 3, or by a threaded ring p^3 , Fig. 1, between which and the under surface of the cap the diaphragm may be clamped. The diaphragm may be readily adjusted to any height by rotating the cap about its central axis, and may be locked in its adjusted position by means of the internally threaded ring p^4 which is adapted to be screwed against the flange provided upon the cap.

It is evident that our invention is susceptible of modifications, and we do not, therefore, desire to limit ourselves to particulars, but

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

1. The combination with permanent bar magnets, of pole pieces mounted upon the ends of said magnets, between which the armature is adapted to rotate, soft iron cores extending from the poles of said magnets, the ends thereof being in proximity and surrounded by telephone coils, and a diaphragm

mounted opposite the ends of said cores, substantially as described.

2. The combination with permanent bar magnets, of pole pieces mounted upon the ends of said magnets, between which the armature is adapted to rotate, soft iron cores extending from the ends of said magnets opposite those upon which said pole pieces are mounted, the ends of said cores lying in proximity and surrounded by telephone coils, and a diaphragm mounted opposite the ends of said cores, substantially as described.

3. The combination with permanent bar magnets, of pole pieces mounted upon the ends of said magnets, between which the armature is adapted to rotate, soft iron cores extending from the ends of said magnets opposite those upon which said pole pieces are mounted, the ends of said cores lying in proximity and surrounded by telephone coils, a diaphragm mounted opposite the ends of said cores, and a bar of magnetic material connecting the ends of said bar magnets upon which said soft iron cores are mounted, thereby providing a magnetic shunt about the same, substantially as described.

4. The combination with a permanent magnet, of a casing supporting the diaphragm and metallically mounted upon said magnet, soft iron cores extending from the poles of said magnet through the bottom of said casing, the ends thereof being approached and situated opposite said diaphragm, and telephone coils provided on said cores, substantially as described.

5. The combination with the straight bar magnets $a\ b$, of the pole pieces $c\ c'$ mounted upon the ends of said magnets, the cast iron pieces $f\ f'$ mounted upon the opposite ends of said magnets, the casing or diaphragm support h mounted upon said cast iron pieces $f\ f'$, the soft iron cores $k\ k'$ mounted upon said pieces $f\ f'$, and the diaphragm n supported upon said diaphragm support h and mounted opposite the approached ends of said soft iron cores $k\ k'$, substantially as described.

6. The combination with a cap, of a diaphragm resting against the under side of the same, a threaded ring adapted to be screwed within said cap against said diaphragm, and a casing provided with threads adapted to engage threads upon said cap, substantially as described.

7. The combination with a cap, of a diaphragm resting against the under side of the same, a threaded ring adapted to be screwed within said cap against said diaphragm, a casing provided with threads adapted to engage threads upon said cap whereby the diaphragm may be adjusted and a threaded ring adapted to be screwed upon said casing and against said cap to lock the same in its adjusted position, substantially as described.

8. The combination with a cap provided with an internally threaded flange, of a

threaded ring adapted to be screwed upon
said threaded flange, a diaphragm adapted to
be clamped between the under side of said
cap and said ring, and a casing provided with
5 a thread adapted to engage a thread upon
said cap; whereby said diaphragm may be
adjustably raised and lowered, substantially
as described.

In witness whereof we hereunto subscribe
our names this 7th day of March, A. D. 1894. to

ALFRED STROMBERG.
ANDREW CARLSON.

Witnesses:

GEORGE L. CRAGG,
GEORGE S. BUELL.