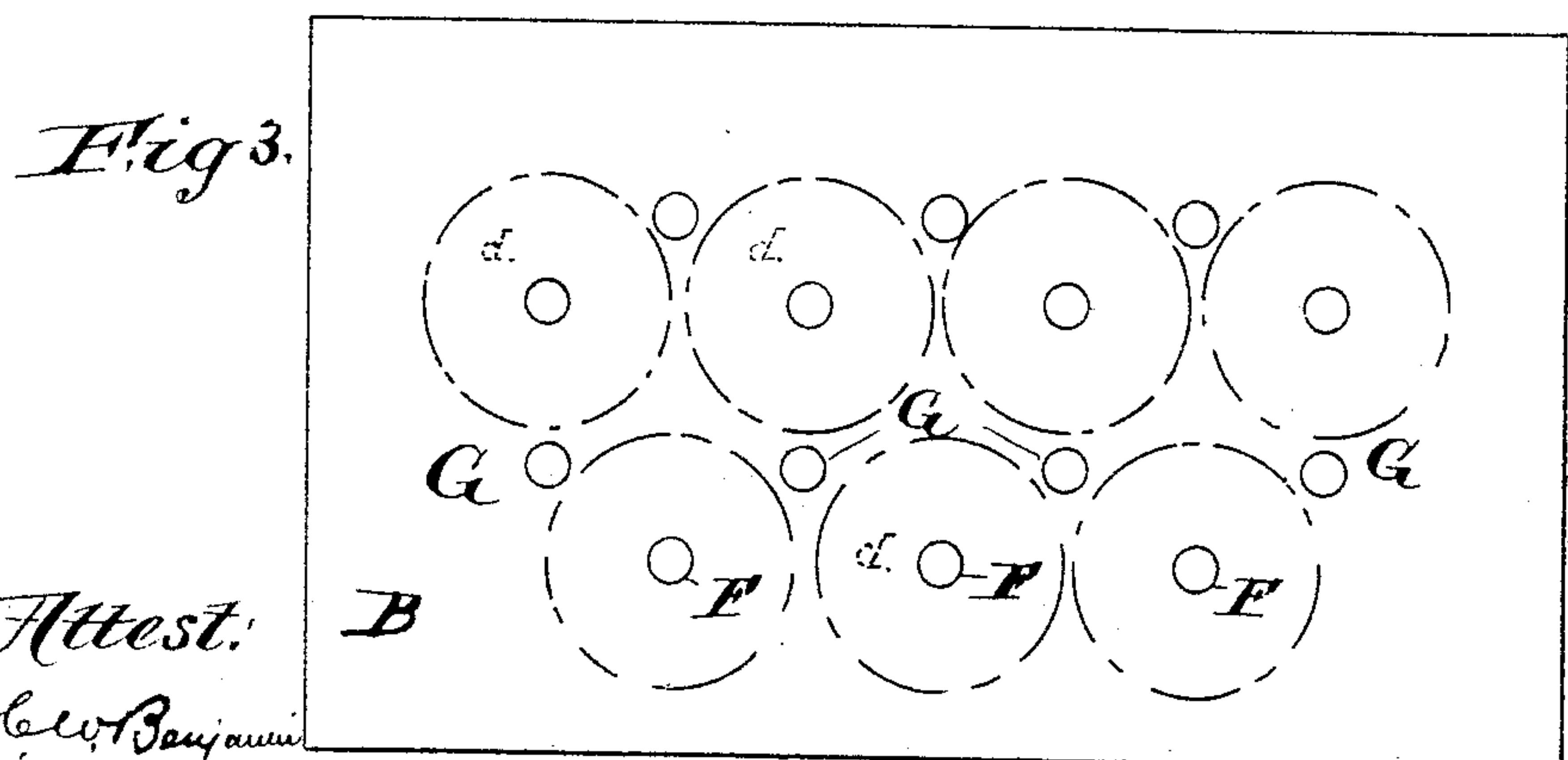
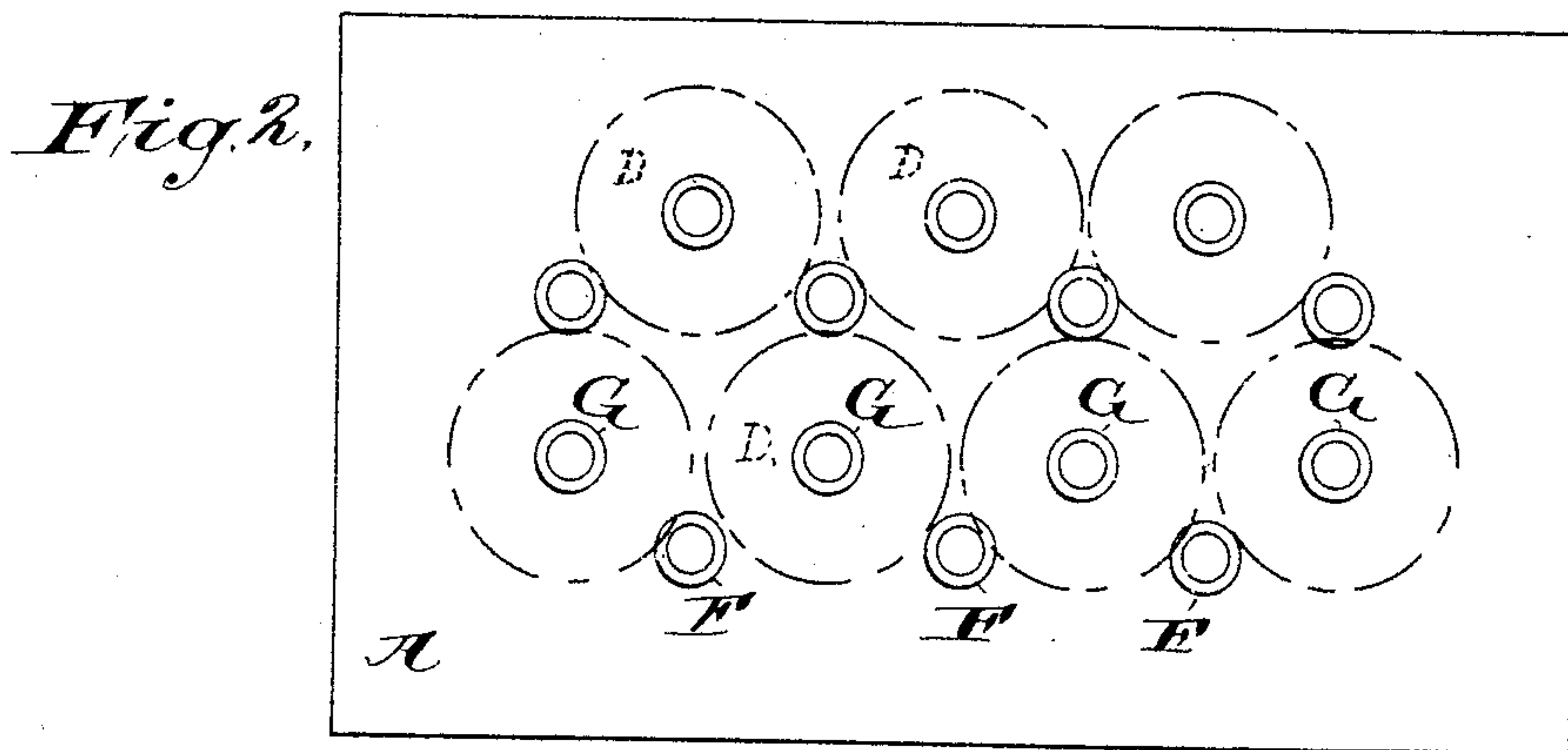
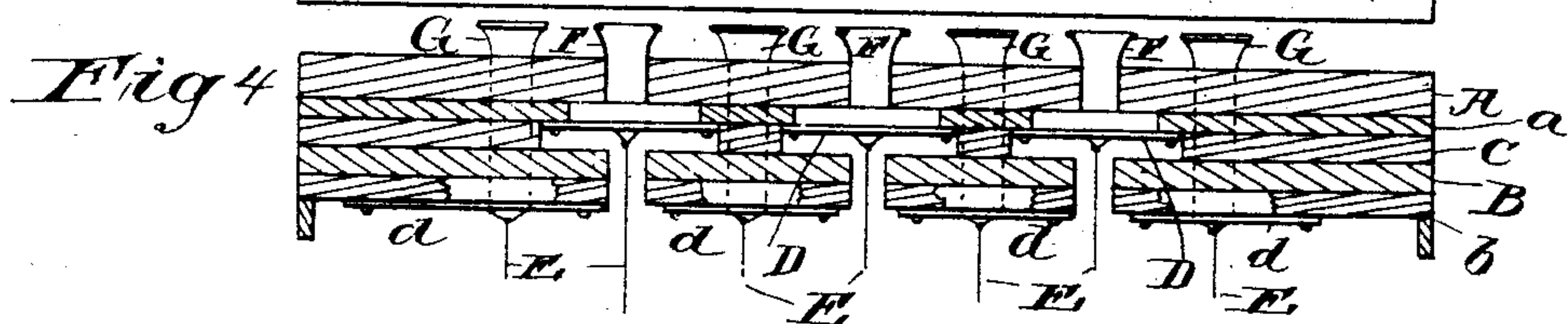
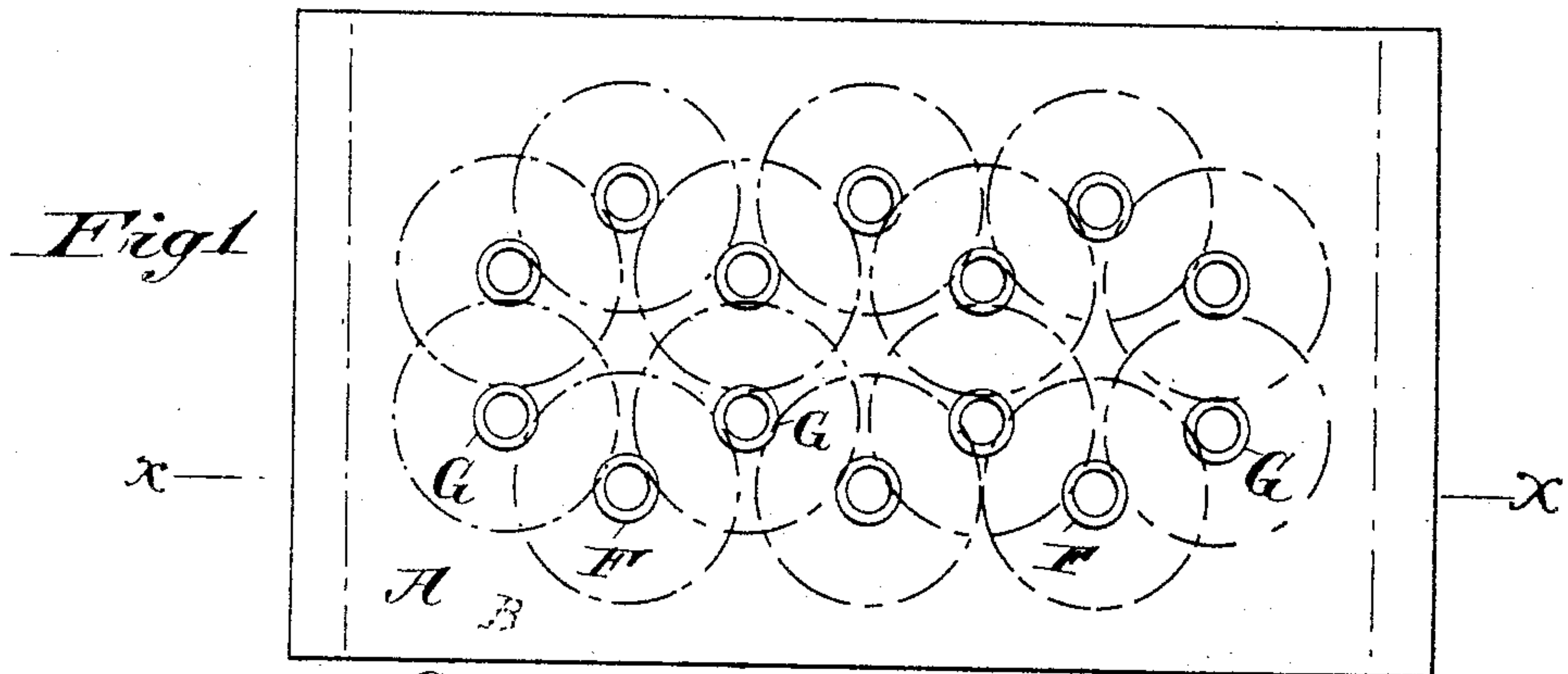


(No Model.)

G. F. SHAVER.
MECHANICAL TELEPHONE EXCHANGE.

No. 444,463.

Patented Jan. 13, 1891.



Attest:

Geo. Benjamin
W. J. O'Connor

Inventor:

G. F. Shaver
M. Carson,
Atty.

UNITED STATES PATENT OFFICE.

GEORGE FREDERICK SHAVER, OF NEW YORK, N. Y., ASSIGNOR TO THE
SHAVER CORPORATION, OF NEW JERSEY.

MECHANICAL-TELEPHONE EXCHANGE.

SPECIFICATION forming part of Letters Patent No. 444,463, dated January 13, 1891.

Application filed May 6, 1890. Serial No. 350,754. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FREDERICK SHAVER, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Mechanical-Telephone Exchanges, of which the following is a specification.

The object of my invention is to provide means for mounting a number of mechanical-telephone diaphragms of a mechanical-telephone exchange in a more compact form than has been heretofore attained, and also to afford intercommunication between the telephone-lines connected thereto without the use of a switching device. The means whereby this end is attained is shown in the accompanying drawings, of which—

Figure 1 shows a plan view of the device. Fig. 2 shows a plan of the primary or front sounding-board. Fig. 3 shows a plan of a secondary or underlying sounding-board; and Fig. 4 shows a cross-section of the two sounding-boards and the method of mounting the same, the drawings showing a section drawn through the line *x x*.

Like letters refer to like parts in the different figures.

A represents a sounding-board, to which are attached two or more diaphragms D and connecting line-wires E.

B is a similar sounding-board fitted with diaphragms *d* and line-wires E.

C is an apertured partition-board interposed between A and B, said apertures being of the same diameter and concentric with the diaphragms D.

a b are thin boards also arranged with apertures concentric to the diaphragms D *d*, but of somewhat smaller diameter.

F F are mouth-pieces arranged upon the board A, through which they pass, thence through the sounding-board B, where they open into vocalizing-chambers formed by the intersection of the said sounding-board B with the apertures in the board *b* and the diaphragms *d*.

G G are mouth-pieces also arranged upon the sounding-board A and passing through said board to the vocalizing-chamber formed

by the intercession of said board with the apertured board *a* and diaphragms D.

The diaphragms D are so mounted upon the boards A with respect to the diaphragms *d* and the sounding-board B that no interference occurs, as the line-wires E from the diaphragms D pass through the open space between the diaphragms *d*, so that although the peripheries of the diaphragms apparently overlap, yet the partition-board C separates one board and attached diaphragms from the other. The apertures in the board C and the boards *a* and *b* provide an open space on both sides of every diaphragm—an arrangement essential to good working qualities.

The boards A B *a b c* are fastened together and vibrate as one single sounding-board. The vibration of any excited line sets the other lines into vibration through the action of the sounding-boards, and thus messages may be sent from one line to any or all the others mounted upon the board without extraneous mechanism. It is obvious that while but two lines are connected only one sounding-board will be required; but in either case the vibration from one line will be transmitted to the others by means of the vibration of the sounding-board. This principle I find applicable to short lines, where powerful transmission is not required. The various boards are mounted only at the ends thereof, so that the tension of the several lines tends to bend the boards in the direction of the connected lines, the resulting resilience of the board being thus made available in the transmission of the vibration from one line to another.

What I claim as new, and desire to secure by Letters Patent, is—

1. A mechanical-telephone exchange consisting of a number of diaphragms and connected line-wires mounted upon and in combination with a common sounding-board adapted to vibrate simultaneously with said diaphragm and line-wires, substantially as herein set forth and described.

2. A common sounding-board supported at its outer edges, the remaining surface being free to vibrate, in combination with a series of diaphragms and connected line-wires mounted thereon, whereby the tension of said

wire and diaphragms is imparted to said sounding-board, substantially as herein set forth and described.

3. A series of mechanical-telephone diaphragms and connected line-wires mounted upon a common sounding-board in such a manner that the tension of the connected line-wires tends to pull the diaphragm in a direction away from the sounding-board, substantially as herein set forth and described.

4. In a mechanical-telephone apparatus, two apertured boards mounted one over the other and separated by a partition-board, in combination with a series of diaphragms and connected line-wires mounted upon each board, the wires from the front or primary board being arranged to pass through apertures between the diaphragms mounted upon the un-

derlying or secondary board, substantially as herein set forth and described.

5. A series of mechanical-telephone diaphragms and connected line-wires fastened to a common apertured supporting-board, in combination with a series of mouth-pieces arranged upon the opposite side of said board concentrically with respect to the said diaphragms and apertures, substantially as herein set forth and described.

Signed at New York, in the county of New York and State of New York, this 5th day of May, A. D. 1890.

GEORGE FREDERICK SHAVER.

Witnesses:

HAROLD J. FOOTNER,
WM. J. O'CONNOR.