

(No Model.)

2 Sheets—Sheet 1.

N. DOWLING.

TELEPHONE TRANSMITTER.

No. 335,510.

Patented Feb. 2, 1886.

Fig. 1.

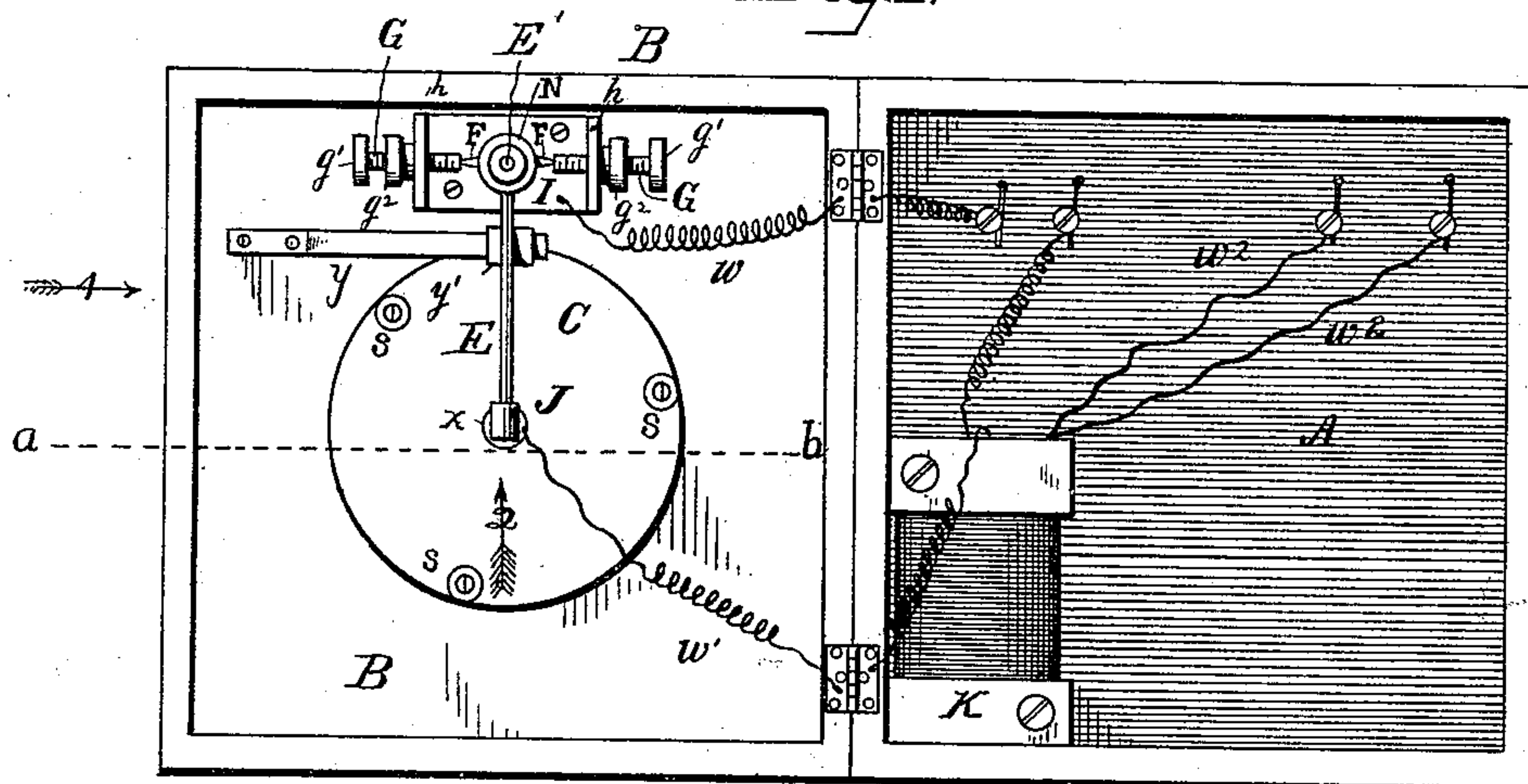


Fig. 2.

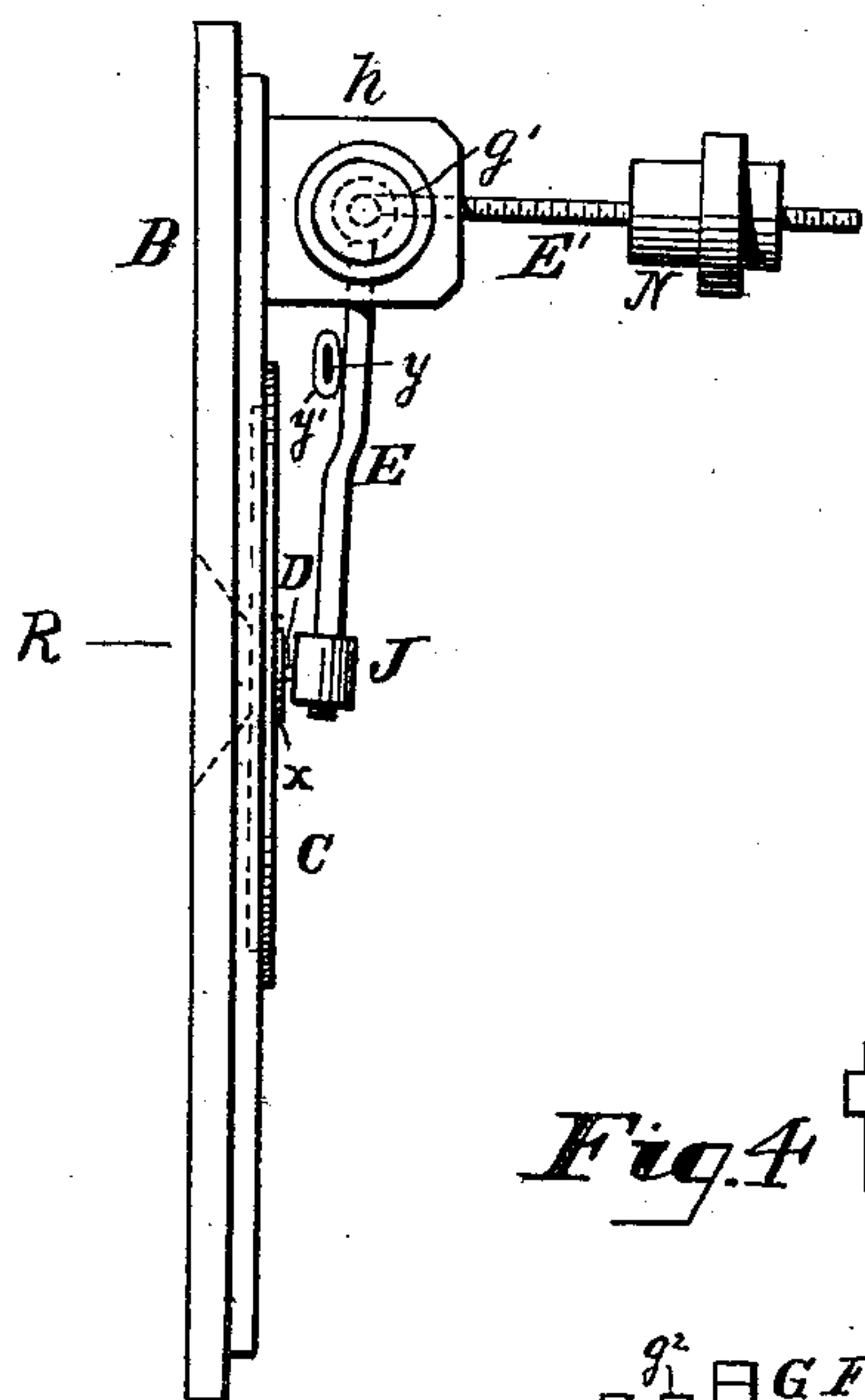


Fig. 3.

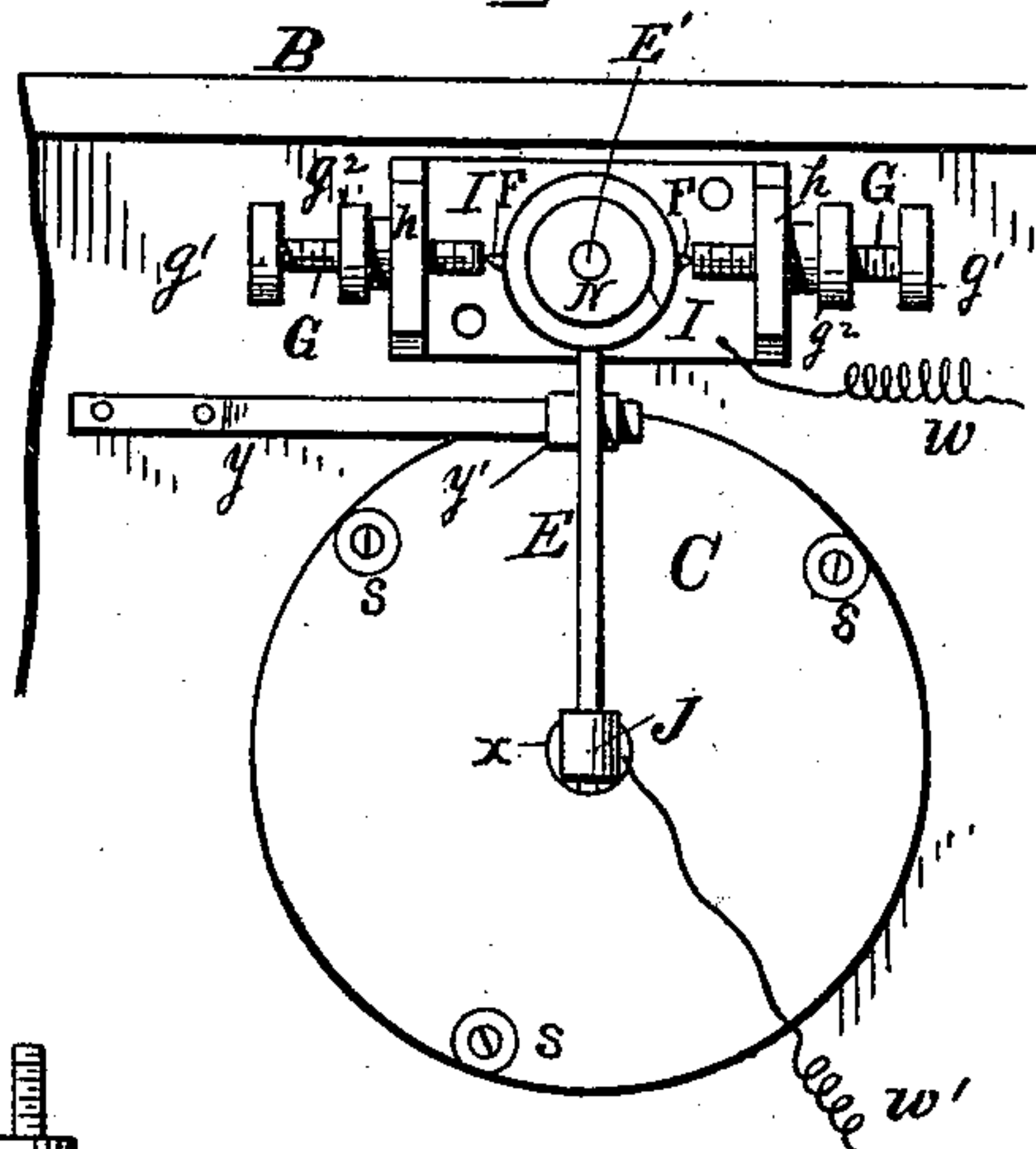
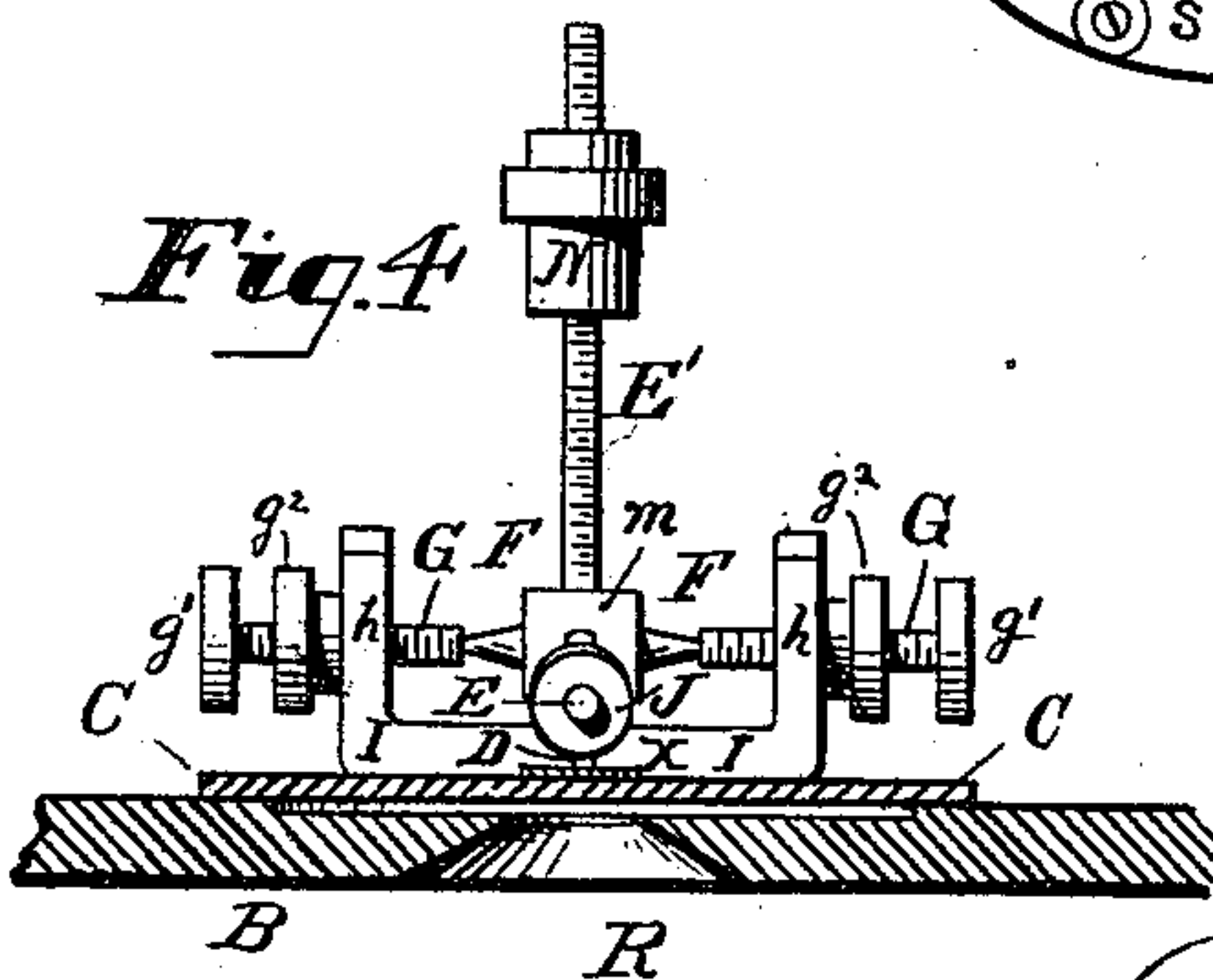


Fig. 4.



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INVENTOR.

North Dowling
per Joshua D. Dwyer

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5

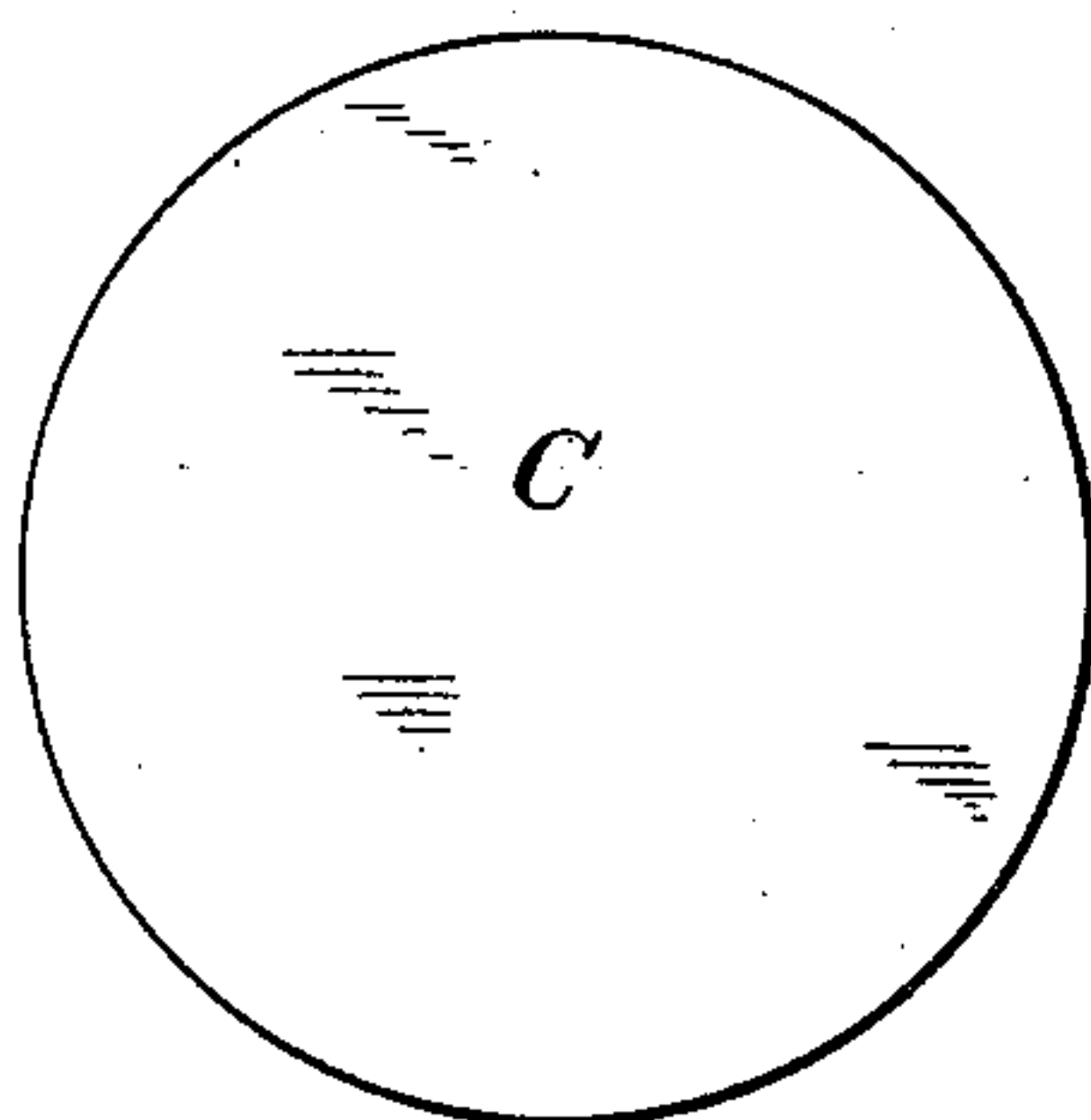
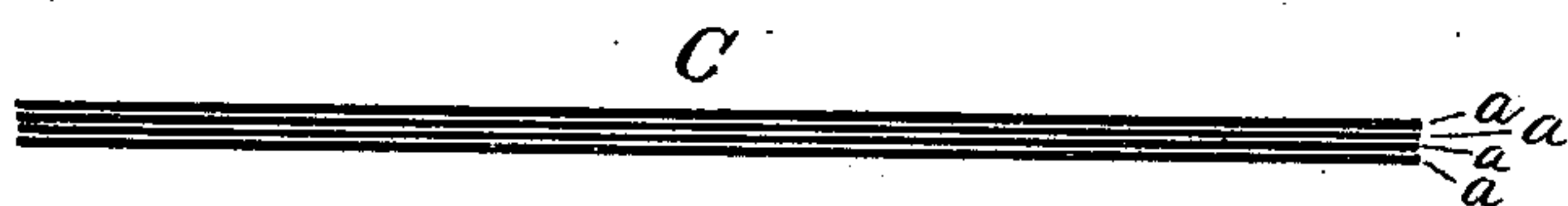


Fig. 6.



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UNITED STATES PATENT OFFICE.

NORTH DOWLING, OF PHILADELPHIA, PENNSYLVANIA.

TELEPHONE-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 335,510, dated February 2, 1886.

Application filed February 14, 1885. Serial No. 155,924. (No model.)

To all whom it may concern:

Be it known that I, NORTH DOWLING, a citizen of the United States, residing in the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Telephone-Transmitters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

10 Figure 1, Sheet 1, is an elevation of the transmitter-box, the lid or door thereof being thrown open. Fig. 2 is a view enlarged, looking in the direction of the arrow 1, Fig. 1, toward the edge of the lid on which the diaphragm, pivoted carbon-bearing arm, &c., are mounted. Fig. 3 is an elevation, enlarged, of the diaphragm, and the said pivoted arm, &c., shown in Fig. 1. Fig. 4 is a section, as on line *a b*, Fig. 1, looking in the direction of the arrow 2, Fig. 1. Fig. 5, Sheet 2, is a plan or face view of the diaphragm. Fig. 6 is a transverse section of Fig. 5, enlarged.

This invention relates to certain improvements in telephone-transmitters; and it has 25 for its objects to provide for maintaining the adjustment of the parts, so as to secure better articulation than heretofore; and to this end the invention consists in the combination, with the diaphragm and platinum contact-point, of 30 a carbon-bearing lever and counterpoise with a spring and elastic sleeve, as more fully hereinafter specified.

In the present application are shown and described devices which are shown and described in an application of even date herewith, No. 155,925, in connection with other devices, and such devices common to both applications I hereby disclaim, as shown and claimed in connection with the devices in the 40 above-mentioned application, No. 155,925.

I shall first proceed to describe the construction of my improved diaphragm-plate C. This is composed of a series of layers, *a*, Fig. 6, Sheet 2, of some suitable textile fabric—such as linen 45 or cotton—each, say, of the thickness of the fabrics of which ordinary linen or cotton handkerchiefs are made. I saturate each layer with a solution of shellac, dissolved, preferably, in ammonia, and superimpose the layers, finally 50 smoothing the same with a heated iron under pressure, so as to consolidate and equalize the

thickness of the mass and to dissipate the ammonia. From this compound fabric the plates C are cut out, of suitable dimensions adapted to be mounted in the transmitter-box in the usual manner. Said box contains the ordinary 55 induction-helix, K, Fig. 1, with the usual wire-connection, *w w'*, between the battery and the primary coil, and those, *w''*, between the secondary coil and the telephone-receiver, respectively. One of the first-mentioned conductors, *w'*, runs from the primary coil to the platinum point or bead D, Fig. 2, held by a plate, *x*, in the center of the diaphragm, which latter is fastened by screws *s* to the inside of the lid of the transmitter-box in front 60 of the mouth-piece R in the ordinary manner. The other battery-wire, *w*, leading to plate I, completes the local circuit, as hereinafter explained. The carbon button J is carried in 70 the free end of a metallic arm, E, that is adapted to vibrate on cones or pin-pivots F, projecting from a boss, *m*, on the end of the arm E, and entering sockets in the ends of screws G, respectively. These screws pass 75 through threaded holes in flanges *h* of plate I. By turning the heads *g'* of the screws fine adjustments of the pivotal connection may be effected. Set-nuts *g''*, abutting against flanges *h*, serve to retain the screws in place as ad- 80 justed.

In order to regulate the degree of contact with or pressure of the carbon button against the platinum bead as circumstances may require, I join to the arm E, or, in the present 85 instance, to the boss *m*, a threaded rod, E', forming with arm E a bell-crank lever, upon which is a screw-nut, N, and which is adapted to operate as a gravity-regulator.

In order to provide a means for further regulating the contact between the carbon and the platinum bead, I sometimes make use of a flat spring, *y*, one end of which is fastened to the lid of the transmitter-box, and its free end bears against the under side of the arm E and 95 supports it with a force proportionate to that of the gravity of the counterpoise N, corresponding to the position of the latter on rod E'. It will of course be understood that the transmitter-box is secured in the position shown in the drawings—that is to say, with the counterpoise on 100 the upper side, so that the gravity of the lat-

ter will always operate to depress rods E' and E, and thus retain the carbon against the platinum bead. I also prefer to attach to the spring *y* an elastic or soft india-rubber sleeve or body, *y'*, so that the arm E will bear upon the same, and thus enable a still more delicate contact of the carbon and platinum to be made. The battery circuit is through wire *w'*, platinum D, arm E to the described trunnion-connection, thence by plate I to the battery-wire *w* connected therewith.

The mode of operation of the device will be clearly understood by those familiar with telephony.

15 By means of the foregoing-described gravity-controlled contact I am enabled to obtain greatly-improved results over the spring-controlled contact of the usual transmitters of the class referred to.

20 I have tried numerous experiments through actual telephone-lines with the foregoing-described devices; and, in connection with certain improvements in telephone-receivers, which form the subject of applications for Letters Patent to be filed simultaneously herewith, I have been enabled to carry on conversations through a line many miles in length

in ordinary whispers, and have also made numbers of tests that demonstrated the superiority of my present improvements over any other transmitter with which I am familiar. Every letter, sound, or articulation of the human voice was fully, accurately, and distinctly reproduced in the receiver with which my transmitter was connected.

The described regulating device may, it will be understood, be used with the ordinary ferrototype or other diaphragm plate.

Having thus described my invention, I claim as new and wish to secure by Letters Patent—

The combination, in a telephonic transmitter, of the diaphragm, the platinum point, the pivoted carbon-bearing lever and its counterpoise, the spring *y*, and elastic rubber sleeve *y'*, substantially as and for the purpose specified.

In testimony whereof I have hereunto affixed my signature this 17th day of January, A. D. 1885.

NORTH DOWLING.

Witnesses:

JOHN NOLAN,
FRANCIS S. BROWN.