

No. 855,085.

PATENTED MAY 28, 1907.

B. F. BELLOWS.
TELEGRAPH KEY.

APPLICATION FILED JULY 9, 1906.

2 SHEETS—SHEET 1.

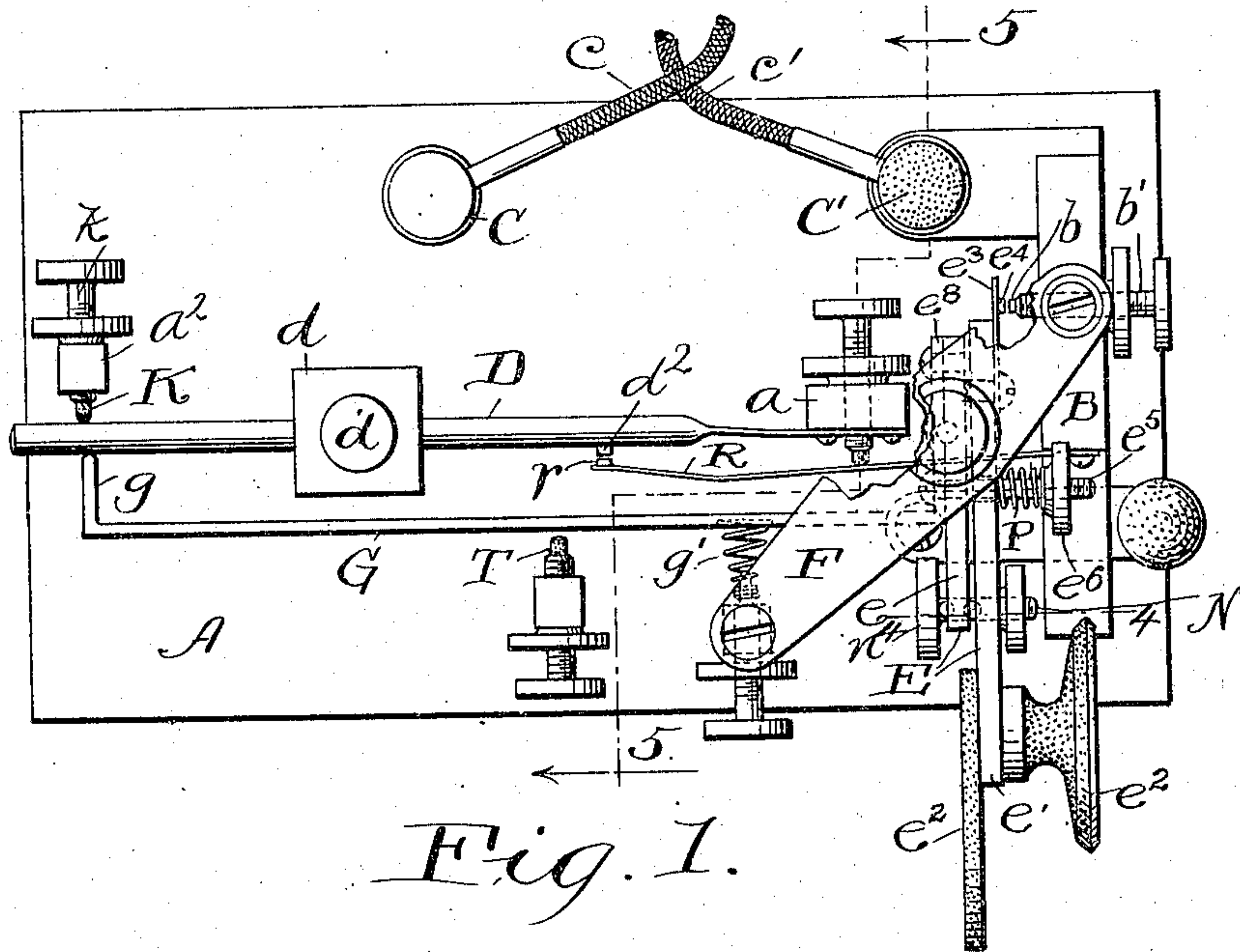


Fig. 1.

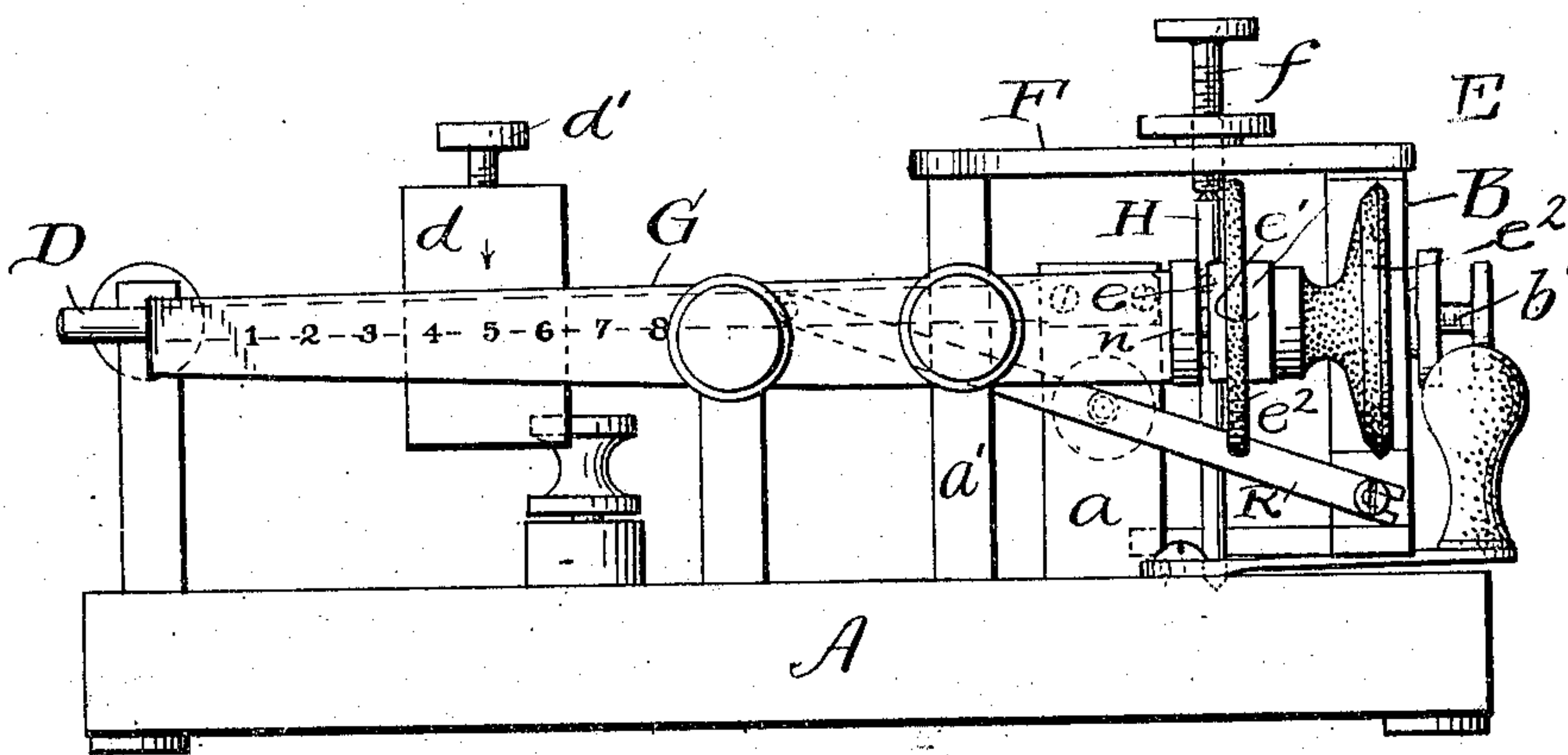


Fig. 2.

Witnesses
E. B. Gilchrist
H. B. Sullivan

Inventor
Benjamin F. Bellows
by Thurston Woodward
attorney

No. 855,085.

PATENTED MAY 28, 1907.

B. F. BELLOWS.
TELEGRAPH KEY.

APPLICATION FILED JULY 9, 1906.

2 SHEETS—SHEET 2.

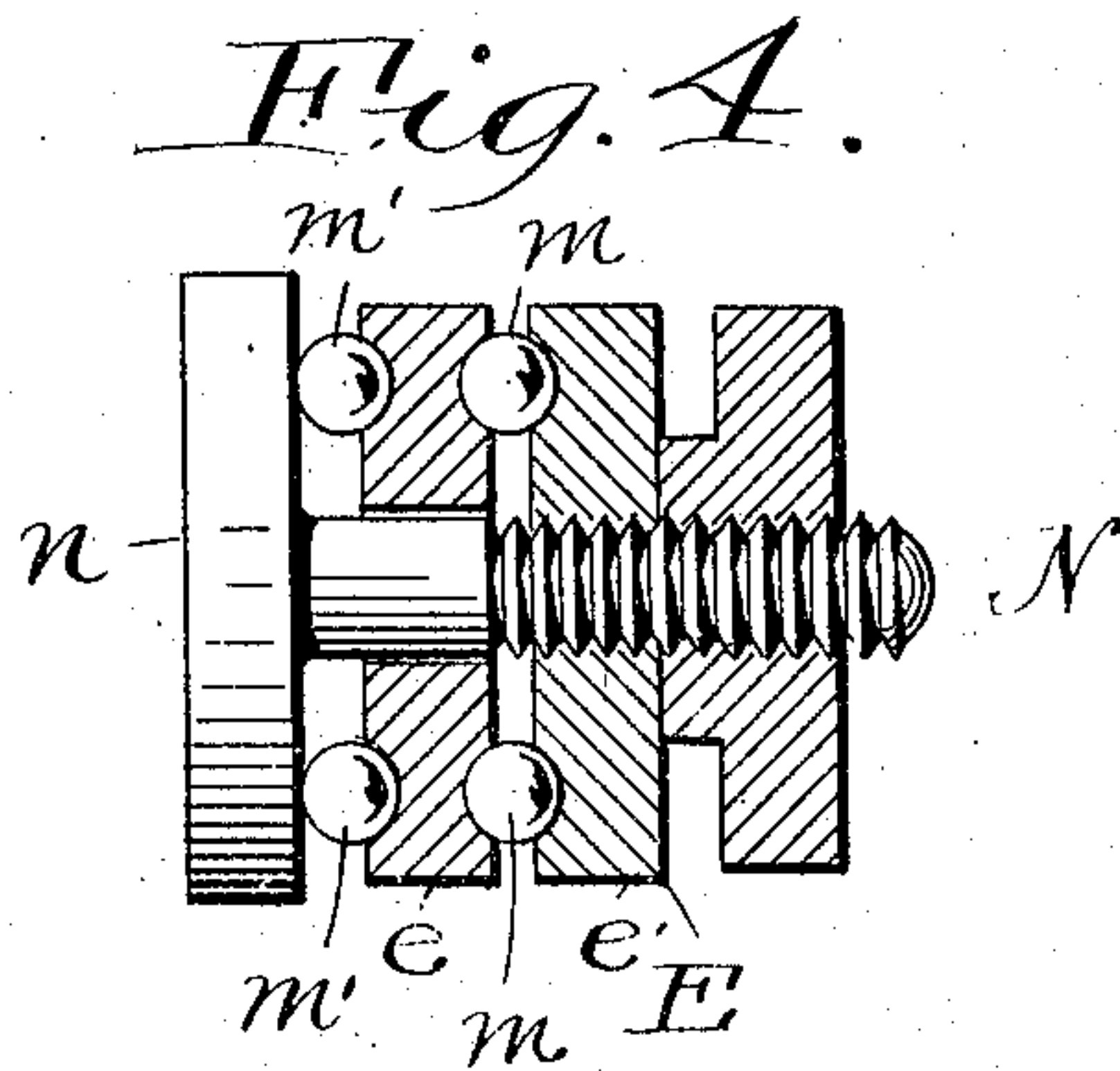
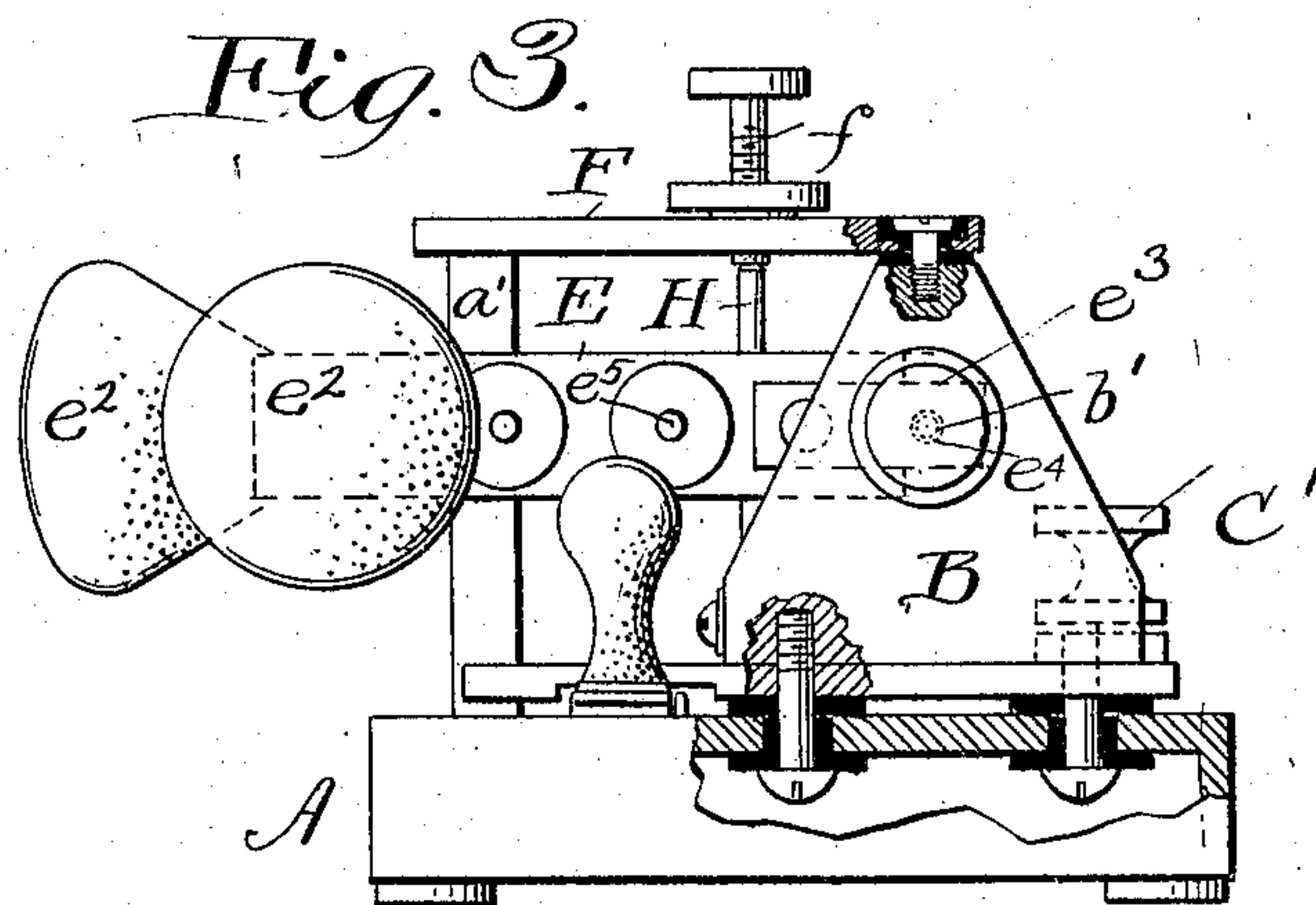
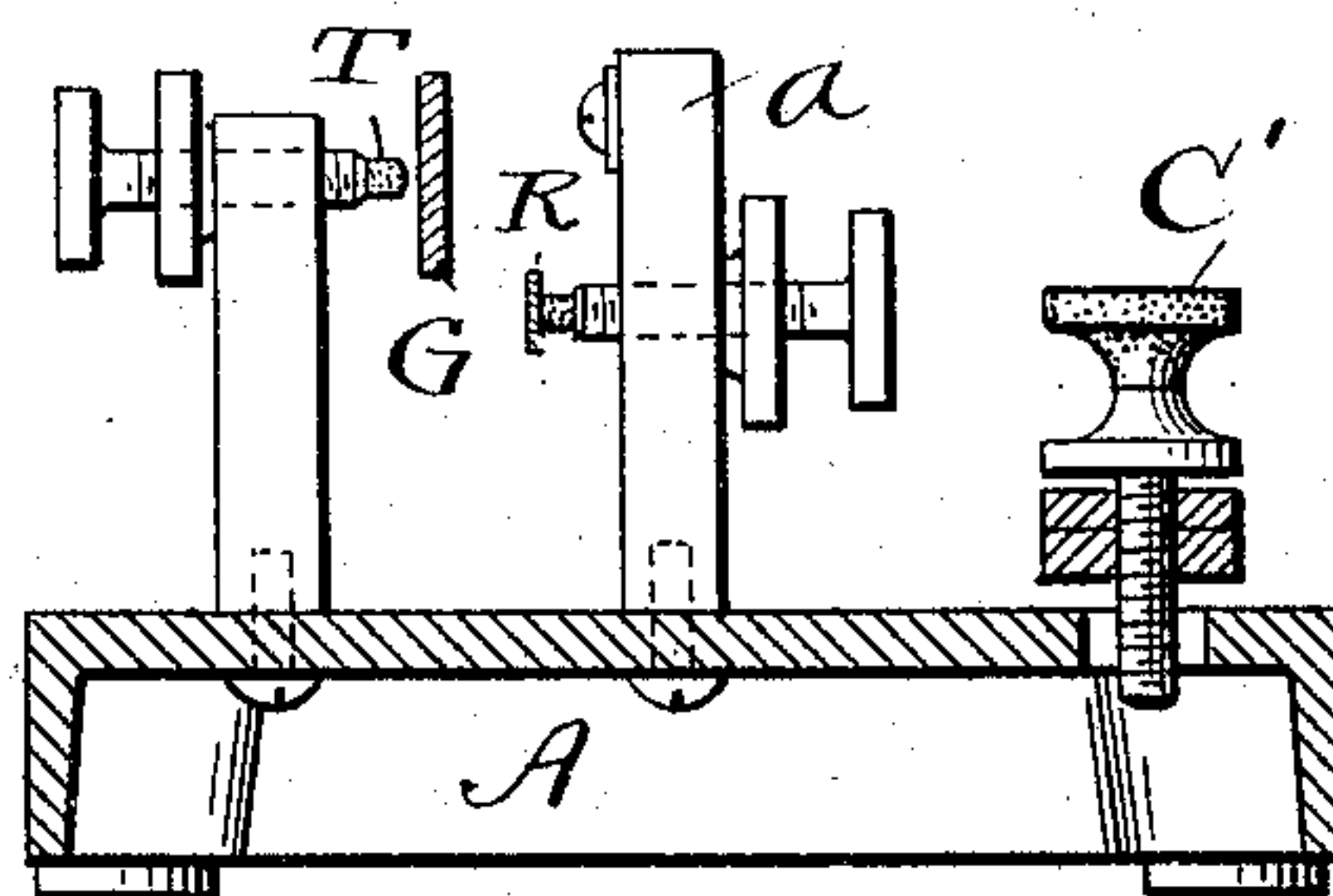


Fig. 5.



Witnesses
E. B. Gilchrist
H. B. Sullivan

Inventor:
Benjamin F. Bellows
By Thurston Woodmard
Attorney

UNITED STATES PATENT OFFICE.

BENJAMIN F. BELLOWS, OF CLEVELAND, OHIO.

TELEGRAPH-KEY.

No. 855,085.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed July 9, 1906. Serial No. 325,215.

To all whom it may concern:

Be it known that I, BENJAMIN F. BELLOWS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Telegraph-Keys, of which the following is a full, clear, and exact description.

This invention is an improvement in a type of telegraph keys which forms the subject matter of the Coffe Patent No. 812,183 issued February 13, 1906.

The object of this invention is to simplify and cheapen the construction of telegraph keys of this type, and to render them more satisfactory in respect to their practical operation.

The invention comprises numerous details of construction, and novel combinations of parts as shown in the drawing and hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of an instrument embodying the invention. Fig. 2 is a front elevation thereof. Fig. 3 is an end view partly broken away. Fig. 4 is a sectional view in the plane indicated by line 4—4 of Fig. 1; and Fig. 5 is a sectional view on the plane indicated by line 5—5 of Fig. 1.

The following is a detailed description of the specific instrument shown in the drawing, which instrument constitutes the best embodiment of the invention now known to me.

A represents the metallic base plate of the instrument, and B a metallic standard secured upon but insulated from said base plate. The outgoing and incoming wires *c*, *c'* are respectively attached to the binding posts C, C',—one of which is carried by the base plate and the other by said standard.

The vibratory circuit controller D is a metallic bar, flattened at one end; and this flattened end is secured to a vertical metallic post *a* which rises from the base plate. The flattened part of the vibrator is of spring metal, wherefore when the vibrator is moved in either direction out of the central position and then released, it will vibrate back and forth past the central position, and eventually come to rest, if permitted so to do, in said position. The rapidity of the vibrations, and their duration may be regulated by means of a weight *d* which may be moved endwise upon the controller and secured at any desired position thereon by a set screw *d'*.

A telegraph key E is made of two levers *e* and *e'* which are pivoted together by means

presently to be described, and for convenience will be hereinafter referred to respectively as the key lever *e* and finger lever *e'*. The key lever *e* is pivoted on a vertical pivot to the base plate. The specific construction is the following: A bar F is secured upon the tops of the standard B and a post *a'* rising from the base plate. A set screw *f*, screwing down through this bar F, engages with the conical upper end of a pivot pin H,—said set screw having in its end a recess to receive the conical upper end of this pin. The lower end of this pin is also made conical, and is seated in a corresponding recess in the base plate. A clamping plate *e⁸* is secured by means of screws to the key lever *e*. The pivot pin H passes between this clamping plate and key lever,—the proximate faces of which are grooved,—and is firmly clamped between them. Secured to the key lever *e* is a restraining arm G, whose outer end *g'* normally engages with the vibrating controller. A spring *g'*, which lies between this restraining bar and the post *a'*, exerts continuous pressure upon the bar G, by reason of which said bar pushes the controller out of its central position and into engagement with an insulated stop K carried by a post *a²* and adjustable by means of a set screw *k*. The finger lever *e'* is, as stated, pivoted to the key lever *e*, on a vertical axis; and the insulated finger pieces *e²* are secured to the front end of this finger lever. This finger lever extends rearward past its pivot, and has on its rear end a small spring *e³* carrying a contact *e⁴*. A contact *b* lies close to but normally out of contact with the point *e⁴*,—said contact *b* being on the end of a set screw *b'* which is adjustably supported by the standard B.

The form of pivotal connection between the two key members *e*, *e'* is shown most clearly in Fig. 4. Two balls *m m* lie between these two members in depressions in their opposing faces. A screw N passes loosely through the key lever *e* and screws into the finger lever *e'*; and two balls *m' m'*, lying in the same vertical plane with the balls *m m*, are confined between the head *n* of this screw and the opposing face of the key lever *e*. The hole in the member *e*, through which the shank of the screw N passes, is enough larger than said shank, to permit the latter to move therein as much as is required. These balls furnish an almost frictionless pivotal connection between the two key members. A screw *e⁵*, which may be one of the same

screws which connect the clamping plate e^8 with the key lever e , passes through a wide hole in the member e' . A coiled spring P embraces this screw and is compressed between the member e' and a nut e^6 on said screw e^5 . This spring exerts a force always tending to swing the finger lever e' about its pivotal connection and in that direction which brings its rear end into contact with the rear end of the key lever e .

A contact spring R is fast to the standard B, and it has on its end a contact r , which is opposed to and normally out of contact with the contact d^2 on the controller.

From the foregoing, it will be understood that since all of the parts as shown are metal, the binding post C, is electrically connected with all of the parts described, except the standard B and the parts carried thereby. It will be noted also that the contact r and the contact b are carried by the standard B, which is insulated from the other parts, and, as afore stated, carries the binding post C'. Therefore, if either of the contacts b^2 or e^4 touch the opposed contact points r and b respectively, the electrical circuit is completed:

Now, to operate the described device for the transmission of telegraphic messages, the operator, taking hold of the finger key pieces e^2 , will move them to the left when he desires to send dashes. By such movement the finger lever e' is rocked upon its pivot furnished by the balls, as described, and thereby its rear end is so moved that the contact point e^4 is carried against the contact point b . This is the movement given to the key when it is desired to transmit dashes in the Morse code. This movement of the key to the left does not, however, have any effect upon the other parts of the mechanism described. The key lever e cannot move any further to the left because the restraining lever g , secured to it, engages with the controller and has pushed the same as far as possible,—that is to say, against the insulating stop K. If the operator should now release the finger lever the spring P would swing it on the pivots furnished by the balls back to its normal position, as shown in Fig. 1, thereby separating the two contact points e^4 and b . If, now, the operator moves the key to the right, as shown in Fig. 1, the result will be to cause the key lever e to turn upon the vertical pivot pin H. By this movement the restraining lever G is drawn away from the controller,—this movement being limited by the engagement of said restraining lever with an insulated adjustable contact point T. When the restraining lever G is withdrawn the controller begins to vibrate, with the result of causing the contact point d^2 to strike contact point r , thereby completing the circuit. The vibrator D will then swing in the opposite direction and separate said points. These

movements take place very rapidly, causing a rapid make and break of the circuit, with the result of transmitting dots of the Morse code. When a sufficient number of these makes and breaks have been effected through the vibration of the controller D, the key lever is then moved to the left, with the result of restoring the parts to the positions shown in Fig. 1, and stopping the vibration of the controller.

Having described my invention, I claim:

1. In a telegraph key, in combination, a contact, a vibrating controller for making and breaking a circuit with said contact, restraining means normally holding said controller in an idle position, additional contacts independent of said controller, a pivoted key comprising a key lever for operating said restraining means, a finger lever pivoted to said key lever and capable of moving independently thereof to cause the engagement of the said additional contacts, and means whereby the movement of the finger lever in the reverse direction past its neutral position will move the key lever in the direction to release said restraining means.
2. In a telegraph key, in combination, a vibrating controller capable of making and breaking a circuit and carrying a contact, a pivoted key lever, a restraining arm secured thereto and adapted to engage with said controller to hold it in an idle position, a spring carrying a contact opposed to the contact on the controller, a finger lever pivoted to the key lever and capable of moving in one direction from its neutral position independently of the key lever, a spring secured to the rear end of said finger key lever and carrying a contact, and a fixed contact opposed to said contact.
3. In a telegraph key, in combination, a vibrating controller capable of making and breaking a circuit, a pivoted key lever, a restraining arm normally engaging said controller and holding it in an idle position and adapted to be withdrawn from such engagement by the key lever, a finger lever pivoted to the key lever on an axis parallel with the axis of the key lever and extending in both directions from its said pivot and normally engaging at its rear end with the side of the key lever, independent contacts, of which one is carried by the finger lever, which contacts are adapted to be brought together by the movement of the finger lever upon its pivot.
4. In a telegraph key, in combination, a pivoted key lever and a finger key lever, a screw passing loosely through a hole in one of said levers and screwing into the other, and balls confined in recesses between said members, and other balls confined between the head of said screw and the adjacent surface of one of said key members.
5. In a telegraph key, in combination, a pivoted key lever and a finger lever pivoted to said key lever on an axis parallel with the

pivot of said key lever, said finger lever extending on both sides of its pivot in a direction substantially parallel with the key lever, finger pieces secured to the front end of the finger lever, and a spring yieldingly holding the rear end of said finger lever in contact with said key lever.

6. In a telegraph key, in combination, a pivoted key lever and a finger lever lying side by side, balls confined in recesses in the proximate faces of said members, and means for holding said members together to prevent the escape of said balls, a spring operating to swing the rear end of the finger lever against the key lever and to yieldingly hold said members in contact.

7. In a telegraph key, in combination, a pivoted key lever and a finger lever, a screw passing loosely through a hole in one of said levers and screwing into the other, and balls confined in recesses between said members, and other balls confined between the head of said screw and the adjacent surface of one of said key members, and a spring operating to yieldingly hold said members in contact.

8. In a telegraph key, in combination, a pivoted key lever and a finger lever, a screw passing loosely through a hole in one of said levers and screwing into the other, balls confined in recesses between said members, and other balls confined between the head of said screw and the adjacent surface of one of said key members, a spring operating to yieldingly hold said members in contact, a fixed contact, a contact carried by the finger key lever and adapted to be carried against a fixed contact by a movement of the finger key lever independent of the key lever in opposition to said spring.

9. In a telegraph key, the combination of a vibrating controller carrying a contact, an opposed contact, a spring-actuated restraining arm engaging said controller, an insulated stop against which said controller is forced by said controller arm, an insulated stop limiting the withdrawing movement of said restraining arm, a key comprising a key lever to which said restraining arm is connected, and a finger lever pivoted, between its end, to said key lever, a contact carried by said finger lever, at one end thereof, a finger piece connected with said finger lever near

the other end thereof and another contact secured to a fixture, and against which the last contact piece is moved by the movement of said finger lever independent of the key lever.

10. In a telegraph key, the combination of a metallic base plate, a standard B secured to the same but insulated therefrom, a vibrating controller, a restraining arm normally holding the same in an idle position, a key for operating said restraining arm, a contact carried by said controller, a contact opposed thereto electrically connected with said insulated standard, another contact also electrically connected with said insulated standard, and an opposed contact carried by said key, a binding post carried by the base plate, another binding post carried by said standard,—the contacts carried by the controller and by the key being electrically connected with the base plate.

11. In a telegraph key, the combination of a metallic base plate, a metallic post thereon, a vibrating metallic controller secured to said post and carrying a contact, a key lever pivoted to the base plate and electrically connected therewith, means operated by said key lever for holding the vibrator in an idle position, a finger lever pivoted to said key lever and carrying a contact, an opposed contact electrically connected with said standard, a spring connected with said standard and carrying a contact opposed to the contact on the controller, a spring acting upon said finger lever to withdraw the contact which it carries from the opposed contact, and a spring acting to move the restraining arm against said controller.

12. In a telegraph key, the combination of a rotatably pivoted post with a key lever and a clamping plate connected therewith and having grooves in their approximate faces which embrace said pivoted post, a finger lever pivoted to said key lever, and a spring acting upon the finger lever to yieldingly hold its rear end against said key lever.

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

BENJAMIN F. BELLOWS.

Witnesses:

W. O. COFFE,
E. L. THURSTON.