

No. 620,577.

Patented Mar. 7, 1899.

S. B. FOWLER.
ANNUNCIATOR.

(Application filed Oct. 25, 1898.)

(No Model.)

Fig. 1.

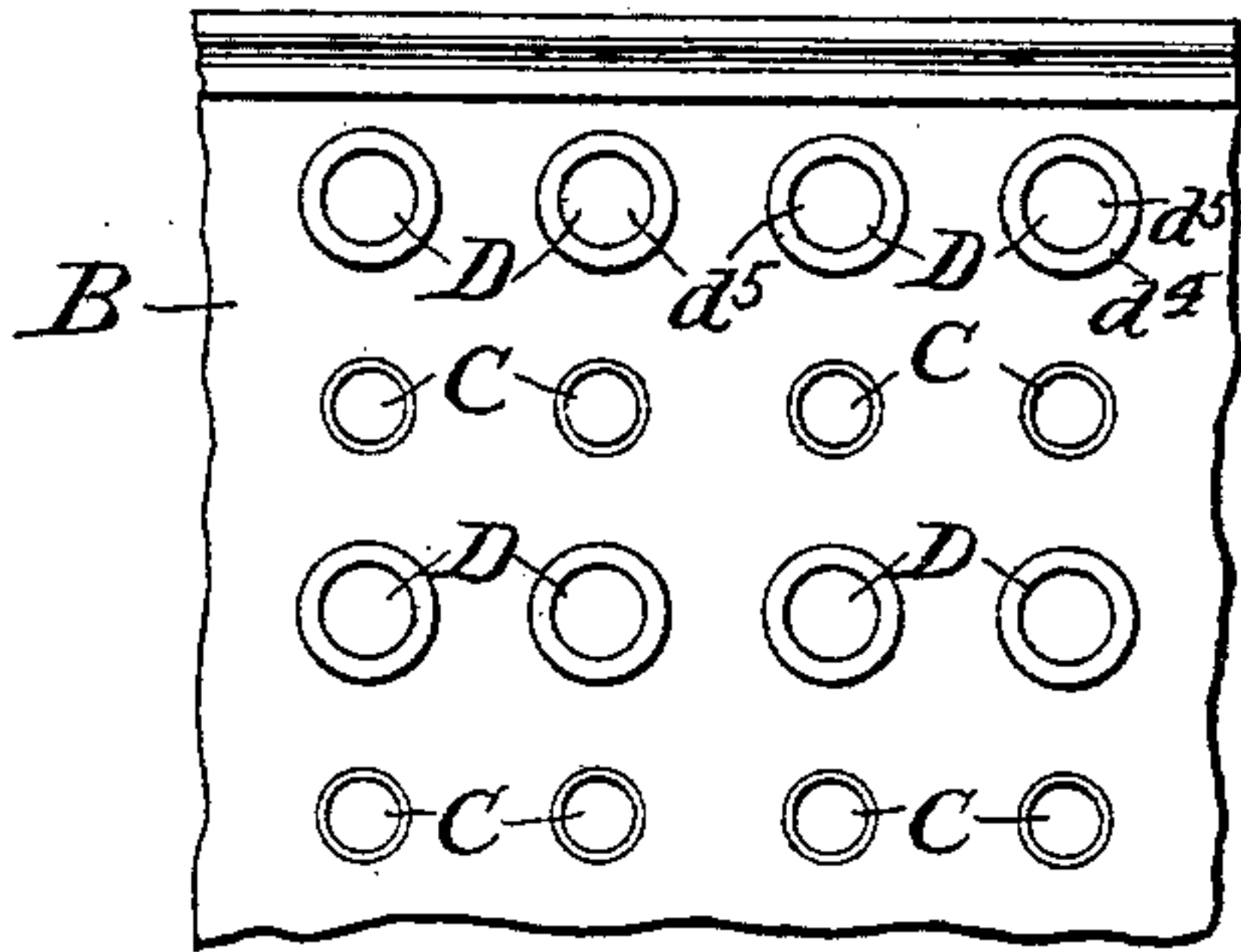


Fig. 2.

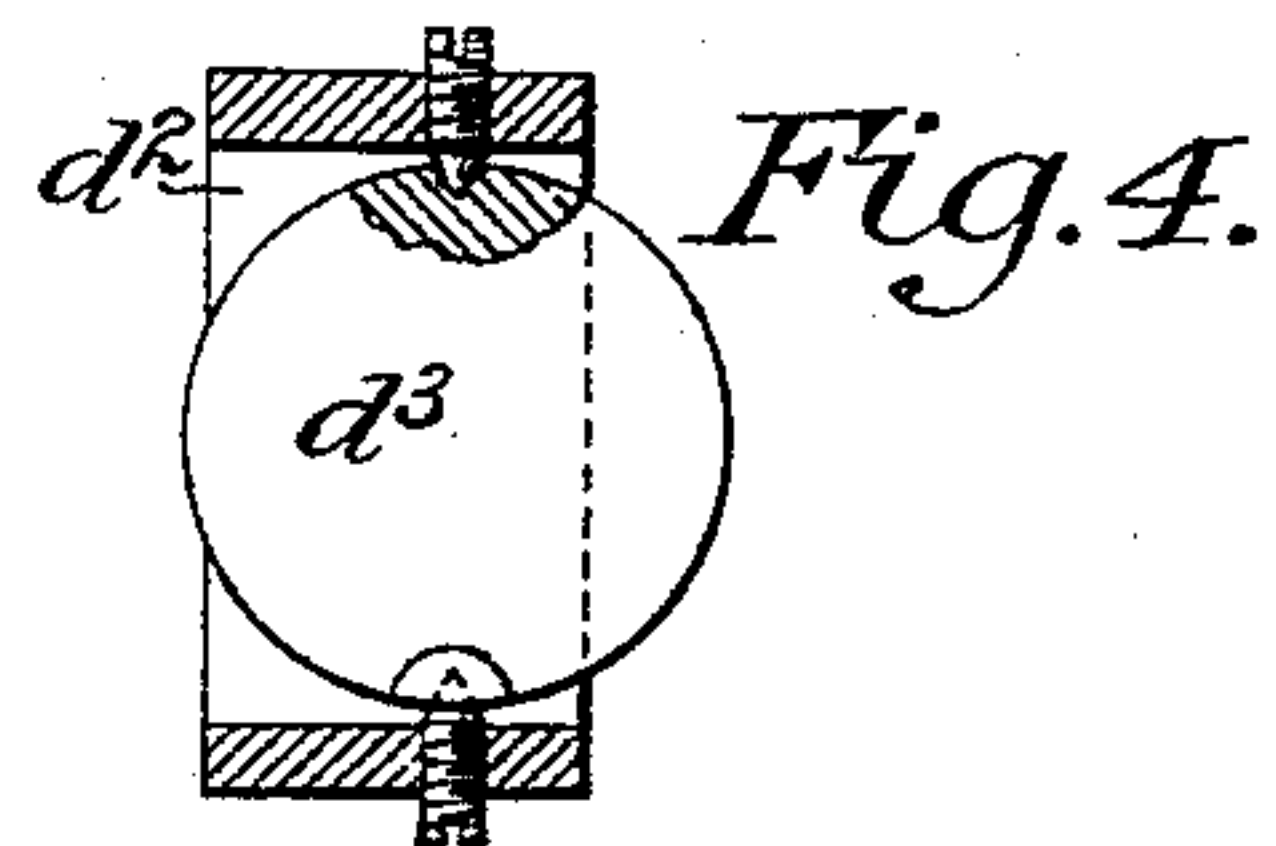
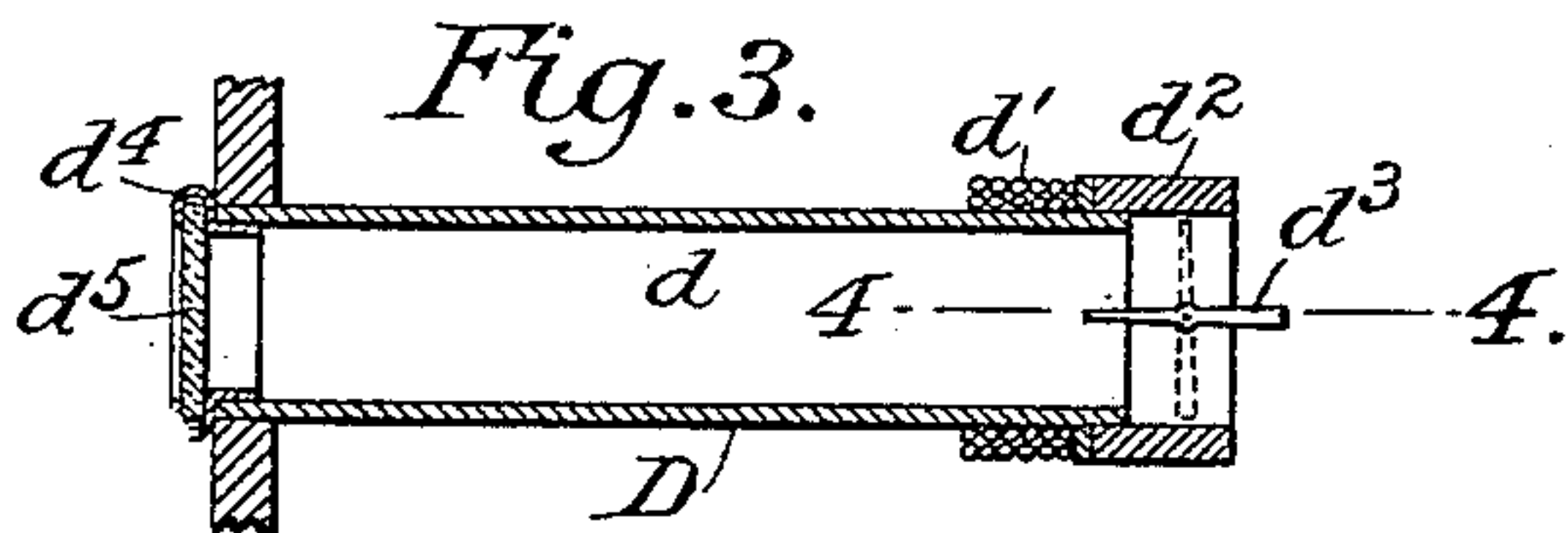
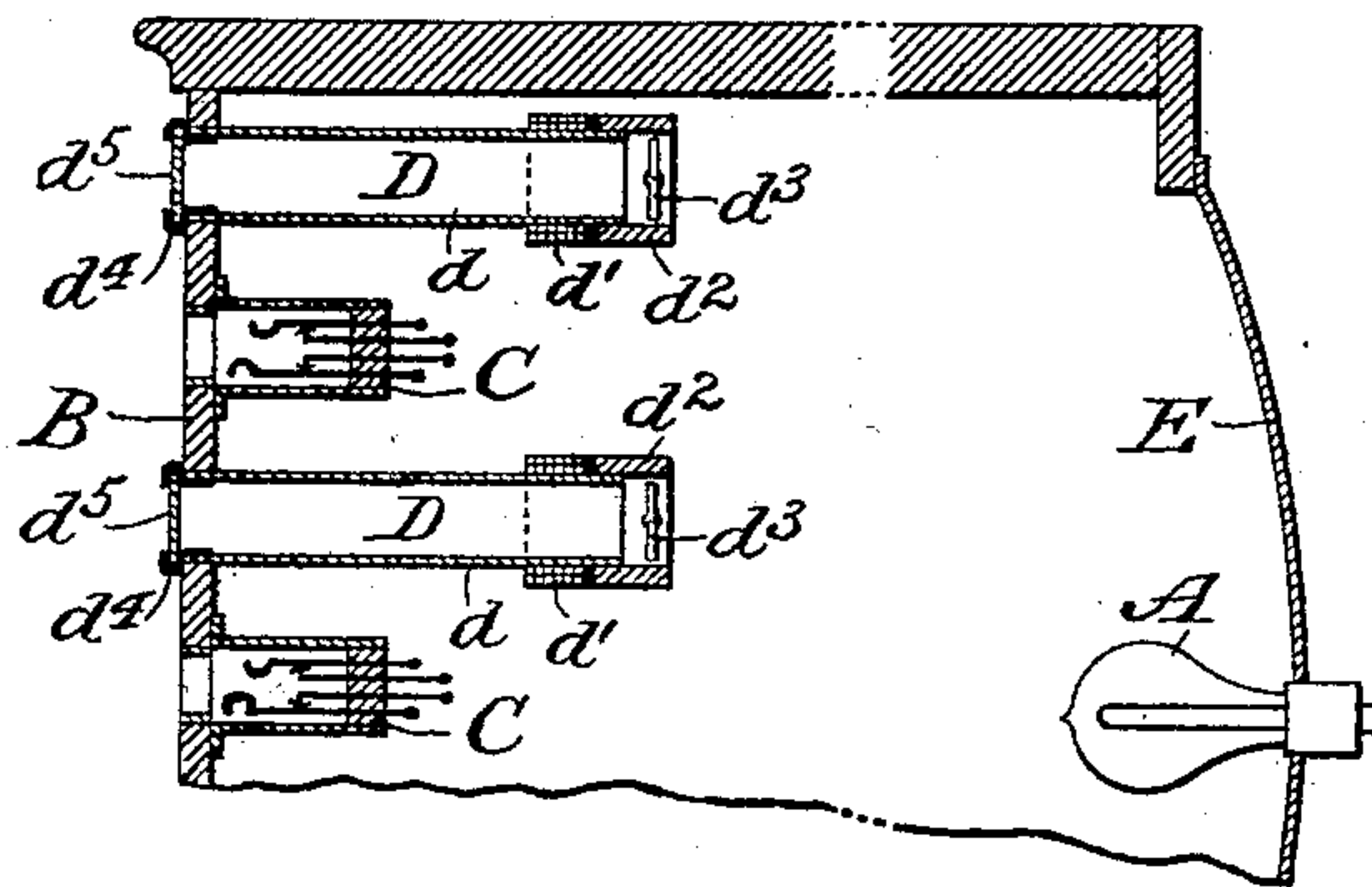


Fig. 5.

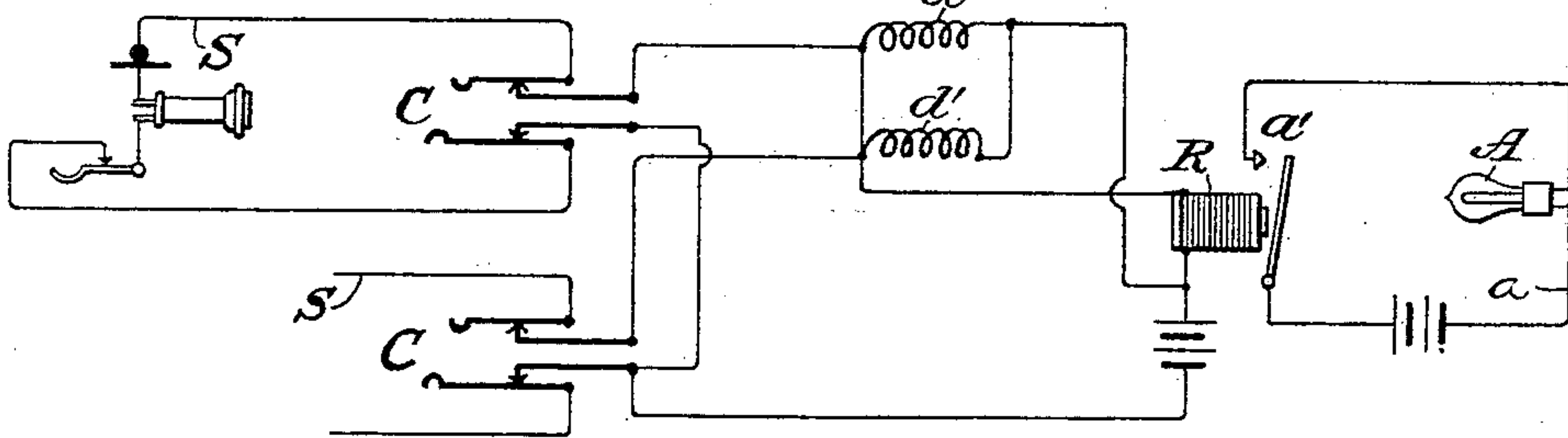


Fig. 6.

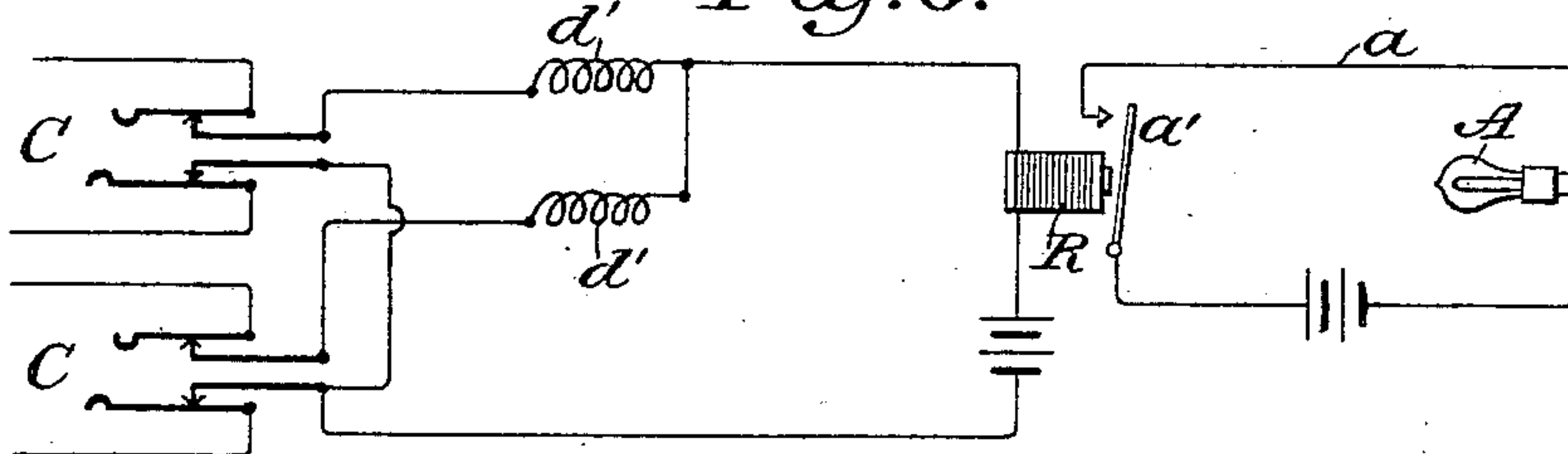
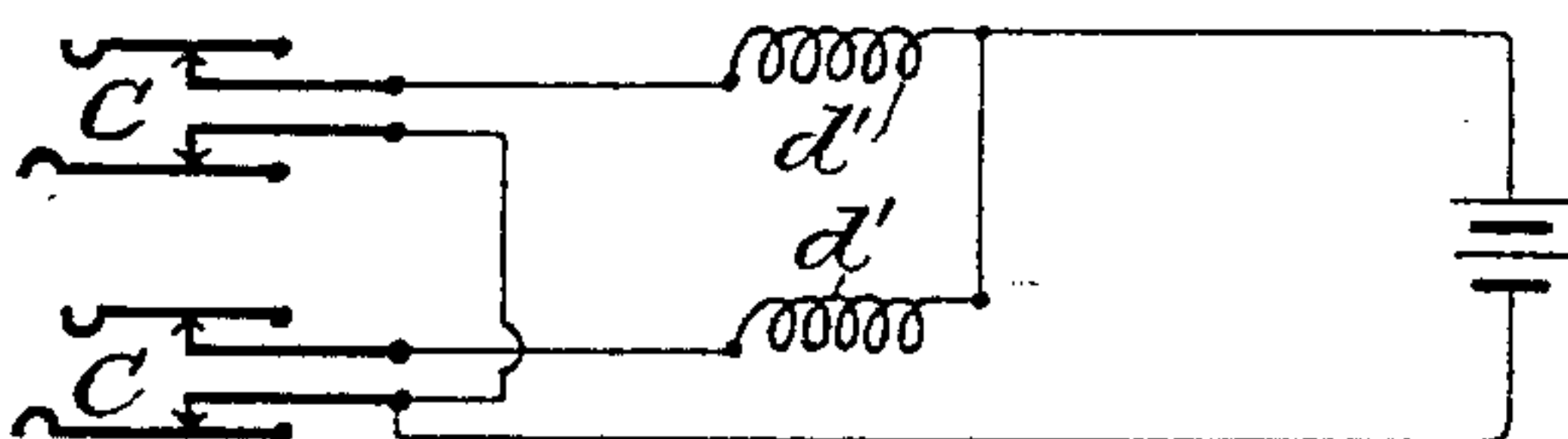


Fig. 7.



Attest:
A. St. John
F. W. Egghart.

Inventor:
Samuel B. Fowler
by Redding, Kiddle & Phelps
Attys.

UNITED STATES PATENT OFFICE.

SAMUEL B. FOWLER, OF NEW YORK, N. Y.

ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 620,577, dated March 7, 1899.

Application filed October 25, 1898. Serial No. 694,510. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. FOWLER, a citizen of the United States, residing in New York, (Tarrytown,) in the county of Westchester, State of New York, have invented certain new and useful Improvements in Annunciators, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

10 This invention relates to electric annunciators, and more especially to the annunciators employed in telephone systems to indicate to the operator at the exchange the number of the subscriber who calls.

15 One object is to make it practicable to employ illuminated drops which will quickly catch the eye of the operator without the expense and unreliability incident to the use of a small electric lamp for each drop.

20 Another object is to simplify the construction and arrangement of telephone annunciator-boards and to reduce the cost of maintenance.

25 The invention is illustrated in a convenient and practical form, with several different arrangements of the electrical connections, in the accompanying drawings, in which—

30 Figure 1 is a front view of a portion of an annunciator-board to which the improvements are applied. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a longitudinal section, on a larger scale, of one of the annunciator-tubes. Fig. 4 is a detail view, in horizontal section, on a plane indicated by the line 4 4 of Fig. 3, but on a larger scale. Figs. 5 and 6 are diagrammatic views representing electrical connections which pertain to the invention when an electric lamp is used as the source of illumination, two different arrangements being indicated. Fig. 7 is a similar view representing the electrical connections when a continuously-lighted lamp is used.

45 The improvements which constitute the subject-matter of this invention, considered apart from the source of illumination, are capable of use either with a lamp which is continuously lighted or with a lamp which is lighted at each call, the lamp in the former case being either electric or oil or gas, and the lamp in the latter case being electric.

The source of illumination, moreover, of whatever kind, may obviously be so located with reference to the drops as to effect their illumination either directly or by means of reflectors. In the drawings, however, in which is represented an arrangement which gives satisfactory results in practice, the source of illumination or lamp is shown as an electric lamp A, situated in rear of the drops, so that the light shall shine through the same from the rear. In the arrangements of electrical connections shown in Figs. 5 and 6 the lamp A is not continuously lighted, but is lighted at each call, while for the arrangement shown in Fig. 7 the lamp (not shown in said figure) would be continuously lighted. In either case a single lamp A illuminates a large number of drops, a few only being shown in the drawings.

70 The board B is supported or arranged in any usual or suitable manner and carries the usual jacks C, by means of which and the usual plugs (not shown) the desired connections between different subscribers are effected. The "drops," so called, corresponding to the several jacks and electrically connected with each subscriber, as usual, are indicated at D. As shown, each drop consists of a tube d , about which is wound a coil of wire d' , which is in circuit with the subscriber's instrument. Secured to the tube d is a sleeve or collar d^2 , of insulated material, which furnishes a convenient support for a balanced shutter d^3 , which is slightly overweighted or otherwise caused to stand normally across the tube, excluding the light therefrom. The shutter is wholly or partly of iron or other magnetic material, but at any rate has in its construction so much of magnetic material that it is subject to the effect of the current which passes about the tube d and in the field of which the shutter stands and will be deflected like the needle of a galvanometer from its normal position when current passes through the coil d' and will be caused to stand in a plane parallel with the axis of the tube, thus permitting the light to pass through the tube. Under ordinary conditions the shutter will vibrate or flutter for a time before it comes to rest, thus alternately permitting and cutting off the passage of

light, and thereby more surely attracting the attention of the operator. At the front end of the tube a suitable cap d^4 supports a piece of ground glass d^5 , upon which is painted the subscriber's number, this ground-glass screen being illuminated in the manner already described. The location of the shutter between the screen and the lamp saves the necessity of having any mechanism on the front of the board and makes the whole construction more compact, besides saving considerable expense. A suitable reflector E may be employed in connection with the lamp A, if necessary, to distribute the light more uniformly to the various drops which are intended to be illuminated from the same source.

In some cases it is preferable to have the lamp A lighted as each call comes in rather than to have it lighted continuously. In such cases the lamp will of course be included in a local circuit, (indicated at a ,) such local circuit having a switch a' , which is normally open, but is adapted to complete the local circuit when acted upon by a relay R, which is included in the circuit with the coil d' of the drop. This relay R is common to all of the drops illuminated by the lamp A. As indicated in Fig. 5, it may be arranged in multiple with the several drop-coils d' , or, as represented in Fig. 6, it may be arranged in series therewith. If an oil or other continuously-lighted lamp is used, the local circuit and relay may be dispensed with, as indicated in Fig. 7.

The connections between each subscriber and the exchange may be arranged as usual and are not necessary to be described in detail herein, a subscriber's circuit being indicated at S in Fig. 5, the connections between the same and the drop being established through the jack C in the usual manner. It may be added that in the multiple arrangement represented in Fig. 5 the resistance of each coil d' is so proportioned to the resistance of the relay R that the current will divide, sufficient passing over the coil to operate the shutter and the remainder passing over the relay to close the lamp-circuit.

It will be obvious that various modifications can be made without departing from the spirit of the invention and that the invention therefore is not to be restricted to the precise construction and arrangement shown and described herein.

I claim as my invention—

1. An annunciator-drop comprising a tube, a coil about said tube and adapted to be included in an electrical circuit and a balanced shutter of magnetic material supported in the field of said coil.

2. In an annunciator, the combination with a source of light, of a tube having a light-screen at one end, a coil of wire about said tube adapted to be included in an electrical circuit, and a balanced shutter of magnetic material supported in the field of said coil.

3. An annunciator comprising a coil adapted to be included in an electrical circuit and having an axial opening for the passage of light, a source of light to illuminate said opening, and a shutter of magnetic material hung within the field of said coil and normally closing the axial opening of the coil, whereby when current is passed through said coil the shutter is moved by the influence of the current in said coil to permit the passage of light through said opening.

4. An annunciator comprising a coil adapted to be included in an electrical circuit and having an opening for the passage of light, a light-screen in said opening, a source of light to illuminate said screen, and a shutter of magnetic material hung within the field of said coil, whereby when current is passed through said coil the shutter is moved by the influence of the current in said coil to permit the passage of light to said screen.

5. In an annunciator, the combination with a source of light, of a tube open for the passage of light therethrough, a coil of wire about said tube adapted to be included in an electrical circuit, and a shutter of magnetic material hung within the field of said coil and normally closing the opening through said tube, whereby when current is passed through said coil the shutter is moved by the influence of the current in said coil to permit the passage of light through said tube.

6. In an annunciator, the combination with a source of light, of a tube open for the passage of light therethrough, a light-screen at one end of said tube, a coil of wire about said tube adapted to be included in an electrical circuit, and a shutter of magnetic material hung within the field of said coil and normally closing the opening through said tube, whereby when current is passed through said coil the shutter is moved by the influence of the current in said coil to permit the passage of light through said tube upon said screen.

7. An annunciator-board comprising a series of coils adapted to be included in electrical circuits and having each an axial opening for the passage of light, a common source of light to illuminate all of said openings, and a shutter of magnetic material hung within the field of each of said coils and normally closing the axial opening of said coil, whereby when current is passed through said coil the shutter is moved by the influence of the current in said coil to permit the passage of light through said opening.

8. The combination with a group of annunciator-drops, of a source of light common to all of said drops, a device for controlling said source of light, and electrical connections connecting all of said drops in circuit with said controlling device.

9. The combination with a group of annunciator-drops, of a source of light common to all of said drops, a local circuit in which said light is included, a relay to control said local

circuit, and electrical connections connecting all of said drops in circuit with said relay.

10. The combination with a group of annunciator-drops comprising each a tube, a coil of wire around the tube, and a balanced shutter in the field of said coil, of a source of light, common to all of said drops, a device for controlling said source of light, and electrical

connections including all of said coils in circuit with said controlling device.

This specification signed and witnessed this 20th day of October, A. D. 1898. 10

SAMUEL B. FOWLER.

In presence of—

ANTHONY N. JESBERA,
W. B. GREELEY.