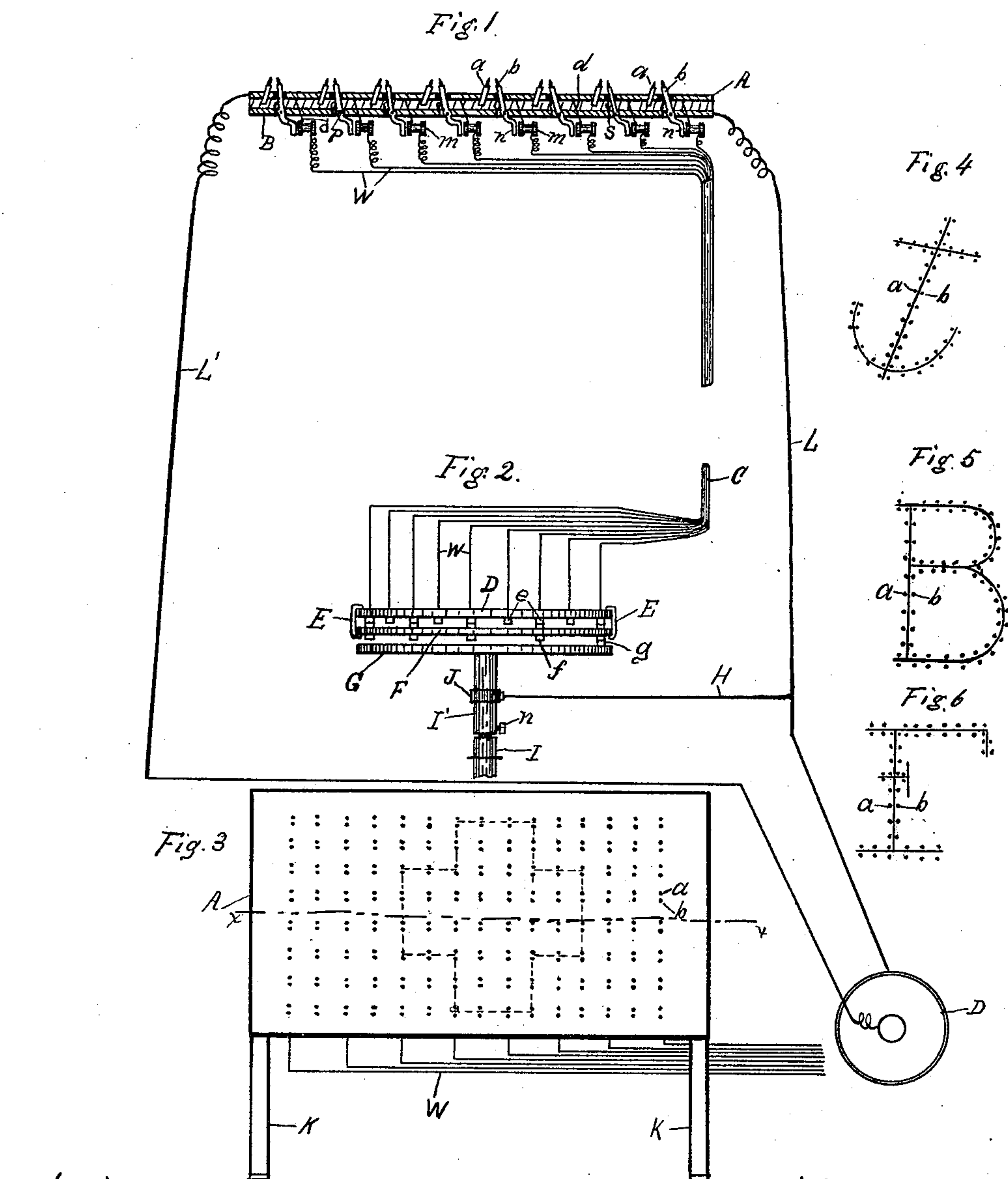


A. C. FERGUSON.

ELECTRIC LIGHTING APPARATUS.

No. 351,369.

Patented Oct. 26, 1886.



WITNESSES

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Charles S. Brintnell

INVENTOR

Arthur C. Ferguson
by Geo. A. Mosher
atty.

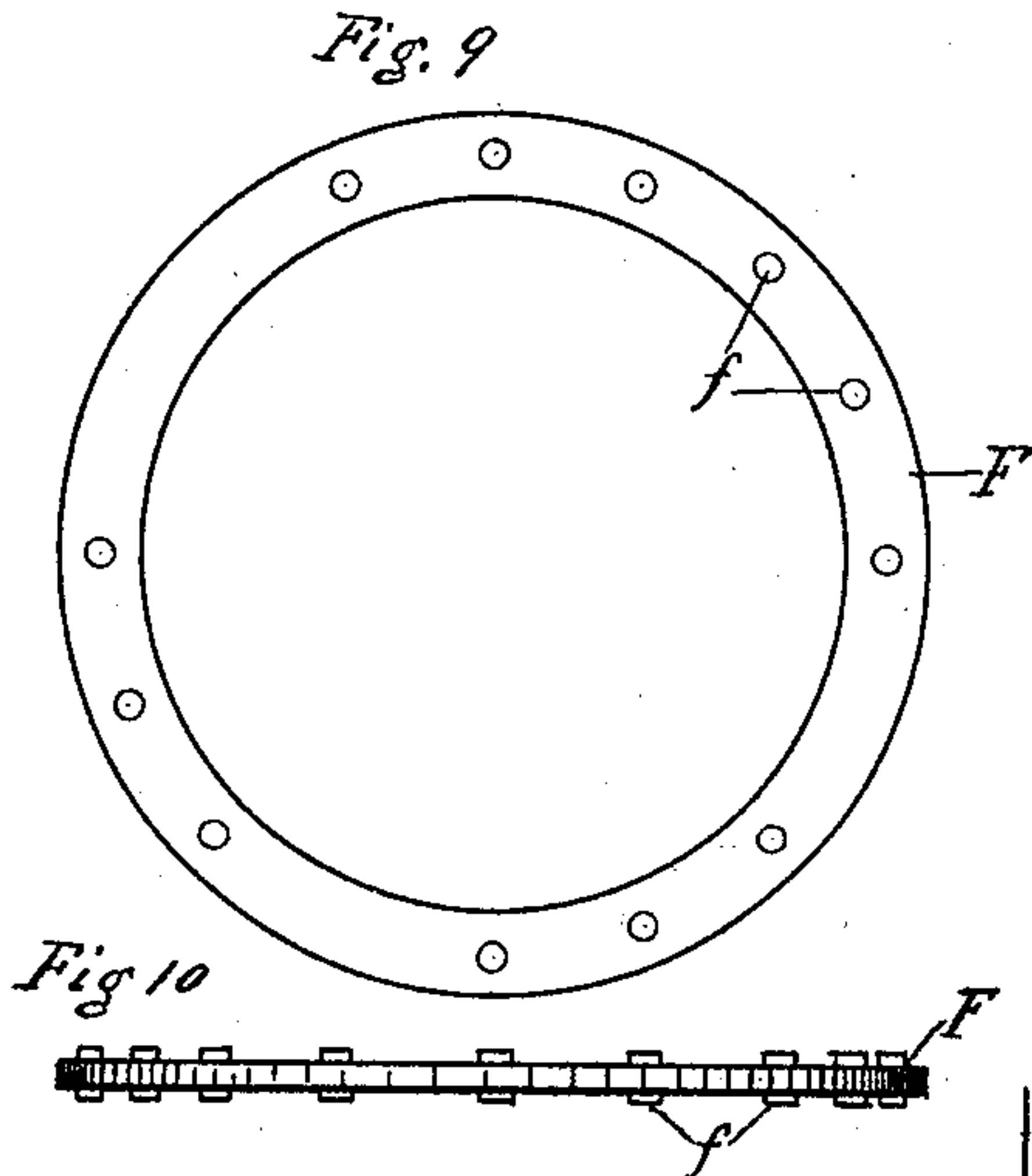
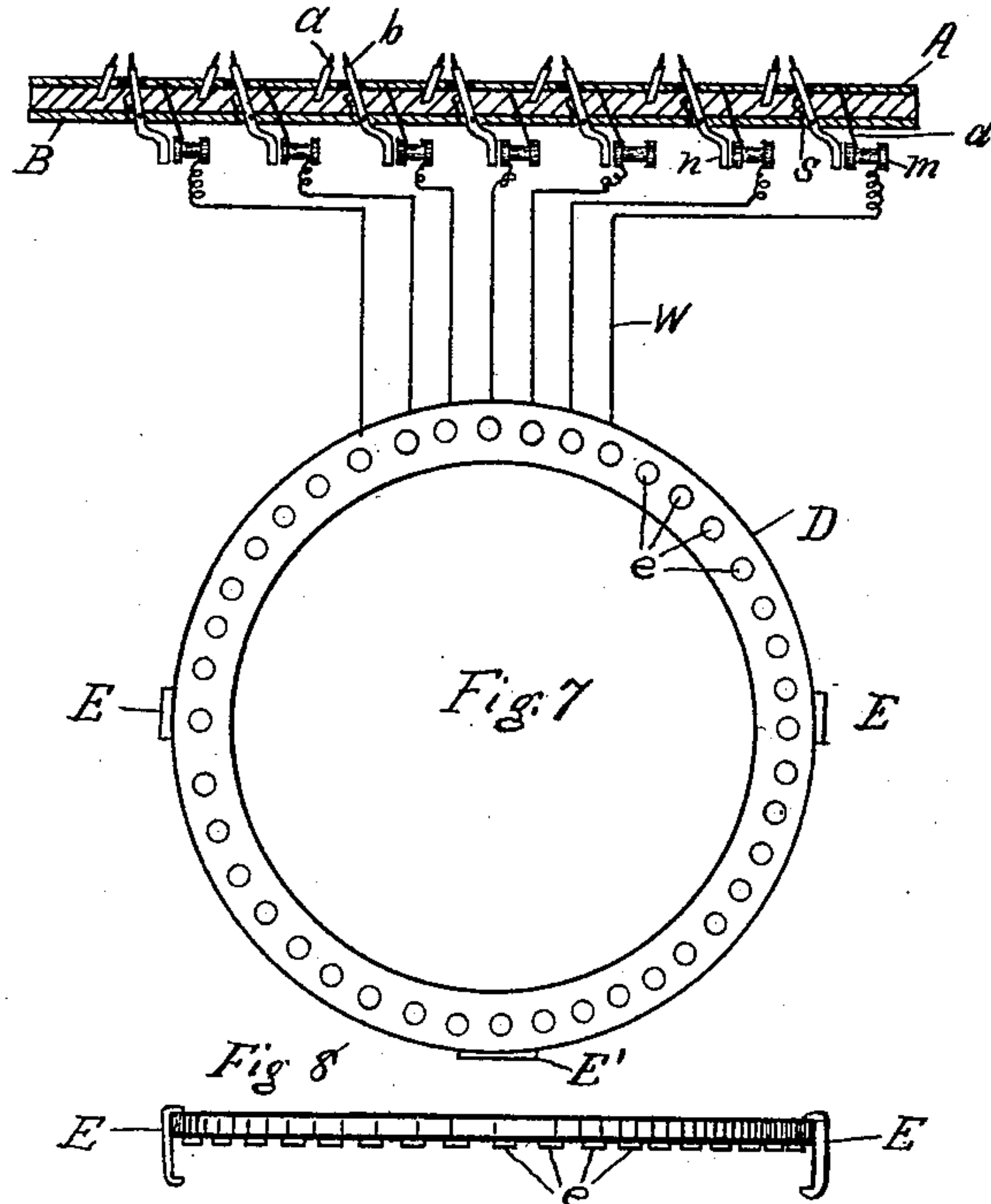
(No Model.)

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

ARTHUR C. FERGUSON, OF SARATOGA SPRINGS, NEW YORK.

ELECTRIC-LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 351,369, dated October 26, 1886.

Application filed February 23, 1886. Serial No. 192,788. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR C. FERGUSON, a resident of Saratoga Springs, in the county of Saratoga and State of New York, have invented certain new and useful Improvements in Electric-Lighting Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

My invention relates to improvements in electric-lighting apparatus, and is an improvement upon the apparatus shown in United States Letters Patent No. 334,366, issued to me January 12, 1886.

The object of this invention is to obtain a series of flash-lights between carbon or other electrodes automatically selected from grouped pairs of electrodes to produce a succession of lights in lines corresponding to the outlines of letters and figures or other designs.

My invention consists of the novel construction and combination of parts hereinafter described, and pointed out in the claims.

Figure 1 of the drawings is a sectional edge view of the electrode-supporting plates, taken at the broken line *xx* in Fig. 3. Fig. 2 is a side elevation of the automatic circuit-breaker. Fig. 3 is a face view, in side elevation, of one of the electrode-supporting plates. Figs. 4, 5, and 6 show different designs produced by the flashes of light. Fig. 7 is a plan view of the electrodes and the support D, employed in connection with the automatic circuit-breaker, showing their connection with the magnets acting to break the light-producing circuit. Fig. 8 is an edge view of the support D and electrodes. Fig. 9 is a plan view of one of the interchangeable electrode selector-plates. Fig. 10 is a side view of same.

The metallic plates A and B are insulated from each other, one supporting the positive electrodes and the other the negative electrodes, *a* and *b*. The electrodes are preferably carbon pencils supported in sockets, one or both of the members of each pair of sockets

being pivoted to its supporting-plate, kept out of contact, when not use, by springs S or gravity.

The electric current employed to produce the light may be supplied by a battery or dynamo, D, one pole of which is connected by a conductor, L, with plate B, and the other pole by conductor L' with plate A. By bringing the members of a pair of electrodes *a* and *b* into contact a current of electricity will be established through the same, and by breaking the contact the current will be cut off and a spark or flash of light will be visible between the two electrodes. If, therefore, I quickly and successively make and break the circuit of a selected number of pairs in the group shown in Fig. 3, I shall be able to produce a line of light that will correspond with the line occupied by the selected pairs—as, for example, that shown by the dotted lines in Fig. 3, or those shown in Figs. 4, 5, and 6.

To make the circuit, I employ the electromagnets *m*—one for each pair of electrodes *a* and *b*. The lever which supports the electrodes *b* is shown pivoted at P to the plate B, and is in electrical contact therewith. One end of the lever supports the electrode *b*, and is in an electrical contact therewith, and the other end acts as an armature for the magnet *m*. A current of electricity passing through the magnet will act to attract the armature, and when of sufficient force will move the armature and bring the electrodes *a* and *b* into contact. Each magnet *m* is connected by a conductor, W, with an electrode, *e*, supported by the plate D, which is preferably some non-conducting material, whereby the electrodes *e* are insulated from each other. The conductors W may be fine insulated wires collected together into a cable, C, and extend over a long distance.

The clips E are adapted to receive and support the electrode selector frame or plate F, which is also made of some non-conducting substance, and provided with the conducting points or pins *f*, preferably made to pass through the plate F and project on the upper and lower side. The points *f* are so arranged that when the selector-plate is slid into the clips E against a suitable stop, as E', the upwardly-projecting points will come into elec-

trical contact with the proper electrodes in the plate D to operate through magnets *m*, the proper pairs of light-producing electrodes to produce a certain letter, figures, or design.

5 It is only necessary, therefore, to rapidly send successive currents of electricity through these selected electrodes to produce the desired result. I do this by means of a shunted or independent current of electricity.

10 I have shown a conductor, H, passing from the main conductor L to a rotary shaft, I I', electrically connected therewith by a sleeve, J. The shaft is electrically connected with and supports the disk or arms G, carrying a breaker, *g*, adapted to come into electrical contact
15 with each one of the points *f* successively at each rotation of the shaft. The shunted current passes through the conductors W to the magnets *m*, and thence through conductors *d* to
20 plate A, and back through conductor L' to the dynamo.

To change the form of the letter, figure, or design to be outlined by the electrodes *a* and *b*, it is only necessary to remove the selector-plate G and insert in its place another plate
25 prepared with points *f*, arranged to come into contact with the proper electrodes, *e*, to select and operate through magnets *m* another group of light-giving electrodes.

30 By employing long conductors W the changes of letters, figures, or designs can be accom-

plished by an operator stationed at a long distance from the light-giving electrodes, and the number of variations in designs will be limited only by the number of selector-plates previously prepared and at hand, the same light-giving electrodes being made to assist in producing different designs. 35

What I claim as new, and desire to secure by Letters Patent, is— 40

1. A group of light-giving electrodes, in combination with automatic mechanism, substantially as described, for making and breaking electrical contact of the electrodes, and an interchangeable electrode selector-plate, substantially as described, for the purpose of arbitrarily selecting the electrodes to be acted upon by the light-giving electrical current. 45

2. A group or series of light-giving electrodes arranged in pairs, one member of each pair being pivoted and provided with an armature, in combination with an electro-magnet for operating said pivoted member to make and break electrical contact between the members of the individual pairs, substantially as described, and for the purposes set forth. 50 55

In testimony whereof I have hereunto set my hand this 20th day of February, 1886.

ARTHUR C. FERGUSON.

Witnesses:

GEO. A. MOSHER,
W. H. HOLLISTER, Jr.