

(No Model.)

W. K. FREEMAN.
ELECTRIC ARC LAMP.

No. 302,553.

Patented July 29, 1884.

Fig. 1.

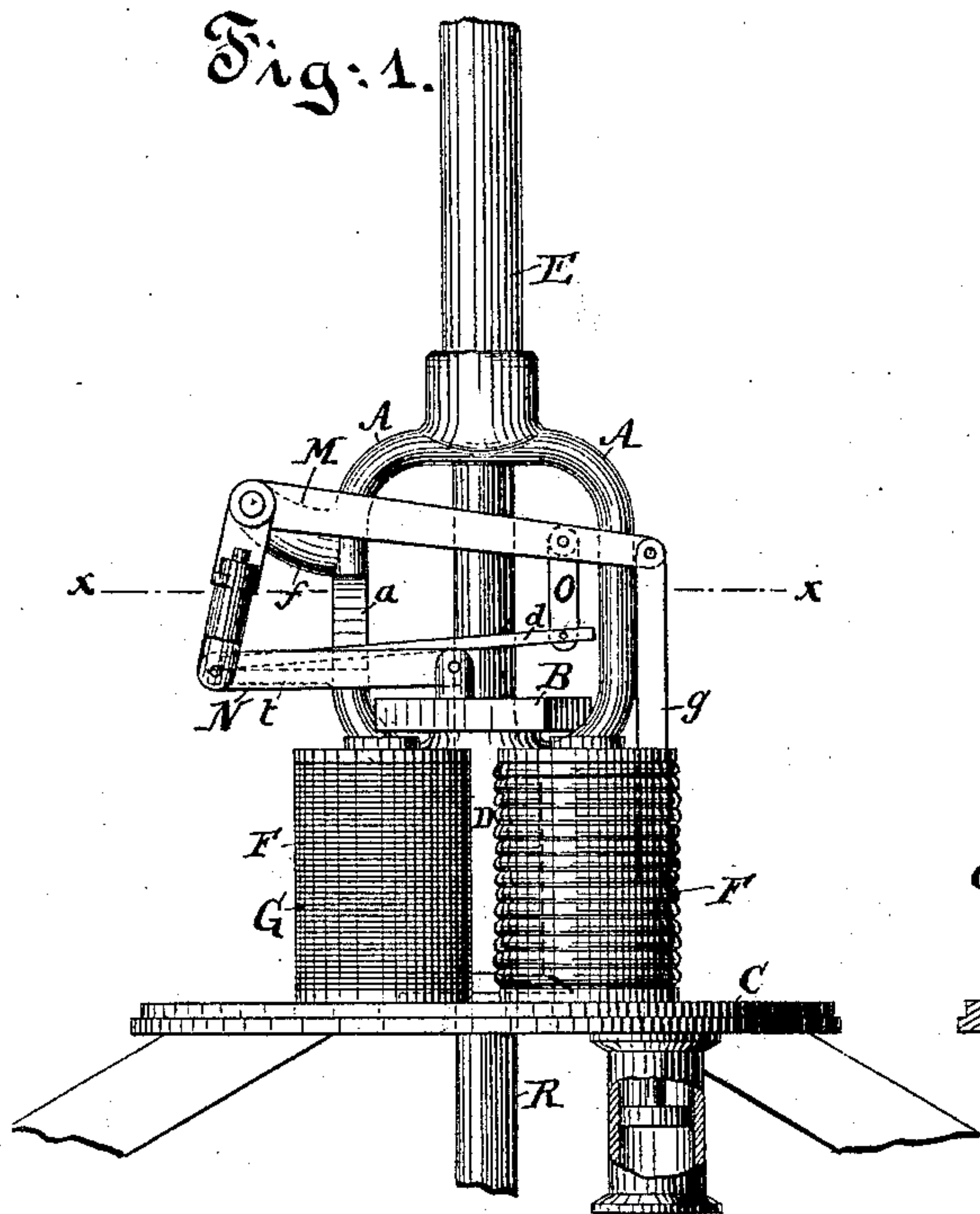


Fig. 2.

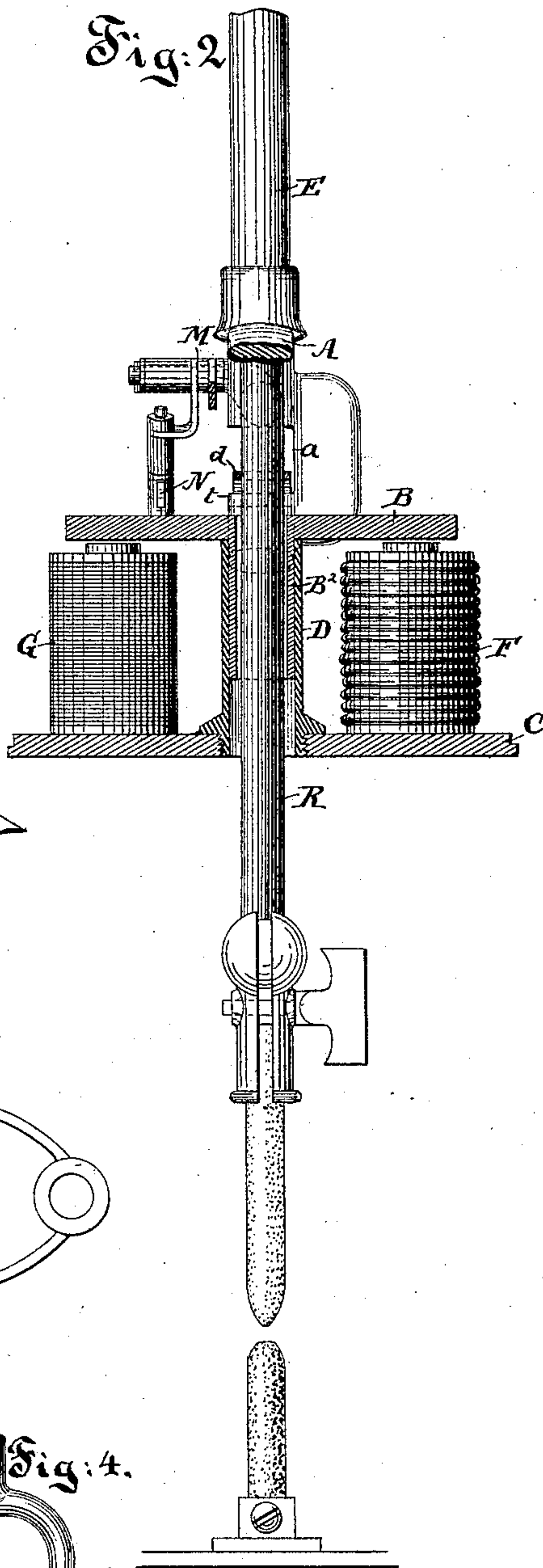


Fig. 3.

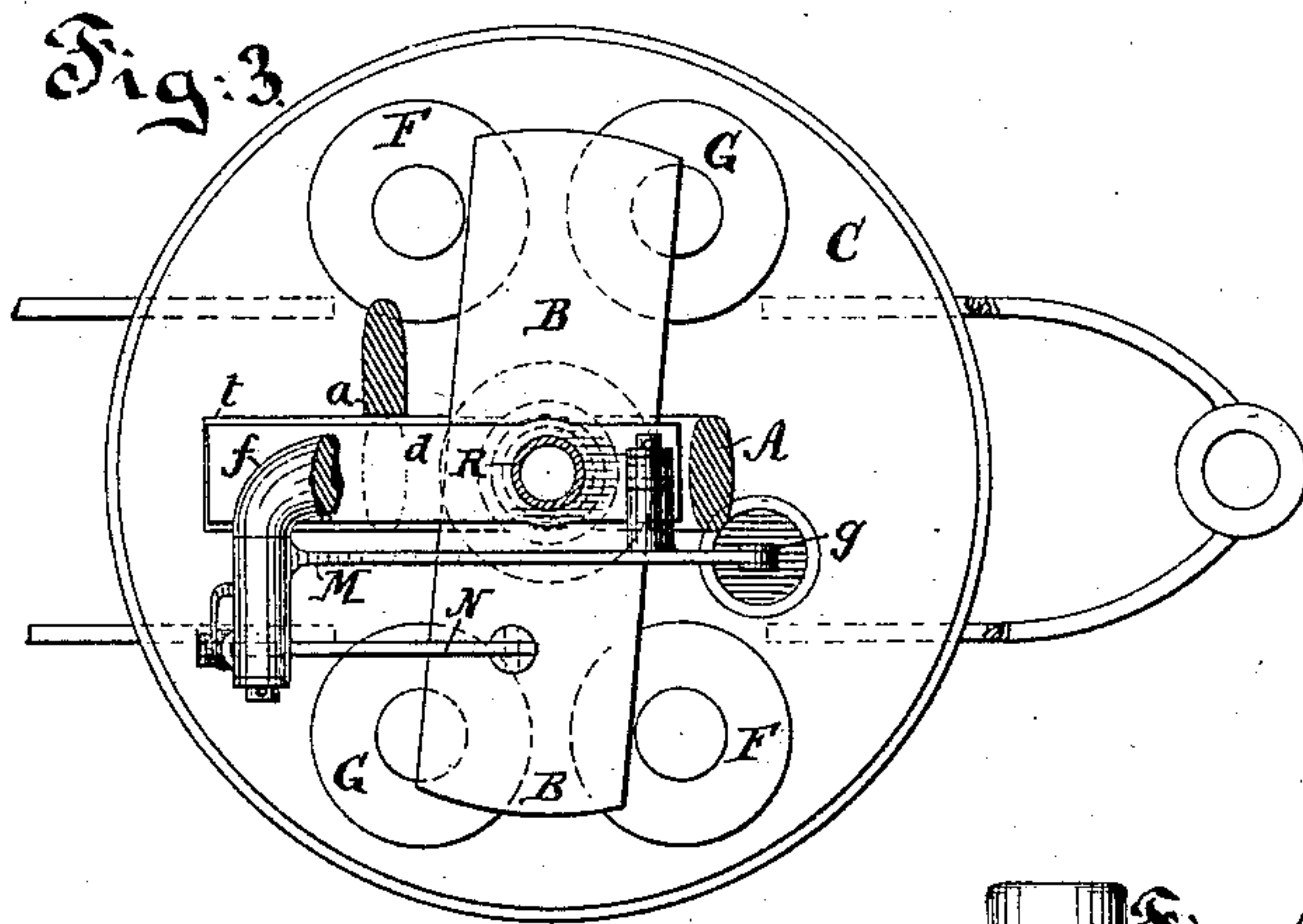
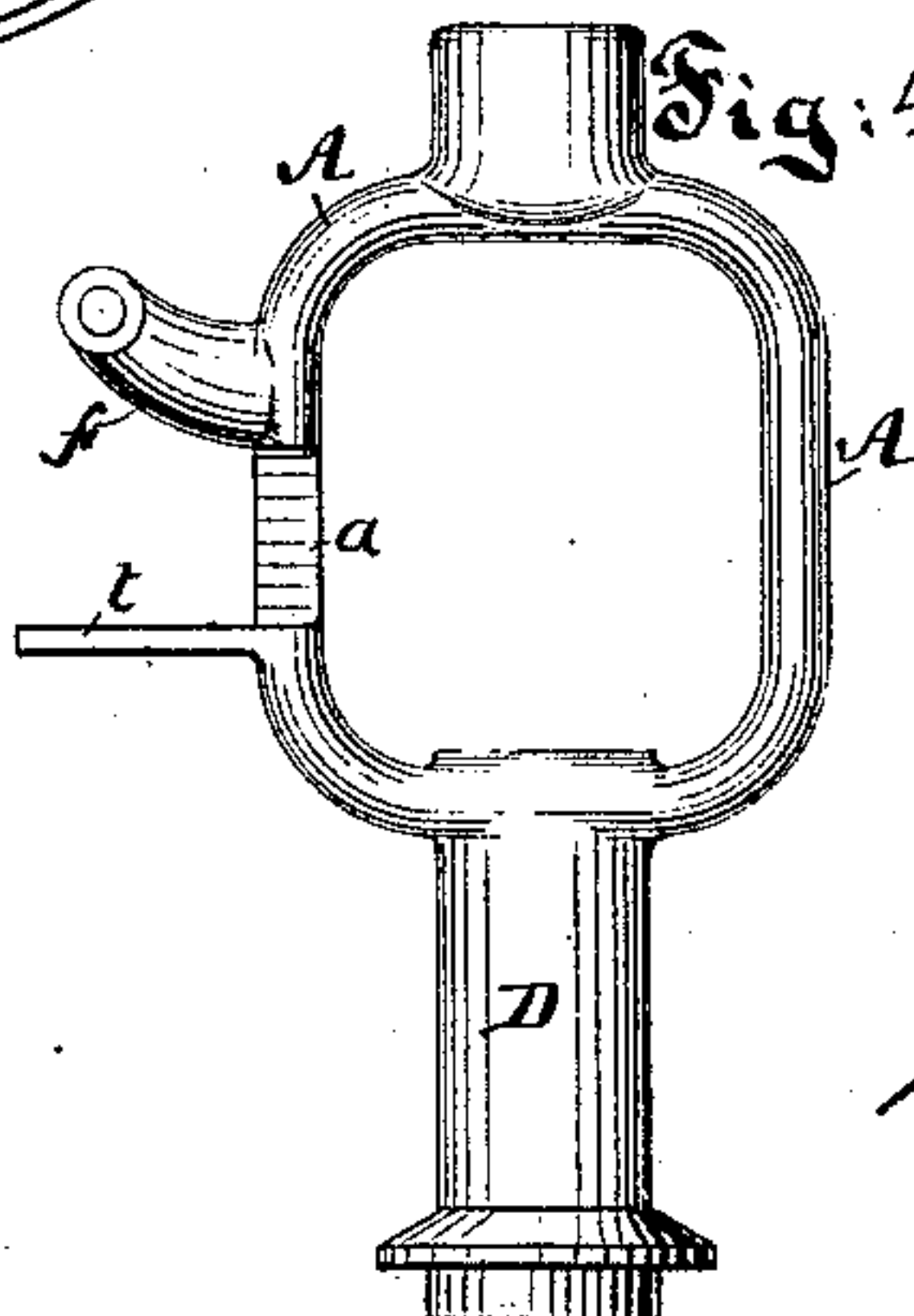


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 302,553, dated July 29, 1884.

Application filed October 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, WALTER K. FREEMAN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

The object of my invention is to simplify the construction and reduce the size of electric-arc lamps; and to these ends my invention consists in certain novel features relating to the disposition and method of mounting the armature of the lamp-magnets; to the devices for communicating movement from said armature to the clamp, clutch, or other mechanism or devices whereby the proper lifting and feed movements of the upper carbon are secured; to the form and construction of the frame and supports for the lamp mechanism, and in certain novel combinations of parts, the nature of which will be readily understood from the following description, taken in connection with the accompanying drawings.

My invention also consists in a novel magnet system for communicating movement to the feed-regulating mechanism.

In the accompanying drawings, Figure 1 is a side elevation of a lamp constructed according to my invention. Fig. 2 is a partial vertical section through the parts to which my invention more particularly relates. Fig. 3 is a transverse section on the line *x x*, Fig. 1. Fig. 4 is an elevation of the lamp-frame, with the magnets, armature, and regulating mechanism removed.

C indicates the bottom plate of the lamp, and is of any ordinary or suitable construction. Upon this plate are seated the lamp-magnets F F G G, two of which, F F, are wound with coarse wire, and the other two, G G, with fine wire, so that the two F F may constitute the main, and the others, G G, the ordinary derived, circuit magnets of an electric-arc lamp.

B indicates the armature for the magnets. It is perforated at its center for the passage of the upper-carbon carrier R, and is arranged to swing in a horizontal plane at right angles to said carrier and to the axis of the magnets F F G G, for which purpose it is mounted on

the top of a pillar, D, rising from and secured to plate C, and is also provided with a tubular extension, B², that extends down within the pillar and serves to steady said armature, as well as to keep it in place. The pillar is hollow, and the carrier R passes down within it and the tubular extension B². The pillar D is united by the arms or branches A A with the tube E, which latter forms, as usual, a guide and casing for the upper end of the carbon-carrier, and is sometimes used for supporting the lamp. The tube, pillar, and arms may, if desired, be cast in one piece, and together form the frame of the upper portion of the lamp from which the regulating mechanism or devices may be supported.

M indicates an elbow-lever pivoted on a bracket, *f*, extending from an arm, A. One arm of the lever is connected by a link, N, with the armature B, while its other or horizontal arm imparts movement to clutch or clamp *d* or other feed-regulating mechanism, and also to the piston-rod *g* of a dash-pot. The clamp is connected by a link, O, with the elbow-levers, and is here indicated as the ordinary tilting clamp or clutch which bites the carrier when lifted at one end. The releasing table or support for the end of the clutch is indicated at *t*, and extends from one of the arms A, to which it is suitably secured or of which it forms an integral part.

At *a* is indicated a bend or offset in one of the arms A, made to afford space for the clutch or clamp. The link N is swiveled both to the armature and the lever M, as indicated, being for this purpose pivoted in supports that are mounted in the armature and lever, so as to be capable of turning in a horizontal plane. By this arrangement freedom of movement is given to the parts during movement of the armature B, which latter, at its point of connection with the link, moves, as is obvious, in the arc of a circle. When the lamp is out of action, the armature B assumes the position shown in Fig. 3, being carried to such position by the weight of the parts supported from the long or horizontal arm of the elbow-lever. Suitable stops may be provided, as usual, to limit the movement of the parts. When the current is turned on, the armature is acted

upon by the main-circuit magnets F F, and turned upon its support, so as to actuate the clamp or other mechanism and lift the carrier R so as to form the arc. It is now, however, in such position that the derived-circuit magnets may pull in a contrary direction to the main-circuit magnet, and may cause the armature to move in the opposite direction, so as to permit the carrier to move downward as the carbons burn away.

The combined action of the main and derived circuit magnets in producing the proper operation of the lamp, being well understood in the art, need not be described further in detail.

I do not limit myself to any particular form of clamp, clutch, or other feed-controlling mechanism to be operated by the elbow-lever M. Other parts of the lamp may be also modified in ways that will readily occur to those skilled in the art without departing from the invention herein claimed. The union of the lower plate, C, and the tube E through the hollow pillar surrounding the carrier gives compactness and simplicity to the lamp. The arms A A serve merely to join the pillar and the tube in such a way as to leave the carrier free for engagement of the regulating mechanism or devices, while at the same time they afford a support for the elbow-lever and the tube t.

What I claim as my invention is—

1. In an electric lamp, the combination, with a feed-regulating armature arranged to swing transversely to the carbon-carrier, of a hollow supporting-pillar through which the carrier passes, and a tubular extension from the armature, said pillar and extension extending one within the other, as and for the purpose described.

2. The combination, in an electric lamp, of

a feed-regulating armature mounted so as to move in a plane at right angles to the carrier, an elbow-lever adapted to swing in a plane parallel with the carrier, for communicating movement to the carbon-separating and feed-regulating mechanism, and a connecting-link having swivel-connection with said lever and armature, as and for the purpose described.

3. The combination, in an electric lamp, of the feed-regulating armature, mounted so as to swing about the carrier as a center, an elbow-lever, M, a connecting-link, N, swiveled to the armature and lever, a clutch for the carbon or carbon-carrier, and a link, O, connecting the clutch and elbow-lever.

4. The combination of the armature B, mounted so as to swing about the carrier as a center, the tube B², and the pillar D, surrounding the carrier and extending one within the other, and intermediate connections between the armature and the feed-regulating devices.

5. The combination of the plate C, supporting the vertical lamp-magnets, the tube and pillar E D, surrounding the carrier, the connecting-pieces A A, from which the regulating mechanism is supported, and the armature adapted to swing about the carrier as a center, and supported on the pillar, as and for the purpose described.

6. In an electric lamp, a connecting-frame between the lower plate and the supporting-tube, consisting of a pillar surrounding the carrier, and connecting-arms A A, of any suitable shape, as and for the purpose described.

Signed at New York, in the county of New York and State of New York.

WALTER K. FREEMAN.

Witnesses:

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