

No. 749,757.

PATENTED JAN. 19, 1904.

O. K. STUART.
ACETYLENE GAS GENERATOR.

APPLICATION FILED APR. 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

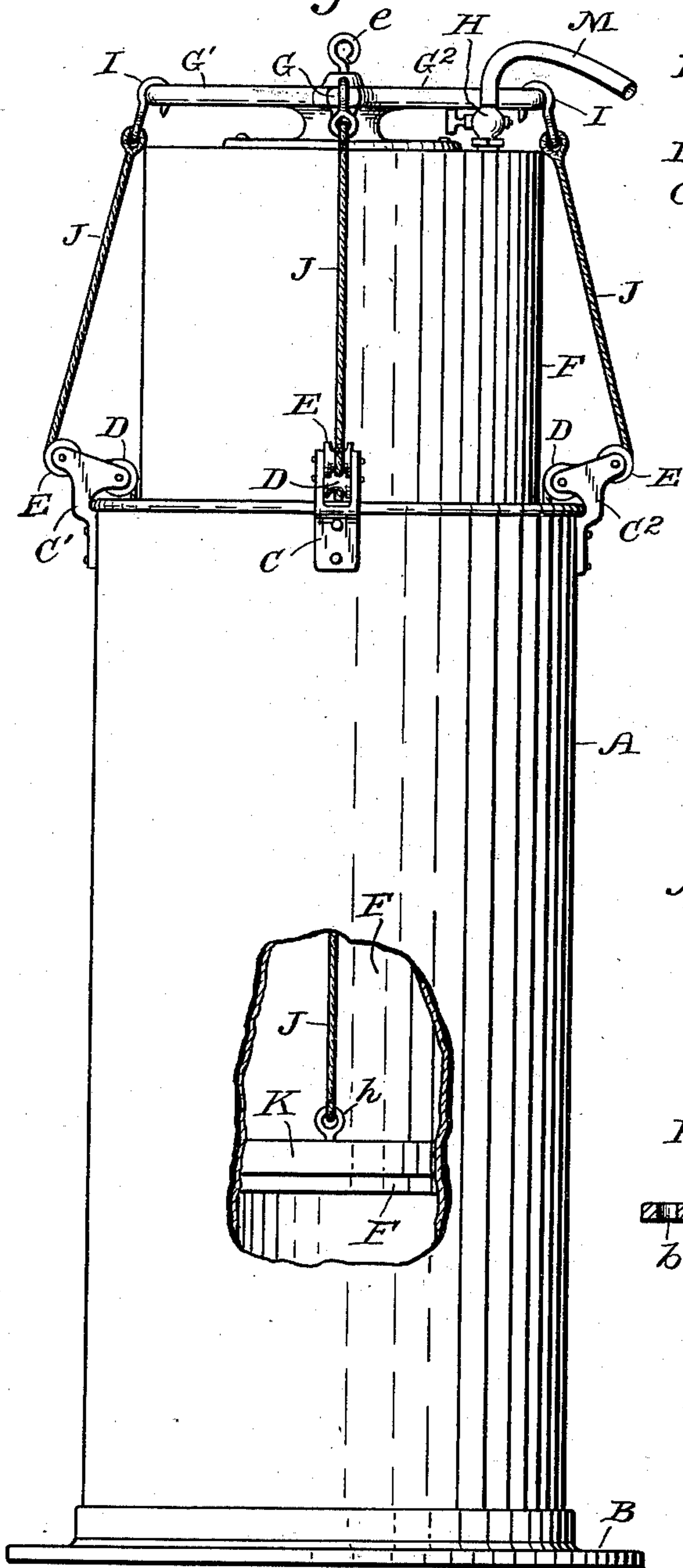


Fig. 2.

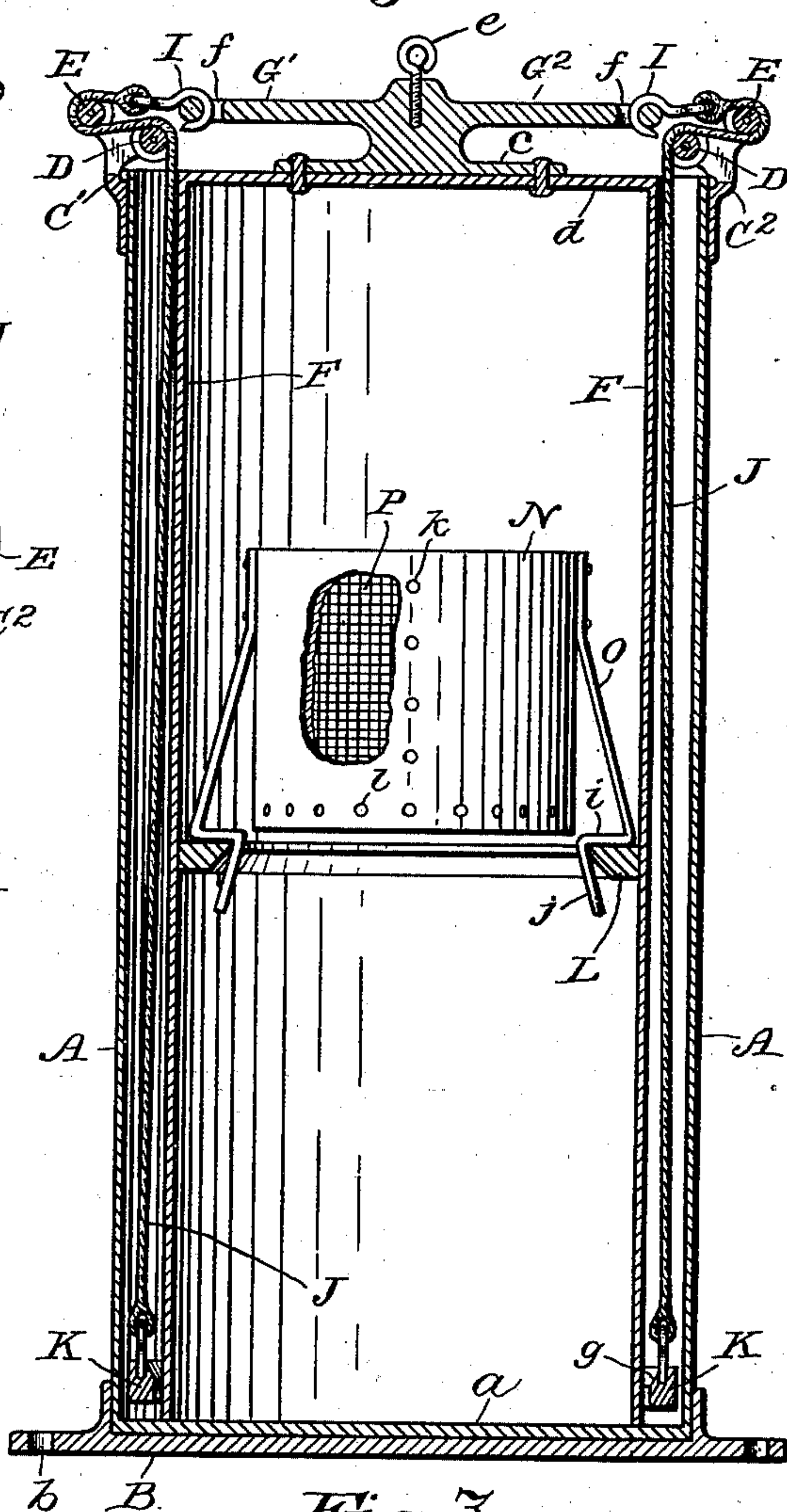
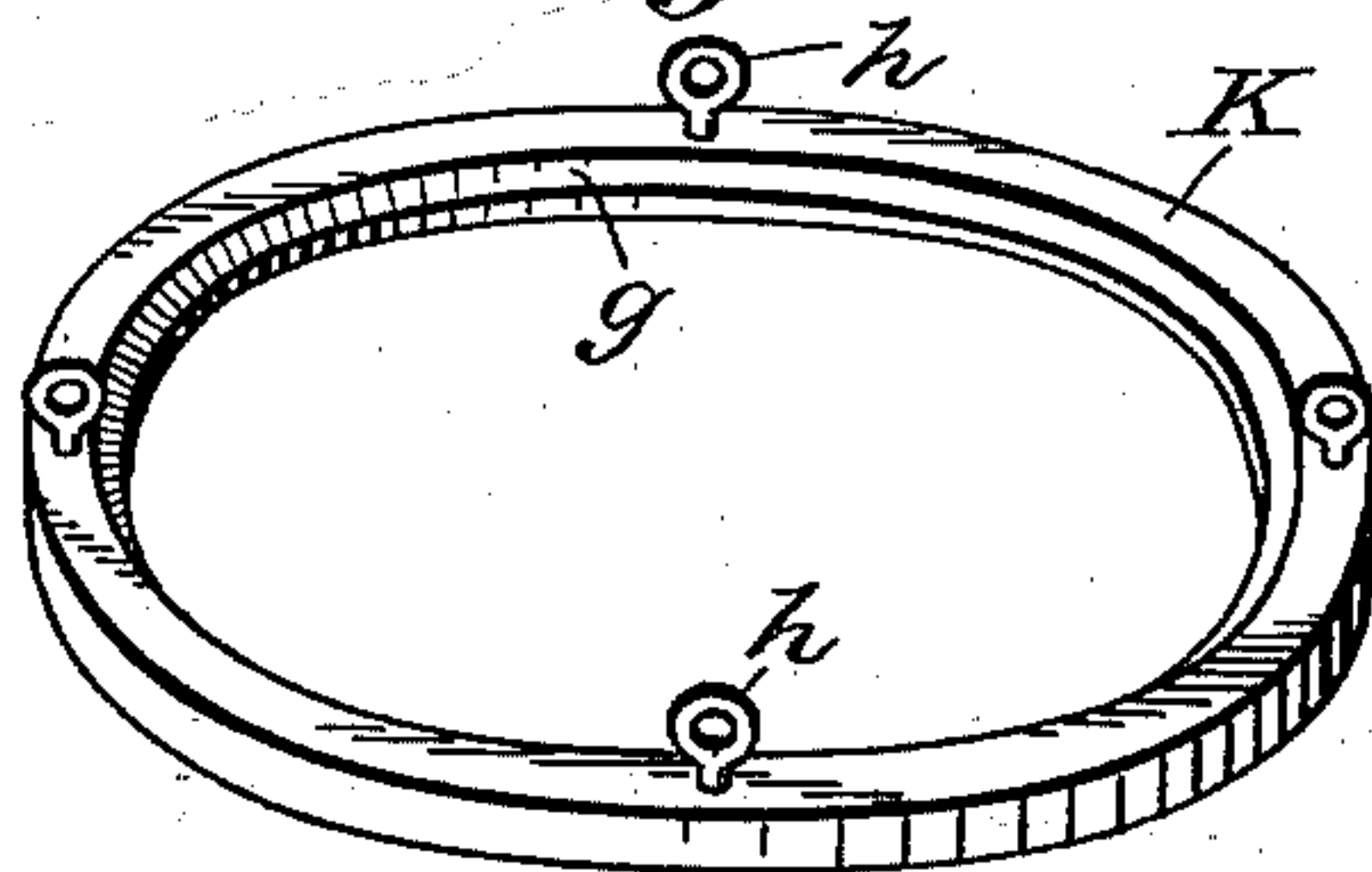


Fig. 3.



WITNESSES:

Row W. Vorhies.
Stella Snider.

INVENTOR:

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2 SHEETS—SHEET 2.

Fig. 4.

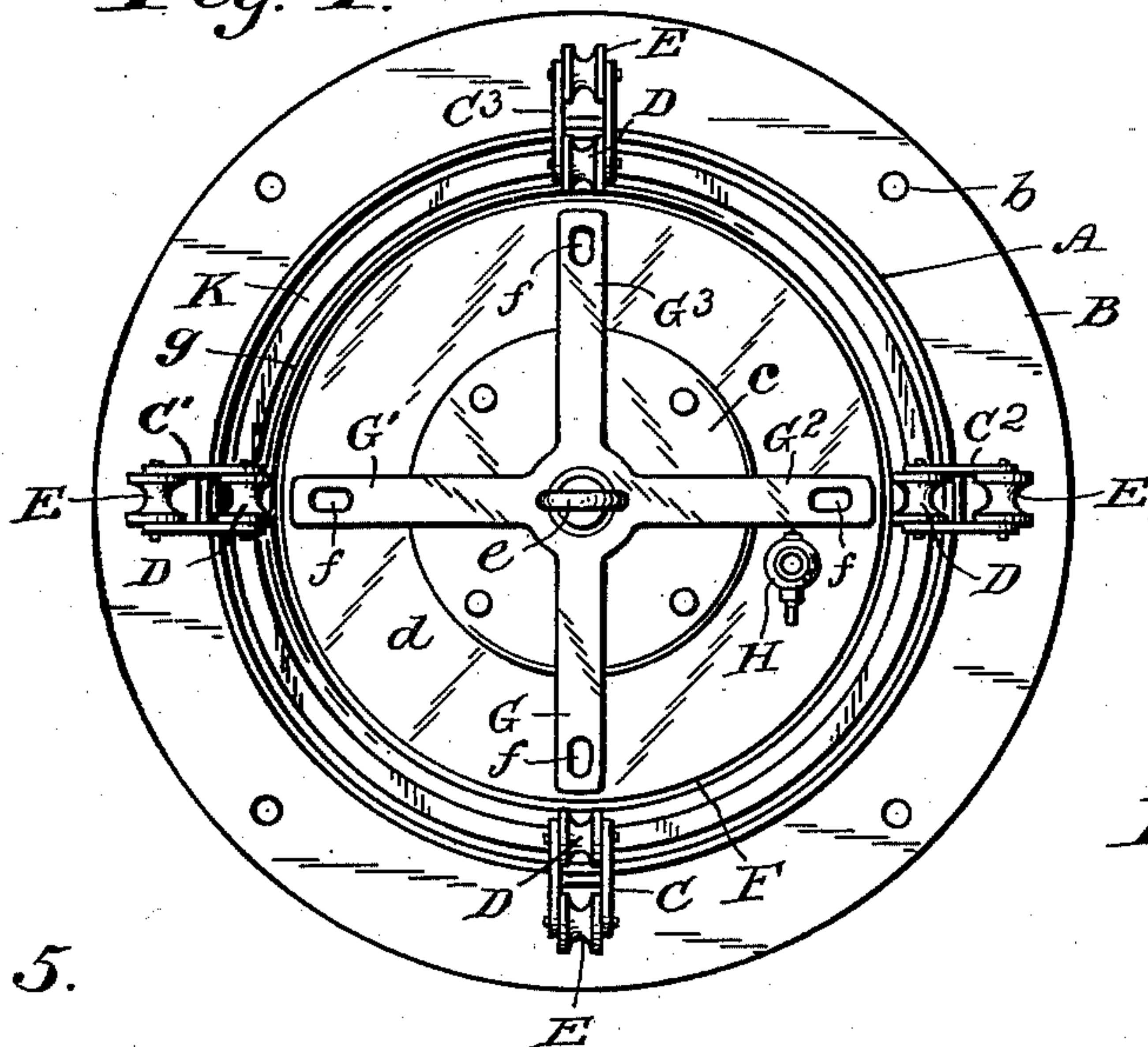


Fig. 5.

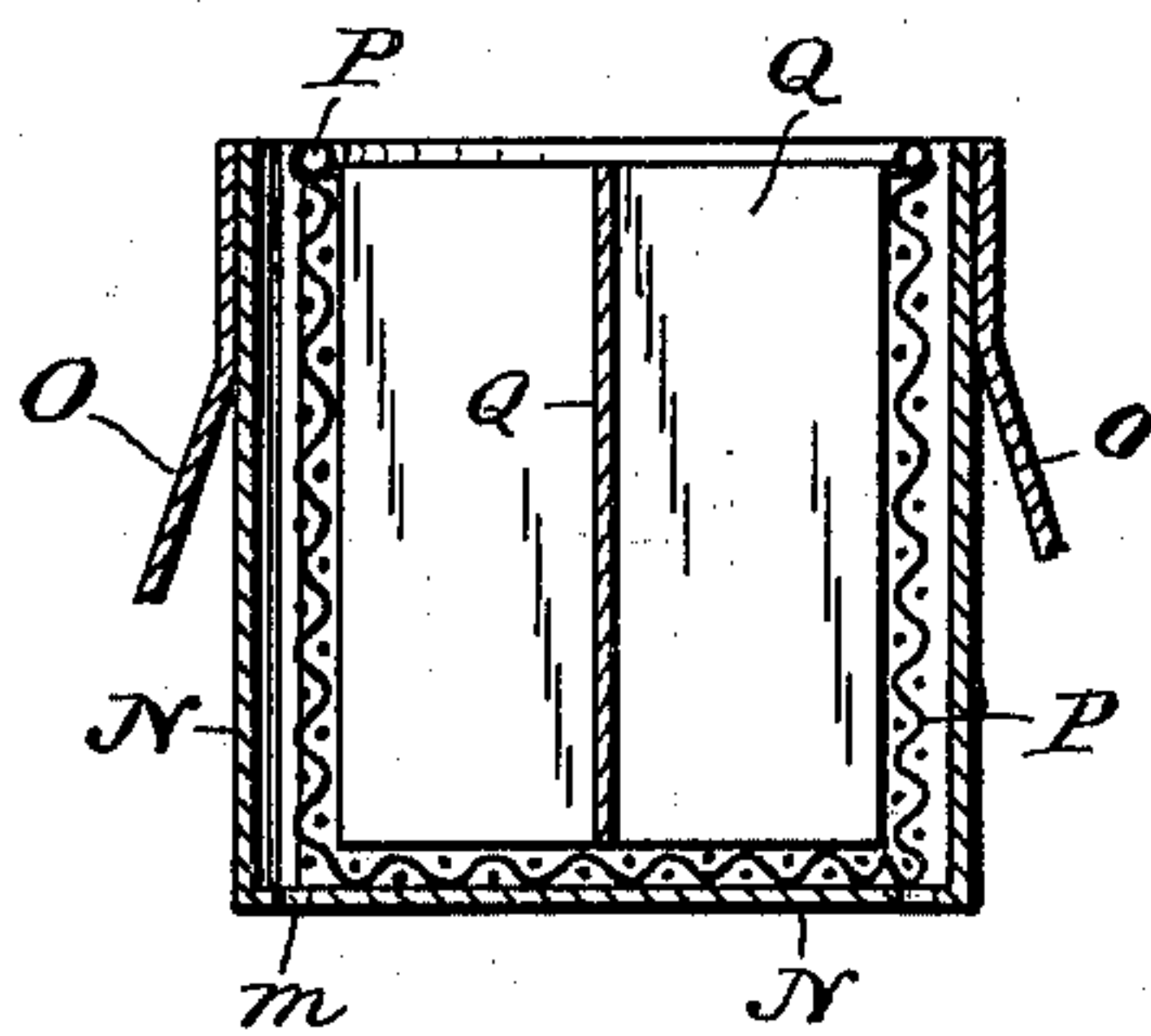


Fig. 7.

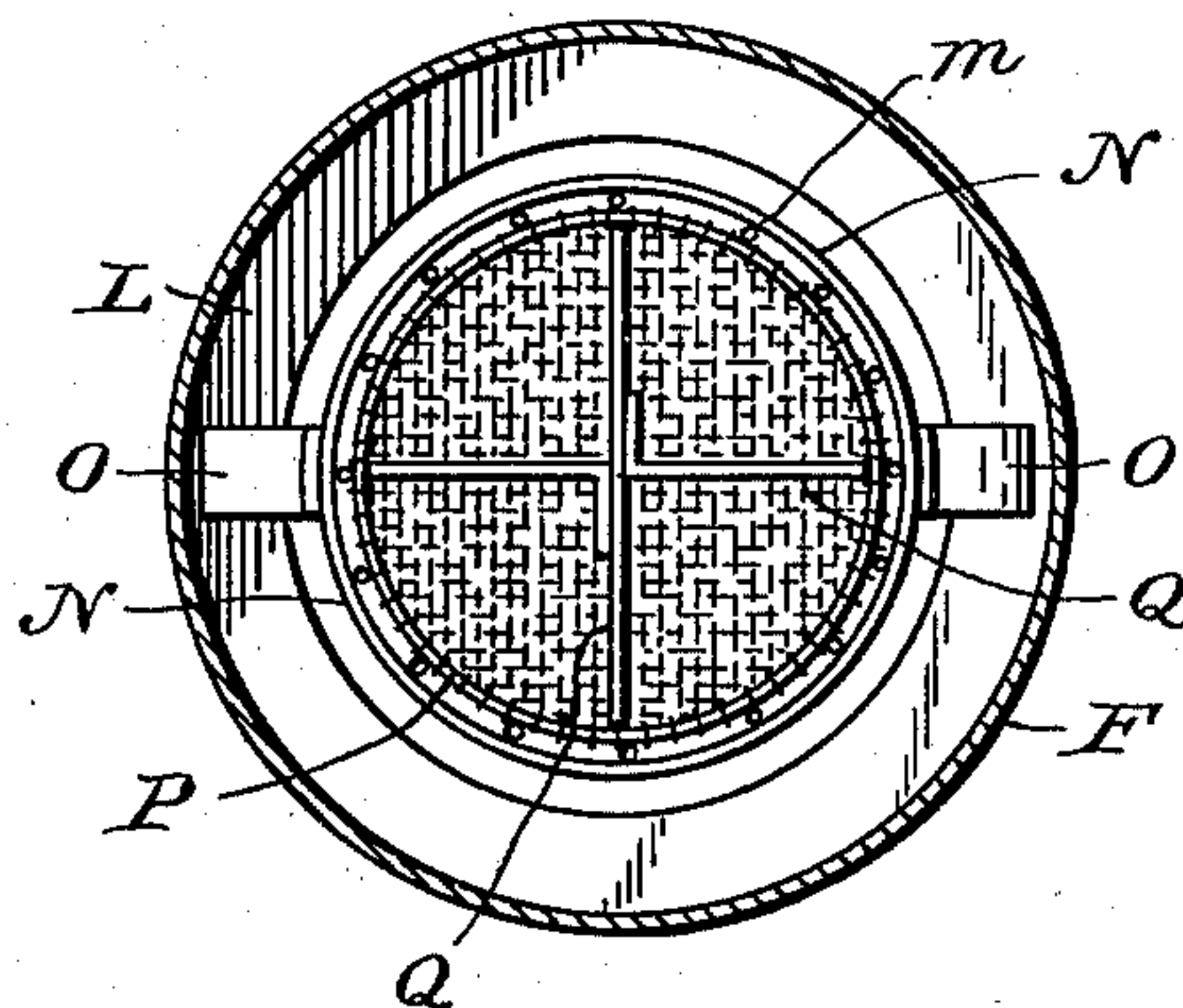
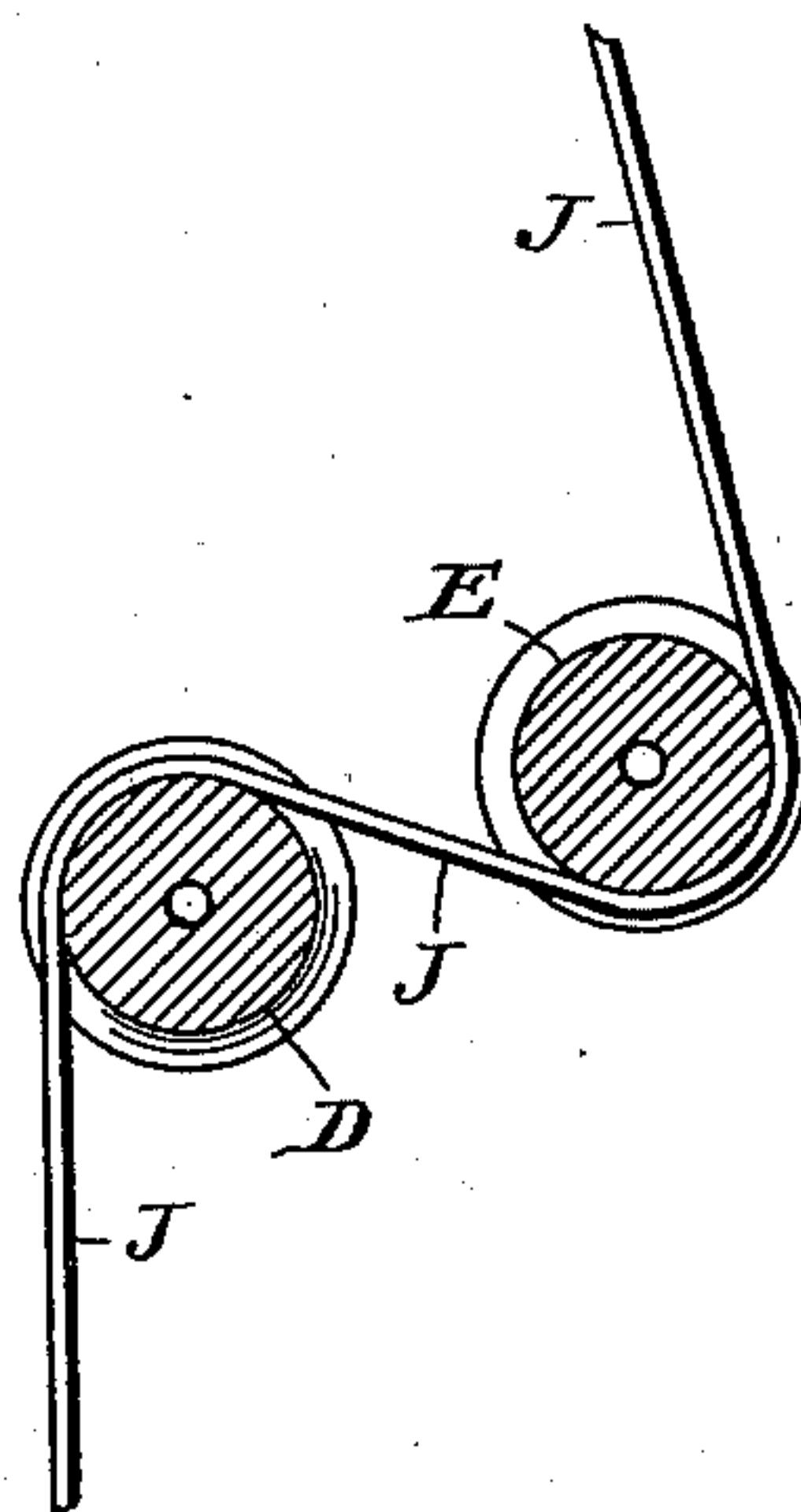


Fig. 6.



WITNESSES:

Dw W. Vorhies.
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INVENTOR:

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UNITED STATES PATENT OFFICE.

ORION K. STUART, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF
TO WILLIAM R. WATSON, OF INDIANAPOLIS, INDIANA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 749,757, dated January 19, 1904.

Application filed April 3, 1903. Serial No. 150,862. (No model.)

To all whom it may concern:

Be it known that I, ORION K. STUART, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Acetylene-Gas Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to apparatus in the use of which acetylene gas may be produced and stored while being distributed for consumption, and the invention has particular reference to apparatus of the above-mentioned character especially adapted for use on locomotives in connection with headlights, as well as for use in supplying buildings with gas.

The object of the invention is to improve the construction of acetylene-gas apparatus in order to attain simplicity and economy in manufacture of the apparatus, and particularly to provide compact self-contained apparatus that may be adapted to be used on moving vehicles, such as locomotives.

My invention consists in a supporting vessel adapted to be secured against displacement and provided with tension devices, a gas-holder in the supporting vessel provided with cables extending through the tension devices, an annular weight and guide combined connected to the cables and extending about the gas-holder within the supporting vessel, and a carbid-holder supported by the gas-holder therein, and the invention consists also in the novel parts and in the combination and arrangement of parts, as hereinafter particularly described, and pointed out in the appended claims.

Referring to the drawings, Figure 1 represents an elevation of the apparatus, showing the gas-holder somewhat elevated as when in use, a portion of the supporting vessel being broken out to disclose the weight and the lower portion of the holder; Fig. 2, a central vertical sectional view showing the several parts in the positions they would occupy when not operating; Fig. 3, a perspective view of the annu-

lar weight and guide; Fig. 4, a top plan of the apparatus with the cables omitted; Fig. 5, a central vertical sectional view of the carbid-holder; Fig. 6, a diagrammatic figure illustrating the course of a cable through a tension device; and Fig. 7, a horizontal sectional view taken in a plane above the carbid-holder through the gas-holder, showing a top plan of the carbid-holder and its supporting devices.

In the several figures of the drawings similar reference characters indicate corresponding parts.

My apparatus is supported entirely and partly contained in the supporting vessel A, which is preferably metallic and is designed to hold water or similar liquid as a compound with which the carbid is to be placed in contact, the vessel having a flat bottom *a* and no top. Suitable provision is made for anchoring the vessel A on vehicles, and this may best be accomplished by means of a base B, having bolt-holes *b* and secured to the lower portion of the vessel A. The height of the vessel A is considerable in proportion to its diameter, and obviously various stay-braces may also be employed when desirable. At the top of the vessel A a suitable number of tension devices are connected thereto to cooperate with the cables above referred to. As at present informed, I prefer as such devices a suitable number of sheaves arranged in the following manner: Four housings $C C' C^2 C^3$ are secured to the top of the sides of the vessel A, extending somewhat above the same and arranged at four points equidistant apart. In each housing a lower inner sheave D and an upper outer sheave E are mounted, the lower sheave D being situated so as to act as a guide-roller for the gas-holder, and the sheave E being situated in a plane beyond the outer side of the vessel and preferably in a plane higher than the sheave D.

The gas-holder F is metallic and has a top *d* and no bottom and is substantially the same height as the vessel A, but of somewhat less diameter, so that a suitable annular space is provided between the gas-holder and the wall of the vessel A. Four arms $G G' G^2 G^3$ are suitably secured to the top *d* of the gas-holder,

either by means of a common base *c* or independently, the latter being preferable in the larger sizes. These arms may be serviceable as handles whereby to lift the holder from the vessel A; but in the larger sizes of apparatus the holder F is provided with an eyebolt *e*, with which lifting-tackle may be connected. Each arm, as G, has an aperture *f* at its end. The holder F is provided with a stop-cock H at the top thereof. Hooks I are inserted in the apertures *f*, and cables J are attached to the hooks, one cable to each hook extending therefrom over and under a sheave E, thence over a sheave D and down the outer side of the holder F within the vessel A nearly to the bottom thereof, when the holder is down to the bottom of the vessel. A combined annular weight and guide K, having a beveled inner edge *g*, extends about the holder F within the vessel A and is attached to the lower ends of the four cables, as by means of eyebolts *h*, secured to the weight. Thus the weight is operatively connected with the gas-holder and, moving therewith, acts as a guide for the lower end thereof in connection with the vessel A, while the upper portion of the holder is guided by means of the sheaves D, the sheaves D and E acting as tension devices for the cables when they move upwardly, and it is obvious that the sheaves E may be mounted adjustably, if desired, so that the tension may be varied in degree. It will be observed that the four arms are arranged at right angles and have their ends opposite to the tension devices.

The gas-holder F is provided at the middle portion of the interior thereof with an annular ledge L, extending inwardly from the wall thereof, for supporting the carbide-holder N, which is provided with a suitable number of supporting spring-arms O, having bearing-elbows *i* normally resting on the ledge and provided with fingers *j*, extending below the ledge. The holder N is open at its top and has vertical rows of perforations *k* and a horizontal row of perforations *l* near its bottom, the latter having perforations *m* therein. Within the holder N is a basket P, composed of wire-netting, cup shape like the holder N and resting on the bottom of the latter, the basket being designed to directly hold the carbide and permit the water to gain free access thereto. Within the basket is a suitable number of plate partitions Q to prevent packing of the carbide, the larger baskets having the greater number of partitions.

A flexible distributing-conduit M is connected to the cock H and may be either rubber or metallic.

In practical use the vessel A is to be supplied with water or other suitable liquid, which may extend above the central part of the vessel. The weight K should be suitably held within the upper end of the vessel A, which may be accomplished by means of one

or more of the cables J, which may be connected to any suitable support above the vessel. The gas-holder F should be elevated. Then the basket P, supplied with carbide or similar substance, is to be inserted into the holder N, and the latter, with the basket, inserted into the holder F and supported on the ledge L. The holder F, with its contents, should then be inserted into the weight K. Then the hooks I should be connected to the arms on the holder F, after which the holder and the weight may be permitted to descend gently into the vessel A until the carbide may be in contact with the liquid in the vessel, the formation of gas resulting from the union of the two substances. The accumulation of gas will cause the holder F to rise, the movement being graduated by means of the tension devices coöperating with the cables, and should excessive pressure be developed any excess in volume desired may escape harmlessly from the lower end of the gas-holder through the liquid seal and pass out at the top of the vessel A. As the carbide will be lifted out of the liquid by the gas acting against the holder F, generation of gas will cease until the gas may be drawn off, when the holder and carbide can descend, so that the latter will again be in contact with the liquid, when more gas will form and the above-described operation be repeated, the required production of gas thus being automatic.

Having thus described my invention, what I claim as new is—

1. Gas apparatus including a supporting vessel, a gas-holder in the supporting vessel, a carbide-holder in the gas-holder, an annular combined weight and guide extending about the lower portion of the gas-holder within the supporting vessel, and cables connected with the gas-holder and also with the combined weight and guide.

2. Gas apparatus including a supporting vessel, a gas-holder in the supporting vessel, a carbide-holder in the gas-holder, cables connected with the top of the gas-holder and extending at the exterior thereof into the supporting vessel, tension devices mounted on the supporting vessel and engaging the cables, and means within the supporting vessel whereby the cables may normally be held taut.

3. Gas apparatus including a supporting vessel adapted to contain a liquid substance and provided at the upper portion thereof with sheaves, a gas-holder in the supporting vessel and provided with cables extending in contact with the sheaves into the supporting vessel at the exterior of the gas-holder, a carbide-holder in the gas-holder, a combined weight and guide extending about the gas-holder within the supporting vessel and connected with the cables, and a conduit connected with the interior of the gas-holder.

4. Gas apparatus comprising a supporting vessel adapted to hold liquid, a gas-holder in

the supporting vessel and having an annular ledge therein, a perforate carbid-holder having spring-arms engaging the ledge, a wire basket in the carbid-holder, cables connected with the gas-holder, a conduit connected with the gas-holder, and means whereby the cables may normally be held taut.

5. Gas apparatus comprising a supporting vessel having means whereby the same may be anchored, a gas-holder in the supporting vessel, arms attached to the top of the gas-holder and having apertures therein, sheaves mounted on the upper portion of the supporting vessel, cables having hooks in the apertures of the arms and extending in contact with the sheaves into the supporting vessel, a combined annular weight and guide in the supporting vessel about the gas-holder and connected with the cables, a carbid-holder in the gas-holder, and a conduit in communication with the interior of the gas-holder.

6. Gas apparatus comprising a supporting vessel adapted to contain a liquid substance and provided at the upper portion thereof with sheaves, a gas-holder in the supporting vessel and provided with arms at the top thereof, cables detachably connected to the arms extending in contact with the sheaves into the supporting vessel at the exterior of the gas-holder, a carbid-holder in the gas-holder, weighting devices connected to the cables within the supporting vessel at the exterior of the gas-holder, and a conduit connected with the interior of the gas-holder.

7. Gas apparatus comprising a supporting

vessel adapted to contain a liquid substance and provided at the upper portion with sheaves, a gas-holder in the supporting vessel and provided at the top thereof with arms opposite to the sheaves, a carbid-holder in the gas-holder, cables detachably connected to the arms in contact with the sheaves and inclosed below the top of the supporting vessel, and weighting devices connected to the cables.

8. Gas apparatus comprising a supporting vessel adapted to contain a liquid substance and provided at the top thereof with a plurality of pairs of sheaves each pair comprising a lower inner sheave and an upper outer sheave, a gas-holder in the supporting vessel and provided with cables each extending in contact with a pair of the plurality of sheaves, weighting devices connected to the cables, and a carbid-holder in the gas-holder.

9. Gas apparatus comprising a supporting vessel adapted to hold liquid, a gas-holder in the supporting vessel and having arms at the top thereof, cables connected to the arms, weights connected to the cables, a perforate carbid-holder having spring-arms, means connected to the interior of the gas-holder adapted to be engaged by the spring-arms, a wire basket in the carbid-holder, and vertical partitions in the basket.

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

ORION K. STUART.

Witnesses:

WM. H. PAYNE,
E. T. SILVIUS.