No. 652,570. Patented June 26, 1900.

J. W. TINSLEY.

ACETYLENE GAS GENERATOR.

(Application filed Dec. 6, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

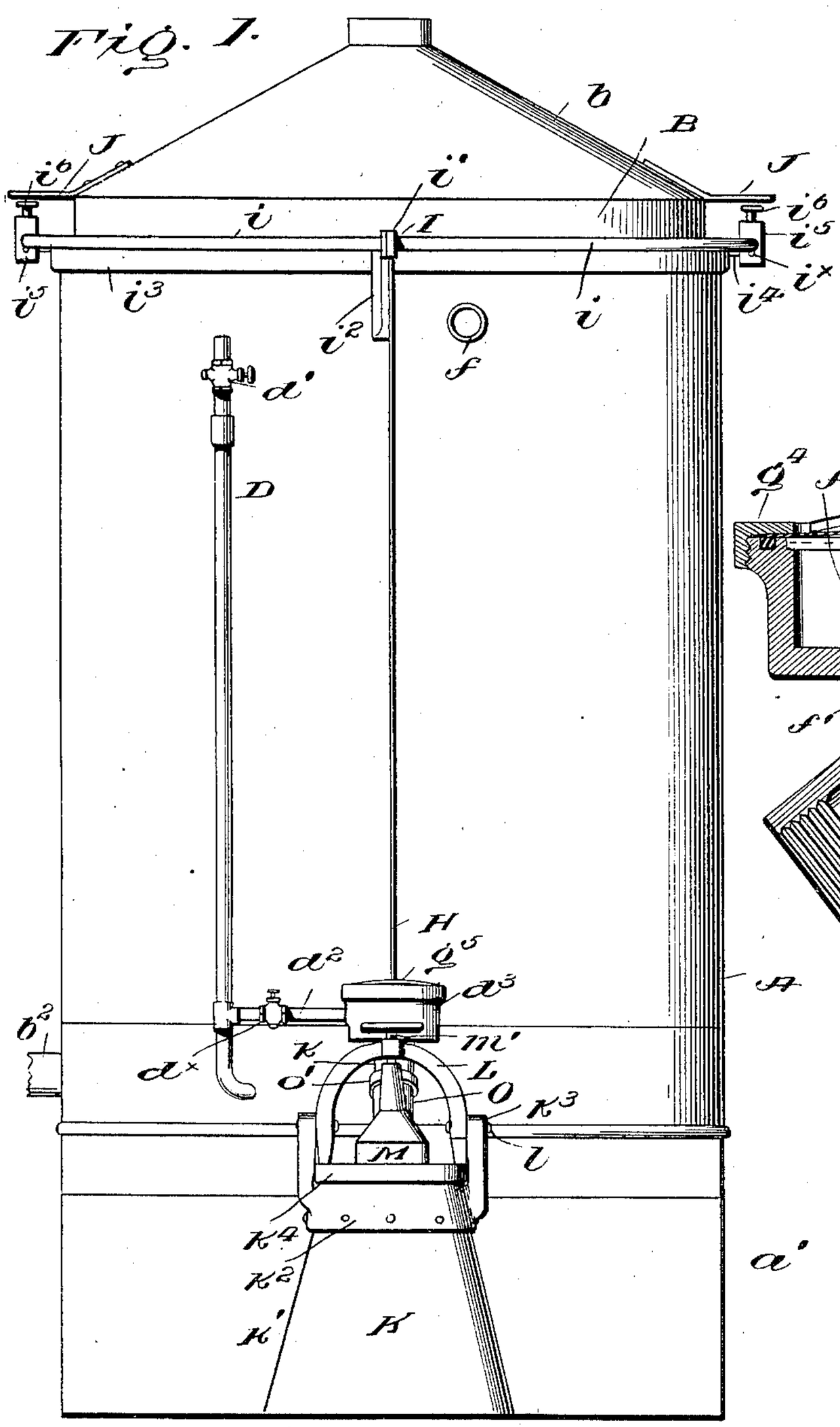
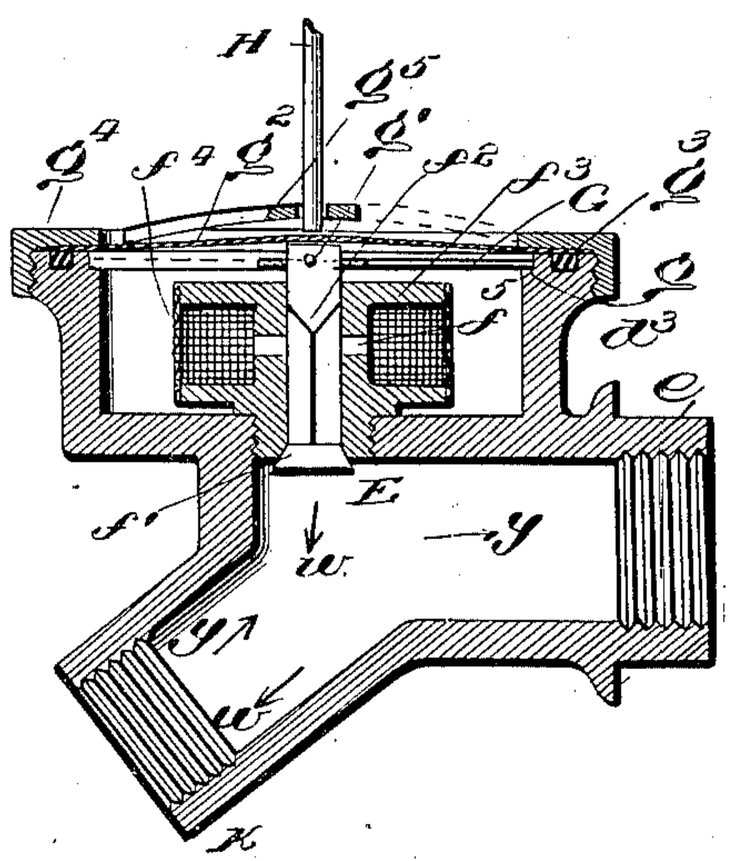


Fig. 6.



Witnesses.
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(No Model.) 3 Sheets—Sheet 2.

Fig. 4.

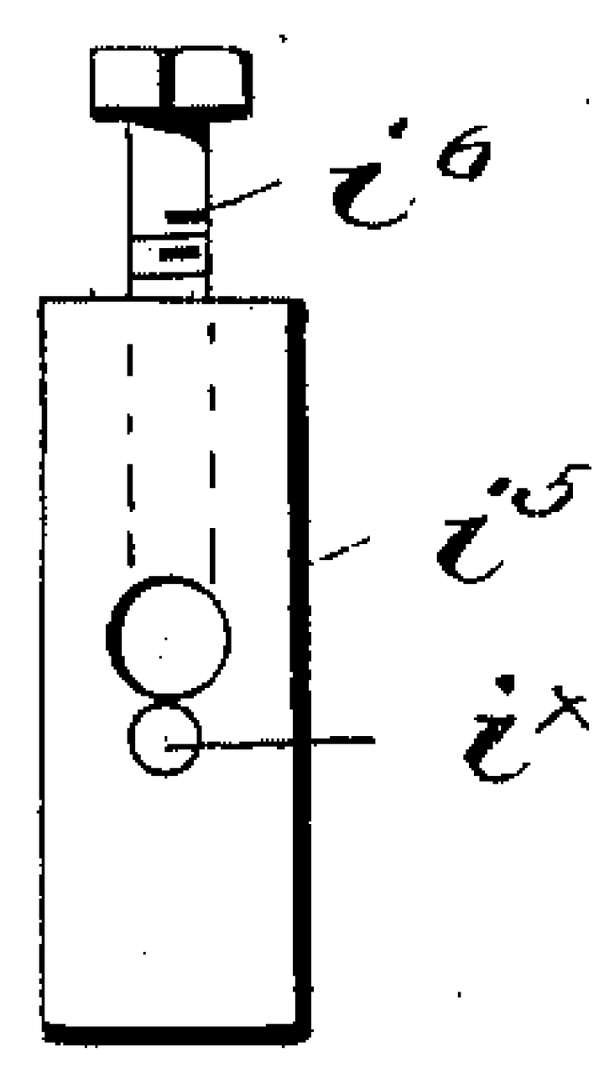


Fig. 7.

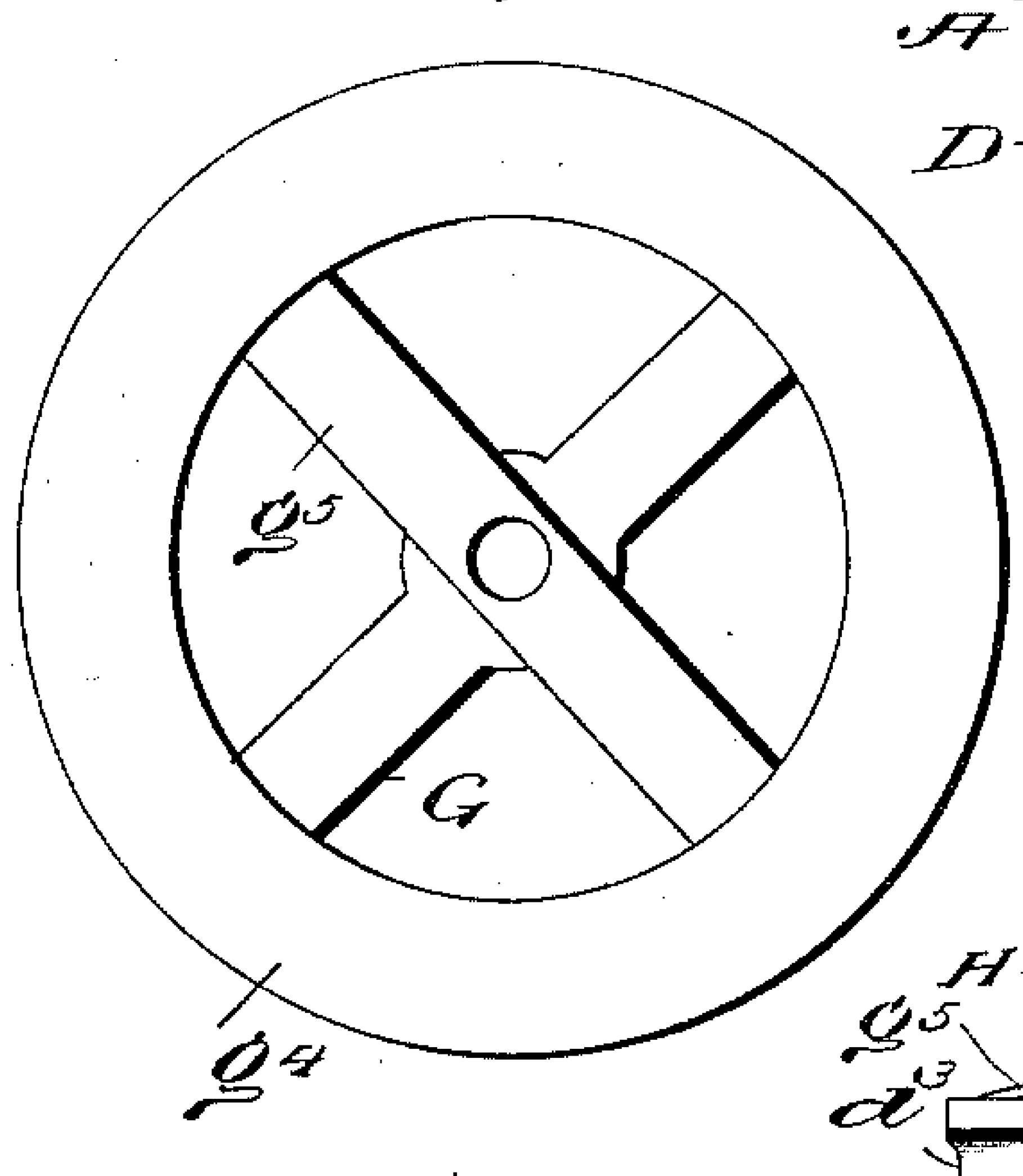
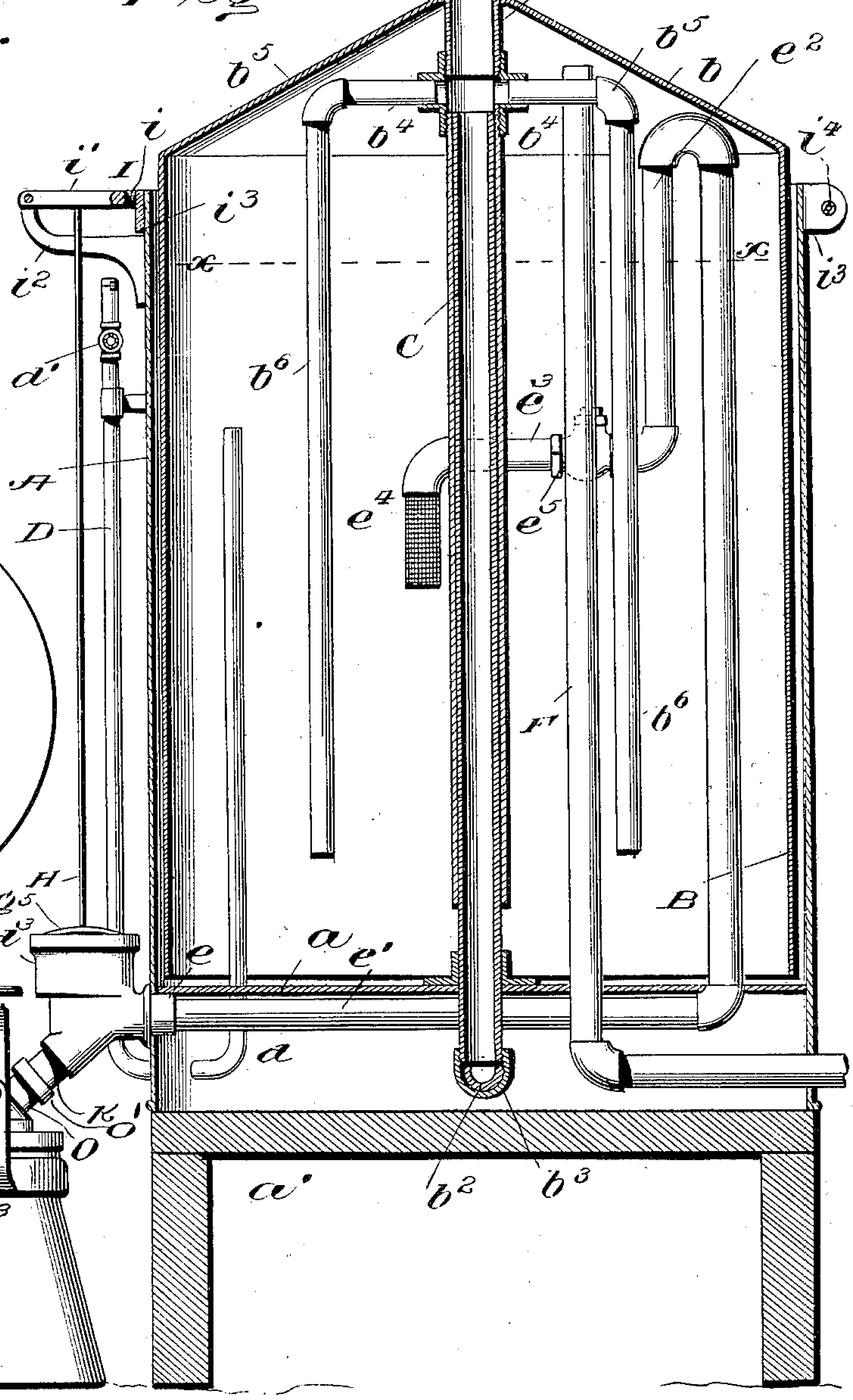


Fig. 2.



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No. 652,570. Patented June 26, 1900.

J. W. TINSLEY.

ACETYLENE GAS GENERATOR.

(Application filed Dec. 6, 1898.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 3.

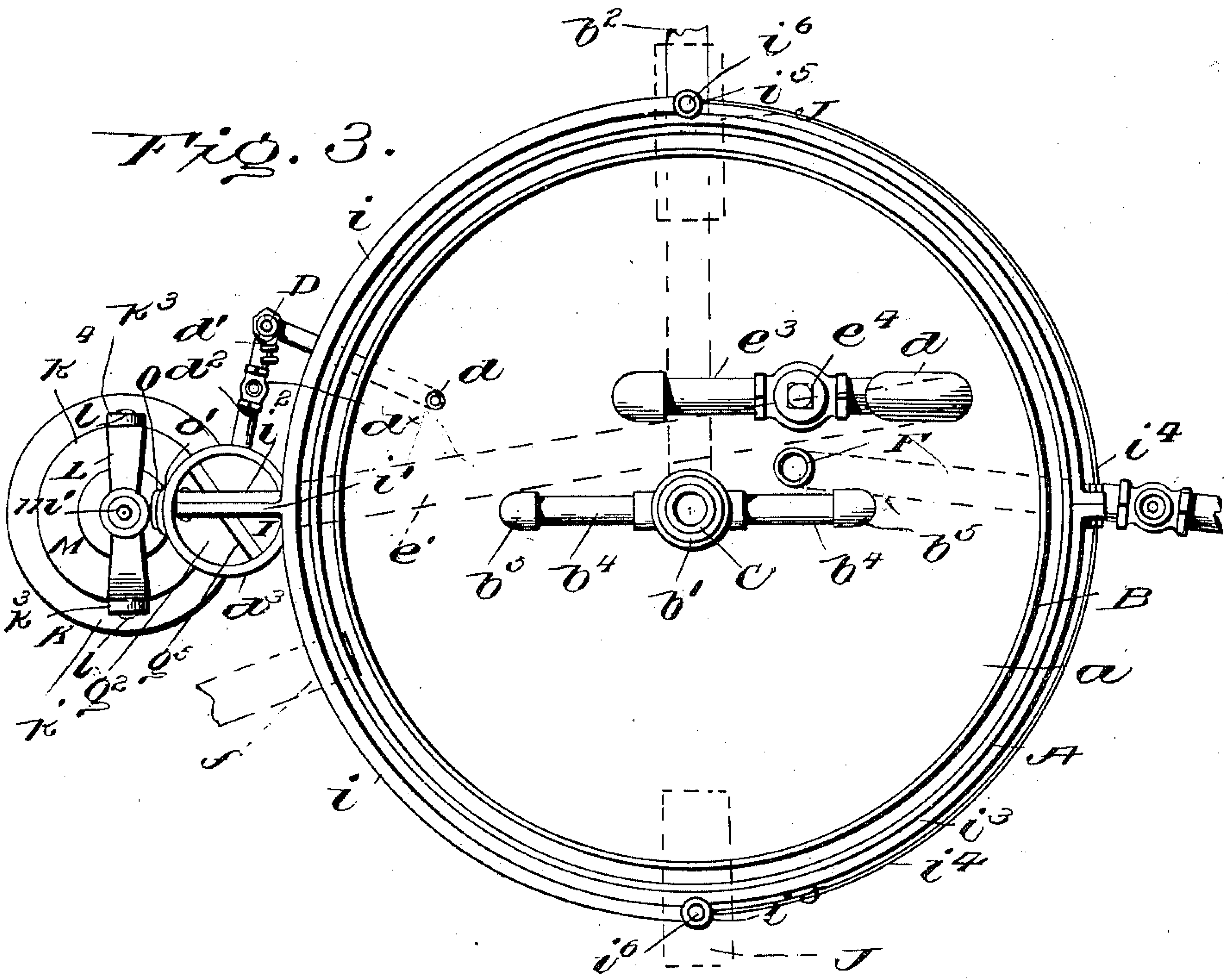
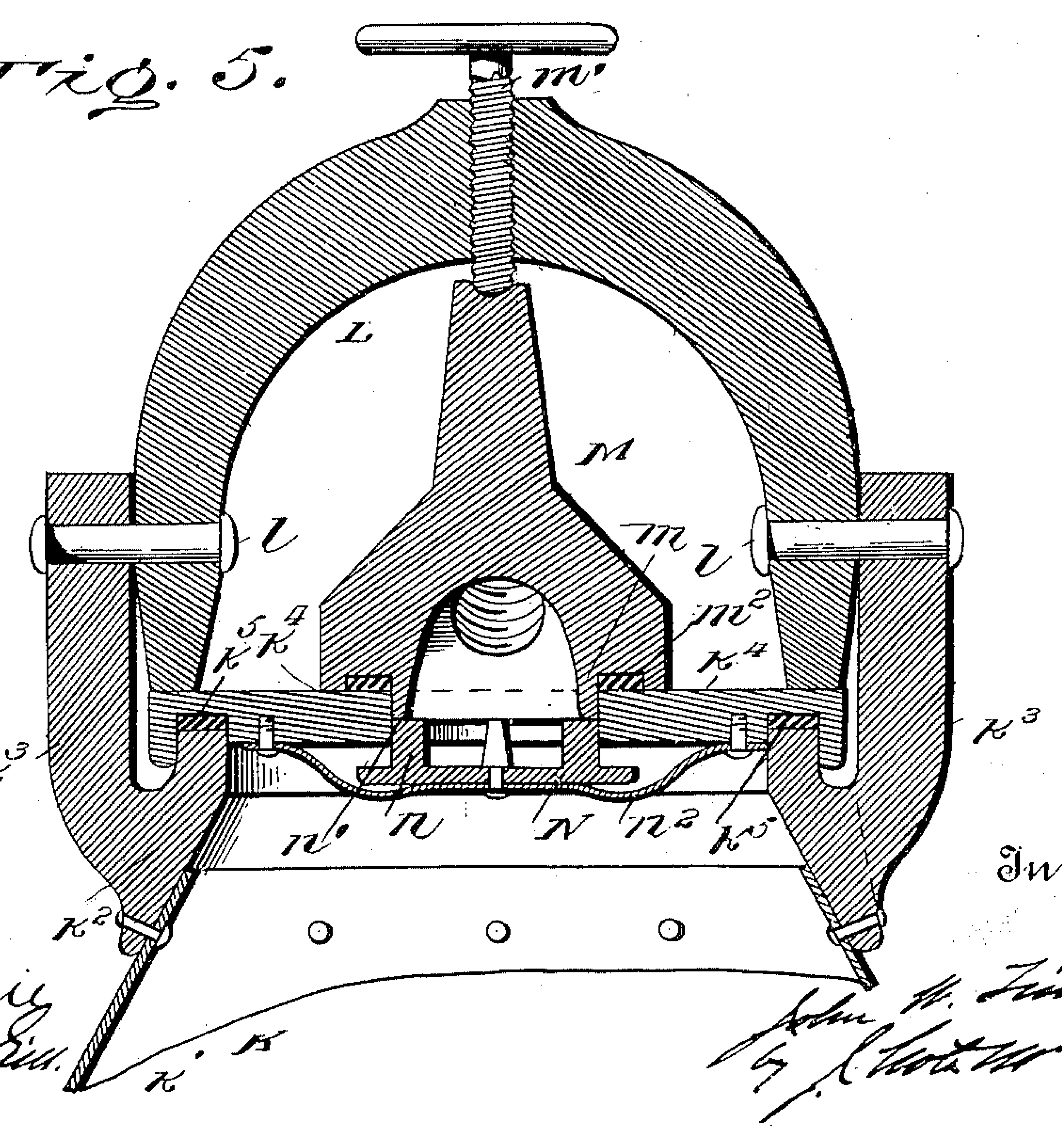


Fig. 5.



Witnesses

Inventor

Attorney

UNITED STATES PATENT OFFICE

JOHN W. TINSLEY, OF SHELDON, IOWA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 652,570, dated June 26, 1900.

Application filed December 6, 1898. Serial No. 698,459. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. TINSLEY, of Sheldon, in the county of O'Brien and State of Iowa, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in acetylene-gas generators.

The objects of the invention are, first, to provide a generator having improved means for facilitating the charging thereof with carbid; secondly, to insure the automatic feeding of water to the carbid when the gas-supply in the tank is exhausted, or nearly so, and, thirdly, to improve and simplify the construction and operation of the parts.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation. Fig. 2 is a vertical longitudinal sectional view. Fig. 3 is a plan view with the top of the movable tank removed. Fig. 4 is an enlarged detail view. Fig. 5 is an enlarged vertical sectional view of the top or head of the generator. Fig. 6 is an enlarged vertical sectional view of the water-controlling valve. Fig. 7 is a plan view of the casing of said valve.

Referring to the drawings, A designates a main tank which is open at its top and provided with a bottom a, which rests upon a base a'. Within this tank A fits a movable or floating tank B, which is open at its bottom or lower end, while its upper end is closed by a top b. To the center of this top b is secured the upper end of a pipe b', which fits down over and incloses a perpendicular pipe C, which extends upward centrally through the bottom a of tank A, said pipe C having a lower horizontal branch b^2 extending therefrom, the same being connected by an elbow b^3. Extending laterally from pipe b' are two branch pipes b^4, to the outer ends of which are connected, by elbows b^5, the upper ends of two perpendicular escape-pipes b^6. The object of this arrangement is to permit of the escape of the gas when a surplus amount thereof is accumulated within tank B. When the latter is elevated to such an extent as to raise the lower end of either one or both of the pipes b^6 above the water-line, which latter is indicated by the dotted lines $x\,x$, Fig. 2, the gas will pass up through pipe b^6 and down through pipes b' and C to the outside atmosphere. By employing two pipes b^6 this escape of surplus gas is insured, and water lodging in the lower end of one of said pipes, consequent upon tank B being slightly tilted, will not in any way interfere with the escape through the other pipes.

D designates a water-supply pipe located on the outside of tank A and having at its lower end a U-shaped bend d, which extends through the bottom a up into tank B, its upper end opening beneath the water-level. Connection is made with the city supply at the upper end of pipe D, and the admission thereof is controlled by a valve d'. From this water-supply pipe D extends a branch pipe d^2, which opens into the casing d^3 of a valve E. This valve-casing has a boss e fitted in an opening in tank A. Into this boss is screwed the gas-supply pipe e', which is extended upwardly into tank B and is then carried downward perpendicularly at e^2, terminating in a horizontal branch e^3, to the outer end of which is secured a cylinder e^4, of wire-cloth, the purpose of which is to aid in effecting the washing of the gas before the latter passes to the burners. In the horizontal branch e^3 of this gas-supply pipe is a check-valve e^5, designed to prevent a siphonic action being formed in pipe e'.

F is the gas-outlet pipe, which is located perpendicularly within tank B, extending above the water-level therein, its lower end being carried horizontally outward through tank A. The pipes leading to the several burners are connected to the outer end of this pipe F. In Fig. 1 I have indicated an opening f, just above the water-line, to accommodate the waste or overflow pipe.

The valve E comprises a conical-shaped valve-body f', the stem f^2 of which is formed with lateral flanges, which guide it in its vertical movement in a central opening of a spool-shaped body f^3, screwed into an opening in the lower portion of the casing d^3. A wire-cloth

screen f^4 encircles this body and serves as a strainer for the water, which passes through the lateral ports f^5 in said body and down into the lower portion of casing d^3. The valve-stem f^2 extends through a central opening in a spring-bar G, which rests at its ends on an annular shoulder g of valve-casing d^3. A cross-pin g' is inserted through this valve-stem at such point that the tension of spring G will normally hold the valve against its seat. Above this valve-stem is a diaphragm g^2, which consists, preferably, of a thin metallic disk resting on a gasket g^3, set in a groove in the top of casing d^3. The cover g^4 is screwed down onto casing d^3 and binds the diaphragm g^2 in place thereon. This cover g^4 has an arched bridge g^5, through a central opening in which extends a perpendicular rod H, by the depression of which against the diaphragm g^2 the valve will be unseated as against the tension of spring-bar G.

I designates a lever the long member of which is composed of two curved arms i, which encircle one-half of tank A, the short arm i' being fulcrumed at its outer end to a bracket i^2, which is secured to tank A at the top thereof. The valve-operating rod H is connected at its upper end to the short arm i' of lever I. Fast on the ends of the curved arms i are blocks i^5, having perpendicularly-disposed set-screws i^6 extending upwardly therefrom and with the heads of which are designed to engage flanged plates J, secured at diametrically-opposite points to the top of tank B. Supported by an encircling band i^3 is a semicircular spring i^4, the ends of which fit in holes $i^\times$ of blocks i^5. This spring serves to hold the lever I in its elevated position.

As the tank B is lowered by the consumption of gas the plates J upon contacting with the screws i^6 will cause the lowering of lever I, and hence the downward movement of rod H, which will effect the unseating of valve E. The branch d^2 of the water-supply pipe being extended into the side of valve-casing d^3 water will at once fall through the bottom of said casing, the valve being unseated. In this branch pipe d^2 is placed a stop-cock $d^\times$.

K designates the carbid-holder or gas-generator, into which the tubular portion k of valve-casing d^3 is designed to open. This generator comprises a tank k', having a circular collar k^2, with which are cast two ears k^3. Upon the collar k^2 is designed to rest a circular plate k^4, having a groove in which is a gasket k^5, which fits upon the upper end of collar k^2. This plate k^4 is normally held firmly against its seat by a bail L, pivoted by means of bolts l to ears k^3, the lower ends of said bail acting as an eccentric against said plate when the bail is perpendicular. Over a central opening in plate k^4 is a dome-shaped head M, which is formed with a circular flange m, normally fitting within the opening in plate k^4. This head is normally held tight against plate k^4 by a screw m', working in a threaded opening of bail L. A gasket m^2 serves to prevent any escape of gas between plate k^4 and head M. When this head M is held seated by screw m', a valve N, placed beneath the central opening of plate k^4, is held away from its seat by reason of lugs n thereof engaging a shoulder n' of the flange m. This valve N is supported by a spring-bar n^2, the ends of which are secured to the under side of plate k^4. The tension of this spring-bar is such that when the dome-shaped head M is unseated the valve N will fit tightly against the under side of plate k^4 and close the central opening thereof. A pipe O opens into the central portion of the head M and is extended diagonally outward sufficiently far to enable it to be secured by means of a coupling o' to the tubular portion k of valve-casing d^3. Hence when the valve N is held unseated by head M and the valve E is opened by the depression of rod H the water will pass directly into tank k'. Gas being thus generated will rise and pass outwardly through pipe O and through the tubular portion of valve-casing d^3 into the gas-supply pipe e' and thence into tank B. The line of passage of the water is indicated by the arrows w, while the line of passage of the gas is indicated by the arrows y.

When it is necessary to recharge the generator-tank, the screw m' is first turned, so as to unseat head M and allow valve N to be seated. Then the pipe O being uncoupled from the valve-casing this tank may be taken to the outside of the building and by turning the bail L on its pivots the plate k^4 may be removed, and access thus gained to the interior of the tank. In this way objectionable odors consequent upon recharging a carbid-tank are prevented from escaping while the tank is within doors.

In practice the necessary quantity of water is supplied to the tank through pipe D and a sufficient quantity is admitted to the generator by the unseating of valve E. The gas from the generator ascends through pipe e' and after passing the check-valve e^5 is discharged into the water through the wire-cloth cylinder e^4. The gas rising above the surface of the water causes the bell or floating tank B to move upward, allowing the valve E to be seated, which valve is held away from its seat when the bell or floating tank is in its lowered position. The gas is conveyed off for consumption through pipe F, and as this occurs the bell or tank B is gradually lowered if the generation is not commensurate with the consumption. Upon the tank B depressing the lever I the valve E will be again unseated, allowing water to pass into the generator, as before explained, thereby providing for a further supply of gas to the tank. If the supply of gas is greater than the consumption, the elevation of the bell to near its upper limit of movement will be arrested when either or both of the pipes b^6 are unsealed by the water, gas being allowed to escape through said pipes and pipe C to the outside of the tanks.

The advantages of my invention are apparent to those skilled in the art, and the operation will be readily understood from what has been said.

I claim as my invention—

1. A gas-generator comprising two tanks, one being movable within the other, a carbid-holder, a pipe leading from said holder into said tanks, a casing opening into said pipe, a valve normally closing such opening, a water-supply pipe connected to said casing, a lever mounted on one tank and designed to be moved by the other tank, and means between said lever and said valve for unseating the latter when said lever is acted upon by the latter tank, as set forth.

2. A gas-generator comprising two tanks, one being movable within the other, a carbid-holder, a pipe leading from the latter into said tanks, a casing opening into said pipe, a valve for normally closing such opening, a spring mounted in said casing for holding said valve to its seat, a rod movable longitudinally in line with said valve, a lever to which said rod is connected, said lever being mounted on the outer tank and designed to be engaged by the inner tank, and a water-supply pipe connected to said casing, substantially as set forth.

3. A gas-generator comprising two tanks, one being movable within the other, a carbid-holder, a pipe leading from the latter into said tanks, a casing opening into said pipe, a valve for closing such opening, a spring-bar in said casing for normally holding said valve seated, a diaphragm above said valve and spring-bar, a rod movable longitudinally in line with said valve, a lever to which said rod is connected, such lever being mounted on the outer tank and designed to be engaged by the inner tank, and a water-supply pipe connected to said casing, substantially as set forth.

4. The combination with the tanks, one being movable within the other, a carbid-holder, and a pipe leading from the latter into said tanks, of a water-controlling valve, a casing therefor, and a water-supply pipe connected to said casing, a spring for normally holding said valve to its seat, a rod for unseating such valve, a lever mounted on the outer tank and extended partly around the latter, and projections carried by such lever designed to be engaged by the movable tank when the latter is lowered, substantially as set forth.

5. The combination with the tanks, one being movable within the other, the carbid-holder, and the gas-pipe leading from the latter into said tanks, of the water-controlling valve, a spring for normally holding said valve to its seat, a rod for unseating said valve, a lever composed of two long curved arms and a short arm, a bracket on which said short arm is fulcrumed, said bracket being secured on the outer one of said tanks, said rod being connected to said lever, and upward projections carried by said curved arms of said lever and designed to be engaged by said movable tank, substantially as set forth.

6. A carbid-holding tank having a cover formed with an opening, a valve for such opening, means for operating said valve, and a bail pivoted near its two ends independent of the cover, the ends of the bail, when the latter is at right angles to the cover, being designed to bear against and hold such cover to its seat, as set forth.

7. A carbid-holding tank having opposed ears, a cover for such tank, formed with an opening, a valve for such opening, means for operating said valve and a bail pivoted near its ends to both of said ears, whereby when it is set at right angles to the cover its ends will bear against the latter and hold it to its seat, as set forth.

8. The combination with the tank having a collar, and opposite ears projecting upwardly from said collar, of a cover designed to fit on said collar and having an opening, a valve for said opening, means for operating said valve, a bail, and pivot-bolts passed through the latter and said ears, the ends of said bail being designed to bear against and hold said cover on said collar, as set forth.

9. A carbid-holding tank having a cover formed with an opening, a spring-pressed valve for said opening, a dome-shaped head fitted on said cover and extending into said opening, normally holding said valve unseated, a screw for holding said head, and a pipe opening into said head, as set forth.

10. A carbid-holding tank having a cover formed with an opening, a spring-pressed valve for said opening having a series of lugs extending up into the latter, a dome-shaped head fitted on said cover and having a flange extending into said opening, a screw for holding said head, and a pipe opening into said head, substantially as set forth.

11. The combination with the carbid-holder having opposite ears, of the cover having an opening therein, a spring-pressed valve for said opening, a dome-shaped head fitted on said cover for normally holding said valve unseated, a bail pivoted to said ears and having its ends bearing against said cover, a screw working in a threaded opening in said bail designed to engage and hold said head, and a pipe leading from the latter, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN W. TINSLEY.

Witnesses:
MACK HARRIS,
I. L. GOULD.