

(No Model.)

2 Sheets—Sheet 1.

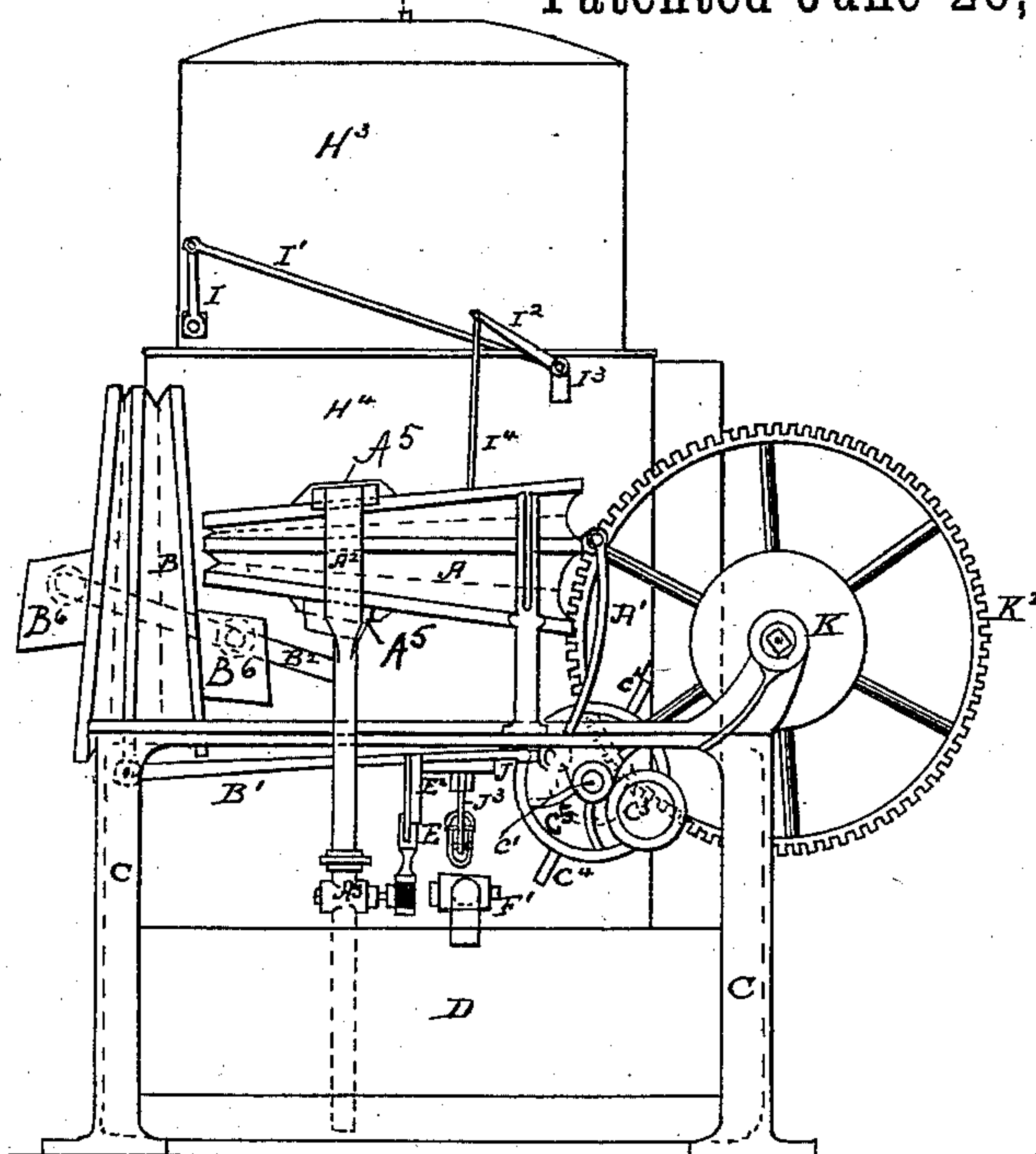
D. H. MARTIN.

# APPARATUS FOR THE MANUFACTURE OF AIR GAS.

No. 280,201.

Patented June 26, 1883.

Fig. I.



*Fig. 2.*

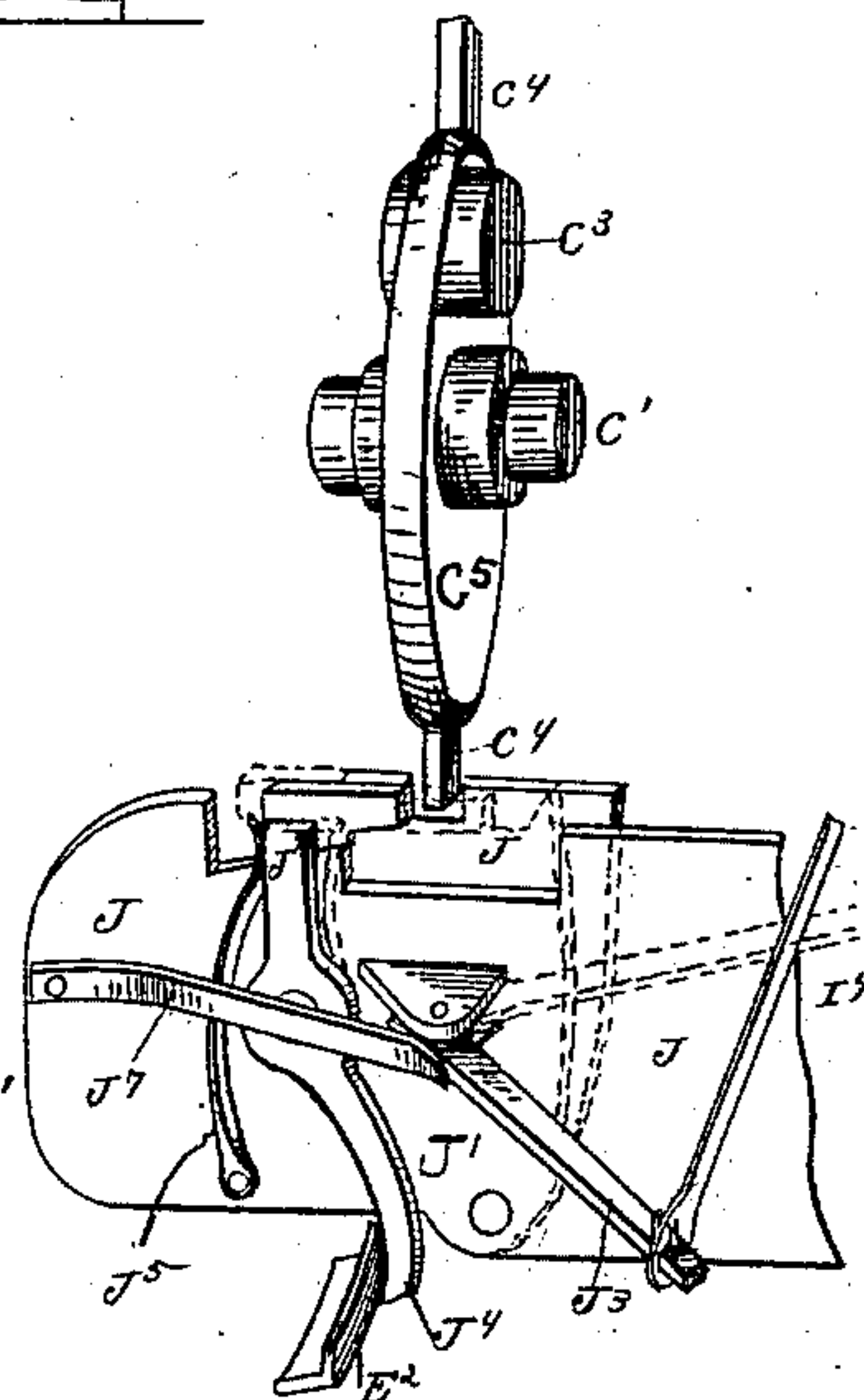
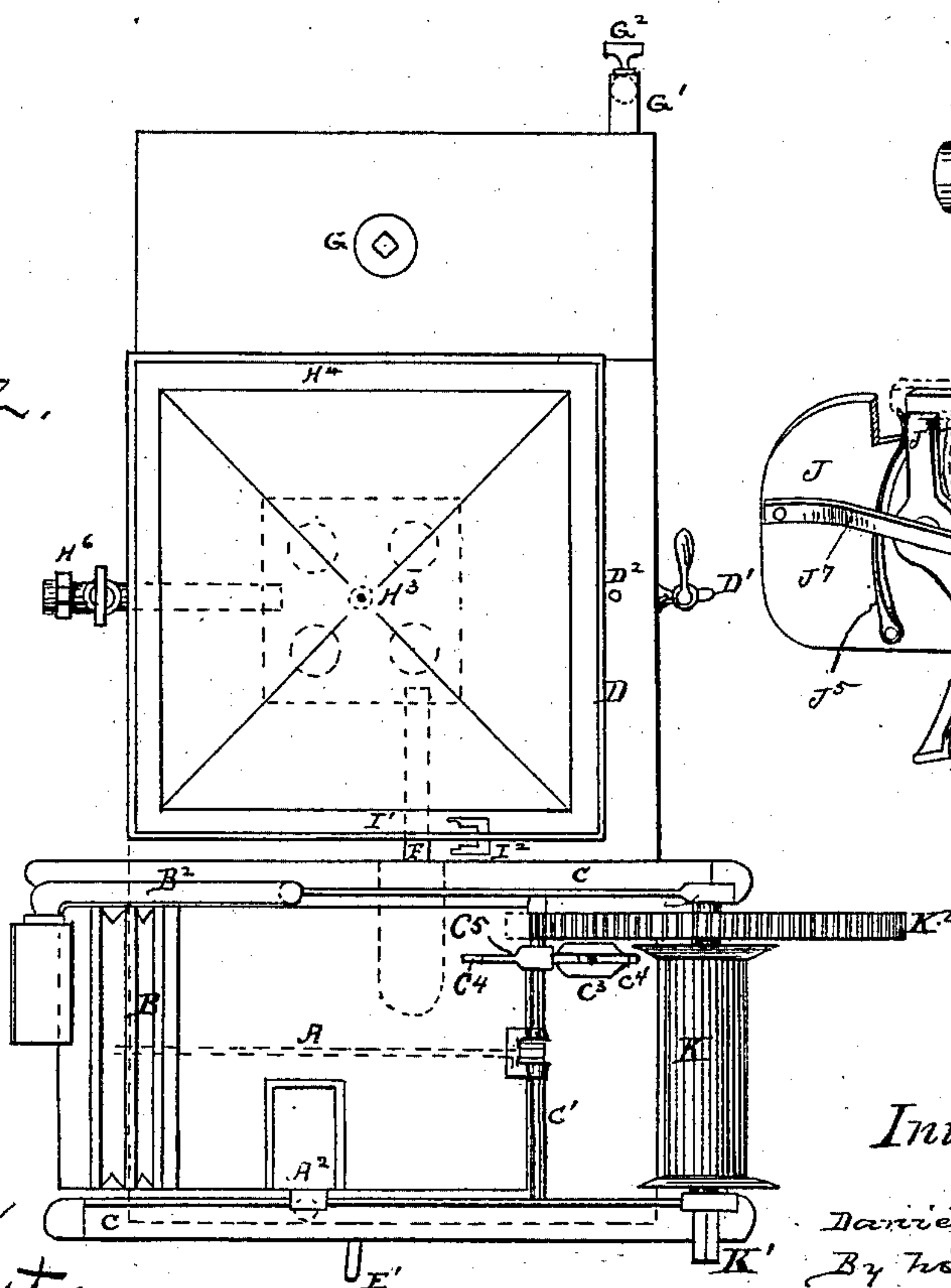


Fig. 11

Attest.  
J. C. Turner  
J. A. Fonto.

*Inventor*

Daniel H. Martin  
By his Atty.  
R. D. Smith





# UNITED STATES PATENT OFFICE.

DANIEL HOWARD MARTIN, OF IPSWICH, QUEENSLAND.

## APPARATUS FOR THE MANUFACTURE OF AIR-GAS.

SPECIFICATION forming part of Letters Patent No. 280,201, dated June 26, 1883.

Application filed September 25, 1882. (No model.) Patented in Queensland May 15, 1882.

*To all whom it may concern:*

Be it known that I, DANIEL HOWARD MARTIN, of Ipswich, in the British colony of Queensland, machinist, have invented new and useful Improvements in Apparatus for the Manufacture of Air-Gas, (for which I have obtained Letters of Registration in the said British colony of Queensland, dated the 15th day of May, 1882,) of which the following is a specification.

My invention consists of certain improvements in apparatus for the manufacture of air-gas, by which I am enabled to produce such apparatus in a compact and serviceable form, capable of cheaply and safely manufacturing large quantities of gas at a low rate, and of automatically regulating such manufacture, so that no large quantity is held in storage.

In my apparatus, there are four main parts—namely, air-suppliers, a gas-generator or air-carburetor, a gas-holder, and a gasoline-reservoir. The air-suppliers consist of two double-acting bellows, which supply four overlapping currents of air to the gas-generator or carburetor. The gas-generator or carburetor is a comparatively shallow chamber underlying the whole of the other parts of the apparatus. The gas-holder is of ordinary construction, and is not of use for its storage capacity so much as for its automatically regulating the manufacture of the gas as it is required. The gasoline-reservoir is a chamber connected to the generator by an elbow-pipe in which is a cock. This reservoir may be made removable at will, or a permanent part of the apparatus. Each arrangement has its advantages. If it is made removable, it is more convenient in one sense, because it may consist of an ordinary gasoline-drum, and when empty it may be replaced by a full one; and on the other hand it is made a permanent part of the apparatus, if a safety-pipe may be inserted to conduct any gases from the top of the gasoline-reservoir to a point below the water in the gas-generator. The supply of gasoline is controlled by a float-valve in the generator, and the supply of air thereto is controlled by cocks movable by hand, and connected by a rod to the stopping-gear. Opening or closing these cocks automatically starts or stops the working of the machine. The gas-holder, to which the stopping-gear is

connected, rising and falling, has the same effect. The air-suppliers are driven by a weight, as is well understood.

In order, however, that my invention may be distinctly understood, I will now refer to the drawings hereto attached, in which—

Figures 1 and 2 show end elevation and plan, respectively, of one of my air-gas-making machines with the gasoline-reservoir removable. Fig. 3 is a longitudinal sectional elevation of the same. Fig. 4 is a plan view of the crank-shaft and its pinion, from which my air-suppliers are worked; and Figs. 5, 6, and 7, plan, side view, and end view, respectively, of my stopping-gear, as hereinafter more particularly described. Figs. 8 and 9 show detail views of my gasoline-valve. Fig. 10 shows the gasoline-reservoir as constructed when it is a permanent part of the apparatus, with the safety-pipe G<sup>6</sup> in it, as hereinbefore described. Fig. 11 is a detail perspective of the stopping mechanism.

A and B are the air-suppliers, connected by rods A' and B' to the crank-shaft C; A<sup>2</sup> B<sup>2</sup> are the air-pipes leading into the generator D.

A<sup>5</sup> A<sup>5</sup> are blocks fixed to the side of the tank, or otherwise suitably held, and the top and bottom boards of bellows A are secured to said blocks. B<sup>6</sup> B<sup>6</sup> are also blocks fixed to the apparatus, and by means of which the outside boards of the bellows are secured. It will thus be seen that the outside boards of each bellows are firmly secured, while the center piece in each is free to vibrate in response to the crank-rods A' B'.

A<sup>3</sup> B<sup>3</sup> are the cocks connected to rod E, for opening and closing the supply of air to the generator by means of handle E'.

F is a pipe for the passage of the air-gas to the receiver H, from whence it passes, through perforations H' in disks H' and H<sup>2</sup>, into the gas-holder H<sup>3</sup>. H<sup>4</sup> is a tank for holding same.

H<sup>5</sup> is a guide for gas-holder; I, radius-bar fixed to gas-holder; I' and I<sup>2</sup>, levers on one pivot, I<sup>3</sup>. To I<sup>2</sup> is attached rod or wire I<sup>4</sup>, working the stopping-gear J.

G' is a pipe for supplying gasoline from its reservoir G to generator D. G<sup>2</sup> is a cock therein, and G<sup>3</sup> float for closing valve G<sup>4</sup> (of the section shown in Fig. 8) on seat G<sup>5</sup>.

H<sup>6</sup> is the gas-supply pipe to burners.



F' is the cock in pipe F. This cock is connected to rod E.

On the crank-shaft C' is pinion C<sup>2</sup>, wheel C<sup>5</sup>, provided with counterbalance-weight C<sup>3</sup>, and arms C<sup>4</sup>. The weight C<sup>3</sup> acts as a counter-balance for the crank C<sup>5</sup>. The pinion C<sup>2</sup> is driven by large spur-wheel K<sup>2</sup> on drum-shaft K', K being the drum on which the rope or cord is wound, which, after passing over suitable pulleys, (not shown,) terminates in a weight, as is well understood.

D' is a drawing-off cock, and D<sup>2</sup> a gage.

C is the main framing.

The stopping-gear consists of frame J, on which is pivoted flat bolt J', having a slot, J<sup>2</sup>, in which trigger J<sup>3</sup> works. J' is a spring bolt to the frame J and pressing against trigger J<sup>3</sup> at the other end. A second bolt, J<sup>4</sup>, pivoted under the frame, is actuated by a spring, J<sup>5</sup>, and controlled by projecting piece E<sup>2</sup> on rod E. When the machine is working the ends of the arms C<sup>4</sup> are free to pass through an opening, J<sup>6</sup>, in the bolt J'.

The mode of operation is as follows: The gas-holder tank H<sup>1</sup> is first filled with water then the generator D is supplied with water—say to level of dotted line *d*, Fig. 3—and then the cock G<sup>2</sup> is opened, so as to supply the gasoline through valve G<sup>4</sup> until that supply is cut off by float G<sup>3</sup> at about dotted line *d'*, same figure, the level of which will also be seen by the gage D<sup>2</sup>. The cocks A<sup>3</sup>, B<sup>3</sup>, and F' are then opened by handle E', the air-suppliers set to work so as to force air in successive currents down pipes A<sup>2</sup> and B<sup>2</sup>, which discharge underneath the water-level, through which and through the gasoline above it they ascend, becoming carbureted or converted into air-gas in their passage, and finally entering, through pipe F, into receiver H; and it is then conducted to the burners by pipe H<sup>6</sup>, or through perforations in the disks H<sup>7</sup> and H<sup>2</sup> into the holder H<sup>3</sup>, to act as a means for regulation, thus: When this holder rises up the radius-bar I, levers I' and I<sup>2</sup> and rod I<sup>4</sup> pull the trigger J<sup>3</sup> of the stopping-gear, which, springing over, moves the bolt J', and so carries the slot J<sup>6</sup> beyond the line of travel of the arms C<sup>4</sup>, which thus stops the

motion of the crank-shaft, and consequently suspends the operation of manufacturing gas until the gas-holder falls again; and then the automatically reverse action of the trigger J<sup>3</sup>, moving the bolt J' back again, allows the arms C<sup>4</sup> to pass through the slot J<sup>6</sup>, and so resume the manufacture of gas. When the handle E' is moved to open the cocks A<sup>3</sup>, B<sup>3</sup>, and F', the projecting piece E<sup>2</sup> on rod E shoots the second bolt J<sup>4</sup> out of the line of travel of the arms C<sup>4</sup>, thus allowing them to revolve and the manufacture to proceed. On the reverse movement of the rod E (when closing said cocks) the projecting piece E<sup>2</sup> allows the spring J<sup>5</sup> to shoot the bolt J<sup>4</sup> within the line of travel of arms C<sup>4</sup>, thus stopping the manufacture of gas, as before described. The motive power therefore cannot revolve the shaft K' when the air-supply to the generator is cut off.

Having thus described the nature of my invention and the manner of performing same, I would have it understood that what I believe to be new, and therefore claim as my improvements, in apparatus for the manufacture of air-gas, is—

1. The gas-holder H<sup>3</sup>, tank H<sup>4</sup>, rods I I', I<sup>2</sup>, and I<sup>4</sup>, in combination with the trigger J<sup>3</sup>, pivoted bolt J<sup>4</sup>, spring J<sup>5</sup>, rod E, having projection E<sup>2</sup>, and bolt J', provided with slots J<sup>2</sup> J<sup>6</sup>, substantially as described, and for the purpose set forth.

2. The frame J, provided with flat bolt J', having slots J<sup>2</sup> and J<sup>6</sup>, spring-trigger J<sup>3</sup>, pivoted bolt J<sup>4</sup>, spring J<sup>5</sup>, in combination with rod E, provided with projections E<sup>2</sup>, substantially as specified.

3. The frame J, provided with flat bolt J', having slots J<sup>2</sup> and J<sup>6</sup>, spring-trigger J<sup>3</sup>, pivoted bolt J<sup>4</sup>, spring J<sup>5</sup>, and rod E, provided with projections E<sup>2</sup>, in combination with the arms C<sup>4</sup>, rigidly united to and adapted to revolve with the shaft C' and the weight C<sup>3</sup>, substantially as set forth.

DANIEL HOWARD MARTIN.

Witnesses:

EDWARD WATERS,

WALTER SMYTHE BAYSTON.