No. 626,237. Patented June 6, 1899.

U. KESSELRING.

ACETYLENE GAS GENERATOR.

(Application filed Sept. 21, 1897.)

(No Model.)

Fig. 2.

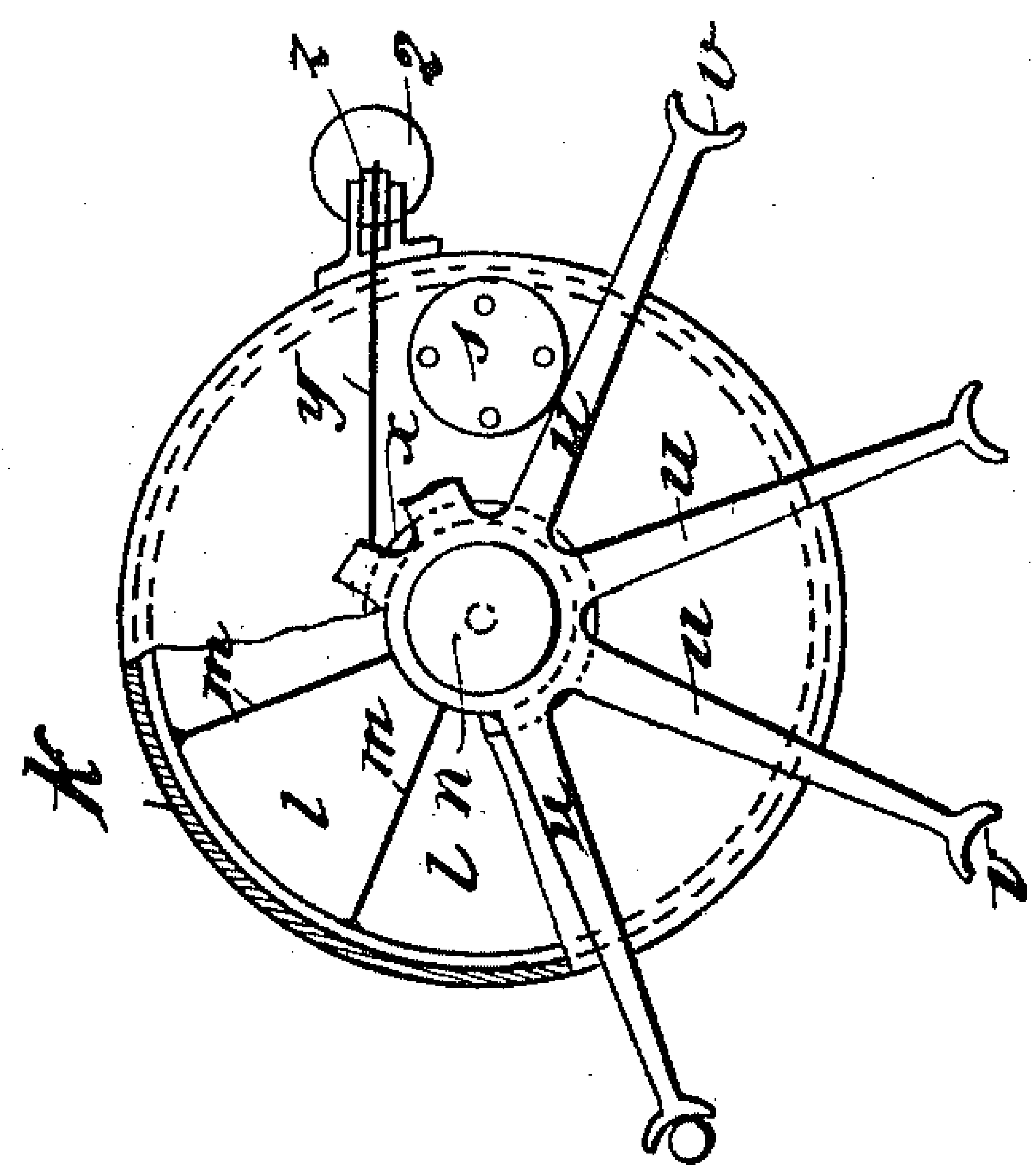
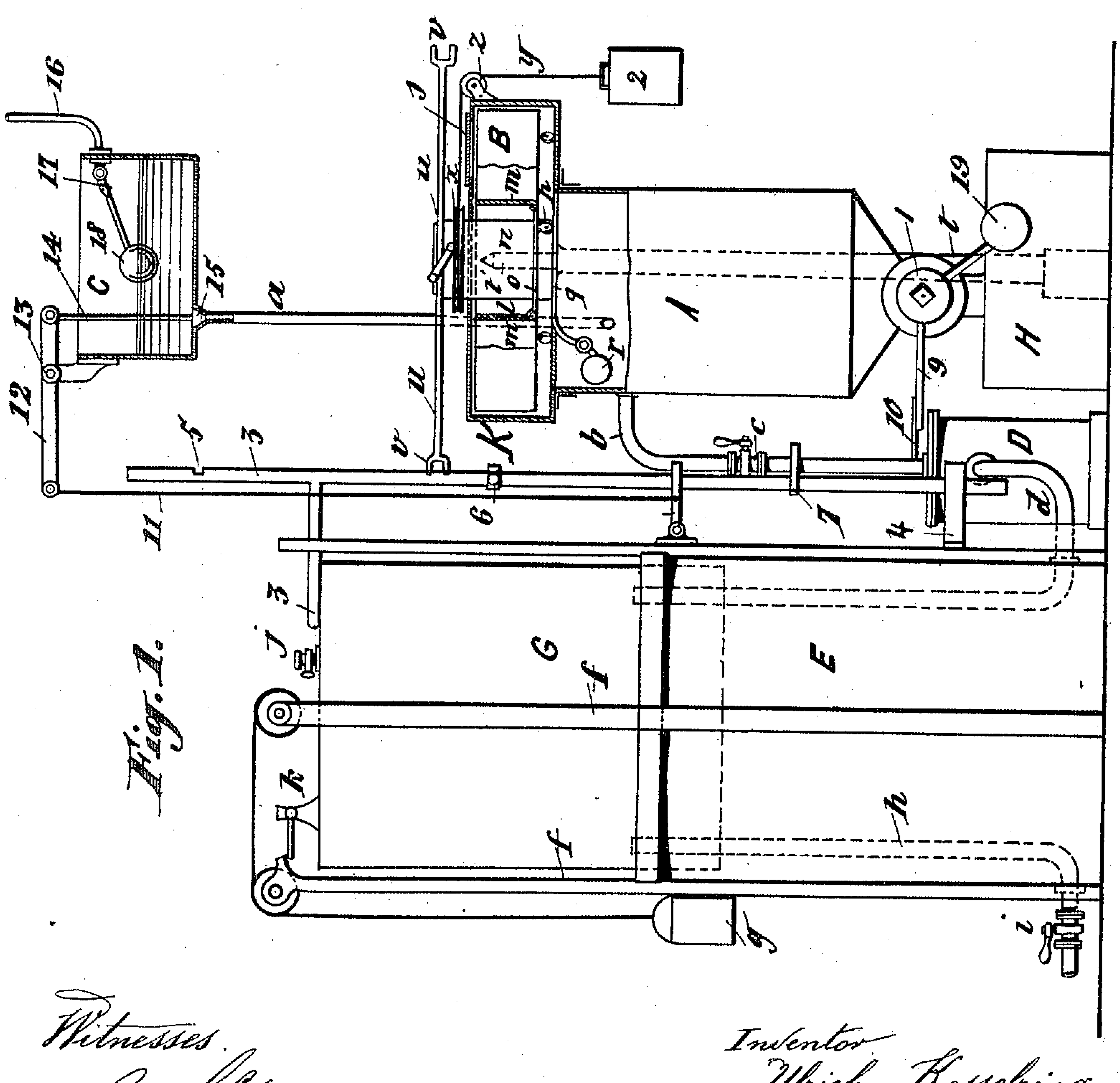


Fig. 1.



Witnesses.
Rémy Leloa.
Ad Sturm

Inventor
Ulrich. Kesselring.
per L. Dixon Jr.
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ULRICH KESSELRING, OF ST. IMIER, SWITZERLAND.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 626,237, dated June 6, 1899.

Application filed September 21, 1897. Serial No. 652,457. (No model.)

To all whom it may concern:

Be it known that I, ULRICH KESSELRING, a citizen of Switzerland, residing at St. Imier, Switzerland, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

The present invention concerns an apparatus with automatic charger intended for the production of acetylene gas.

This apparatus offers the following advantages: It is very simple, entirely automatic, is easily charged, and offers no danger. Moreover, the production of gas is proportionate with the consumption and ceases with it. The introduction of the charges of water and carburet of calcium is produced automatically by the cocks by means of a single rod movable with the bell of the gasometer, and the charging consists simply in the filling of the empty compartments of the carburet-distributer and of the water-reservoir if there is necessity before each operation.

In the annexed drawings, Figure 1 is a general elevated view of the apparatus, the charger being seen in a profile section at its vertical axis. Fig. 2 is a plan view of the distributer or charger.

The whole apparatus is composed of several essential parts, which are a gas-generator A, in which the acetylene gas is produced by the action of the water on the carburet of calcium and which is surmounted by a distributing-drum B; a water-reservoir C, feeding at appropriate moments the generator A, with which it communicates by a tube *a;* a purifying apparatus D, communicating through the pipe *b*, which is furnished with a cock *c*, with the generator and by the pipe *d* with the gasometer and in which the gas is purified by means of appropriate known matters; a gasometer E G, composed, as ordinary gasometers, of a cistern E, filled with water, and of an upper bell G, destined to receive the gas and vertically movable between the uprights *f*, its weight being poised by the pressure of the gas and one or more counterpoises *g*, the gasometer communicating with the tubes of the burners by a pipe *h*, supplied with a cock *i*, and the bell is provided at its upper part with a cock *j*, allowing it to be emptied of the gas which it contains, and of a safety-valve *k*, opening automatically when the bell has attained its highest point and when from any cause there is an overproduction of gas; a receiver H, which receives the residuum of decomposed carburet of calcium and of water coming from the generator, with which it communicates by means of a cock I.

The charging apparatus is composed of a distributing-drum divided into a certain number of compartments *l* by radial partitions *m*, fixed to the nave *n*. Each compartment is provided with a movable bottom *o*, articulated with the lower part of a radial partition *m*, and in the lower face of which is screwed the frame of a caster *p*. The distributing-drum is placed in a cylindrical case K, fixed to the upper part of the generator A, and whose cover and bottom are provided with an opening. The opening of the cover, closed by a plate *s*, serves for the introduction of the carburet into the compartments of the distributer, and the bottom opening, closed by the flap *q*, opens a communication between the case K and the generator and allows the introduction of the carburet into the latter. The drum turns on a pivot *t*, which at the same time serves as a support to the case K and whose upper extremity *t'*, forming the "pivot," properly so called, is fixed into the nave *n*, on the upper part of which are fixed, above the radial partitions *m* and of the same number as the latter, arms *u*, terminated by a small fork *v*, whose two branches are diagonally arranged with respect to one another. Under the arms *u* a grooved pulley *x* is wedged on the nave *n*, on which a cord *y* turns, passing over a guide-pulley *z*, and at the extremity of which a counterpoise 2 is fixed. The distributing-drum is worked automatically by means of a T-shaped rod 3, fixed with its perpendicular branch on the bell of the gasometer and properly guided by one or more sockets 4. The rod 3 is supplied with a groove 5, into which pass the points of the forks *v*, and with two catch-tappets 6 and 7, respectively acting on the descent upon the levers 8 and 9. The lever 9 is provided with a counterpoise 19 and is wedged upon the axle of the evacuation-

cock I, which it opens and shuts. A small blade 10, forming a spring, is fixed to the end of the lever 9 to allow the passage of the catch-tappet 7 when the rod 3 ascends. The lever 8, fixed to the upright *f* through the medium of the cord 11, commands the extremity of a lever 12, having its fulcrum at the point 13 on the water-reservoir C, and whose extremity supports a rod 14, provided at its lower extremity with a plug 15, shutting the pipe *a*, which leads the water into the generator A. The introduction of the water into the case C is made by a tube 16, connected with a system of piping or with another larger reservoir and whose lower extremity, emptying into the water-chamber, is supplied with a cock 17, worked by a float 18.

The working of this apparatus is very simple and takes place as follows: The compartments *l* being filled with carburet and the water in the reservoir C being at its normal height, if the gasometer is empty the bell G is on a level with the cistern E, which is filled with water, and the rod 3 occupies its lowest position. To put the apparatus into movement, a first charge of water and of carburet of calcium is introduced into the generator A. As soon as these two matters are in contact there is a production of gas which, by the pipe *b*, is led into the purifying apparatus D, where it is purified by means of appropriate known matters, such as lime. The gas leaves the purifier D by the pipe *d* to enter into the gasometer, the bell of which rises according to the pressure of the gas. The rod 3 following the ascending movement of the bell, the groove 5 reaches the height of the fork *v* and the upper point, which presses against the rod, enters the groove alone, the arm *u* being constantly held by the rod, which slides between the two points of the fork. The bell continuing to ascend, the catch-tappet 6 surpasses the lever 8. Then the catch-tappet 7 in its turn surpasses the lever 10, and when the bell has reached the upper extremity of its course the charge contained in the generator is completely used up. When the production of gas has ceased, the bell descends, owing to the consumption, and the tappet 7, acting upon the lever 9, produces the opening of the cock I, which causes the evacuation of the residuum of carburet and water in the generator into the receiver H. When the tappet 7 leaves the lever 9, the cock I shuts by the action of the counterpoise 19. Then the tappet 6, coming into contact with the lever 8, lifts the plug 15, which admits into the generator the necessary quantity of water for a charge of carburet and returns to its initial position when the catch 6 leaves the lever 8. The bell continuing its descent the groove 5 again reaches the height of the fork *v*, and the lower point of the fork, passing in its turn into the groove, the arm *u* is set free and allows the distributing-drum to turn under the action of the counterpoise 2 until the next arm *u* comes in its turn into contact with the rod 3. Owing to the rotation of the drum the empty compartment which was above the flap *q* is substituted by a compartment containing a charge of carburet. The charge by its weight causes the movable bottom *o* of the compartment to open and this, through the medium of the caster *p*, causes the flap *q* to open, which thus leaves a free opening of the generator and allows the charge of carburet to fall into the latter. The flap *q* and the movable bottom are afterward brought back to their former position by the counterpoise *r*. Owing to the projection of the carburet into the water of the generator there is a fresh production of gas, and the bell ascends again in the manner already described.

In order that the admission of water into the generator might be always regular, the level of the water in the reservoir C must be constant. For this purpose the cock 17 for introducing the water into the reservoir is worked by a float-lever 18. Each time the water-level falls the float follows this movement and the lever opens the cock, which is only shut again when the water, and consequently the float, has returned to its normal level.

Having fully described my invention, I declare that what I claim, and desire to secure by Letters Patent, is—

1. An automatic acetylene-gas producer consisting of a gas-generator, a discharge-cistern disposed underneath said generator and connected therewith by a tap worked automatically by the bell of the gasometer, a water-cistern connected with said generator by means of a feeding-pipe and provided with a valve also automatically worked by the bell of the gasometer, a distributing-drum for the carburet of calcium disposed on the upper part of said generator, a purifying apparatus connected with said generator and a gasometer the bell of which commands the discharge of the water feeding and the carburet feeding to said generator.

2. An automatic acetylene-gas producer comprising a generator, a discharge-cistern, a purifying apparatus and a gasometer, the combination of a water-cistern connected with said generator by means of a feeding-pipe and provided with a valve for the closing and opening of said pipe, a lever pivoted on said water-cistern and connected with one end to the stem of said valve and with the other end to a cord connected on its turn to a little rod articulated to the upright of the gasometer, a catch secured to the rod worked by the bell of the gasometer to draw back said little rod for the working of said valve, a cock secured to the feeding-tube of the water-cistern and a float working said cock.

3. An automatic acetylene-gas producer comprising a generator, a discharge-cistern, a water-cistern, a distributing-drum, a puri-

fying apparatus and a gasometer, the combination of a rod worked by the bell of the gasometer, a notch in said rod for the releasing of the forked arms of the distributing-drum, a catch, secured to said rod and working the valve of the water-cistern and another catch for the working of the cock of the discharging-cistern substantially as described and shown.

ULRICH KESSELRING.

Witnesses:
EDUARD ZINGY,
JOHN WEBER.