

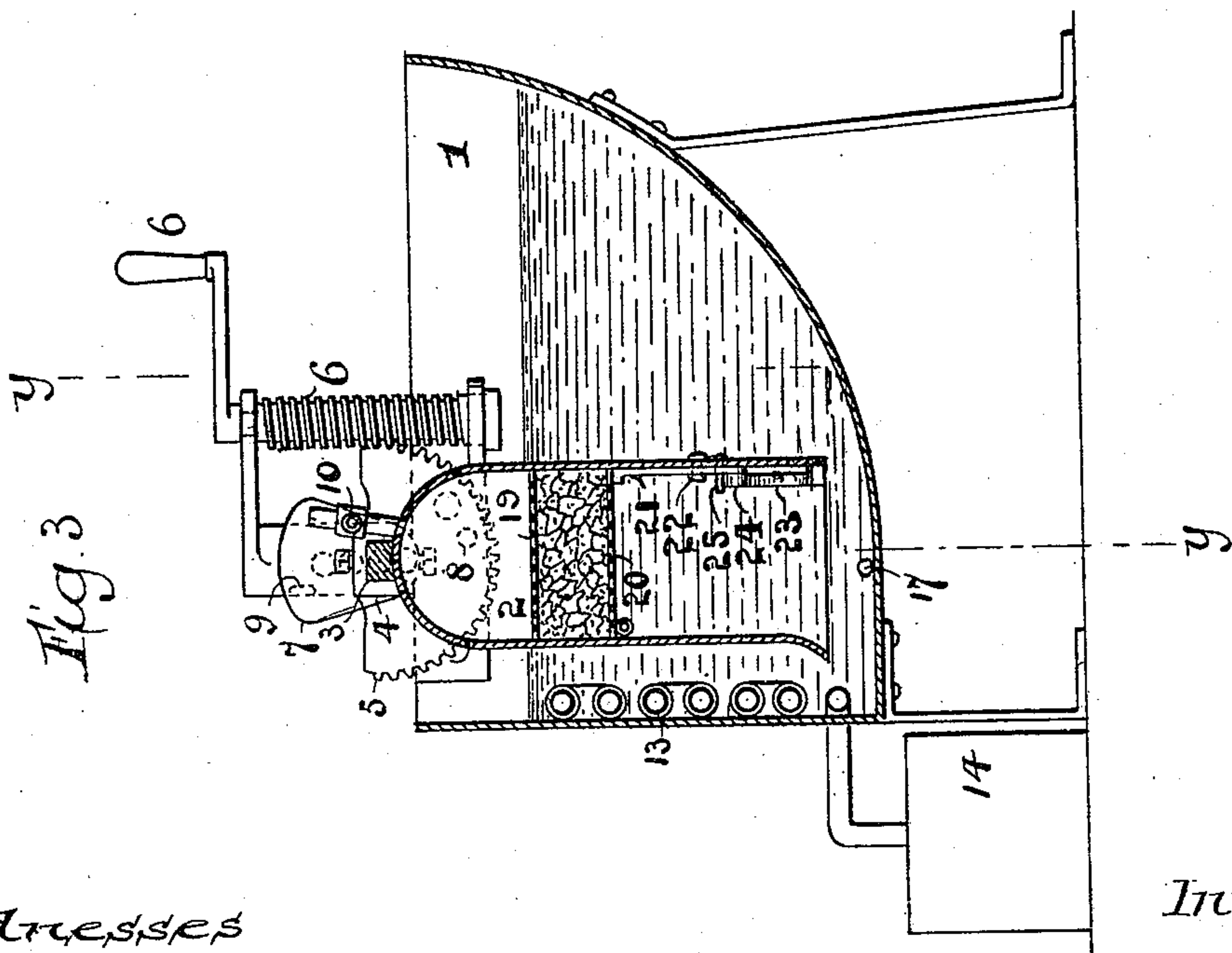
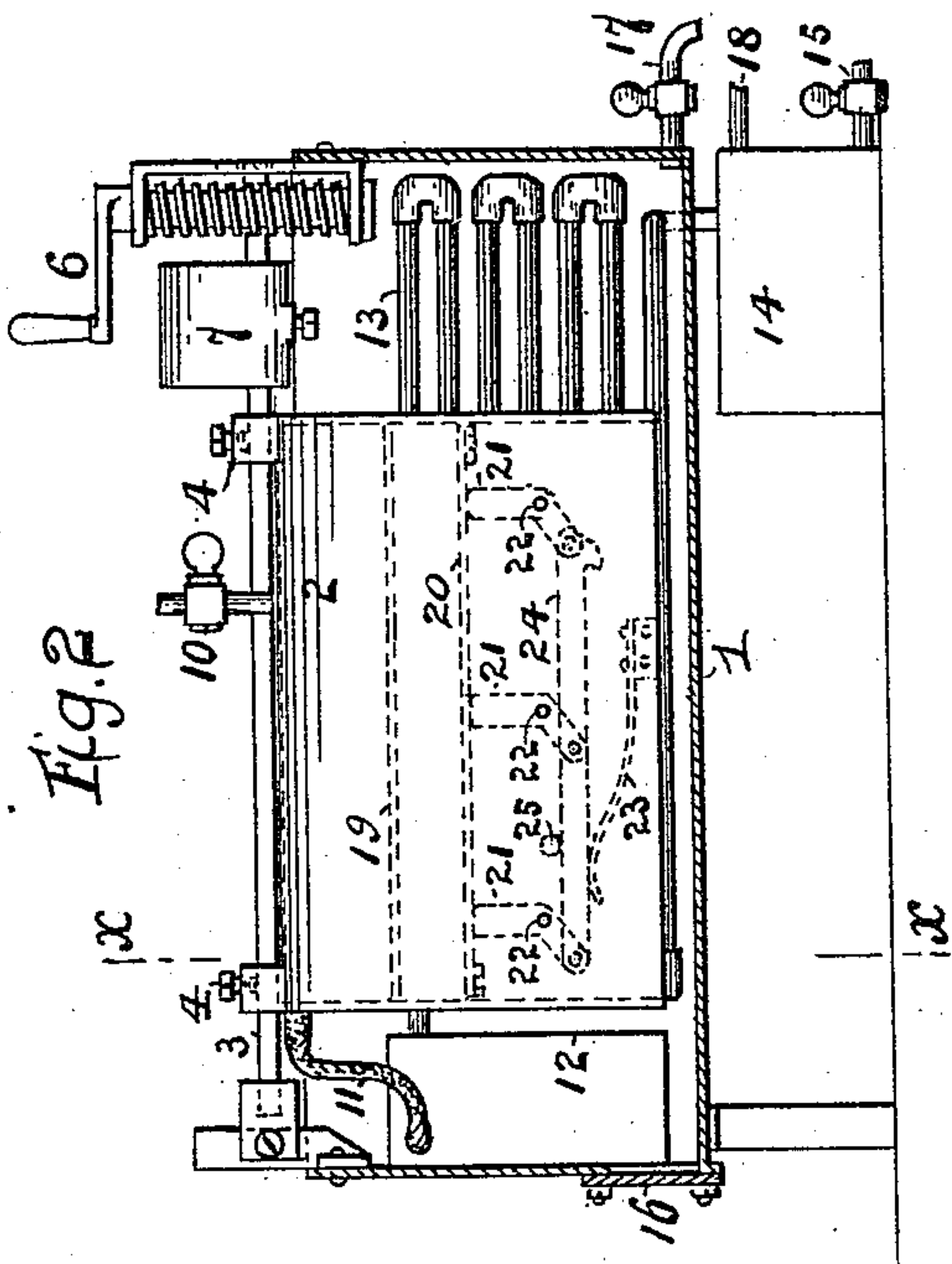
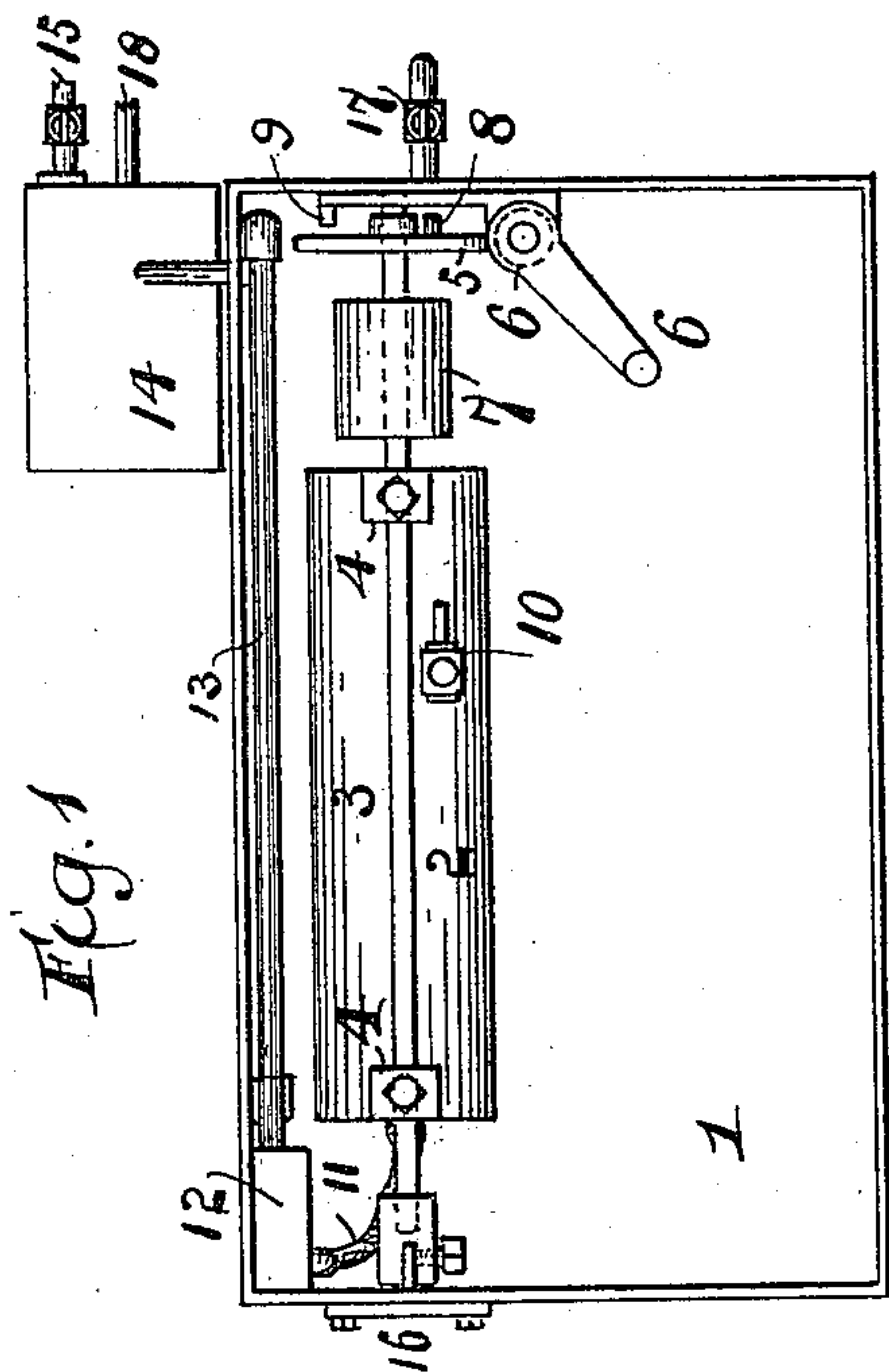
(No Model.)

E. N. DICKERSON.

## ACETYLENE GAS PRODUCING APPARATUS.

No. 579,702.

Patented Mar. 30, 1897.



Witnesses  
Geo. Wadman  
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E N Duberna



# UNITED STATES PATENT OFFICE.

EDWARD N. DICKERSON, OF NEW YORK, N. Y.

## ACETYLENE-GAS-PRODUCING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 579,702, dated March 30, 1897.

Original application filed January 3, 1896, Serial No. 574,205. Divided and this application filed May 25, 1896. Serial No. 592,980. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD N. DICKERSON, residing in the city, county, and State of New York, have invented a new and useful Improvement in Gas-Producing Apparatus, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

This invention relates to an improvement in apparatus designed for the purpose of forming gas by the combination of a liquid and a solid, and is especially applicable to the formation of acetylene gas by combining calcium carbide with water. In this process the vapor of water is carried off with the gas, and my invention is especially useful in condensing or removing from said gas the vapor so carried with it. In accomplishing this result I utilize the same body of water which is used to generate the acetylene gas as a means of condensing the vapor in a suitable condenser. I may also carry the condensed water into a receptacle independent of the body of water itself which is above referred to. I have described this apparatus as connected with a special form of generator, but I do not limit myself to that form.

My invention will be readily understood from the accompanying drawings, in which—  
Figure 1 represents a plan view; Fig. 2, a section through Fig. 3 on the line *y y*, and Fig. 3 a cross-section through Fig. 2 on the line *x x*.

The apparatus consists generally of a movable receptacle 2 for receiving the calcium carbide, located in a suitable tank 1. The said receptacle is pivoted on the shaft 3, by means of which it can be elevated above the water or depressed into the position shown in the drawings. It is provided with a grating 19 and a pivoted grating 20. The receptacle 2 may be of any suitable shape, but as shown is U-shaped in cross-section. The shaft 3 is preferably made square, though it may be of any suitable construction, and the receptacle 2 is carried upon it by lugs 4, provided with suitable set-screws.

When the apparatus is of considerable size, the counterbalance 7 may be employed, and the receptacle may be elevated by means of

a worm 6 and gear 5, meshing therewith. The gear is provided with stop 8, which engages in its elevated position with stop 9 on the frame supporting the worm.

Of course in small apparatuses a worm-gear is not required, but a suitable stop should be conveniently arranged to hold the vessel in its upper position, the said stop not being necessary where a worm is employed. The pivoted grating 20 is locked in its closed position in any suitable way, as shown, by bell-crank bolts 21 pivoted at 22. When these bolts are thrown out of the way—as, for instance, by the connecting-bar 24—the grating 20 can be raised parallel to the side of the vessel in which it is pivoted. This is of course done when the vessel is raised, so that the U stands upright. When, however, the bar 24 is swung to the left, as shown in Fig. 2, it is arrested by the fixed stop 25 and is held in position by the spring 23. The receptacle or generating vessel 2 is provided with a drain-cock 10, by which it can be emptied when raised, and which cock also serves, when the vessel is lowered, to allow the escape of any air when the gas is generating and before it passes to the service-pipes. A flexible gas connection 11 connects with the upper part of the generator 2, as shown in Fig. 2, and also connects with the box 12, from which, at another part, the gas passes through the condensing-coil 13, which connects with the water-receptacle 14, from which the gas passes again to the holder or other service by pipe 18.

In the generation of acetylene gas considerable water is carried off with the gas. This will then pass into the box 12, closed at the top and open at the bottom, and sealed, of course, by the water in the vessel 1. Any remaining vapor will be condensed in the condenser 13 and received in the vessel 14, from which it can be drawn out at times through the drip-cock 15.

The lime which falls to the bottom of the vessel 1 can be removed through the hand-hole 16 or otherwise, and the vessel itself can be emptied when desired through the drain-cock 17.

The operation of my device will now be readily understood. The generator 2 is raised to



the upper position either by the worm-gear or by a suitable handle. The grating being raised, the chamber between the grating 19 and 20 is filled with carbid, any water in the vessel lying at that time in the lower bend of the U. The generating-chamber is then lowered to the position shown in Fig. 3, and the water-level being properly adjusted the generation of gas immediately commences. If desired, the air may first be purged through the purge-cock 10. Then the gas passes, as before indicated, to the holder. This action will continue until the carbid is exhausted if the difference in the water-level between the outside and the inside of the generating-chamber exceeds the pressure of the holder. The water-level will be lowered within the generating vessel as the pressure in the holder increases, and the generation will be to that extent automatically controlled.

As will be seen, the advantage of carrying out the condensed water into a separate tank is apparent from the fact that otherwise the entire length of the condensing-pipe could not be used as a condenser, for it would be largely filled with water. The only available difference in height which could be so utilized in said body of water as a condenser would be the difference in water-level due to the pressure of the gas.

I make no claim herein to the specific construction of generator shown and described, as the same forms the subject-matter of my copending application, Serial No. 574,205,

filed January 3, 1896, of which the present application is a division, which has resulted in Patent No. 563,457, dated July 7, 1896.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a tank for containing a liquid, of a receptacle for generating gas by the union of a liquid and a solid, a condenser connected with said gas-generating receptacle and located in the liquid in the same tank in which the generator is located, an extension of said condenser passing through the walls of the liquid-chamber, and provided with an outlet for withdrawing the condensed moisture, and an outlet for carrying off the dried gas, whereby the liquid in the tank produces the gas and cools the gas so produced, substantially as described.

2. The combination in an apparatus for generating gas from a solid material, of a vessel containing the water which generates the gas, the generator 2, the condenser 13, and connections between the generator and condenser, the generator and condenser being located in the vessel containing the water which generates the gas, substantially as described.

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

E. N. DICKERSON.

Witnesses:

ANTHONY GREF,  
H. COUTANT.