

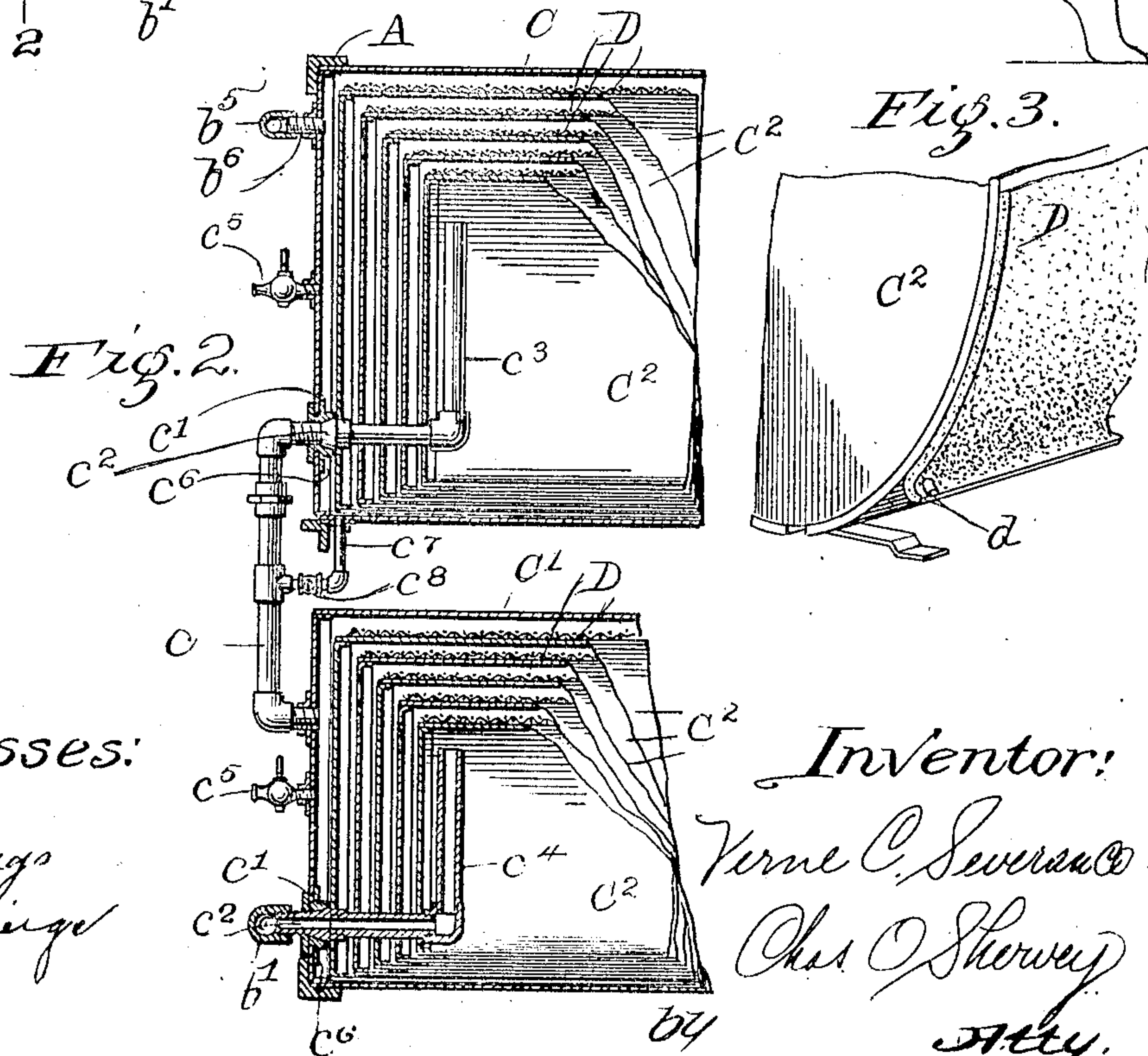
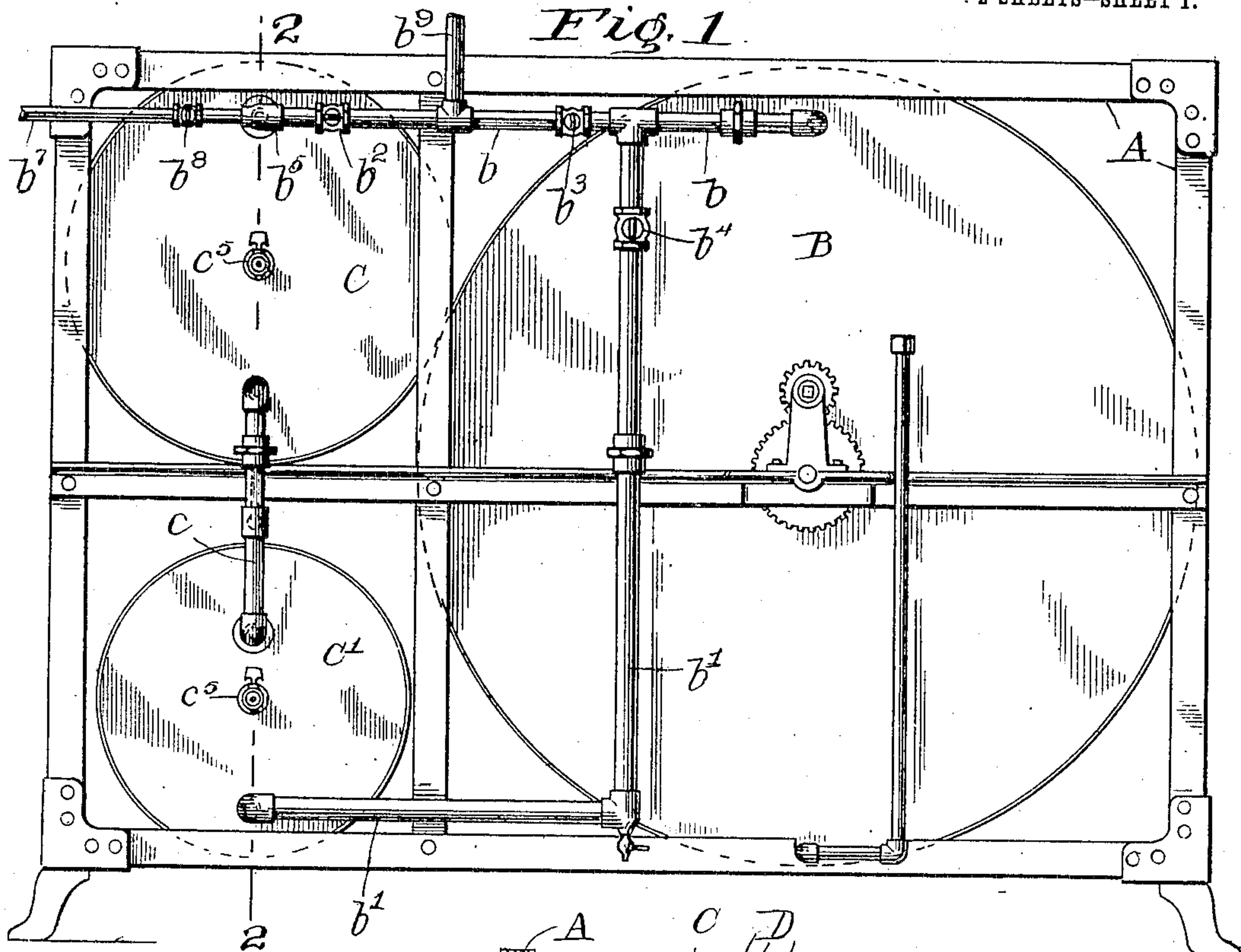
No. 843,112.

PATENTED FEB. 5, 1907.

V. C. SEVERANCE.
CARBURETER.

APPLICATION FILED MAR. 3, 1906.

2 SHEETS—SHEET 1.



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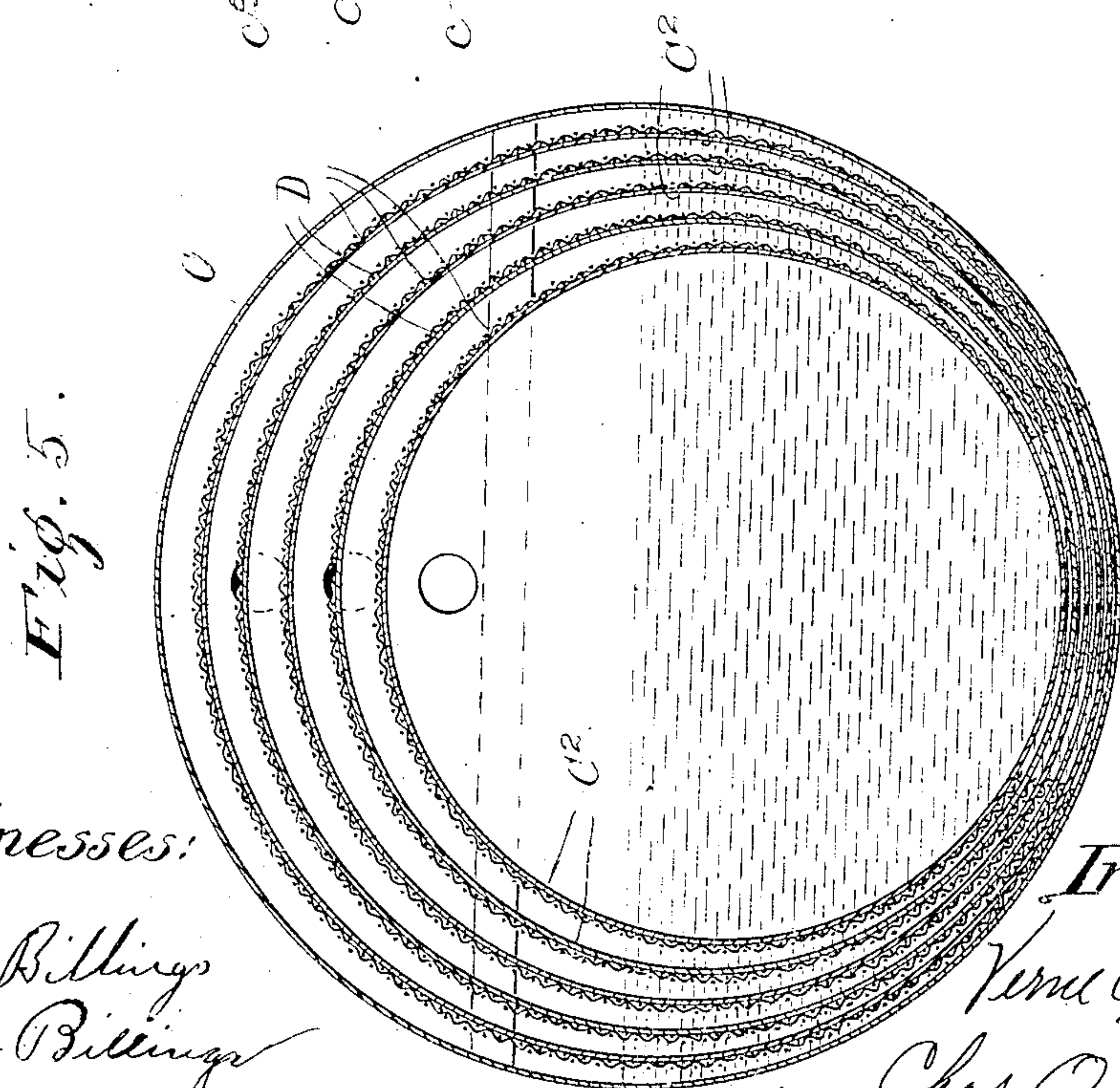
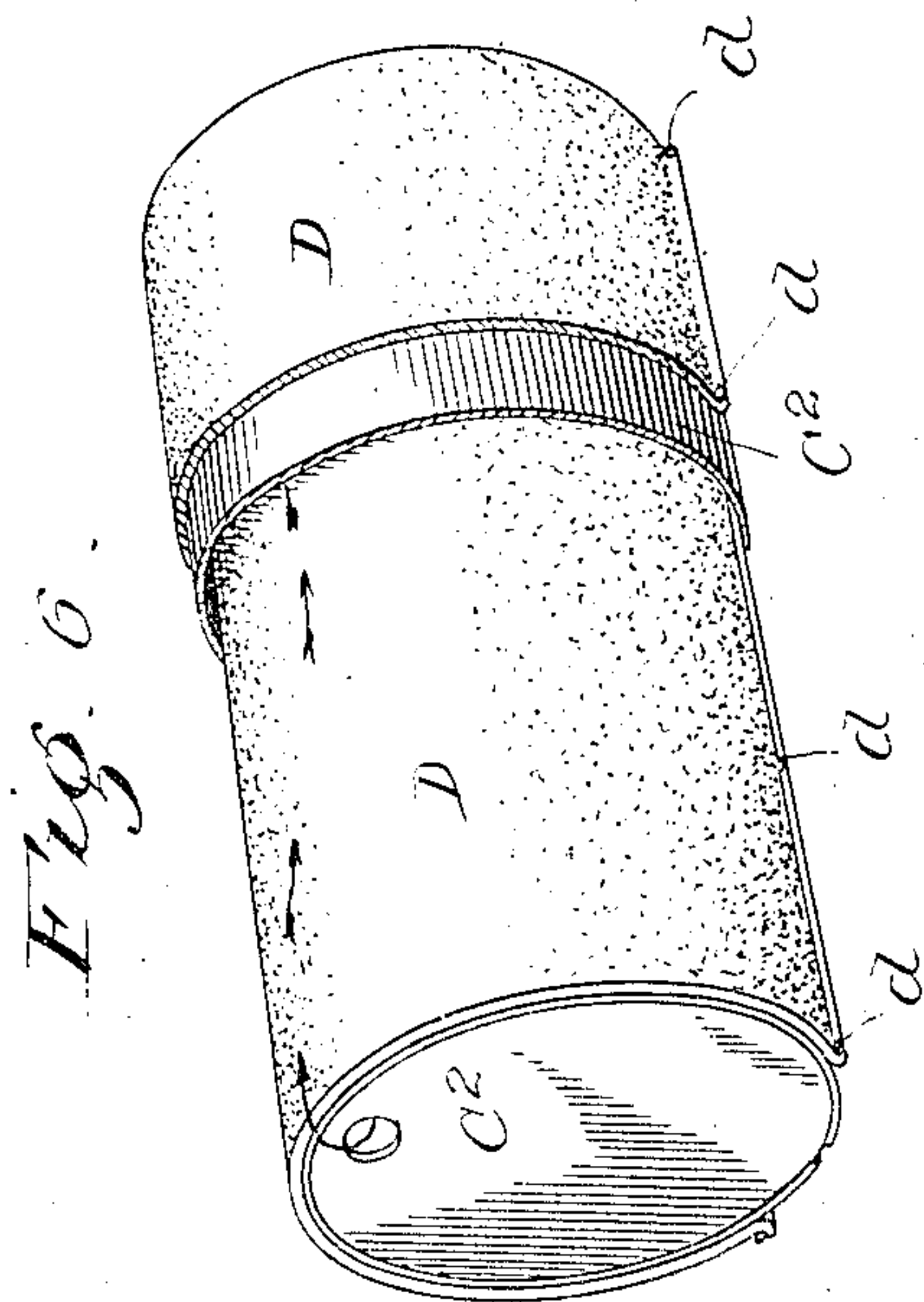
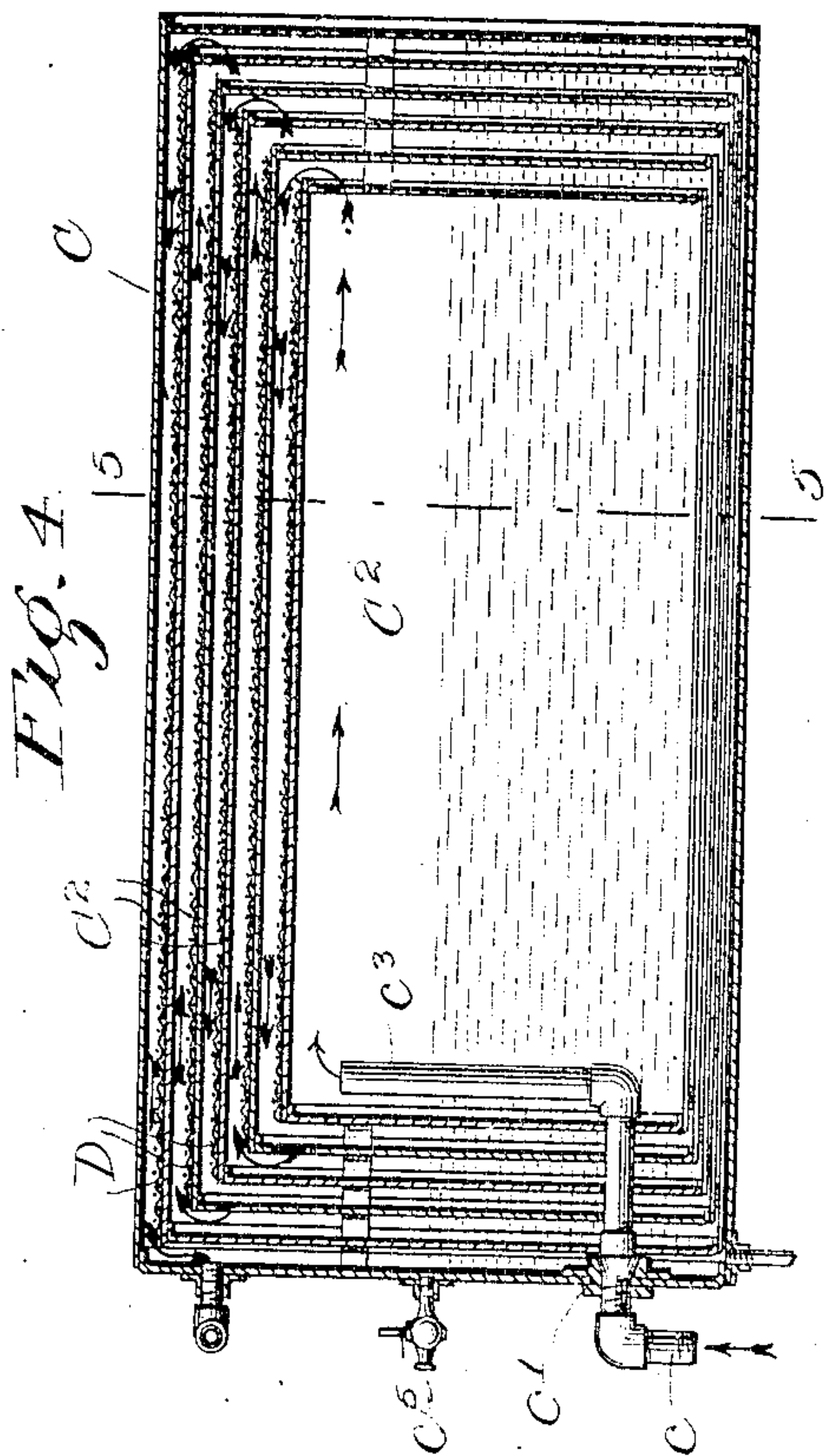
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

VERNE C. SEVERANCE, OF CHICAGO, ILLINOIS.

CARBURETER.

No. 843,112.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed March 3, 1906. Serial No. 303,962.

To all whom it may concern:

Be it known that I, VERNE C. SEVERANCE, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to certain new and useful improvements in carbureters, and to such end consists in certain novel features of construction, a description of which will be found in the following specification and the essential features thereof particularly pointed out in the claims.

The invention is illustrated in the drawings furnished herewith, in which—

Figure 1 is a front view of the apparatus containing my improvements. Fig. 2 is a vertical diametrical section taken in the line 2 2 of Fig. 1, a portion of the carbureting-tanks being broken away. Fig. 3 is a fragmental perspective view of one of the inner tanks and wick. Fig. 4 is a central vertical longitudinal section of the upper carbureting-tank. Fig. 5 is a cross-section in the line 5 5 of Fig. 4, and Fig. 6 is a perspective view of one of the inner tanks and a fragment of one of the outer adjacent tanks which surrounds the same.

Referring first to Fig. 1, A represents a frame in which is supported an air-pump B and a number of carbureting-tanks C C'. The air-pump may be of any of the old and well-known kinds and needs no further description. Said pump operates to force air into the carbureting-chambers through pipes b b', which pipes are controlled by valves b² b³ b⁴. The pipe b is provided with a T-coupling b⁵ at its end, and a nipple b⁶ connects the tank C with one branch of the T-coupling. A filling-pipe b⁷ connects with the other branch of the T-coupling and extends to a suitable source of hydrocarbon supply. The pipe b⁷ is provided with a valve b⁸, which may be opened when it is necessary to fill the carbureter. Between the valves b² b³ is interposed the main outlet-pipe b⁹, through which the gas is conducted to the places where it is to be used. The gas flowing into the pipe b⁹ may be mixed with air coming from the pump B by opening the valve b³, and by this means any mixture of carbureted air and uncarbureted air may be had.

The carbureting-tanks C C' are preferably

arranged one above the other, as shown, and are connected by a pipe c, which extends from the outer chamber of the lower tank to the innermost chamber of the upper one. At the place where the pipe c enters the outer chamber of the upper tank an air-tight joint is made by means of a coupling c', the socket c⁶ of which is secured to the wall of the chamber and formed with a tapered opening in which fits a tapered nipple c², which is drawn into the socket c⁶ by a nut threaded upon the nipple and bearing upon the outside of the wall of the tank. From the nipple c² the pipe extends into the inner chamber and is carried up to a position near the top thereof by a pipe c³. The pipe b' is also provided with a coupling similar to the one on the upper tank and extends into the inner chamber, where it is provided with an upwardly-extending pipe c⁴.

Both of the tanks are provided with petcocks c⁵, which can be opened when filling the tanks, so as to ascertain the amount of hydrocarbon put into the tanks. A pipe c⁷, provided with a valve c⁸, extends from the bottom of the upper tank and connects with a coupling in the pipe c. By opening the valve in the pipe c⁷ the lower tank can be filled from the one above. In filling the apparatus the valve b² is closed, the valves b³ c⁸ and petcocks c⁵ opened. When the hydrocarbon reaches the level of the petcocks, they are closed, as are also the valves b³ and c⁸. The valve b² is then opened, the air-pump started, and the carbureted air will presently flow out through the pipe b⁹.

My present invention relates more particularly to the carbureting-chambers in which the air is charged with the vapors from the hydrocarbon, and this feature will now be described. To saturate air with hydrocarbon, it is customary to provide a tortuous passage of considerable length, through which the air is forced, and where any great capacity is required these tortuous passages are duplicated and placed side by side and one above the other, so that a great amount of space is required, resulting in a large and cumbersome apparatus. One of the aims of my present invention is to reduce the size of an apparatus of this kind without reducing the vaporizing-surface necessary to give the same capacity. This I accomplish by making a number of tanks C² of varying sizes and

placing them one within the other, as illustrated, thus forming chambers between any two adjacent tanks.

In the drawings I have shown the tanks in the form of cylinders closed at both ends, each cylinder having an opening in one of its ends through which the air can pass from one chamber to the other. The course of the air through the chambers is indicated by arrows in Fig. 4, where it will be seen that it first passes over the body of hydrocarbon, then out through the perforation in the rear end of the innermost tank, then back through the chamber between the wall of the tank through which it came and the wall of the adjacent tank. It then passes out through the perforation in the head of this tank, continuing its course through and around the various tanks until it escapes through the outlet in the outer chamber. A long and tortuous passage is thus formed which merely occupies the space contained in the outer chamber. The lower edges of the inner tanks are open, and the tanks may be slightly separated, so that the hydrocarbon will have free access to all of the chambers. The inner tanks are braced and held apart in any suitable manner.

I employ wicks D in the vaporizing-chambers, which wicks are preferably constructed of some fabric—as, for instance, eiderdown—and, as shown, these wicks extend around the inner tanks to points near the open bottom edges thereof, where they are held in place by pins *d*. It has been customary to employ wicks in carbureters and to arrange the wicks in the tortuous passages; but these wicks were generally arranged in vertical planes. The hydrocarbon is drawn up the wick by capillary attraction and forms a sheet of semivaporous liquid supported by the wick. In my experiments I find that under the best of conditions the hydrocarbon will rise on a vertically-extending wick through a distance of approximately twenty inches. The evaporating-surface of a vertically-extending wick thirty inches long is therefore limited to an area, say, twenty inches high (the level to which the hydrocarbon rises) by thirty inches long. I have discovered that if instead of placing the wick in a vertical plane it be bent out of a vertical plane and inclined at an angle thereto a much wider wick can be used as the hydrocarbon will still rise through a vertical distance of approximately twenty inches. If the wick extends at a very obtuse angle with respect to the vertical, the wick may extend out a considerable distance, although this is objectionable so far as practical purposes are concerned. The radiating-surface of the wick is, however, increased in proportion. To economize space with the use of wicks which have this greater radiating-surface, instead of carrying them out to any consider-

able distance, I bend them around in the form of a horizontally-extending cylinder and interpose them in the chambers between the adjacent tanks. By wrapping them around the tanks two wicks are provided to all intents and purposes in each chamber, which wicks extend up from both sides of the opening in the bottom, around the opposite sides of the tanks, and meet at the upper edge. In this way I have greatly increased the radiating-surface of each single wick without necessarily increasing the size of the apparatus and have consequently increased the working capacity thereof to a considerable degree. This carbureter has been designed more especially for producing gas for illuminating and heating purposes, although its use need not necessarily be confined thereto.

I realize that considerable variation is possible in the details of this construction without departing from the spirit of the invention, and I do not intend, therefore, to limit myself to the specific form herein shown and described.

I claim as new, and desire to secure by Letters Patent—

1. In a carbureter, a carbureting-chamber comprising an outer tank, an inner tank of smaller diameter than the outer tank eccentrically disposed with respect thereto and supported upon the bottom thereof, an air-inlet extending into and near the top of the inner tank, and an outlet in the outer tank.

2. In a carbureter, the combination with a hydrocarbon-tank, of a tank of smaller diameter within the same and forming an air-passage between the walls of the outer and inner tanks, an air-passage in the end wall of the inner tank, and a hydrocarbon-passage in the bottom of the inner tank, an air-inlet, a gas-outlet, and a wick supported in the air-passage between the two tanks.

3. In a carbureter, the combination with an outer tank, of a plurality of eccentrically-disposed inner cylindrical vaporizing-tanks of gradually-decreasing size, placed with their points of greatest separation at their upper ends, each tank having air communication with its adjacent tank through one of its end walls and having a hydrocarbon passage-way through its lower side, an air-inlet passage and a gas-outlet passage.

4. In a carbureter, the combination with an outer tank, of a plurality of eccentrically-disposed inner tanks of gradually-decreasing size, placed with their greatest distance apart at their upper ends and forming vaporizing-chambers with their upper portions, each chamber having communication with its adjacent one through an opening in the end wall of the tank, and all of said inner tanks being immersed in the hydrocarbon, wicks extending around the tanks, an air-inlet passage and a gas-outlet passage.

5. In a carbureter, the combination with a

carbureting-tank, of a second tank within the first-named tank, an air-passage from the inner to the outer tank, through the end wall of the inner tank, an opening in the bottom of the inner tank through which the hydrocarbon may enter, a wick interposed in the chamber located between the two tanks, an air-inlet pipe extending through the outer and into the inner tank and terminating at a point near the upper wall of the inner tank, a gas-outlet pipe communicating with the outer tank, a filling-pipe connected to the gas-outlet pipe, and valves interposed in the filling-pipe and gas-outlet pipe at points adjacent to their juncture.

6. In a carbureter, the combination with an outer tank for containing the hydrocarbon, of an inner tank supported therein, an air-passage between the two tanks opening through the end wall of the inner tank, an opening in the bottom of the inner tank, an air-inlet opening into the inner tank, a gas-outlet opening from the outer tank, a wick

wrapped around the inner tank, and means upon the inner tank for securing the wick in place.

7. In a carbureter, the combination with an outer tank for containing the hydrocarbon, of an inner tank supported therein, an air-passage between the two tanks opening through the end wall of the inner tank, an opening in the bottom of the inner tank, an air-inlet opening into the inner tank, a gas-outlet opening from the outer tank, a wick wrapped around the inner tank, and pins upon the inner tank for securing the wick in place.

In witness whereof I have signed the above application for Letters Patent, at Chicago, in the county of Cook and State of Illinois, this 24th day of February, A. D. 1906.

VERNE C. SEVERANCE.

Witnesses:

H. A. SUTTLE,
A. HAMILTON O'NEILL.