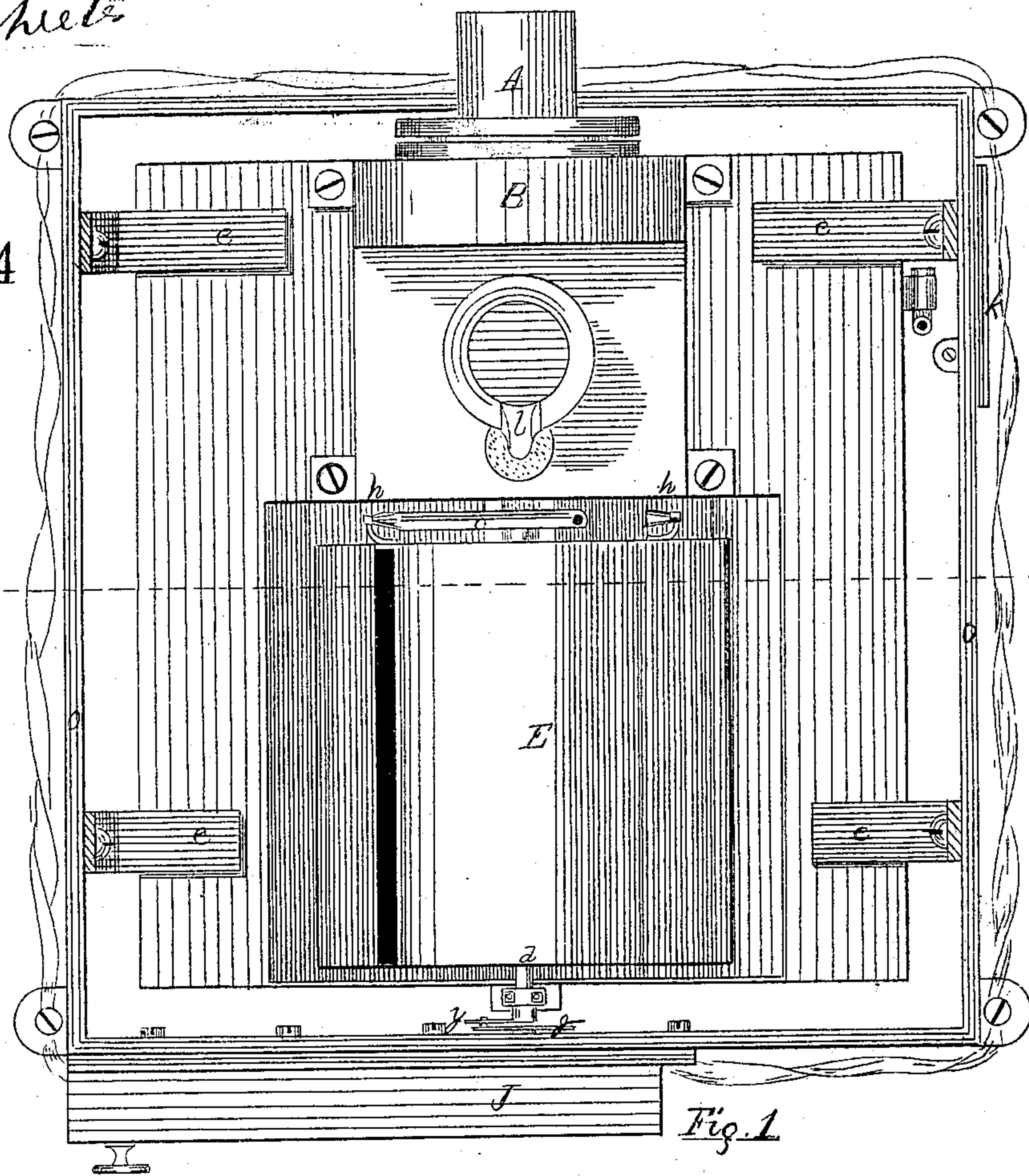
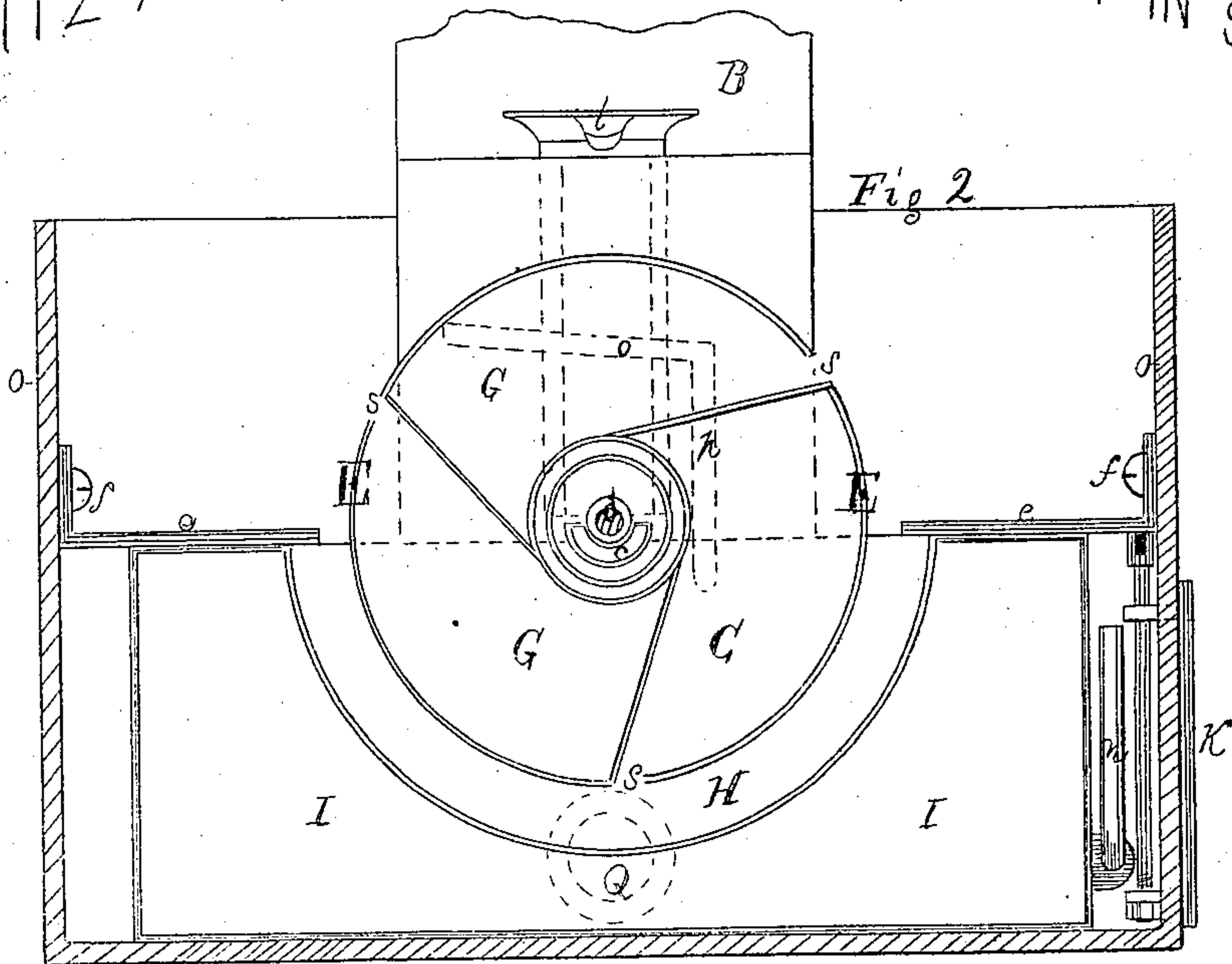


72774



PATENTED
DEC 31 1867

MORITZ AUGENSTINE'S IMPROVEMENT IN SPIRIT



OR LIQUOR METRES FOR THE PREVENTING OF FRAUDS UPON
THE REVENUE.

3 sheets Sheet. II.

3 sheets Sheet. II.

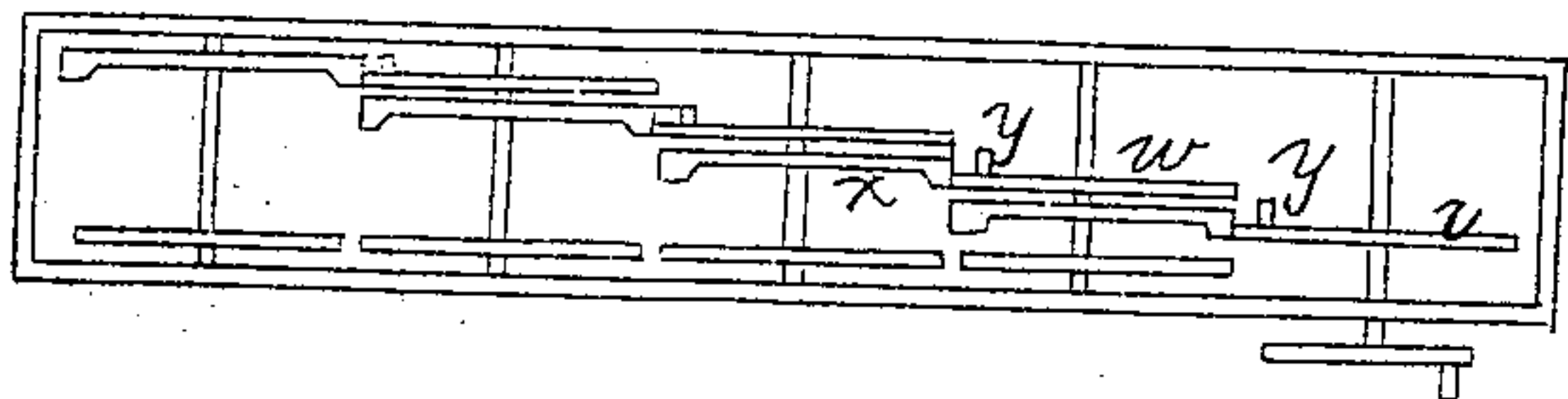
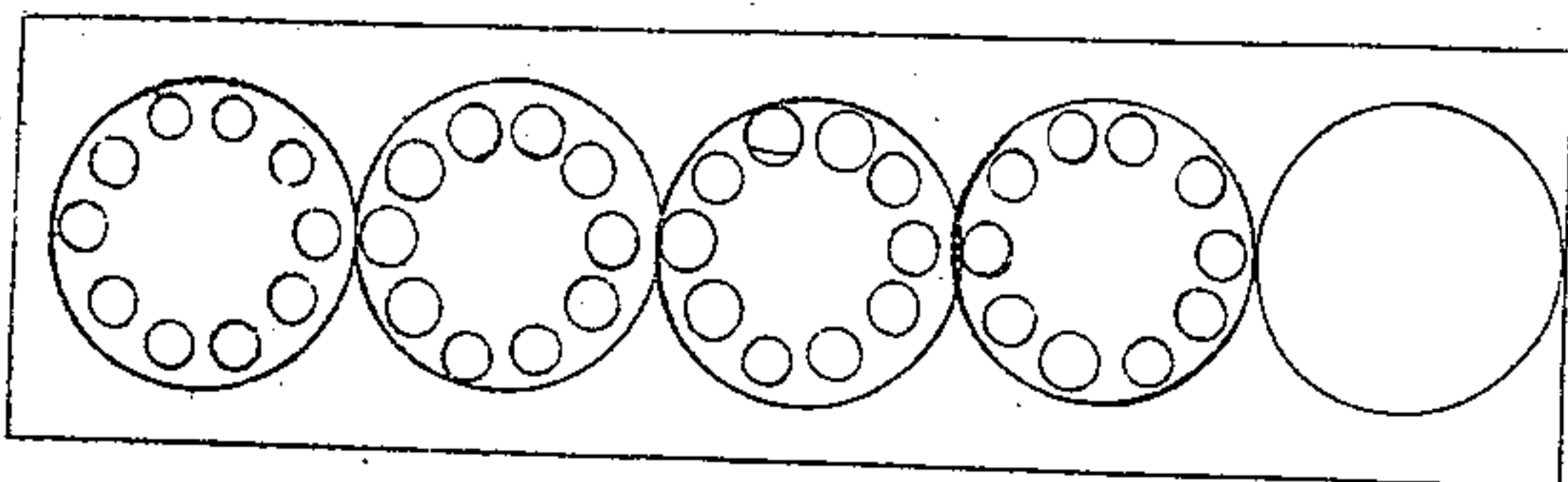


Fig. 4.

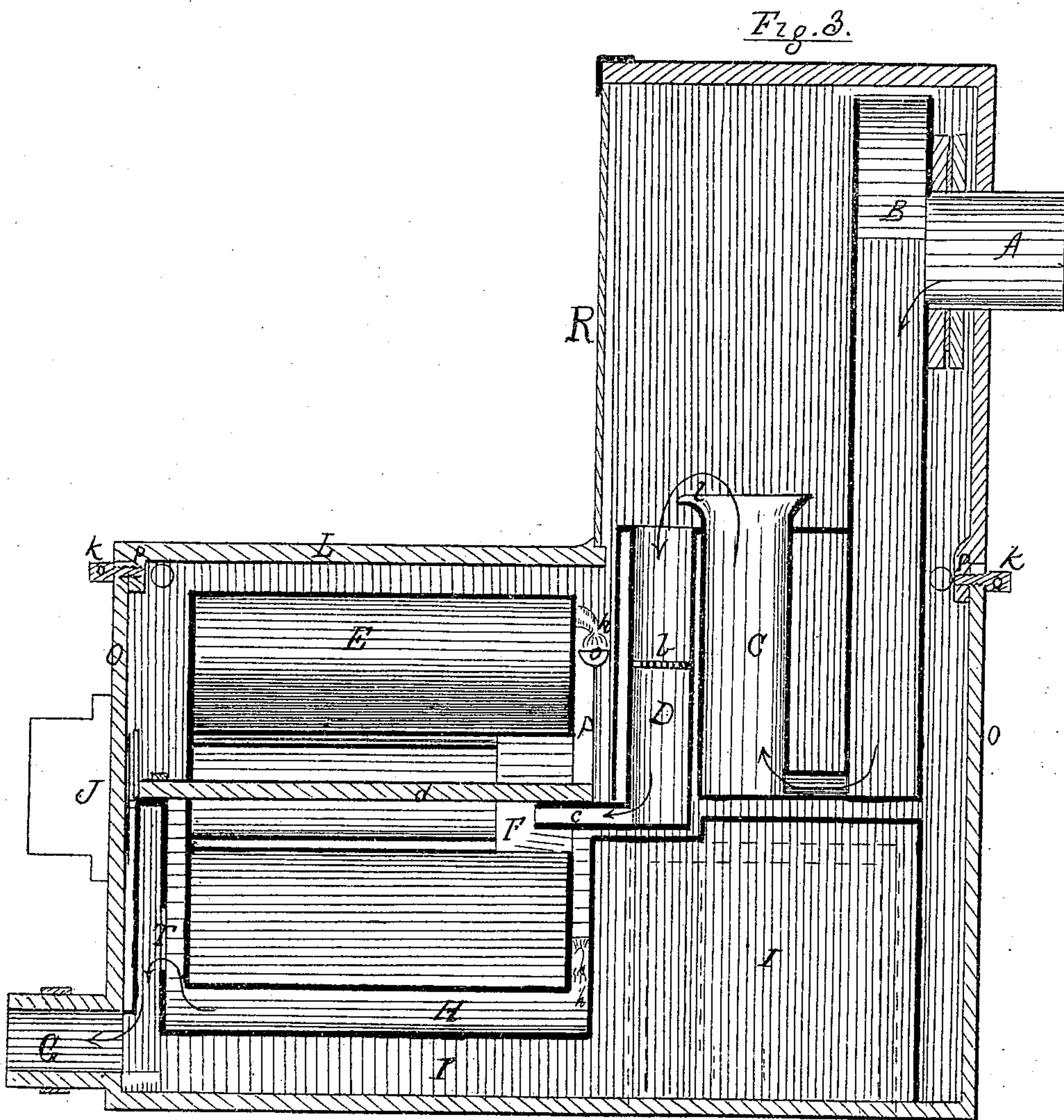
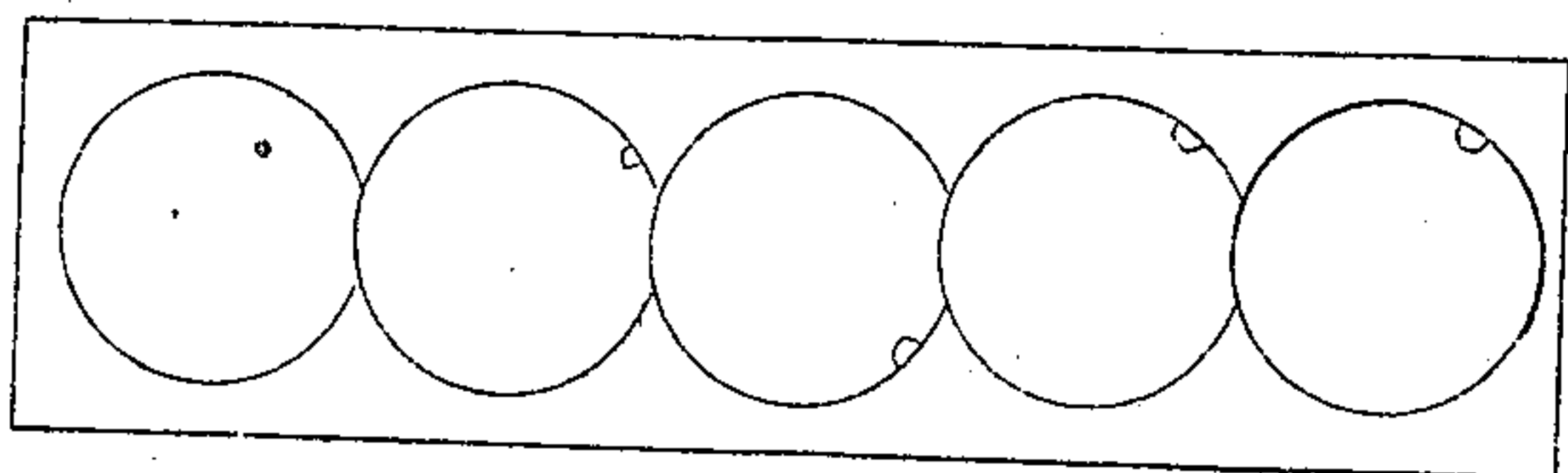


Fig. 3.

72,774

3 sheets Sheet III

Patented Dec. 31. 1867

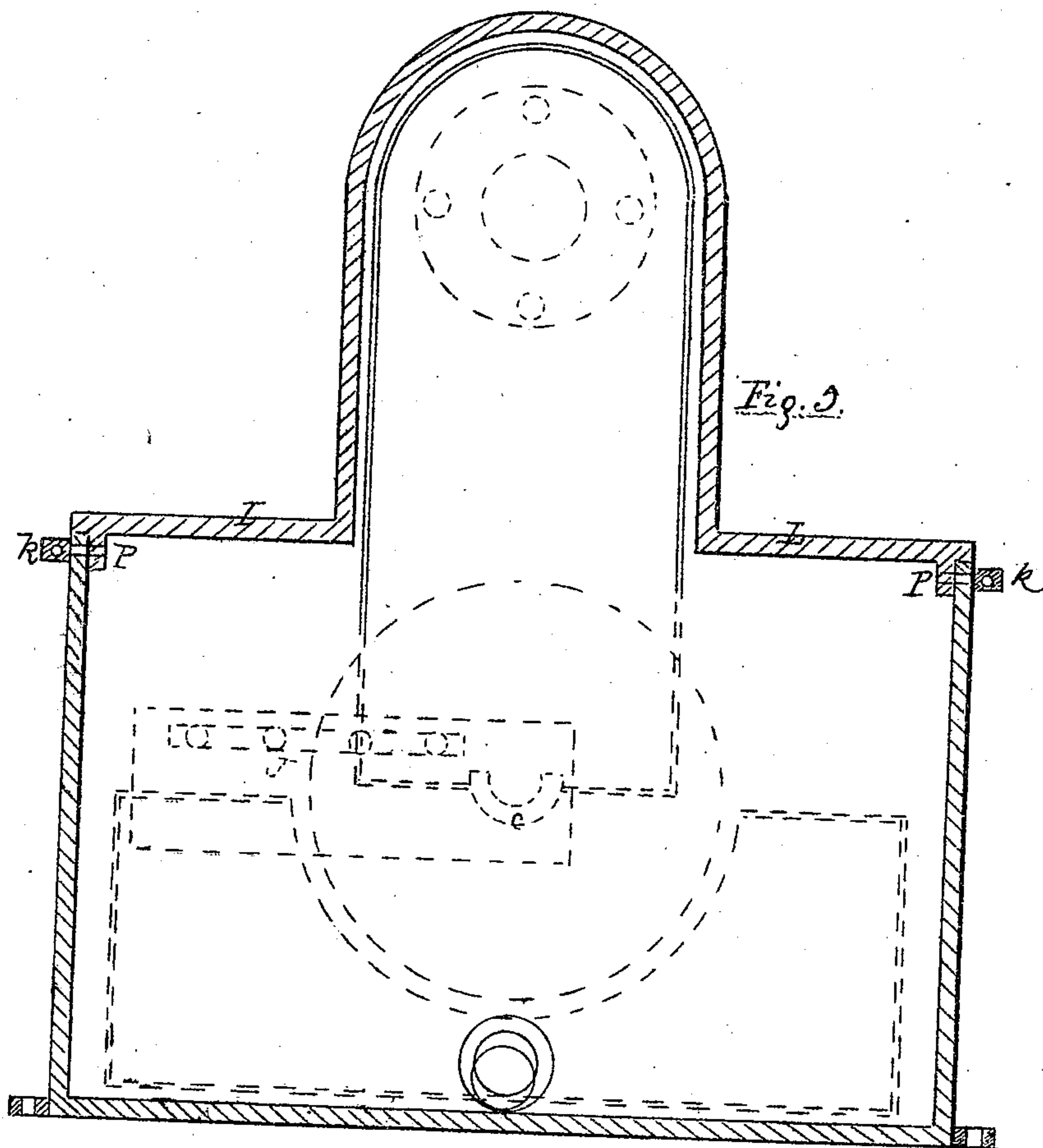


Fig. 2.

WITNESSES.

INVENTOR.

Moritz Augustin

By M. P. Norton

His Attorney

United States Patent Office.

MORITZ AUGENSTEIN, OF NEW YORK, N. Y.

Letters Patent No. 72,774, dated December 31, 1867.

IMPROVEMENT IN SPIRIT-METERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, MORITZ AUGENSTEIN, of the city of New York, in the county and State of New York, have invented new and useful Improvements in "Spirit or Liquor-Meters," for the preventing of frauds upon the revenue of the country in the distillation of spirits; and I do hereby declare that the following is a full, clear, and exact description of the construction, plan, and operation of the same, reference being hereby had to the accompanying drawings, which, with the letters of reference marked thereon, make a part of this, my specification.

Like letters represent and refer to like or corresponding parts.

Figure 1, sheet 1, represents a perspective view of my said spirit-meter, looking downward into the same from the top thereof, and showing the various parts of said invention; all of which are fully described and set forth hereinafter.

Figure 2, sheet 1, represents a vertical cross-section, showing the manner or plan of the construction of the horizontal measuring-drum or cylinder E, and the chamber surrounding the same, into which the spirits or liquor are discharged from such drum or cylinder, and showing also the chamber adjoining and underneath said chamber surrounding such drum or cylinder E, which is for the purpose of receiving and retaining the spirits or liquor, so as to enable the same to be tested as to the average strength of the same for a given length of time; also showing other parts of my said invention; all of which are more fully described and set forth.

Figure 3, sheet 2, is a vertical section lengthwise of my said spirit-meter, showing and representing the manner and the means employed whereby said spirits or liquors are conducted from the still or distilling-apparatus to and into the said horizontal measuring-drum or cylinder, for the purpose of ascertaining the amount or quantity manufactured, and showing also the manner and means whereby a small quantity of spirits or liquor is conducted into the said receiving and testing-chamber, so as to enable the average strength or quality of said spirits or liquor to be obtained; and it (said figure) also shows the passage of said spirits or liquors into the meter, into and through the various parts thereof, and into some suitable receiving-vessel outside of such meter, after the quality of the same may have been ascertained, and also after the quantity thereof shall have been registered in the manner and by the means substantially as herein described and set forth.

Figure 4, sheet 2, represents the apparatus by which the quantity of spirits or liquor passing into such meter, and into and through such measuring-drum or cylinder, is registered and determined, and which may be so extended and enlarged as to correctly register or indicate the amount of spirits or liquor manufactured from one time to another, as the case may require.

Figure 5, sheet 3, represents a front vertical end section, and showing in dotted lines the several chambers, the measuring-drum or cylinder, and the device whereby the spirits are conducted into such drum; also the manner and means of fastening or securing the top plate or cover to the outside frame or meter-box; each of which are more at large, and more fully, described hereinafter.

The nature of my said invention and improvements consists in the employment of a horizontal measuring-drum or cylinder, containing chambers of a given capacity, and so arranged and combined with other parts of the said meter, as to receive the spirits or liquor from the still or distillery, and then, after having so received a given quantity, moves forward and empties or discharges the same, and at same time registering the quantity so discharged, into a chamber from whence it passes through a suitable channel into a reservoir, or into barrels and the like, to be sent to storehouses or into market, in the manner substantially as herein described and set forth.

It also consists in the employment and arrangement of the means, substantially as hereinafter described and set forth, for the purpose of receiving, at each revolution of the measuring-drum or cylinder aforesaid, a small portion of the spirits or liquor passing through such drum or cylinder, and which is thence conducted to a receiving-chamber, from which the average strength of said spirits or liquor is ascertained during the operation of the said meter within a given length of time, in the manner and for the purposes substantially as herein described and set forth.

It also consists in the employment of a vertical tube or receiving-chamber, connected with the pipe extending from said chamber to the still or distillery, and which vertical tube or chamber is in combination with another and smaller vertical tube, containing a spirit-strainer of suitable construction; the first and larger tube or chamber being so constructed and arranged as to permit and require the spirits or liquor therein, and coming therein from said still or distillery, to pass, or to be emptied at or near the top thereof, into the second and smaller vertical tube containing such strainer, and from which second tube such spirits shall pass, at or near the bottom or lower end thereof, through a suitable opening, into a horizontal pipe connected therewith, and so constructed and arranged as to conduct such spirits or liquor into the respective measuring-chambers in the

said horizontal measuring-drum or cylinder, and each and all arranged and combined in the manner substantially as herein described and set forth.

It also consists in the construction and arrangement of the meter-frame box or encasement, for the proper reception of the various parts of the machinery therein contained, and to guide and control the operation of the same, in such manner that no change or alteration in such working parts or machinery, or of the correct and truthful measurement of such spirits or liquor by the various parts of such machinery, can in any way, manner, or form, or by any means, be had or done without certain and immediate detection and discovery, substantially as herein described and set forth.

Having thus described the nature of my said invention and improvements, I will here proceed to describe the construction and operation of the same, which is substantially as follows, to wit:

I construct the frame, box, or encasement O, of cast iron. I usually make the same in two parts, one of which, I denominate the box O, and the other part, the box-cover or cap L. The said box may be made of any size or capacity required to receive and contain the machinery hereinafter described and set forth. The said cover is so constructed as to contain upon the lower side thereof a flange, P, of suitable size, and so made as to closely fit into the top part of said meter-box, and which is then and there firmly secured, by means of the security-screw pins K K, sheets 2 and 3, upon the respective sides thereof. The heads of such pins are constructed with a hole therein, of some suitable size and form, for the purpose of passing through and containing a ribbon or cord, of suitable size and strength, while the respective ends thereof are brought together at some desirable point, and there sealed with the seal of the Government of the United States of America, for the purpose of preventing any interference with or attempt to alter or change the working of such meter, and thereby defraud the internal revenue without immediate and positive detection; and by similar means the said meter is firmly secured to the bed or foundation on which the same is placed for operation in the measurement of the manufactured spirits, as herein described, and shown at fig. 1, sheet 1, of the drawings. It will be seen that no part of said meter-box or frame can be removed, so as to allow or permit any of the internal parts of the meter to be changed or altered in a fraudulent manner, and for fraudulent purposes, without detection. Each and every of the outside parts of said meter are therefore perfectly secured to each other, and are then and there sealed with Government seal, in the manner substantially as shown in the accompanying drawings.

A, figs. 1 and 2, is the connection-pipe of the worm with the meter. B, figs. 1, 2, and 3, sheets 1 and 2, is a vertical chamber, of any desired capacity, height, or form, and immediately connected with the tube or pipe A extending to the worm of the still, as aforesaid. C, figs. 1, 2, and 3, is a vertical tube, of any suitable height or diameter, and is connected with the said vertical chamber B, at or near the lower end thereof, by means of a small tube, a, fig. 3, sheet 2. D is also a vertical tube, which I generally make of less diameter than that of said tube C. The said tube D, I place in position vertically with said tube C. Within this tube, D, I place a spirit-strainer, b, fig. 3. The said strainer may be constructed of any suitable material, and in such manner as to cleanse the passing spirits of and from anything which ought not to pass into the measuring-drum, hereinafter described. The said tubes are firmly arranged in proper place, as to each other, and there held by means of any suitable frame, substantially as shown at fig. 3 of sheet 2 of the accompanying drawings.

At or near the lower end of the said tube D, I construct a semi-tube, C, figs. 2, 3, and 5, which extends therefrom directly underneath the shaft-bearing of the measuring-drum E, and into that end of such drum nearest to said vertical tube D, substantially as shown at F, fig. 3, sheet 2. The said semi-tube C may be of any capacity required to conduct the spirits into the measuring-chambers within said drum E. E, figs. 1, 2, 3, and 4, is a drum or cylinder, constructed of any length or diameter required, and it contains chambers, substantially as shown at G G G, fig. 2; three in number, as shown at said figure, and each of which may be of a given capacity, all depending upon the size of the meter. This cylinder may be constructed from any suitable material, of sheet metals, and put firmly together by means of solder, or any manner or means which will render the said chambers complete and water or spirit-tight. It is suitably arranged upon and fastened to the axis or shaft d, figs. 1, 2, and 3, which shaft revolves in and upon bearings suitably arranged or located within the said box or frame of the meter, for the purpose of allowing said drum to revolve in the manner substantially as hereinafter set forth. H, figs. 1, 2, 3, and 5, is a reservoir, into which the spirits are emptied from the respective measuring-chambers G, in said drum E. I, figs. 2 and 5, is a chamber, constructed of sheet metal, in some good, sufficient, and substantial manner, for the purpose of receiving some part of the spirits that shall have passed the said measuring-drum E, which is done in the manner and by the means substantially as hereinafter set forth. This chamber extends underneath the said chamber H, and measuring-drum E, to the rear part of the meter-frame, and may be of any capacity desired for the purposes thereof. The box or framework of sheet metal which forms the said chamber H, and also the said chamber I, and upon which are firmly fixed the bearings or journal-boxes of the said measuring-drum shaft d, is firmly secured and held in its proper and required place by means of metallic angles, e, figs. 1 and 2, which are held to the sides of the meter-frame by means of the screws f, fig. 2. The quantity of spirits or liquor which passes into and out of the said measuring-drum E, will be indicated and registered at and by means of the machinery represented at and shown by fig. 4, sheet 2, which is an ordinary device for registering purposes, to determine and indicate certain quantities, and it is connected and combined with the drum-shaft d, substantially as shown at g g, fig. 1, sheet 1. It is attached to and combined with the said meter-frame or box, substantially as shown at J, figs. 1, 3, and 5. The said index or registering-machinery, and each and every part thereof, operates within a suitable box, which is constructed perfectly secure and safe against any attempts at changing or altering the same in any fraudulent way or manner, or for any fraudulent purposes whatever. I close the outer surface of the indicator J, so as to prevent the same from being seen or examined save by a person in Government employ, who has the right and proper instrument to use in opening the same for the purpose of noting the amount or quantity of spirits or liquor

registered as having come from the still and passed through the said horizontal measuring-drum. Upon that end of said drum next adjoining the said vertical tube D, I construct two dippers, *h h*, figs. 1 and 3, with small brushes attached thereto, and which, at each revolution of said horizontal measuring-drum, take up a few drops of the liquor or spirits out of the reservoir or chamber H, in which the said measuring-drum E revolves, and discharges or empties its contents, which it has received from the still in the manner substantially as hereinafter set forth, and carries the same to the gutter or trough *o*, figs. 1, 2, and 3, from whence it is conveyed through the small tube *p*, figs. 2 and 3, thence into the said receiving-chamber I, which will require about fifteen days to fill entirely, all, however, depending upon the size of the meter used, as, the larger the meter, of course the greater will be the capacity of the said receiving-chamber I; at the expiration of which time, or at any previous time, the port-hole K, figs. 1 and 2, and at dotted lines at fig. 3, and at the side of the meter, may be opened in order to ascertain the average quality of the spirits or liquor manufactured and measured in said horizontal measuring-drum E. Behind the shutter or door of the said port-hole is a pipe, *n*, fig. 2, through which the spirits are emptied when said pipe is moved or turned down through said port-hole, when the door thereof is opened for that purpose by some suitable mechanical means or device upon the inside of the meter, and which cannot be reached unless the top of said meter be removed by some person having authority to do the same. The turning down of said pipe *n* will permit the discharge of the spirits into some suitable vessel for the purpose of allowing the same to be proven as to quality, as aforesaid. The axis of the said horizontal measuring-drum E connects with a wheel, *v*, fig. 4, sheet 2, of any required size, which wheel, again, connects with another wheel, *w*, of suitable size. This wheel has a tooth, *y*, and which connects with a third, *z*, which is provided with the required cogs or teeth upon the periphery thereof. At each full revolution of said wheel *w*, the said wheel *z* is driven forward one-tenth of its circumference. This wheel *z* connects with another wheel, *x*, carrying a dial with the ten numeral figures thereon, each of which will at each one-tenth of a revolution appear visible from the outside, when the door over the same is opened, and it will then show the units of the amount of liquor or spirits passed through the meter. This wheel connects in the same way, and by the same means, with another or second wheel, which operates in the same manner as the one before described, and shows the tens of the quantity run or passed through said meter, and likewise this wheel connects with another or third wheel, showing the hundreds of the quantity of the spirits or liquor passed the meter. Thus with a fourth in like manner, and which will show the thousands of spirits which pass the said meter as aforesaid; and so in like manner and by like means the process of registering the quantity may continue to a large extent. The said wheels must each and all be constructed of the same size and diameter, and with the same number of teeth or cogs upon the peripheries thereof as may be required in order to move the wheels aforesaid in the manner aforesaid.

The said port-hole, leading to the said chamber I, and hereinbefore described, is closed from and upon the inside by means of a latch, or any other suitable device, and which is only accessible when the top or cover part L, figs. 3 and 5, is removed, which can only be done by breaking the seal or cutting the ribbon or tape running through the holes in the screw-heads hereinbefore described, and which of course would be instantly detected by the persons inspecting the meter on the part of the Government. O is the box or frame of the meter hereinbefore mentioned, into which the said cover L is closely fitted, and containing the tongue P, which is there firmly secured by means of the said screw-pins K, figs. 3 and 5, and whose heads are perforated, so that a string, tape, or ribbon, can be passed through said perforations, and thereafter sealed on the outside of the meter in the manner and for the purposes substantially as hereinbefore stated.

The whole apparatus or meter must be placed upon and secured to a board or plank foundation by means of screws used for that purpose, which are also perforated at the heads thereof in the same manner as those for the securing of the cover, so that a ribbon or tape shall be passed through the same, and a seal of the Government placed thereon in the same manner as stated in relation to the screws securing the said cover, so as to prevent any illegal removal of the same.

There is no iron or steel used in the construction of the aforesaid meter, except the said frame O and the said cover L. The axis of the said horizontal measuring-drum E is constructed of brass, and it revolves in two beds of white-metal. The said drum, dials, wheels, and each and every of the other parts, are constructed of or from zinc, brass, and white-metal, so that the whole apparatus or machinery shall be perfectly secure from and against the action of the magnet-loadstone or electric-galvanic multipliers, as well as against the destructive action of oxidation. The arrows indicate the direction or course of the spirits or liquor from its entrance into the said meter at the worm-pipe connection A, figs. 1 and 3. It will therefore be seen that such spirits; enter the said pipe A from the worm of the still, and pass down the said vertical chamber B, thence through the said short horizontal tube *a* into the vertical cylindrical pipe or box *c*, in which they rise and fill the same, which, when full of spirits, the same are emptied into the top part of another cylindrical tube, D, through and by some suitable means or spout *l*, figs. 1, 2, and 3, and thence down said tube D they pass through the spirit-strainer *b*, arranged across and horizontally and about midway in the said tube D, thereby straining the same, and freeing said spirits of and from any and all material not properly belonging to and with said spirits and then and thereafter they pass to the bottom of said tube D into, along, and through the horizontal semicircular tube or spout *e*, extending into said drum E, in the manner substantially as aforesaid, from which the said spirits are emptied into the respective chambers G, fig. 2, alternately; that is to say, when one of said chambers G is exactly filled with and by the said spirits, the said drum E will move forward and commence and continue the discharge of such spirits into the chamber H, as aforesaid, and at the same time present another of said chambers G in front of said tube or spout *e* to receive and be filled by the spirits passing from the said tube D as aforesaid, which, when full, the said drum will move forward, as before stated, and will discharge the spirits, as aforesaid, through the throat or slot-opening, S, figs. 1 and 2, and into said chamber H, and thus will

continue the movement of said horizontal measuring-drum E, during the length of time it may be desired to continue the manufacture of the spirits as aforesaid. When the said spirits are emptied into said chamber II from said measuring-drum, substantially as aforesaid, they are discharged therefrom through the opening T in the partition or side forming one part of the said chamber II, from which they pass, as indicated by the arrows, into and through the tube *a*, figs. 2 and 3, and thence into some suitable receiving-vessel.

At R, fig. 3, is an opening in and through the cast-iron upright part of the top part O of the said meter-frame or box, which is filled with glass in a secure and permanent manner, by suitable mechanical means upon the inside thereof, so that said pane of glass cannot be removed therefrom without immediate detection. This pane of glass is for the purpose of allowing any person to look into said meter at or near said vertical tubes, for the purpose of ascertaining whether or not the spirits or liquor are passing from the still into the machinery of said meter in the manner and for the purposes substantially as aforesaid. There is also a pane of glass within the top part of said meter-box or frame, and directly over the said measuring-drum E, which is secured therein in the same manner and by substantially the same means as that of the pane of glass R as aforesaid, and which is for the purpose of allowing any one to see the working or operation of the said measuring-drum in the act of measuring spirits or liquor passing therein, in the manner and by the means substantially as aforesaid, and thus, by means or aid of the said panes of glass aforesaid, may be seen the true working condition of the said meter without the opening or disturbing of any part of said meter-frame or box hereinbefore described and set forth, and at same time prevent any alteration, fraudulent or otherwise, of the said internal parts or devices of said meter without immediate detection.

The aforesaid chambers G, of the said horizontal measuring-drum E, may be constructed of any capacity desired, and each must be of the exact size, and of course contain the same quantity of each of the other of said chambers G, in order to measure correctly, as well as to insure uniform and correct working of the said meter, and of each and every part thereof. The size of such measuring-chambers will depend upon the size or capacity required of such meter; the spirits or liquor passing into said meter at the worm-connection A, through and out of said meter at the discharge-pipe *a*, with the exact quantity thereof measured, and the same noted and registered at J in the manner and by the means substantially as herein described and set forth.

There can be no changes made in the said meter, or in any part thereof, for any fraudulent purpose, without the same being discovered at once; therefore the exact quantity of spirits manufactured must pass into such meter, and, passing into it, it must in its passage out therefrom become measured as to the positive quantity thereof, and at the same time and operation of such measurement, such quantity will of necessity become registered in the manner and by the means substantially as herein described and set forth, and as shown at figs. 1, 2, 3, 4, and 5 of the accompanying drawings.

Having thus described the nature, construction, and operation of my said invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The horizontal measuring-drum E, containing the chambers G G G, each being constructed and arranged upon the shaft *d*, in combination with the semicircular tube *c*, or any equivalent therefor, in the manner and for the purposes substantially as herein described and set forth.
2. I also claim the vertical chamber B and vertical tube C, arranged and combined, by means of the horizontal tube *a*, or any equivalent therefor, in the manner and for the purposes substantially as herein described and set forth.
3. I also claim the vertical tube D, containing the spirit-strainer *b*, arranged therein, and having at or near its lower end the horizontal or semicircular tube *c*, and which tube D is so arranged in combination with the vertical tube C, as to receive the spirits or liquor passing over and through the spout *l* into or near the upper end thereof, in the manner and for the purpose, substantially as herein described and set forth.
4. I claim the channel or trough *o*, and vertical tube *p* connected therewith, and extending to the receiving-chamber I, and the brushes *h h* arranged upon the end of the measuring-cylinder E, and combined and operated in the manner and for the purposes substantially as herein described and set forth.
5. I also claim the discharging-chamber H, combined with the horizontal measuring-drum E, with opening T arranged above the discharging-pipe or tube, in the manner and for the purposes substantially as herein described and set forth.
6. I claim the combination of the horizontal measuring-drum E with the registering-device J, in the manner and by the means substantially as herein described and set forth.
7. I also claim the receiving-chamber I, in combination with the discharge-tube *n* and with the door K, each being arranged in the manner and for the purposes substantially as herein described and set forth.
8. I also claim the meter-frame or box *o* with the top L, having thereon the tongues P P, extending around the top of said box *o*, and firmly secured thereto by means of the screw-pins or bolts *k*, having an opening in each of the respective heads thereof, so as to receive and pass through the same some suitable ribbon or cord, so that the same may be sealed with Government seal, in the manner and for the purposes substantially as specified.
9. I also claim the conducting of spirits or liquor, after the same shall have been measured in the manner substantially as aforesaid, from the said chamber II into the receiving-chamber I, so that the average quality thereof may be ascertained for any given time of the operation of manufacturing of spirits or liquor, in the manner and by the means substantially as herein described and set forth.

In testimony whereof, I have hereunto set my hand, this 4th day of October, A. D. 1867.

MORITZ AUGENSTEIN.

Witnesses:

CHARLES D. KELLUM,
MARCUS P. NORTON.