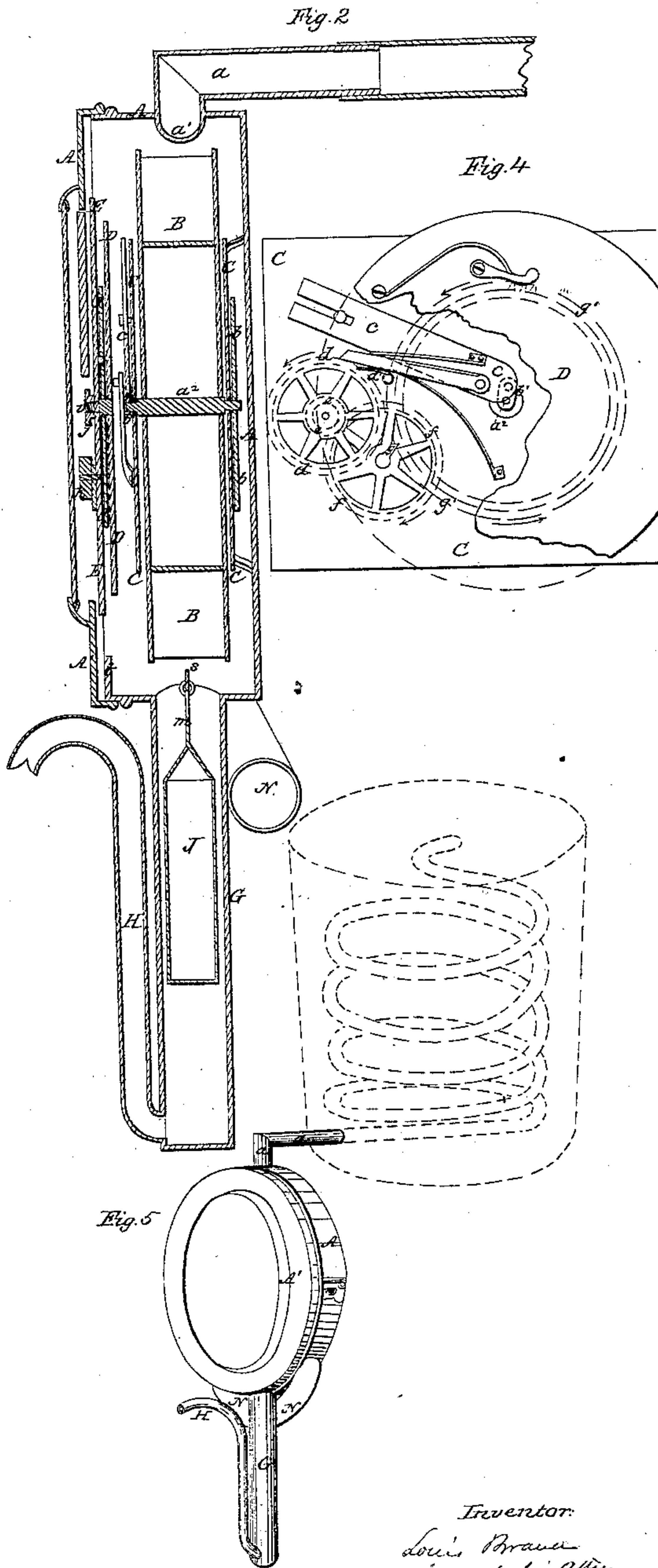
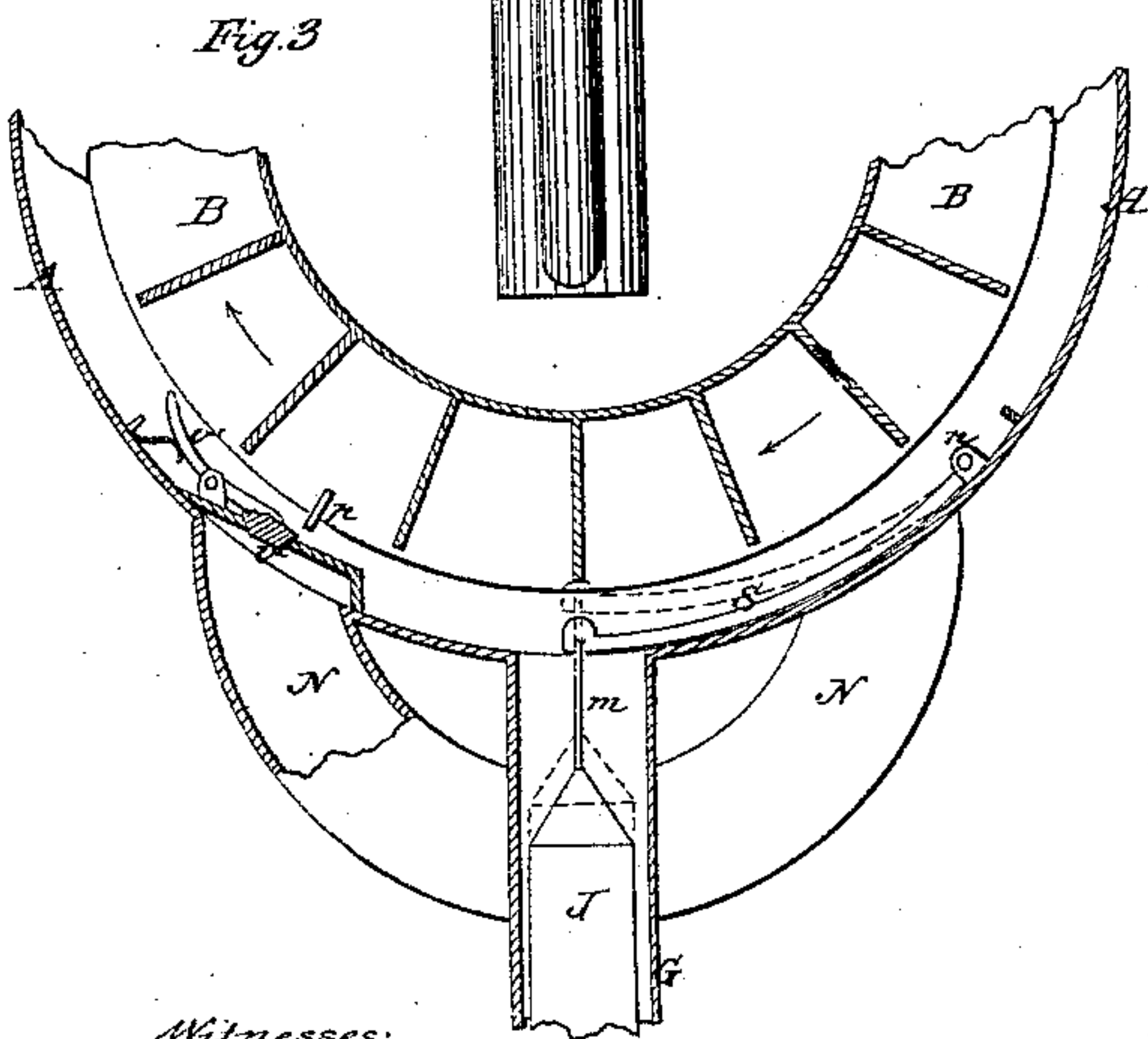
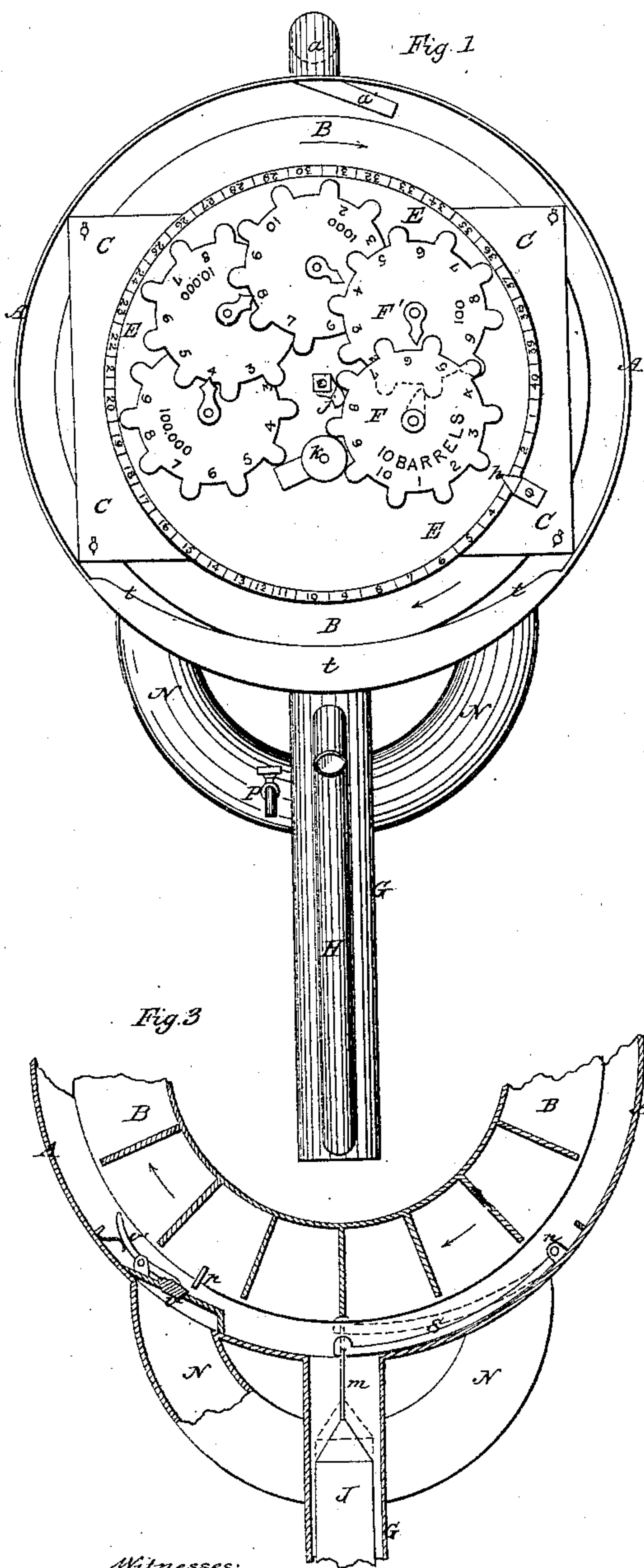


L. Brauer, Spirit Meter

N^o 50,092.

Patented Sept. 26, 1865.



Witnesses:
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UNITED STATES PATENT OFFICE.

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IMPROVED HYDROMETRIC APPARATUS.

Specification forming part of Letters Patent No. 50,092, dated September 26, 1865; antedated September 18, 1865.

To all whom it may concern:

Be it known that I, LOUIS BRAUER, of Memphis, county of Shelby, and State of Tennessee, have invented a new and useful Hydrometric Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of the apparatus with its hinged face-plate removed. Fig. 2 is a diametrical section taken in a vertical plane through the apparatus. Fig. 3 is a section of the lower portion of the apparatus. Fig. 4 shows, in detail, the mechanism for transmitting motion from the shaft of the overshot-wheel to the registering apparatus. Fig. 5 is a perspective view showing the apparatus connected to the cooling-worm of a still.

The object of my invention is to obtain an apparatus, which, when it is applied to the condenser or cooler of a still, will automatically register the quantity of strong liquor or high-wine as it flows from the cooler into vessels adapted to receive it, and will also indicate to the distiller when the flow of strong spirit ceases, so that he can separate the high from the low wine.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a cylindrical box, which may be made of any required size and capacity, and which is provided with a tightly-fitting door, A', having a glass face applied to it, as shown in Fig. 2. At the upper part of this case or box A is a pipe, *a*, which, by means of an elbow, extends off and connects with the worm of the cooling apparatus, as indicated in red lines, Fig. 5. This pipe *a* enters the crown of the case A, and terminates in a chute, *a'*, which directs the liquor flowing from the still into the buckets of an overshot wheel, B. The wheel B is of less diameter than the case A, and when it is not allowed to rotate the liquor flows down between its circumference and the case A, to the bottom of this case, from whence it is discharged, as will be hereinafter described.

The wheel B may be constructed with radial

buckets, as shown in Fig. 3, or in any other suitable manner which will admit of the liquor flowing from the inclined chute *a'* rotating it. The shaft *a²* of this wheel B has its bearings in a frame, C, Figs. 1, 2, and 4, and carries on that end which is nearest the back of the case A a ratchet-wheel, *b*, the teeth of which are acted upon by a pawl that serves to prevent the wheel B from turning backward, and also as a rattler to indicate to the distiller when said wheel is rotating. Various contrivances may be applied to the wheel B for making a noise during the rotation of this wheel.

The opposite end of the shaft *a²* has a short crank or eccentric, *b'*, keyed to it, which gives a rectilinear reciprocating motion to a slide, *c*, (shown in Fig. 4.) To this slide a spring-pawl is affixed, which acts upon the teeth of a spur-wheel, *d*, and moves this wheel the distance of one tooth at every forward thrust of the slide. The detent or dog *d'* prevents the wheel *d* from turning back. The shaft of the wheel *d* has its bearings in the outer plate of frame C and in a circular plate, D, a portion of which latter is shown in Fig. 4, and to said shaft a pinion spur-wheel, *e*, (indicated by red lines,) is keyed, which engages with the teeth of a wheel, *f*, that has a toe, *g*, keyed to the outer end of its shaft, as shown in Fig. 4. When wheel *f* makes one revolution its toe *g* moves the large wheel *g'* the distance of one tooth, and this wheel *g'* in moving moves a circular face-plate, E, to which it is attached by means of a pin entering one of its spokes, as shown in Fig. 2. The wheel *g'* has a dog or brake, *g²*, applied to its teeth, as shown in Fig. 4, for the purpose of preventing it from turning unless acted upon by the toe *g*. If the wheel *g'* has forty teeth the wheel *f* must rotate forty times to effect a rotation of said wheel *g'*.

The disk or face-plate E is intended to indicate gallons by means of figures upon its edge and a stationary pointer, *h*, Fig. 1. This circular face-plate E is pivoted loosely to the axis *i*, which, being fixed to the plate D, has a toe, *j*, secured to it in such manner as to act upon and move a toothed wheel, F, the distance of one tooth at every complete revolution of the plate E. Wheel F is intended to register barrels or the number of revolutions

of the plate E. It is prevented from being moved too far or moved backward by means of a wheel-brake, *k*, which is held in place between the teeth of wheel F by a spring-pressure. The hub of this latter wheel has a toe secured to it, as indicated in dotted lines, Fig. 1, which acts upon the teeth of a spurred wheel, F', and moves this wheel the distance of one tooth at every revolution of the wheel F. A train of wheels may thus be arranged upon the surface of the wheel or disk E, and made to operate one upon the other, so as to register one barrel or one hundred thousand barrels, as represented in Fig. 1.

By such an arrangement of registering wheels and disk a very large quantity of liquor can be measured and the apparatus made very compact. The motion of the overshot wheel communicates motion to the train of wheel-work, which in turn transmits motion to the registering-disk and registering-wheels, so that at any moment the amount of liquor which has passed through the apparatus can be readily ascertained. After leaving the chute *a'* and passing over the wheel B, the liquor flows into a vertical pipe, G, which is closed at its bottom, but provided with a side outlet in the form of a pipe, H, which rises to a sufficient height and is bent over and downward, so that it will discharge liquor into a receiver through a branch pipe or trough.

Within the pipe G is a float, J, which may be made of thin sheet metal, in the form represented in Figs. 2 and 3, or it may be made in any other suitable manner. The upper end of this float or buoy J is connected by means of a short stem, *m*, to one end of a lever, S, that is pivoted at its opposite end to the ears *n*, as shown in Fig. 3. This lever S is curved, so as to lie flat upon the bottom of case A when the buoy J drops down to its fullest extent; but when the buoy rises to its fullest extent a projection on the free end of said lever comes in contact with a projection, *p*, on the driving or overshot wheel B, and stops the further movement of this wheel. In other words, as long as the high-wine continues to flow through the apparatus it will move the wheel B, and the buoy will remain down or in the position indicated in black lines, Figs. 2 and 3; but when low-wine, or the liquor having greater buoyancy, commences to flow through the apparatus the buoy J will rise, as indicated in Fig. 3 in red lines, and the wheel B will be stopped. The stopping of this wheel B does not check the flow of the heavier liquid through the apparatus. It only stops the movement of

the apparatus which is intended for registering the marketable liquor.

By reference to Figs. 1 and 2 it will be seen that there is a ledge, *t*, projecting up from the front edge of the case A, so as to form a basin at the bottom of the case, for the purpose of preventing the overflow of the liquor and its escape from the apparatus at this point. This ledge is carried around sufficiently far to cause the liquor to flow into a pipe, N, through a valve-opening, in very small quantities at every revolution of the wheel B. Said valve-opening is closed by a valve, *v*, which has a lever, *v'*, that is acted upon by a spring to keep the valve down upon its seat, except when said lever is touched by the projection *p* on the circumference of the wheel B at every revolution of this wheel. I have represented but one projection, *p*, applied to the wheel B; but I prefer to use two or more, arranged at proper distances apart, for the purpose of preventing any considerable quantity of the weak liquor from being registered by the registering apparatus. The liquor which flows in small quantities into the pipe N can be drawn off for inspection by means of the try-cock P.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Registering the quantity of high-wine as it flows from the cooler of a distilling apparatus by means of an apparatus which is so constructed that the registering mechanism thereof will be automatically controlled by the strength of the flowing liquor, so as to be stopped when the liquor is below proof, and started again by liquor above proof, substantially as described.

2. Providing the case A A' with an inlet-pipe, *a a'*, leading to the cooler of a still, a pipe, G, for receiving the buoy J, and a discharge-pipe, H, for conducting the liquor from the apparatus, substantially as described.

3. Providing the wheel B with one or more projections, *p*, in combination with a buoy or float, J, operating substantially as described.

4. The combination of an alarm-wheel, *b*, or its equivalent, with the wheel B, which actuates a mechanism for registering gallons and barrels, substantially as described.

5. Automatically controlling the testing mechanism or device by the strength of the flowing liquor, substantially as set forth.

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