

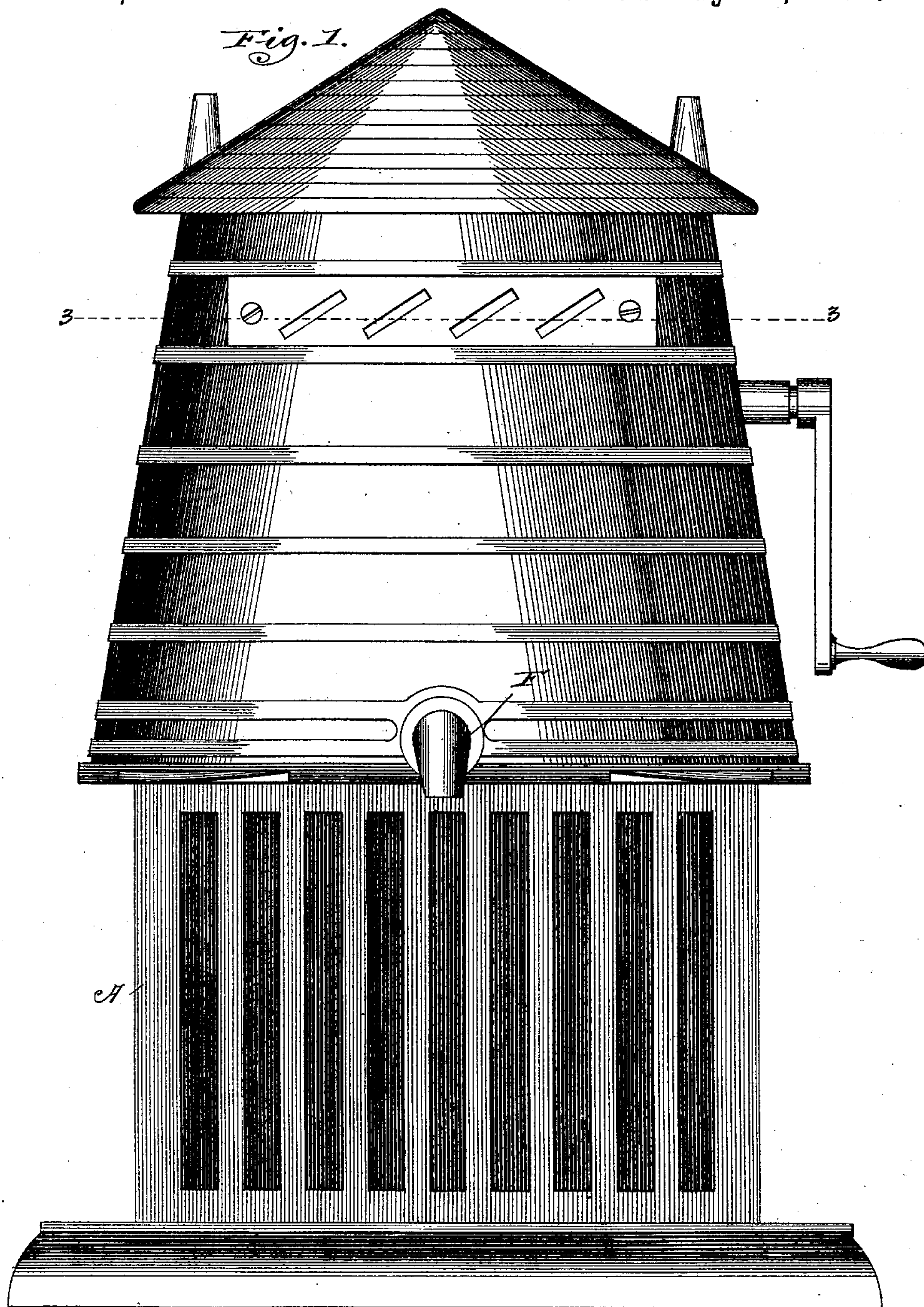
(No Model.)

5 Sheets—Sheet 1.

D. H. BACON & C. C. HILL.  
COIN OPERATED LIQUID VENDING DEVICE.

No. 452,092.

Patented May 12, 1891.



Witnesses,  
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E. L. Huber.

Inventors,  
Daniel H. Bacon  
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Attorneys,  
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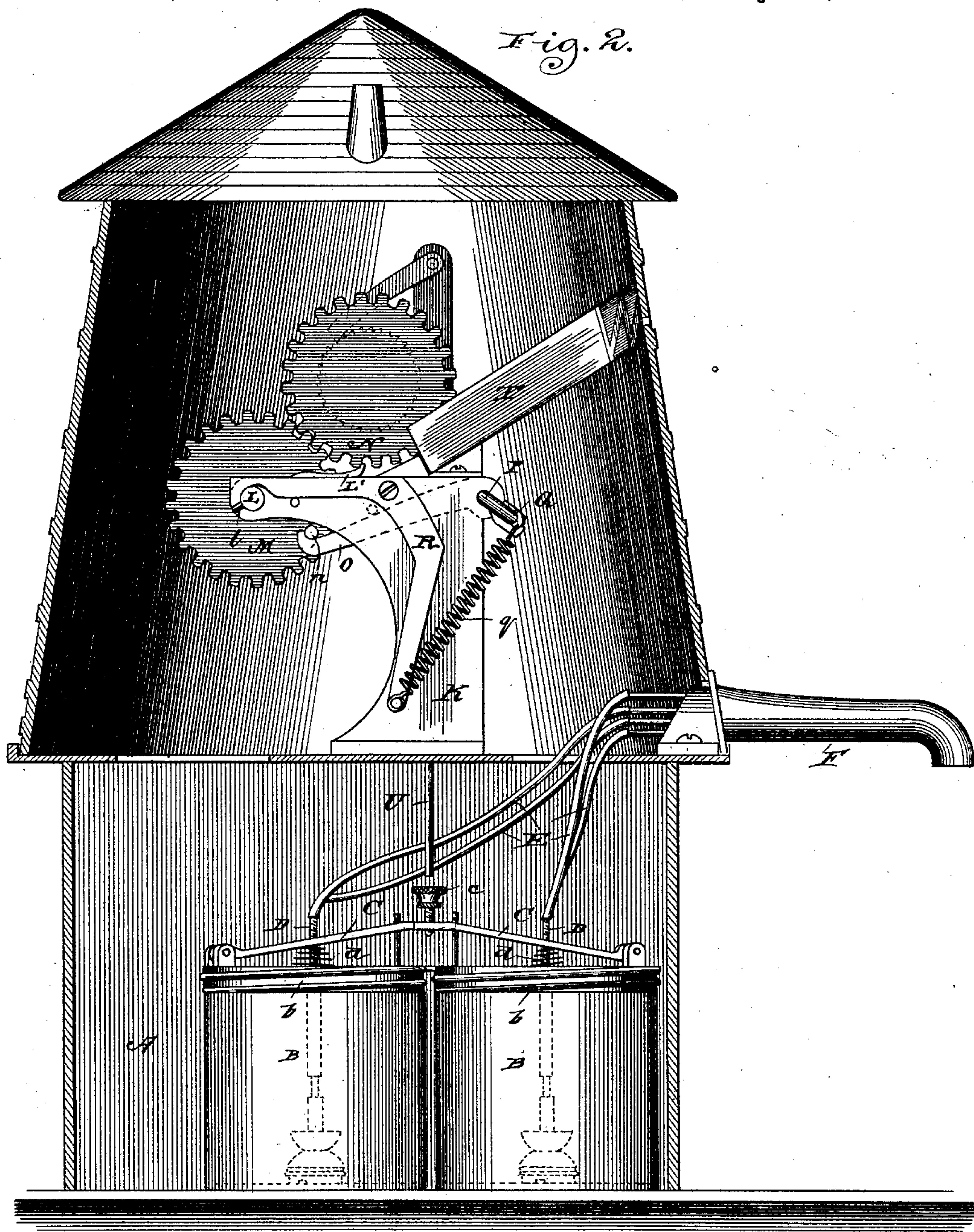
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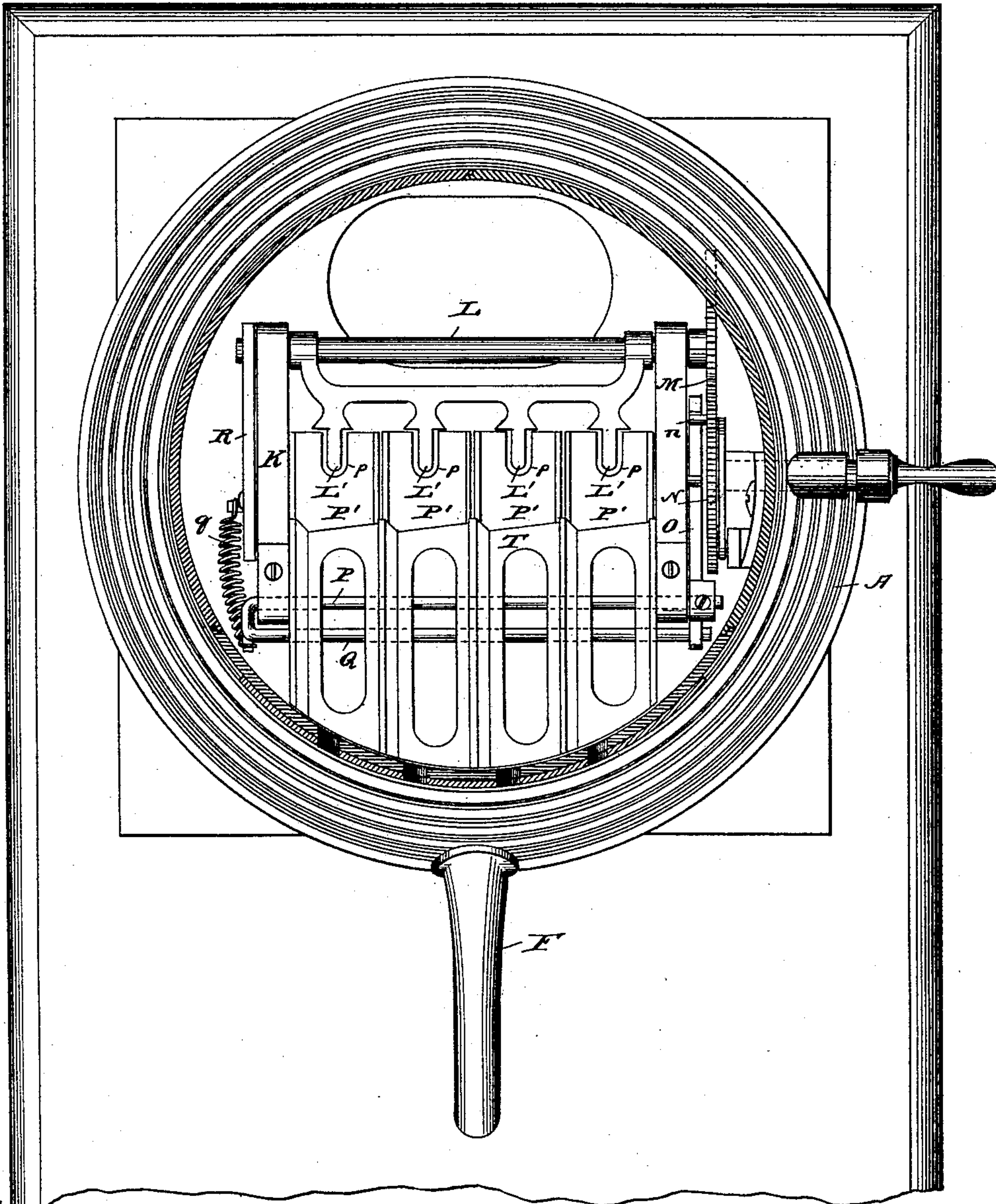
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*Fig. 3.*



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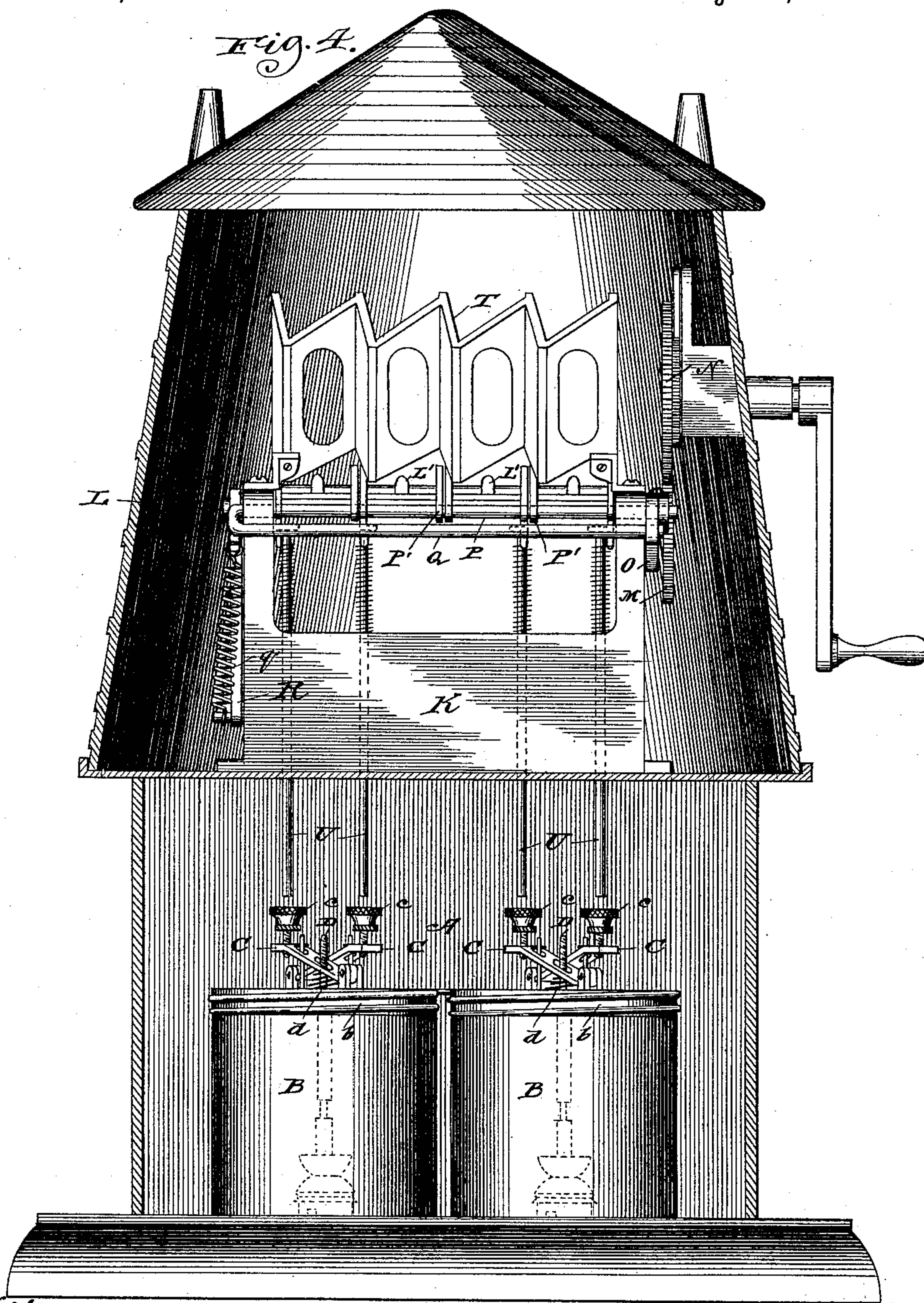
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D. H. BACON & C. C. HILL.  
COIN OPERATED LIQUID VENDING DEVICE.

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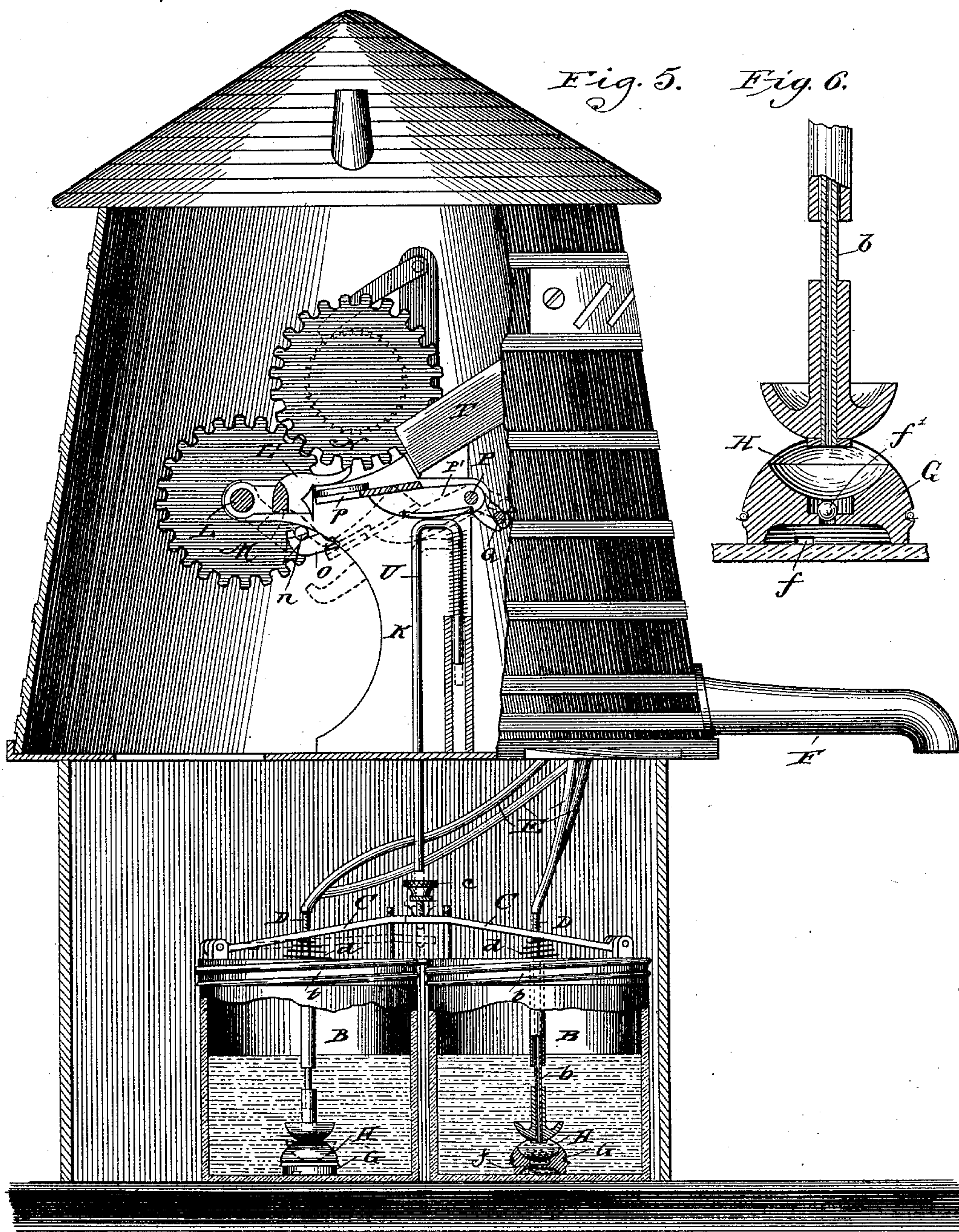
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# UNITED STATES PATENT OFFICE.

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HILL ASSIGNOR TO SAID BACON.

## COIN-OPERATED LIQUID-VENDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 452,092, dated May 12, 1891.

Application filed July 8, 1890. Serial No. 358,042. (No model.)

*To all whom it may concern:*

Be it known that we, DANIEL H. BACON and CHRISTIAN C. HILL, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Coin-Operated Liquid-Vending Devices, of which the following is a specification.

Our invention relates to certain improvements in that class of coin-operated vending devices which are used to deliver liquids in measured quantities, and is particularly adapted to the vending of a variety of liquids from a single machine.

Features of our invention relate to the employment of direct-pressure pumps which can be made separately operative by the introduction of a coin into a chute corresponding with the pump which is desired to be put into action, and other features relate to the means for operating said pumps, and which means comprise a rotatable shaft which is adapted to be rotated manually, and carries thereon a series of cranks adapted by the deposit of a coin in the machine to be locked in engagement with a lever carried by a rock-shaft, and which lever is made to transmit a reciprocating movement to the plunger of the pump, the shaft being locked against rotation, except when a coin is introduced, by the engagement therewith of a locking-lever which is tripped by the action of the crank-arm upon the operating-lever above described, so as to permit the shaft to make one complete revolution and the pump to make a complete stroke. Suitable means—such as springs—are employed to return the parts to their normal and operative position after they have acted, and a variety of liquids, such as perfume, may be delivered from a single machine by providing a number of receptacles to contain the perfume and providing each with its pump and actuating mechanism, all of which may be so interconnected as that by the introduction of a plurality of coins simultaneously the pumps may be made to act simultaneously for the delivery of liquids from a plurality of vessels at the same time.

In the accompanying drawings, Figure 1 is a front elevation of the device in the preferred form of construction, and Fig. 2 is an

elevation in vertical section through the casing of the device. Fig. 3 is a plan view below the line 3 3 of Fig. 1. Fig. 4 is a sectional elevation through the casing, and showing the operating mechanism in front elevation. Fig. 5 is a sectional elevation through the casing and operating mechanism, including the valve construction, the dotted lines of said figure indicating a secondary position of the moving parts. Fig. 6 is a detail of the pump mechanism.

In the drawings, A represents a casing to contain the fluid-receptacles B, any number of which may be used, and each of which has a cap or cover *b*, to which is pivoted a key-lever C, having a vertically-adjustable striking-head *c*. The key-lever is apertured about its mid-length, and through said aperture a hollow plunger D is passed, an open coiled spring *d* being interposed between the key-lever and the top of the cover. The plunger is secured with the key-lever by a pintle or equivalent device, so as to permit a slight rocking of the lever, and the aperture will be formed so as to allow such movement. From the upper end of the hollow plunger a flexible pipe E leads to the delivery-nozzle F. In the machine illustrated in the drawings four of these discharge-pipes are indicated which lead from as many reservoirs containing different kinds of fluid—as, for example, a variety of perfumes.

Within the reservoir and preferably upon the bottom thereof a pump-chamber is formed, in this instance by an inverted cup G and a flexible wall H, which forms a diaphragm upon which the plunger is made to bear, said plunger having its lower end enlarged circumferentially and rounded so as to force the flexible wall inwardly. The diaphragm is perforated beneath the end of the hollow plunger. An inlet-aperture *f* is provided in the wall of the cup, which has also an aperture in its bottom, and to which aperture is adapted a gravity-valve *f'*, arranged so as to seal the aperture during the working stroke of the pump, as shown in Fig. 6.

The pumps are operated by mechanism which is particularly illustrated in Figs. 3, 4, and 5 of the drawings. Said mechanism comprises a frame K, secured within the casing



and having journaled at the upper front corner thereof a rotatable shaft L, bearing thereon a gear M, enmeshed with a similar gear N, carried upon a stub-shaft, which has a bearing in the casing and carries on its end outside the casing a crank by which the shaft may be rotated. A ratchet and pawl prevent the turning of the shaft in one direction.

Upon the shaft L are a series of arms or cranks L', secured to rotate with the shaft. The latter is locked against operative rotation by the engagement of a locking-stud *n* on the gear-wheel M with a locking lever or trigger O pivoted between its ends on a second rock-shaft P, which is journaled at the rear upper corner of frame K. The rock-shaft P carries a number of skeleton bell-cranks P', corresponding to the number of pumps employed, the front end of these bell-cranks being flattened to provide a coin-receptacle and having in the flattened portion a slit *p*, above which the projecting ends of the arms or cranks on the shaft L project and through which slits said arms are adapted to pass during the action of the parts. The rear ends of the bell-cranks are normally depressed by a spring-controlled rod Q, which may be made integral with rock-shaft P or carried in arms secured therewith. Spring *q* is secured to one member of the bent lever R, pivoted on the side of the frame K, and having its front end projected into engagement with a stop or lug *l* on the shaft L. The action of this spring and rod is to hold the rear ends of the bell-cranks down and their flattened front ends up to a position slightly below the projecting ends of the operating levers or cranks and permitting a coin which may be delivered into the upper end of the coin-chutes T to come to rest on the flattened ends of the bell-cranks and covering the slots therein and in position to be engaged by the projecting cranks or arms when the shaft L is rotated. The bell-cranks are normally in engagement with sliding rods U, said rods being for convenience of construction bent to provide two downwardly-projecting legs, one of which enters an aperture in the frame, and is normally held in contact with the lower side of the bell-crank lever by an open coiled spring surrounding said leg, while the opposite leg projects into the chamber below and is adapted to impinge upon the striking head of the key-lever and when depressed to cause a downward movement of the pump-plunger.

In operation, when a coin is deposited in one of the coin-chutes, it slides down the latter and comes to rest on the flattened and slitted end of the bell-crank lever before described and beneath the projecting ends of the arm or crank of the rotating shaft. If now power be applied the cranks or arms will be brought into engagement with the coin and by means thereof locked in operative condition with the bell-crank lever, thus depressing the forward ends of the latter and rocking the shaft on which they are

mounted in its bearing. A slight rotary movement is permitted to the shaft L after it is locked to the bell-crank lever, sufficient to rock the shaft P in order to depress the front end of the trigger, and thereby remove its engaging end from the path of the stud *n* on the gear M, and which is thus made free to complete one revolution. During said revolution the bell-crank, which has been made operative by the insertion of a coin, has depressed the sliding rod and through it the pump-plunger, collapsing the diaphragm and expelling the liquid contained in the chamber beneath it through the hollow of the plunger and through the flexible pipe, delivering it at the nozzle. During the revolution of the shaft the coin will be dragged off the bell-crank lever by the arms or cranks on the rotating shaft and will drop down within the casing of the machine, thus leaving the apparatus locked against operation except by the insertion of another coin. After each working movement of the trigger and sliding rods they are returned to their normal positions by their respective springs.

It is apparent that each of the pumps may be worked independently or that any two or more may be worked simultaneously by the insertion of coins in the respective chutes, and thereby a variety of perfumes may be delivered simultaneously from a single machine, or two or more sorts of perfume may be delivered simultaneously through the nozzle, thus effecting a combination of the perfumes.

It is obvious that variations may be made in the structural features above described without departing from the spirit of our invention, and that some of the features may be used in a machine where others are not used.

We claim—

1. In a coin-operated liquid-vending device, the combination, with a reservoir to contain the liquid, and having a pump-chamber therein provided with a collapsible wall, and a suitable inlet-port provided with a valve and an eduction-pipe delivering outside the casing, of a plunger adapted to be moved in contact with said collapsible wall, whereby to expel the liquid from the chamber, substantially as described.

2. In a coin-operated liquid-vending device, the combination, with a reservoir to contain the liquid, and having a pump-chamber therein provided with a collapsible wall and a valve-controlled inlet, of a hollow plunger whose hollow is in communication with the chamber through a perforation in the collapsible wall, and suitable means for actuating the plunger, whereby to collapse said wall and expel the contents of the chamber, substantially as described.

3. In a coin-operated liquid-vending device, the combination of a plurality of reservoirs to contain different sorts of liquid, and each of said reservoirs provided with a pump-chamber having a collapsible wall, a valve-controlled inlet, and a delivery-pipe to de-



liver the liquid outside the casing, an operating-lever for each of the plungers, and means for depressing said plungers independently or simultaneously at will, substantially as described.

4. In a coin-operated liquid-vending device, the combination, with a reservoir to contain the liquid, and having a pump therein and a delivery-pipe from the pump, of means for operating said pump, comprising a rotatable shaft having a projection therefrom and a rock-shaft having also a projection therefrom to receive and support a coin, a coin-chute to deliver the coin upon the last-named projection, and said rocking projection being adapted to engage the plunger of the pump whereby to expel a measured quantity of the liquid, substantially as described.

5. In a coin-operated liquid-vending device, the combination, with a reservoir to contain the liquid and having a pump therein, of means for operating said pump, comprising a rotatable shaft normally locked against rotation and having a projection therefrom, and a rock-shaft having also a projection therefrom adapted to receive a coin, whereby to lock the projections from the rotating shaft therewith, substantially as described.

6. In a coin-operated liquid-vending device, the combination, with a reservoir to contain the liquid, and a pump whose plunger-rod is projected above the reservoir, of means for depressing said plunger, comprising, in combination, an endwise-movable rod having its end adapted to bear on the plunger, a rock-shaft having a projection therefrom adapted to de-

press the sliding rod, said projection having also a slotted portion to sustain the coin, a coin-chute delivering to said receptacle, a rotatable shaft having projections adapted to engage the coin, and a trigger connected with the rock-shaft and adapted to lock the rotatable shaft against rotation except when a coin is engaged, substantially as described.

7. In a coin-operated liquid-vending device, the combination, with a reservoir to contain the liquid, a pump within the reservoir, having a projecting plunger, a sliding rod having one of its ends normally engaged with the plunger, and a spring whereby to return said rod after it has been moved, of a rock-shaft having a projection bearing upon said sliding rod and a slotted coin-receptacle at one end of said projection, an integral portion of said projection being extended behind the rock-shaft, a spring controlled and locking lever or trigger secured with the rock-shaft and having an end thereof engaged with the spring-controlled rod and its opposite end forwardly projecting, a rotatable shaft connected through suitable gearing with a crank external to the casing of the machine and bearing thereon a projection adapted to impinge upon the receptacle, and a locking-stud on the gear engaged with the trigger, substantially as described.

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