

(No Model.)

4 Sheets—Sheet 1.

W. M. FOWLER.
LIQUID DISPENSING APPARATUS.

No. 555,284.

Patented Feb. 25, 1896.

Fig. 1.

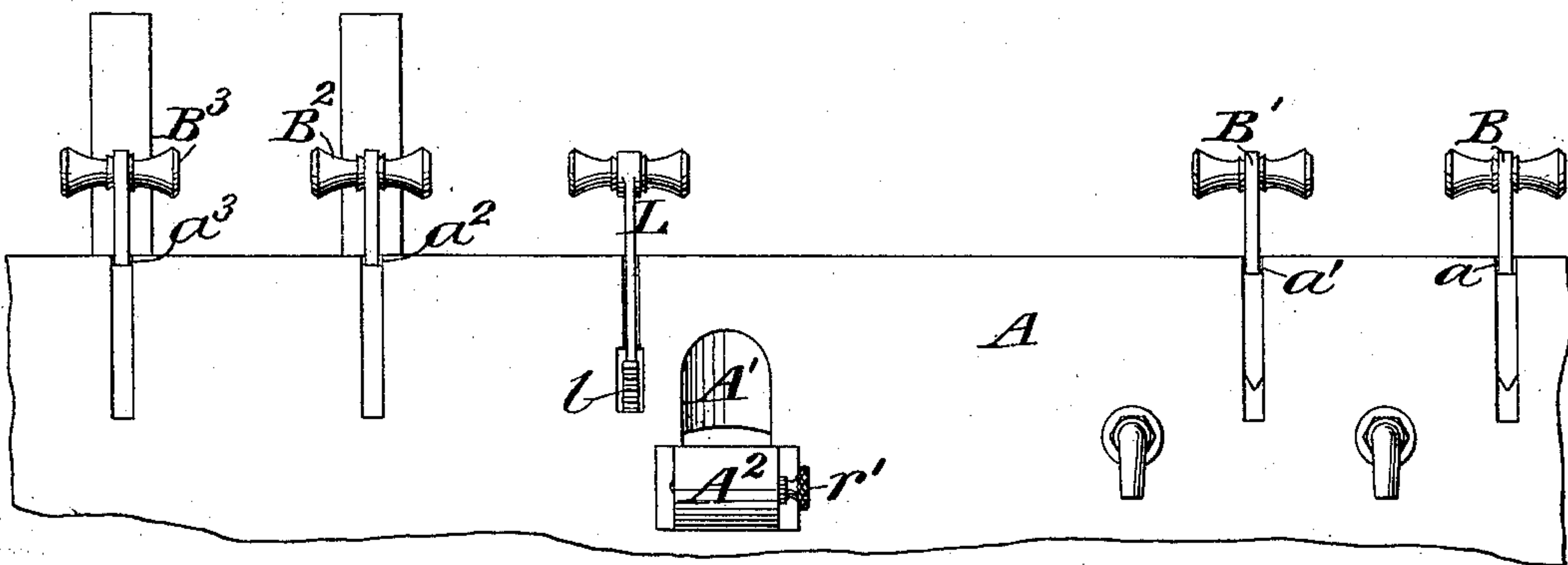
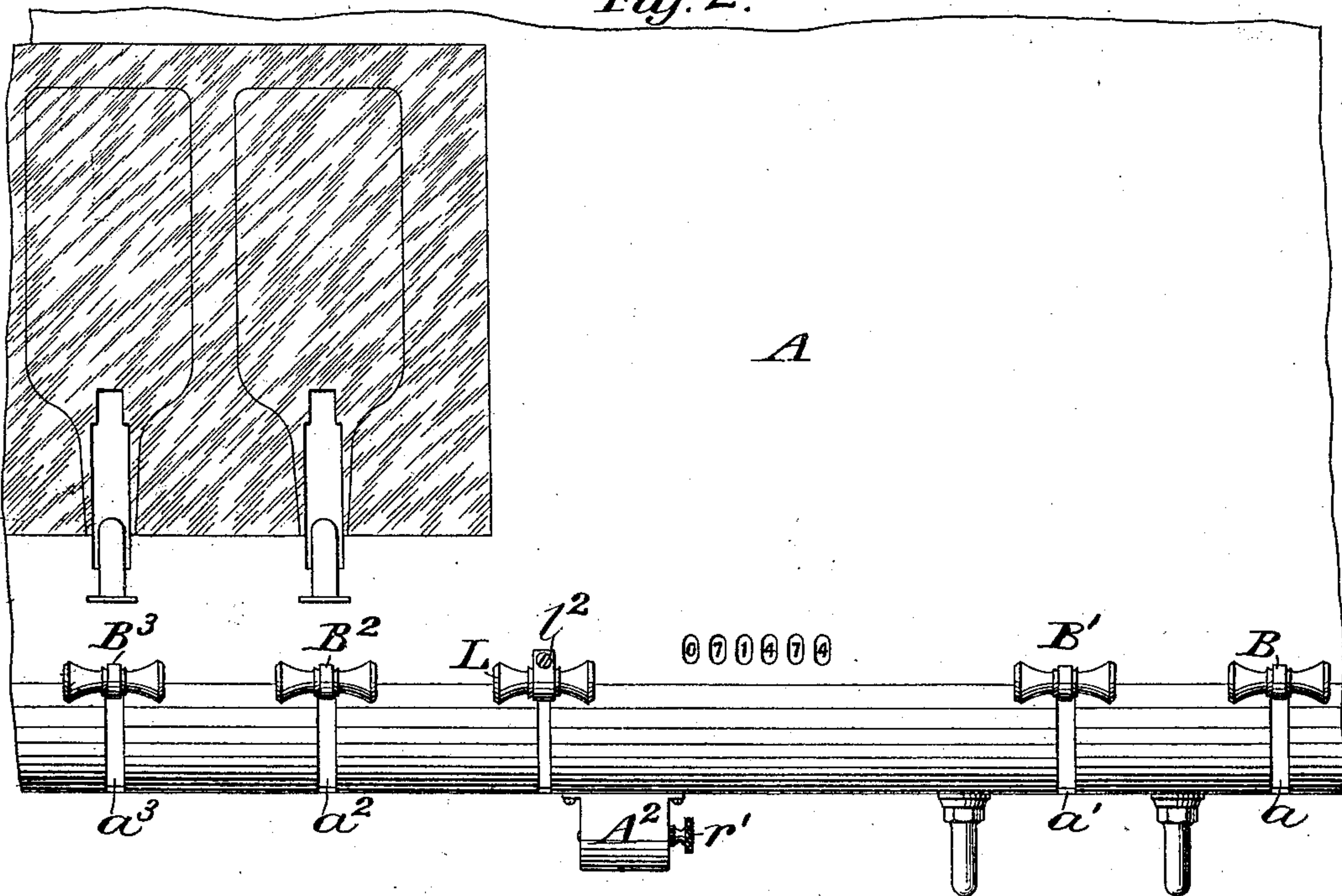


Fig. 2.



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Brown & Durand

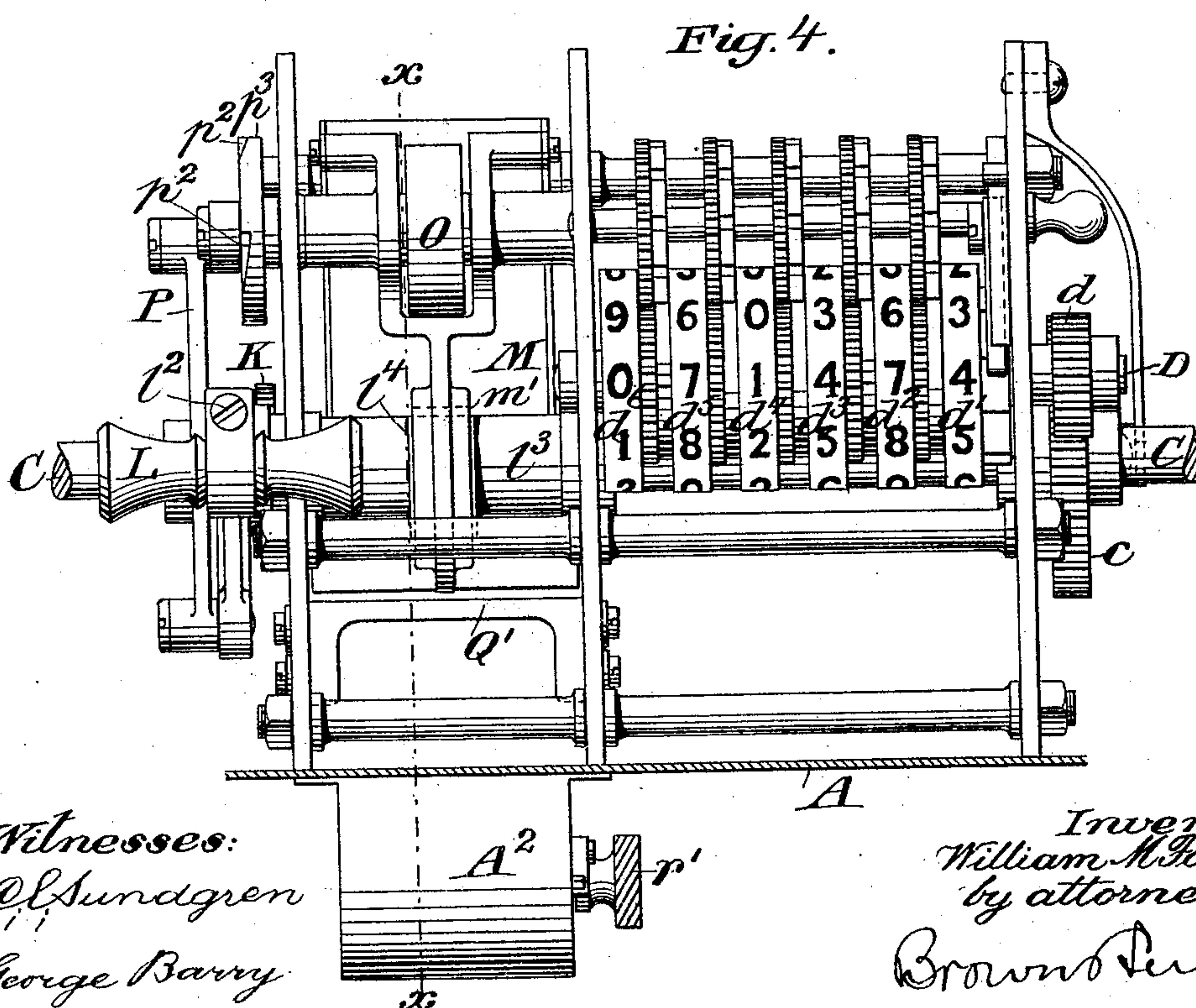
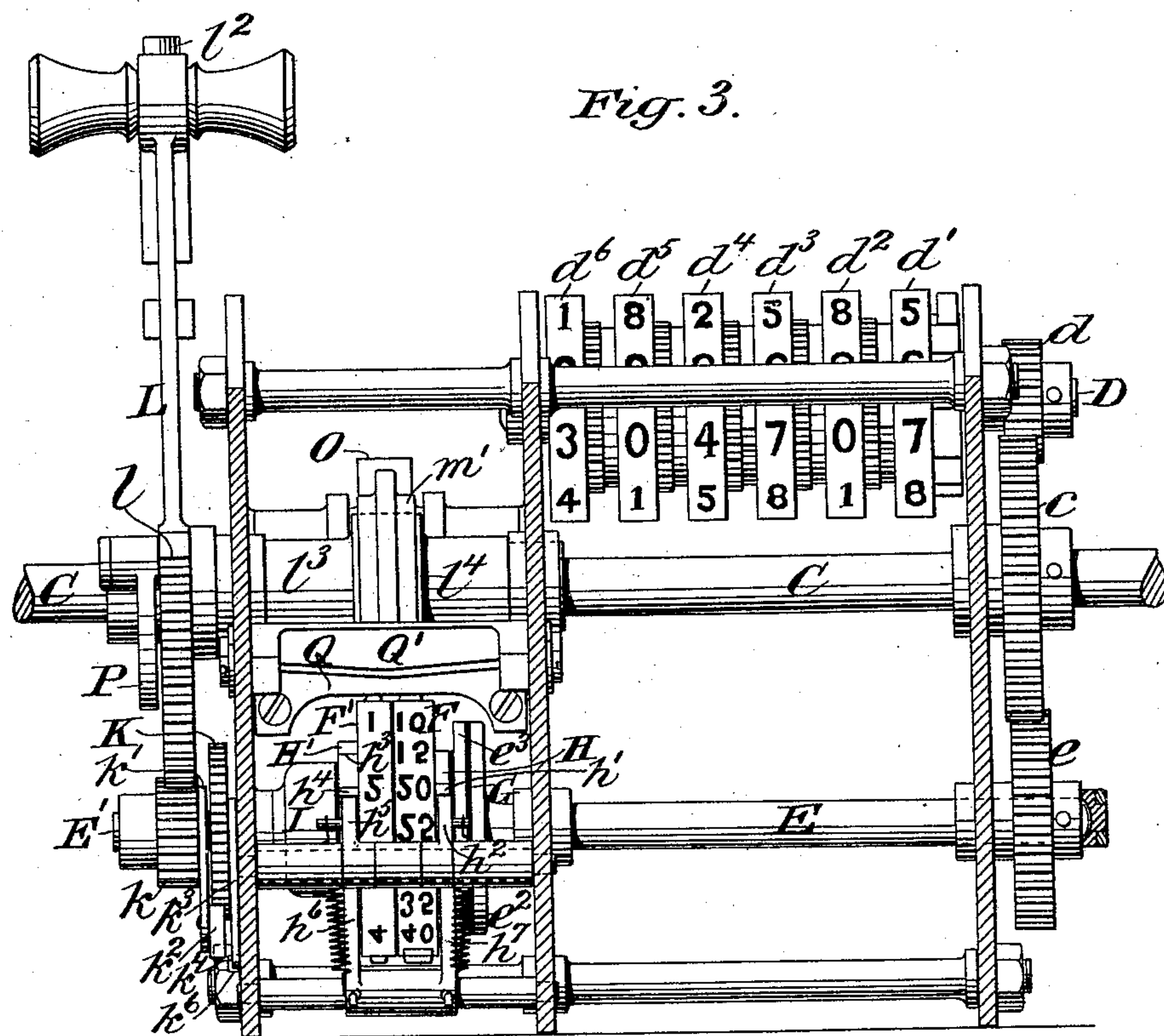
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Fig. 5.

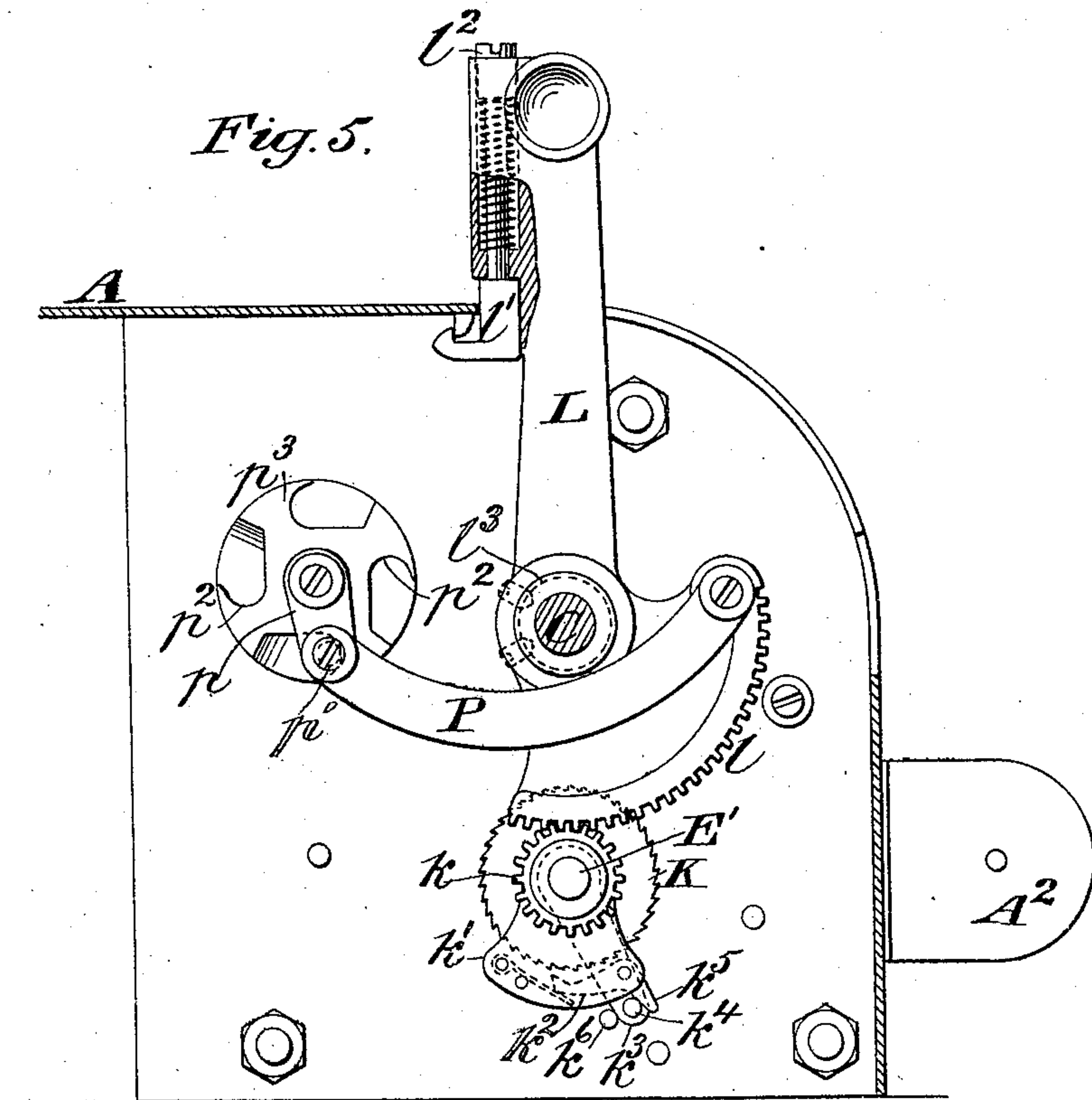
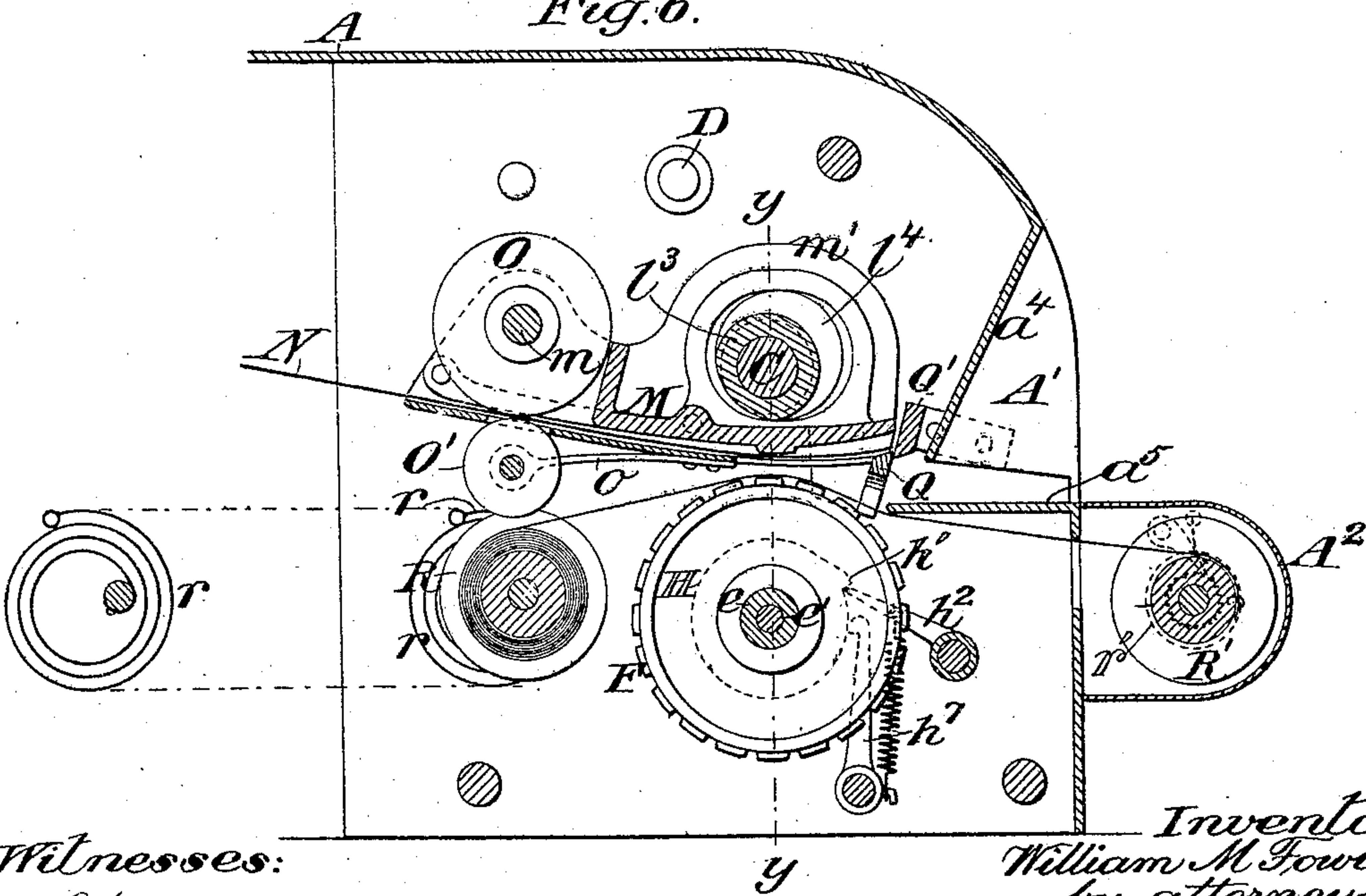


Fig. 6.



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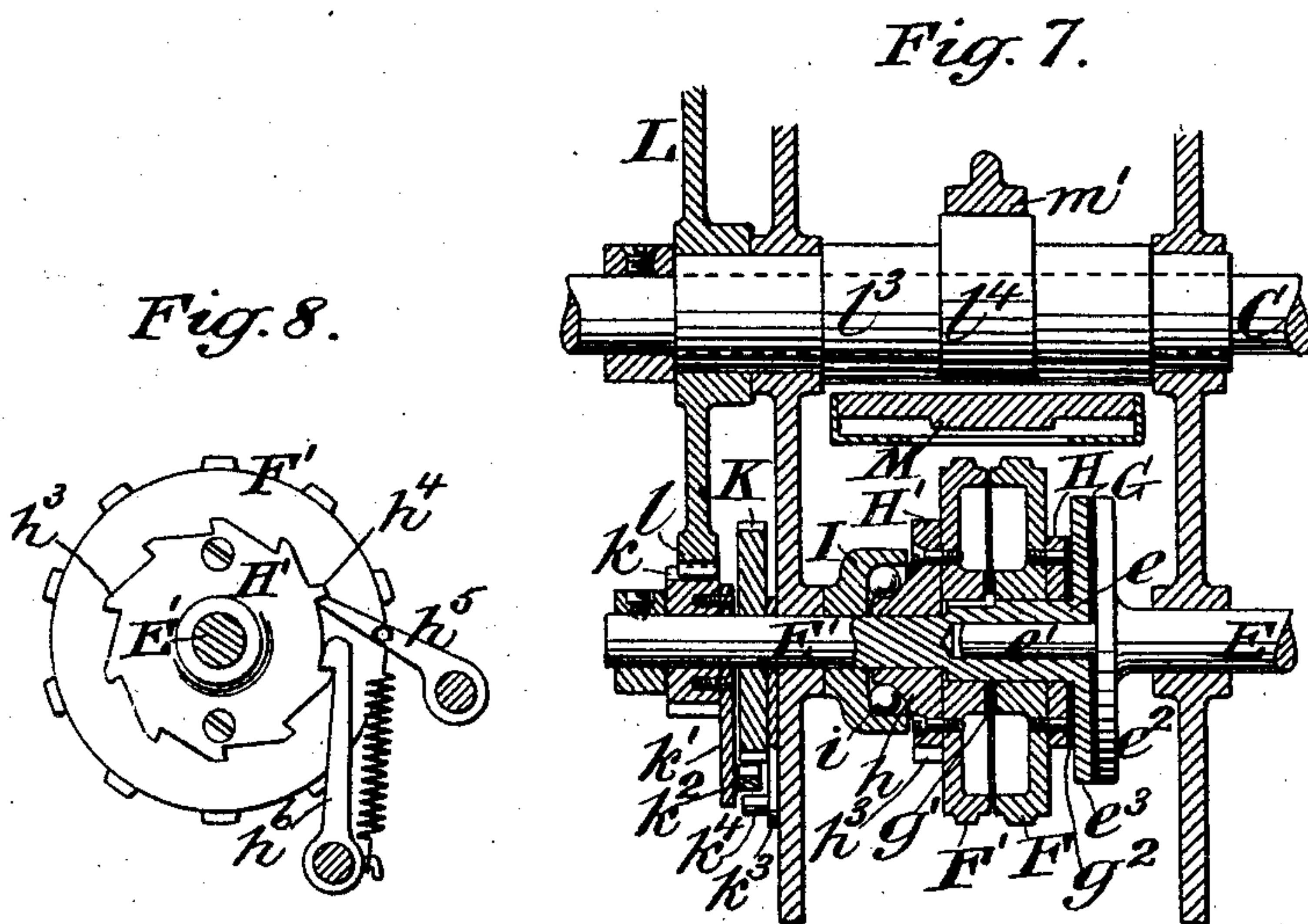
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4 Sheets—Sheet 4.

W. M. FOWLER.
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No. 555,284.

Patented Feb. 25, 1896.



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UNITED STATES PATENT OFFICE.

WILLIAM MILES FOWLER, OF STAMFORD, CONNECTICUT.

LIQUID-DISPENSING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 555,284, dated February 25, 1896.

Application filed November 13, 1894. Serial No. 528,638. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MILES FOWLER, of Stamford, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Liquid-Dispensing Apparatus, of which the following is a specification.

My invention relates to an improvement in liquid-dispensing apparatus in which provision is made for dispensing any desired number of portions from one or several supply-receptacles and finally printing a ticket which shall designate the sum-total of the prices of the several portions dispensed under one order and registering the sum-total of the prices or number of portions dispensed under successive orders throughout the day, week, month, year, or other length of time, as may be required.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a portion of the front of a bar, showing four different dispensing-levers and the printing-lever. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged view in front elevation of the operative parts under the control of the printing-lever and of the several dispensing-levers for printing and registering. Fig. 4 is a top plan view of the same. Fig. 5 is a view of the same in end elevation. Fig. 6 is a view in vertical transverse section from front to rear on the line $x x$ of Fig. 4. Fig. 7 is a view in vertical longitudinal section on the plane of the line $y y$ of Fig. 6. Fig. 8 is a view in detail in side elevation of the dollar printing-wheel and the pawl and stop which coact therewith.

The bar is represented by A and is provided at suitable intervals with slots $a a' a^2 a^3$ for the reception of dispensing-levers B B' B² B³, which connect with suitable mechanism for measuring and discharging a portion of liquid in a suitable manner—such, for example, as that shown and described in my Letters Patent No. 490,823, granted January 31, 1893, and No. 522,322, granted July 3, 1894.

The several dispensing-levers B B', &c., are arranged to operate a common shaft C each time any one or more of them is or are depressed, and it is to the results produced by the rotary movement of the common shaft C

under the successive impulses of the dispensing-levers for purposes of printing and registering that my present invention is more particularly directed.

At or near the point where the printing and registering mechanism is located the shaft C is provided with a spur-wheel c , fixed to rotate therewith and geared with a pinion d on the shaft D arranged to operate a set of registering-wheels $d' d^2 d^3 d^4 d^5 d^6$, in the present instance six of them, each carrying a succession of ten figures from zero to nine, inclusive, and representing units, tens, hundreds, thousands, tens of thousands, and hundreds of thousands.

The means by which each successive wheel to the left is rotated one step when the wheel to the right has completed a revolution may be of any well-known or approved form, such as is commonly employed in connection with a series of registering-wheels. The arrangement is such that every time one of the dispensing-levers is depressed the register will be advanced one unit, so that for my present purpose the register will indicate at any time the sum-total of portions which have been dispensed. As indicated in Fig. 2, the number of portions which have been dispensed amounts to seventy-one thousand four hundred and seventy-four.

In connection with this subject-matter I would say that for my present purpose my price-unit is five cents, and this corresponds to a single portion, so that the amount of cash which should be paid to correspond to the number of portions may be easily ascertained by simply multiplying the number of portions by five.

If a dispensing-lever were employed to dispense a portion having the value set at ten cents or fifteen cents, or some multiple of five, its connection would be so made with the shaft C that the latter would be rotated when such lever was operated twice or three times as far as where the price of the portion was five cents, so that the number of units denoting the portions would still each represent a value of five cents.

It is obvious, of course, that any other unit-value than the one which I have adopted may be made use of, if so desired.

Each time the shaft C is rotated under the impulse of any one or more of the dispensing-

levers its spur-wheel c acts upon a spur-wheel e , fixed to rotate with a shaft E and therefore rotates the shaft E a predetermined distance. The shaft E has a frictional engagement with a pair of type-wheels F F', the former carrying type denoting cents and the latter carrying type denoting dollars. The type on the wheel F is arranged to represent the numbers from zero to ninety-five at intervals of five—viz., zero, five, ten, fifteen, &c. The dollar-wheel F' represents the numerals from zero to nine, inclusive, at intervals of one.

The particular means which I have adopted for connecting the type-wheels with the shaft E, so that they may move simultaneously or, either one move relatively to the other one, are as follows: The shaft E has a section E' separate from E, the section E' being provided with a socket e in its end for the reception of an extended tongue e' on the section E'. The section is provided at the base of the tongue e' with a laterally-extending flange e^2 and the section E' is provided with a corresponding flange e^3 , separated from the flange e^2 by an interposed washer or layer G of some suitable material—such, for example, as leather or rubber—for increasing the frictional resistance between the surfaces.

The wheels F and F' are mounted so as to rotate on the shaft E when compelled to do so and are separated by a disk g' , of some suitable material—such, for example, as leather or rubber—for increasing the frictional resistance between the adjacent ends of the hubs of the wheels. The disk g' is keyed to the shaft-section E' in any well-known manner, as by a feather and groove, so as to rotate positively with the said shaft-section. The wheel F has fixed to rotate therewith a stop wheel or disk H (shown in side elevation in dotted lines in Fig. 6) and the wheel F' has fixed to rotate therewith a stop-wheel H'. (Shown in detail in Fig. 8.) The wheels or disks H H' might be formed integral with the type-wheels F F' if so desired.

The stop wheel or disk H has interposed between it and the adjacent face of the flange e^3 a disk or layer g^2 , of suitable material—such, for example, as leather or rubber—for the purpose of increasing the frictional contact between the surfaces. The stop wheel or disk H' has an extended hub portion h , which is received within a cup-shaped bearing I, and balls i are interposed between the hub and the interior of the cup I to give the wheel F' a ball-bearing at that end. The stop-wheel H is provided with one tooth or abutment h' against which a spring-actuated dog h^2 operates to prevent the wheel F from rotating in a backward direction past the point which presents the zero-type on its face in position to print. The said wheel F may, however, rotate in a forward direction one or more revolutions without interruption by the dog h^2 .

The stop wheel or disk H' is provided with

a series of ratchet-teeth h^3 , corresponding to the digits from zero to nine, inclusive, and with a square-faced tooth h^4 , corresponding to the zero-type. A spring-actuated dog h^5 in engagement with teeth h^3 prevents the wheel F' from a backward movement past the point where its type will print zero, but permits it to move in the opposite direction freely.

A spring-actuated hook-pawl h^6 is constructed to operate simultaneously with a corresponding hook-pawl h^7 , the two being constructed rigid with respect to each other, the one, h^6 , (see Fig. 8,) being in position to engage successively the ratchet-teeth h^3 on the stop-wheel H' and prevent it, and hence the wheel F', from a forward movement, and the latter, h^7 , being in a position to rest against the periphery of the stop-wheel H. When the stop-wheel H has just about completed its forward revolution, the tooth h' on its periphery will rock the hook-pawl h^7 a distance sufficient to carry its corresponding pawl h^6 out of engagement with the ratchet-tooth on the stop-wheel H', and will permit the wheel F' to be rotated one step, or a distance sufficient to bring the type with the numeral 1 into position to print, while the wheel F is making a rotary movement from 95 to 0.

The section E' of the shaft has fixed thereon a ratchet-toothed wheel K. A pinion k (see Fig. 5) under the control of the printing operating-lever L, to be hereinafter more particularly referred to, is loosely mounted on the shaft-section E', and has an arm or plate k' fixed to rotate with the pinion and carrying a spring-actuated pawl k^2 , which has a tendency to engage the teeth on the ratchet-toothed wheel K, and, when the pinion k is rotated in one direction, to cause the wheel K and hence the shaft E' to rotate.

In order to permit the pinion k and the pawl-carrying plate fixed thereto to make a complete revolution, and at the same time cause the arrest of the pawl and its release from the teeth on the wheel K when the latter has been returned to a point corresponding to zero on the wheels F F', I provide an arm k^3 which hangs loosely from the shaft E, with a laterally-projecting pin k^4 in position to engage a tailpiece k^5 on the pawl k^2 , (see Fig. 5,) and at the same time I provide a fixed stop k^6 set in the side frame and projecting from the face of the frame just far enough to arrest the loosely-swinging arm k^3 , but not far enough to interfere with the pawl k^2 . This permits the arm or plate k' with its pawl k^2 to be turned around the wheel K in the direction in which its teeth point a complete revolution without interruption, and at the same time, when the pinion k with the plate k' and pawl k^2 are rotated in the opposite direction carrying with them the wheel K, the pawl will be arrested and released from the wheel K as soon as the pawl comes in contact with the pin k^4 on the arm k^3 , while the latter is arrested by the stop k^6 .

The lever L is provided with a toothed sector l of sufficient length to give the pinion k a complete revolution in one direction when the lever L is drawn from its perpendicular position down to its horizontal position and to give the said pinion k a complete revolution in the opposite direction when the lever is returned from its horizontal to its vertical position. I find it desirable to provide the lever L with a spring-catch l' to lock it in its upward position, the said catch l' being in a position to be readily raised or released by the pressure of the finger upon the end l'' of its stem.

The operation of the mechanism as thus far explained is as follows: When one or more of the dispensing-levers B B', &c., are operated, their action is communicated through the shaft C, spur-wheel c , spur-wheel e and shaft E E' to the type-wheels F F' as follows: The type-wheel F, which denotes cents at intervals of five, will be advanced step by step by the frictional contact of the shaft E with it and will tend to carry with it the type-wheel F', but it will be prevented from doing so until the proper moment by the engagement of the hook-pawl h^6 of the stop-wheel H'. When; however, at any time the type-wheel F shall have advanced to the step from ninety-five cents to a dollar, the type-wheel F' will be released, as hereinabove explained, and will rotate from zero to one dollar as the wheel F completes its revolution. In the same manner the wheel F will, when it again reaches the position ninety-five, rotate the wheel F' another step, or from one dollar to two dollars, and so on. The wheels F and F' will therefore present in position to print, in the present instance at their uppermost points, a combination of dollars and cents which indicates the sum-total of the prices corresponding to the one or more portions of liquid which have been dispensed in response to an order. The downward movement of the printing-lever L, for the purpose of printing a ticket representing the sum-total of the prices of the several portions which may have been dispensed, will rotate the pinion k and with it the pawl-carrying plate and pawl a complete revolution, so as to enable the pawl when it engages the ratchet-wheel K to return it a complete revolution. The return movement of the printing-lever L to its upright position will rotate the pinion k in the opposite direction, and will carry with it the ratchet-wheel K, and hence the shaft-section E', a complete revolution. This return movement of the shaft E' by means of its frictional engagement with the wheels F F' will return them to their normal positions, or with their zero-type uppermost. The wheels F F' will rotate together on their return movement until the wheel F' is arrested by its dog h^5 , and the wheel F will be carried on, provided it has not reached its normal position at the same time with the wheel F', by the additional frictional contact between it and the shaft which

is obtained by the friction-disk g^2 . On the other hand, if the wheel F should reach its normal position first, the wheel F' would be carried on independently of the wheel F by the rotary movement of the friction-disk g' which is keyed to the shaft. It follows, therefore, that the operation of the printing-lever L will return the type-wheels F F' to their normal positions from the position which represents the sum-total of the prices for the several portions dispensed.

The printing is effected as follows: A pressure plate or platen M is hinged on a pivotal bar or pintle m so as to swing toward and away from the type on the wheels F F'. The lever L is loosely mounted on the shaft C, preferably by means of a sleeve l^3 , which sleeve is provided with an eccentric or cam portion l^4 , which works on or within a socket m' , formed at the back of the pressure plate or platen M, so that when the lever L is thrown from its upright to its horizontal position the pressure-plate M will be forced toward the type on the wheels F F', and when the lever L is returned to its upright position the said plate M will be moved away from the type.

The strip of paper from which the tickets are to be cut is denoted by N, and is drawn from a suitable supply-roll. (Not shown.) It passes between a pair of rollers O and O', which feed it from time to time between the pressure-plate M and the type-wheels. The roller O' is mounted on a spring-support o in order to closely hold the strip N between the two rollers, and the roller O is positively operated to advance the strip by means of a link P, connected at one end with the sector on the operating-lever L and at its opposite end with a pawl p hung from the shaft or spindle m , on which the feed-roller O is loosely mounted and provided with a nose p' adapted to engage the abrupt ends p^2 of notches in the face of the disk p^3 , fixed to rotate with the feed-roller O. In the present instance I have provided the disk p^3 with four notches, and the feed-roller O is of such size that a one-fourth revolution will feed the strip N far enough to form the length of a ticket. As the lever L is depressed, the pawl p will swing idly into engagement with a previous notch p^2 and when the lever L is thrown into an upright position it will advance the feed-roller O and feed forward the strip N. The movable pressure plate or platen M is provided with one blade, Q, of a cutter, the opposite blade, Q', being fixed stationary to the frame at a point near the opening which is provided at the front of the bar for the discharge of the printed tickets. This opening I prefer to form by a notch A' having a downwardly and rearwardly receding wall a^4 and a floor a^5 , as clearly shown in Fig. 6. As the platen M is depressed, the printing takes place, and as it is elevated from the type the printed ticket will be forced forward between the blades Q Q', which blades will finally sever it from the strip just as the lever L approaches

its upright position. The severed ticket will fall on the floor a^5 of the notch A' and may be handed to the customer at pleasure.

I may either depend upon forcing the strip 5 N into contact with pronounced type to make the print by indenting the strip, or I may—as I prefer to do—use an inking-ribbon for the purpose of printing the amount in ink on the strip. The inking-ribbon leads from a 10 spool R, which is provided with a retracting-spring r , over the face of the type which are to print, between them and the strip N and thence to a spool R', housed within a projecting chamber A^2 at the front of the bar and 15 preferably immediately below the notch A' . The spool R' is provided with an ordinary pawl and ratchet and its shaft projects from the chamber A^2 and is provided with a thumb-wheel r' for the purpose of winding the ribbon from the spool R onto the spool R' at 20 such intervals as the case may require. The inking-ribbon may be permitted to run back from the spool R' onto the spool R by releasing the spool R' and permitting the retracting-spring r to act.

What I claim is—

1. In combination, one or more liquid-dispensing devices, independently movable type-wheels under the control of said liquid-dispensing device or devices to indicate the 30 sum-total of the prices of several portions of liquid dispensed, a printing mechanism for making a record of said sum-total and means under the control of the said printing mechanism for moving the said type-wheels either 35 simultaneously or independently of one another to return them to zero or normal position after each printing, substantially as set forth.

2. In combination, type-wheels, a divided 40 shaft on which the type-wheels are mounted, the wheels being arranged to move either with the shaft or relatively thereto, as may be required, means for operating the shaft at intervals to advance the type-wheels, and means 45 for operating one section of the shaft to return the type-wheels to normal, substantially as set forth.

3. In combination, type-wheels, a shaft on 50 which the type-wheels are mounted, the wheels being arranged to move either with the shaft or relatively thereto, as may be required, one of the wheels being under the control of the other, both to advance and release it, means for advancing the shaft and 55 means for returning the wheels, substantially as set forth.

4. In combination, liquid-dispensing devices, a divided shaft under the control of 60 the liquid-dispensing devices to be rotated in one direction, type-wheels mounted on the divided shaft and arranged to be moved in one direction by one section of the shaft and in the opposite direction by another section 65 of the shaft, a printing-platen, a lever for

operating the printing-platen, and a connection between said lever and the shaft-section for returning the type-wheels to normal, substantially as set forth.

5. In combination, a divided shaft, type- 70 wheels mounted on the shaft, means for rotating the shaft-sections in one direction, means for rotating one of the shaft-sections in the opposite direction, the type-wheels having a frictional engagement with the shaft 75 and with each other and means for taking an impression from the type-wheels, substantially as set forth.

6. In combination, a divided shaft, type- 80 wheels mounted on the shaft, means for rotating the shaft-sections in one direction, means for rotating one of the shaft-sections in the opposite direction, one of the type-wheels having a ball-bearing with the shaft 85 at one end of its hub and a frictional engagement with the shaft at the opposite end of its hub, another type-wheel having a frictional engagement with two shaft-sections, and means for taking an impression from the 90 type-wheels, substantially as set forth.

7. In combination, a divided shaft, type- 95 wheels mounted on the shaft and having a frictional engagement with the shaft and with each other, means for rotating the shaft in one direction, means for rotating one section of the shaft in the opposite direction, stop- 100 wheels fixed to rotate with the type-wheels, dogs for arresting the movement of the type-wheels in one direction, and a pawl for holding one of the type-wheels against movement in the opposite direction, the said pawl being 105 under the control of a companion type-wheel to release it, substantially as set forth.

8. In combination, type-wheels, means for 110 operating them, a movable pressure plate or platen, means for operating it, a feed-roller, means for operating it, a stationary cutting-blade and a movable cutting-blade carried by the platen, substantially as set forth.

9. In combination, type-wheels, means for 115 operating them, an impression plate or platen, a lever for operating it, a gear on the lever, a pinion loosely mounted on the type-wheel shaft adapted to intermesh with the gear on the lever, a ratchet-toothed wheel fixed on 120 the type-wheel shaft, an arm fixed to rotate with the pinion and carrying a spring-actuated pawl in position to engage the ratchet-wheel, an arm loosely mounted on the type-wheel shaft and provided with a stop to arrest the pawl and release it from the ratchet-wheel and a fixed stop in position to engage the stop-carrying arm to arrest it and hence the stop which releases the pawl, substantially as set forth.

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Witnesses:

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