

No. 690,475.

Patented Jan. 7, 1902.

O. E. SORG.

COIN CONTROLLED LIQUID VENDING MACHINE.

(Application filed Dec. 29, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

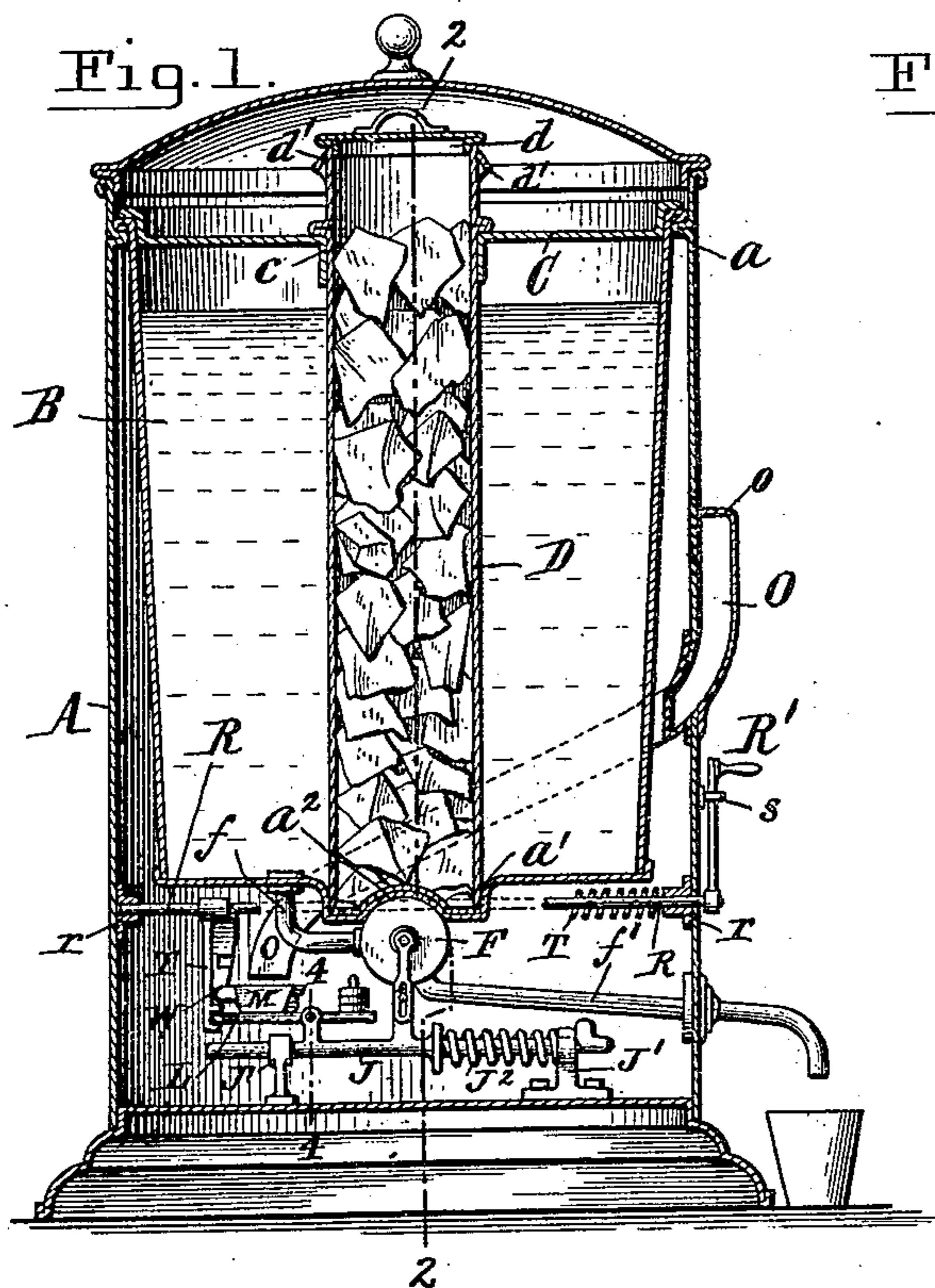


Fig. 2.

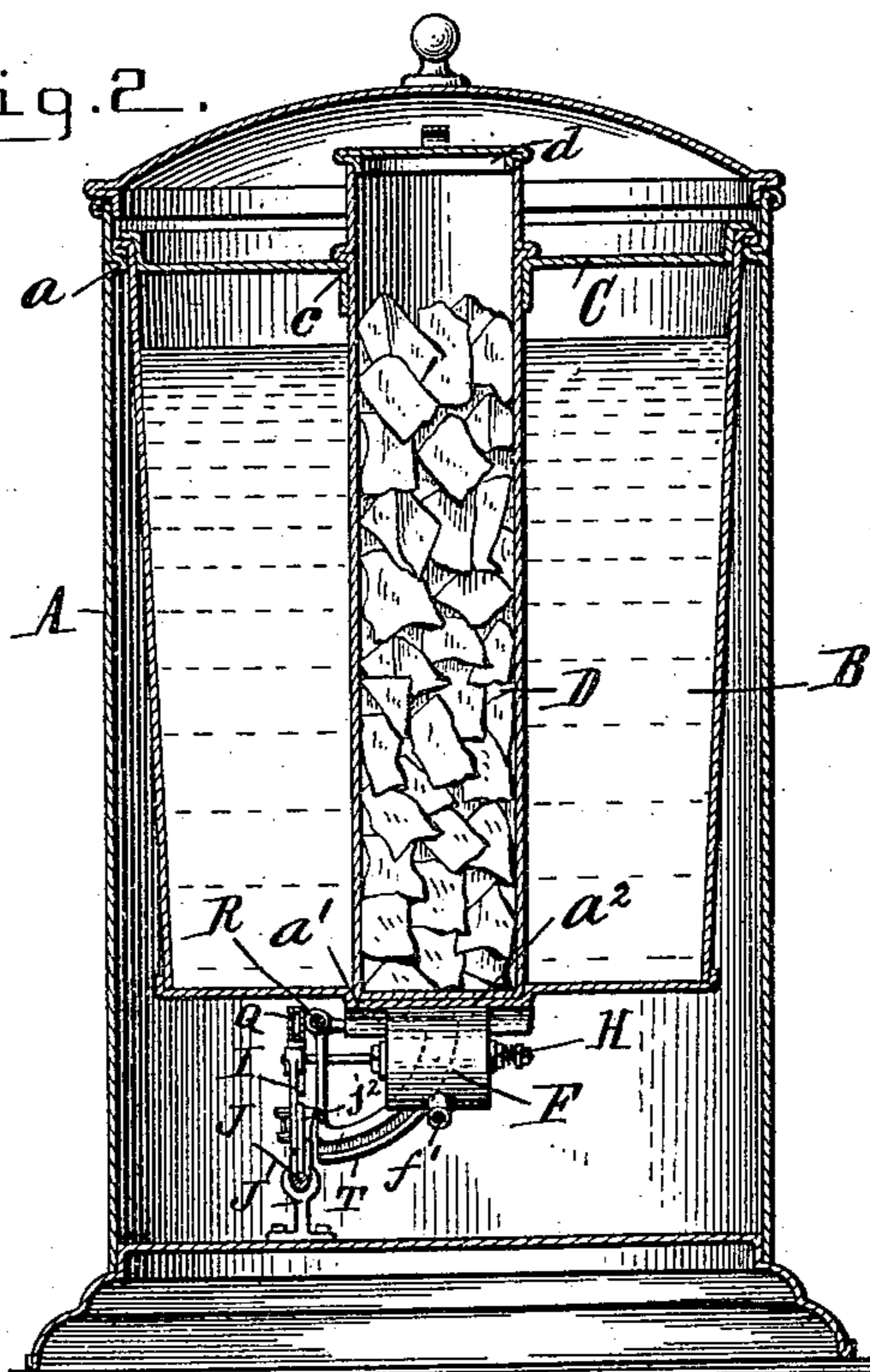
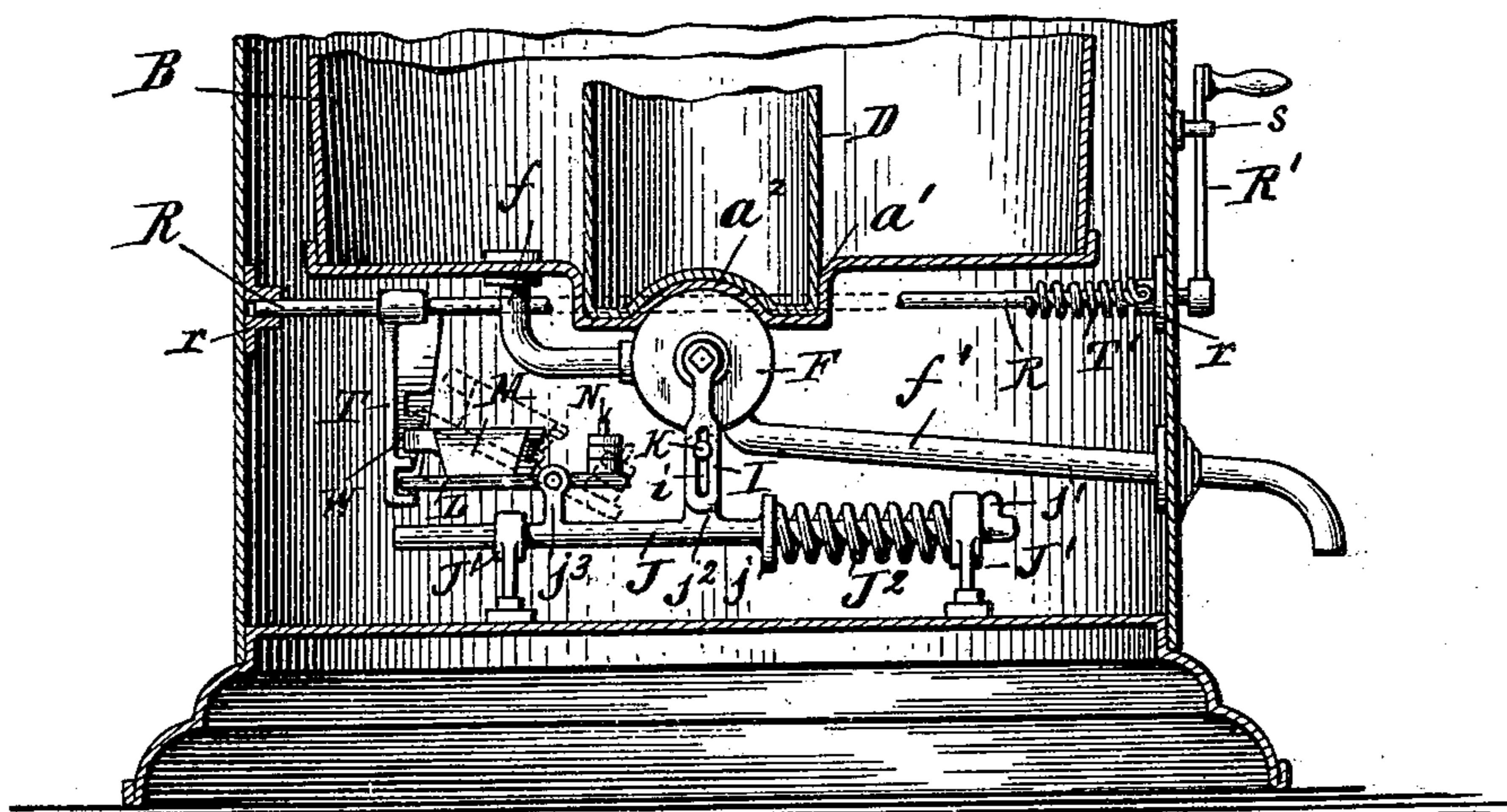


Fig. 3.



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3 Sheets—Sheet 2.

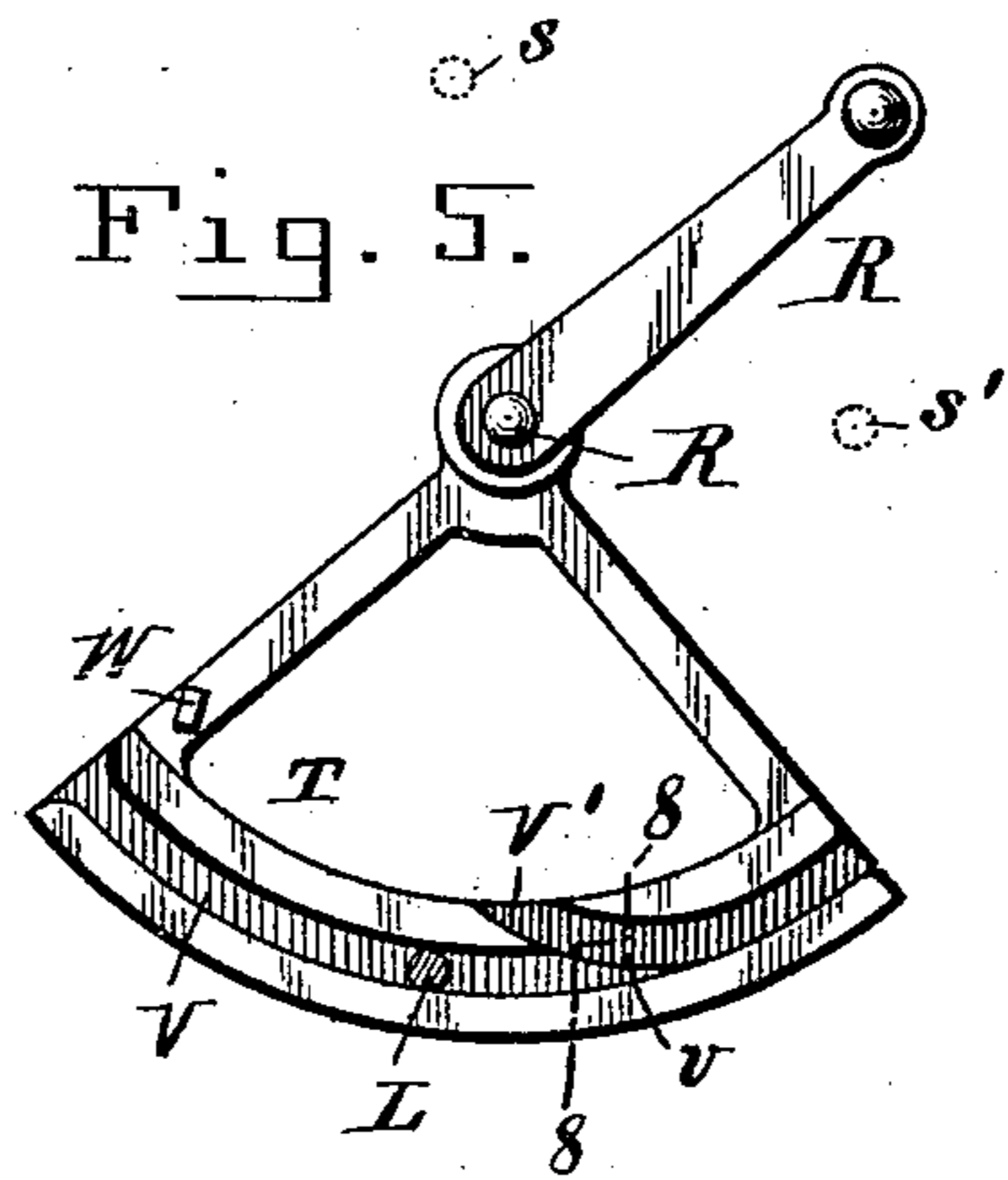
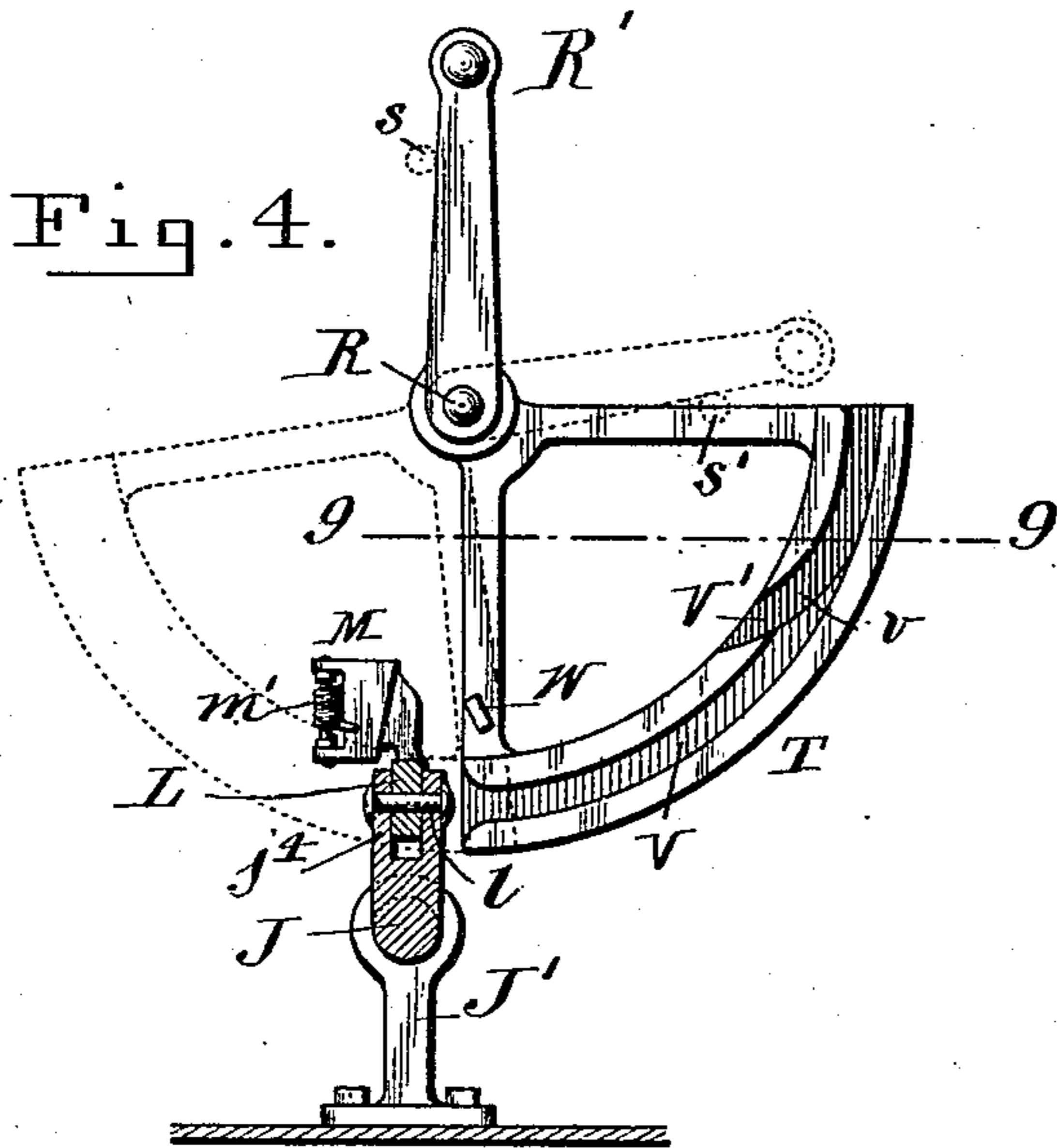


Fig. 7.

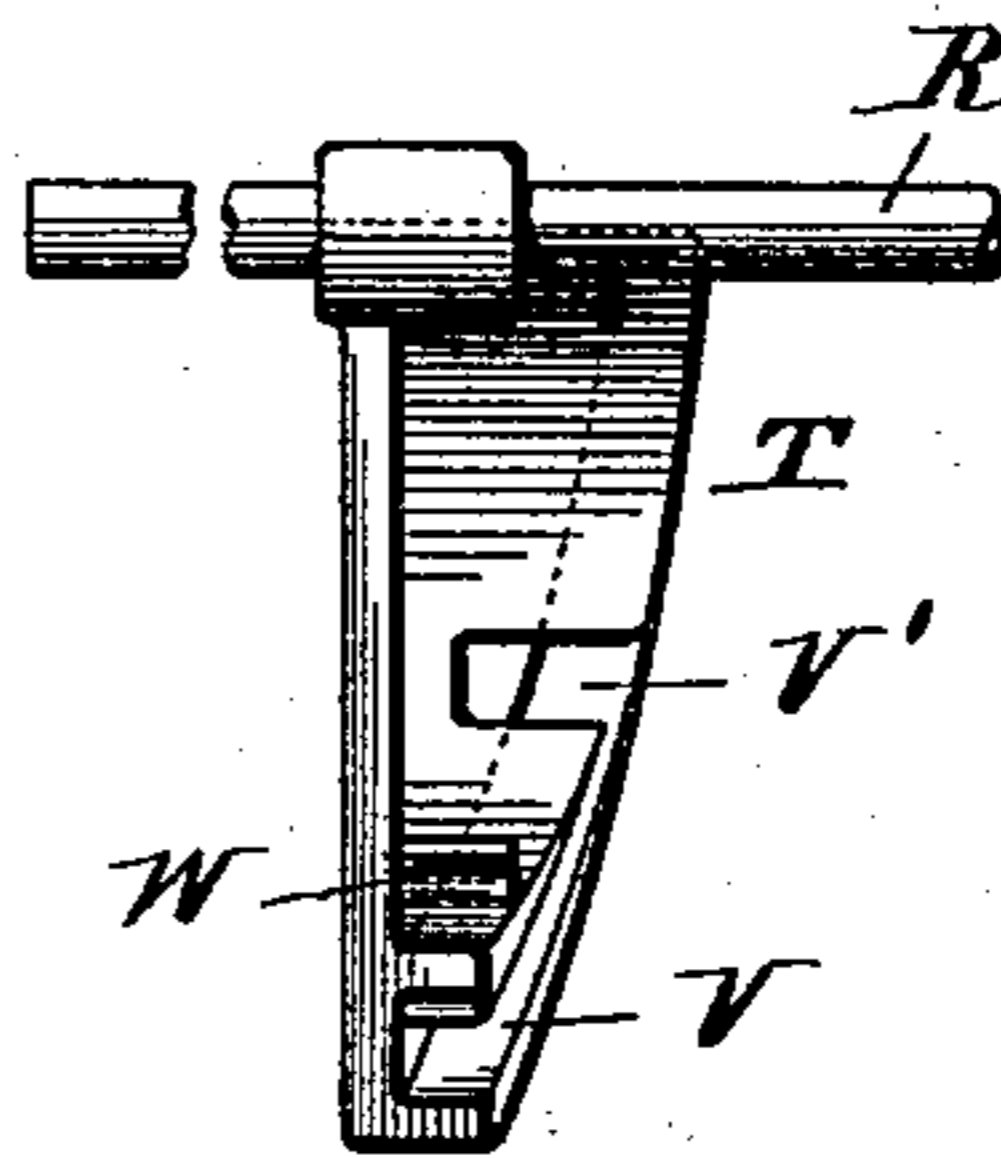
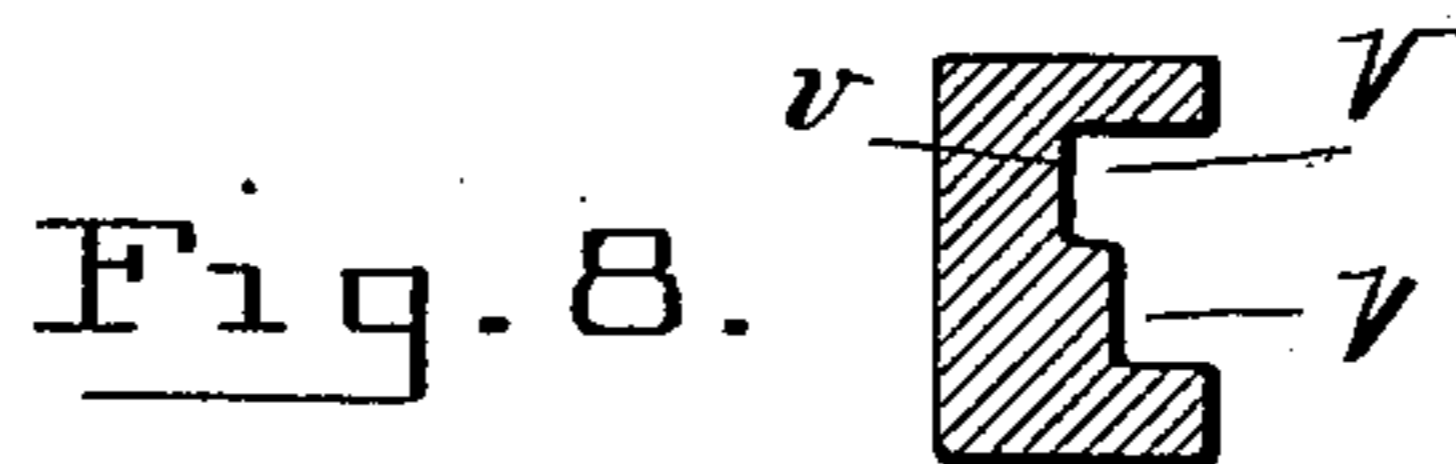
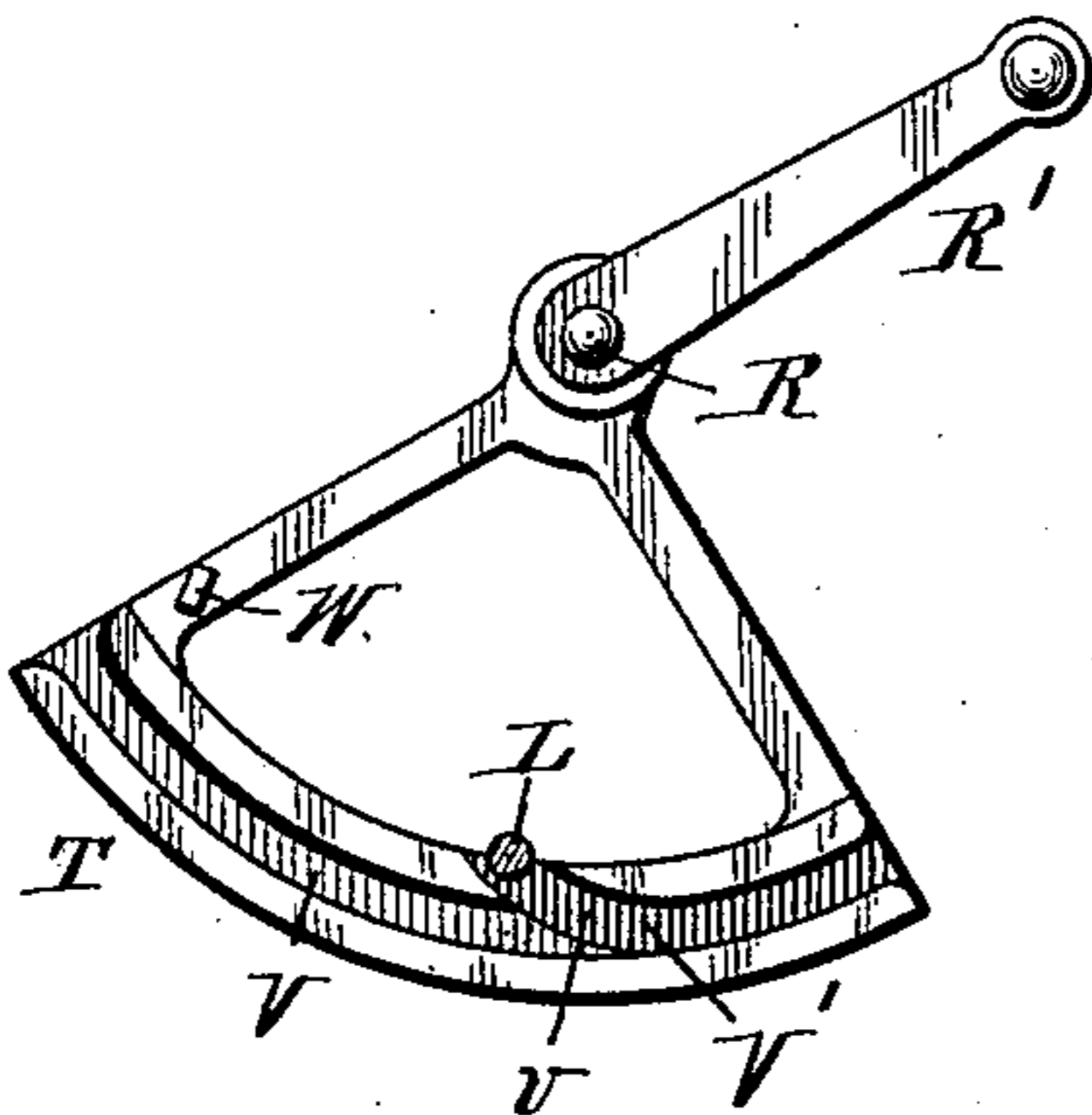


Fig. 6.



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3 Sheets—Sheet 3.

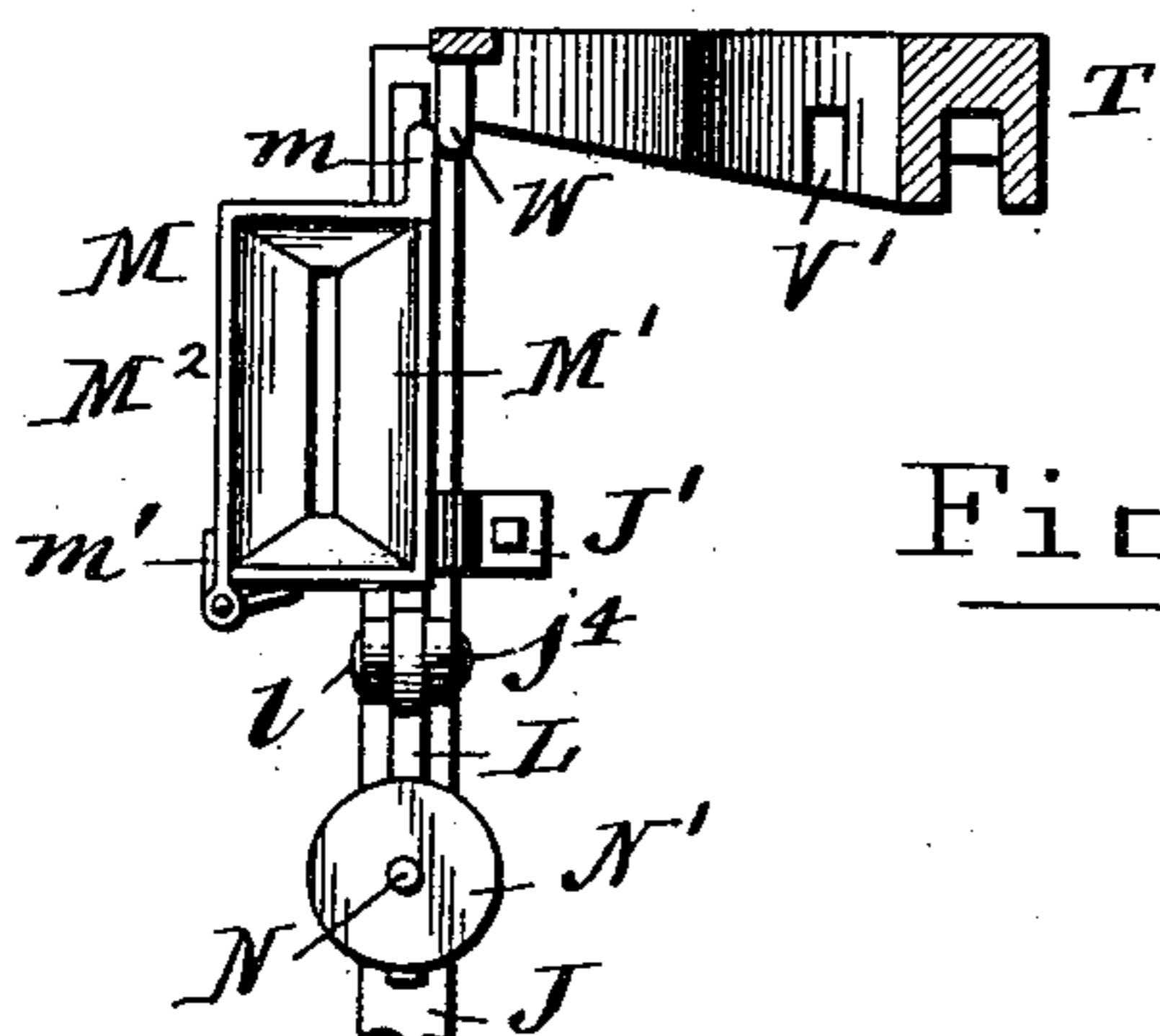


Fig. 9.

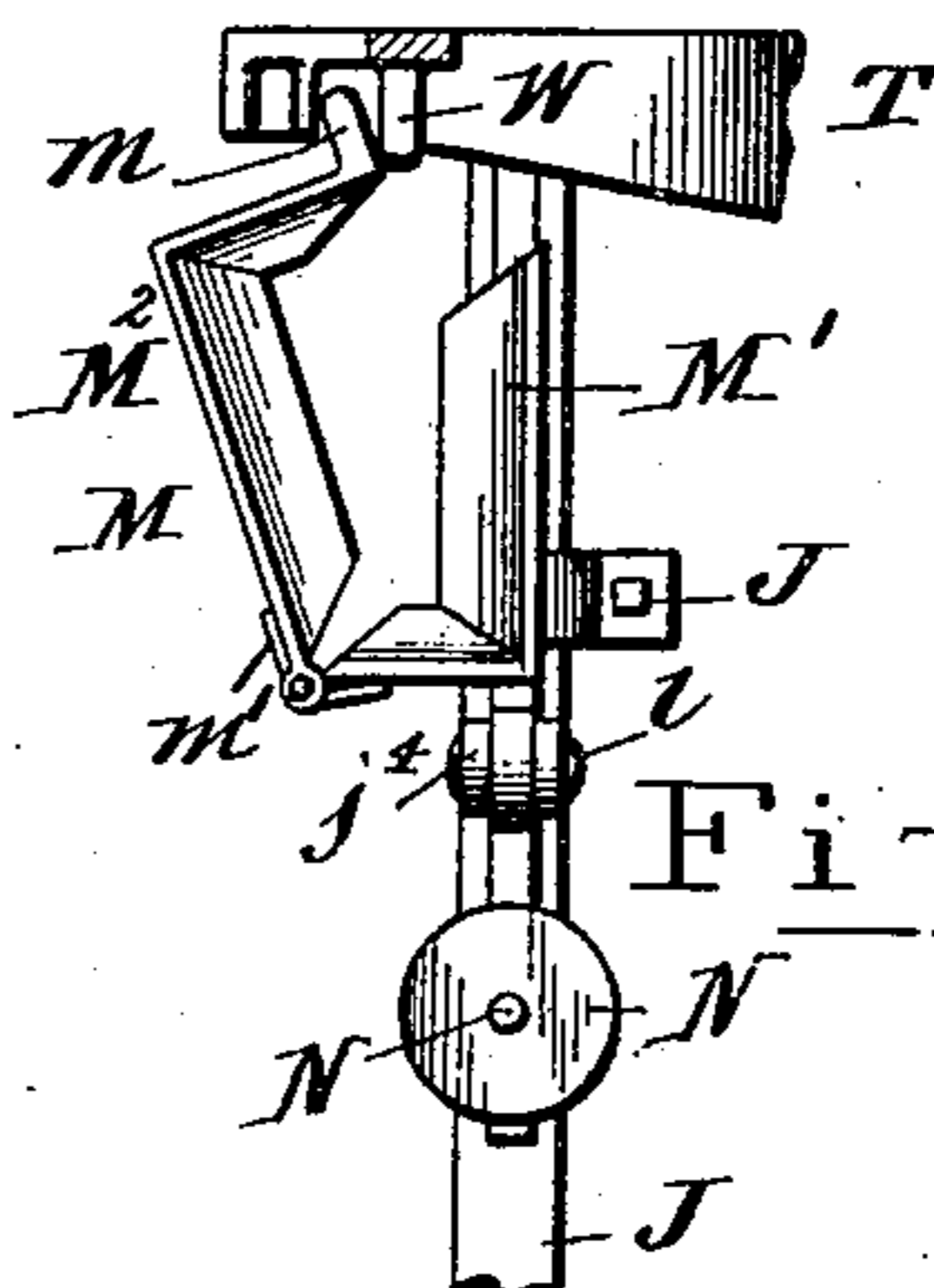


Fig. 10.

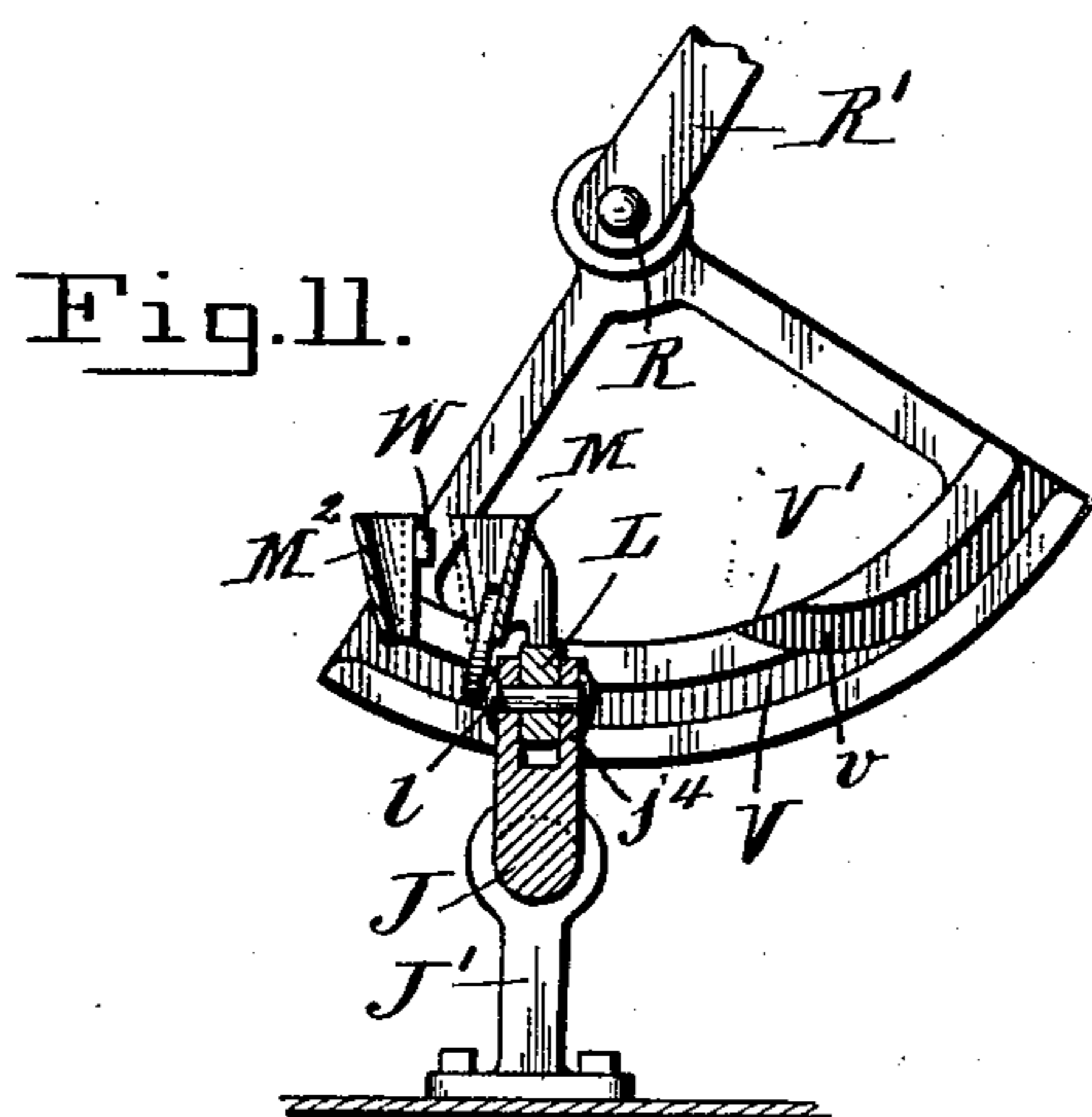


Fig. 11.

Fig. 12.

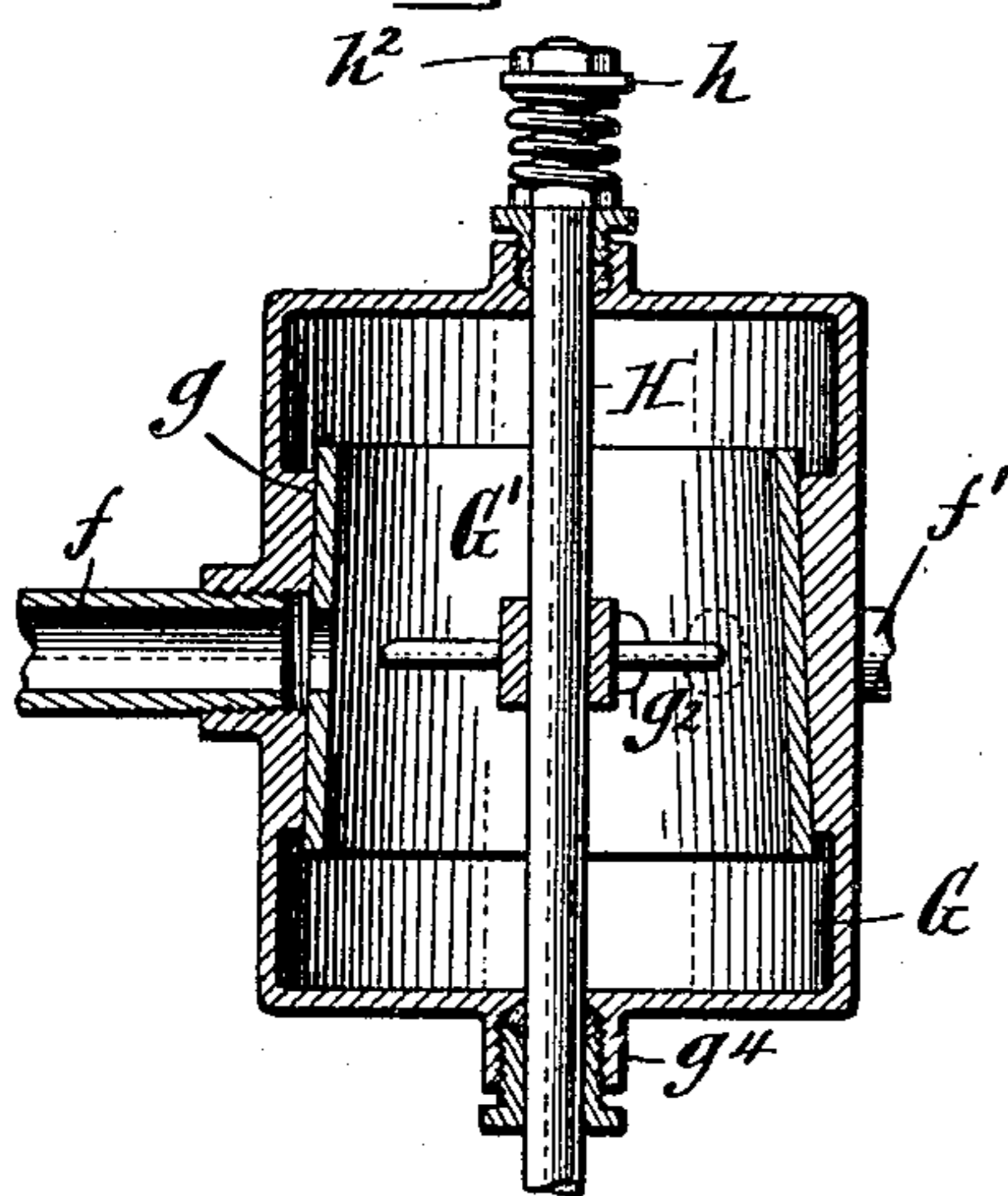
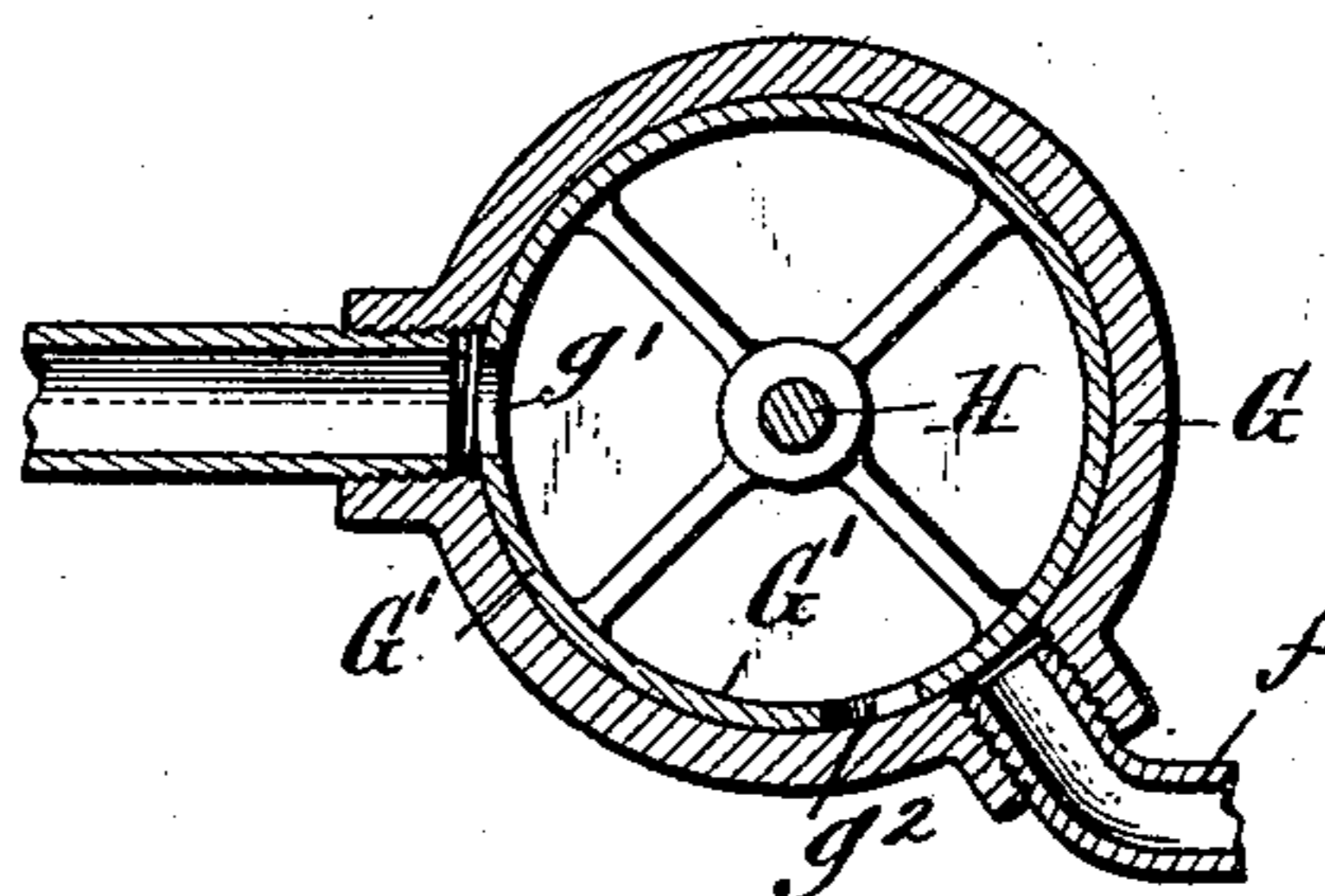


Fig. 13.



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# UNITED STATES PATENT OFFICE.

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## COIN-CONTROLLED LIQUID-VENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 690,475, dated January 7, 1902.

Application filed December 29, 1900. Serial No. 41,463. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR E. SORG, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Coin-Controlled Liquid-Vending Machines, of which the following is a specification.

My invention relates to a liquid-vending machine which delivers a predetermined quantity of liquid and which is controlled by the deposit of a coin of a certain denomination.

The apparatus comprises a liquid-reservoir having an ice-chamber therein, a liquid-measuring valve or cup, mechanism for discharging the liquid from said measuring valve or cup, and coin-controlled mechanism whereby said mechanism is caused to operate the measuring-valve to discharge the liquid contained therein, and a coin receiver and chute wherein the coin is placed and directed to the coin-controlled mechanism.

My improvements lie in the novel construction and combination of elements forming these various parts, with the object in view of devising a simple, inexpensive, and accurate device of this character which is reliable and responsive in action to a suitable coin deposited therein and which by the combination of novel constructed parts assures delivery of a predetermined quantity on the deposit only of the proper coin.

Referring to the drawings, Figure 1 is a vertical section of a liquid-vending apparatus, showing my improvements embodied therein. Fig. 2 is a vertical section taken on line 2 2, Fig. 1. Fig. 3 is an enlarged vertical section of the lower portion of the apparatus, taken on the same plane as Fig. 1. Fig. 4 is a section on line 4 4, Fig. 1, the operating mechanism comprising a shaft, its attached handle and wedge or cam segment being shown in elevation, the cam-segment being shown in its normal position. Fig. 5 is a front view of the operating mechanism, comprising a shaft, its attached handle, and cam-segment, they being shown as on their forward movement. Fig. 6 is a similar view showing the parts on their return movement. Fig. 7 is a side elevation of the cam-segment and a por-

tion of the operating-shaft. Fig. 8 is a cross-section on line 8 8, Fig. 5. Fig. 9 is a horizontal section on line 9 9, Fig. 4, the cam-segment being about to open the coin-receptacle. Fig. 10 is a similar view, the cam-segment having opened the coin-receptacle to discharge the coin. Fig. 11 is a view similar to Fig. 4, with the coin-receptacle shown in section to show the manner of discharging the coin therefrom. Fig. 12 is a central longitudinal section of the measuring valve or cup. Fig. 13 is a transverse section of the same.

Referring to the drawings in detail, the letter A represents the outer casing, which may be constructed of any suitable material and in any desirable form or shape and which is provided with an inwardly-projecting rim or bead *a* near its upper end.

B represents the liquid-reservoir, having its upper edge flanged to bear or rest against said inwardly-projecting rim or bead *a*, thus holding said reservoir in proper position in the casing A. A cover C, having an opening *c* in its center, is made to fit and close the liquid-reservoir. The latter is provided in its bottom with a depression or pocket *a'*, which latter is formed with a raised or convex portion *a<sup>2</sup>*.

D is the ice-chamber, which passes through the opening *c* in the cover C and extends centrally through the liquid-reservoir, the lower end thereof entering the depression or pocket *a'*, formed in the bottom of the liquid-reservoir. This ice-chamber has its bottom concaved to receive the convex portion *a<sup>2</sup>* of the depression or pocket *a'*, whereby the lower end of the ice-chamber is held in proper position, the cover C serving to hold the upper end thereof. A cover D is provided for said ice-chamber, and handles *d'* are secured to opposite sides thereof to facilitate the placing of the ice-chamber into the liquid-reservoir and also to more readily remove said chamber therefrom. A cover E is placed over the top of the casing, which with said casing completely houses all the parts. By constructing the liquid-reservoir and ice-chamber as described they may be easily separated and cleaned.

Directly under the center of the liquid-reservoir and ice-chamber a measuring valve or

cup F is located, so as to be partly surrounded by the concaved portions thereof. This valve or cup is made in size to hold a predetermined quantity of the liquid and has an inlet-pipe  $f$ , which is connected to the bottom of the liquid-reservoir, and an outlet or discharge pipe  $f'$ , which terminates outside of the casing A. Through this outlet or discharge pipe the predetermined quantity of liquid is discharged on depositing the proper coin. It will be apparent that by forming the liquid-reservoir and ice-chamber with the concaved portion and locating the measuring valve or cup partly within the same the liquid contained in said measuring-valve will be kept cold under all conditions and on deposit of the proper coin will always deliver a refreshing drink.

The measuring-valve consists of an outer casing G, having the inlet and outlet pipes  $f f'$ , respectively, entering the same, and a tapering valve-seat  $g$  formed therein. A valve  $G'$  of corresponding taper to the valve-seat is held therein and is provided with inlet and outlet ports  $g' g^2$ , respectively, which serve to open the inlet and outlet pipes of the casing. This valve is secured to a valve-stem H, which passes out through stuffing-boxes  $g^3 g^4$ , formed on the casing G. To one end of this stem a washer  $h'$  is held and a nut  $h^2$  is secured. Between said washer and the gland of the stuffing-box  $g^3$  a spring  $h^3$  is located, which serves to draw the valve  $G'$  tightly against its seat. To the other end of the valve-stem H a depending lever I is secured and provided with a longitudinal slot  $i$  at its lower end.

J represents a thrust or slide rod which slides in guides  $J'$ , secured to the bottom of the casing A, and which has a flange  $j$  and a stop  $j'$  formed thereon. Between the flange  $j$  and one of the guides  $J'$  a spring  $J^2$  is located, it serving to keep said thrust or slide rod in its rearmost position, which brings the stop  $j'$  against the front face of the forward guide. Upwardly-extending arms  $j^2 j^3$  are formed on the thrust or slide rod, the arm  $j^2$  having a pin or stud K formed or secured thereon, which enters the slot  $i$ , formed in the lever I of the valve-stem, thus giving the necessary play between said lever and the arm  $j^2$ . The arm  $j^3$  is bifurcated, as at  $j^4$ , to receive a balance-lever L, a pivot-pin  $l$  passing through both and serving to permit the balance-lever I to tilt and also causing the same to move the thrust or slide rod and be moved by the same.

M represents the coin-receptacle, which is formed on or secured to the balance-lever I, at one end thereof, and which is formed in two parts  $M' M^2$ , respectively, the part  $M'$  being secured to lever L, while the part  $M^2$  is pivotally secured to the part  $M'$ . The purpose of this arrangement is to allow the coin contained in the coin-receptacle to drop to the bottom of the casing A or any other suitable receptacle, which may be emptied from time to time. As best shown in Figs. 4, 9, 10, and

11, the part  $M^2$  has an ear or lip  $m$  for a purpose as will presently appear. To the other end of the lever L a pin N is secured, over which weights  $N'$  are placed. As many of these weights are used as is necessary to balance the coin deposited in the coin-receptacle M. On changing the price of the liquid the weight of the changed coin denomination may necessitate a change of weights, in which event it is simply necessary to add weights to or take weights from those already held on the balance-lever, as the case may require, to balance the coin.

Encircling the pivot-pin which connects the two parts of the coin-receptacle is a spring  $m'$ , one end of which bears against the fixed part  $M'$ , while the other end thereof bears against the pivoted part  $M^2$ . This spring serves to keep the pivoted part against the fixed part. When the pivoted part  $M^2$  is held against the fixed part  $M'$ , the coin-receptacle is closed to receive the coin; but while thus closed it still has an opening in its bottom through which any coin will drop which is smaller in diameter than the one intended for use in operating the device.

R represents the operating-shaft, journaled in bearings  $r$ , secured to the inside of the casing A. One end of this shaft extends out through the casing and has secured thereto an operating crank or handle  $R'$ . The movement of this handle is limited by pins or stops  $s s'$ , which also limit the rocking movement of the operating-shaft to which said handle is secured. Near the rear end of said shaft an oscillating cam-segment T is secured, which is positioned normally to one side and in rear of the coin-receptacle. A spring T' surrounds the shaft R and has one end secured thereto and its other end to one of the bearings  $r$ , its purpose being to keep the cam-segment T and the handle  $R'$  in the position shown in full lines in Fig. 4.

As best illustrated in Fig. 7, the cam-segment is wedge-like in form and has a groove V formed therein. This groove is also made wedge-like to conform to the face of the segment and inclines outward or swells from left to right. In order to prevent the delivery of more than one cupful of the liquid on the deposit of a coin, it is essential that the cam-segment be disengaged from the coin-controlled mechanism before it returns to its starting-point. This is done by forming a depression  $v$ , (see Fig. 8,) which directs or leads the said balance-lever to a by-pass or return-groove  $V'$ , from which it is disengaged during the first portion of the return movement of the cam-segment. A lip or ear W is formed on the cam-segment T, its purpose being to engage the lip or ear  $m$ , formed on the part  $M^2$  of the coin-receptacle, thereby opening the latter when the cam-segment is oscillated and causing the coin contained therein to be discharged.

O represents a coin-chute which has its upper end provided with a coin-slot  $o$ , in which

the coin is placed. Said chute passes around one side of the liquid-receptacle and has its lower end positioned directly over the coin-receptacle M, in which the coin is deposited.

5 The operation of the device is as follows: A coin is placed in the coin-slot *o* of the coin-chute, whereby it is directed to the coin-receptacle M. On entering the coin-receptacle the coin causes the same and the balance-le-  
 10 ver to which it is secured to swing from the position shown in dotted lines in Fig. 3 to that shown in full lines. This brings the rear end of the balance-lever in line with the entrance of the groove in the cam-segment and the lip or ear formed on the part M<sup>2</sup> of  
 15 the coin-receptacle in line with the lip or ear W formed on the cam-segment. The handle *o*<sup>3</sup> is now swung from the position shown in Fig. 4 in full lines to that shown in dotted  
 20 lines, where it is momentarily held to permit the contents of the measuring-valve F to be discharged. During this movement of the handle the cam-segment is swung from right to left, and the groove formed therein engages  
 25 the end of the balance-lever. As soon as said lever and cam-groove coact the lip or ear W formed on the cam-segment engages the lip or ear formed on the pivoted part M<sup>2</sup> of the coin-receptacle and on the further movement  
 30 of the cam-segment opens the coin-receptacle and discharges the coin, which lightens the rear end of the balance-lever. During this movement and the further movement of the cam-segment the balance-lever, owing to the  
 35 wedge-like cam-groove engaging its rear end, is forced forward, which lever, through its connection with the thrust or slide rod J, forces it forward also, which in turn, through its connection with the valve-stem, turns  
 40 the measuring-valve. The turning of this valve closes the inlet-port *g*<sup>1</sup> and opens the outlet-port *g*<sup>2</sup>, thus permitting the liquid to flow from said measuring-valve to a cup or  
 45 other receptacle, which may be held at the mouth of the outlet-pipe *f*<sup>1</sup>. Just as the handle *o*<sup>3</sup> is about to approach its lowermost position and strike the stop *s*<sup>1</sup> the elevation or ledge formed by the depression *v* in the cam-  
 50 groove passes over the end of the balance-lever and causes the same to enter the depressed portion of the groove, which it enters as the handle *o*<sup>3</sup> strikes the stop *s*<sup>1</sup> and prevents further movement of the shaft R and  
 55 cam-segment T. On releasing the handle R' the spring T', surrounding the shaft R, turns the same in the opposite direction until stopped by the handle R' striking the stop *s*. The cam-segment is thereby also returned to its normal or disengaged position. Dur-  
 60 ing this return movement of the cam-segment the ledge or elevation formed by the depression *v* in the cam-groove directs the balance-lever into the by-pass or return-groove T', and as it reaches the end of this return-groove  
 65 the spring surrounding the thrust or slide rod J forces the same and the balance-lever L back until the stop *j*<sup>1</sup>, formed on said thrust

or slide rod, strikes the adjacent guide J'. This rod in turn, through its connection with the lever I, closes the outlet of the measur- 70  
 ing-valve and opens the inlet thereof, thus allowing the measuring-valve to be again filled. As the balance-lever is carried back with the thrust or slide rod J the rear end thereof is elevated, owing to its front end be- 75  
 ing heavier. The cam-segment now completes its return movement without coming in contact with any other part of the device. The coin-receptacle is now again in position to receive a coin, when the operation of the 80  
 parts as described will again deliver the liquid contained in the measuring-valve.

It is to be understood that a coin thicker than the coin intended to be used cannot be passed through the slot *o* of the coin-chute, 85  
 and a coin smaller in diameter or thinner or both smaller in diameter and thinner will pass through the opening in the coin-receptacle M without operating the balance-lever.

Having thus described my invention, what 90  
 I claim is—

1. In a vending-machine, the combination with the casing, of a thrust or slide rod located therein and so connected as to deliver the article to be vended, coin-controlled 95  
 mechanism secured to said thrust or slide rod and serving to operate the same, an operating-shaft, and a cam secured to said operating-shaft and arranged to operate the coin-controlled mechanism and with it the 100  
 thrust or slide rod, substantially as set forth.

2. In a vending-machine, the combination with the casing, of a thrust or slide rod located therein and connected to discharge the article to be vended, a spring for keeping the 105  
 thrust or slide rod to the end of its travel in one direction, a balance-lever pivoted between its ends to said thrust or slide rod and having a coin-receptacle at one end and a weight at its other end, the latter being adapted 110  
 to keep the coin-receptacle in its elevated or normal position, a coin-chute terminating directly over the coin-receptacle, and mechanism adapted to engage said balance-lever when a coin is deposited in the coin-recepta- 115  
 cle and move the said lever and the thrust or slide rod in a direction opposite to which it is held by the above-mentioned spring, substantially as set forth.

3. In a vending-machine, the combination 120  
 with the casing, of a thrust or slide rod arranged and connected so as to discharge the article to be vended, a spring for keeping said thrust or slide rod to the end of its travel in one direction, a balance-lever pivoted be- 125  
 tween its ends to said thrust or slide rod, a coin-receptacle formed in two parts, one part being fixedly secured to the balance-lever, the other being pivotally secured to the fixed part, a spring for keeping the two parts of 130  
 the coin-receptacle together, an operating-shaft, and a cam-segment secured to said shaft and being adapted to engage said balance-lever when a coin is deposited in the

coin-receptacle and move the same and the thrust or slide rod to which it is attached in a direction opposite to which it is held by the above-mentioned spring, said cam-segment  
5 being also adapted to engage the pivoted part of the coin-receptacle, separate the same from the fixed part thereof, and discharge the coin contained therein, substantially as set forth.

4. In a vending-machine, the combination  
10 with the casing, of a thrust or slide rod arranged and connected to discharge the article to be vended, coin-controlled mechanism secured to said thrust or slide rod, and operating mechanism whereby the coin is discharged  
15 from the coin-controlled mechanism and whereby the latter is operated with the thrust or slide rod, substantially as set forth.

5. In a vending-machine, the combination with the casing, of an operating-shaft, a handle secured to one end of said shaft, a cam-segment secured to its other end and having a wedge-like groove formed therein and a return-groove leading from the latter, a balance-lever having a weight at one end and a  
25 coin-receptacle at its other end and being adapted for engagement with said wedge-like groove when a coin is deposited in the coin-receptacle, and a thrust or slide rod carrying said balance-lever and being operated thereby for effecting the discharge of the article to be vended, substantially as set forth.  
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6. In a vending-machine, the combination with the casing, of a coin-chute, a balance-lever weighted at one end and having a coin-receptacle formed in two parts hinged together at its other end, said receptacle having an opening in its bottom slightly shorter in length than the diameter of the proper or predetermined coin and less in width than  
40 the thickness of such a coin, controlling mechanism for effecting the discharge of the article to be vended, said controlling mechanism carrying the balance-lever and being operated thereby, and operating mechanism whereby  
45 the two parts of the coin-receptacle are separated to discharge the coin contained therein and whereby the balance-lever is caused to operate the controlling mechanism, substantially as set forth.

50 7. In a vending-machine, the combination with the casing, of controlling mechanism for

effecting the discharge of the article to be vended, a balance-lever pivoted between its ends, a coin-receptacle formed in two parts hinged together, one of said parts being fixedly secured to the light end of said balance-lever, the other part thereof being pivotally secured to said fixed part, a spring for holding the two parts of said coin-receptacle together, a coin-chute terminating at one end directly over said coin-receptacle, and operating mechanism adapted to cause said balance-lever to operate the said controlling mechanism when a coin is deposited in the coin-receptacle and also to cause the two parts  
60 of said coin-receptacle to separate for discharging the coin contained therein, substantially as set forth.  
65

8. In a vending-machine, the combination with the casing, of a thrust or slide rod working in guides and having a flange or collar and a stop formed thereon, said stop being arranged to bear against one side of one of said guides, a spring bearing with one end against the other side of said guide and with its other end against said collar, thus serving to keep the thrust or slide rod to the end of its travel in one direction, said thrust or slide rod being arranged and connected to effect the discharge of the article to be vended, a balance-lever pivoted between its ends and having a coin-receptacle formed in two parts held on the light end thereof, one of said parts being fixedly secured thereon, the other part being pivotally secured to the fixed part, a spring for keeping the two parts of the coin-receptacle together, an operating rock-shaft, a cam-segment secured to said shaft and being adapted to engage said balance-lever when a coin is deposited in the coin-receptacle and  
80 move the same and the thrust or slide rod to which it is attached in a direction opposite to which it is held by the above-mentioned spiral spring, said cam-segment being also adapted to engage the pivoted part of the coin-receptacle, separate it from the fixed part thereof, and discharge the coin contained therein, substantially as set forth.  
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95

OSCAR E. SORG.

In presence of—

ANDREW J. VAUGHT,  
EMIL NEUHART.