

No. 621,961.

Patented Mar. 28, 1899.

J. COONS.

GAS OR LIQUID VENDING MACHINE.

(Application filed May 22, 1897. Renewed Apr. 2, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

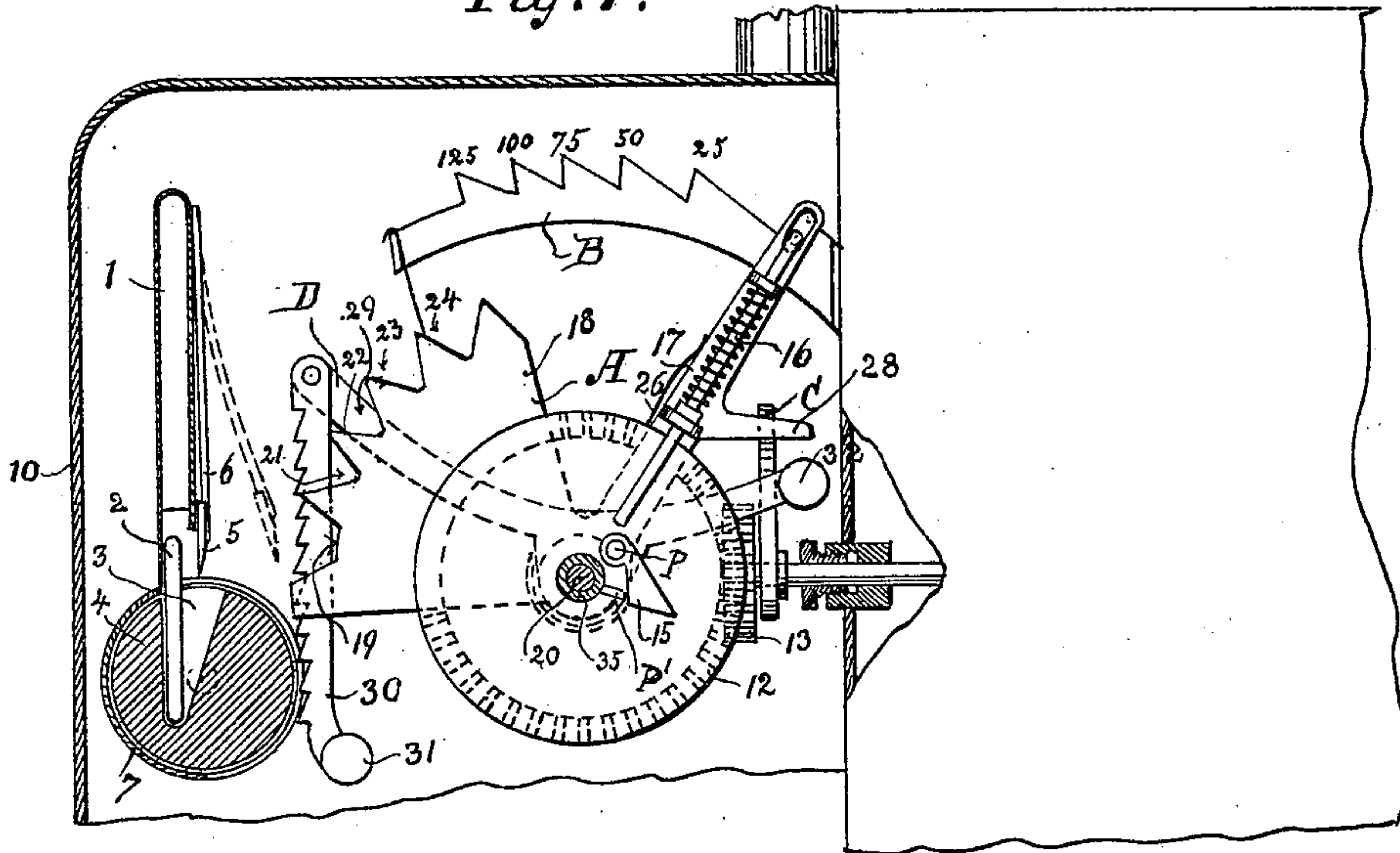


Fig. 2.

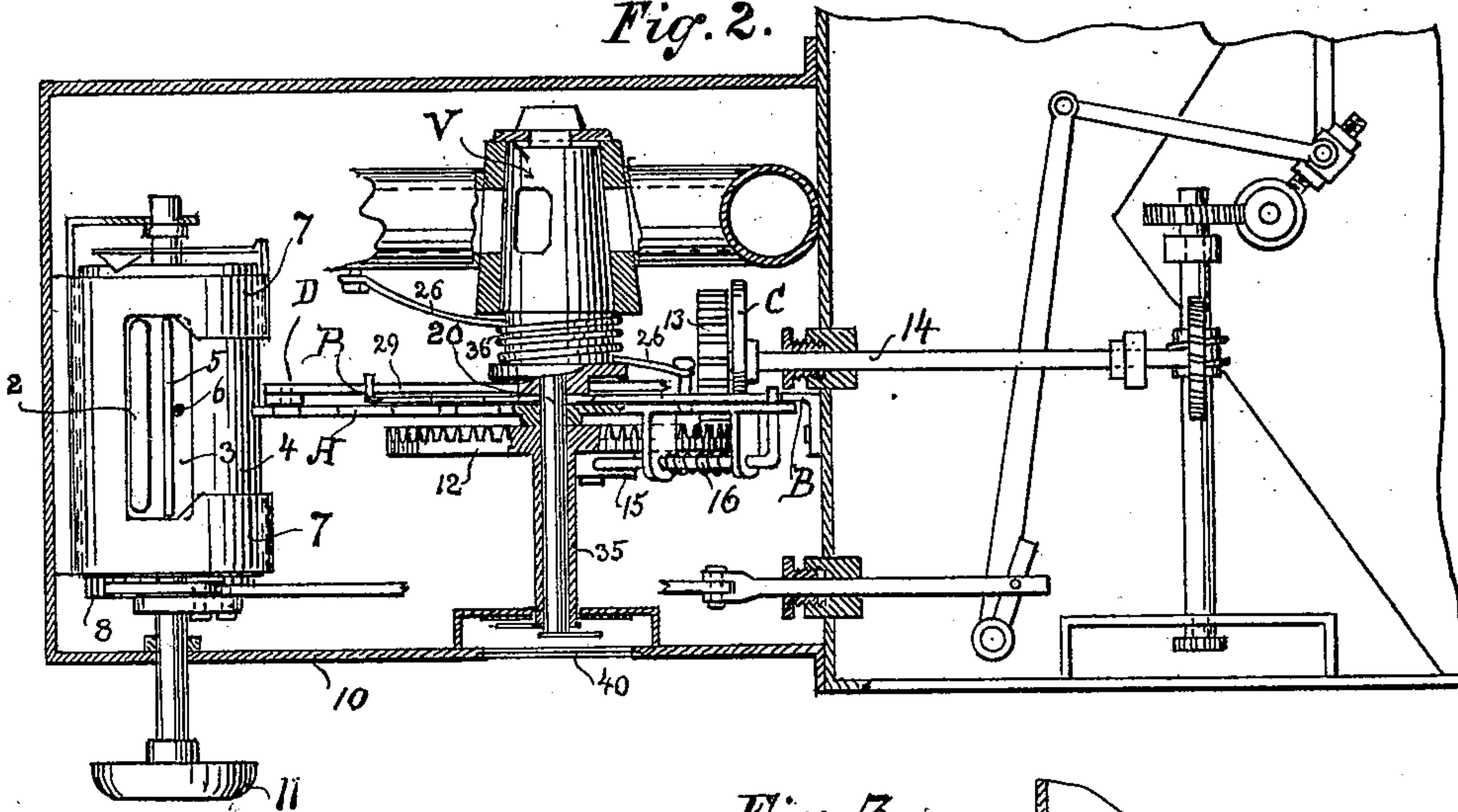
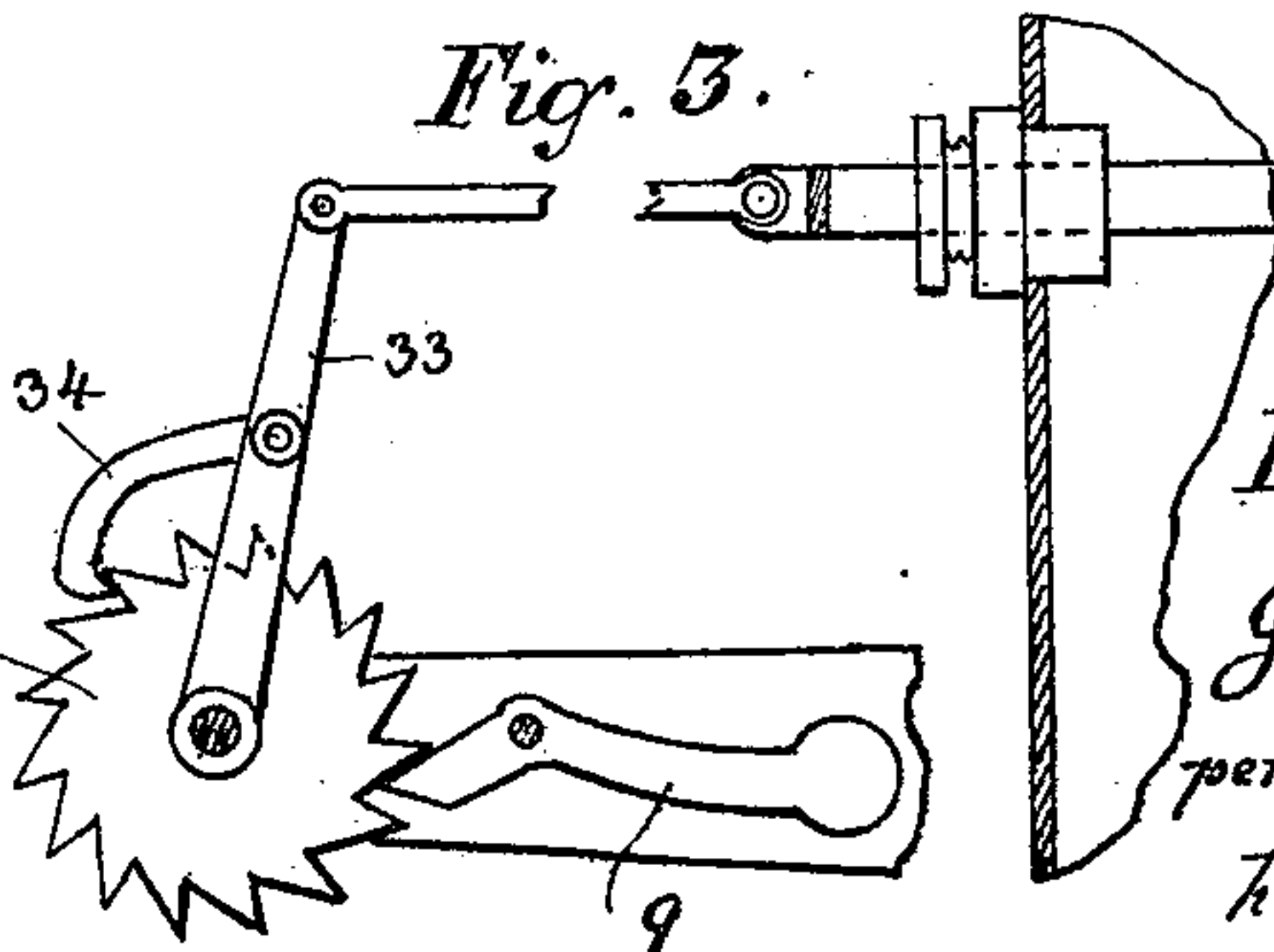


Fig. 3.



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Fig. 4.

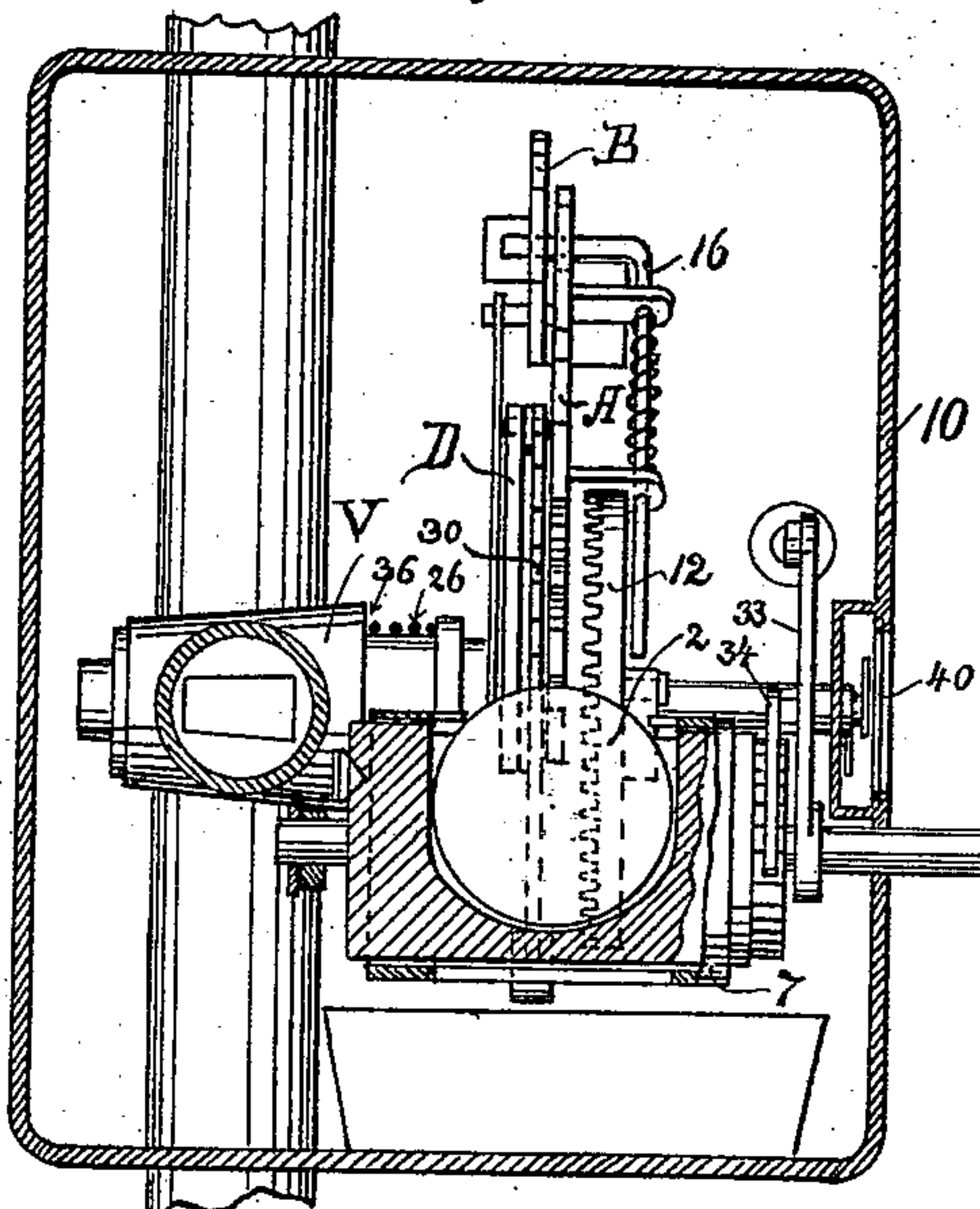


Fig. 5

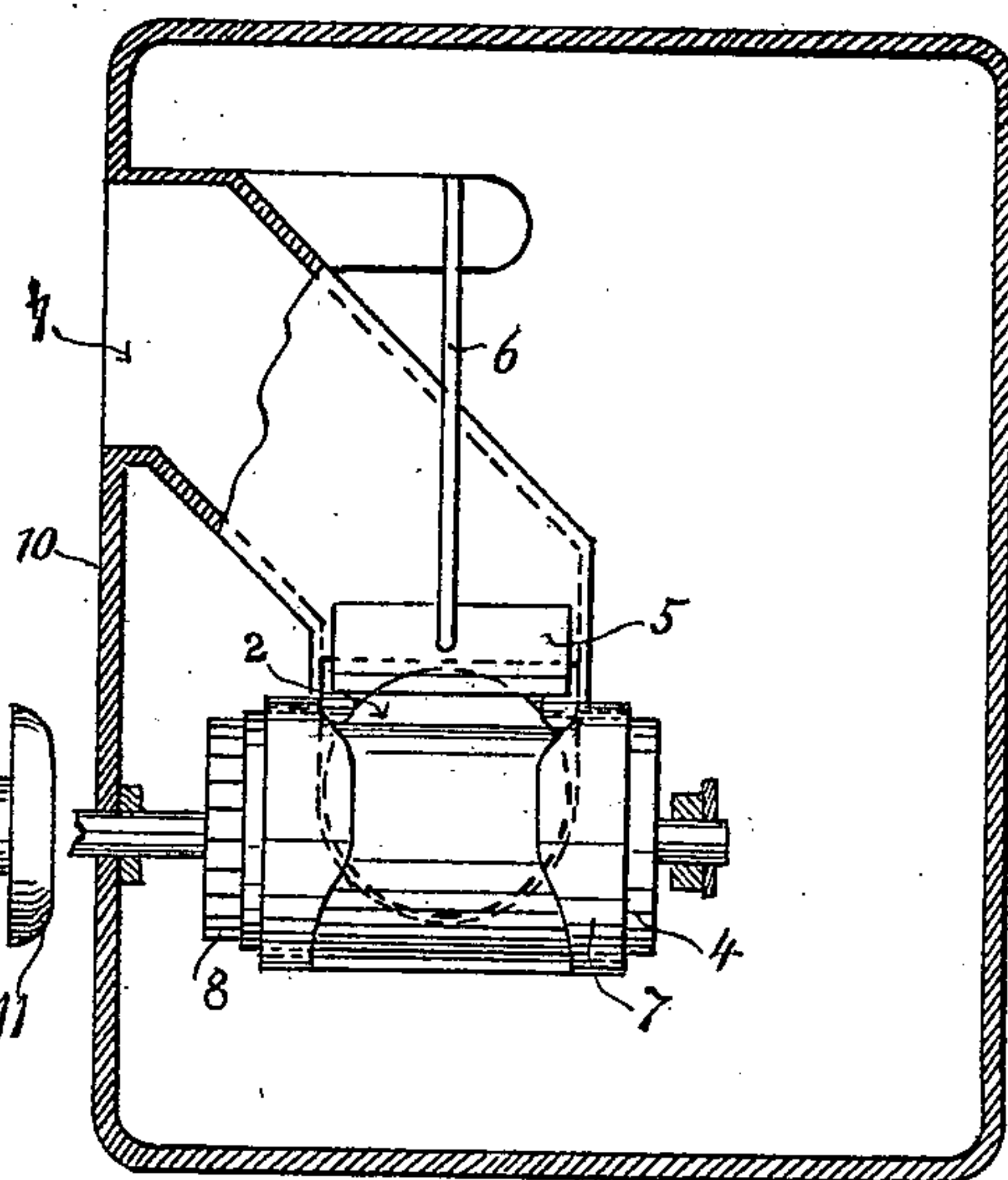


Fig. 6

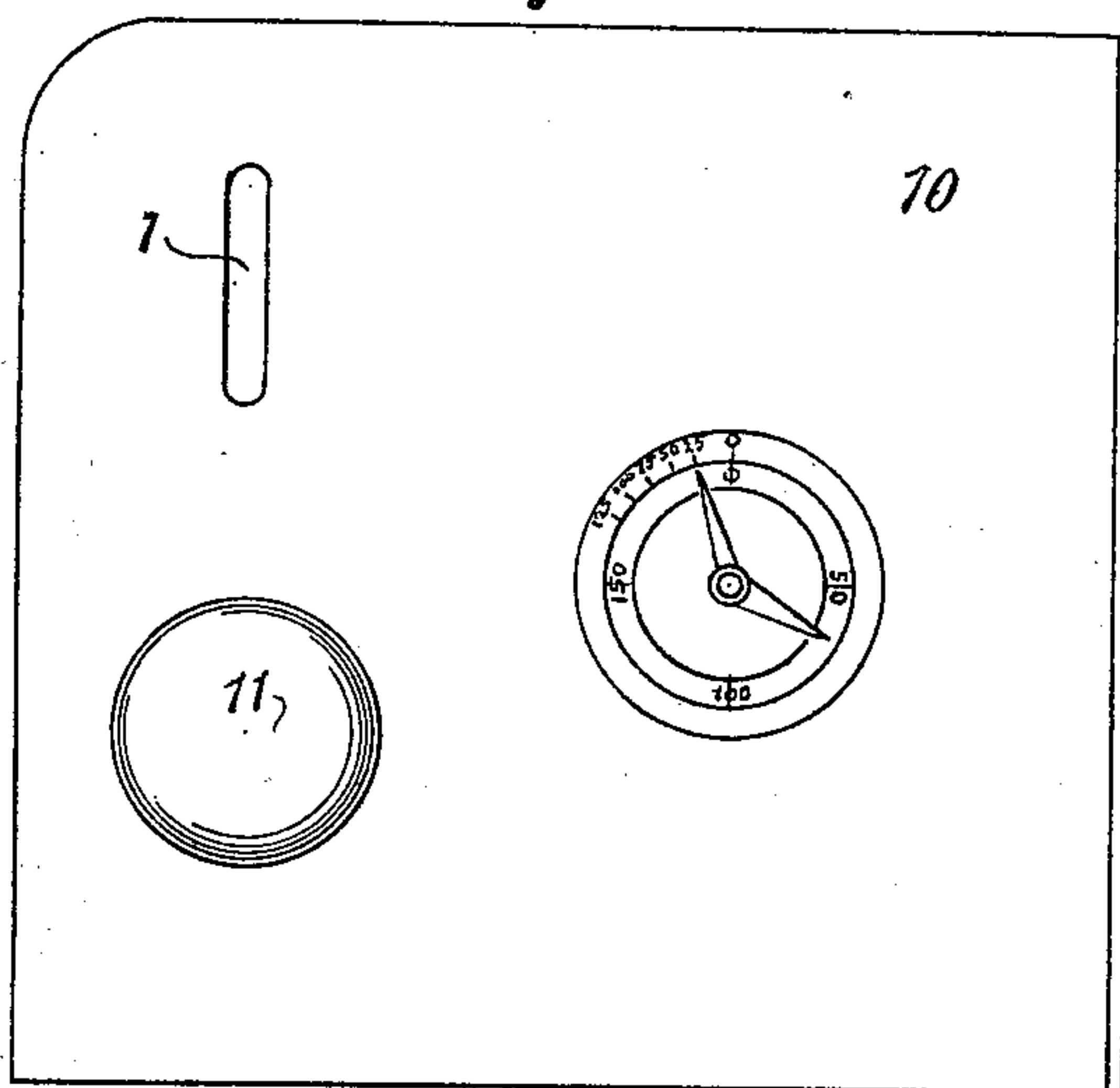
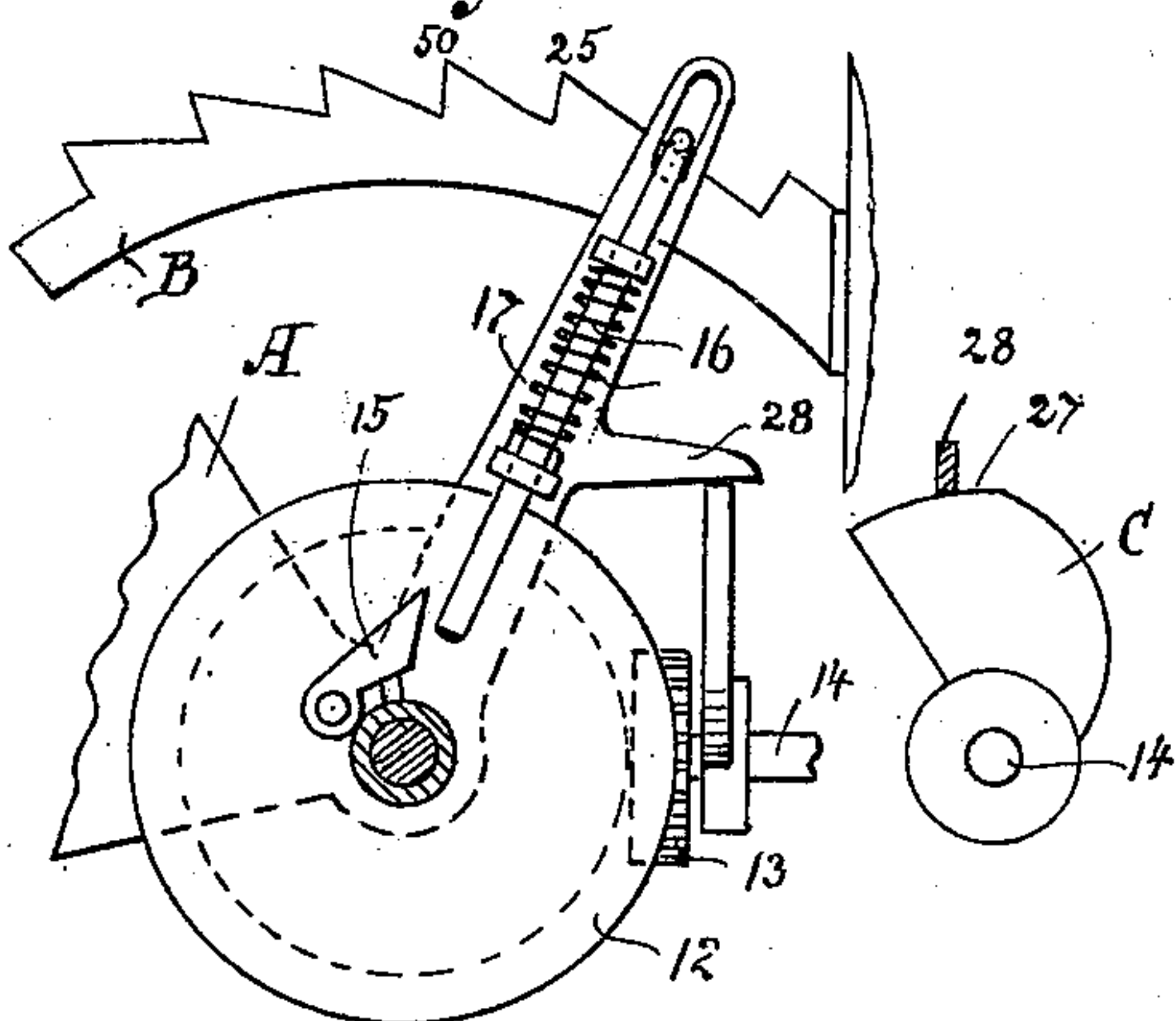


Fig. 7



Witnesses:

Andrew Stewart  
John Kelly

Inventor:

James Coons  
per Charles Raettig  
his Attorney

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Fig. 8.

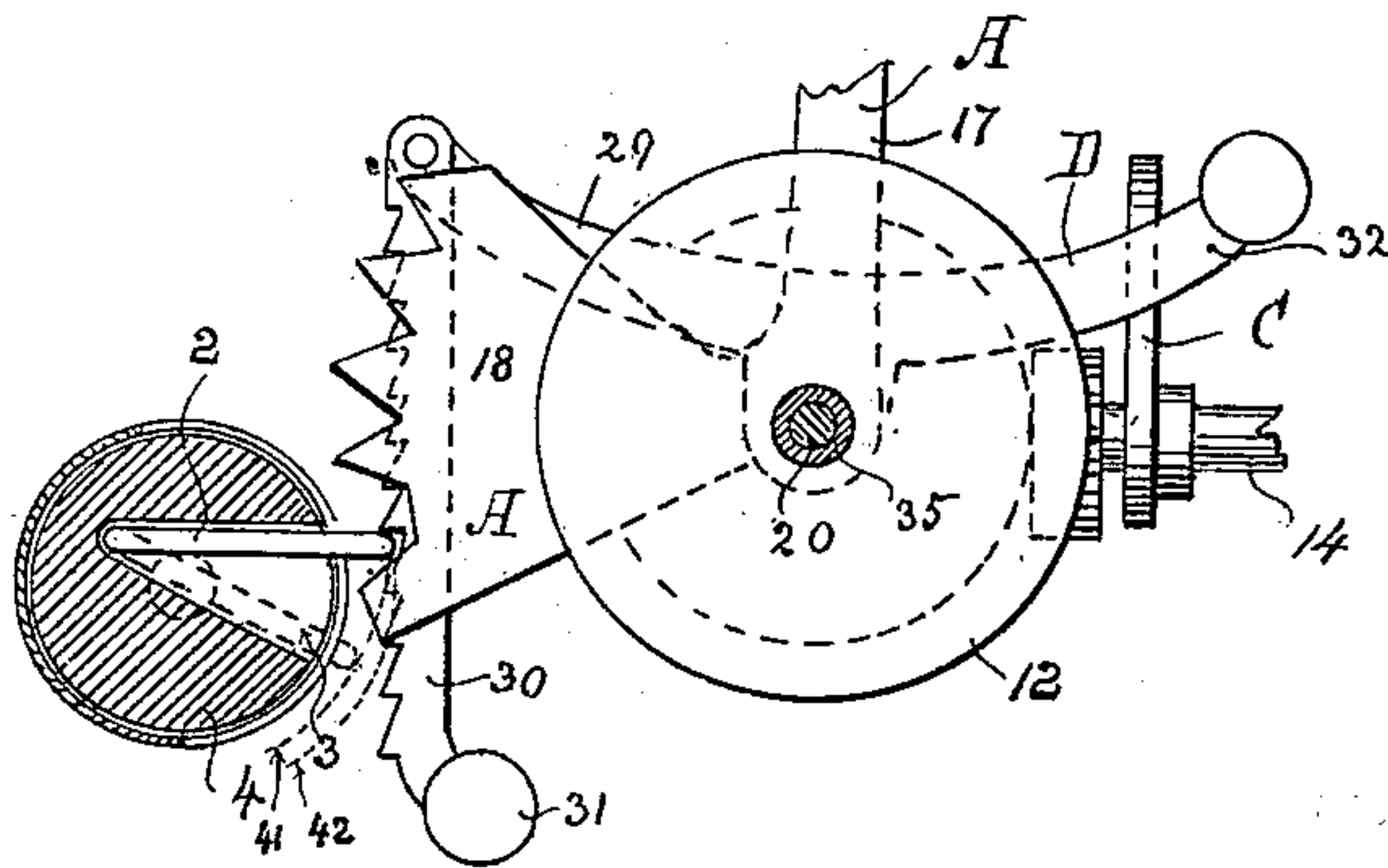


Fig. 9.

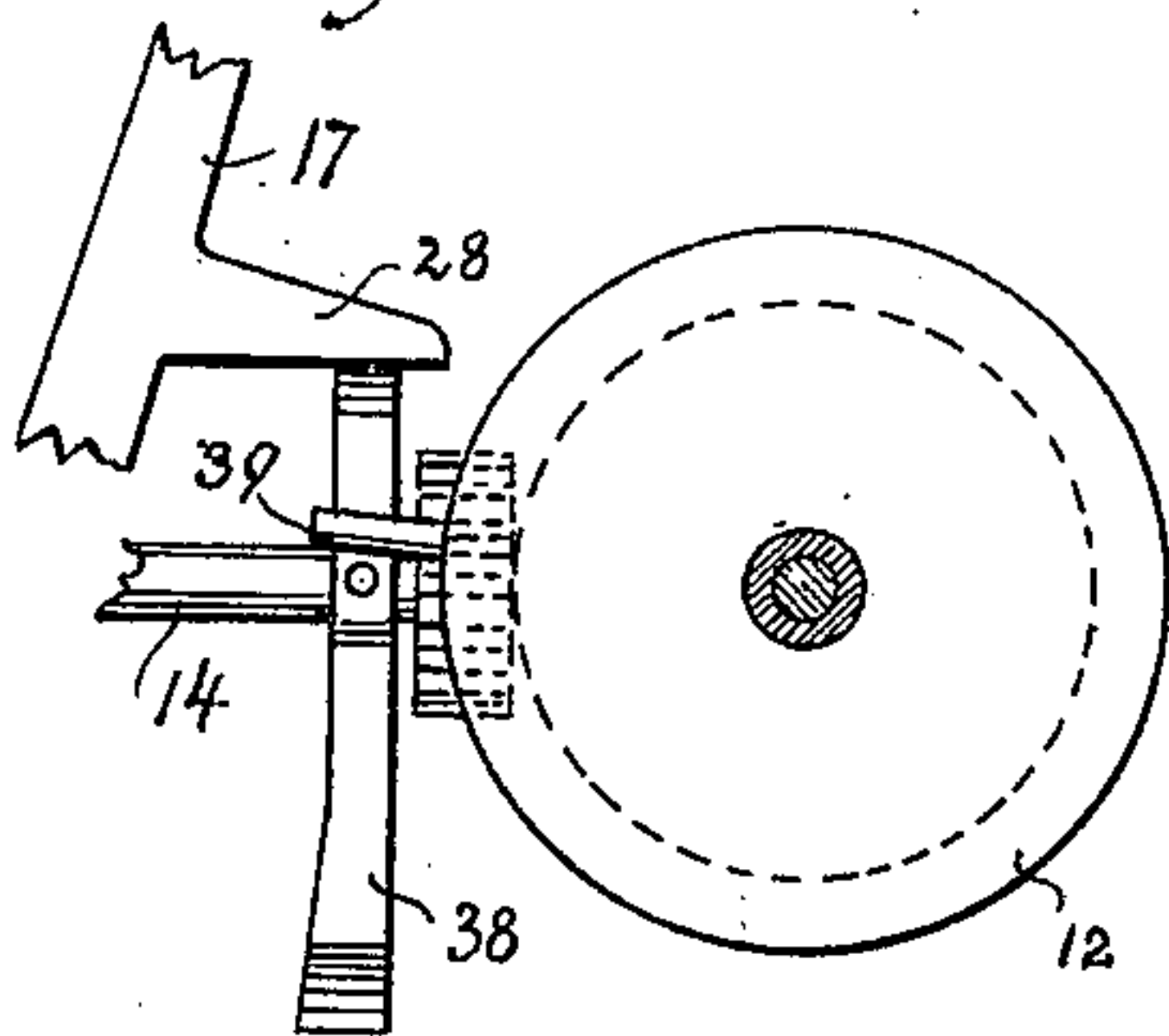
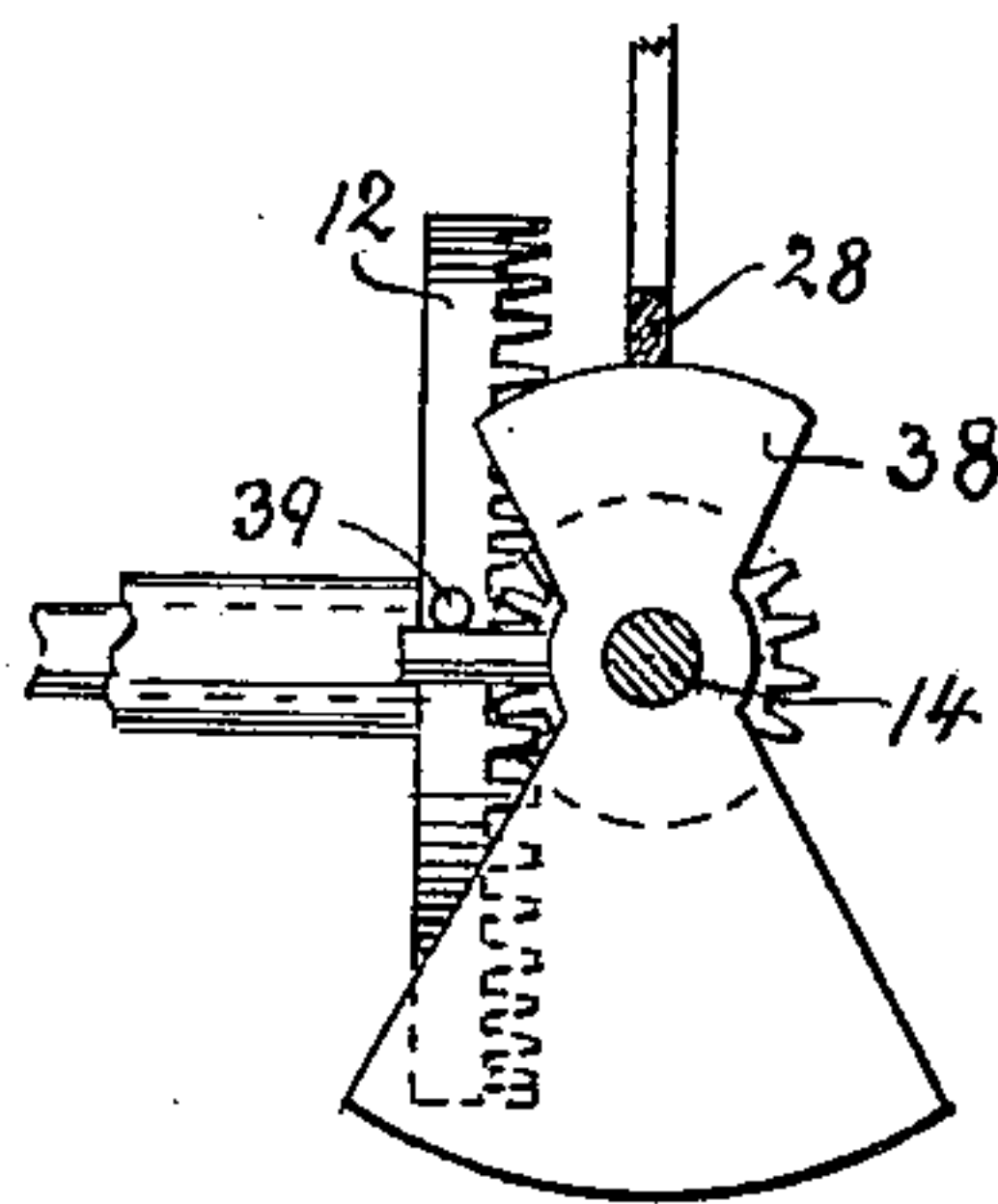


Fig. 10.



Witnesses:

Andrew Stewart.  
John Kelly.

Inventor:

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his Attorney.



# UNITED STATES PATENT OFFICE.

JAMES COONS, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO PAUL C. SHAFFER AND JAMES F. REID.

## GAS OR LIQUID VENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 621,961, dated March 28, 1899.

Application filed May 22, 1897. Renewed April 2, 1898. Serial No. 676,253. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES COONS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Gas or Liquid Vending Machines, of which the following is a specification.

My invention relates to gas or liquid vending machines which are actuated and controlled by coins; and my invention consists in a novel combination and construction of parts hereinafter described, and shown in the drawings, by means of which a variable quantity of gas or liquid can be safely delivered to the consumer, yet any attempt to fraudulently use the machine will be rendered fruitless by the guards employed. I attain this object by a combination of parts illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation showing the principal parts in their relative position at the starting-point. Fig. 2 is a plan view of the machine. Fig. 3 is a detailed view showing the ratchet-wheel attached to the rotatable receiving-cylinder and the pawls locking and turning said cylinder. Fig. 4 is a transverse section through the machine. Fig. 5 is an elevation of the coin-conduit and connecting parts. Fig. 6 is a front view of the machine with the cover in place. Fig. 7 is a detailed view of the cam adapted to delay the closing of the valve. Fig. 8 is a detailed view of the coin-ejecting part. Fig. 9 is a detailed view of a modification of the cam shown in Fig. 7, and Fig. 10 is a side view of the parts in Fig. 9.

In the operation of the machine the coin 2 is placed in the coin-conduit 1 and thence delivered into a V-shaped eccentric cavity 3 in the rotatable cylinder 4 and slightly projecting therefrom, as shown in Fig. 1. This eccentric cavity 3 is narrow at the bottom and wide at the mouth and is mounted at one side of the axis of the cylinder 4, thus allowing for the tipping of the coin, as hereinafter described. The cylinder 4 is held in the desired position for receiving the coin by any customary spring-notch device, as shown in Fig. 2, the cavity 3 then occupying a position in which one wall of the cavity stands ver-

tical, forming a continuation of the side wall of the coin-conduit 1. This spring-notch can be omitted entirely, as the coin when deposited in the coin-conduit 1 will drop into the cavity 3 of the cylinder 4 as soon as the mouth of the cavity passes the lower end of the coin-conduit 1 in the process of turning the cylinder by actuating the hand-wheel 11. On the outside of the coin-conduit 1 a trap or door 5 is hinged, or it may be mounted on a spring, as at 6, and adapted to close the aperture left in the wall of coin-conduit 1 for the passage of the projecting edge of the coin. The rotatable cylinder 4 is incased in a stationary shell 7, as shown in Figs. 1, 2, and 5, which shell is cut out for over one-half its circumference in such manner as to prevent the withdrawing of the coin at any other place except the place of receiving and that of delivering the same in the coin-receiver of the machine. The mode of retaining the coin by means of the flanges of this stationary shell is especially illustrated in Fig. 5 of the drawings, in which it is shown that the distance between the inner edges of the flanges while less than the diameter of the coin is still sufficient to allow the edge of the coin to project, thus preventing the withdrawal of the coin while it passes along the edges of said flanges during the turn of cylinder 4.

The cylinder is rotatably mounted in suitable bearings and provided at one end with a ratchet-wheel 8 and gravity-pawl 9, allowing it to be rotated in one direction only. The shaft of the cylinder projects through the outer case 10 and there carries a hand-wheel 11, by means of which it is rotated.

A crown-wheel 12, revolved by the meter mechanism, when the meter is working, by means of a pinion 13, secured to shaft 14, serves to regulate the quantity of gas to be delivered for a unit of coin, one revolution of this wheel corresponding to the quantity of gas to be delivered for one coin. The wheel 12 carries on its back a gravity-pawl 15, which at the end of each revolution of the wheel will trip the spring-latch 16, mounted in bearings secured upon one leg 17 of the principal working lever A. This lever A is secured to the valve-stem 20 of inlet-valve V, regulating the gas-supply, the broad seg-



mental leg 18 being provided with notches 19, 21, 22, 23, and 24, all of which, with the exception of the first notch 19, are equal. The revolving cylinder 4, with the projecting edge of a coin acting as a tooth or finger, will engage one of these notches and cause the lever A to oscillate, and thereby open the inlet-valve V until the spring-latch 16, attached to the other leg 17 of the lever A, slips behind teeth 25, 50, 75, 100, or 125, respectively, which teeth are cut into the upper edge of a stationary rack B, mounted upon the frame of the machine. One coin is required to advance the lever A one tooth, and in turn each revolution of the wheel 12 will release the latch 16, and the leg 17, actuated by a spring 26, will slip back to the next tooth on the rack B, gradually closing the inlet-valve V, connected with the supply-pipe. Corresponding to the first large notch 19 on leg 18 of lever A is the first tooth 25 on rack B, which is about double the length of the remaining teeth, the object being to open the inlet-valve wide enough at the beginning to permit a full supply of gas to escape, while a cam C, secured to shaft 14 near the pinion 13, having at its highest point a rest or portion equidistant from its axis 27, as shown in Fig. 7 of the drawings, will prevent the entire closing of the inlet-valve, stopping the lever A in the middle of the first long tooth 25 of the rack B by engaging with a nose 28, projecting from leg 17, thus arresting the action of the spring 26 and giving a warning several hours or days in advance, as the case may be, by the slightly-reduced flame before the gas is shut off entirely. Another means of gradually shutting off the gas is shown in Fig. 9 of the drawings, where it is accomplished by means of a loose cam 38, rotatably mounted upon the main shaft 14 and operated by a pin 39 on crown-wheel 12. This cam 38 is always held by means of a weight or spring in a position ready to receive the nose 28 on the lever A when it has fallen to a position which has partially closed the inlet-valve, there remaining until the whole amount of gas paid for has been consumed. Then the pin 39 turns the cam 38 sufficiently to allow the nose 28 to drop and to entirely shut off the gas, the pin 39 clearing the cam 38 and the latter returning automatically to its normal position.

The gravity-pawl 15 is pivotally mounted on a pin  $p$ , secured to crown-wheel 12, one end of the pawl when in working position at its highest point and ready to raise latch 16 resting upon a stop  $p'$  on sleeve 35. When the latch 16 has been raised by the pawl 15, the wheel 12 having been rotated to the left and the lever A arrived at the position shown in Fig. 7 of the drawings, at which only a small amount of gas can escape, and the gas is soon to be cut off entirely, the consumer can renew his payments. The first coin dropped into coin-conduit 1, the cylinder 4 being once revolved, will return the lever A and the spring-latch 16 to the last position

when the full amount of gas was permitted to escape. In putting additional coins into the coin-conduit in order to provide for a larger amount of gas another reason for employing the gravity-pawl 15 becomes apparent, as on dropping the first additional coin the turning of cylinder 4 will move the lever A one additional tooth and the lower end of the latch 16 will turn the gravity-pawl 15 over around its center  $p$  and allow the end of the latch 16 to pass and more payments to be made at once.

Another feature of my invention is the automatic coin-ejector D, consisting of a lever 29 and a weighted rack 30, suspended from one end of said lever, having rack-teeth cut on its outer edge pointing downward and being held in contact with the coin by a weight 31 at the lower inner end of the rack 30 when cylinder 4 is rotated. This lever 29 is rotatably mounted upon the valve-stem 20 near the lever A, and its weighted outer end 32 is in contact with and resting upon the working face of cam C. In working the machine the projecting edge of the coin will first pass the trap or door 5, which, falling back to its original position, will prevent access to the coin from the coin-conduit, while the rim on the stationary shell 7 prevents its removal from the cylinder on its way to the place of delivery at the bottom of the shell. During this half-turn should an attempt be made to block the machine while the gas-meter is in action by clamping the coin in a central horizontal position between the teeth of lever A and the attempt be partially successful the automatic coin-ejector D will commence to act. The cam C on the shaft 14, actuated by the flow of gas from the meter, will raise one end of the lever 29 and by depressing the other will throw the lower edge of a ratchet-tooth of the rack 30 in contact with the upper edge of the coin and first change the position of the coin in the V-shaped cavity 3 of the cylinder 4 to the dotted position shown in Fig. 8 of the drawings, thus reducing the distance of the outer edge of the coin from the center of the cylinder and preventing it from springing the latch 16, while the rack 30, operated by the cam C, will gradually turn the cylinder and deliver the coin into the cash-receiving drawer, the lever 17 snapping back to its starting-point. The arc described by the remotest point in the edge of the projecting portion of the coin when the cylinder is turned by hand is to be described from a center in the axle of cylinder 4 with a normal radius in order to move the lever one tooth. The shifting of the coin in the cavity 3 by means of the lever 29 and rack 30 will cause this point in the edge of the coin to describe a shorter arc 41, having the diameter of the coin for a radius, with its center at the bottom of the cavity, as shown in Fig. 8 of the drawings. This arc 41, in which the actuating-point for lever A is located, will fall short of the required distance and cause the lever A to snap back to its former position before the spring-latch



16 has slipped behind the next tooth on the stationary rack B. The cam C, actuated by the meter, will nevertheless continue to push the coin by means of lever 29 and rack 30 and with it turn the cylinder 4, thus finally delivering the coin into the cash-drawer of the machine.

As an additional precaution against fraud, the devices shown in Fig. 3 of the drawings are used in conjunction with the coin-ejector D, whereby the cylinder 4 is rotated directly by the gas-meter mechanism by means of an oscillating lever 33, pawl 34, ratchet-wheel 8, and gravity-pawl 9.

Both the valve-stem and the sleeve 35, forming the hub of the crown-wheel 12, extend to the front of the outside case 10 and, passing through a dial having suitable figures printed upon its face, have a hand secured to each. Thus the amount of gas purchased and the amount sold will both be indicated and can be learned by a single glance at the dial, as shown in Figs. 2 and 6.

To insure the valve V working uniformly without too great friction, the spring 26, operating the lever A, is wound spirally around valve-stem 20, one end of the spiral portion of the spring resting against the barrel of valve V and the other against a shoulder or stop on the valve-stem, thus enacting a lateral pressure, transferring sufficient of the friction between the valve-stem and the barrel to the nut on the back end of the valve to prevent the jamming of the valve-stem and valve, and causing an easier movement of the valve than in ordinary valves.

I preferably employ a crown-wheel having fifty teeth, which best suits the present price of gas; but by making this wheel removable and supplanting it by another having more or less teeth the fluctuations in the price of gas can be met without materially changing the other parts of the machine. In this case I prefer to use the cam shown in Fig. 9, as it renders the removal of crown-wheel 12 easier.

It is evident that the use of this machine is not confined to gas-vending machines as herein principally described, but can also be used to dispense measured quantities of liquids.

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

1. In a gas or liquid vending machine the combination of a coin-conduit, a movable receptacle adapted to receive and hold the coin while it engages the valve-operating part, a valve, a lever secured to the valve-stem of said valve and adapted to open said valve, a spring-latch operatively connected to said valve and adapted to engage a corresponding part to hold said valve open, and means for automatically closing the same, substantially as and for the purposes set forth.

2. In a gas or liquid vending machine, the combination of a coin-conduit, a movable receptacle adapted to receive and hold the coin

while it engages the valve-operating part, a valve, a lever secured to the valve-stem of said valve and adapted to open said valve, a spring-latch operatively connected to said valve, means adapted to engage said spring-latch thereby holding the valve open, and means for automatically closing the same, substantially as and for the purposes set forth.

3. In a gas or liquid vending machine, the combination of a coin-conduit, a movable receptacle adapted to receive and hold the coin while it engages the valve-operating part, a valve, a lever secured to the valve-stem of said valve and adapted to open said valve, a lever having a spring-latch and secured to said valve-stem, a rack adapted to engage said spring-latch thereby holding the valve open, and means for automatically closing the same, substantially as and for the purposes set forth.

4. In a gas or liquid vending machine, the combination of a coin-conduit, a movable receptacle adapted to receive and hold the coin while it engages the valve-operating part, a valve, a lever secured to the valve-stem of said valve and adapted to open said valve, a spring-latch operatively connected to said valve, means adapted to engage said spring-latch thereby holding the valve open, a wheel having a loose pawl arranged to actuate said spring-latch, and means adapted to turn the valve-stem thereby closing the valve, substantially as and for the purposes set forth.

5. In a gas or liquid vending machine, the combination of a coin-conduit, a movable receptacle adapted to receive and hold the coin while it engages the valve-operating part, a valve, a lever secured to the valve-stem of said valve and adapted to open said valve, a spring-latch operatively connected to said valve, means adapted to engage said spring-latch thereby holding the valve open, a wheel having a loose pawl arranged to actuate said spring-latch, means adapted to turn the valve-stem thereby closing the valve, and a cam adapted to govern the closing of the valve, substantially as and for the purposes set forth.

6. In a gas or liquid vending machine, the combination of a coin-conduit, a movable receptacle adapted to receive and hold the coin while it engages the valve-operating part, a valve, a lever secured to the valve-stem of said valve and adapted to open said valve, a spring-latch operatively connected to said valve, means adapted to engage said spring-latch thereby holding the valve open, a wheel having a loose pawl arranged to actuate said spring-latch, means adapted to turn the valve-stem thereby closing the valve, a cam adapted to govern the closing of the valve, and an automatic coin-ejector actuated by said cam, substantially as and for the purposes set forth.

7. In a gas or liquid vending machine, the combination of a movable receptacle adapted to receive and hold the coin while it engages the valve-operating part, said receptacle having a wheel secured upon one end thereof



turned by means of pawl and lever actuated  
by the meter mechanism, a valve, means for  
opening said valve and means for automatic-  
ally closing the same, substantially as and for  
5 the purposes set forth.

8. In a gas or liquid vending machine, the  
combination of a coin-conduit, a movable re-  
ceptacle adapted to receive and hold the coin  
while it engages the valve-operating part, a  
10 valve, a lever secured to the valve-stem of  
said valve and adapted to open said valve, a  
lever having a spring-latch and secured to said

valve-stem, means adapted to engage said  
spring-latch thereby holding the valve open  
and means for automatically closing the same, 15  
substantially as and for the purposes set forth.

Signed at New York, in the county of New  
York and State of New York, this 14th day of  
May, A. D. 1897.

JAMES COONS.

Witnesses:

PAUL SHAFFER,  
J. F. REID.