

No. 711,498.

Patented Oct. 21, 1902.

H. HODSDON.  
ENUMERATING MACHINE.

(Application filed Mar. 28, 1901.)

(No Model.)

Fig. 2-

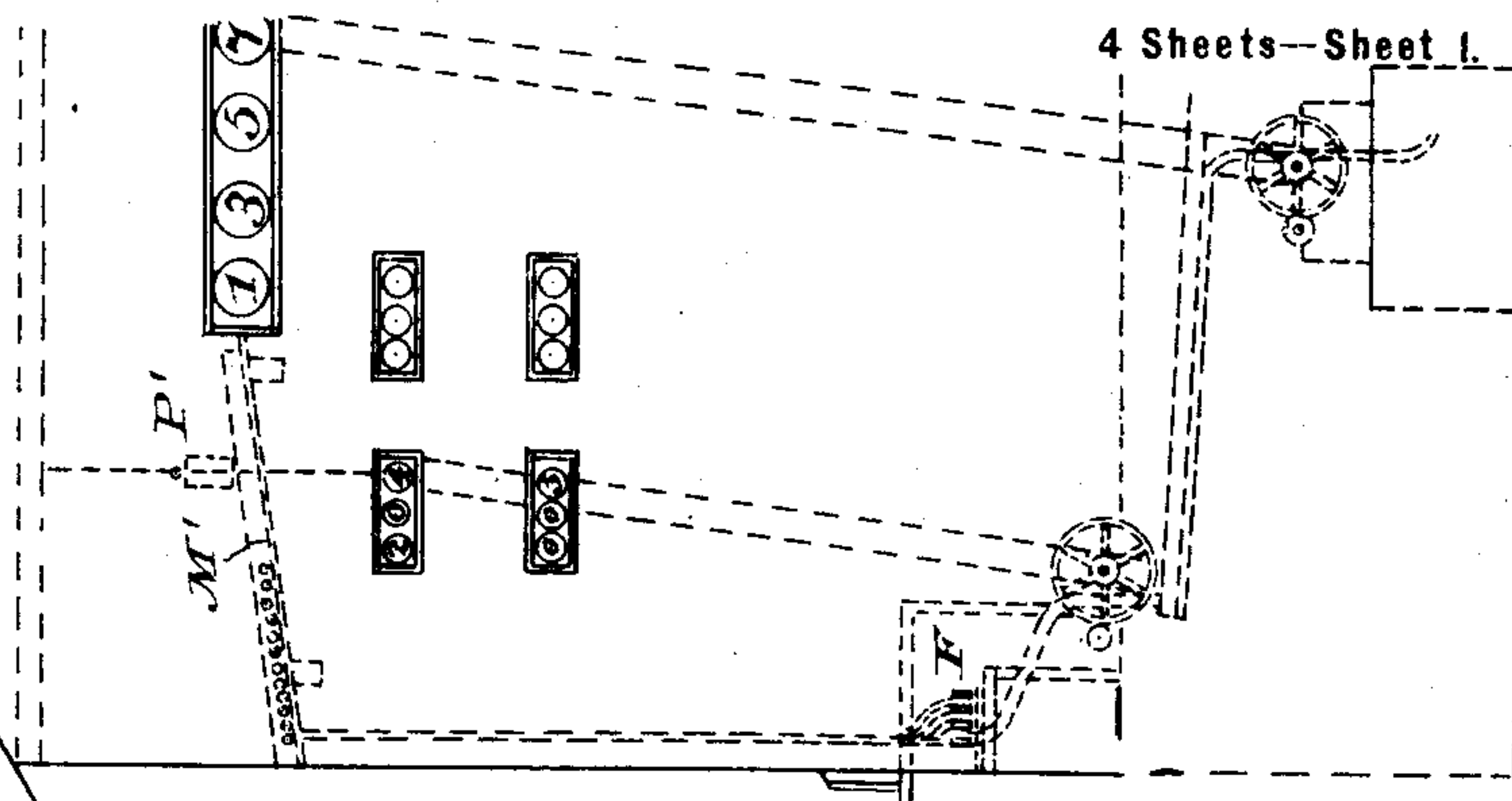
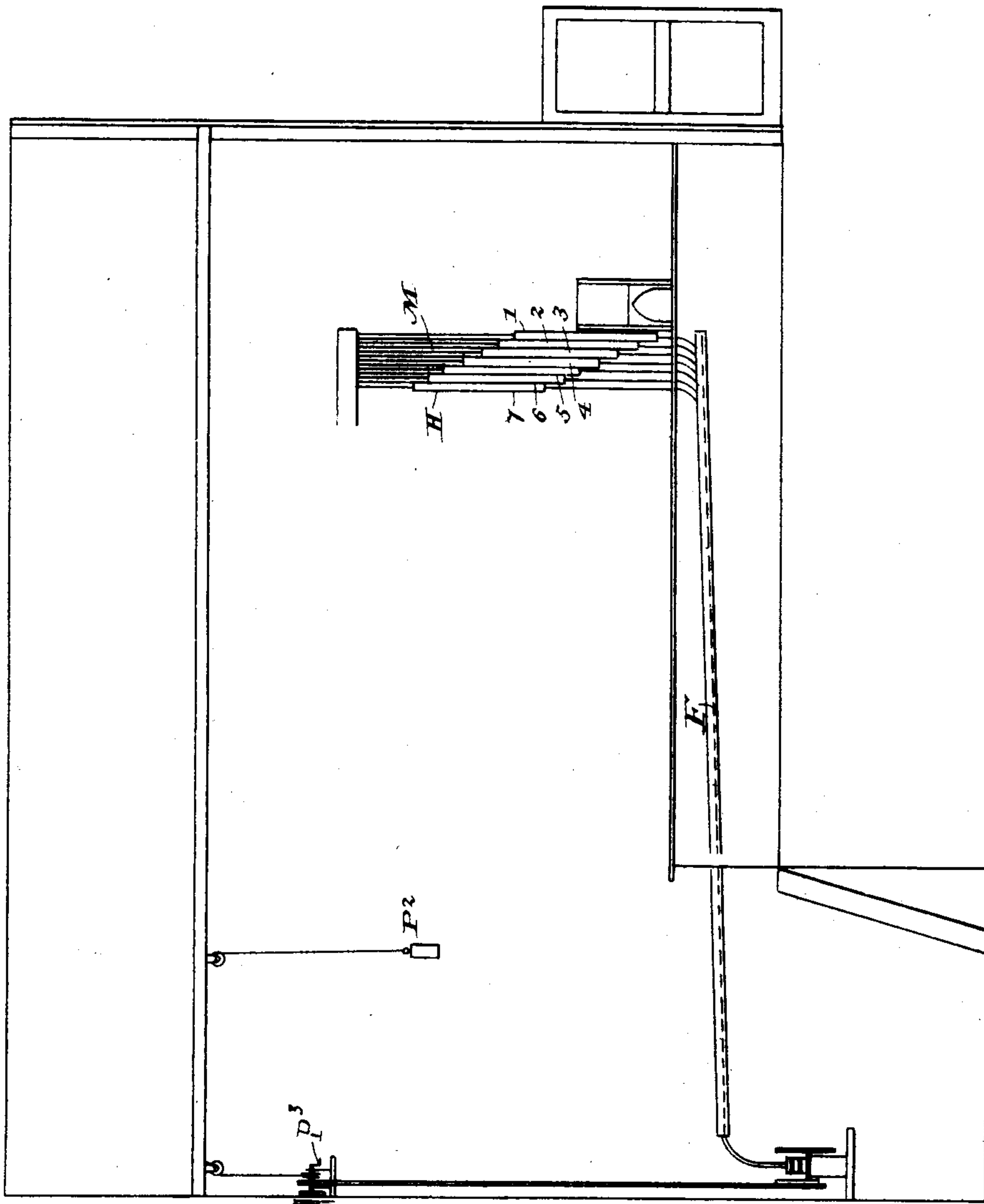


Fig. 1-



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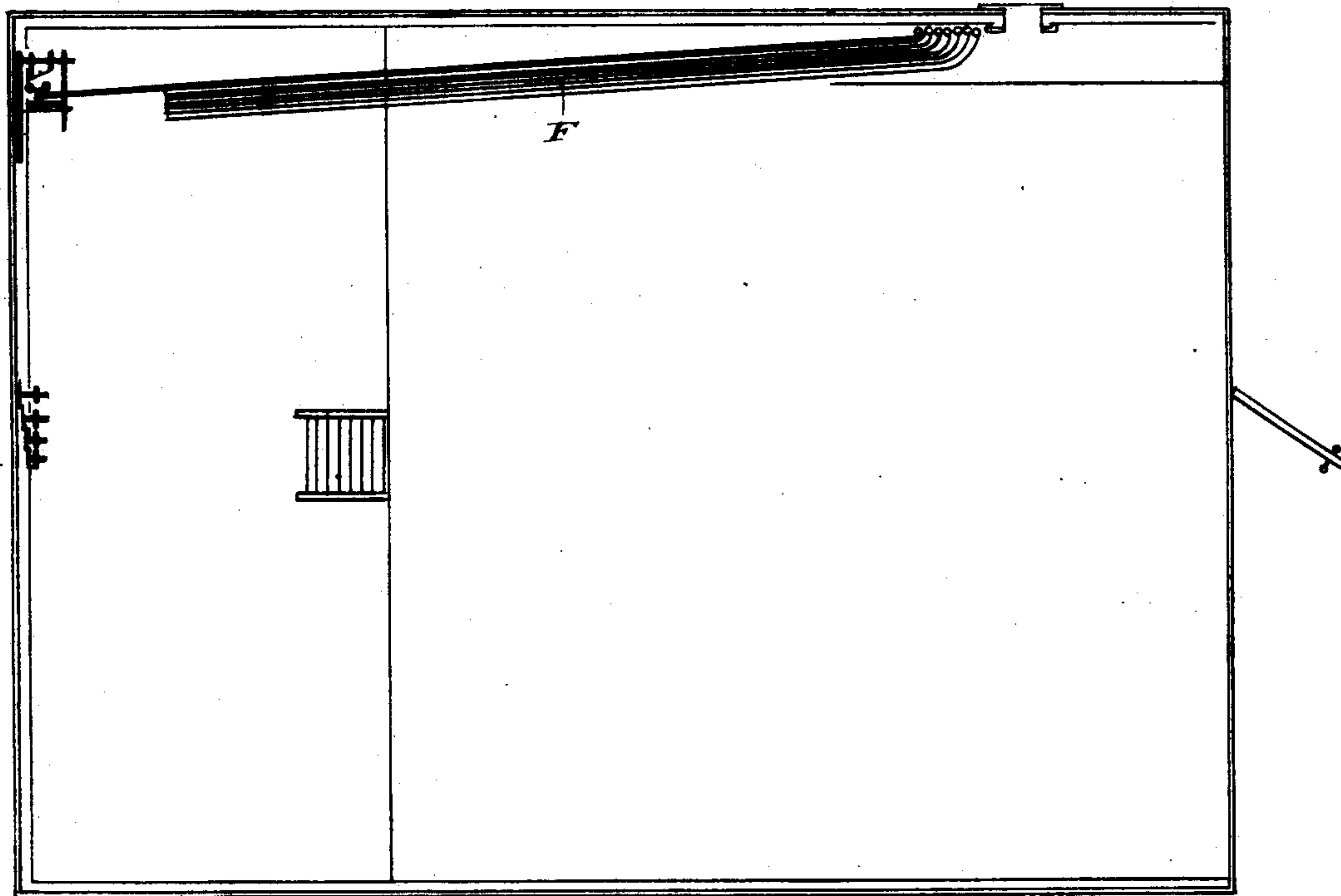


Fig. 3.

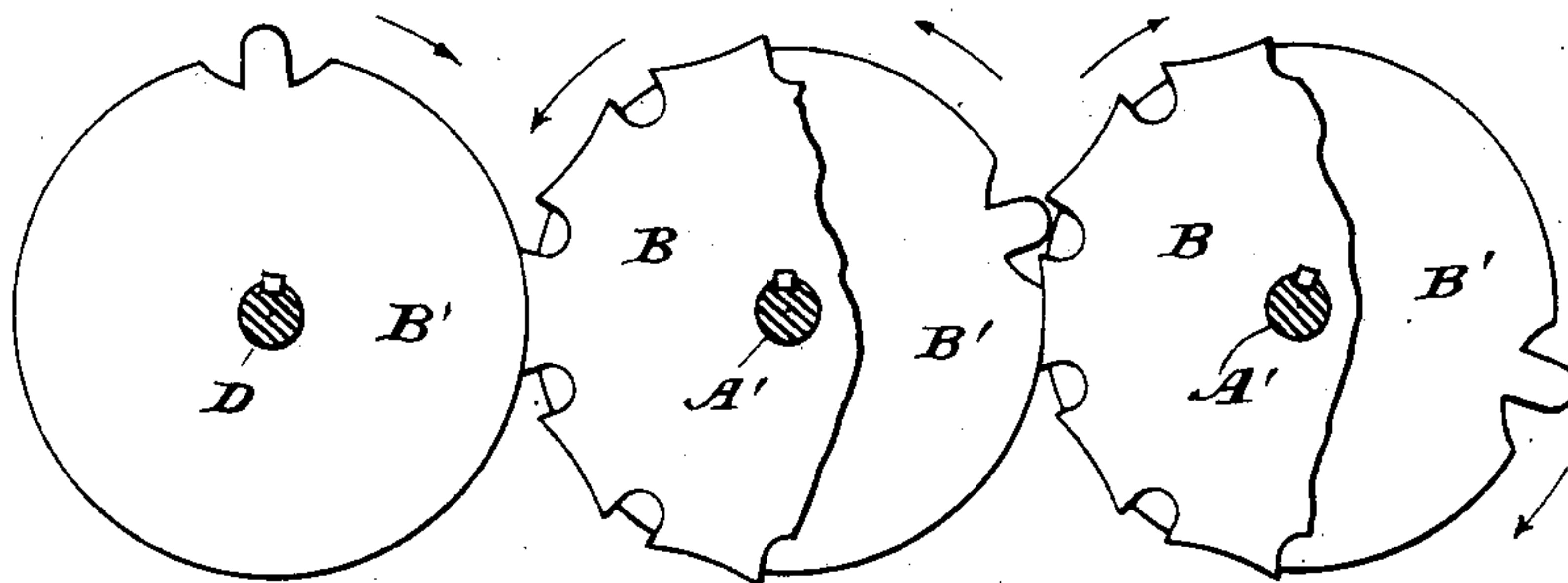


Fig. 88

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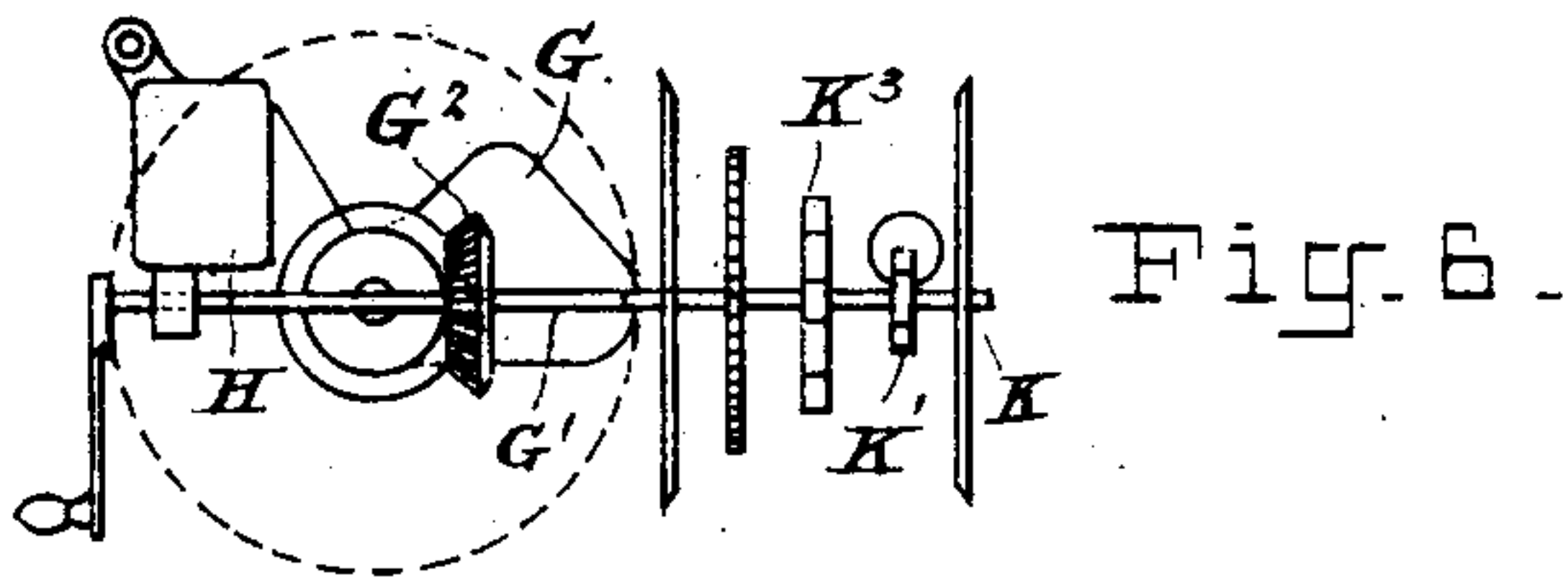
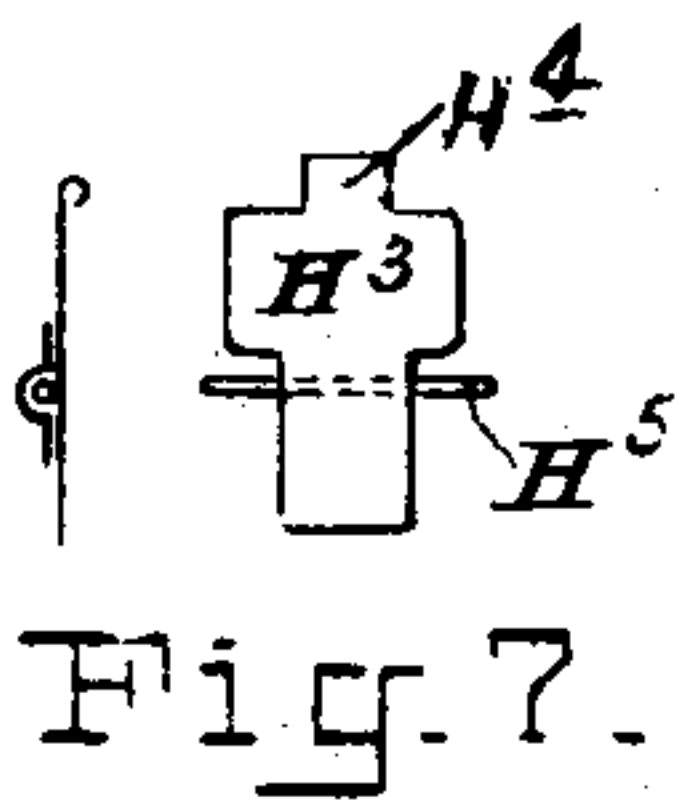
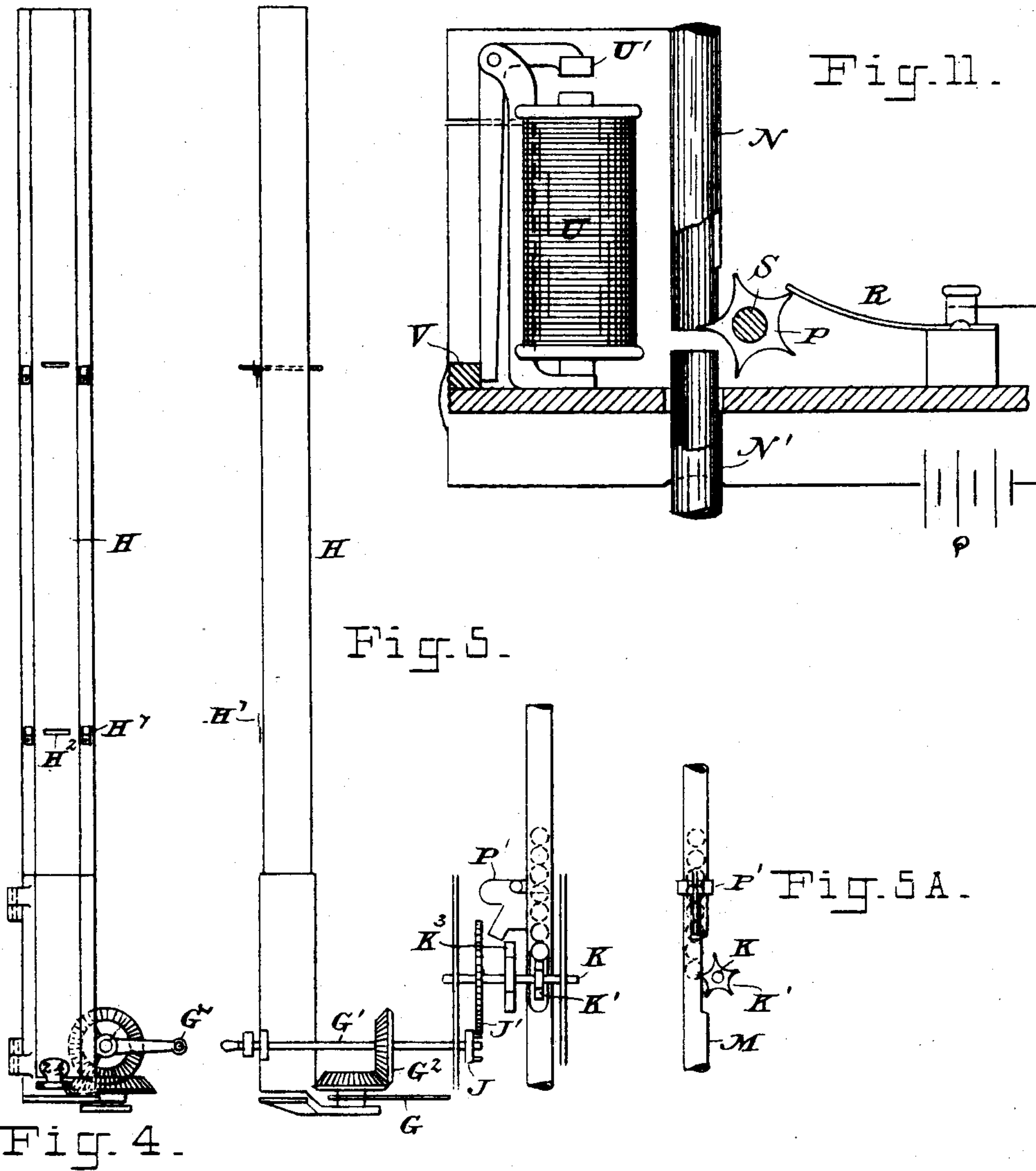
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4 Sheets—Sheet 3.



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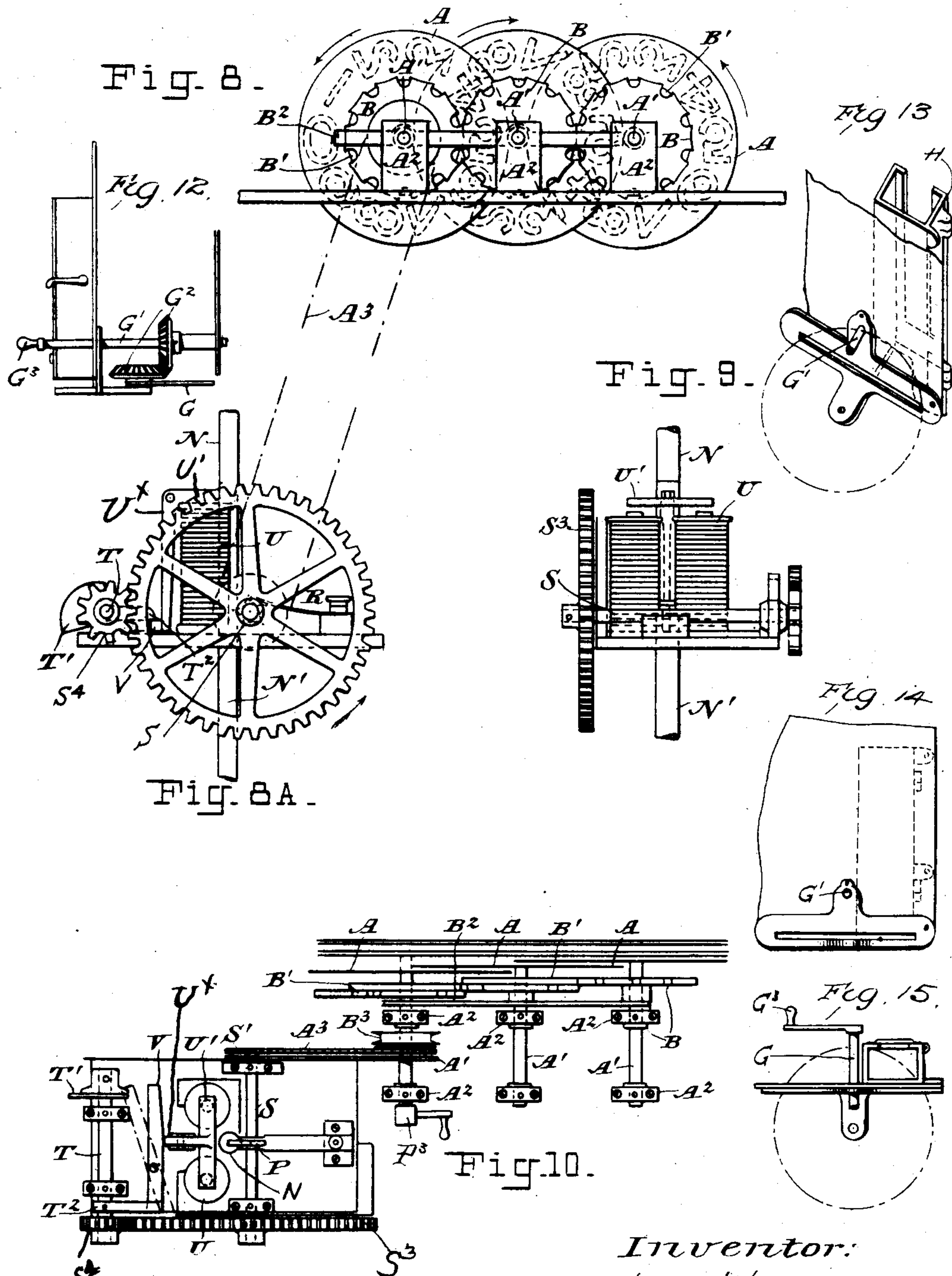
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

HENRY HODSDON, OF ALBION, BRISBANE, QUEENSLAND, AUSTRALIA.

## ENUMERATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 711,498, dated October 21, 1902.

Application filed March 28, 1901. Serial No. 53,290. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY HODSDON, carpenter, residing at Tattersall's Estate, Oriel road, Albion, Brisbane, in the State of Queensland, Australia, have invented certain new and useful Improvements in and Relating to Enumerating-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of enumerating-machine by which a series of separate totals are registered and indicated and a grand total computed therefrom registered and indicated; and it has for its object the making of the minor and grand totals act in such a manner that almost perfect accuracy is obtained and all the minor counters can work, if necessary, simultaneously without interfering with the computing and registering of the grand total, and the registering mechanism can be placed at any reasonable distance from the operator.

The minor counters constructed according to my invention consist of the necessary number of disks having on their faces the numerals "0" to "9." These counters are operated by means of a weight or spring and controlled by a special device hereinafter described. The mechanism connecting the units, tens, and hundreds disks is such that it cannot be overrun by momentum and is practically locked. The grand-total counter is constructed in a similar manner, but has more disks than a minor counter in order to indicate the grand total from a number of minor counters.

In the invention herein described the operator in registering a purchase issues a ticket by means of simple mechanism, and at the same time the mechanism releases from a supply-hopper a ball made of metal that is a good conductor of electricity. This ball passes through tubes or ducts (having suitable gradients) on its way to the controlling device of the counter corresponding with the mechanism the operator issued a ticket from, registers on the minor counter, and passes on to the grand-total counter. This controlling mechanism consists of an electrical device the circuit for working which can-

not be closed until a metal ball despatched by one of the operators reaches the gap in it, when the circuit being completed a couple of magnets withdraw a stop, allowing the counter to which the mechanism is connected to register an addition, after which the ball passes on, the circuit being instantly broken, and the stop holds the mechanism again. The ball in the meanwhile passes on to a similar device that controls the grand total, adds to the register there, and passes into a receptacle for redistribution among the operators.

In order, however, that my invention may be clearly understood, I will now describe it with reference to the accompanying drawings, in which—

Figure 1 shows a side elevation of a building containing one minor-counter operating device, ducts, and total. Fig. 2 is a part end elevation of same, showing the relative position of minor-total counters and grand total with operating mechanism and connections in dotted lines. Fig. 3 is a plan of Fig. 1. Fig. 4 is a front view of the ticket-holder and issuing gear. Fig. 5 is a side elevation of same with the ball-issuing mechanism and locking device for same added. Fig. 5<sup>A</sup> is a part view to show the star-wheel of the ball-issuing device and locking-gear for same. Fig. 6 is a plan of Fig. 5 with the locking mechanism omitted. Fig. 7 shows front and side view of a ticket-block or check-plate. Fig. 8 is a back elevation of one of the minor counters, showing its connection with the controlling device; Fig. 8<sup>A</sup>, back view of controlling device; Fig. 8<sup>B</sup>, separate view of counter mechanism, partly broken for clearness. Fig. 9 is a side view of Fig. 8<sup>A</sup>. Fig. 10 is a plan of Figs. 8 and 8<sup>A</sup>. Fig. 11 is one view of the electrical contact device. Figs. 12, 13, 14, and 15 are detail views of the parts shown in Fig. 4.

It will be understood that although only one operating set and recording device is illustrated throughout any number can be applied, and the description of one complete gear is the description of any number.

A A are the registering-disks, carrying the numerals "0" to "9" in consecutive order, each disk being carried on an independent spindle A', running in bearings A<sup>2</sup> and car-



rying a Geneva stop B and a finger-wheel B', the operation and construction of which will be seen at a glance on referring to Fig. 8<sup>B</sup>.

B<sup>2</sup> is a locking-bar, which when lifted out of the grooves in the shafts A<sup>2</sup> allows them to be moved in the direction of its length to bring the finger and stop wheels out of gear, so that the disks can be set to zero.

B<sup>3</sup> is the drum, carrying the cord or wire attached to the actuating-weight P<sup>2</sup>, Figs. 1 and 2, which is raised by turning a handle P<sup>3</sup> on the units-spindle.

The controlling device, which is connected to and driven by the counter by means of a small link belt A<sup>3</sup>, (though it can equally well be connected by a shaft and bevel-wheels,) consists of a main spindle S, carrying a spur-wheel S<sup>3</sup>, into which gears a pinion S<sup>4</sup> on the shaft T. This shaft has a cam T' at one end and a pawl T<sup>2</sup> at the opposite end. The pawl T<sup>2</sup> is held in its normal position by the stop V, and this latter is only removed by electric current passing through the magnets U, causing them to draw the armature down and make the lower extremity of the lever U<sup>x</sup>, carrying the armature U', to move aside the stop V and allow the pawl and other mechanism to move around. As it does so the cam T' on the shaft T gradually puts the stop in place, so that the pawl, and consequently all the connected mechanism, is brought to rest after each addition. The portion that controls the current for operating this device is as follows: Metal balls are stored in the supply-hopper M', which is placed over the ticket-issuing device and is divided off into ducts leading to their respective pipes M, from whence they are despatched each in its own duct into a short length of copper pipe N, which nearly touches a similar pipe N', placed in the same line. On the shaft S is a star-wheel P, electrically insulated from the shaft S and having spokes so designed that the curve between them corresponds with the curve of the balls. The pipe N has a slot in it that enables the wheel to revolve sufficiently within it to prevent a ball passing without the wheel P moving.

The electric circuit is shown diagrammatically in Fig. 11, from which it will be seen that the pipe N and magnets are connected to one pole of the source of electricity Q and the wheel P to the other pole through the spring R, so that the circuit is only closed when a ball made of a metal that is a good conductor of electricity comes down the pipe N and rests on the wheel P. This causes the armature to be attracted down and makes the other end of the lever throw out the stop V, immediately releasing the gearing, so that the wheel P revolves part of a revolution, allowing the ball to escape, and is detained ready for the next ball by the cam T' replacing the stop V.

The tickets are assembled in sets and placed in the trunks H, these having at intervals brackets H<sup>7</sup> and slots H<sup>2</sup> for the reception

of the check-plate H<sup>3</sup>, Fig. 7, the lug H<sup>4</sup> of which fits in the slot H<sup>2</sup> and the pins H<sup>5</sup> in the brackets H<sup>7</sup>. If all the tickets in a trunk are of the same character, these check-plates are not required. The tickets being operated with are put in the trunk and a block of lead or type-metal put on the last ticket. Figs. 4 and 5 show that the trunks may be divided each into three sections by the insertion of two check-plates, one in each of the slots H<sup>2</sup>. Each section is sufficiently deep to hold an ordinary number of an assembled set of particular tickets; but should the number of tickets be greater than will fill one section one or more check-plates H<sup>3</sup> may be removed. The lug H<sup>4</sup> on the check-plate H<sup>3</sup> is inserted in a slot H<sup>2</sup> in the back of the trunk and is held in position by a pin H<sup>5</sup>, fitting in the brackets H<sup>7</sup> on the trunk and a slot on the check-plate H<sup>3</sup>. A block of lead or type-metal is put above the last ticket of each set of particular tickets. The ticket device is operated by the handle G<sup>3</sup> on the shaft G', which latter rotates the bevel-wheels G<sup>2</sup>, and attached to the horizontal bevel-wheel is the blade G, which is free to rotate through a slot near the bottom of the trunk and expel a ticket each revolution. At the end of this shaft G' is a pinion J, gearing into a spur-wheel J' on a second shaft K, which latter carries a star-wheel K' (like S, but not insulated) and the locking-wheel K<sup>3</sup>. The star-wheel K' operates partly in a tube M and only allows one ball to pass as one ticket is issued. Above this star-wheel is a small bracket carrying a pivoted stop P', which is held out of gear by the balls in the pipe. The tube M is carried up to a convenient height and is connected to a tray M', Fig. 2, divided into ducts, so that each duct is connected to its corresponding pipe. The trunks H are arranged side by side, as shown in Figs. 1, 2, and 3, and numbered, respectively, "1" to "7," and are placed in convenient position to the issuing-window. Above the trunks are placed the trays M', having ducts connected to the corresponding pipes M. Below the table or counter at which the operator works the lower ends of the pipes M are led into their respective ducts F, which latter have a suitable gradient and lead to that part of the building containing the minor and grand totals, where each duct is connected by a single pipe or single duct to its proper minor-total controlling mechanism, and thence the ducts all lead to the grand-total mechanism.

I will now describe the operation of the whole invention, it being understood that each ticket and ball issuing device in each case is connected up by pipes or ducts to its respective minor-counter controlling mechanism and that each minor-counter controlling mechanism has its discharge-ducts connected with the grand-total-counter controlling mechanism. The tickets are placed in their respective trunks (which may be indicated by name value or number, as 24, Fig. 4) and a



block made at least twice the thickness of a ticket placed on the top. The trays M' are filled with balls, which run down the tube M until stopped by the star-wheel K'. Then on a purchase being made the operator gives the handle G<sup>3</sup> of the ticket device (that corresponds with the purchase) one revolution, thereby causing the blade G to wipe out the lowest ticket in the trunk H, causing the star-wheel K' to release one ball, which at once falls into its duct and rolls away to the controlling device, passes down the tube N, rests a second on the star-wheel P, thereby closing the electric circuit, causing the magnets U to attract the armature U' and so throw out the stop V. The mechanism being thus released, the pinion-shaft T revolves, turning the star-wheel one point, so causing the connected mechanism to make an addition on the dials while the cam T' is replacing the stop V, so that the pawl T<sup>2</sup> comes against it and arrests the movement. Meanwhile the ball released by the star-wheel P passes to the grand-total mechanism and repeats its operation there, making an addition, and passes on to a receptacle in readiness for redistribution. In the event of an operator running out of tickets the metal block before referred to comes into operation and prevents the blade G from making a revolution or even moving far enough to issue a ball, while if the operator runs short of balls the stop P' by its weight (when the resistance of the balls is removed) falls down between the teeth of the stop-wheel K<sup>3</sup> and locks the whole mechanism.

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

1. In an enumerating-machine, a ticket-trunk having a slot at its lower extremity, a ticket-issuing blade, a tube through which balls may run, a star-wheel for controlling the passage of the balls through said tube, a shaft carrying said star-wheel, a locking-wheel thereon, a stop to engage said locking-wheel, said stop being controlled by the balls in the tube, a handle for operating the ticket-issuing blade and a connection between said handle and the star-wheel, substantially as described.

2. In an enumerating-machine, a ticket-trunk with a slot at its lower extremity, a rotatable ticket-issuing blade, a horizontal shaft having a handle, bevel-wheels for transmitting motion from said shaft to said blade, a second shaft, having gearing connecting it with the first-named shaft, a locking-wheel, and a gravity-lock suspended over the locking-wheel and held out of operation by metal

balls in the adjacent tube, substantially as described.

3. In combination a ticket-trunk with a slot at its lower extremity, a ticket-issuing blade, a horizontal shaft having a handle, bevel-wheels transmitting motion from said shaft to said blade, a second shaft connected with said first-named shaft and a star-wheel operating partly in a tube or duct containing metal balls and geared so that with each revolution of ticket-issuing blade one ball is passed by star-wheel down pipe and respective duct to controlling mechanism of minor totals.

4. A minor-total controlling device consisting of a metal tube for the reception of the metal balls, electromagnets electrically connected to said tube, a battery connected to said magnets, a contact-spring, a star-wheel insulated from the shaft carrying it and contacting with said spring and grand-total mechanism controlled by said balls.

5. In combination with the counting mechanism driving means therefor, a controlling device comprising an electromagnet and releasing mechanism which allows the driving means to have one movement when the magnet is energized, circuit connections including within them the electromagnet and said circuit being normally open, a series of balls for closing said circuit, ticket-issuing means, means for directing the balls and means for releasing a ball when a ticket is issued, substantially as described.

6. In combination a grand-total mechanism, a minor-total controlling device released by metal ball in a tube completing or closing electric circuit, electromagnets attracting armature, said armature throwing out a stop to allow pinion-shaft and main shaft to move until star-wheel permits ball to pass to similar controlling device for operating the grand total, substantially as described.

7. In combination, a hopper for balls, a plurality of conduits leading therefrom, a plurality of ticket-delivery devices, means for controlling the release of a ball in the proper tube upon the delivery of a ticket, registering mechanism, electrically-operated controlling means therefor and means whereby the circuit to the controlling means is closed by the proper ball when released, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HENRY HODSDON.

Witnesses:

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