

(No Model.)

9 Sheets—Sheet 1.

R. D. GALLAGHER, Jr.
COIN CONTROLLED MECHANISM FOR TELEPHONES.

No. 571,590.

Patented Nov. 17, 1896.

Fig. 1.

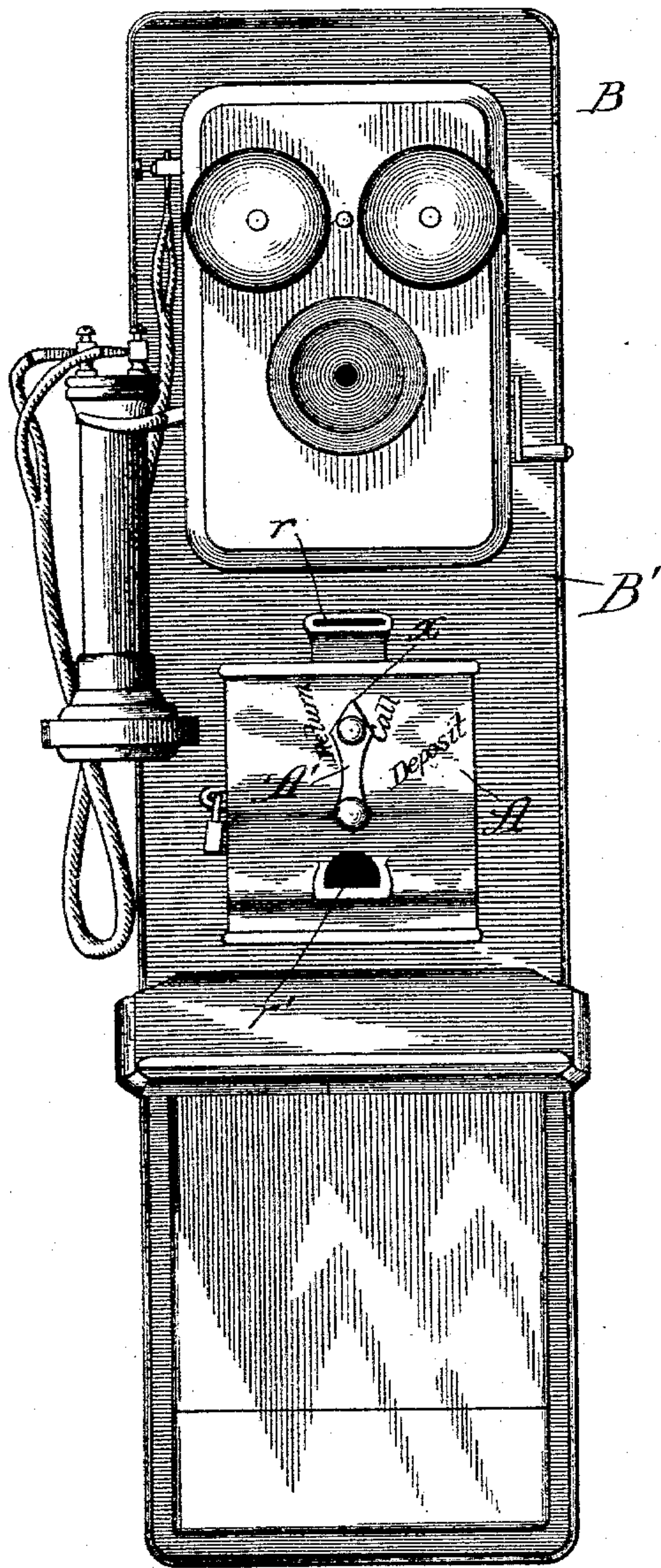
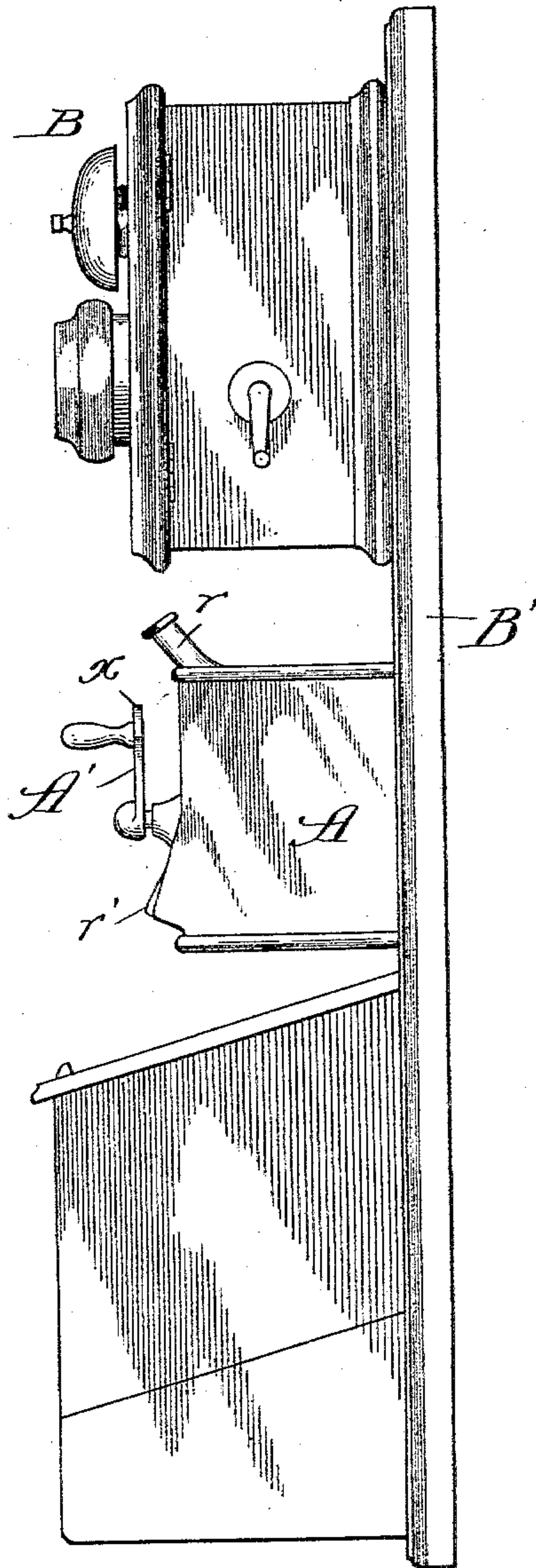


Fig. 2.



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John J. Allen.

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Fig. 3.

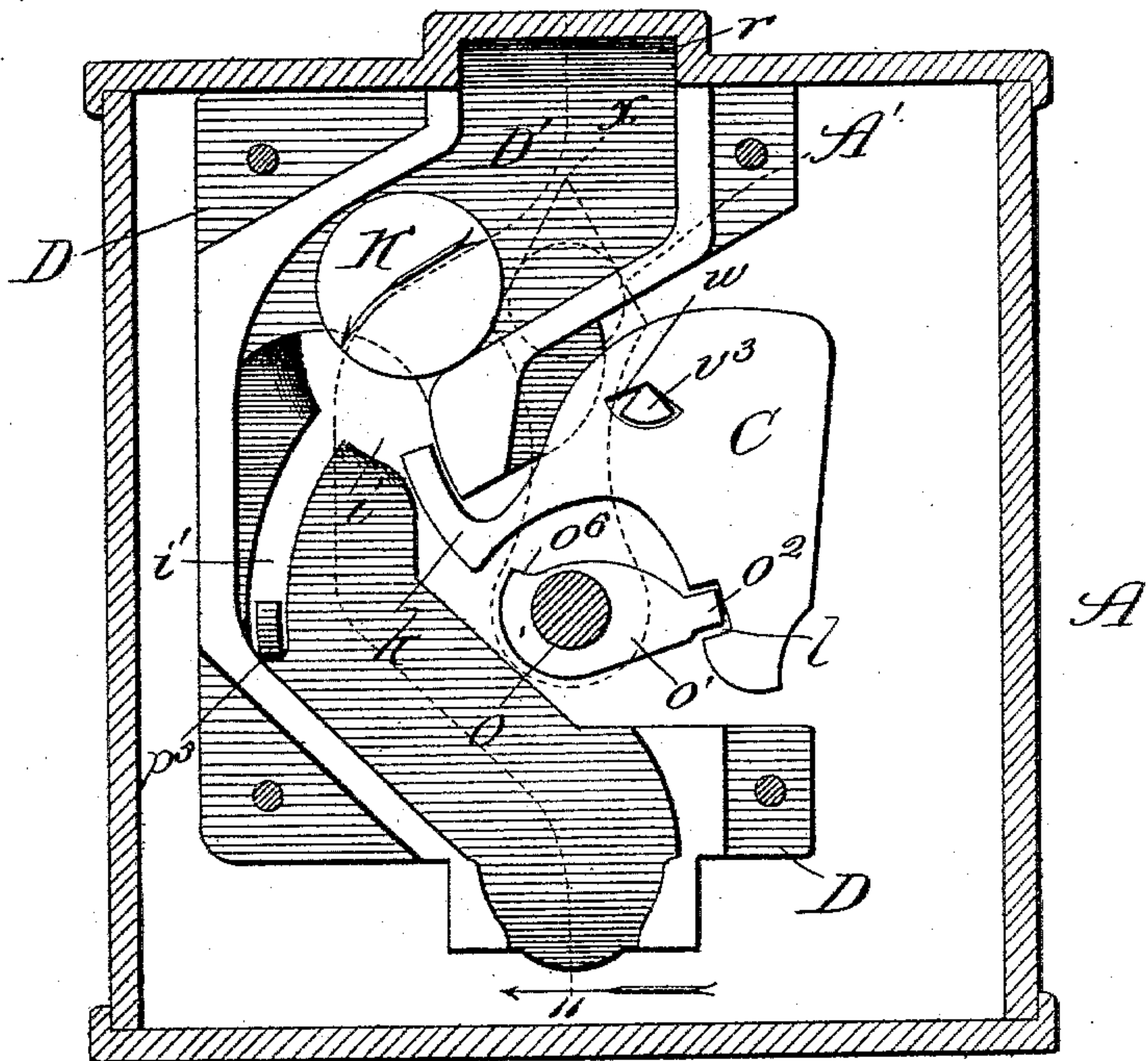
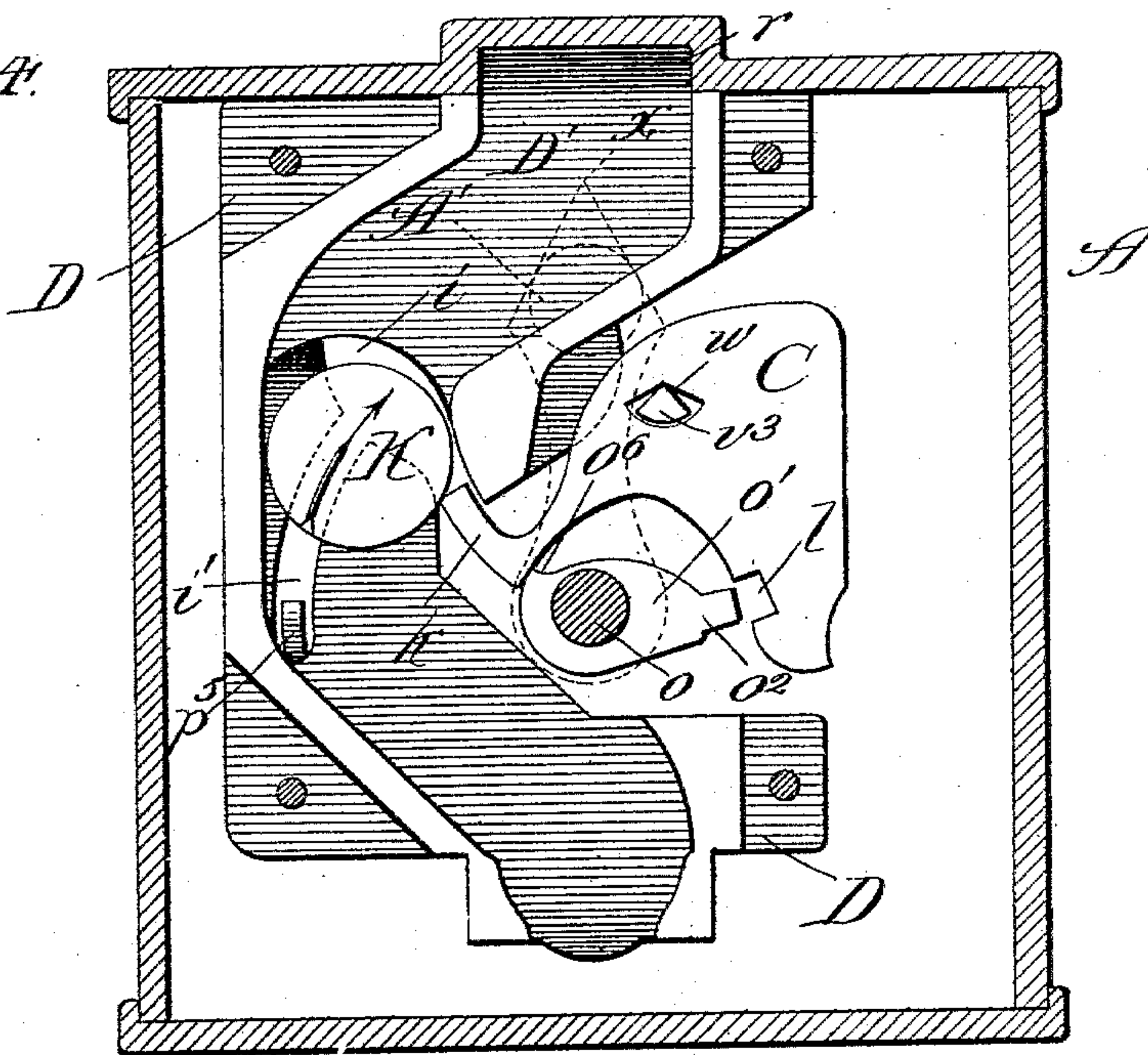


Fig. 4.



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Fig. 5.

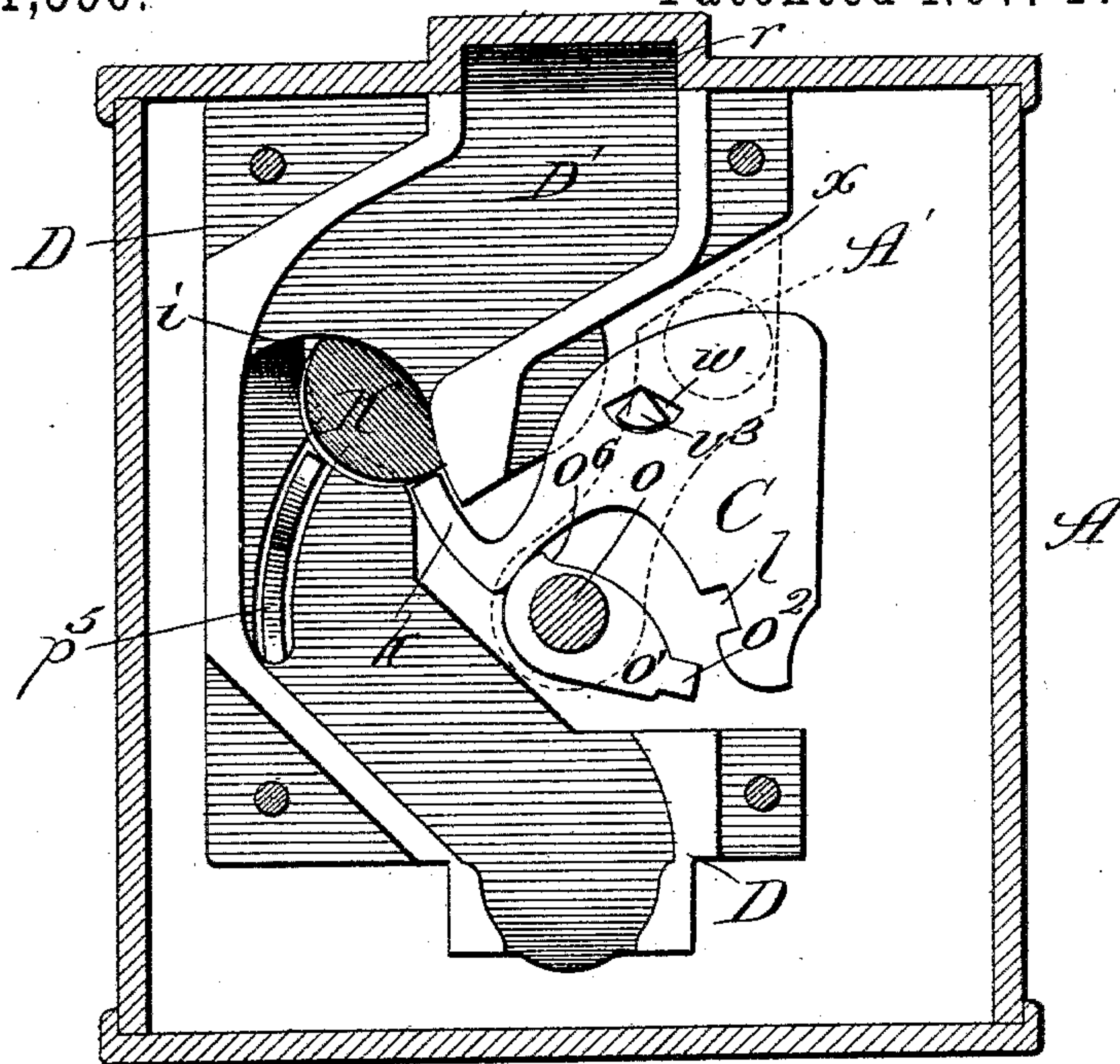
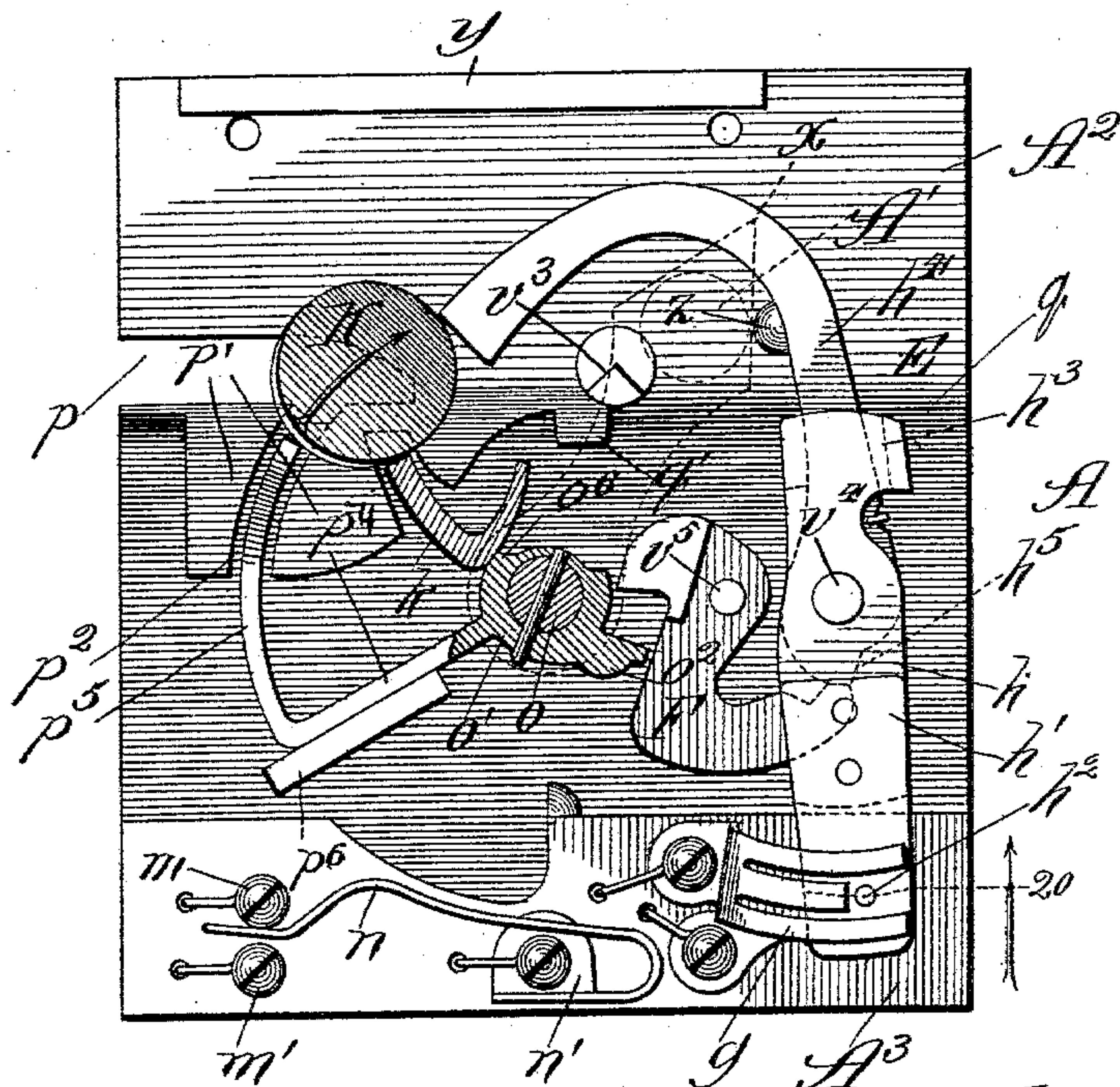


Fig. 6.



Witnesses:

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(No Model.)

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Fig. 7.

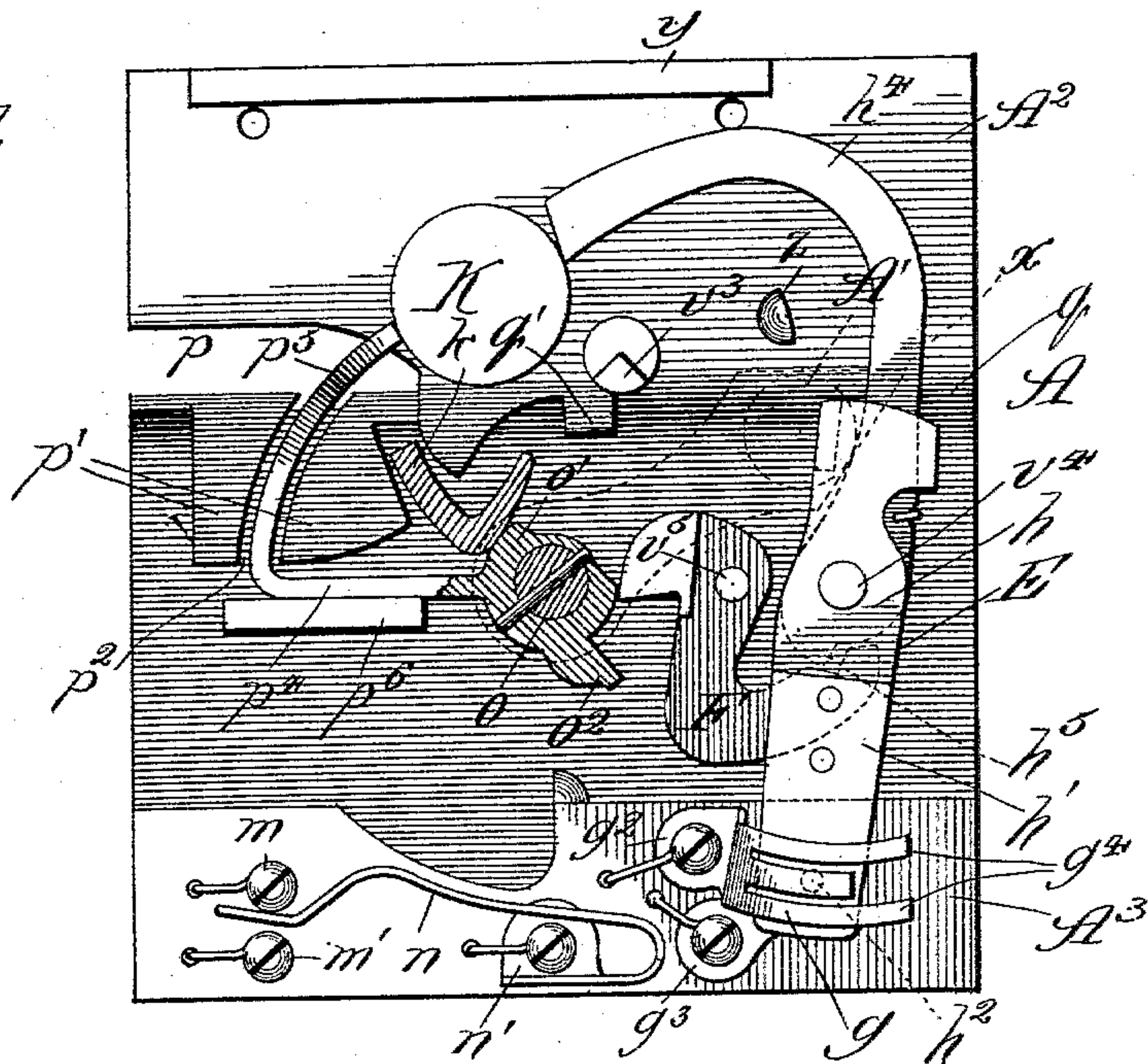
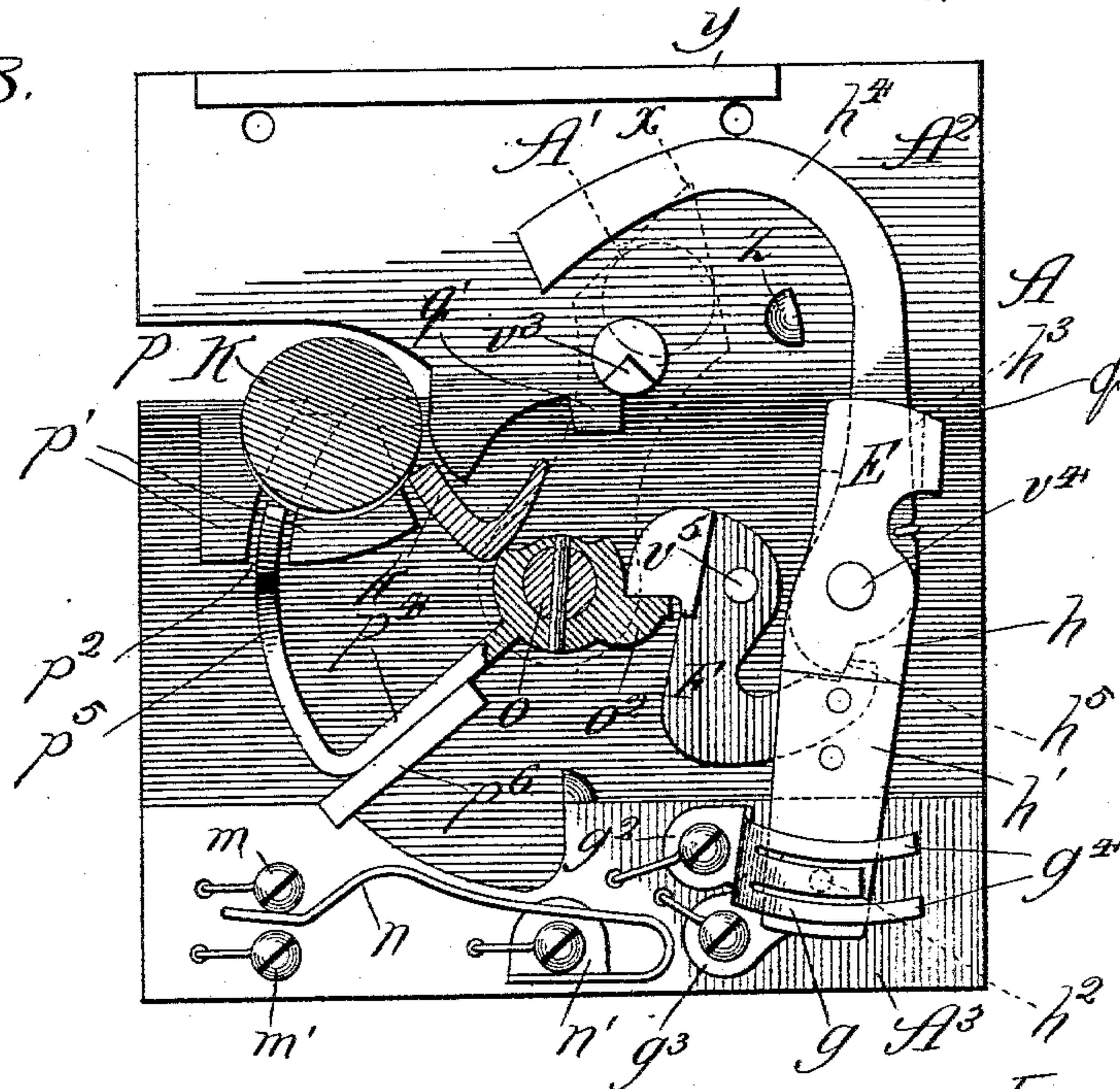


Fig. 8.



Witnesses:

Chas. E. Chafford,
Little J. Allen.

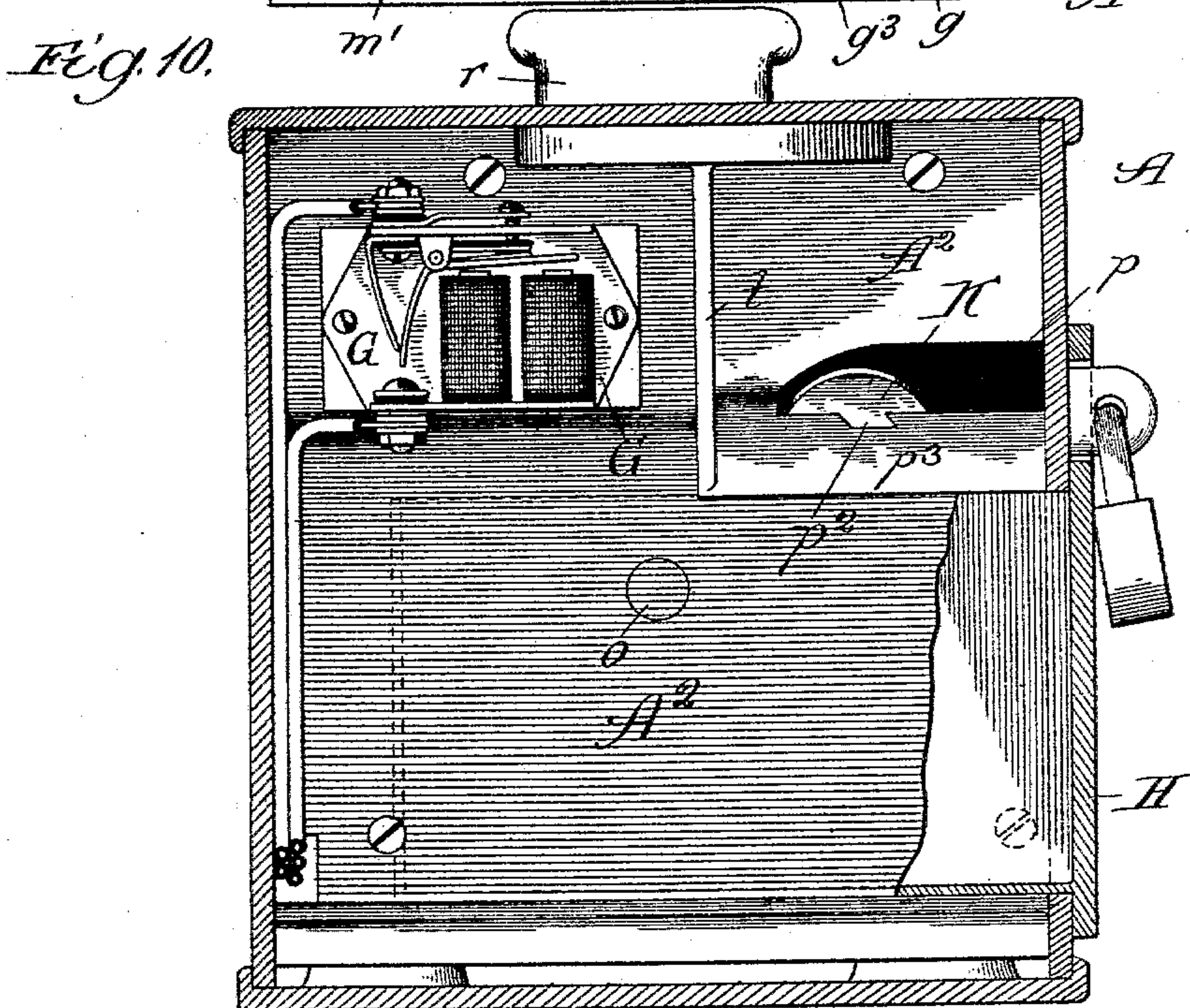
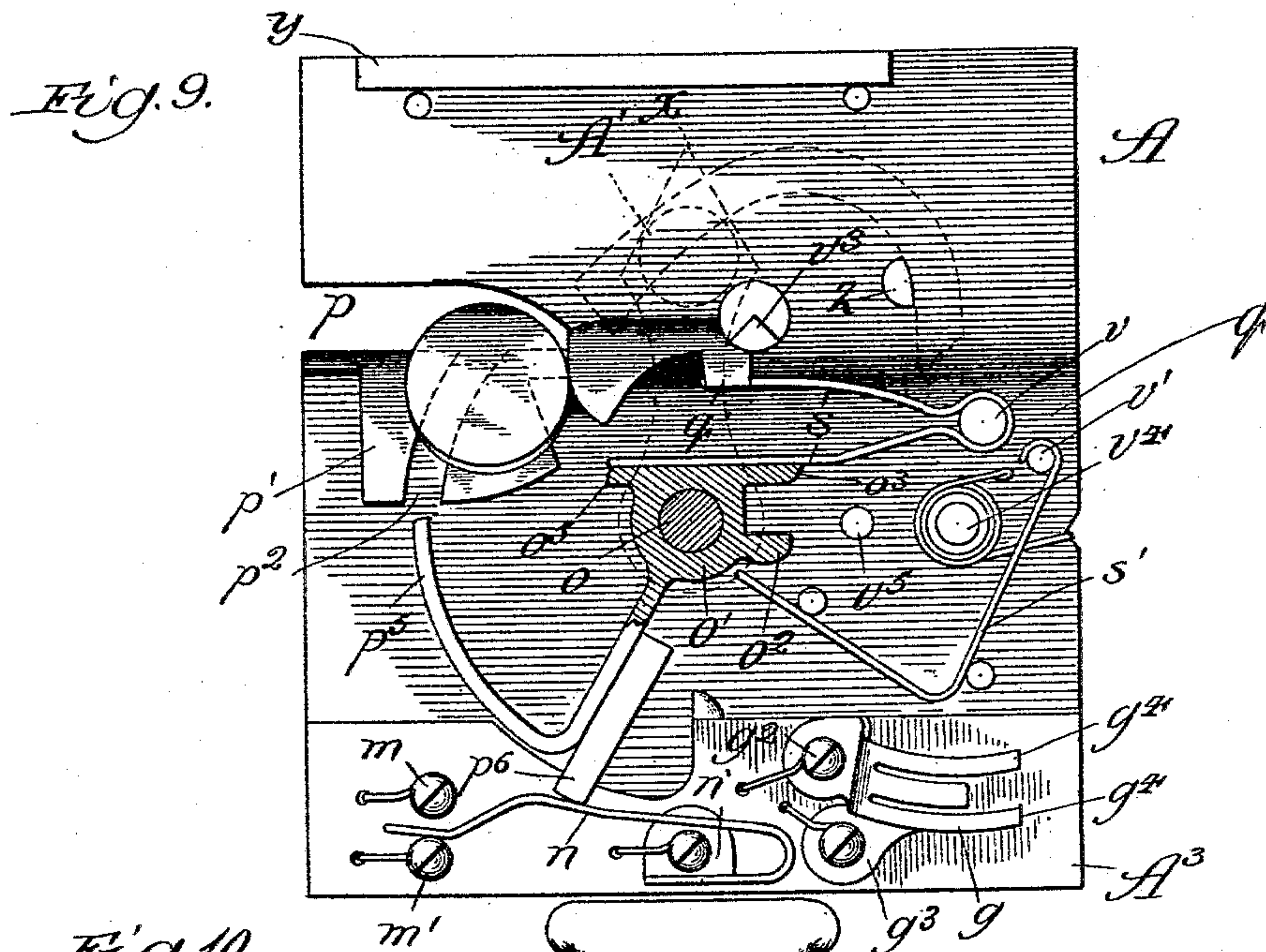
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(No Model.)

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Fig. 11.

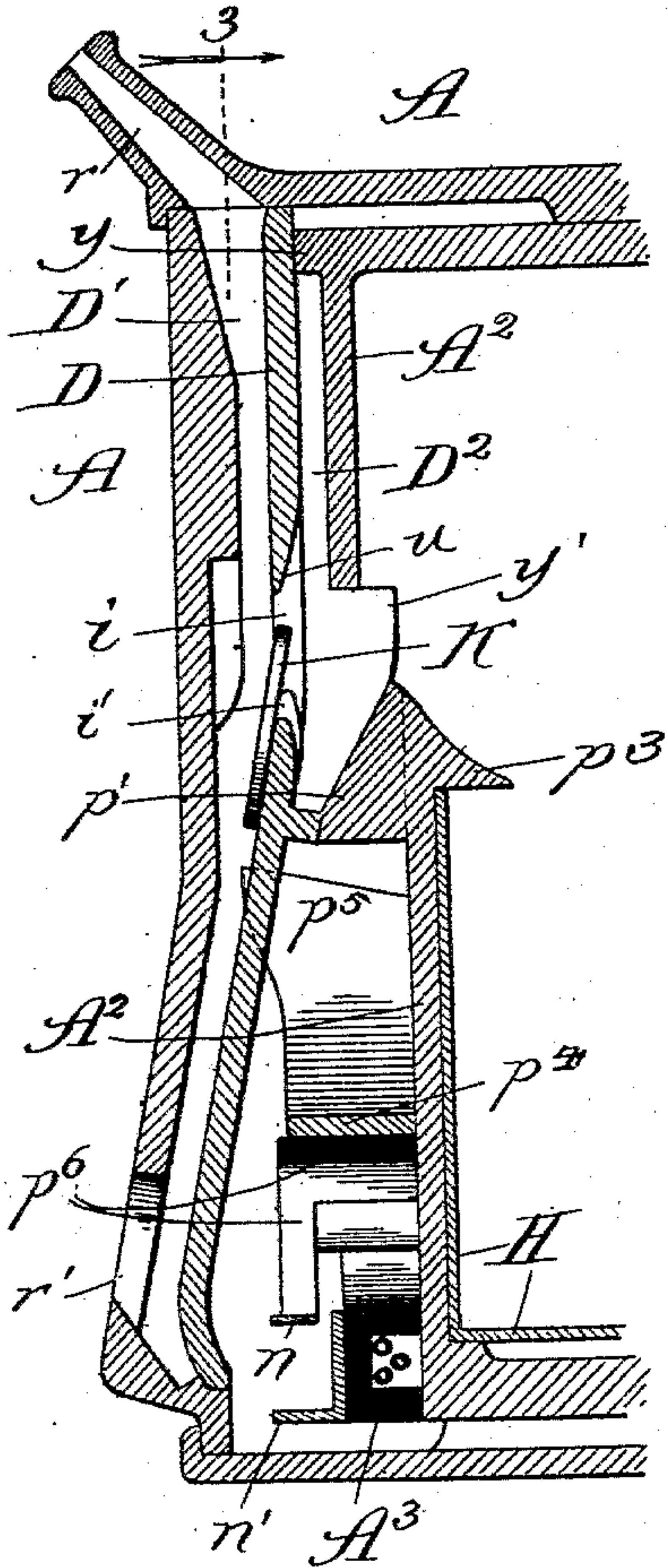
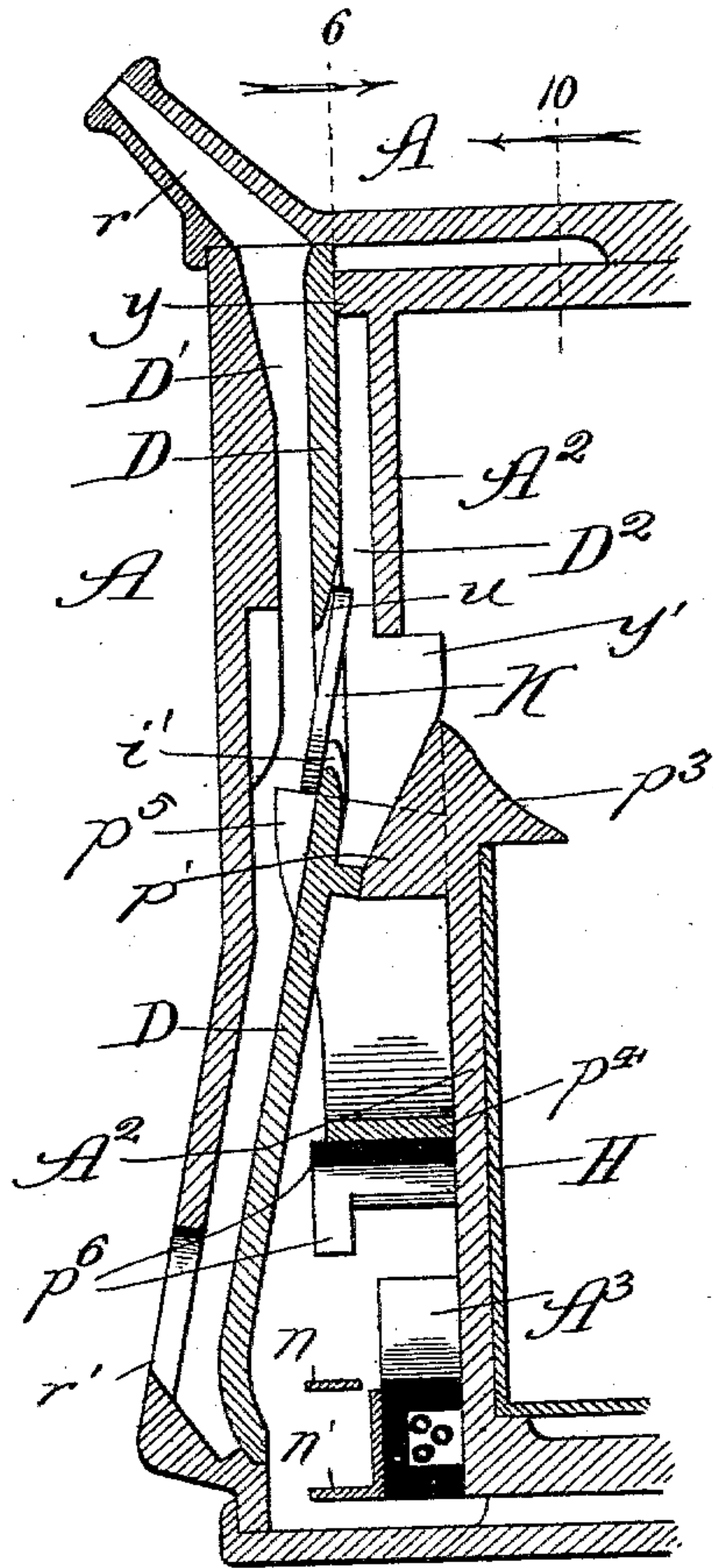


Fig. 12.



Witness:
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Fig. 13.

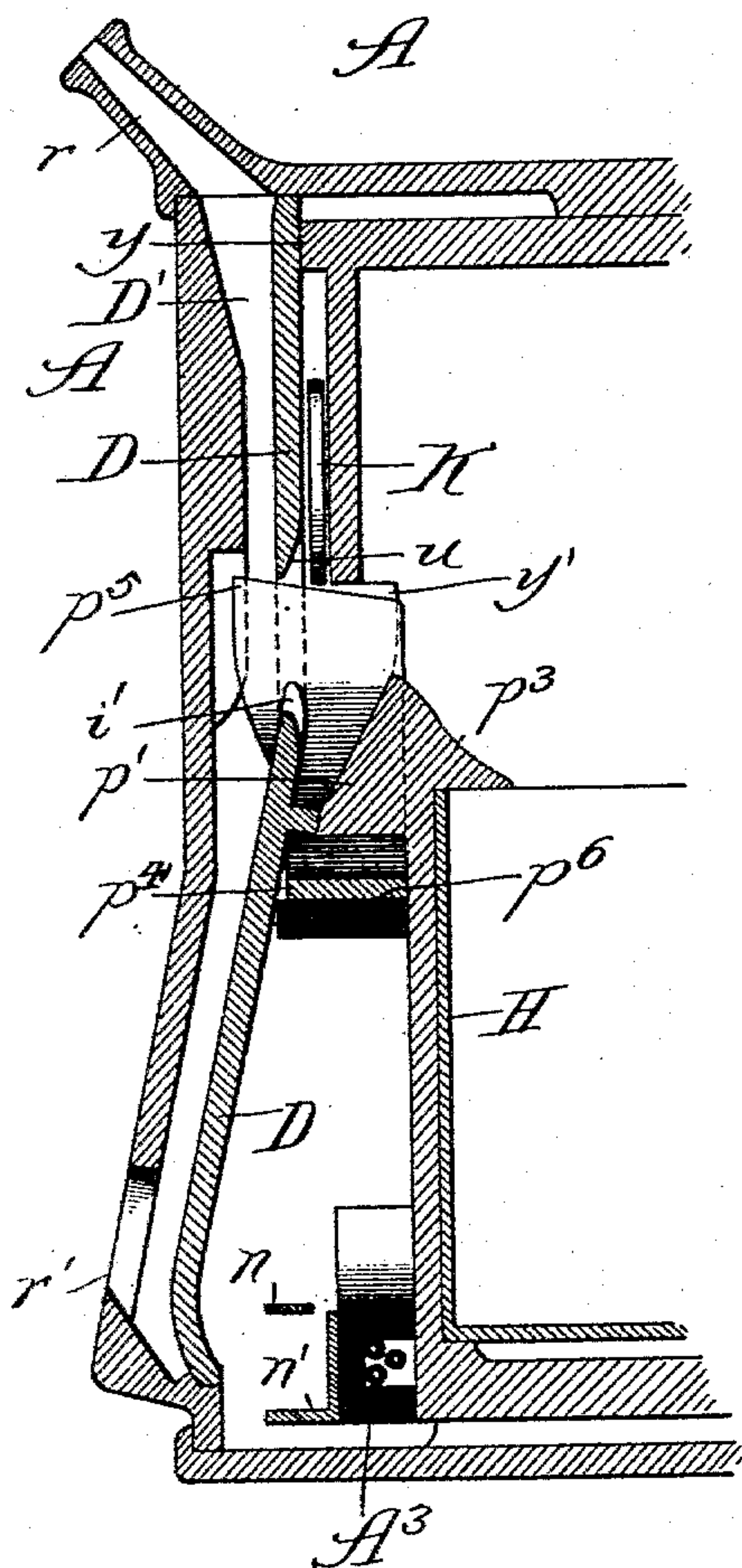
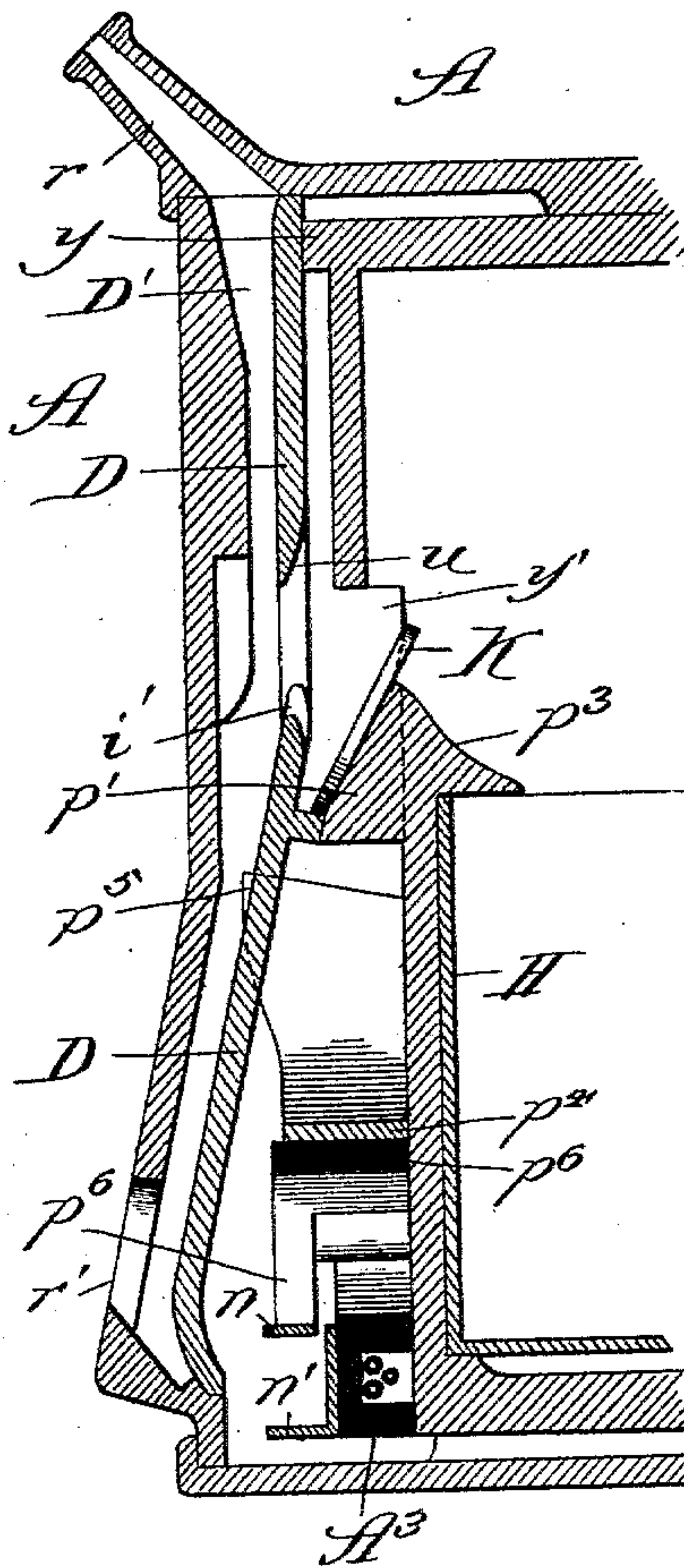


Fig. 14.



Witnesses:

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Fig. 15.

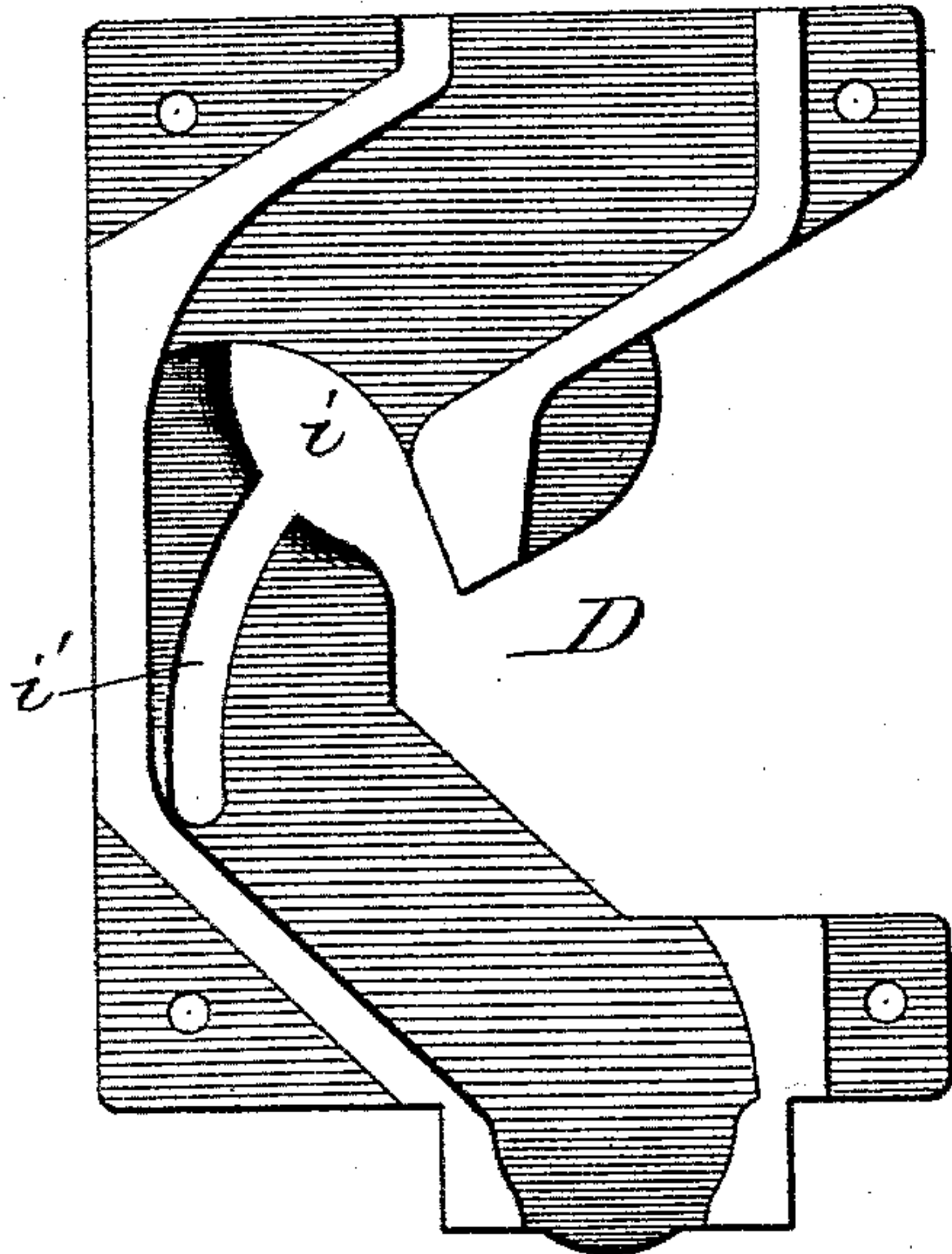


Fig. 16.

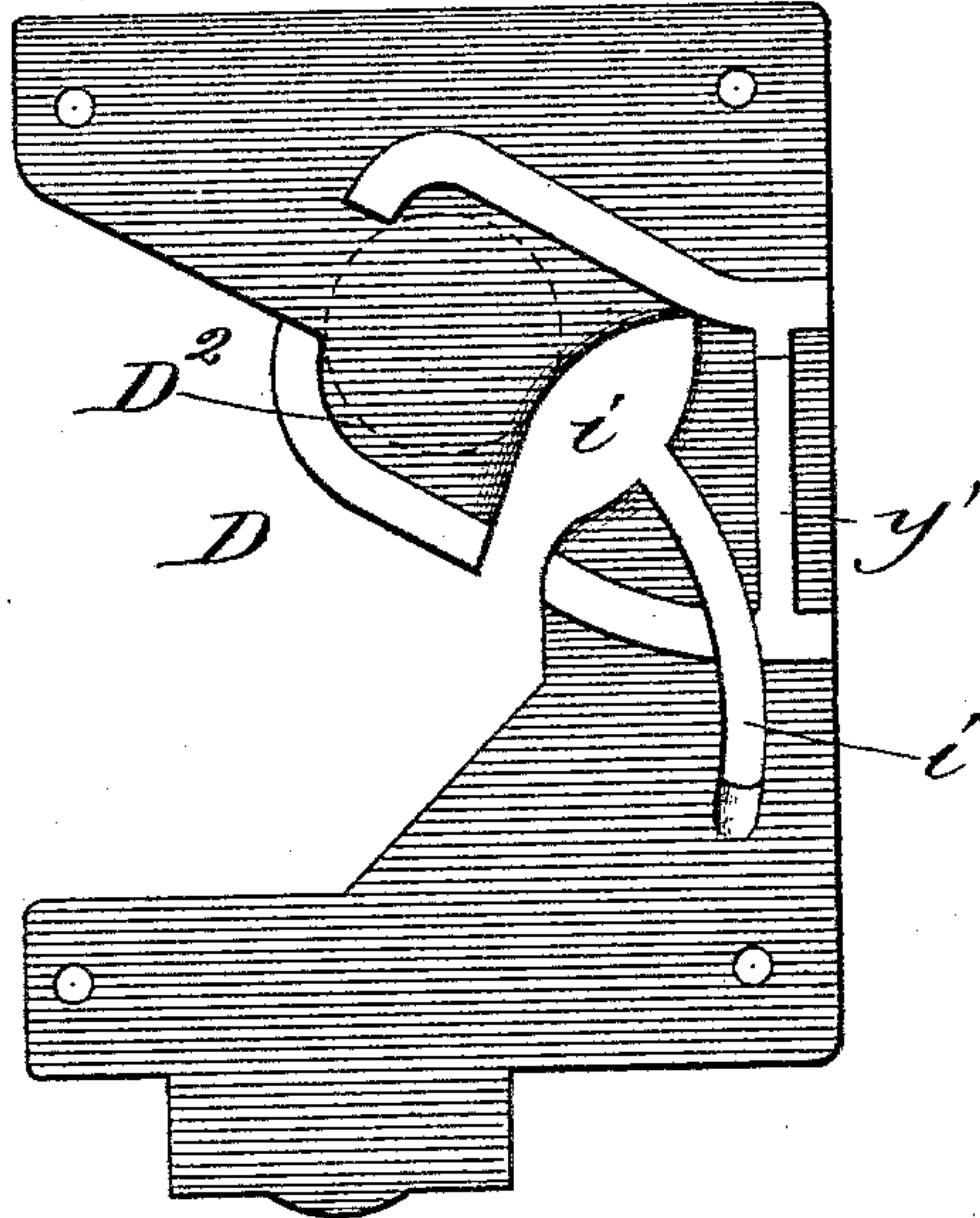


Fig. 17.

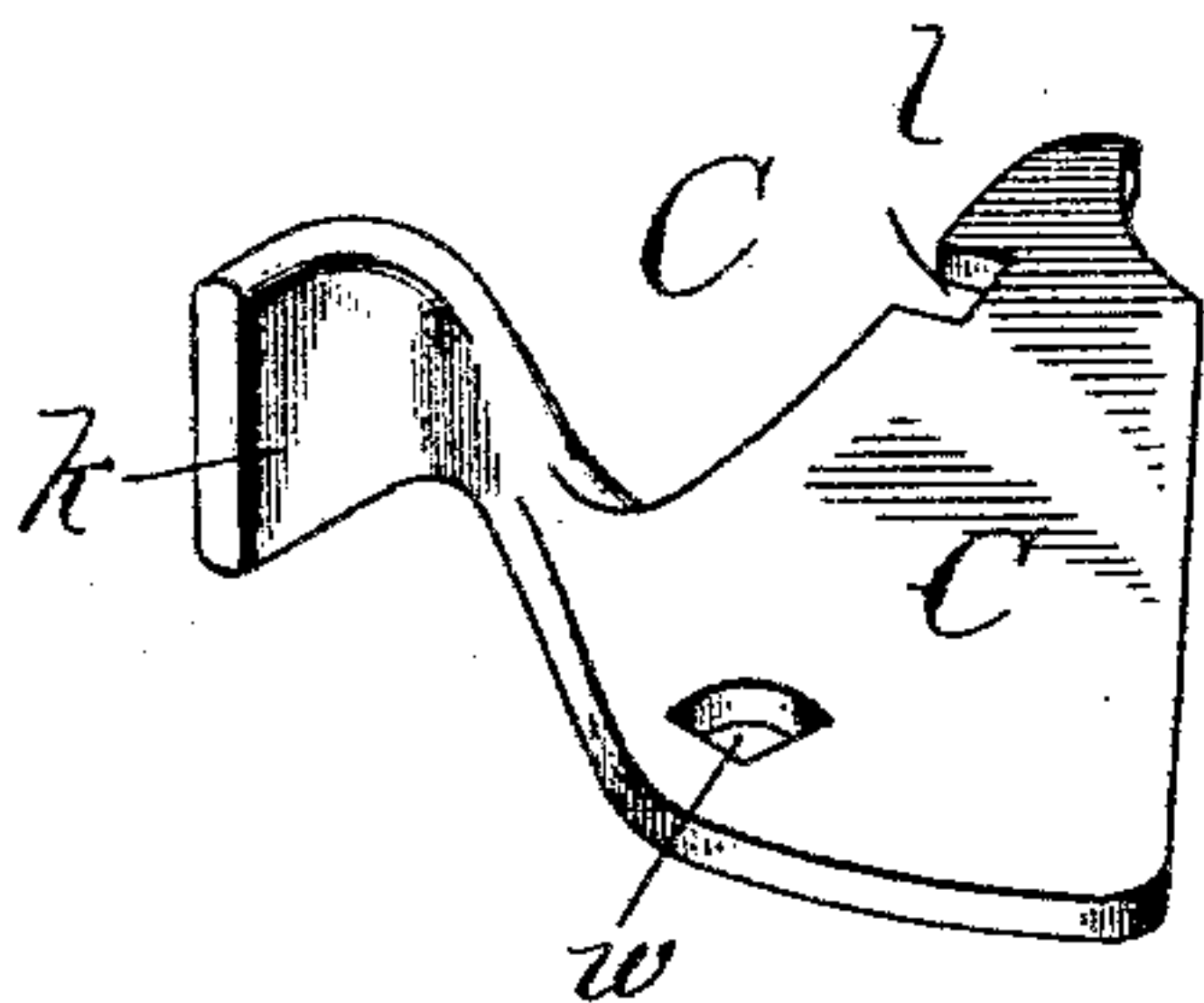


Fig. 18.

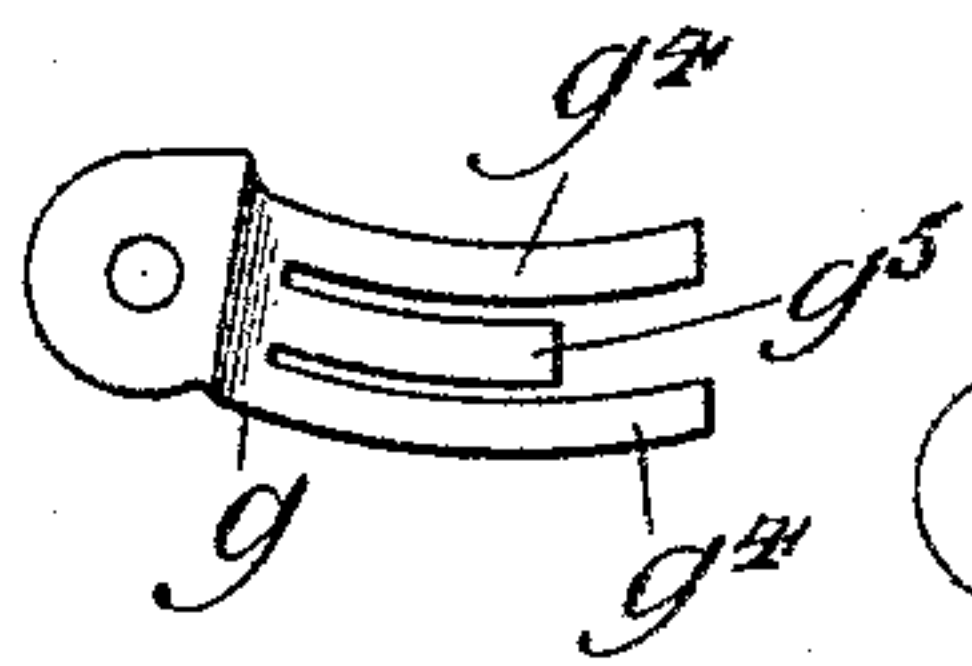


Fig. 19.

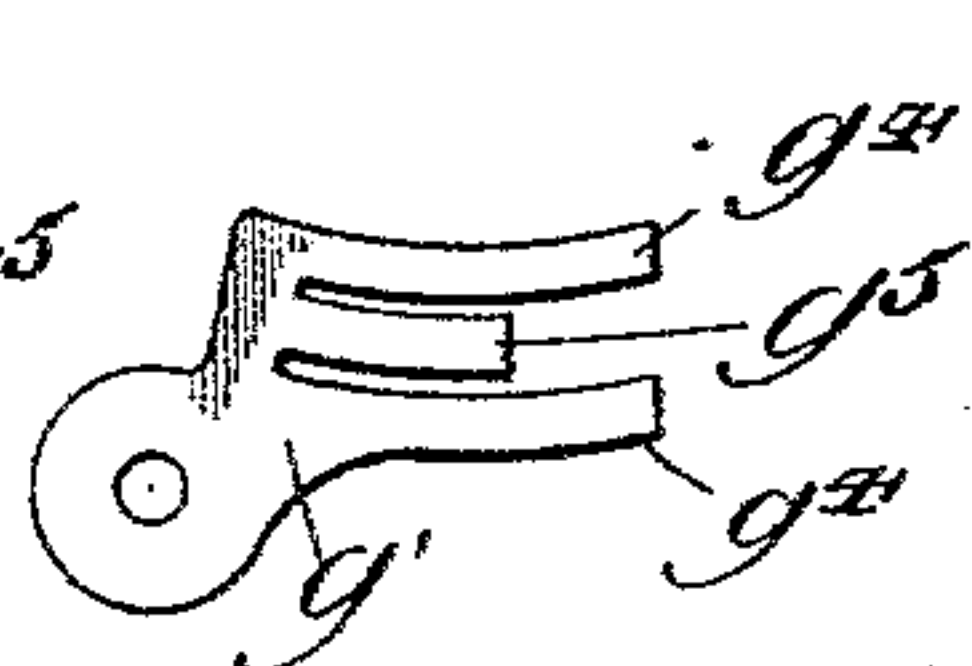


Fig. 21.

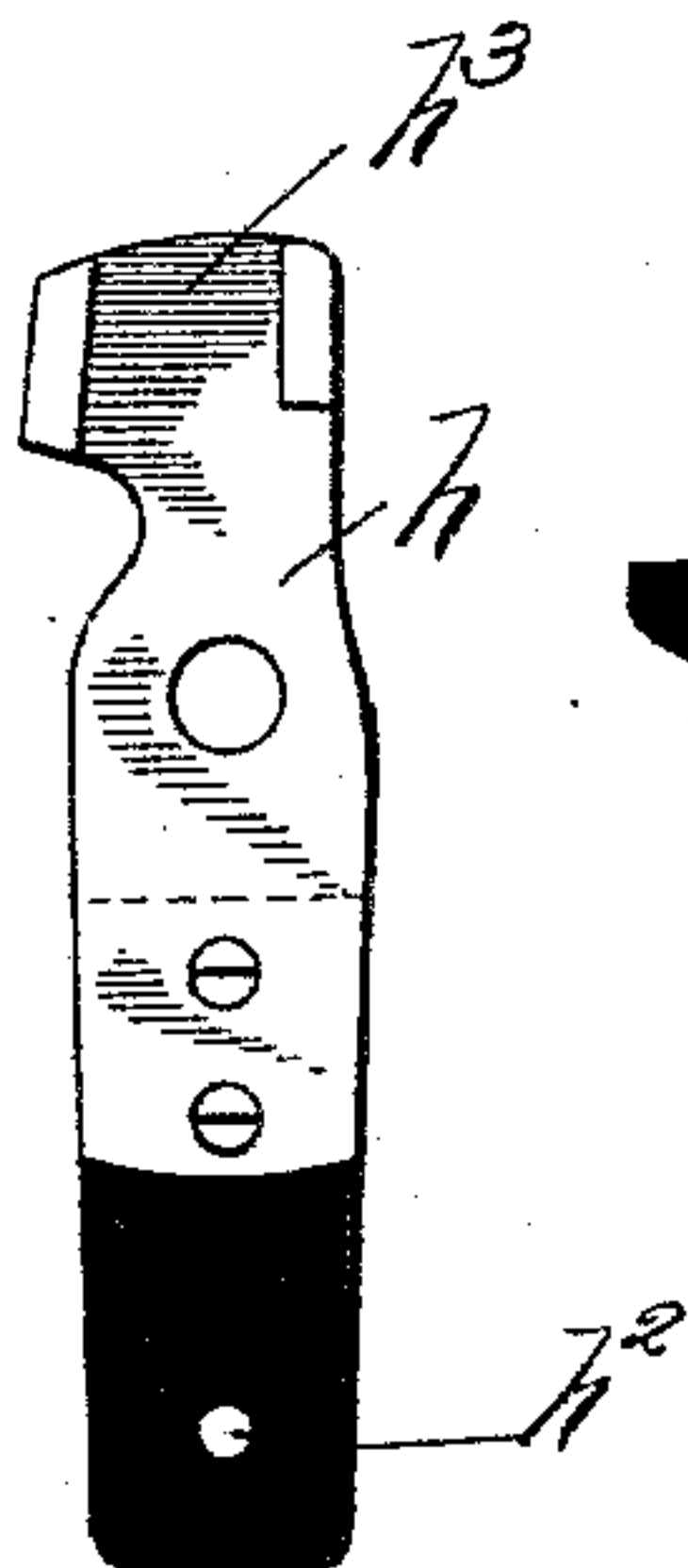
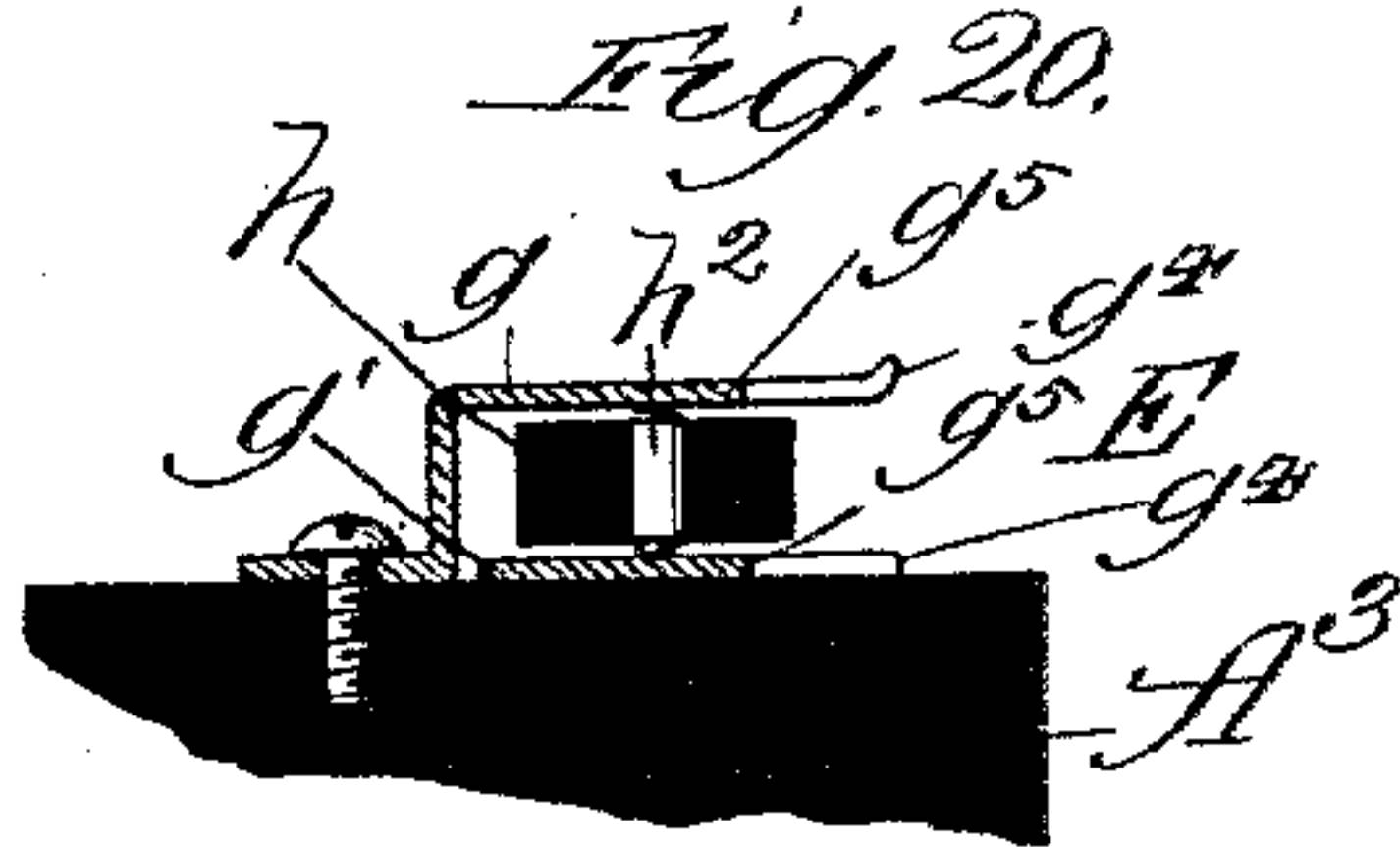


Fig. 20.



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(No Model.)

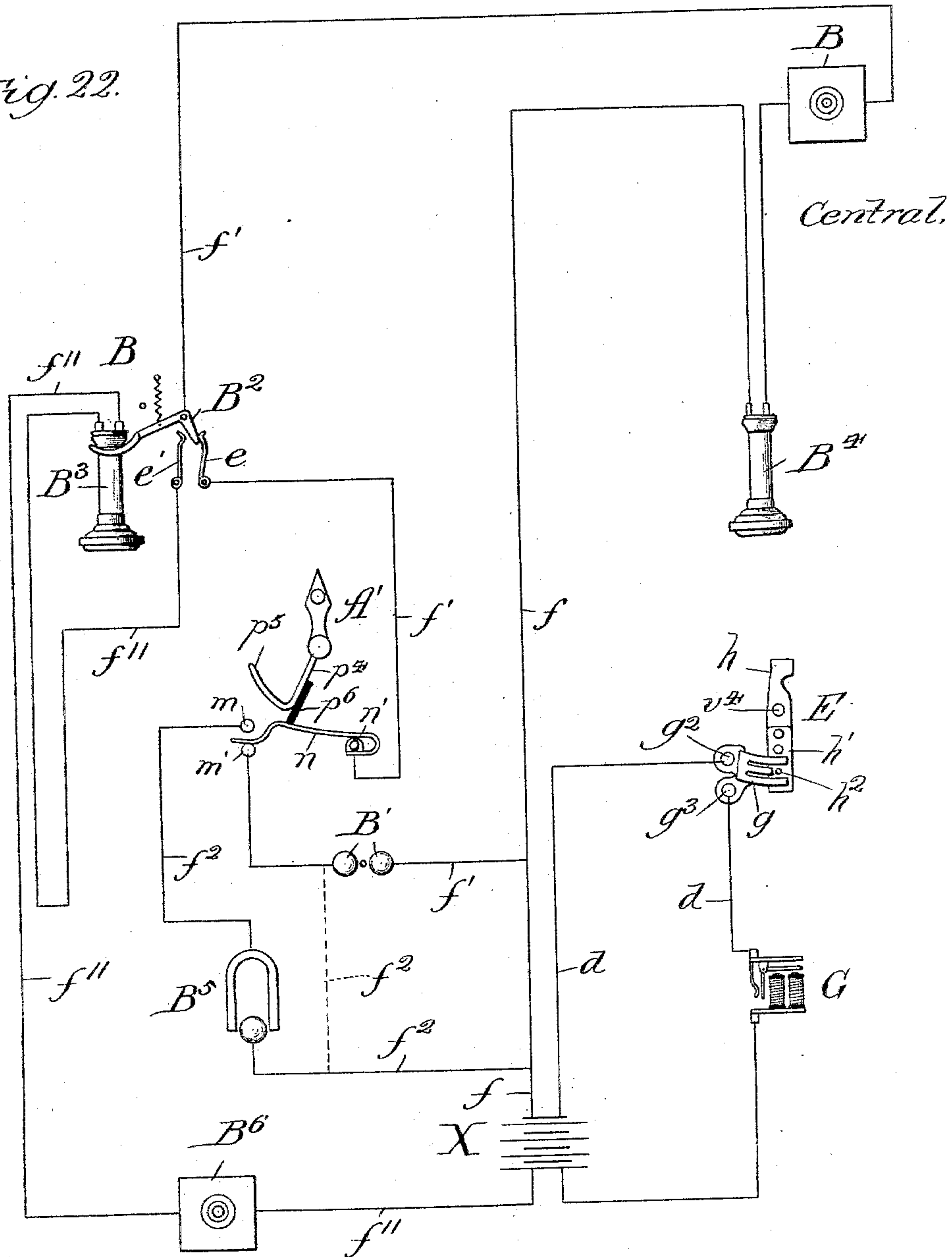
9 Sheets—Sheet 9.

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COIN CONTROLLED MECHANISM FOR TELEPHONES.

No. 571,590.

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Fig. 22.



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UNITED STATES PATENT OFFICE.

RICHARD D. GALLAGHER, JR., OF CHICAGO, ILLINOIS.

COIN-CONTROLLED MECHANISM FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 571,590, dated November 17, 1896.

Application filed March 14, 1896. Serial No. 583,219. (No model.)

To all whom it may concern:

Be it known that I, RICHARD D. GALLAGHER, Jr., a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Coin-Controlled Mechanisms for Telephones, of which the following is a specification.

My invention relates to an improvement in the class of mechanism used in connection with a telephone to be controlled by the insertion into it of a coin of the denomination representing the price of a single use of the telephone to place the telephone in condition for use.

The primary object of my invention is to provide an improved construction of the coin-controlled mechanism whereby it shall be adapted to be applied for its purpose to any of the various kinds and conditions of use of electric telephones.

Further objects of my improvement are to absolutely prevent the user of a telephone from obtaining of his own accord connection with central until the proper coin, representing the price of the use of the telephone, shall have been deposited; to insure or induce immediate signaling of central by depositing the coin; to provide for the return of the coin by the mechanism if service may not be had; to cause the inserted coin not only to unlock the calling-circuit switch, but to maintain it in unlocked condition till the user shall ring off, and this without interference with operating the telephone, so that only one signaling operation may be had from each coin inserted; to obviate the operation of the mechanism by the insertion of any coin of other denomination than that representing the fee for using the telephone; and to enable the operator at central to talk with and call the user of the telephone and such user to talk with central without inserting a coin to close the user's call-circuit.

Referring to the accompanying drawings, Figure 1 is a front view of a telephone instrument equipped with my improved coin-controlled mechanism; Fig. 2, a view of the same in side elevation; Fig. 3, an enlarged sectional view showing the parts of the coin-controlled mechanism in front elevation in their normally relative positions in the case,

the section being taken at the line 3 on Fig. 11 and viewed in the direction of the arrow; Fig. 4, a view like that presented by Fig. 3, but with the operating-lever unlocked by the weight of an inserted coin upon a gravity-catch which normally locks the lever; Fig. 5, a similar view showing the mechanism with the parts in the relative positions they assume by turning the operating-lever to "Call;" Fig. 6, a section taken at the line 6 on Fig. 12 and viewed in the direction of the arrow, showing the base-plate in elevation without the inclosing case and the chute-plate and a portion of the gravity-catch being removed; Fig. 7, a view like that presented by Fig. 6 with the parts in the relative positions they assume when the operating-lever is turned to the end of its right-hand throw to actuate the signal or to effect closure of the signal-circuit preparatory to causing by the release of the lever the return of the inserted coin into position to be subsequently deposited; Fig. 8, a similar view showing the parts of the mechanism in the relative positions they assume by the return of the operating-lever toward its normal position; Fig. 9, a similar view showing the parts in the relative positions they assume by the return of the operating-lever to its normal position; Fig. 10, a broken section taken at the line 10 on Fig. 12 and viewed in the direction of the arrow, showing the signal device in the rear of the case, which contains the coin-controlled mechanism; Fig. 11, a section taken at the line 11 on Fig. 3 and viewed in the direction of the arrow; Fig. 12, a similar view showing a different relation of parts as presented in Fig. 5; Fig. 13, a similar view showing a still different relation of parts as presented in Fig. 7; Fig. 14, a similar view showing another relation of parts as presented in Fig. 9; Fig. 15, a front view of the chute-plate; Fig. 16, a rear view of the same; Fig. 17, a perspective view of the gravity-catch; Figs. 18 and 19, views in elevation of different parts of the signal-switch; Fig. 20, a section taken at the line 20 on Fig. 6 and viewed in the direction of the arrow; Fig. 21, a view in elevation of a portion of the signal-switch, and Fig. 22 a diagram of the circuits controlled by my improved mechanism.

In Figs. 3, 4, and 5 both switch mechanisms

are omitted to avoid confusion, and for the same purpose the springs shown in Fig. 9 are omitted from Figs. 6, 7, and 8.

It may be stated at the outset that my improved mechanism, which is intended to afford an attachment for coin controlling any electrically-operated telephone, may be entirely separate from the telephone instrument, except for its conductor connection therewith, or fixed directly upon the box of the instrument, as shown in the drawings.

B is a telephone instrument, that shown being the well-known Bell telephone, to the use with which the description hereinafter contained of my improvement is confined for the sake of convenience. On the face of the back B', on which the instrument B is fastened, is shown to be supported my improved coin-controlled mechanism inclosed in a suitable case A, on the top of which is provided the coin-insertion slot r , leading to the coin-chute of the mechanism, hereinafter described, and on the front of which are provided the three words "Return," "Call," and "Deposit" arranged in radial series with reference to the operating-handle A', and at the base of the front side of the case is provided the discharge-opening r' at the lower end of the coin-chute, through which coins or tokens are returned to the user in case of failure to operate the instrument.

Inside the case A is rigidly supported in vertical position the base-plate A², which carries all the coin-controlled mechanism. The upper portion of the base-plate is divided above its horizontal center from the lower portion by a transverse offset q , through which is provided to extend inward from one edge of the plate short of its vertical center a slot p , shown to be curved along its upper side toward its inner end. Just below the slot p on the front face of the base-plate is cast a lug p' , inclined on its face in an upward and backward direction and containing an arc-shaped slot p^2 , (see particularly Figs. 6 to 9, inclusive,) and behind the base of the slot p is cast a downward and backward inclined guide-ledge p^3 , Fig. 10, to extend beyond the inner curved end of the slot, where it joins a vertical rib t . The operating-handle A is in the form of a crank having a pointer extremity at x and carrying a stem o , at which it is journaled in the center of the base-plate. The stem o carries a hub o' , shown as of somewhat oval shape and terminating at its narrower extremity in a nose o^2 , the hub also having one flat side extended at its opposite ends, respectively, into a nose o^3 and into a projection o^5 , and on the outer end of the hub, at the side thereof opposite that from which the nose o^2 extends, there is provided a shoulder o^6 . An arm p^4 extends radially from the hub o' and carries at its outer end an arc-shaped extension p^5 to work by turning the stem o in and out of the arc-shaped slot p^2 , and on the back of the arm is

provided an insulating-block p^6 to engage normally a contact-spring n , extending from a terminal n' between the contacts m and m' , and hold the spring normally in engagement with the contact m' . The contacts m and m' the spring n , and the terminal n' are shown to be supported on a block of insulating material A³ on the lower part of the face of the base-plate A². The rotatory stem o is maintained normally in a position to cause the pointer x to extend midway between the words "Return" and "Call" by a V-shaped spring s , confined at its bend about a stud v , Fig. 9, and having one arm bearing against an abutment q' , projecting from the offset q , and its other arm bearing against the straight side of the hub o' , and a V-shaped spring s' , which is fastened at one end to a stud v' , extends at its opposite end into opposition to the hub o' at the lower side of the nose o^2 .

C is a gravity catch or dog which may be of the general shape illustrated. It is loosely fulcrumed at one side of its center of gravity on a substantially triangular-shaped stud v^3 on the base-plate A² at a larger but similarly-shaped opening w in the dog. Near one (its heavier) end the dog C contains a recess l to receive the nose o^2 on the hub o' , and at its opposite end it carries an upward and laterally projecting curved finger k .

D is the chute-plate, the shape of which is best illustrated by Figs. 15 and 16. The plate D is of somewhat concavo-convex form longitudinally, and carries on its front side a chute D' running in three directions, namely, inclining from its upper end toward the left, then extending for some distance straight downward, and then inclining toward the right to the lower edge of the chute-plate. At the base of the upper inclined portion of the chute D' is an upwardly-curved opening i through the chute-plate, from the under side of which there extends downward a segmental slot i' , the sides of which, that terminate at the opening i , incline upward and somewhat backward to extend at their extremities below the plane of the top of the upper side of the opening, and the inner margin or flange of the chute is cut away nearly to its lower end from the opening i at the side thereof where the finger k of the dog C centers it. The back of the chute-plate has a chute D² inclining upward toward the right parallel with the upper part of the chute D', and from the top of the opening i the adjacent edge of the chute D² is beveled, as shown at u . The chute-plate D is fastened to the bed-plate A² in position to introduce the finger k of the gravity-dog C into the opening i to bring the curved slot i' coincident with the arc-shaped arm p^5 , extending from the hub o' , and with the corresponding slot p^2 in the lug p' , and to bring the opening i over the slot p in the base-plate, and the chute-plate is spaced at its upper portion from the base-plate by bearing against a forward-projecting flange y at the upper edge

of the latter, and at a beveled rib y' , which forms the base of the chute D^2 , against the face of the lug p' .

E is a lever device for controlling the signal or the signal-circuit. As illustrated, it comprises an arm h , fulcrumed between its ends upon a post v^1 on the base-plate A^2 , and carrying, to project beyond its lower end, a piece of insulating material h' , carrying a contact h^2 , which extends through it and projects at its opposite ends from opposite sides of the block of insulating material. The insulating-block h' is confined at its lower end between an upper contact-spring g and a lower contact-spring g' , proceeding, respectively, from binding-posts g^2 and g^3 on the insulating-base A^3 . Each of the contacts g and g' , as shown, is formed with three parallel spring-fingers, the two outer ones g^4 being of corresponding length and longer than the middle one g^5 , whereby contact is only made through the medium of the lever device E when the arm h is turned far enough to bring the contact h^2 between the fingers g^5 of the two spring-contacts g and g' . At its upper end the arm h has formed upon it a species of socket h^3 , Fig. 21, through which extends from the stud v^1 , upon which it is fulcrumed the spring-controlled supplemental curved arm h^4 about a stop z , and below the chute-plate D into normal proximity at its extremity to the inner end of the opening p in the base-plate A^2 . The socket h^3 is considerably wider than the arm h^4 , whereby the latter may be turned on its fulcrum to a limited extent without thereby turning the arm h .

F is a catch pivoted upon the base-plate on a stud v^5 thereon to extend at one end into the path of the nose o^2 on the hub o' of the operating-lever, and engages at its opposite end a projection h^5 on the lower end of the curved arm h^4 below its fulcrum.

To use my improvement upon or with a telephone B the connections are made with the circuits according to the diagram presented by Fig. 22, as follows: From one pole of the battery indicated at X by way of the wire f and branch wire f' through the bell B^1 of the user's telephone, thence through the terminal m' over the spring n , and continuation of the branch wire f' to the terminal e , normally engaged by the suspension-hook B^2 , carrying the receiver B^3 of the user's telephone, and from which the branch wire f' continues through the telephone B at central, at the receiver B^4 of which it connects with the wire f . From the wire f another branch f^2 leads through the magneto B^5 of the user's telephone to the contact m , and, if desired, the branch wire f^2 instead of proceeding from the wire f , as shown by the full-line representation, may lead from the branch wire f' , as indicated by the dotted section f^2 , to cut into the call-circuit the bell on the user's telephone. From the same pole of the battery there leads a wire d to the binding-post g^2 , and from the binding-post g^3 through an alarm G (repre-

sented as a well-known form of "buzzer," shown in Fig. 10 as located in the case A on the back of the base-plate A^2) to the opposite pole of the battery, and from this opposite pole of the battery leads the wire f^{11} through the transmitter B^6 of the user's telephone and through the receiver B^3 of the latter to the contact e' .

To operate my improvement, the user inserts into the slot r the proper coin and then turns the handle A' to register with the word "Call," whereby the call-circuit is closed. If the response from central is that the line called for is busy, the user turns the handle to register with the word "Return," whereby his coin is returned by dropping out at the opening r' . If, on the other hand, central informs the user that he can have the desired connection, he turns the handle to register with the word "Deposit," whereby the signal is sounded to notify central or some custodian of the telephone that the proper coin has been paid into the machine. The arrangement is such that the coin holds the call-switch unlocked until the user rings off to finally deposit the coin.

Following is a detailed description of the operation: On inserting a coin K into the chute D' it descends therein till it reaches the finger k of the gravity-catch C, which the weight of the coin turns sufficiently to take the recess l out of engagement with the nose o^2 on the hub o' , though when the finger k encounters the hub it stops the gravity-catch from turning so far as to withdraw the finger out of the path of the coin, so that the coin lodges in the chute D' till the operating-handle is worked. The effect of thus releasing the gravity-catch from the hub o' is to unlock the handle. The user then turns the handle (without thereby disturbing the gravity-catch) to register with the word "Call," whereby the insulated block p^6 on the hub-arm p^4 is withdrawn from bearing against the contact-spring n , which accordingly flies against the contact m and closes the call-circuit over the spring n , wire f' , contact e , hook B^2 , telephone at central, and wire f through the magneto B^5 to the contact m . Thereupon the user, without necessarily releasing the handle to permit it to return to its normal position, rings up central and takes down the receiver B^3 to listen to central, thereby connecting the wires f' and f^{11} through the hook B^2 and contact e' . If the connection called for by the user cannot be had, upon being so informed he turns the handle A' back to register with the word "Return," whereby the shoulder o^6 on the hub o' is turned past the finger k , thus presenting an offset to the finger to permit the weight of the coin to turn it out of its way, whereupon the coin drops through the chute and out at the opening r' .

It will be noticed by inspection of Figs. 4 and 11 that when the coin is in the position of its initial lodgment against the finger k its upper-edge portion is below the plane of the upper edge of the opening i in the chute-

plate, and the coin is there seated on the inclined margins of the slot i' in the chute-plate leading to the opening i , whereby, owing to the inclination of the coin in the upward and backward direction on its seat, it projects at its upper-edge portion beneath the plane of the upper edge of the opening i , so that when the coin is moved upward in the chute D' it will be guided through the opening i into the space beneath the chute-plate D and base-plate A^2 against the adjacent end of the curved finger h^4 . The movement of the coin necessarily ensues as a consequence of turning of the handle A' to point to "Call," since thereby the curved portion p^5 of the radial arm p^4 is turned upward in the upwardly and backwardly inclined slot i' of the chute-plate, and, owing to the inclination of the base of the chute, the arm p^5 , as it advances in the slot, projects through it and when it reaches the lower-edge portion of the coin it engages the latter and shoves it through the opening i into the space between the chute-plate and base-plate till it encounters the adjacent end of the finger h^4 , at which engagement the handle will point to "Call." This condition of the parts is illustrated in Figs. 5, 6, and 12. Whenever, therefore, the handle is turned to register at the "Call" point, if a coin be lodged in the chute D' , as described, it will be thus shoved by the action of the curved arm p^5 through the opening i against the end of the finger h^4 and may be retained there by the user holding the handle at "Call" till he is advised through the telephone from central whether or not he can have the desired connection, and if he cannot, by turning the handle back to register with "Return" the gravity of the coin will turn the finger h out of its path and permit the coin to drop entirely through the chute and out at r' . If, however, when the user has inserted his coin and been informed, upon turning the handle in the manner described to permit closure of the call-circuit that the connection he desires may be had, he thereupon turns the handle A' farther, to "Deposit," thus into the position in which it is represented in Fig. 7, whereby the curved portion p^5 of the finger p^4 forces the coin K against the end of the curved finger h^4 and turns the latter upon its pivot v^4 till it bears at the outer side of the socket h^3 against the arm h , which is thereby turned to introduce the contact h^2 it carries between the short spring-fingers g^5 of the contact devices g and g' . Thereby the signal G is actuated, since the circuit is closed on the wire d from the battery X through the contacts g , h^2 , and g' and through the device G back to the battery. The sound of the signal is audible over the telephone-circuit and informs central or the custodian of the user's telephone that the coin has been introduced and that accordingly the user has paid for the desired connection, which is thereupon furnished him. Obviously it is not necessary that the signal G shall be electric, for it were

quite feasible to provide it as a gong or other sounder to be actuated by turning a lever device E in the manner described, that is, by the interposition of the coin, to sound it.

When the user has turned the handle to "Deposit" and thereby actuated the device E in the manner described, the projection h^5 on the finger h^4 will have been turned past the adjacent end of the catch F by turning the latter on its pivot, and when the projection has thus passed the catch it returns at its end by gravity into the path of the projection and prevents the coin from producing more than one signal, and also prevents immediate separation of the arm h from the contacts g g' when the handle A' is released by the user to return to its normal position, so that during part of the time the handle is thus returning the sounding of signal G may be prolonged. In the return of the handle, however, the coin follows the curved extension p^5 of the arm p^4 and enters the rear chute D^2 to rest therein against its base-rib v' across the path of the slot i' , as shown in Fig. 9, and when in the turning of the handle the nose o^2 on the hub o' encounters the adjacent end of the catch F it trips the latter, thereby releasing the finger h^4 and permitting its spring to return the device E to its normal position.

The coin remains lodged in the chute D^2 until the handle is again operated to obtain another use of the telephone in the manner described, whereby the curved extension p^5 of the arm p^4 encounters the coin and shoves it upward in the chute D^2 from the position in which it is shown in Figs. 9 and 10, through the opening p in the base-plate A^2 , over the inclined edge p^3 , at the base of which opening the coin turns and is guided to drop into the drawer H , shown provided to receive it.

From the foregoing description it will be seen that the user may ring off when he is through telephoning by turning the handle A' to "Call," though if he should neglect thus to ring off the telephone will not thereby be prevented from being used by inserting another coin into the mechanism, and the first coin will then be dropped into the drawer by turning the handle A' to "Call" in the next use of the telephone.

The somewhat complicated nature of the construction shown to be involved in my improvement renders necessary the foregoing minute description of each part and its mode of operation. I do not, however, wish to be understood as limiting my invention to these precise details, as they may be variously modified and some even omitted without thereby departing from my invention, the primary advantage of which, besides its reliability and positiveness in operation, is the compact form in which I am enabled to provide the coin-controlled mechanism owing to the arrangement of chutes, whereby great elongation thereof is avoided.

Instead of the signal device being provided on the telephone or in the box A it may, as

in a drug-store or other public telephone station, be located on the cashier's desk or elsewhere in his vicinity to enable him to receive the signal when a user of a telephone has inserted his coin and arranged with central to make the desired connection.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a coin-controlled mechanism for telephones, the combination of a coin-chute, a call-circuit switch, an operating-handle normally engaging said switch to maintain the user's call-circuit open, and a gravity-catch normally locking said handle and extending into said chute to arrest a coin therein for unlocking said handle, substantially as described.

2. In a coin-controlled mechanism for telephones, the combination of a coin-chute, a call-circuit switch comprising a spring-contact n extending between the contacts m and m' , an operating-handle having an insulated extension p^6 normally holding said spring against the contact m' , and a gravity-catch C normally locking said handle and having an arm k extending into said chute to arrest a coin therein to turn the gravity-catch and unlock the handle, substantially as described.

3. In a coin-controlled mechanism for telephones, the combination of a coin-chute, a call-circuit switch, an operating-handle normally engaging said switch to maintain the user's call-circuit open, a gravity-catch normally locking said handle and extending into said chute to arrest a coin therein for unlocking said handle, a signal lever device extending into the path of the coin, and means connected with the handle for engaging the coin with said lever device, substantially as described.

4. In a coin-controlled mechanism for telephones, the combination of a base-plate carrying a call-circuit switch, an operating-handle normally engaging said switch to maintain the user's call-circuit open, a signal lever device, a chute-plate on said base-plate, having a coin-chute containing an opening between its ends toward which said chute inclines in contrary directions, the lower portion of said chute leading into said opening to said base-plate, a gravity-catch normally locking said handle and extending into said chute-opening to arrest a coin in the chute for unlocking said handle, and means connected with the handle for engaging the coin with said lever device through said chute-opening, substantially as described.

5. In a coin-controlled mechanism for telephones, the combination of a base-plate A^2 having an opening p and carrying a call-circuit switch, an operating-handle normally engaging said switch to maintain the user's call-circuit open, a signal lever device, a chute-plate D on said base-plate, having a front coin-chute D' containing an opening i toward which said chute inclines in contrary directions, the lower portion of said chute leading into said opening to said base-plate, a rear coin-chute D^2 on said chute-plate leading to

said opening p , a gravity-catch C normally locking said handle and extending into said chute-opening to arrest a coin in the chute D' for unlocking said handle, and means connected with the handle for engaging the coin with said lever device through said chute-opening, substantially as described.

6. In a coin-controlled mechanism for telephones, the combination of a base-plate A^2 having a shoulder q containing an opening p below which extends the slotted lug p' , said base-plate carrying a call-circuit switch, an operating-handle A' on a rotary spring-controlled stem o carrying a hub o' provided with a nose o^2 , a shoulder o^6 and an arm p^4 carrying an insulated piece p^6 normally holding said switch open and a curved extension p^5 to enter the slot in said lug, a signal lever device, a gravity-catch C containing a notch l at which to engage said nose to lock the handle against turning and provided with an arm k , a chute-plate D on said base-plate, having a front chute D' containing a slot i' to admit said extension p^5 and an opening i toward which said chute inclines in contrary directions and into which said arm k enters, the lower portion of said chute leading into the opening i to said base-plate and a rear coin-chute D^2 on said chute-plate leading to said opening p , substantially as and for the purpose set forth.

7. In a coin-controlled mechanism for telephones, the combination of a base-plate carrying a call-circuit switch and a signal-switch, an operating-handle normally engaging said call-circuit switch to maintain the circuit open, a signal lever device E comprising the pivotal contact-carrying arm h having a spring-controlled finger h^4 extending from it, a signaling device G controlled by said signal-switch, a chute-plate on said base-plate having a coin-chute containing an opening between its ends toward which said chute inclines in contrary directions, the lower portion of said chute leading into said opening to said base-plate, a gravity-catch normally locking said handle and extending into said chute-opening to arrest a coin in the chute for unlocking said handle, and means connected with the handle for engaging the coin with the finger h^4 through said chute-opening, substantially as described.

8. In a coin-controlled mechanism for telephones, the combination of a base-plate carrying a call-circuit switch and a signal-switch, an operating-handle normally engaging said call-circuit switch to maintain the circuit open, a signal lever device E comprising the pivotal contact-carrying arm h having a socket h^3 and a spring-controlled finger h^4 extending from the arm through said socket, a signal device G controlled by said signal-switch, a catch F pivotally supported to engage at one end the finger h^4 and to be engaged at its opposite end by the mechanism of the operating-handle, a chute-plate on said base-plate having a coin-chute containing an

opening between its ends toward which said chute inclines in contrary directions, the lower portion of said chute leading into said opening to said base-plate, a gravity-catch
5 normally locking said handle and extending into said chute-opening to arrest a coin in the chute for unlocking said handle, and means

connected with the handle for engaging the coin with the finger h^4 through said chute-opening, substantially as described.

RICHARD D. GALLAGHER, JR.

In presence of—

J. H. LEE,

RICHARD SPENCER.