

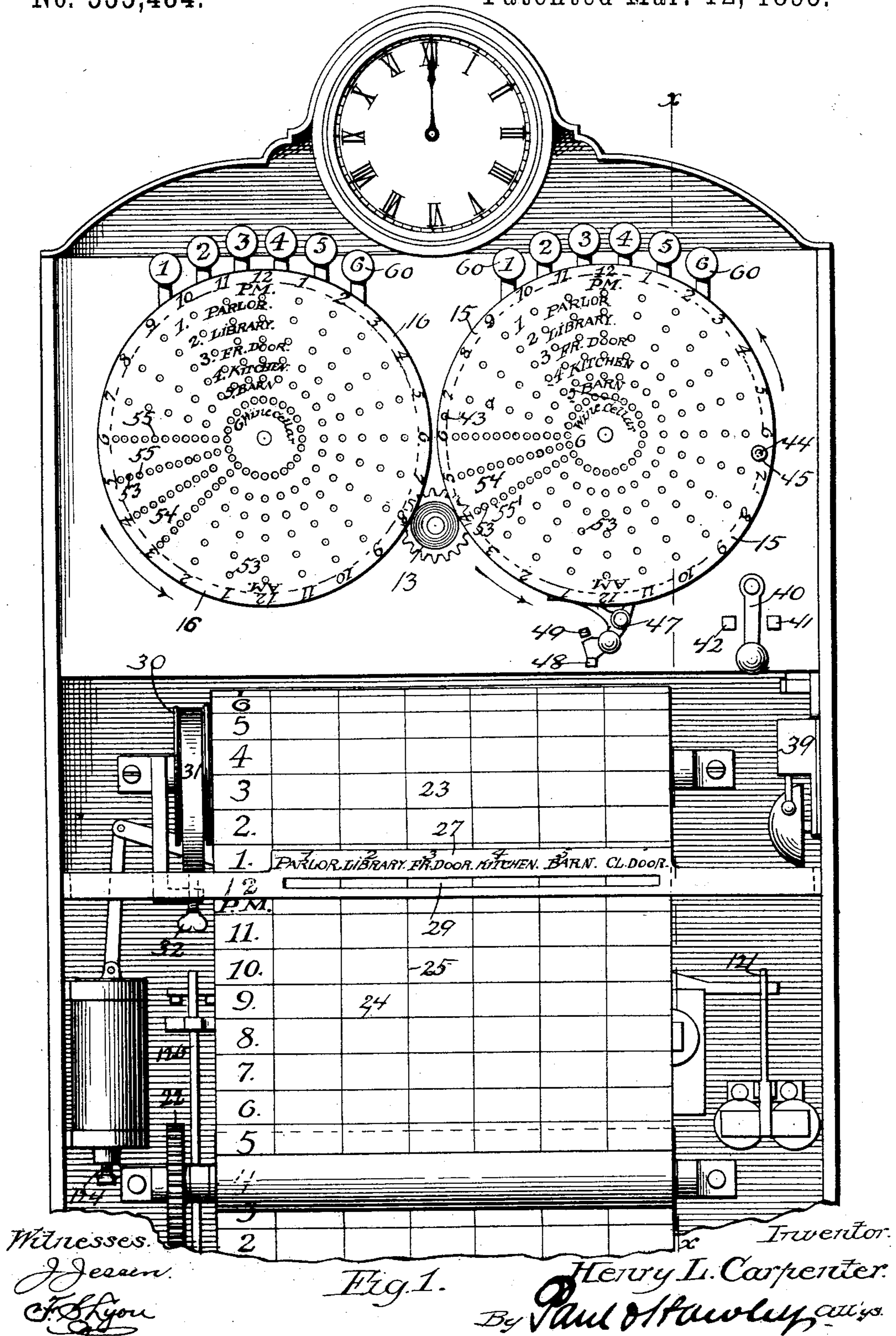
(No Model.)

7 Sheets—Sheet 1.

H. L. CARPENTER.  
ELECTRIC BURGLAR ALARM AND HOUSE CALL.

No. 535,484.

Patented Mar. 12, 1895.



(No Model.)

7 Sheets—Sheet 2.

H. L. CARPENTER.  
ELECTRIC BURGLAR ALARM AND HOUSE CALL.

No. 535,484.

Patented Mar. 12, 1895.

Fig. 2.

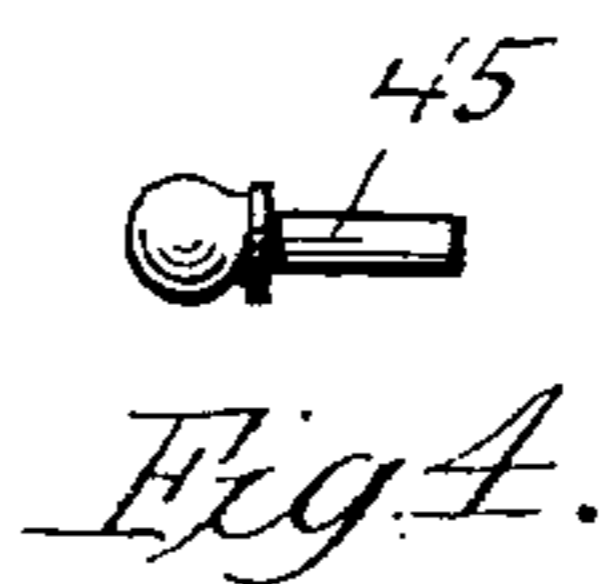
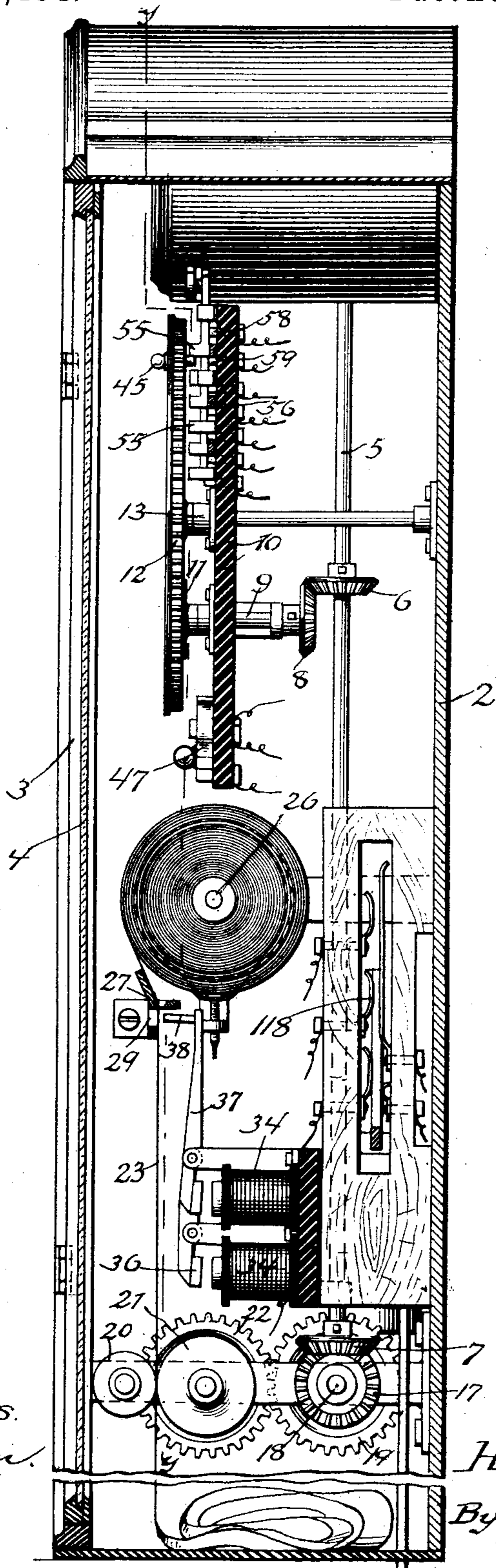


Fig. 4.

Witnesses.  
J. Jensen.  
C. E. Lyon

Inventor:  
Henry L. Carpenter.  
By Paul Hawley  
his Attorneys.

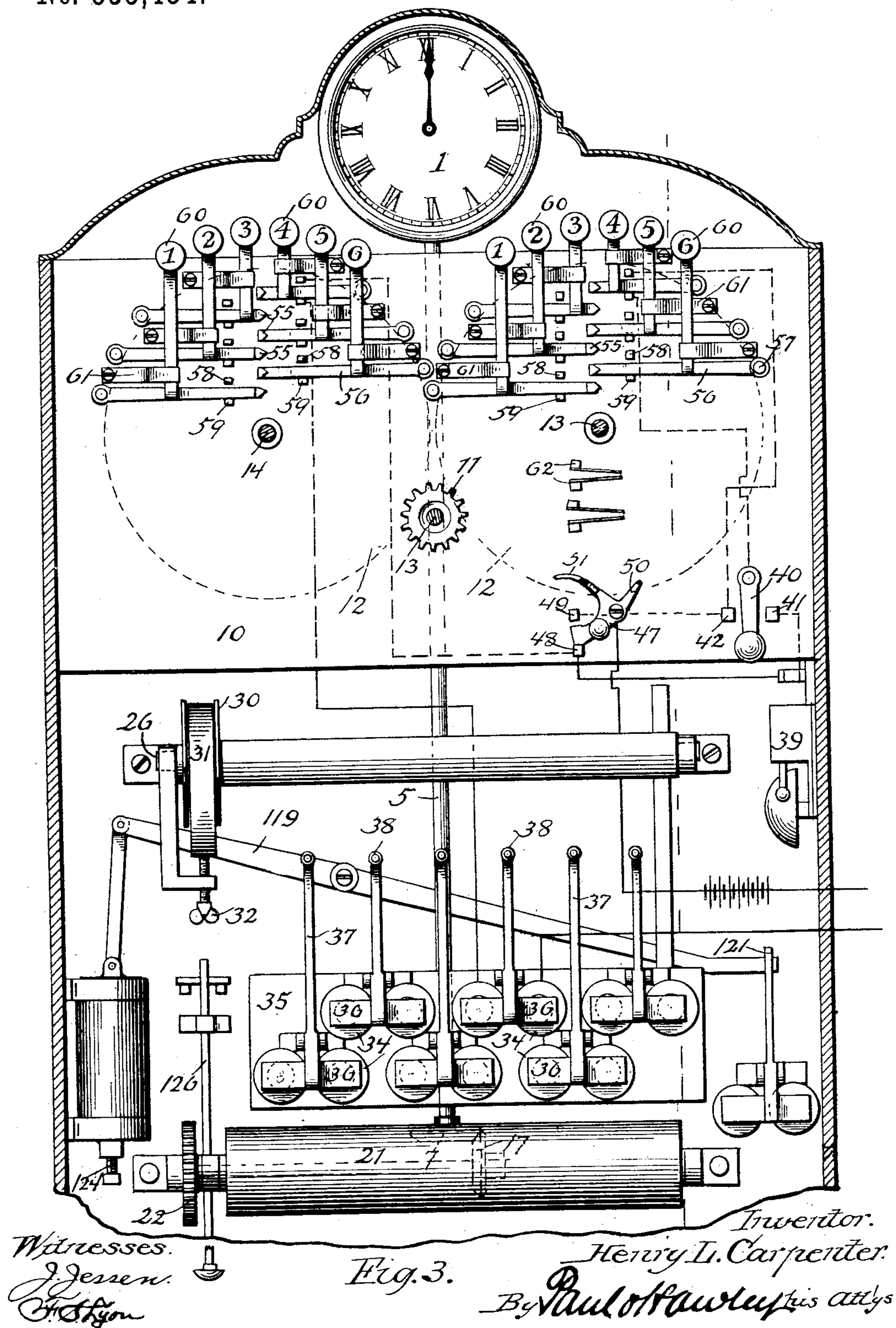
(No Model.)

7 Sheets—Sheet 3.

H. L. CARPENTER.  
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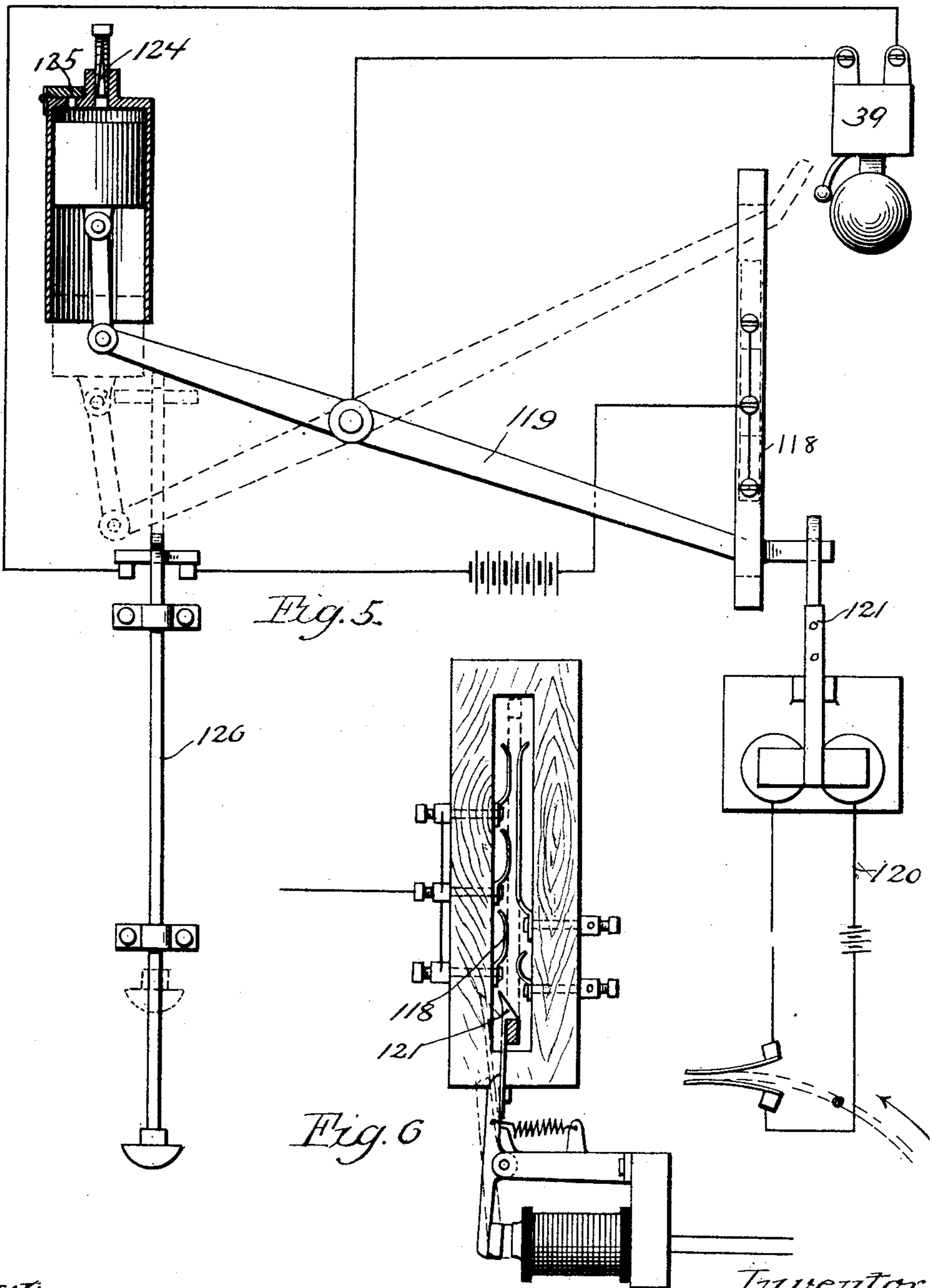
(No Model.)

7 Sheets—Sheet 4.

H. L. CARPENTER.  
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Witnesses.  
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B. O. H. H. H.

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(No Model.)

7 Sheets—Sheet 5.

H. L. CARPENTER.  
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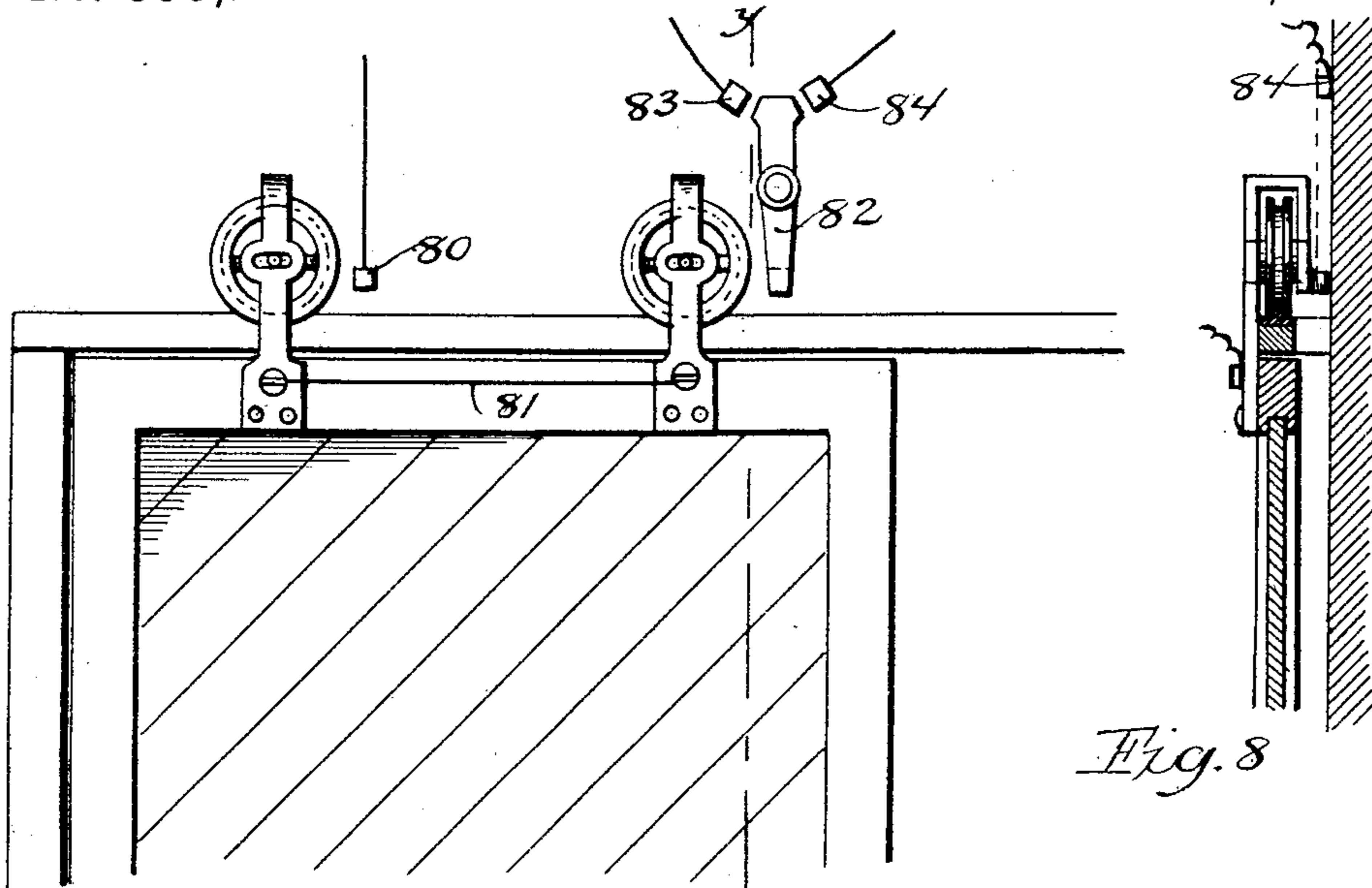


Fig. 7.

Fig. 8

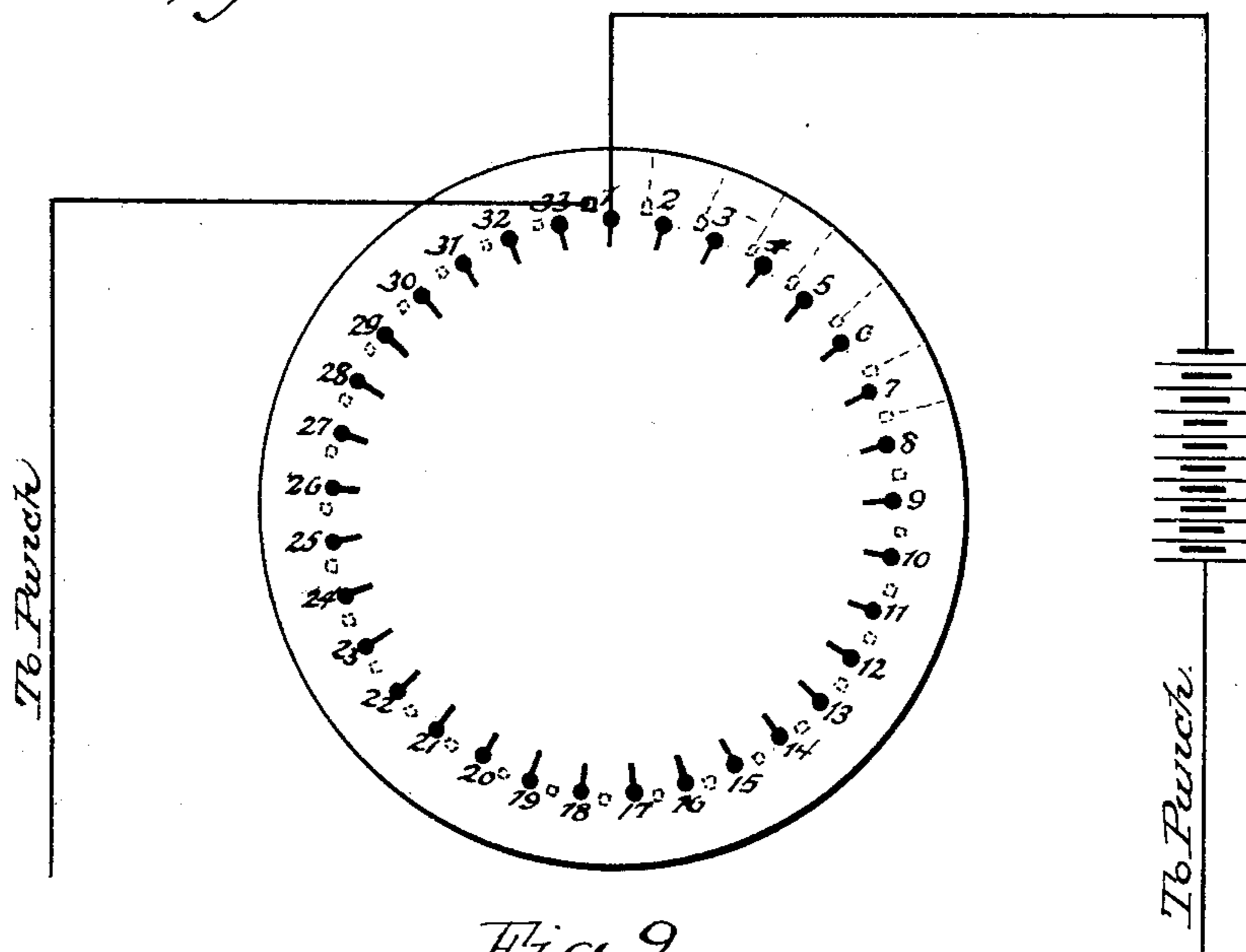


Fig. 9

Witnesses  
J. Jensen.  
[Signature]

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Henry L. Carpenter.  
By Paul Hawley his Attys

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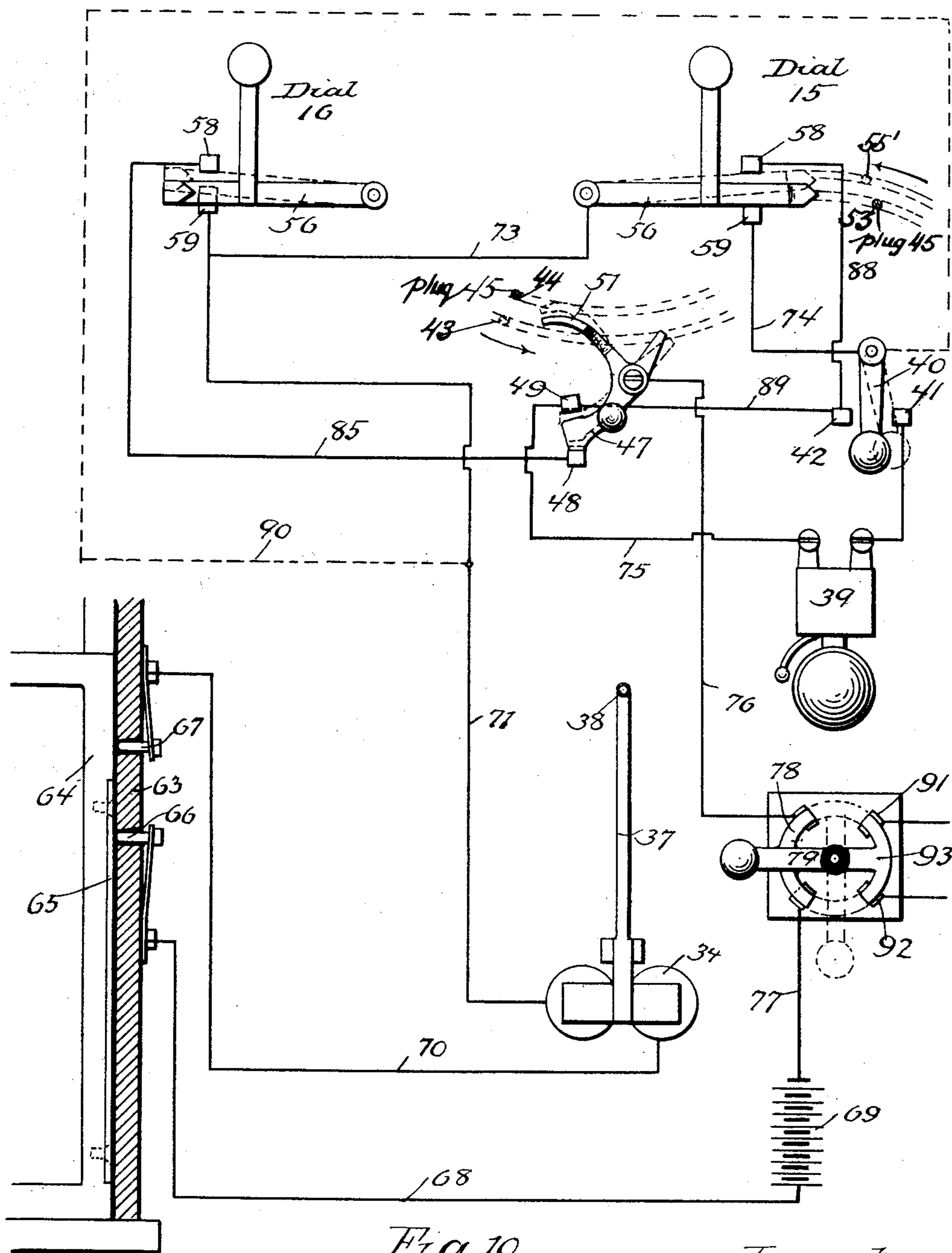


Fig. 10

Witnesses.

J. Jensen.  
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(No Model.)

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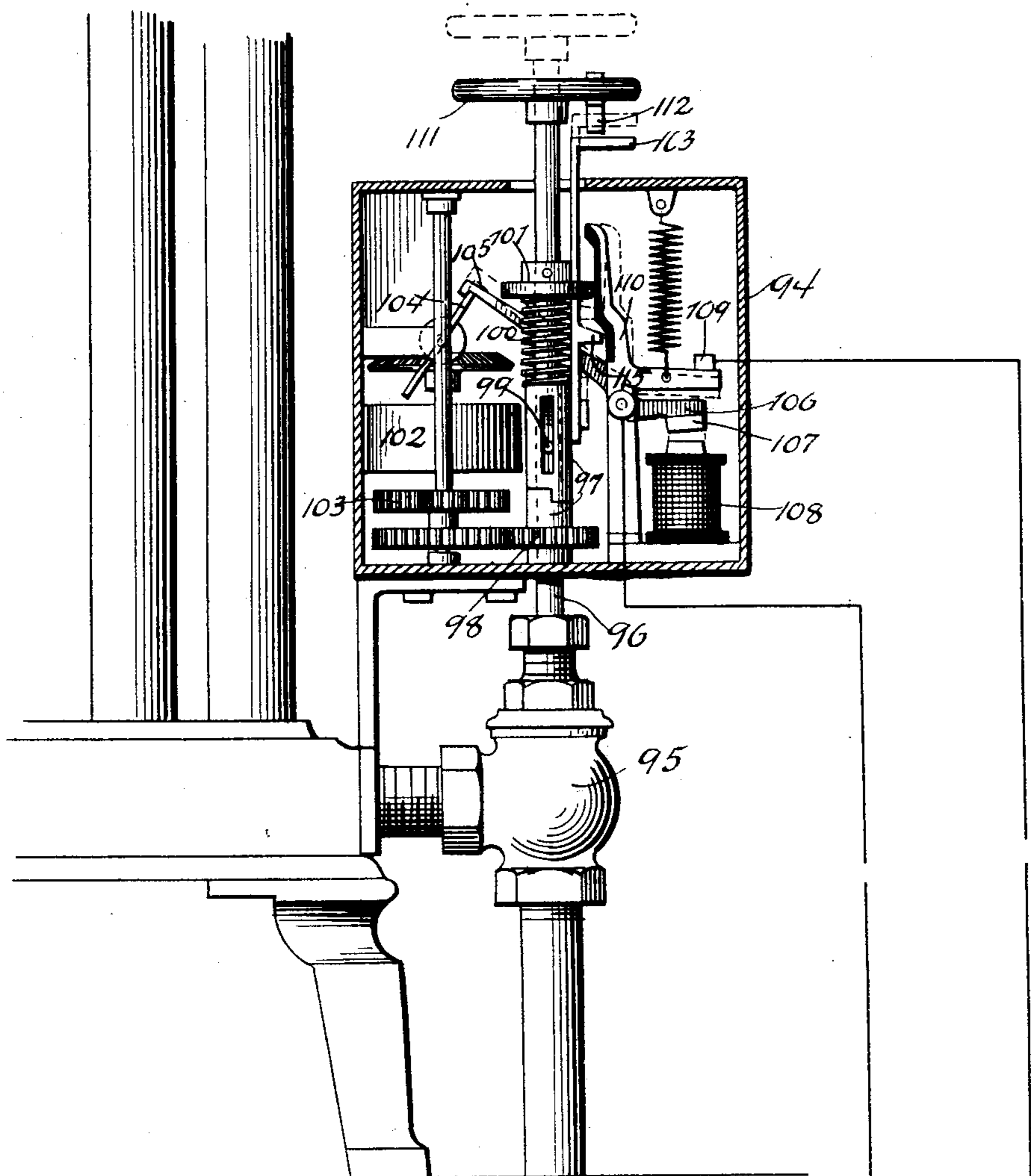


Fig. 11.

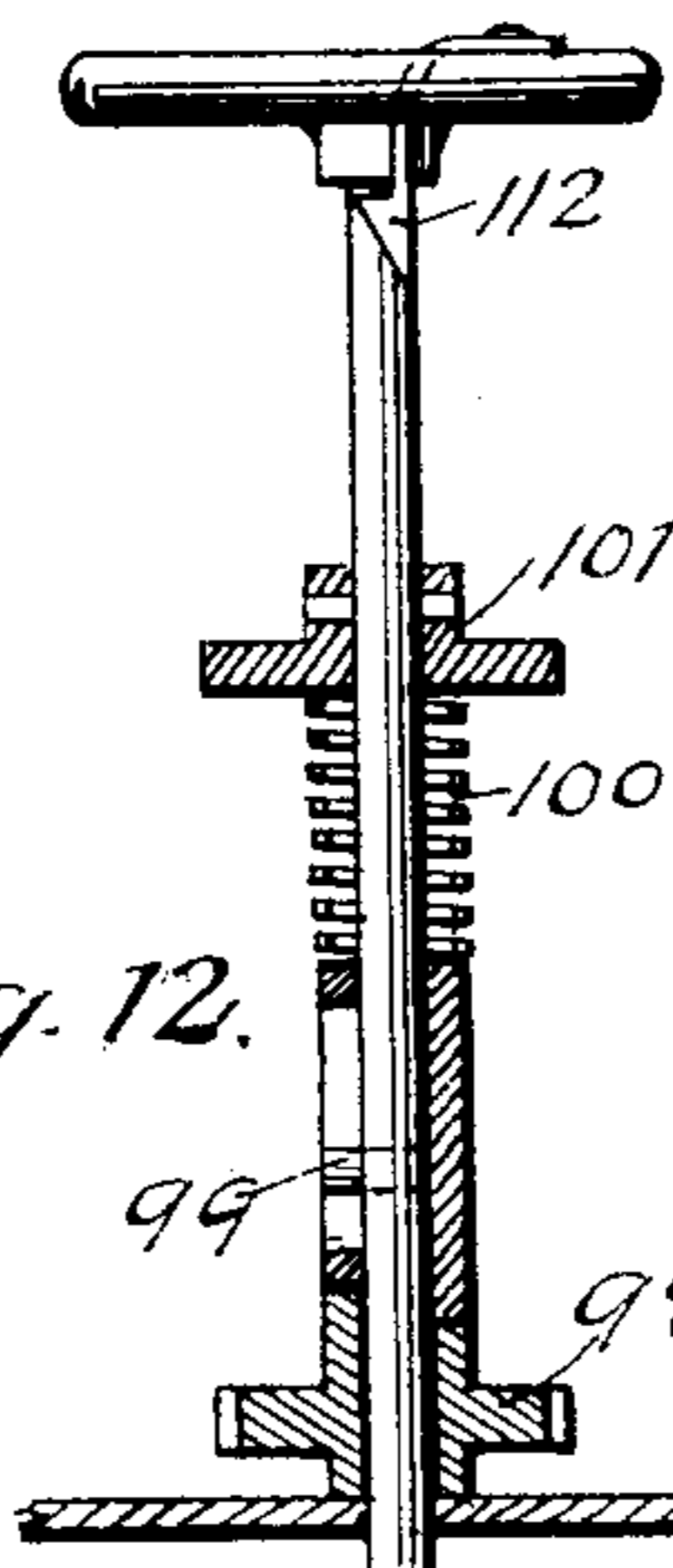


Fig. 12.

Witnesses.  
J. Jensen.  
F. H. Lyon.

Inventor.  
Henry L. Carpenter.  
By Paul O. Hawley,  
his Attorneys.

# UNITED STATES PATENT OFFICE.

HENRY L. CARPENTER, OF MINNEAPOLIS, MINNESOTA.

## ELECTRIC BURGLAR-ALARM AND HOUSE-CALL.

SPECIFICATION forming part of Letters Patent No. 535,484, dated March 12, 1895.

Application filed April 16, 1894. Serial No. 507,622. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY L. CARPENTER, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Electric Burglar-Alarms and House-Calls, of which the following is a specification.

My invention relates to electrical means for sounding an alarm at a central point upon the opening or closing of given doors or windows, and further for recording the exact time thereof; and further my invention relates to means for indicating the time of the arrival or departure of persons residing in the house or of watchmen or employes; further to means for sounding breakfast or other calls, at desired times; to means for opening or releasing the valves of steam radiators and dampers of furnaces or otherwise operating various contrivances about a dwelling, store or factory.

The object of the invention is to provide an electrical alarm and call apparatus, which, though simple and of cheap construction, will admit of a great variety of uses or any single use out of a number for which the apparatus is installed; and further to provide apparatus which will be thoroughly accurate, reliable and durable.

My invention consists, in general, in the combination, with a suitable time-sheet or strip, of a clock for advancing the strip, electro-magnetically operated punches adapted to perforate the strip of paper, and an electric circuit for each electro-magnetic punch, a circuit closing device included in each circuit and representing the particular door or other object, the operation of which is to be recorded, and a suitable source of electricity; further, in the combination with the above, of an electro-magnetic bell or alarm arranged in said circuit; further in adjustable means for opening or closing or first opening and then closing parts of said circuit at certain times; further, in means for automatically cutting in or out the punches or the bell, or both; further in means for cutting in or out any particular circuit or the bell in connection therewith; further in automatic means for closing certain circuits at certain times; further in means for regulating the time during which the alarm will sound; and further

and finally in particular constructions and combinations, all as hereinafter described and particularly pointed out in the claims. 55

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a front elevation of an alarm apparatus or clock embodying my invention, the lower part of the box or casing being broken away. Fig. 2 is a vertical cross section on the line  $x-x$  of Fig. 1. Fig. 3 is a front elevation similar to Fig. 1 with the time strip or sheet and also the revolving dials removed. Fig. 4 is a detail of one of the pins or plugs to be inserted in the dial holes. Fig. 5 is a detail showing another form of the bell regulator. Fig. 6 is an end view of the contact slide and the stop for holding the contact arm or lever. Fig. 7 is a detail showing the circuit closer for sliding doors. Fig. 8 is a vertical section thereof on the line  $y-y$ . Fig. 9 is a detail showing another form of dial. Fig. 10 is a diagrammatic view showing one of the systems of circuits. Fig. 11 is an enlarged detail sectional view showing the valve opening mechanism. Fig. 12 is a sectional detail of the stem thereof. 80

As shown in the drawings, 2 represents a suitable casing provided with the door 3, preferably provided with the glass panel 4. In the upper part of this casing I preferably provide the clock 1 of any suitable make or construction and sufficiently powerful to operate the revoluble parts of the clock mechanism taken as a whole. The vertical shaft 5 is driven from the works of the clock 1 and is provided with the bevel gears 6 and 7. The bevel gear 6 meshes with a like gear 8 arranged upon a horizontal shaft 9 which has suitable bearings on the cross-plate or board 10. On the forward end of the short shaft 9 is a pinion 11 which meshes with the large gear-wheels 12 secured upon the stud-shafts 13 and 14 and which bear the two dials 15 and 16, which dials are therefore driven by the pinion 11. The other bevel gear-wheel 7 meshes with the gear 17 provided on the shaft 18 which has the spur-gear 19. 95 100

20 and 21 are suitable drawing rolls, the shafts of which have bearings in the casing and are driven by the gear-wheel 22 meshing

with the gear 19. The rolls may have rubber surfaces or may be corrugated as may be desired to firmly grip or hold the time-strip or sheet 23, which is a long strip of paper provided with the transverse and longitudinal rulings 24 and 25, respectively, which divide the strip into small spaces or rows of spaces numbered with the hours of the day and night as shown, and corresponding with the rooms, doors or windows of the house or building.

The paper, in roll form sufficient for a number of days, is carried upon the shaft 26, the paper passing down through the guide 27 extending across the face of the strip and in front provided with the slot 29 above which are the various numbers and names of the rooms, doors, windows, &c., the various vertical columns being thus designated. To insure proper tension upon the paper between the carrying roll and the drawing-rolls I provide the shaft of the carrying-roll with the pulley 30 and in connection therewith use a friction strap 31 rendered adjustable by means of the thumb-screw 32. The electro-magnetic punches each consist in an electro magnet 34 secured on the insulating strip showing the armature 36 of the magnet being secured upon a pivoted lever 37, which bears on its upper end the punch point 38. These punch points are arranged directly opposite the slot in the paper guide and one punch is provided opposite each of the hour columns of the paper. Within or upon the casing is a suitable electro magnetic bell 39.

40 represents a switch arm adapted to be thrown upon one or the other of the contact points 41 or 42 to connect the same with the bell circuit as desired. The dial 16 may be designated as the punch dial or recording dial and the dial 15 as the bell dial. The bell dial 15 is provided with two or more holes in corresponding relations to the holes 43 and 44, the latter being nearer to the center than the former. Small pins or plugs 45 may be inserted in these openings and being carried by the dial are adapted to operate the main or hand switch 47, closing the same upon one or the other of the points 48, 49. To this end the switch 47 is provided with the two arms 50 and 51, the former a short arm to be engaged by a pin in the outside hole 43, while the longer, forwardly extending and curved arm 51 will, when struck by a pin carried in hole 44, move to throw the switch into contact with contact point 48. Each disk is provided with several annular rows or series of holes 53, and the holes in the several circles are arranged in annular rows of which there are twenty-four, numbered from 1 to 12 for the hours of the day, and from 1 to 12 for the hours of the night. As shown in the radial rows 54, on the two dials, I may also provide extra holes 55. The dials revolve once in twenty-four hours, and by means of small plugs or pins 45 arranged in the holes 53 and 55, I am enabled to operate the switches at given or desired times, to throw in or cut out of circuit the bell

or punch included in any one or more than one of the circuits of my apparatus or system. The switches back of the two dials are of the same form and arrangement, there being one switch for each of the annular rows of holes upon a dial.

All of the switches of a dial are arranged so that they will be operated when the pins in the dial arrive at a point directly above the shaft of a dial, and in order to save space and get all the switches in on the upper side of the dial I preferably place one-half of the switches on one side, the other half extending toward the same on the other side, each switch being provided with a lug 55, having the sharp edge on the side from which the pins approach as the dial is revolved.

The switch arms 56 are pivoted upon suitable posts 57, and for each arm I provide two contact buttons or posts 58, 59, the switches normally resting upon the lower point. The switch points back of the punch dial are so arranged that when a switch arm is lifted, the arm will bridge the points or posts, while the switch points of the bell dial are arranged so that the switch arm being removed from one point to another, will break contact with the first and make contact with the second. For lifting these time switches, I provide the pull buttons 60, numbered to correspond with the numbers or names upon the dials and upon the time strip.

Small friction springs 61 are provided for holding the switch arms in positions wherein they are set. For particular or special time calls, I also provide the pairs of terminal springs 62, beneath one or both of the disks, the spring points being adapted to be bridged by the metal plugs placed in and which project through the dial.

Both the mechanical and the electrical operation of my apparatus will be clearly understood by reference to the diagrammatic view Fig. 10 and reference to the circuit connections shown in Fig. 3. In Fig. 10, 63 represents a window casing and 64 a window sash arranged therein. The window sash carries a metal strip 65, which, the sash being raised, will make contact between the spring points 66 and 67, one of which is preferably always in contact with the strip. Stationary instead of spring points may be employed. From the point of contact pin 66, the line 68 extends to a local battery 69, while from the other point, 67, a line 70 extends to a connection with the windings of the electro magnetic punch 34. On the opposite side thereof, a line 71 extends to the lower contact button of post 59 of the punch dial time switch, the switch arm of which is ordinarily in contact with the lower contact button. At such times the hand switch 47 would be in contact with the point 49, while the bell switch 40 would be in contact with the point 41. Hence as the line is open at 59, current would pass through the line 73 to the switch arm 56 beneath the bell dial, thence through the lower point 59 thereof to the line

74, passing into the switch arm 40. From the arm 40 current would pass to the contact point 41 and thence into the bell 39, through the same and by the line 75 to the point 49 and switch arm 47, and thence back to the battery through lines 76 and 77, passing through the metallic bridge of the switch 79. Thus it will be seen that immediately upon the raising of the window sash, the punch would be operated and the bell sounded, calling attention to the fact, and also perforating the paper strip to record thereon the location of the window and the time when it was opened.

It is obvious that the bridge strip 65 may be arranged upon any door, window, or other movable device which, when moved, would cause the strip 65 to make connection between contact points similar to 66 and 67. For instance, said points may be replaced by the circuit closer shown in Figs. 7 and 8 and adapted for use with a sliding door.

Three contacts are preferably employed in connection with barn doors where it is desired to record both the time of opening and closing of the door.

80 represents a contact point or spring to engage the hanger of the door, and represents one terminal of the circuit which includes the alarm clock. The two hangers are preferably connected by a wire 81, and the rear hanger is arranged to operate a swinging lever 82, and also make electrical contact therewith. When the door is opened, the hangers will move into engagement with point 80 and lever 82, and through the lever make contact with the point 83, while when the door is closed the lever 82 would be thrown in an opposite direction to make contact with the point 84. In place of these two points a single one may be used, the lever being adapted to swing the same at each operation so that the contact will be for an instant only.

Ordinarily it is not necessary that the alarm apparatus should be in full working condition through the day, while it is desirable that all circuits should be thrown on at an early hour in the evening. I therefore arrange a plug in the hole 43 between the hours of six and seven indicated on the dial 15, so that as the pin is revolved it will, at 6.30 p. m., strike the short arm of the hand lever and throw the switch into contact with the point 49, which is the working contact of the machine, while at a similar hour in the morning, the main switch will be returned to the point 48, by the engagement of a pin in the hole 44 with the curved arm 51 of the switch 47, thereby cutting out both the bell and the punches. If the apparatus is to be cut in or out at different hours, it is only necessary to provide pin holes 43 and 44 at other points on the dial 15. In place of these automatic means for operating the main switch, the switch may be operated by hand. When the switch arm 47 is on the point 48, the bell will be cut out of the circuit without regard to the position of the

bell switch. Suppose that while the switch 47 is in the position shown in Fig. 10, it is desired to keep a record of the opening or closing of any particular window or door, say the front door, the wine cellar door, or the barn door. In that case it would only be necessary to raise the punch dial switch bearing the number of the particular door in question, either No. 1, No. 5, or No. 6, as shown on the drawings. Thereupon circuit would be closed between the points 59 and 58 back of the dial 16, so that upon the opening of the door, current would pass from line 71 through said points, and over the line 85 to point 48, and thence through arm 47 and lines 76 and 77 to battery, thus causing the operation of the punch. Suppose at the time of setting the dial or switch time 1, 5, or 6, as above mentioned, it is desired to discontinue this safeguard at a certain hour, as, for instance, at three o'clock. Then a pin would be inserted in one of the holes of the row No. 3 on dial 16, and upon the arrival of the pin opposite the switch, the same would be thrown back out of contact with the point 58. If, on the other hand, it is necessary to observe this certain precaution after a certain hour, a pin would be inserted in one of the holes of that hour upon the dial so as to throw the lever into contact with the point 58 automatically at the time fixed upon. The automatic operation of the time switches belonging to the bell dial is exactly the same as that described in connection with the punch dial, it being possible by means of the bell dial switches to automatically cut the bell in or out of any particular circuit at a given time. At such times, however, it is necessary that the switch 47 should be in contact with 49, and the lever 40 in contact with 41. Then a circuit could be traced as before to line 73, arm 56, the lower point 58, behind dial 15, and thence through line 74 to the switch and bell, thence to switch 47 and back to battery. In case, however, the arm 56 has been raised away from the point 59, and into contact with point 58, the bell would be cut out and the current would pass from point 58 over line 88 and line 89 through the arm 47 and thence to battery, thus operating only the punch; but after a certain hour if it is desired to again throw in the bell as in connection with the front door and after twelve o'clock, a pin previously placed in the twelve o'clock hole on the bell dial would throw the arm 56 back on to the point 59 at that hour.

The automatic time switches may during the day or other hours be dispensed with by means of a shunt 90 extending directly between the line 71 and the bell, the switch 47 being then in engagement with point 49.

This house apparatus may be readily connected with the police station or other central station by the employment of a double bridge switch 79, as shown in Fig. 10, wherein 91 and 92 represent the terminals of a circuit extending to the police station. The switch 79 is provided with a second bridge 93, and when

the switch is swung into dotted line position, the line 76 will be connected with one side of the police or call circuit, and the line 77 to the other side thereof.

5 Various bells and other devices may be operated by the closing of circuit through the dial pin and the terminals 62, all at stated times. For instance, by means of a circuit  
10 thus to be closed or to be closed by one of the automatic time switches, I am enabled to provide a guest or servant call to ring at a set time; or the circuit may be employed in connection with means for automatically unlocking doors or safes, or for opening furnace  
15 dampers or the valves of radiators.

In Figs. 11 and 12 I have illustrated means for opening radiator valves, it being alone necessary to release a strong spring by the electrical means above described. I preferably  
20 ably provide a box or casing 94 above the valve 95. This valve stem 96 extends into the bottom of the casing and is provided with the clutch 97 and also with gear-wheel 98, the hub of which is journaled on the stem and is adapted to be engaged with clutch 97, which  
25 is slidably connected with the stem by the pin 99 operating in a slot in the clutch. This clutch is normally pressed down to the spring 100 which bears against the same and the  
30 fixed collar 101 on the stem. 102 represents a strong clock spring connected by the train 103 to the pinion 98 connected to the stem by means of the clutch 97. A revoluble vane or regulator 104, which forms a part of the clock-  
35 work is adapted to be engaged by the hook finger 105, extending from the pivoted armature lever 106. This lever carries the armature lever 107 adapted to be attracted by the magnet 108, and when drawn down to with-  
40 draw the finger 105 from the vane 104, thus liberate the clock spring and so cause the closing or opening of the valve. The circuit through the magnet 108 is made through the contact post 109, and the bell-crank 110. As  
45 the stem rises the collar 101 moves along the upper arm of the bell-crank 110 and finally engages the upper end thereof, thus separating the bell-crank and the post 109 and breaking circuit, whereupon the finger 105 will fall and  
50 engage the revolving part 104, thus stopping the clockwork. After the valve has been thus opened it may be closed by hand. The hand wheel 111 is loose upon the upper end of the stem, so that injury cannot be done to  
55 the clock mechanism by turning the wheel. To temporarily secure the wheel 111 to the stem, a catch 112 is employed on the wheel to engage the finger 113 projecting up through the casing and at its lower end secured to the  
60 clutch 97 so that when the finger is raised it lifts the clutch out of engagement with the clock mechanism, after which the valve may be very easily seated. At the same time contact is broken between the bell-crank and the  
65 post 109 by the engagement of a lug 115 on the finger with an incline shoulder on the bell crank.

In connection with all bells in my apparatus, and with other translating devices, I preferably employ means whereby the operation  
70 thereof may be limited to a time much shorter than the time of contact between the slow-moving dial pins and the fixed contact points. For this purpose I interpose in the bell circuit shown in simple form in Fig. 5, one or  
75 more short contact points or springs 118, making the same one terminal and the lever 119 the other terminal. As the lever is released by the closing of a local circuit 120 through the dial, and the consequent withdrawal of  
80 the armature hook 121, the lever sweeps by the contact point of spring, during which time the bell will ring. If there are several contact points or springs 118, the bell will be rung several times; or distinct bells may be  
85 connected with the several points so that each will be rung for a short time during the travel of the lever 119. The speed of the lever is regulated by a dash pot, which may be connected with the lever by either of the forms  
90 shown in Figs. 3 and 5. In the former, the piston within the short cylinder is a considerable weight and sinks slowly against the body of air in the lower end of the cylinder, the air escaping gradually through the ad-  
95 justable valve 124. In the other form the piston falls, the fall being regulated by the rapidity with which air is admitted to the closed upper end of the cylinder through a like adjustable valve 124. An outlet valve  
100 125 admits of the lever and piston being raised quickly by means of the vertical push rod or stem 126, means being provided in connection therewith for breaking the bell circuit to avoid ringing the bell or bells when  
105 the lever is returned along the contact 118.

For factory and watchman's clocks I preferably use a dial or dials like that shown in Fig. 9, the same having key-holes into which  
110 a key may be inserted and turned to close contact upon stationary posts provided behind the dial and in circuit with the bell or respective punches.

Having thus particularly described and ascertained the nature of my said invention, I  
115 claim as new and desire to secure by Letters Patent—

1. The combination, with suitable circuit-closers, and devices, such as doors, windows, or the like, whereby the same are adapted to  
120 operate the circuits extending from said circuit-closers, electro-magnetic recording devices included in said circuits, respectively, a bell or alarm included therein, a moving time-sheet or strip to be operated upon by said re-  
125 cording devices, and automatic means for opening or closing the alarm and recording-device circuits at desired times, substantially as described and for the purpose set forth.

2. The combination, with suitable circuit-  
130 closers, and devices, such as doors, windows, or the like, whereby the same are adapted to operate the circuits extending from said circuit-closers, electro-magnetic recording de-

vices included in said circuits, respectively, an alarm included therein, a moving time-sheet or strip to be operated upon by said recording devices, automatic means for opening or closing the circuit of any given recording device at a desired time, and a source of electricity, substantially as described.

3. The combination, with suitable circuit-closers, and devices, such as doors, windows, or the like, whereby the same are adapted to operate the circuits extending from said circuit-closers, electro-magnetic recording devices included in said circuits, respectively, an alarm included therein, a moving time-sheet or strip to be operated upon by said recording devices, automatic means for opening or closing any given circuit through the alarm at a desired time or times, and a source of electricity, substantially as described.

4. The combination, with the clock mechanism, of a dial revolved thereby and provided with a series of pin-holes, pins or plugs adapted to be inserted therein and projecting through the dial, a series of circuits, a series of switches therefor, said switches being arranged in proximity to said dial and adapted to be operated by the pins or plugs inserted therein, a source of electricity, electro-magnetic recording devices provided in said circuits, and a time-sheet upon which said recording devices are adapted to operate, said time-sheet or strip being moved to correspond with said dial, substantially as described and for the purpose set forth.

5. The combination, with the clock mechanism, of a dial revolved thereby and provided with a series of pin-holes, pins or plugs adapted to be inserted therein and projecting through the dial, a series of circuits, a series of switches therefor, said switches being arranged in proximity to said dial and adapted to be operated by the pins or plugs inserted therein, a source of electricity, translating devices included in said circuits, electro-magnetic recording devices provided in said circuits, and a time-sheet upon which said recording devices are adapted to operate, said time-sheet or strip being moved to correspond with said dial, substantially as described and for the purpose set forth.

6. The combination, with circuit-closers, of respective devices whereby they are to be operated, such as doors, windows or the like, circuits including said circuit-closers and a source of electricity, electro-magnetic punches included therein, a moving time-sheet or strip adapted to be perforated by said punches, a punch-dial provided with a series of holes corresponding to the several punches, a clock mechanism for moving said dial, pins or plugs to be inserted in the holes in said dial, and switches arranged in proximity thereto and adapted to be operated by said pins or plugs, said switches being included in said circuits, substantially as described and for the purpose set forth.

7. The combination, with circuit-closers, of respective devices whereby they are to be operated, such as doors, windows, or the like, circuits including said circuit-closers and a source of electricity, electro-magnetic punches included therein, a moving time-sheet or strip adapted to be perforated by said punches, a punch-dial provided with a series of holes corresponding to the several punches, a clock mechanism for moving said dial, pins or plugs to be inserted in the holes in said dial, switches arranged in proximity thereto and adapted to be operated by said pins or plugs, said switches being included in said circuits, and automatic means for opening or closing all of the punch-circuits at a desired time, substantially as described.

8. The combination, with a valve and a valve stem, of a clutch provided upon said valve stem, a clock mechanism operatively connected with one part of said clutch, a revoluble part of said clock mechanism, an electro-magnet, the armature thereof, the pivoted lever whereon the arm is mounted the finger upon said lever adapted to engage the revoluble part of said clock mechanism, an electro circuit including said electro magnet, and automatic means for closing said circuit at a given time, whereby said clock mechanism is liberated and the valve opened, substantially as described.

9. The combination, with a valve and a valve stem, of a clutch provided upon said valve stem, a clock mechanism operatively connected with one part of said clutch, a revoluble part of said clock mechanism, an electro magnet, the armature thereof, the pivoted lever whereon the arm is mounted, the finger upon said lever adapted to engage the revoluble part of said clock mechanism, an electro circuit including said electro magnet, automatic means for closing said circuit at a given time, whereby said clock mechanism is liberated and the valve opened, one part of said clutch being slidable upon the stem, a pivoted contact arm included in said circuit, and a part revoluble with said stem to rise therewith and engage said arm and thereby break the circuit when the valve has been opened, substantially as described.

10. The combination, with a valve and a valve stem, of a clutch provided upon said valve stem, a clock mechanism operatively connected with one part of said clutch, a revoluble part of said clock mechanism, an electro magnet, the armature thereof, the pivoted lever whereon the arm is mounted, the finger upon said lever adapted to engage the revoluble part of said clock mechanism, an electro circuit including said electro magnet, automatic means for closing said circuit at a given time whereby said clock mechanism is liberated and the valve opened, one part of said clutch being slidable upon the stem, a pivoted contact arm included in said circuit, a part revoluble with said stem to rise therewith and

engage said arm and thereby break the circuit when the valve has been opened, the hand wheel loosely mounted on said stem and the finger rod extending from the movable part of  
5 said clutch and adapted to be moved into engagement with said hand-wheel whereby the hand wheel is locked upon the stem, and means for operating the contact arm at such

times to break the circuit, substantially and for the purpose specified. 10

In testimony whereof I have hereunto set my hand this 4th day of April, A. D. 1894.

HENRY L. CARPENTER.

In presence of—

F. S. LYON,

C. G. HAWLEY.