

930,357.

J. & A. DEY.
TIME RECORDING MECHANISM.
APPLICATION FILED JULY 10, 1905.

Patented Aug. 10, 1909.
4 SHEETS—SHEET 1.

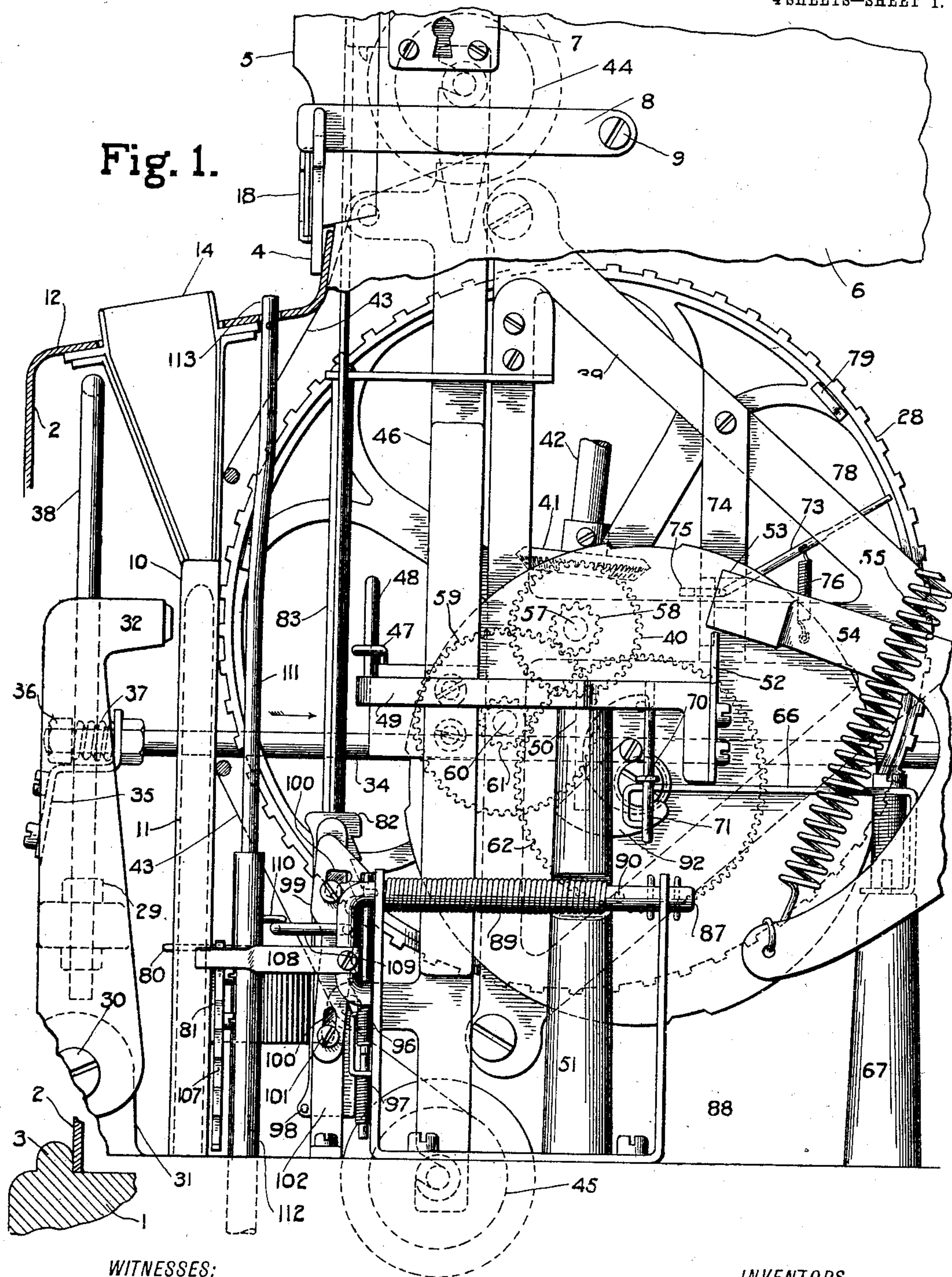


Fig. 1.

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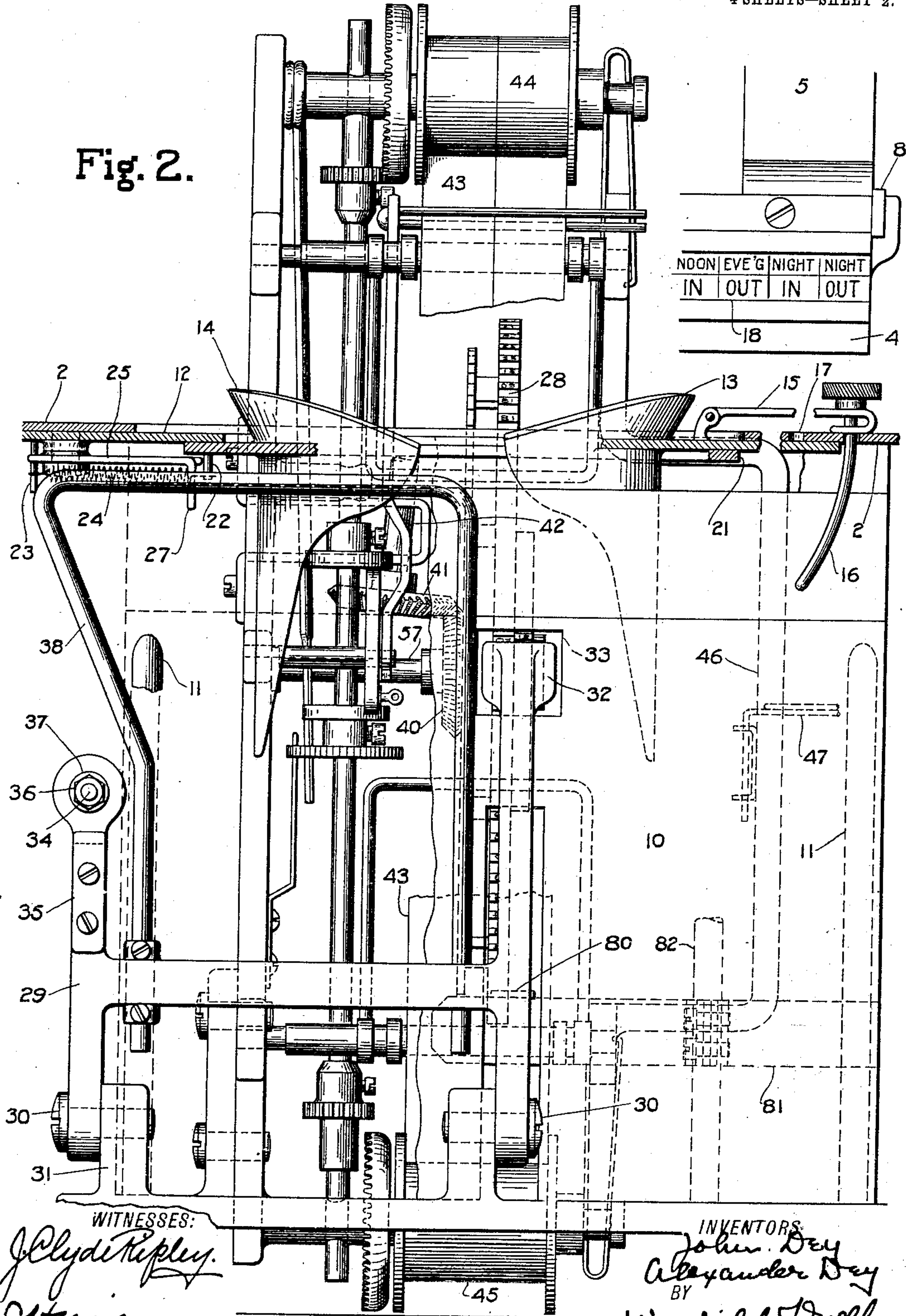
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4 SHEETS—SHEET 2.

Fig. 2.



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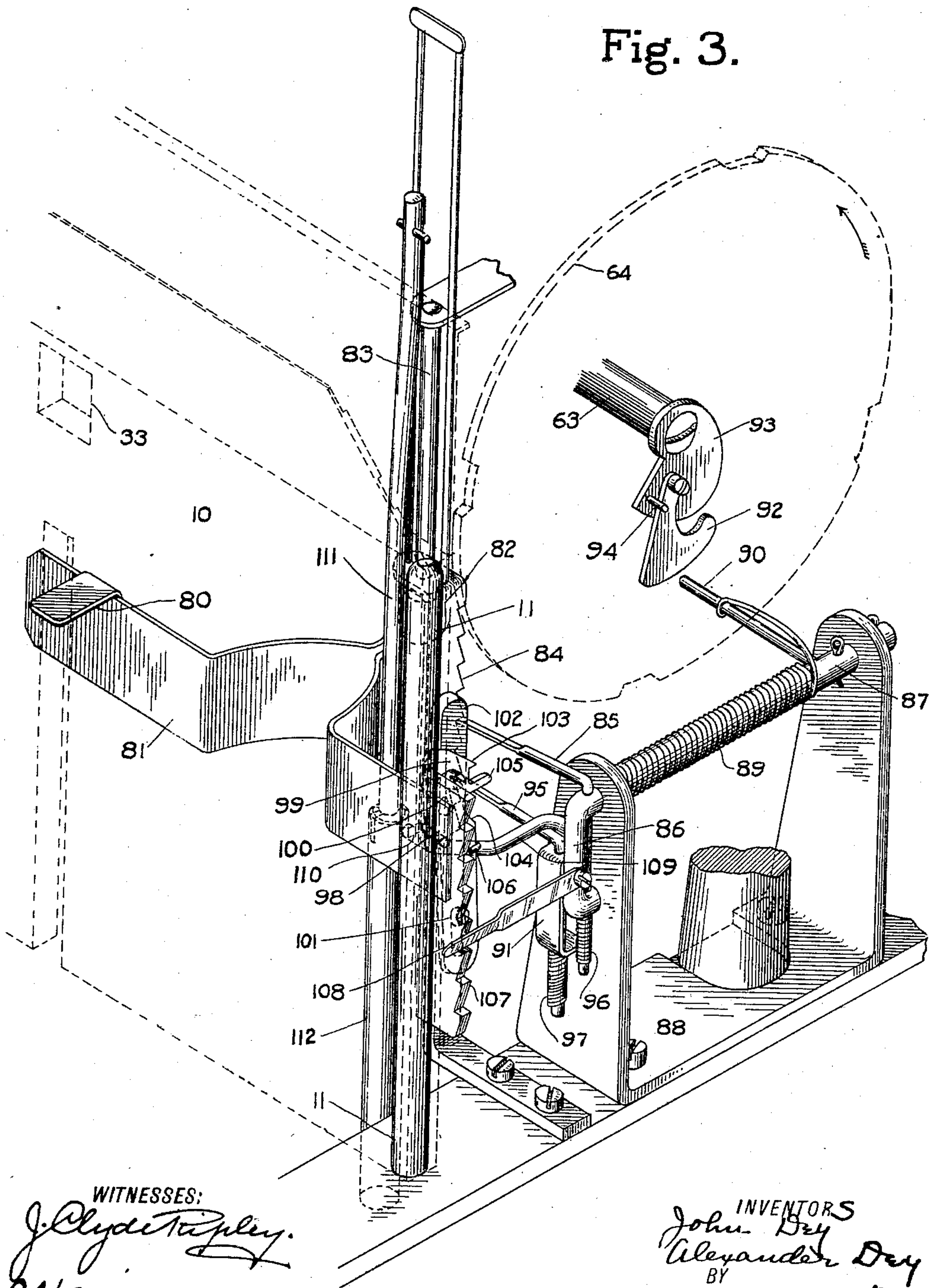
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4 SHEETS—SHEET 3.

Fig. 3.



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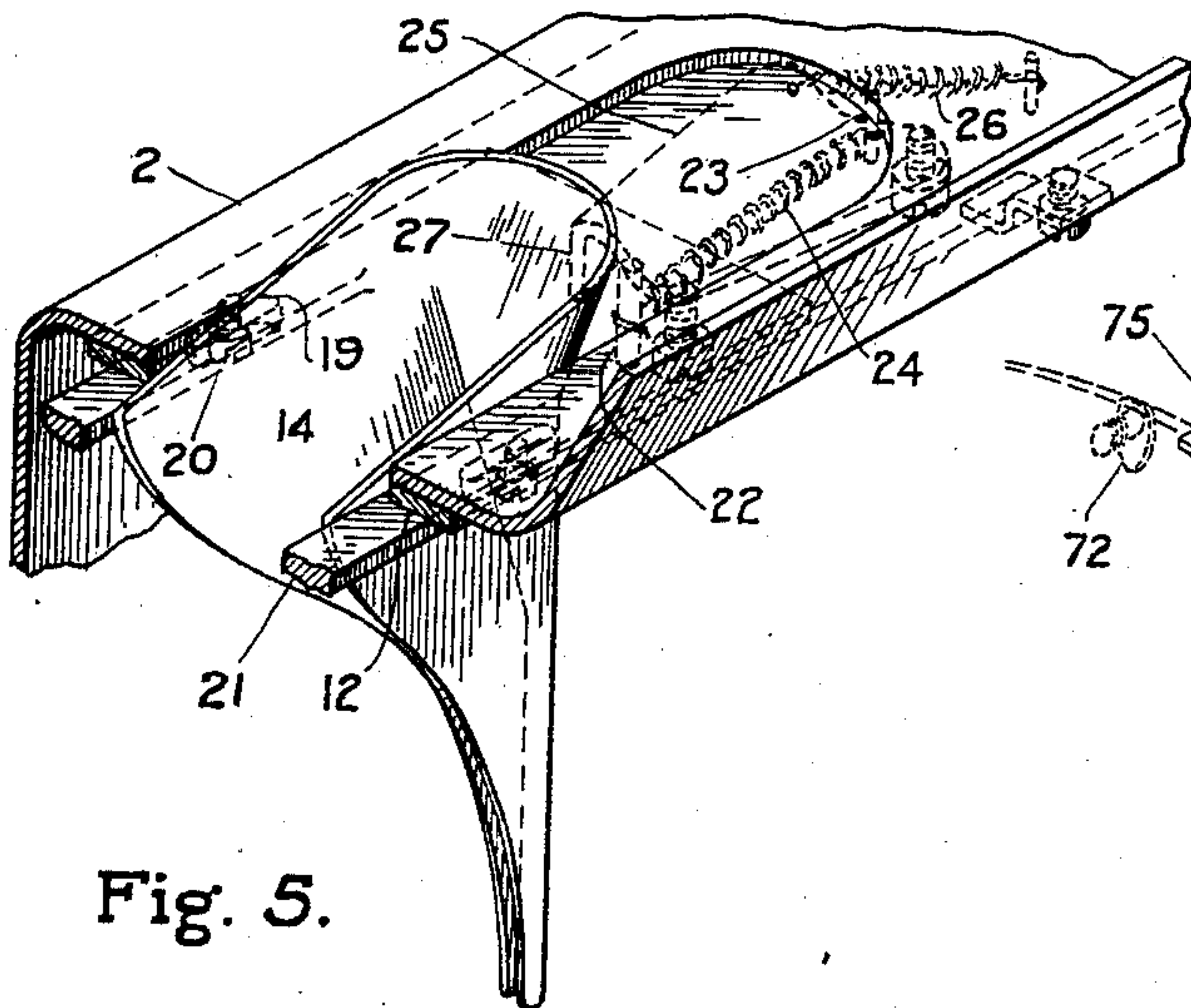


Fig. 5.

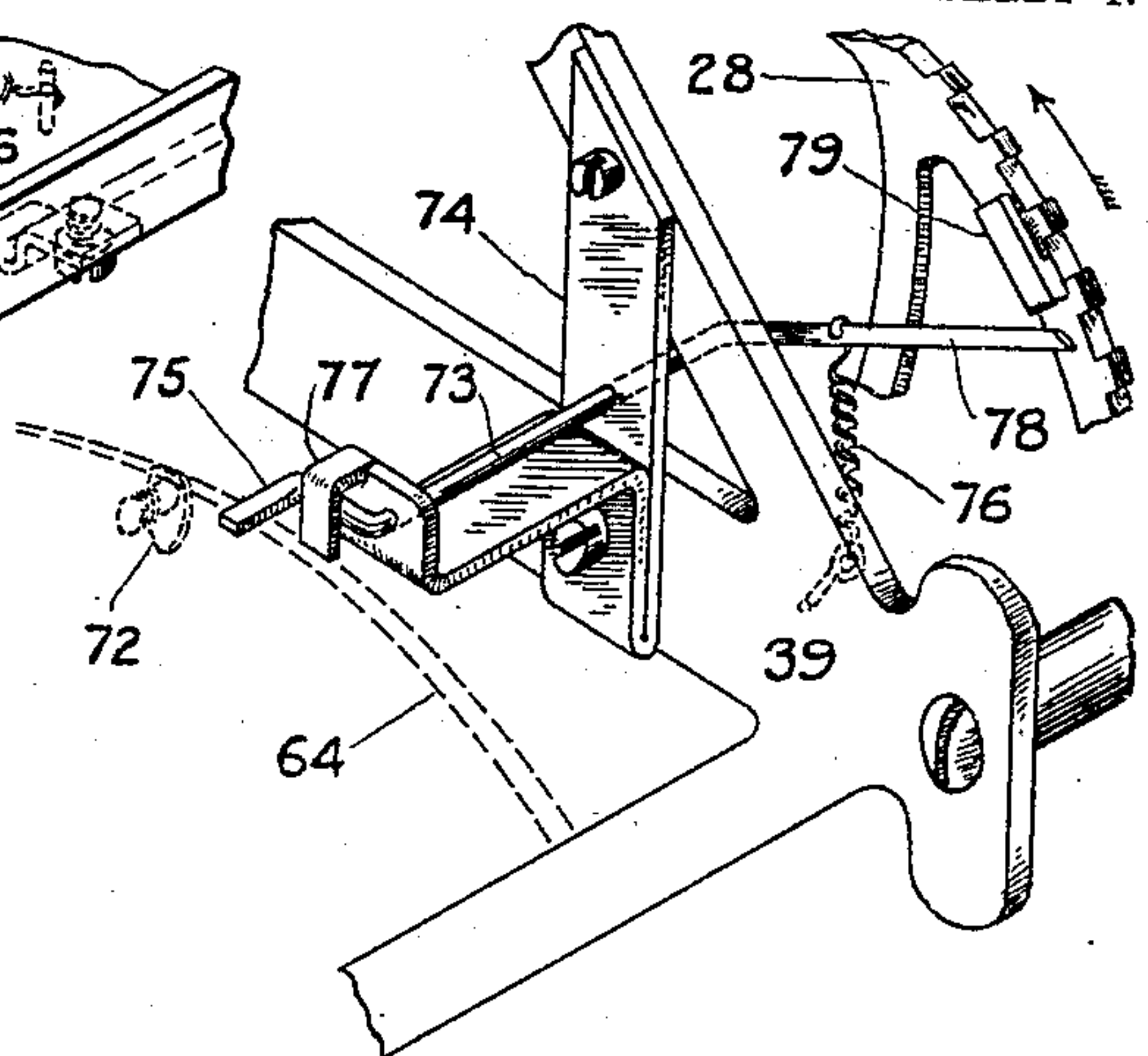


Fig. 6.

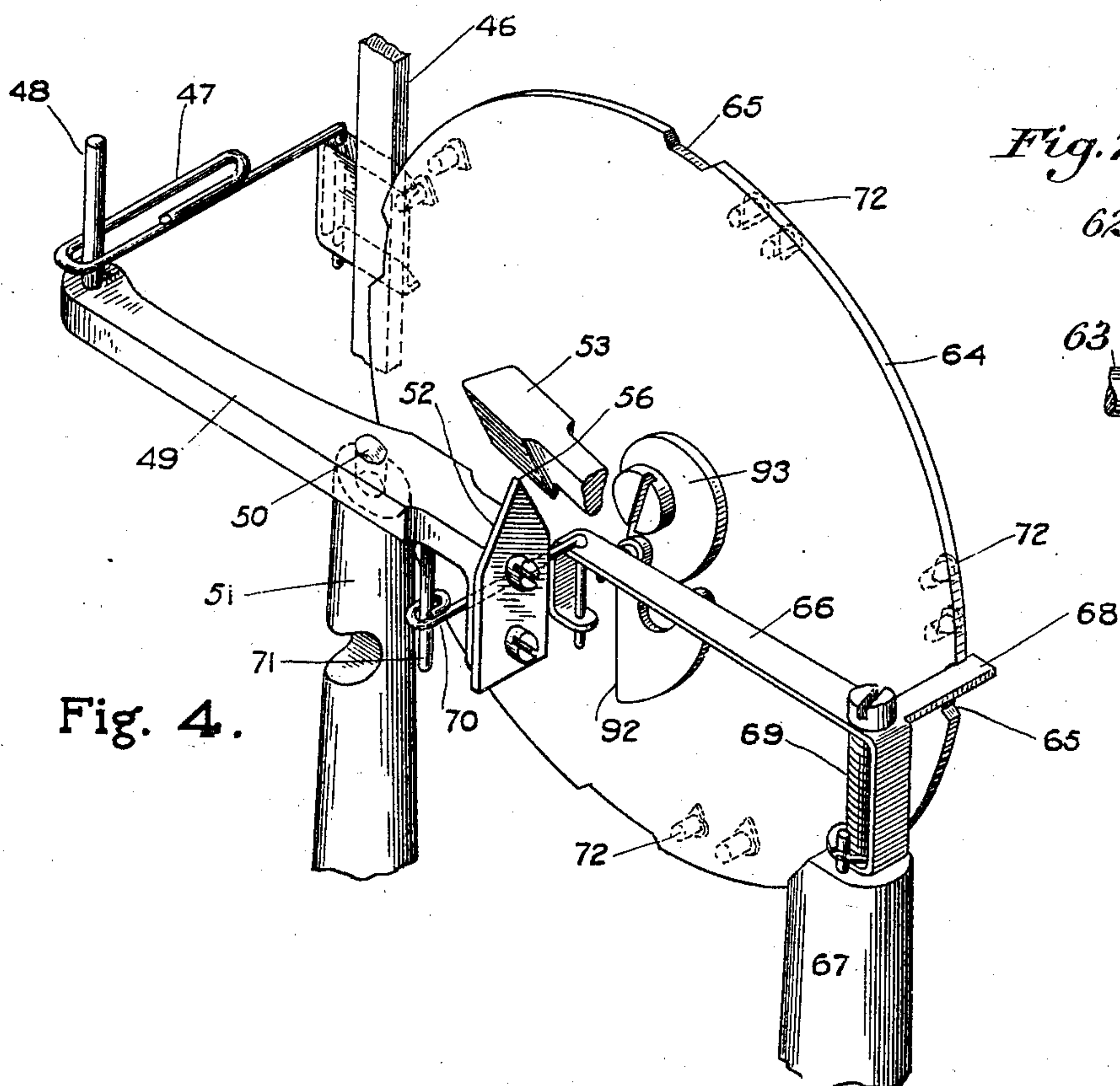
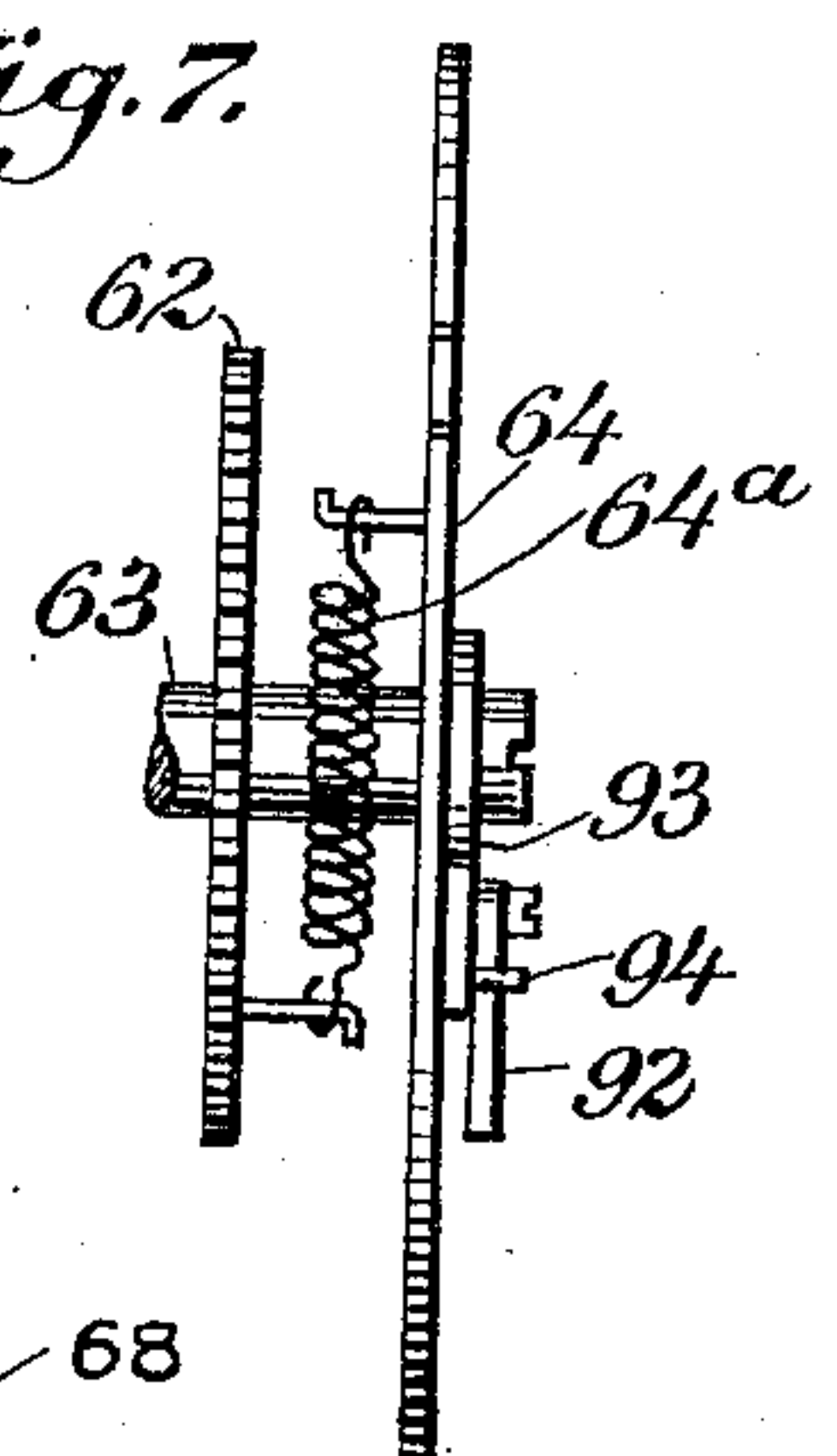


Fig. 4.

Fig. 7.



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UNITED STATES PATENT OFFICE.

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TIME-RECORDING MECHANISM.

No. 930,357.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed July 10, 1905. Serial No. 268,932.

To all whom it may concern:

Be it known that we, JOHN DEY and ALEXANDER DEY, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Time-Recording Mechanism, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to time recorders.

One of the objects thereof is to provide a time recorder characterized by marked simplicity and durability of construction.

Another object is to provide a time recorder having reliably and positively acting means, automatic and manually controlled, for placing a record-receiving member accurately in position to be acted upon.

Another object is to provide a time recorder casing which can be quickly and securely locked to prevent tampering with the parts inclosed and yet readily opened to permit access to all parts of the instrument.

Another object is to provide simple and non-complicated means for varying the character of the records made within certain predetermined periods of time.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the mechanism and devices hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings wherein is shown one of various possible embodiments of the several features of our invention, Figure 1 is a side elevation partly in section. Fig. 2 is a front elevation of certain parts shown in Fig. 1. Fig. 3 is a perspective view of ratchet mechanism and parts associated therewith showing the same isolated from surrounding mechanism. Fig. 4 is a similar view of certain parts shown in Fig. 1, the same appearing on a slightly larger scale. Fig. 5 is a similar view of a portion of card-receiving means. Fig. 6 is a similar view of locking mechanism. Fig. 7 is a detail view of a portion of the ribbon-shifting mechanism.

Similar reference characters refer to similar parts throughout the several figures.

It may here be noted that this invention, as regards the more important features thereof, deals with the simplification of time recorder mechanism and the provision of means whereby a record having the desired characteristics can be made with precision and certainty.

Referring now to Fig. 1 of the drawings, 1 represents a time recorder casing having positioned thereon what may be termed a "cover section" 2 interlocking therewith at its lower end as by a bead 3 formed on the casing. The upper end of this cover section which in effect forms a portion of the casing, is held in position by a plate 4 upon a door 5 mounted upon the casing. This door, which preferably covers the front of the upper portion of the instrument is adapted to swing against a second door 6 which, in this illustrative embodiment, covers one side of the instrument. The outer portion of these doors, or those portions remote from the hinges, preferably engage one another and are secured one to another as by the key-controlled lock 7. In this manner, upon the lock 7 being turned into operative position, the doors 5 and 6 are not only maintained closed but the cover section 2 is likewise held in closed position and access to the interior of instrument is prevented. An auxiliary lock is preferably provided, being shown in the present case as a swinging hook 8 pivoted at 9 to the door 6 and adapted to engage the plate 4 upon the lower portion of the door 5.

Referring now to Fig. 3 of the drawings, what may be termed a "card receiver" 10 shown in dotted lines is slidably mounted as upon upright pins one of which is shown at 11, these pins being fixed to the casing or frame of the instrument. In this manner the receiver 10 is quickly removable upon the cover section 2 being detached, thus providing ready access to the interior of the lower portion of the instrument.

Cover section 2, as is best shown in Fig. 2 of the drawings, is provided with a slide 12 mounted upon its lower surface and having secured thereon the card engaging members 13 and 14. Member 13 is preferably fixed to the slide, but member 14, on the other hand, is movable with relation thereto for a purpose and by means hereinafter described. The entire slide with associated parts may be adjusted laterally as by means

of a link 15 having thereon a pin 16 adapted to swing into any desired one of a series of substantially equally spaced openings 17 in cover section 2. In this manner, if it be desired to shift the card-engaging members 13 and 14 so as to change the position of a record card or other record-receiving member relative to the printing mechanism hereinafter described, it is necessary merely to withdraw the pin 16 from the opening 17 within which it is positioned and shift the same opposite such opening as will bring the card-engaging members into the desired position. An indicator 18 of any desired type may be mounted upon the plate 4 to aid in shifting the record card to the desired position. It may here be noted that the term "record card" is used throughout this specification and the following claims in a broad sense as denoting a record receiving member of any character.

As it is desired that sufficient space be provided between the members 13 and 14 to permit the ready insertion of a record card and yet that the same be accurately positioned with reference to the printing mechanism so as to insure that the record be placed thereon with the desired precision, the following means are provided for forcing these members together subsequent to the insertion of the card: Referring to Fig. 5 of the drawings, the member 14 is mounted upon the slide 12 by slots 19 and screws 20 and is provided with an extension 21 about the member 13 serving to aid in guiding the same and to hold the parts in their desired relative positions. Upon the lower surface of member 14 is formed a pin 22 connected with a pin 23 upon the slide 12 as by a spring 24. This spring tends to draw the member 14 away from member 13 and maintain these parts in such relative positions as to permit the ready insertion of a record card. Upon the lower surface of slide 12 is pivotally mounted a cam 25 normally retracted and held against the pin 23 as by a spring 26. Cam 25 is provided with a depending finger 27 through which the same is actuated as hereinafter described. It will thus be seen that the members 13 and 14, as well as the cam and springs above referred to, are mounted upon the slide 12 and are carried therewith in its lateral movement above described.

Referring now to Fig. 2 of the drawings, there is positioned opposite the time printing wheel 28 hereinafter referred to, a swinging frame 29 mounted as by screws 30 upon the lugs 31 formed upon the frame of the instrument. Upon the upper portion of this frame is fixed a platen 32 adapted to pass through an opening 33 in the card receiver 10 and force a record card positioned therein against the printing wheel or wheels. This movement is accomplished by means

of a rod 34 connected with a strip 35, secured to the frame 29, by means of the nut 36 and spring 37. Rod 34 may be manually actuated by any desired means, the same not being here shown as they form, in themselves, no part of the present invention. Upon the rod 34 being thrown in the direction indicated by the arrow in Fig. 1 of the drawings, the platen 32 is actuated as above described and a bent rod 38 secured to the frame 29 forces the finger 27 toward the rear of the instrument, thus swinging the cam 25 and causing the members 13 and 14 to approach one another and grip a record card positioned therebetween. These parts are so adjusted as to cause the card to be gripped before the same is forced against the printing wheels by the platen 32. Owing to the conformation of the rod 38 the above described lateral movement of the slide 12 is permitted without the disengagement of the finger 27 therewith, thus preserving the gripping mechanism at all times in operative condition.

Referring now to Fig. 1 of the drawings, the printing wheel 28 is mounted on the frame 39 and driven from clockwork of any desired type in any desired manner, as by means of the bevel gears 40 and 41 and the shaft 42. It may here be noted that the term "clockwork" is used throughout this specification and the following claims to denote any mechanism, parts of which are driven at a predetermined and substantially constant rate of speed. Opposite the printing wheel 28 is mounted a multi-colored printing ribbon 43 as upon the spools 44 and 45, the ribbon being fed by any desired means, the same not being here shown as it forms in itself no part of the present invention. This ribbon, which, in the present illustrative embodiment, comprises portions of two colors, is laterally movable so as to bring portions of either one or the other of these colors into operative relation to the printing wheels according as the ribbon occupies one or the other of two alternative positions. This movement is preferably brought about by means of a bar 46 connected with the spools 44 and 45 and having connection as by slotted link 47 with a pin 48 fixed upon a horizontal lever 49 pivoted at 50 upon a post 51, as shown in Fig. 4. Lever 49 is provided at its rear end, or that end remote from cover section 2, with a vertical wedge or cam 52 adapted to be engaged by a wedge 53 upon an arm 54 which is normally retracted, as by spring 55, but may be forced downwardly by any desired manually-actuated means, the same not being here shown as they form in themselves no part of the present invention. Upon this movement taking place, the wedge 53 will drive the wedge 52 in either one or the other direction according to the side of the edge 56 of the

same upon which it strikes. This movement will, by reason of the pin 48 and link 47, cause a corresponding shifting of the ribbon 43 unless the same is already in the position corresponding to the extreme position into which the lever 49 is thrown. Owing to the slotted conformation of the link 47, a predetermined range of movement of the lever 49 is permitted without affecting the ribbon 43 and this movement is sufficient to cause the edge or point 56 to swing past the corresponding portion of the wedge 53 and upon a subsequent downward movement of the latter member to shift the ribbon. Such action of the lever 49, which may be termed "setting" the shifting mechanism in operative condition, is accomplished by the following means: Upon the shaft 57 of the printing wheel 28 is a pinion 58 intermeshing with an idle gear 59 upon a shaft 60 having fixed thereon a pinion 61 intermeshing with a gear 62. The gear 62 is fixed upon a sleeve 63 provided with a disk 64 and the several gears are preferably so proportioned and driven as to cause this disk to make a complete revolution every twenty-four hours. About the circumference of disk 64 are cut a number of notches 65, as shown in Fig. 4, which correspond in position and extent to certain periods of the day throughout which it is desired that the ribbon be shifted with reference to its normal position. A bell-crank lever 66 is pivotally mounted upon a post 67 adjacent disk 64 and the shorter arm 68 thereof is held against the outer surface of the disk as by a spring 69 coiled about its pivot. On the free end of lever 66 is secured a link 70 embracing a pin 71 upon the lever 49. It will thus be seen that according as the arm 68 is depressed within a notch 65 or is riding upon the relatively elevated outer surface of the disk the wedge 52 occupies two alternative positions in which it is respectively placed with its edge or point 56 either one or the other side of the edge of the wedge 53, this movement being permitted by the slot within link 47.

In order to insure that the bell-crank lever 66 be moved by the disk 64 precisely at the predetermined points of time, the following means are provided for controlling the movement of the disk at such times as the arm 68 passes from a notch 65 to the raised outer surface, or, conversely from the raised outer surface to a position within a notch. This movement, as will be obvious from the above description, determines the time of setting of the lever 49 so as to cause a shifting of the ribbon upon the next subsequent movement of the wedge 53, and, if it is desired that this time of setting be predetermined with a high degree of accuracy, the action which would be caused by the formation of the disk alone, although oper-

ative, would be incompatible with an instrument of the highest efficiency. Upon the lateral surface of disk 64 toward the minute printing wheel 28 are fixed a series of pins 72, as shown in Fig. 6. Opposite these pins is mounted a locking lever 73, journaled within a strap 74 secured to the frame 39 of the instrument. The projecting tip 75 of lever 73 normally lies within the path of travel of the pins 72 and is held in such position by means of a spring 76 holding the lever against a stop lug 77. About the surface of printing wheel 28, which is preferably adapted to print minutes, and adjacent the free end 78 of the lever 73 are positioned a plurality of lugs 79 adapted to engage the end 78 and raise the same against the force of spring 76, thus depressing the projecting tip 75 and removing it from the path of travel of the pins. The operation of this feature of my invention is as follows: Assuming that it be desired to shift the printing ribbon, or rather set the same in condition to be shifted by the next subsequent operation of the instrument, at the hour of 7, a notch 65 is so positioned upon the disk 64 as to be brought to the arm 68 just before the hour in question. In order to insure the entry of the arm within the notch at the desired minute, however, a pin 72 is so positioned as at this time to engage the locking tip 75 of the lever 73, thus holding the disk stationary until the lever is released. The latter function is accomplished by a lug 79 upon the minute wheel 28, this part being so positioned as to raise the end 78 at the point of time at which the printing mechanism is exactly in condition to print the hour of 7. In this manner the disk 64 is held until the exact minute has arrived at which the setting of lever 49 is desired and is then released and snapped forward, permitting the arm 68 to fall within notch 65 and setting the lever in such position as upon the next downward movement of the wedge 53 to cause the same through link 47 and the bar 46 to shift the ribbon so as to bring a portion of different color in operative relation to the printing wheels. The holding of the disk 64 is preferably permitted as by a spring, at 64^a, Fig. 6 interposed at any desired point in the mechanism through which the same is driven, as between the disk and the gear 62, and the resilience thus acquired tends to snap the disk forward upon release, and insure the desired quickness and certainty of action. It is to be understood that the pins 72 are so positioned about the disk 64 as to lock the same just before the entry or egress of the arm 68 into or from each of the notches 65, thus causing each movement of the bell-crank lever 66 to be performed at precisely the point of time at which such movement is desired.

Downward movement of the record receiving card or member relative to the printing wheel 28 is limited by a stop or abutment 80 formed upon a strap 81 which rests
 5 against the rear surface of the receiver 10 and is clamped about a sleeve 82 slidably mounted upon a guide rod 83. Sleeve 82 is provided with a rack 84 adapted to be actuated by a pawl 85 mounted within a yoke 86
 10 upon a rock shaft 87 journaled within the upturned ends of a strap 88 secured to the frame of the instrument. Rock shaft 87 is normally held in a predetermined position by a spring 89 coiled about the same and
 15 having one end secured to an arm 90 fixed upon the shaft and the other secured to the parts within which the shaft is mounted, this spring serving to hold the yoke 86 against a similar part 91 upon the strap 88.
 20 Arm 90 projects within the path of travel of a cam 92 pivotally mounted upon a plate 93 secured to the sleeve 63 above described. This cam is adapted upon rotation in a direction indicated by the arrow in Fig. 3 of
 25 the drawings, to rest against a stop pin 94 and, depending from the plate 93, to engage and depress the arm 90. Upon movement of the cam in an opposite direction, however, the same rocks away from the pin 94 and
 30 passes over the arm 90 without depressing the same. Due to this intermittent depression of arm and the consequent rocking of the shaft 87 the pawl 85 is adapted to raise the rack 84 step by step, the latter part be-
 35 ing held in its raised position by means of a holding pawl 95 journaled within the yoke 91, above referred to, springs 96 and 97 being provided to maintain the pawls in engagement with the rack. Upon the rack be-
 40 ing raised throughout the entire desired path of travel, which, in this illustrative embodiment, comprises seven steps, a pin 98 secured to the rack 84 engages a releasing member 99 mounted, as by slots 100 and
 45 screws 101, upon a support 102. Upon such movement taking place, the member 99 is thrown within the path of travel of the actuating pawl 85 and the next subsequent oscillation of this member results in an en-
 50 gagement thereof with a tooth 103 formed upon the releasing member and the raising of the latter in such manner as to throw the holding pawl 95 out of engagement with the rack through the action of an inclined
 55 portion 104 formed upon this part. As the actuating pawl 85 is held away from the rack by the releasing member in the position into which it has moved, the stop 80 falls to the lowermost limit of its path of
 60 travel owing to the fact that the rack 84 is unsupported. The next subsequent operation of the actuating pawl 85 causes the depression of the releasing member 99 through engagement with a projection 105 formed
 65 thereon, and, owing to the fact that pin 98

is out of engagement with this part, the releasing member is forced into inoperative position, this position being determined by the conformation of the slots 100. A spring 106 is provided in order to maintain the releasing member in inoperative position
 70 until it is again thrown out by the pin 98. In order to insure that upon the actuating pawl being released and snapped upwardly the rack will be raised throughout one step
 75 only, a rack 107 is fixed thereto this member having its teeth inclined in the opposite direction and adapted to be engaged by a pawl 108 secured to the yoke 86. Thus, at each upward step of the rack 84 the pawl
 80 108 is swung against the rack 107 and the upward movement of the stop positively limited.

In order to permit an independent manual adjustment of the abutment 80, if desired,
 85 there is formed upon and secured to the yoke 86 an arm 109 projecting within the path of travel of a pin 110 fixed to a rod 111 slidably mounted within a sleeve 112 and having its upper end projecting through
 90 the cover section 2, as shown at 113. By this means the rock shaft may be oscillated by hand and the abutment placed in any desired position. If, on the other hand, such manual control is undesirable, the rod 111
 95 may be removed from the sleeve 112 and the mechanism rendered purely automatic in action.

The operation of the above described embodiment of the several features of our in-
 100 vention in so far as the same has not been above explained, is as follows: Assuming a record card be inserted between the members 13 and 14, the rod 34 is drawn in the direction indicated by the arrow by manu-
 105 ally actuated means of any desired type. This action as above described results in the forcing together of the members 13 and 14, thus gripping the card and accurately positioning the same with reference to the
 110 printing mechanism. The further swinging of the frame 29 causes the platen 32 to force the card against the type and result in the desired record being impressed thereon. As the frame 29 is then permitted to swing
 115 back the members 13 and 14 are drawn apart by the spring 24 and the card released. If it be desired to change the position of the card engaging members laterally with respect to the printing mechanism, the same
 120 is accomplished merely by withdrawing pin 16 from the perforation 17 in which it is positioned and inserting the same in such perforation 17 as to place and hold the
 125 card engaging members in the desired position. The ribbon 43 is shifted by the means above described so as to print in one color throughout certain predetermined periods, and in another color during the remainder of the day. In this manner, if it
 130

be assumed that the records are to be printed in green during the periods of time within which the workmen are required to enter and leave the establishment, and to print in red through the hours of labor, a red impression upon the card will clearly evidence the fact that the workman upon whose card it is found, was either tardy in arrival or left before the time set for his departure.

The stop or abutment 80 which determines the depth to which the record can be inserted, and consequently the horizontal line along which the record will be made is automatically moved, as above described, and with the aid of properly disposed matter subdividing the surface of the cards the position of the records thereon will serve to indicate at a glance the period of time within which the record was made. The ratchet mechanism, on account of the action of rack 107 and pawl 108 may be snapped upwardly throughout its successive steps with any desired sharpness and force without the chance of the same rising throughout a greater distance than is desired.

In order to obviate the chance of ambiguity in certain terms used throughout this description and the following claims, it may here be noted that they are used with the following meanings: By the term "printing mechanism" is meant any means adapted to make a record upon a surface, whether such action be accomplished by staining, depressing or perforating the same, or otherwise; by the term "walls" is meant the outer exposed parts thereof or those parts which form the outer boundary or shell of the instrument; by "character" as used with reference to records is meant either their color, form, or other means whereby they can be distinguished; by "cover-section" is meant any movable portion of the walls of the instrument, using the term "walls" as above defined.

It will thus be seen that we have provided simple and efficient mechanism for accomplishing the several objects of our invention. The illustrative embodiment set forth is of the simplest and most inexpensive construction though it will be apparent that in no respect has accuracy, durability or positiveness of action been sacrificed. It will also be seen that while the several parts of the instrument are readily accessible, yet the same may be quickly and securely locked at a single point so as to reduce to a minimum the chance of tampering with the parts contained therein.

As many changes could be made in the above construction and many apparently widely different embodiments of our invention could be made without departing from the scope thereof, we intend that all matter contained in the above description or shown in the accompanying drawings shall be in-

terpreted as illustrative and not in a limiting sense. We desire it also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A time recorder including in combination time-controlled marking devices; means for producing records therefrom; means, including a rotary driving member, for making records of different classes by marks having distinguishing characteristics; means adapted to lock said driving member; and time-controlled means adapted to release the same.

2. A time recorder including in combination time-controlled marking devices; means for producing records therefrom; means, including a rotary driving member, for making records of different classes by marks having distinguishing characteristics; means adapted to lock said driving member; and a minute wheel provided with means adapted to release the same.

3. In a time recorder, in combination, time-controlled printing mechanism; means for taking impressions from said printing mechanism upon a record surface; means, including a rotary driving member, for varying the character of the impression; means for locking said driving member; and means adapted to release the same.

4. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions therefrom upon a record surface, means adapted to vary the character of the matter impressed, a member driven slowly by clock-work and adapted to control the actuation of said last mentioned means, and a relatively fast moving member adapted to control said slow moving member.

5. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon the record surface, means adapted to vary the color of the impression produced, a member slowly driven by clock-work and a second member more rapidly driven from said clockwork, said first mentioned member being adapted to set said varying means in operative condition and said second mentioned member being adapted to determine the time of such setting.

6. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record surface, means adapted to vary the color of the impression produced, a clock driven member adapted to set said varying means in operative condition

tion, a second clock driven member adapted to control the time of such setting, and manually actuated means adapted upon said varying means being set in operative condition to actuate the same.

7. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record surface, means adapted to vary the character of the impression made, a rotary driving member adapted to set said varying means in operative condition, and means adapted to lock said driving member against movement.

8. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record surface, means adapted to vary the color of the impressions produced, a clockwork-driven member adapted to set said varying means in operative condition, means adapted to lock said clockwork-driven member, and a part driven from clockwork at a higher rate of speed than that of the operative portions of said first mentioned clockwork-driven member adapted to release said locking means.

9. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record surface, a multi-colored printing ribbon adapted to travel in operative relation to said printing mechanism, means adapted to shift said printing ribbon so as to bring a portion of a different color in operative relation to said printing mechanism, a clock-driven member to effect the operation of said shifting means, and means clock-driven at a higher rate of speed adapted to control the movement of said first mentioned clock-driven member.

10. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record surface, a multi-colored printing ribbon adapted to travel in operative relation to said printing mechanism, manually-actuated means adapted to shift said printing ribbon with reference to said printing mechanism and bring a portion of different color into operative position, a clock-driven member controlling said shifting means, means adapted to lock said clock-driven member, and a part clock-driven at a higher rate of speed adapted to release said locking means.

11. In a time recorder, in combination, printing mechanism, means adapted to take impressions from said printing mechanism upon a record surface, means adapted to vary the character of the impressions made, means driven at a predetermined rate of speed and coacting with said varying means and adapted to perform a cycle of operations thereon, and time-controlled means

driven at a higher rate of speed adapted to determine the times at which said operations are performed.

12. In a time recorder, in combination, printing mechanism, means adapted to take impressions from said printing mechanism upon a record surface, means for varying the character of the impressions made, means driven at a predetermined rate of speed and coacting with said varying means and adapted to perform a cycle of operations thereon and repeat said cycle every twenty-four hours, and time-controlled means driven at a higher rate of speed adapted to determine the times at which said operations are performed.

13. In a time recorder, in combination, printing mechanism, means adapted to take impressions therefrom upon a record surface, means for varying the character of the impressions made, a member adapted to control said varying means, a member provided with irregularities adapted to engage said first-mentioned member and move the same, means adapted to lock said second-mentioned member, and a clock-controlled member adapted to release the same.

14. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions upon a record surface from said printing mechanism, means adapted to vary the character of the impressions made, a member controlling said varying means, a rotary clock-driven member having irregularities adapted to engage and move said first mentioned member, means adapted to lock said rotary member, and a second clock-driven member adapted to release said locking means at predetermined times.

15. In a time recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record surface, means adapted to vary the character of the impressions made, a member controlling said varying means, a rotary clock-driven member having irregularities adapted to engage and move said first mentioned member, means adapted to lock said rotary member, and a second clock-driven member adapted to release said locking means at predetermined times, the operative portions of said second clock-driven member being driven at a higher rate of speed than the operative portions of said first clock-driven member.

16. In a time recorder, in combination, printing mechanism, means adapted to take impressions from said printing mechanism upon a record surface, means adapted to vary the character of the impressions made, a member controlling said varying means, a rotary clock-driven disk with which said member engages, said disk being provided with irregularities of predetermined position

and extent, means adapted to lock said disk upon the same reaching a predetermined position, and a second member clock-driven at a higher rate of speed than said disk having parts thereon adapted to engage and release said locking means.

17. In a time recorder, in combination, printing mechanism, means adapted to take impressions therefrom upon a record surface, a multi-colored printing ribbon adjacent said printing mechanism, means adapted to shift said printing ribbon and bring a portion thereof into operative relation to said printing mechanism of different color from that last in such relation, a clock-driven disk having irregularities in its surface, a lever adapted to engage said disk and be moved in accordance with the position and extent of said irregularities, a connection between said lever and said shifting means, locking means adapted to lock said disk upon the same reaching certain predetermined positions, and a clock-driven member having parts adapted to engage and release said locking means.

18. In a time recorder, in combination, printing mechanism, means adapted to take impressions therefrom upon a record surface, a multi-colored printing ribbon adjacent said printing mechanism, means adapted to shift said printing ribbon and bring a portion thereof into operative relation to said printing mechanism of different color from that last in such relation, a clock-driven disk having irregularities in its surface, a lever adapted to engage said disk and be moved in accordance with the position and extent of said irregularities, a connection between said lever and said shifting means, locking means adapted to lock said disk upon the same reaching certain predetermined positions, and a clock-driven member having parts adapted to engage and release said locking means at predetermined times the operative portions of said last mentioned clock-driven member being driven at a higher rate of speed than the operative portions of said disk.

19. In a time recorder, in combination, printing mechanism, means adapted to take an impression from said printing mechanism on a record surface, a multi-colored printing ribbon adjacent said printing mechanism, means adapted upon being set in operative condition to shift said printing ribbon with respect to said printing mechanism and bring a portion into operative relation thereto, of a different color from that last in such relation, manually-actuated means adapted to actuate said impression-taking means and said shifting means, a clock-driven disk having irregularities in its outer surface, a lever resting upon said disk and adapted to be moved in accordance with the position and extent of said irregularities,

means connected with said lever adapted to set said shifting mechanism in operative condition, means adapted to lock said disk against movement upon its arrival in certain predetermined positions, and a clock-driven member adapted to engage and release said locking means at predetermined times.

20. In a time recorder, in combination, time-controlled printing mechanism, means adapted to take an impression from said printing mechanism on a record surface, a multi-colored printing ribbon adjacent said printing mechanism, means adapted upon being set in operative condition to shift said printing ribbon with respect to said printing mechanism, and bring a portion into operative relation thereto of a different color from that last in such relation, manually-actuated means adapted to actuate said impression-taking means and said shifting means, a clock-driven disk having irregularities in its outer surface, a lever resting upon said disk and adapted to be moved in accordance with the position and extent of said irregularities, means connected with said lever adapted to set said shifting mechanism in operative condition, means adapted to lock said disk against movement upon its arrival in certain predetermined positions, and means upon said printing mechanism adapted to engage and release said locking means at predetermined times.

21. In a time recorder, in combination, a casing, a movable member positioned therein, a member adapted to hold the same in the position into which it is moved, a spring tending to maintain said holding member in operative position, a more powerful spring, means actuated by said second spring adapted to overcome said first spring and move said holding member into operative position, and manually-actuated means projecting through said casing adapted to cause the actuation of said second mentioned spring.

22. In a time recorder, in combination, printing mechanism, a stop adapted to limit the relative movement in one direction of a coacting record card, means adapted intermittently to move said stop, and means adapted positively to limit the extent of each movement.

23. In a time recorder, in combination, printing mechanism, a stop adapted to limit the relative movement in one direction of a coacting record card, ratchet mechanism adapted intermittently to move said stop, time-controlled means adapted to actuate the said ratchet mechanism, and means adapted positively to limit the extent of each movement of said stop.

24. In a time recorder, in combination, printing mechanism, a stop adapted to limit the relative movement in one direction of a coacting record card, a toothed member con-

connected with said stop, actuating and holding pawls coacting with said toothed member, clock-controlled means adapted intermittently to operate said actuating pawl, a
 5 third pawl and a toothed member adapted to coact therewith and positively limit the extent of each movement of said stop.

25. In a time recorder, in combination, printing mechanism, a stop adapted to limit
 10 the relative movement in one direction of a coacting record card, a toothed member adapted to actuate said stop, a holding pawl coacting with said toothed member, a spring pressed rock shaft having thereon an actuat-
 15 ing pawl adapted to coact with and move said toothed member, clock-actuated means adapted intermittently to rock said rock shaft, a second toothed member connected with said stop, and a second pawl upon said
 20 rock shaft adapted to coact with said second toothed member and positively limit the extent of each movement of said stop.

26. In a time recorder, in combination, printing mechanism, a stop adapted to limit
 25 the relative movement in one direction of a coacting record card, a toothed member connected with said stop, clockwork-actuated means adapted to coact with said toothed member and intermittently move said stop,
 30 means adapted positively to limit the extent of each movement of said stop, a casing, and manually-actuated means projecting through said casing adapted to actuate said coacting means.

35 27. In a time recorder, in combination, printing mechanism, a stop adapted to limit the relative movement in one direction of a coacting record card, a toothed member connected with said stop, actuating and holding
 40 pawls coacting with said toothed member, a second toothed member connected with said stop, means adapted to co-act with said second toothed member and positively limit the extent of each movement of said stop, a cas-
 45 ing, and manually-actuated means projecting through said casing adapted to operate said actuating pawl to move said stop.

28. In a time recorder, in combination, a casing, a door upon the front of said casing,
 50 a cover-section below said door said cover-section being held upon said casing at the bottom and being adapted to be held in place by said door at the top, and key-controlled means adapted to hold said door in
 55 closed position.

29. In a time recorder, in combination, a casing, a door upon said casing, a cover-section below said door said cover-section being held upon said casing at the bottom and be-
 60 ing adapted to be held in place by said door at the top, and key-controlled means adapted to hold said door in closed position.

30. In a time recorder, in combination, a casing, a door upon said casing, a cover-section below said door said cover section being
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held upon said casing at the bottom and being adapted to be held in place by said door at the top, a second door adapted to swing adjacent said first door, and key-controlled means adapted to lock together the outer
 70 portions of said doors.

31. In a time recorder, in combination, a casing, a door upon the front of said casing, a cover-section below said door said cover section being adapted to be held in place by
 75 said door at its top, means adapted to hold in place the lower portion of said upper section, a door at the side of said casing, and a single key-actuated means adapted to lock together the outer portions of said doors and
 80 hold in closed position said cover-section and both of said doors.

32. In a time recorder, in combination, printing mechanism, a casing in which said printing mechanism is inclosed, a card re-
 85 ceiver and a pair of pins mounted upon said casing upon which said card receiver is adapted to be slidably and removably mounted adjacent said printing mechanism.

33. In a time recorder, in combination, a
 90 casing, a door upon said casing, a cover-section below said door said cover-section being adapted to be held in place at the top by said door, means adapted to hold in place said cover-section at the bottom, a second
 95 door, key-controlled means adapted to lock the outer edges of said doors one to another, printing mechanism within said casing, a card receiver, and means mounted upon said casing adapted removably to support said
 100 card receiver adjacent said printing mechanism.

34. In a time recorder, in combination, a casing, printing mechanism, means movably mounted adjacent said printing mechanism
 105 and provided with parts adapted to engage a record receiving member and position the same in operative relation to said printing mechanism, a link connected with said means, a pin upon said link, said casing hav-
 110 ing a series of substantially equally spaced perforations adapted to receive said pin and determine the position of said first mentioned means.

35. In a time recorder, in combination,
 115 printing mechanism, means slidably mounted within the recorder and upon the walls thereof provided with parts adapted to engage a record receiving member and position the same in operative relation to said
 120 printing mechanism, and means adapted to move said first mentioned means through a predetermined distance.

36. In a time recorder, in combination, printing mechanism, means slidably mount-
 125 ed upon the walls of the recorder adjacent said printing mechanism, said means being provided with parts adapted to engage a record receiving member and position the same in operative relation to said printing
 130

mechanism, a member connected with said first mentioned means, and a part of the recorder having a series of substantially equally spaced irregularities with which
5 said last mentioned member is adapted to interlock.

37. In a time recorder, in combination, printing mechanism, means slidably mounted upon the recorder adjacent said printing mechanism, said means being provided
10 with parts adapted to engage a record receiving member and position the same in operative relation to said printing mechanism, a member connected with said first mentioned means, and a part of the recorder
15 having a series of substantially equally spaced irregularities with which said last mentioned member is adapted to interlock.

38. In a time recorder, in combination, a casing, printing mechanism, means slidably
20 mounted within the recorder upon the walls thereof adjacent said printing mechanism, said means being provided with parts adapted to engage a record receiving member and position the same in operative relation to said
25 printing mechanism, a link connected with said means, a pin upon said link, and said casing having a series of substantially equally spaced perforations adapted to receive said pin and determine the position
30 of said first mentioned means.

39. In a time recorder, in combination, a casing, printing mechanism, a plurality of members adapted to engage a record receiving member and position the same in operative
35 relation to said printing mechanism, and means adapted to move said members toward one another and grip said record receiving member, said members and said last mentioned means being mounted upon the
40 walls of the recorder casing.

40. In a time recorder, in combination, printing mechanism, a plurality of members adapted to engage a record receiving member and position and hold the same in operative
45 relation to said printing mechanism to be printed upon, and means adapted to move one of said members toward the other and grip said record receiving member said first mentioned members and said last mentioned means being mounted upon and within
50 in the walls of the recorder.

41. In a time recorder, in combination, printing mechanism, a platen adapted to
55 coact therewith, a pair of members adapted to engage a record receiving member and position the same in operative relation to said printing mechanism, means adapted to move said first mentioned members toward one another, and means connected with said
60 platen adapted to actuate said last mentioned means.

42. In a time recorder, in combination, printing mechanism, a platen adapted to
65 coact therewith, a pair of members adapted

to engage a record receiving member and position the same in operative relation to said printing mechanism, means adapted to move said members toward one another, and a member directly connected with and
70 adapted to move said platen adapted to actuate said last mentioned means.

43. In a time recorder, in combination, printing mechanism, a pair of members adapted to engage a record receiving member and hold the same in operative relation
75 to said printing mechanism, a spring tending to force said members apart, and positively acting means adapted to overcome said spring and force said members toward one another.
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44. In a time recorder, in combination, printing mechanism, a pair of members adapted to engage a record receiving member and hold the same in operative relation
85 to said printing mechanism, a spring tending to draw apart said members, and a spring retracted cam adapted to engage one of said members and force the same toward the other thereof.
90

45. In a time recorder, in combination, printing mechanism, a pair of members adapted to engage a record receiving member and hold the same in operative relation
95 to said printing mechanism, a platen adapted to engage said record receiving member and force the same against said printing mechanism, means adapted to move said first mentioned members toward one another, said first mentioned members and said last
100 mentioned means being positioned upon the walls of the recorder, and means connected with said platen adapted to actuate said moving means.

46. In a time recorder, in combination, 105 printing mechanism, a pair of members adapted to engage a record receiving member and hold the same in operative relation to said printing mechanism, a spring tending to draw apart said members, and positively acting means to overcome said spring
110 and force together said members, said first mentioned members, spring and positively acting means being mounted within and upon the walls of the recorder.
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47. In a time recorder, in combination, printing mechanism, a pair of members adapted to engage a record receiving member and hold the same in operative relation
120 to said printing mechanism, a platen adapted to force said record receiving member against said printing mechanism, a spring tending to hold apart said first mentioned members, positively acting means tending to force the same toward one another, and
125 means connected with said platen adapted to actuate said positively acting means.

48. In a time recorder, in combination, printing mechanism, a pair of members adapted to engage a record receiving member
130

ber and hold the same in operative relation to said printing mechanism, a platen adapted to force said record receiving member against said printing mechanism, a spring tending to draw apart said first mentioned member, a cam adapted to engage one of said members and force the same toward the other thereof, and a member directly connected with and adapted to move with said platen adapted to engage and operate said cam.

49. In a time recorder, in combination, printing mechanism, a pair of members adapted to engage a record receiving member and hold the same in operative relation to said printing mechanism, a platen adapted to engage said record receiving member and force the same against said printing mechanism, a spring tending to draw apart said first mentioned members, means adapted positively to force the same toward one another, and means connected with said platen adapted to operate said last mentioned means, said members and said second mentioned means being mounted upon the walls of the recorder and collectively movable with relation thereto.

50. In a time recorder, in combination, a casing, a door upon said casing, a cover section below said door, said cover section being adapted to be held in place at its top by said door, means adapted to hold in place the lower portion of said cover section on said casing, a second door, key-controlled means adapted to lock together the outer portions of said doors, printing mechanism within said casing, a pair of members adapted to engage a record-receiving member and operatively position the same with relation to said printing mechanism, and means adapted to move said members toward one another, said members and said moving means being mounted upon the walls of the recorder.

51. In a time recorder, in combination, a casing, a door upon said casing, a cover section below said door, said cover section being adapted to be held in position at its top by said door, means adapted to hold the lower portion of said cover section in place upon said casing, a second door, key-controlled means adapted to lock together the adjacent outer portions of said doors, means adapted to engage a record receiving member, means slidably mounted upon said cover section having fixed thereon said engaging means, and means adapted to vary the position of said slidably mounted means.

52. In a time recorder, in combination, a casing, a door upon said casing, a cover section below said door, said cover section being adapted to be held in position at its top by said door, means adapted to hold the lower portion of said cover section in place upon said casing, a second door, key-con-

trolled means adapted to lock together the adjacent outer portions of said doors, means adapted to engage a record receiving member, means slidably mounted upon said cover section having mounted thereon said engaging means, and means adapted to vary the position of said slidably mounted means, said last-mentioned means comprising a member secured to said slidably mounted means and adapted to engage one of a series of irregularities in the outer surface of the recorder.

53. In a time recorder, in combination, a casing, a door upon said casing, a cover section below said door, said cover section being adapted to be held in position at its top by said door, means adapted to hold the lower portion of said cover section in place upon said casing, means adapted to engage a record receiving member, means slidably mounted upon said cover section having mounted thereon said engaging means, and means adapted to vary the position of said slidably mounted means, said last mentioned means comprising a member secured to said slidably mounted means and adapted to engage one of a series of irregularities in the outer surface of the recorder.

54. In a time recorder, in combination, a casing, a door upon said casing, a cover section below said door, said cover section being adapted to be held in place at its top by said door, means adapted to hold the lower portion of said cover section in place upon said casing, a second door mounted adjacent said first mentioned door, key-controlled means adapted to lock together the outer portions of said doors, printing mechanism within said casing, a pair of members adapted to engage a record receiving member and hold the same in operation relation to said printing mechanism, a platen, means adapted to force said engaging members toward one another, and means connected with said platen adapted to actuate said last-mentioned means.

55. In a time recorder, in combination, a casing, a door upon said casing, a cover section below said door, said cover section being adapted to be held in place at its top by said door, means adapted to hold the lower portion of said cover section in place upon said casing, printing mechanism within said casing, a pair of members adapted to engage a record receiving member and hold the same in operative relation to said printing mechanism, a platen, means adapted to force said engaging members toward one another, and means connected with said platen adapted to actuate said last mentioned means.

56. In a time recorder, in combination, a casing, a door upon said casing, a cover section below said door, said cover section being adapted to be held in place at its top by said door, means adapted to hold the

lower portion of said cover section in place upon said casing, printing mechanism, a member slidably mounted upon said cover section, a pair of members upon said slidably mounted member adapted to engage a record receiving member and hold the same in operative relation to said printing mechanism, means upon said slidable member adapted to force said engaging members toward one another, means adapted to move said slidable member throughout a predetermined distance, a platen adapted to force said record receiving member into engagement with said printing mechanism, and means connected with said platen adapted to engage and actuate said second-mentioned means.

57. In a time recorder, in combination, a casing, a cover section upon said casing, printing mechanism within said casing, a member slidably mounted upon said cover section, a pair of members upon said slidably mounted member adapted to engage a record receiving member and hold the same in operative relation to said printing mechanism, means mounted upon said slidable member adapted positively to force toward one another said card-engaging members, a spring tending to draw apart said card-engaging members, means adapted to move said slidable member throughout a predetermined distance, and means adapted to actuate said means upon said slidable member and remain in operative relation thereto throughout the entire range of movement thereof.

58. In a time recorder, in combination, a casing, a detachable cover section mounted thereon, printing mechanism within said casing, a member movably mounted upon said cover section, a pair of members upon said movable member adapted to engage a record receiving member and hold the same in operative relation to said printing mechanism, and means upon said movable member adapted to force said engaging members toward one another.

59. In a time recorder, in combination, a casing, a cover section mounted thereon, printing mechanism within said casing, a member slidably mounted upon said cover section, a member connected with said slidable member adapted to engage one of a plurality of spaced irregularities in the surface of the recorder to determine the position of said slidable member, a pair of members positioned upon said slidable member adapted to engage a record-receiving member and hold the same in operative relation to said printing mechanism, means upon said slidable member adapted to force toward one another the said engaging members and means adapted to actuate said last-mentioned means and remain in operative

relation thereto throughout the entire range of movement of said slidable member.

60. In a time recorder, in combination, a casing, printing mechanism mounted therein, a member movably mounted with relation to said printing mechanism, a pair of members upon said movable member adapted to engage a record-receiving member and hold the same in operative relation to said printing mechanism, means adapted to move said movable member throughout a predetermined distance, means upon said movable member adapted to force toward one another said engaging members, and means adapted to actuate said last-mentioned means and remain in operative relation thereto throughout the entire range of movement thereof.

61. In a time recorder, in combination, a casing, printing mechanism mounted therein, a member slidably mounted upon the walls of said time recorder, a pair of members upon said slidable member adapted to engage a record-receiving member and hold the same in operative relation to said printing mechanism, means upon said slidable member adapted to force said engaging members toward one another and a member secured to said slidable member provided with means adapted to engage and interlock with irregularities in the walls of the recorder and lock said slidable member in a predetermined position.

62. In a time recorder, in combination, a casing, printing mechanism mounted therein, a member slidably mounted upon the walls of the recorder adjacent said printing mechanism, a member secured to said slidable member adapted to engage and interlock with irregularities in the walls of the recorder, a pair of members upon said slidable member adapted to engage a record receiving member and hold the same in operative relation to said printing mechanism, means upon said slidable member adapted positively to move said engaging members toward one another, a spring tending to draw the same apart, and means adapted to actuate said last-mentioned moving means and remain in operative relation thereto throughout the entire range of movement of said slidable member.

63. In a time recorder, in combination, printing mechanism, a platen adapted to contact therewith, members adapted to engage a record receiving member and position the same in relation to said printing mechanism, and means operated from the platen adapted to move said first-mentioned members to engage the record receiving member.

64. In a time recorder, in combination, a casing, printing mechanism therein, a cover section movable toward and away from said casing, and a card receiver mounted on and carried by the cover section and movable

therewith into and out of operative position relative to the printing mechanism, and means whereby the card may be moved relative to the printing mechanism when the
5 cover is in closed position.

65. In a time recorder, in combination, a casing, printing mechanism therein, a cover section movable toward and away from said casing, and a card receiver movably mounted
10 on and carried by the cover section on the inside of the latter and movable therewith into and away from operative position relative to the printing mechanism.

66. In a time recorder, in combination, a
15 casing, printing mechanism therein, a cover section movable toward and away from the casing, a card receiver movably mounted on and carried by the cover section and movable therewith into and out of operative
20 position relative to the printing mechanism, and means to move the receiver relative to said cover section and the printing mechanism.

67. In a time recorder, in combination, a
25 casing, printing mechanism therein, a cover section movable toward and away from said

casing, a card receiver movably mounted on and carried by the cover section and movable therewith into and out of operative position relative to the printing mechanism, 30 and shifting means for the receiver mounted within the casing and arranged to co-act therewith when the card receiver is in operative position relative to the printing mechanism. 35

68. In a time recorder, in combination, time controlled marking devices, means for producing records therefrom, means for making records of different classes in marks having distinguishing characteristics, said
40 last-mentioned means including a rotary member, means to lock said rotary member, and time controlled means adapted to release the same.

In testimony whereof we affix our signatures, in the presence of two witnesses. 45

JOHN DEY.
ALEXANDER DEY.

Witnesses:

CLARA SACKETT RAYMOND,
MARCELLA JANE COON.