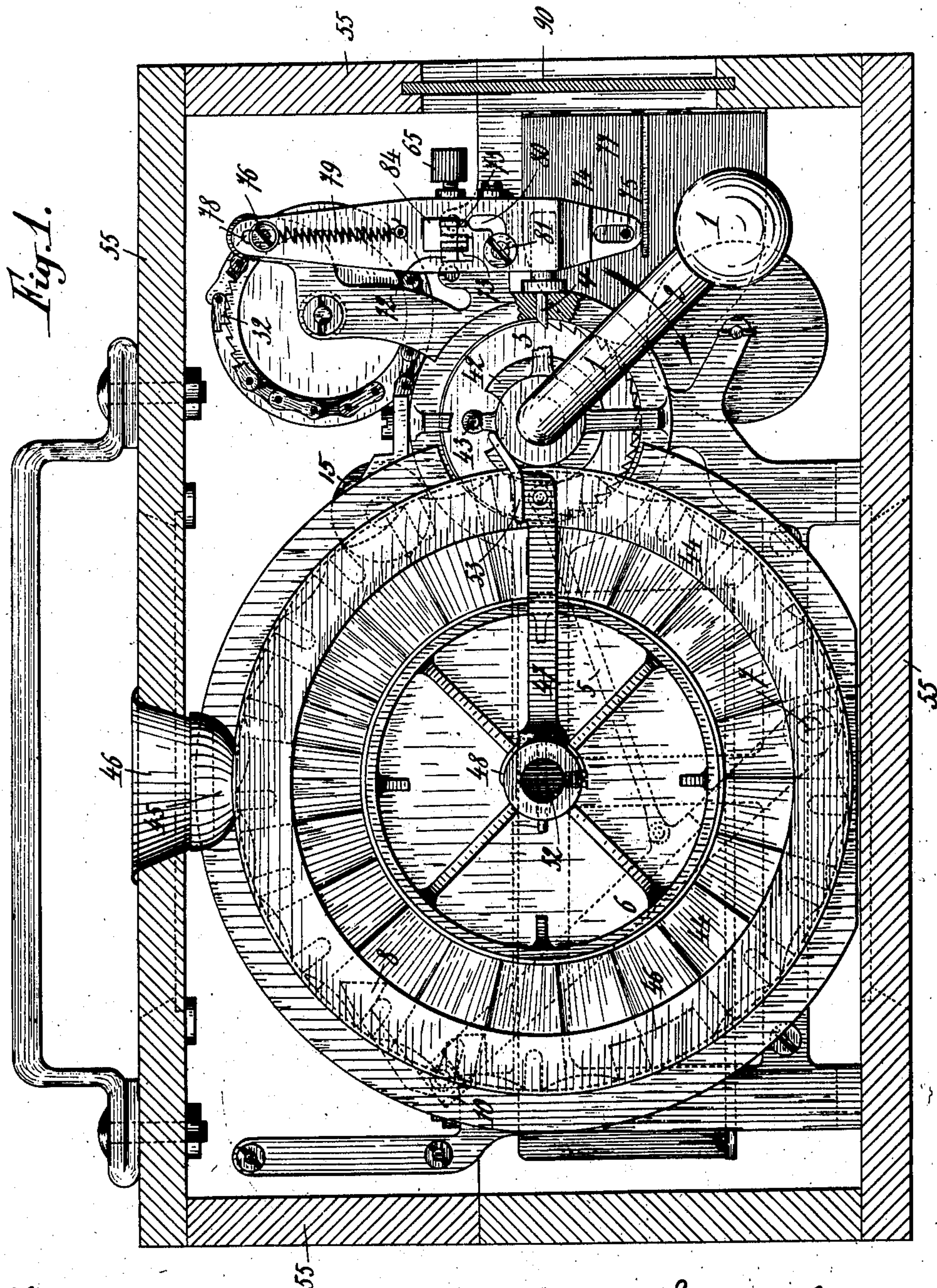


A. P. A. J. PLASSCHAERT.
 INTERMITTENTLY OPERATED TIME RECORDING APPARATUS.
 APPLICATION FILED MAY 17, 1908.

929,107.

Patented July 27, 1909.

4 SHEETS—SHEET 1.



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[Signature]

Inventor
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 By *[Signature]* C. M. Boulter,
 attorney

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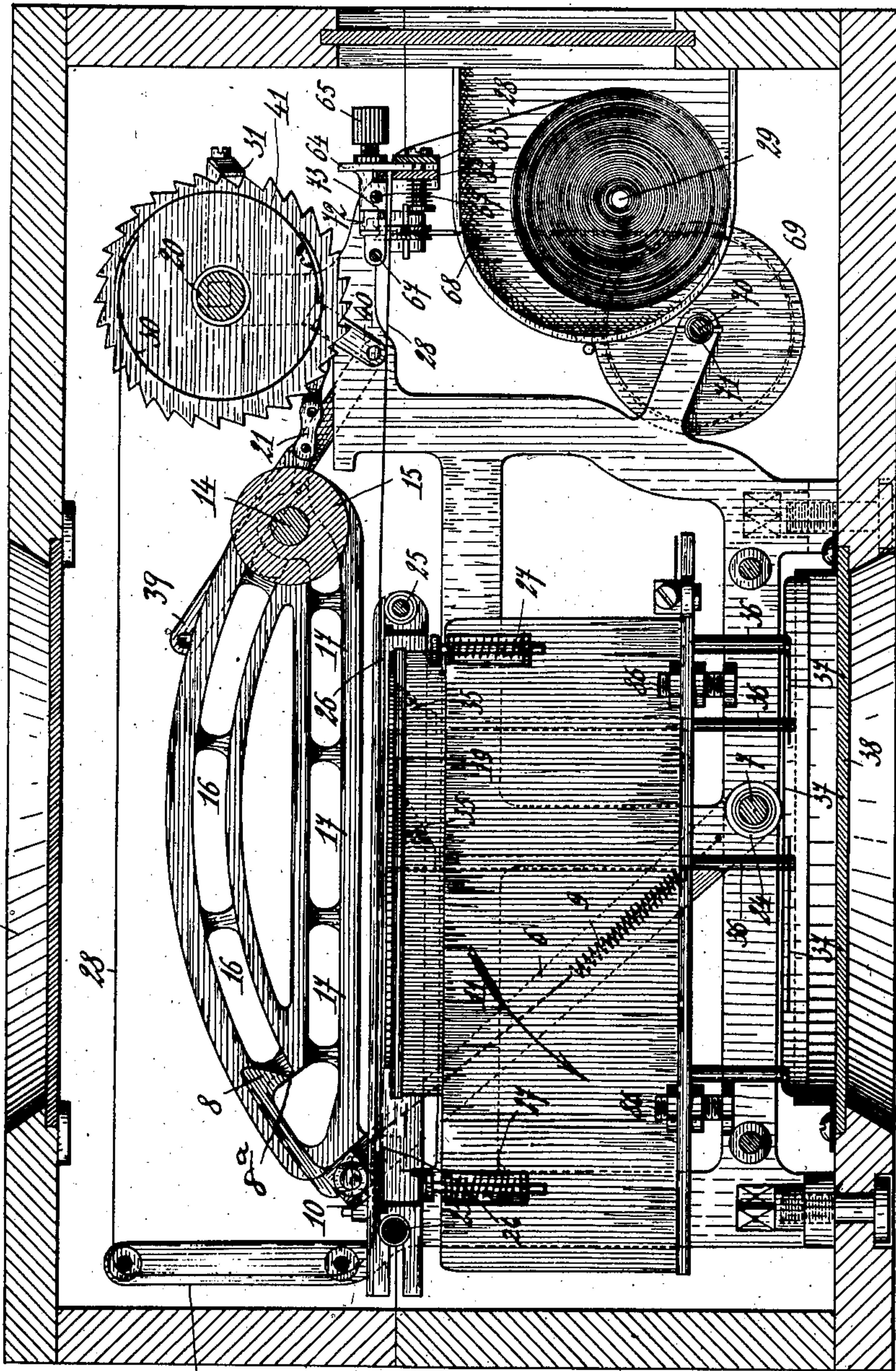
APPLICATION FILED MAY 17, 1906.

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4 SHEETS—SHEET 2.

929,107.

Fig. 2.



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4 SHEETS—SHEET 3.

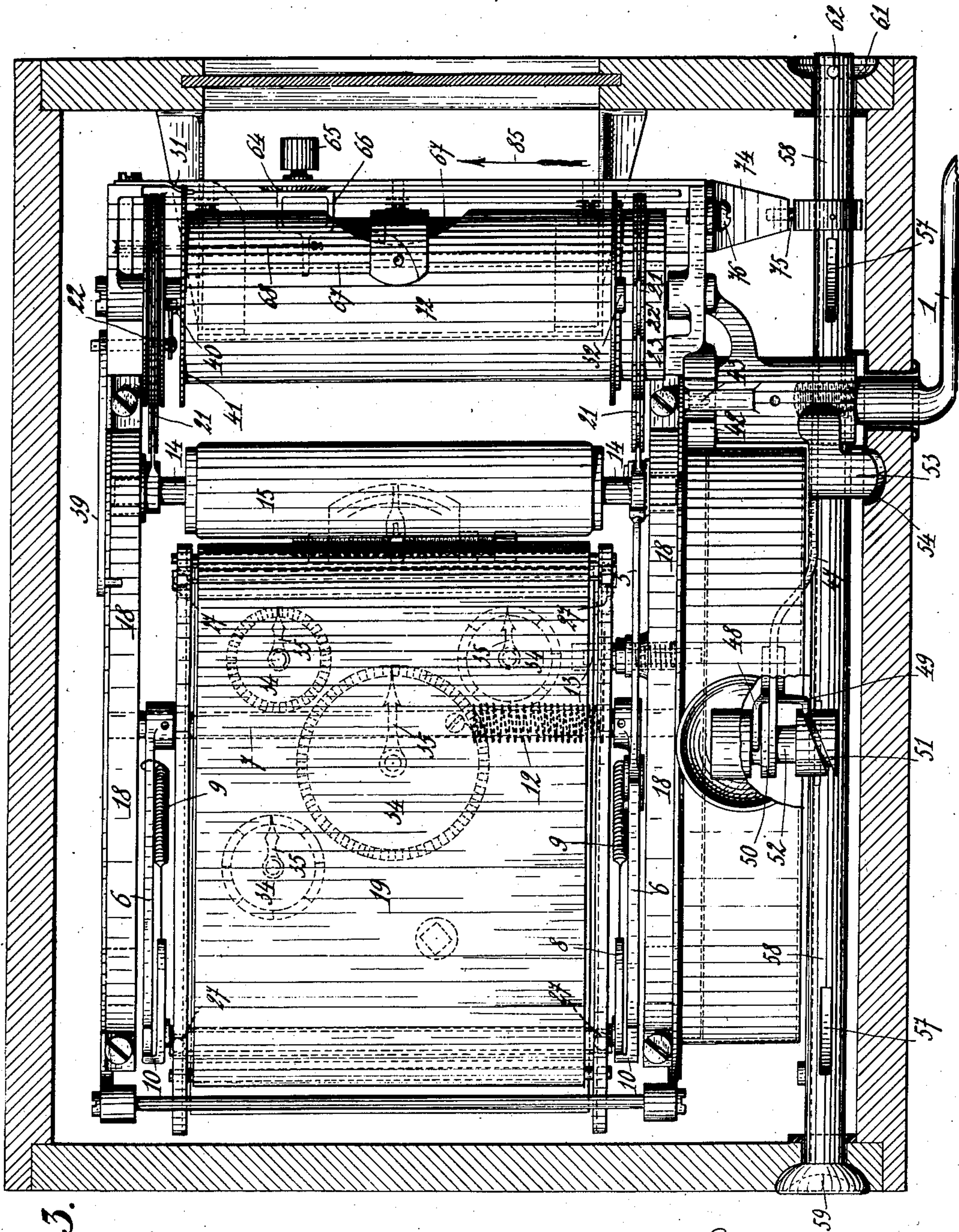


Fig. 3.
 Witnesses
 L. M. Ault
 J. M. Ault

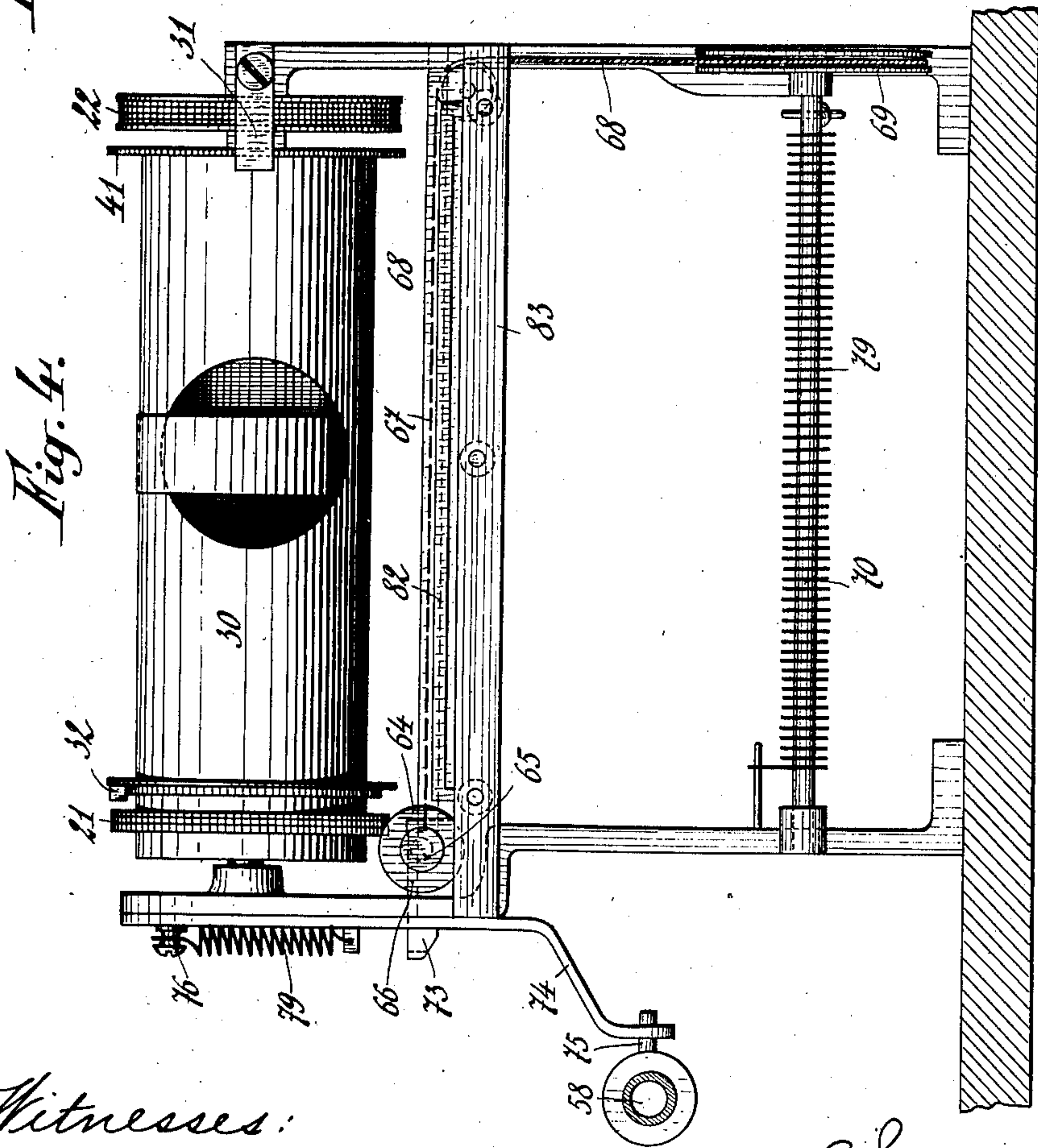
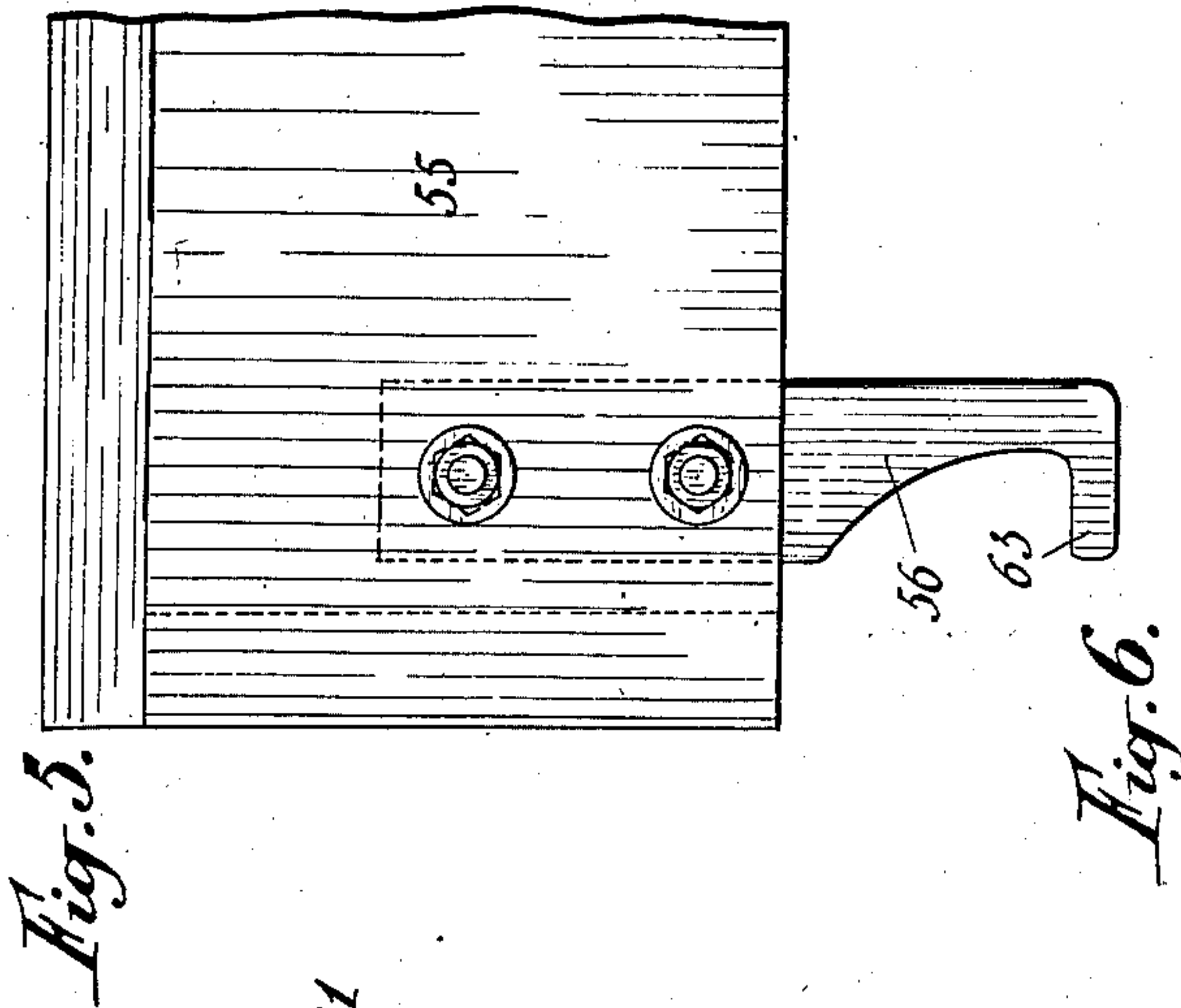
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Patented July 27, 1909.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

ALFRED PHILIPPE AUGUSTE JEAN PLASSCHAERT, OF WACHTEBEKE-LEZ-GAND, BELGIUM.

INTERMITTENTLY-OPERATED TIME-RECORDING APPARATUS.

No. 929,107.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed May 17, 1906. Serial No. 317,378.

To all whom it may concern:

Be it known that I, ALFRED PHILIPPE AUGUSTE JEAN PLASSCHAERT, a subject of the King of the Belgians, residing at Wachtebeke-lez-Gand, Belgium, have invented certain new and useful Improvements in Intermittently-Operated Time-Recording Apparatus, of which the following is a specification.

10 This invention relates to a time recording apparatus of the kind in which the position of the indicating hands is recorded by printing cards or paper bands, the printing being effected by forcing the inking ribbon and
15 paper against the indicating hands. In machines of this type it is necessary that the contact of the printing surface with the surface to be printed should be as sharp as possible in order to produce a clear impression, while the mechanism effecting this contact should not interrupt the movement of
20 the recording mechanism nor affect the time mechanism and cause the apparatus to get out of order.

25 In the apparatus according to the present invention the printing is obtained by the rapid rolling movement of a printing roller which being thrown forward in a track acts to bring the paper successively into contact
30 with the printing surface. The mechanism for effecting this movement of the roller to the end of the track is connected to means for advancing a compartmented drum adapted to receive tokens, pigeon rings or other
35 articles, as desired. The roller is impelled back to its starting place by a spring upon the release of the means above mentioned.

Other features of the invention consist in the improved record printing mechanism
40 and the inking-device.

The device according to this invention is further provided with safety devices for preventing the casing of the apparatus from being closed before all the parts are in the
45 normal working position, and to a controlling device for exposing all attempts to fraudulently open the apparatus by severing automatically the paper band upon which the records are printed.

50 An apparatus according to this invention is illustrated, by way of example, in the accompanying drawing.

Figure 1 is a front view of the apparatus,

with the casing partly in section: Fig. 2 is a longitudinal section through the center of 55 the apparatus; Fig. 3 a plan; Fig. 4 an end view, partly in section, and Figs. 5 and 6 detail views of the closing device for the box or casing.

The crank 1, moved in the direction of the 60 arrow 2 is attached to disk 3, half of whose circumference is provided with ratchet teeth engaged by a spring pawl 4. A pivoted rod 5 is attached to the disk 3 and to an arm 6 keyed to a spindle 7 and pro- 65 vided at its upper end with a hinged hook 8, controlled by a spring 9, the pivotal movement of the said hook being limited by a projection 10 in a downward direction. The spindle 7 which extends across the whole 70 width of the apparatus is provided at the other end with a second arm 6 having thereon another pivoted hook 8, controlled similarly to the first. A spring 12 (Fig. 3) is secured to and surrounds the spindle 7, its other end 75 pressing against a fixed point 13. The printing roller 15 is faced with rubber or the like and is provided with a spindle 14 the two ends of which are engaged in guides 16, 17, made in the two side brackets 18. These 80 guides form a continuous path comprising a curved portion 16, 16, and a straight portion 17, 17, these parts merging at their ends. The roller is connected to a spring in a barrel 23, secured to a squared spindle 20, the spin- 85 dle 14 being connected by chains 21 to sprocket-wheels 22, 22, keyed to the spindle 20 one of the sprocket wheels 22 being constituted by the rim of the barrel 23. In order that the roller 15 may roll in the guides 90 17 and at the same time exercise sufficient pressure upon the printing surface, screws 86 are provided whereby the whole clockwork may be raised and consequently the printing surface adjusted. A frame 25 resting on four 95 spring legs 27 and carrying a stretched ink ribbon 26 and also a paper band 28. This paper band is supplied from a spool 29 and is wound upon a drum 30, the latter normally participating in the movement of the barrel 100 23 by a spring pawl 32 (Fig. 1). A detent pawl 31 is provided to prevent the drum 30 from turning in the opposite direction during the movement of the recording mechanism, that is, while the cylinder 15 executes its 105 printing movement. A lever 39 is provided

for disengaging the drum 30 from the two pawls 31 and 32.

The printing surface 19 is constituted by a stereotyped plate provided in relief with the desired indications of days, hours, minutes and seconds, and with openings 34 in which move hands 35 constituted by bracket-shaped arms (Fig. 2) secured to spindles 36 operated by the clockwork. The spindles 36 project beyond the opposite side of the clockwork and are provided there with ordinary hands 37 which give the exact position for direct reading through a glazed portion 38 of the casing.

The arrangement of the frame 25 enables the ink-ribbon 26 to be stretched and wound up, so that it can be moved either to one side or to the other.

A disk 42 is provided upon the crank 1 for producing the intermittent rotation of the drum 44 which is provided with corresponding notches a pin 43 being disposed upon said disk for that purpose and engaging said notches while a lever 47 engages, by means of a fork 48 (Fig. 3) behind a disk or projection 50 on the hollow spindle of the drum 44 and on the other hand, by means of a projection 49 in a helical guide or cam 51 secured to a fixed spindle 52. A handle 53 of the coupling lever 47 is arranged in a recess 54 of the box. The toothed or metal portion limiting the advance notches on the drum 44 is removed at 46.

The parts comprising the closing device are as follows:—Two hooks 56 are provided upon the cover 55 and engage in holes 57 in a bolt 58, which passes through the entire length of the box and has a button 59 at one end thereof. The button lies in a corresponding recess 60 a similar recess being provided at the other end of the bolt which latter is perforated at 62 in order that a seal or other locking device may be affixed thereto. The bolt is combined with a controlling device constituted by a rotary circular knife or cutter 64 (Fig. 4) provided with a button 65 and mounted on a carriage 66 suitably guided on rods 67 and attached by a cord 68 to a grooved pulley 69 controlled by a very strong helical spring 71, surrounding a spindle 70. The carriage 66 is, moreover, provided with two projections 72, 73, one directed laterally, 72, and the other downward 73 (Fig. 4) this latter taking the form of a pawl. The projections 72 73 engage with the notches of a trigger 74 connected by means of a pin 75 to the bolt, so that, under the action of the latter, it oscillates toward the right or the left about the point 76 and at the same time can slide upward or downward because of the slots 77, 78, 80. In this sliding movement the trigger is controlled by a spring 79 and guided by fixing screw 81 76 (Fig. 1). The rotary cutter 64 during the whole of its travel, is kept by a movable spring plate 82 in en-

gagement with a fixed blade with a cutting edge 83.

The operation of the device is as follows:—When the crank 1 is moved in the direction of the arrow (Fig. 1) the rod 5, connected to the said crank by the disk 3, draws the arms 6 forward in opposition to the spring 12 during that portion of the rotation of the disk 3, during which the smooth portion of the circumference of the latter forces back the pawl 4. Before the connecting rod 5 has arrived at the dead center, the hooks 8 meet the spindle 14 of the printing roller and slide with their inclined faces against and over the said spindle, and afterward fall behind the said spindle. The crank 1 continuing to rotate the rod 5 pushes the arms 6 back, and from that moment the pawl 4 is in engagement with the ratchet teeth of the disk 3 thereby preventing return of the disk. The hooks 8, participating in the movement of the arms 6 draw the roller 15 also backward. As the hooks 8 describe an arc of a circle, the center of which is the center of rotation of the spindle 14, they move the spindle 14 into the guide portion 16, so that the cylinder 15, while being moved backward, is raised above the printing surface 19. The movement of the roller takes place in opposition to the action of the spring in the barrel 23 owing to its connection by the chains 21 to the sprocket-wheels 22 23. The arc of the guides 16 not having the same center as the arc described by the hooks and the center of the guide 16 being arranged at the point 24, the hooks 8 when coming near the end of their travel are disengaged from the spindle 14, this being also facilitated by the shape of the hooks, the inner surfaces 8^a being straight and preferably inclined, so as to be parallel to the arms 6. As soon as the hooks have arrived at the end of their travel, the spindle 14 pulled by its spring which is tensioned to the greatest extent, slides downward along the inner surfaces 8^a of the hooks and leaves them as well as a small corresponding inclined surface of the guides 16. The roller spindle is thereupon drawn rapidly along the straight portion 17 and returns to its original position owing to the action of the spring 12 in the direction shown by the arrow 11. During the backward movement of the hooks 8, the drum upon which the paper is wound is held and prevented from turning in the opposite direction by means of the detent pawl 31. During the printing movement, the cylinder 15 rolls on the paper 28, pressing down the ink ribbon 26 and frame 25, and pressing the paper and ribbon against the printing surface. It thus produces with great speed extremely clear printing on the outer surface of the paper, so that the printed matter can be read from the outside when the paper band passes under the glazed portion 33 of the casing of the apparatus.

The drum 30 can be disengaged from the two pawls 31, 32, so as to be capable of rotating loosely on the spindle when the apparatus is opened, and to enable the printed band to be unwound. This disengaging is rendered possible by raising the lever 39, provided with an arm 40 which normally enters a space between the sprocket wheel 22 and the disk 41 of the drum 30. This space is arranged for the purpose of allowing the drum 30 to slide laterally and to be thus released from the pawls 31, 32, when the arm 40 is withdrawn from the said space, normally engaging, by means of its arm 40 between the sprocket wheel 22 and a disk 41 of the drum 30 provided with ratchet teeth. When the said lever is raised, it is impossible to close the box as the lever is of such dimensions that its upper part engages the interior of the lid. The reversal of the lever enables closing to be effected and brings about the engagement of the drum with the pawls 31, 32. The compartmented drum 44 rotates intermittently owing to the notches thereon corresponding to the pin 43 on the disk 42 so that the drum is advanced to the extent of one notch before each impression. The drum stops at the corresponding notch at the last compartment which is preferably closed at the top, so as to cover the inlet hole. This stoppage is due to the fact that the tooth or metal portion limiting the advance notches is removed at the point 46. The drum is thrown into, or out of, engagement with the driving device 42 43 by means of the lever 47 which produces either a forward or a backward movement of the drum by which it is respectively brought out of, or into, engagement with the driving device 42 43. The lever 47 being thrown back for the purpose of disengaging into the diametrically opposite position, and the handle comes on the edge of the box or casing 55, thus preventing the box from being closed as long as the drum remains disengaged from its driving gear. While the drum remains disengaged, it can be turned loosely, and the rings of the pigeons, or other tokens, withdrawn from it.

When the box or case is closed and the bolt 58 is slipped into the closing position (Fig. 3) the hooks 56 are held by their feet 63 while they can be disengaged from the holes 57 when the bolt is pushed into its opening position (Fig. 6). The controlling device becomes operative as soon as an attempt is made to push it into the opening position. This release of the controlling device takes place owing to the movement of the trigger 74 connected to the bolt, the rotary cutter 64 being then caused to travel sharply across the paper owing to the tension exerted by the spring 71. The pressure of the spring plate 82 results not only in pressing the cut-

ter 64 against the fixed blade, but also in forcing it to rotate, which results in the formation of continuously acting shears during the passage of the cutter, and in obtaining a clean cut of the paper band.

The device is set before the paper band 28 is passed into the printing apparatus above the ribbon 26 etc. The carriage moved by means of the button 65 engages then, by means of its projection 73, with the lower edge of a notch 84 of special shape in the trigger 74, the screws 81 being at that moment below the vertical branch 80 of its guiding slot. This having been done, the paper band 28 is passed into the apparatus and attached to the drum 30. The box is closed, and this closing is secured by pushing the bolt 58 into its closing position. The result of this movement is that the lower end of the trigger is caused to move to the right when the projection 73 will be released and the projection 72, previously free, will engage the trigger at the left hand side of the slot 84 (Fig. 1). As soon now as the bolt 58 is pushed back into its opening position, either for an authorized opening or for any attempt to open, the trigger will move toward the left, an orifice 84 will come full in front of the projection 72 which, thus losing its support, will enable the cutter 64 to obey the action of its spring and to move quickly backward in the direction of the arrow 85 (Fig. 3) and coöperating with the fixed blade 83, to cut the paper band. Any premature or fraudulent attempt to open the box will therefore result in preventing the paper band from being subsequently driven, while authorized opening is also combined with the cutting of the band printed upon in the normal manner.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a time-recorder the combination of means for printing the time to be recorded, clock-mechanism continuously acting upon said printing apparatus, an inked ribbon stretched over the surface of said printing apparatus, a recording band passing over the ribbon and the said printing apparatus, a printing roller adapted to pass over the band and to press it against the printing ribbon, hand-operated means for carrying the printing roller over the band out of contact with the latter, means for releasing said printing roller and automatic means for drawing the roller back over the band, and means engaging the roller for pressing it upon the band and causing the latter to receive an impression from the time-printing apparatus.

2. In a time-recorder the combination of means for printing the time to be recorded, clock-mechanism continuously acting upon the printing apparatus, an inked ribbon and a recording band arranged over the printing surface, a printing roller, upper and lower

guides engaged by the printing roller said upper guides being adapted to lead the printing roller over the band but out of contact therewith and the lower guides being adapted to lead the printing roller over the printing surface and the inked ribbon and to press the recording band thereon, oscillatable levers, hand-operated means for oscillating said levers, hooks pivoted on said levers, said hooks being adapted to engage the printing cylinder and to draw it over the printing surface in the upper guides and to release the said roller upon its reaching the opposite side of the printing apparatus, and automatic means for drawing the roller back in the lower guides and pressing the recording band against the printing apparatus.

3. In a time-recorder the combination of means for printing the time to be recorded, clock-mechanism continuously acting upon the printing apparatus, a recording band arranged over the printing surface, a printing roller, upper and lower guides engaged by the printing roller said upper guides being adapted to lead the printing roller over the printing surface but out of contact therewith and the lower guides being adapted to lead the printing roller over the printing surface and to press the recording band thereon, oscillatable levers, hand-operated means for oscillating said levers, hooks pivoted on said levers, said hooks being adapted to engage the printing roller and to draw it over the printing surface in the upper guides and to release the said roller upon its reaching the opposite side of the printing apparatus, rotatable pulleys, a spring drum tending to retard the rotation of the pulleys in one direction, flexible connections between the printing roller and the pulleys, said flexible connections being unwound from the pulleys when the printing roller is moved forward in the upper guides and drawing the printing roller back in the lower guides when it is rewound upon said pulleys through the torsion of the spring drum.

4. In a time-recorder the combination of means for printing the time to be recorded, clock-mechanism continuously acting on said printing apparatus, a recording band passing over said printing apparatus, means for adjusting the height of the printing surface, a printing roller adapted to pass over the band out of contact with same and to return and press it against the printing surface, means for operating the printing roller, a disk having a smooth portion and a toothed portion, a pawl adapted to engage the toothed portion, a connection between said disk and the printing roller operating means, hand-operated means for turning the disk and a drum having compartments adapted to receive tokens, said compartmented drum moving simultaneously with the disk.

5. In a time-recorder the combination of

means for printing the time to be recorded, clock-mechanism continuously acting on said printing apparatus, an inked ribbon stretched over the printing surface of said printing apparatus, a recording band passing over the ribbon and the said printing apparatus, a printing roller adapted to pass over the band out of contact with same and to return and press it against the printing ribbon above the printing surface of the printing apparatus, means for operating the printing roller, a disk having a smooth portion and a toothed portion, a pawl adapted to engage the toothed portion, a connection between said disk and the printing roller operating means, hand-operated means for turning the disk, and a drum having compartments adapted to receive tokens, said compartmented drum moving simultaneously with the disk.

6. In a time-recorder the combination of means for printing the time to be recorded, clock-mechanism continuously acting on said printing apparatus, an inked ribbon stretched over the printing surface of said printing apparatus, a recording band passing over the ribbon and the said printing apparatus, means for adjusting the height of the printing surface, a printing roller adapted to pass over the band out of contact with same and to return and press it against the printing ribbon above the printing surface of the printing apparatus, means for operating the printing roller, a disk having a smooth portion and a toothed portion, a pawl adapted to engage the toothed portion, a connection between said disk and the printing roller operating means, hand-operated means for turning the disk, and a drum having compartments adapted to receive tokens, said compartmented drum moving simultaneously with the disk, a casing inclosing the whole apparatus, closing means upon said casing, and means operated by the withdrawal of said closing means for cutting off the recording band.

7. In a time-recorder the combination of means for printing the time to be recorded, clock-mechanism continuously acting on said printing apparatus, an inked ribbon stretched over the printing surface of said printing apparatus, a recording band passing over the ribbon and the said printing apparatus, a printing roller adapted to pass over the band out of contact with same and to return and press it against the printing ribbon, means for operating the printing roller, a disk having a smooth portion and a toothed portion, a pawl adapted to engage the toothed portion, a connection between said disk and the printing roller operating means, hand-operated means for turning the disk, a drum having compartments adapted to receive tokens, said compartmented drum moving simultaneously with the disk, and means for disengaging the hand-operated disk driving

means from the compartmented drum-rotating mechanism, a box inclosing the whole apparatus and provided with a lid, and an arm actuated upon the disengagement of the compartmented drum to prevent the box lid from being closed.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

ALFRED PHILIPPE AUGUSTE JEAN PLASSCHAERT.

Witnesses:

A. GRAETZ,

GREGORY PHELAN.