

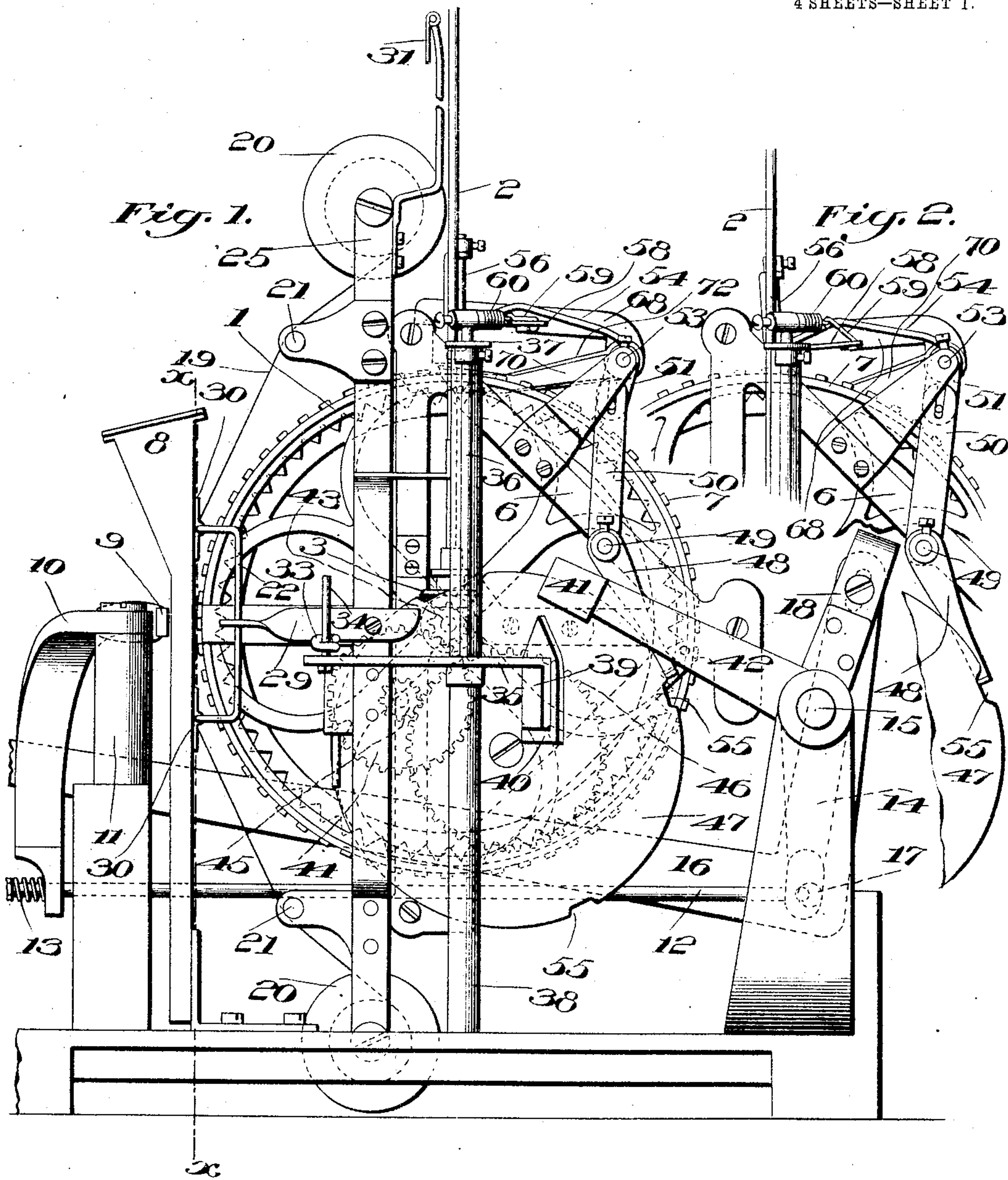
No. 786,011.

PATENTED MAR. 28, 1905.

J. & A. DEY.
TIME RECORDER.

APPLICATION FILED NOV. 15, 1904.

4 SHEETS—SHEET 1.



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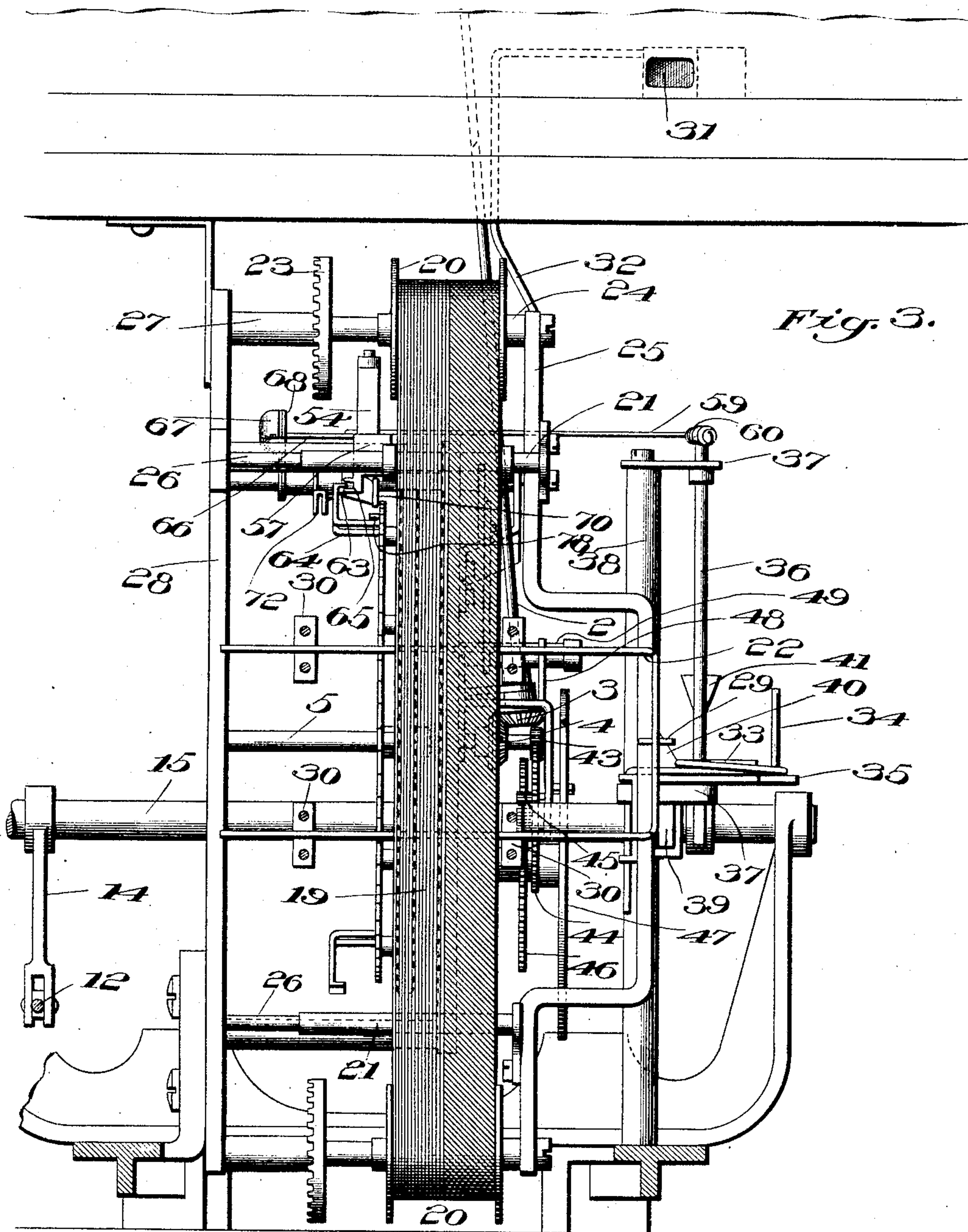
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

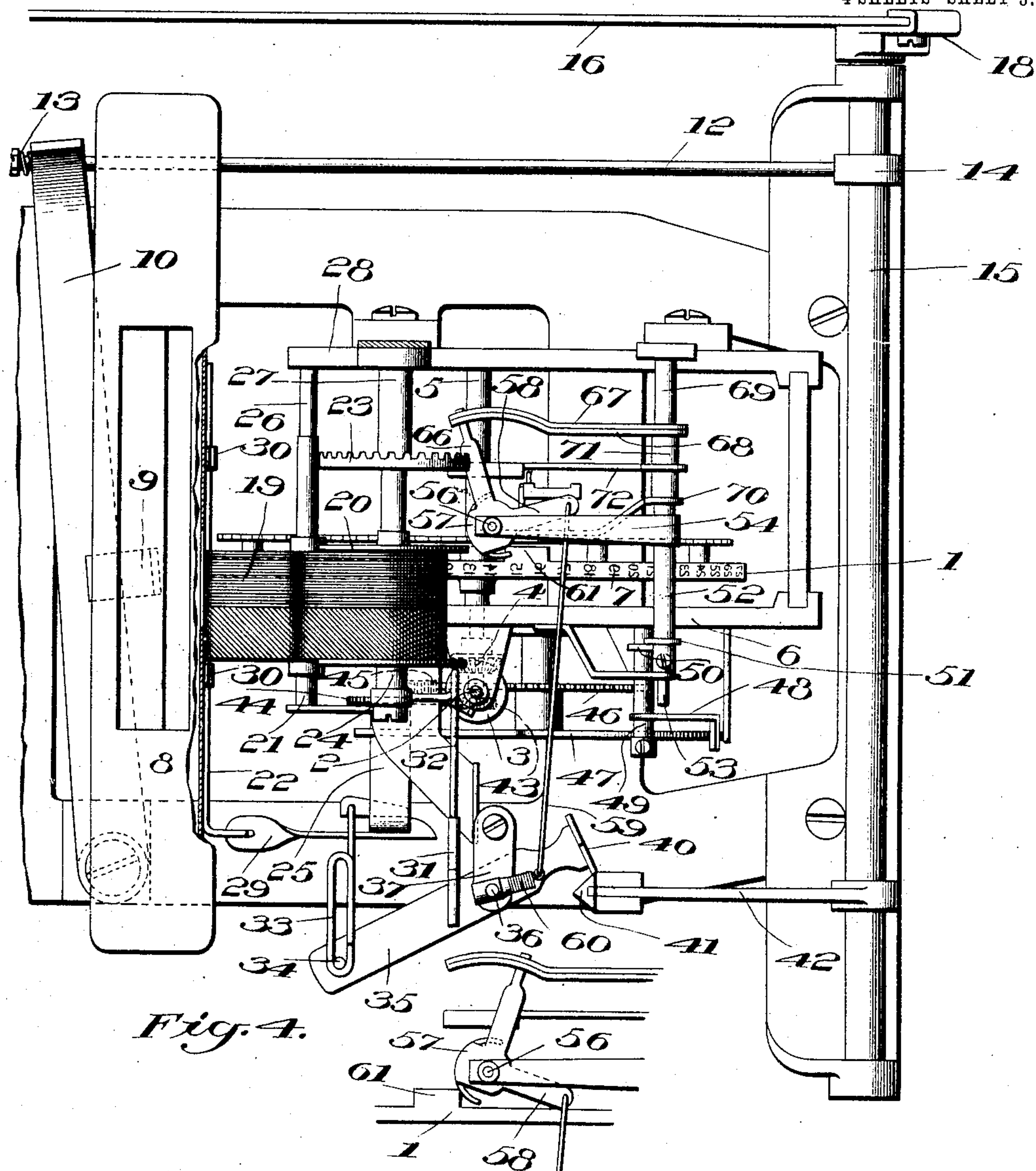


Fig. 4.

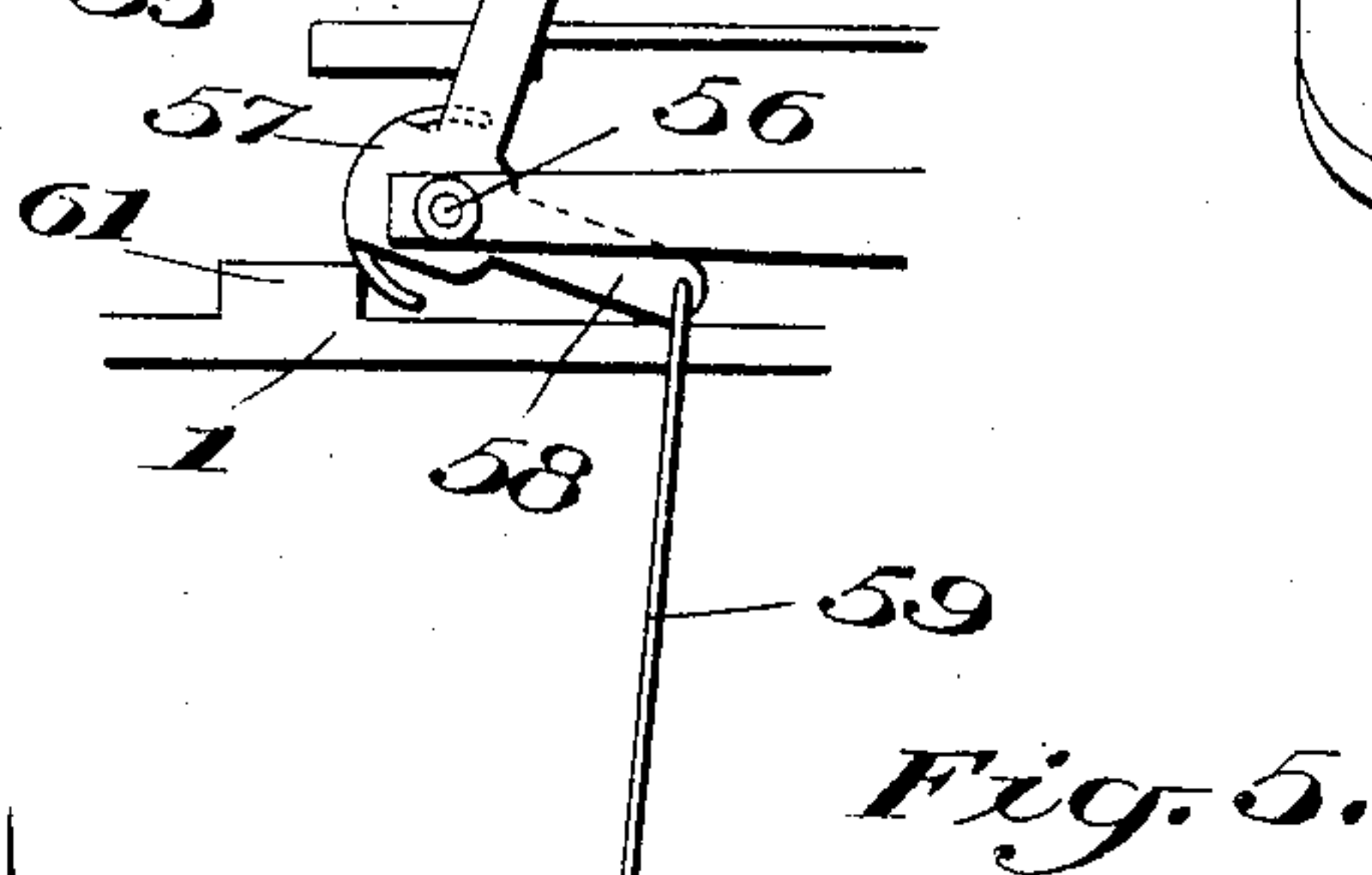


Fig. 5.

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4 SHEETS—SHEET 4.

Fig. 6

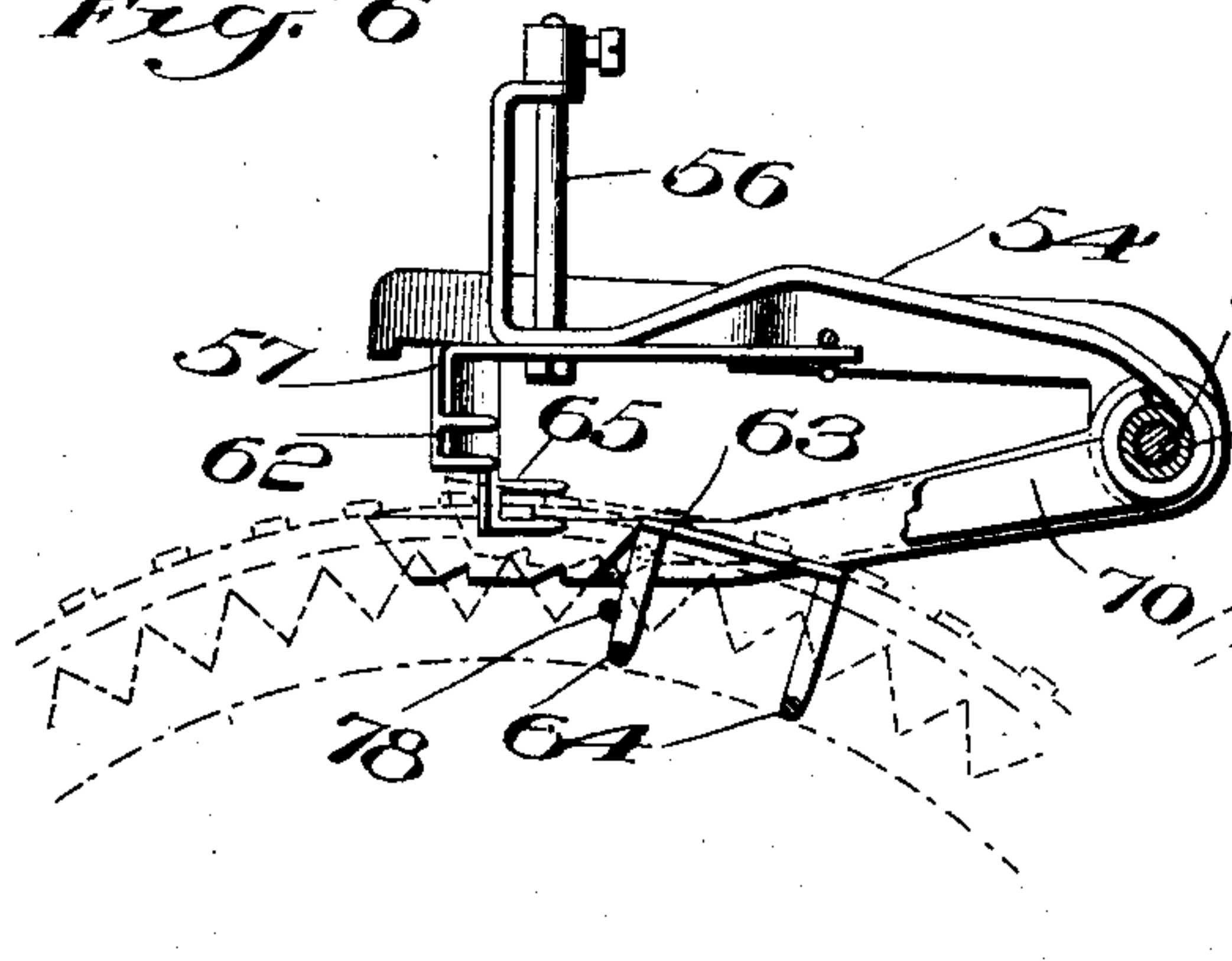


Fig. 9.

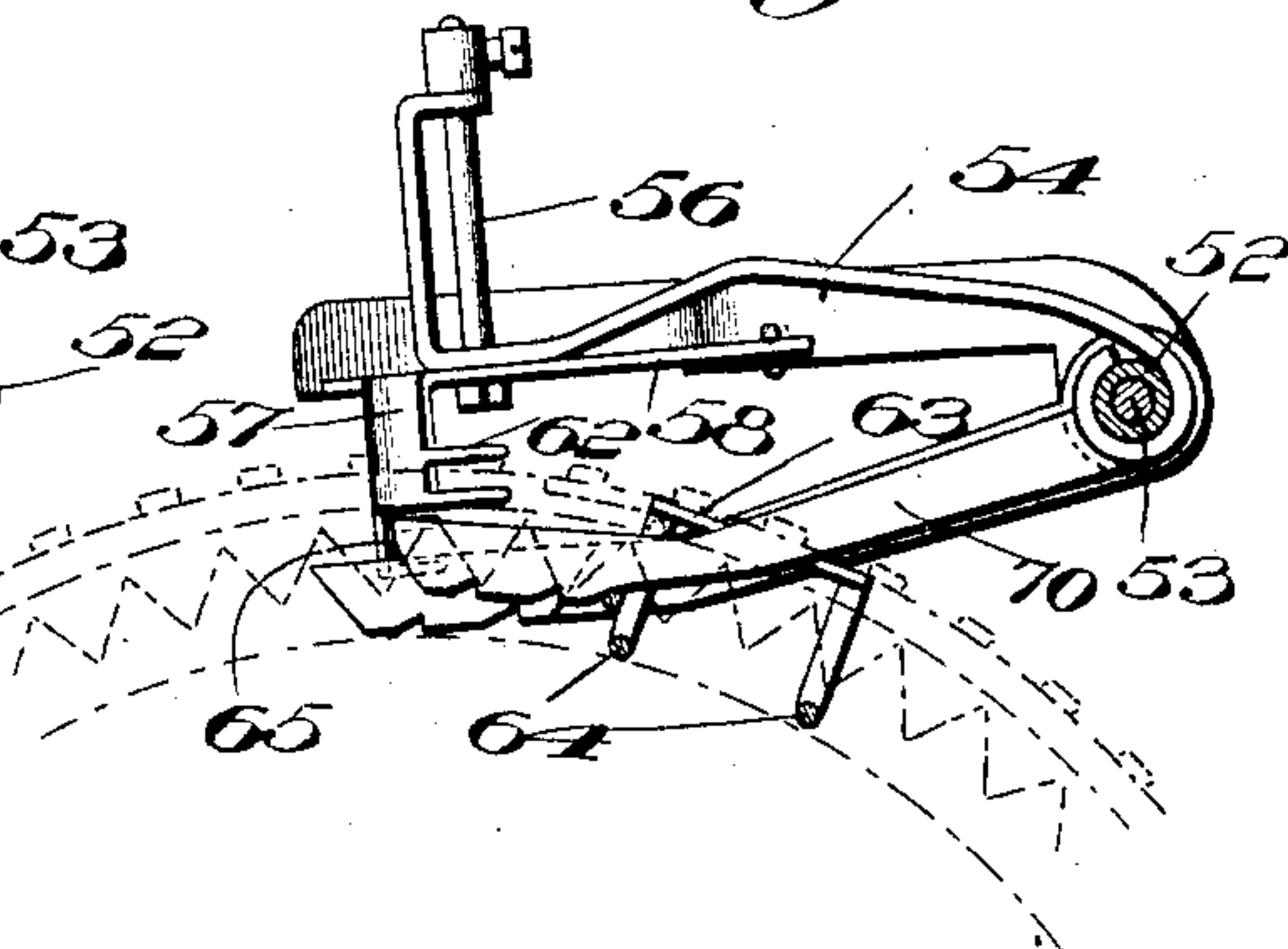


Fig. 7.

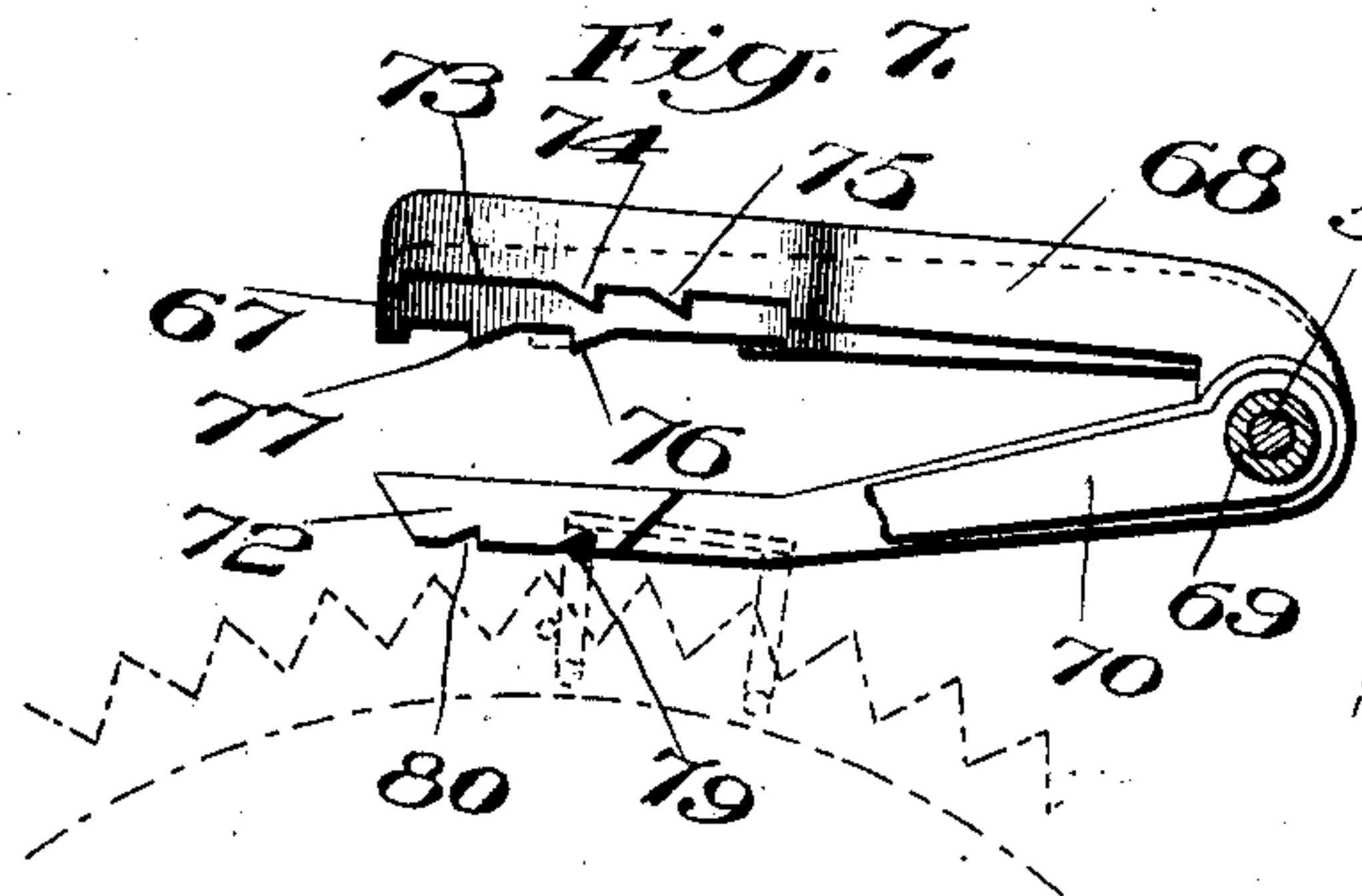


Fig. 10.

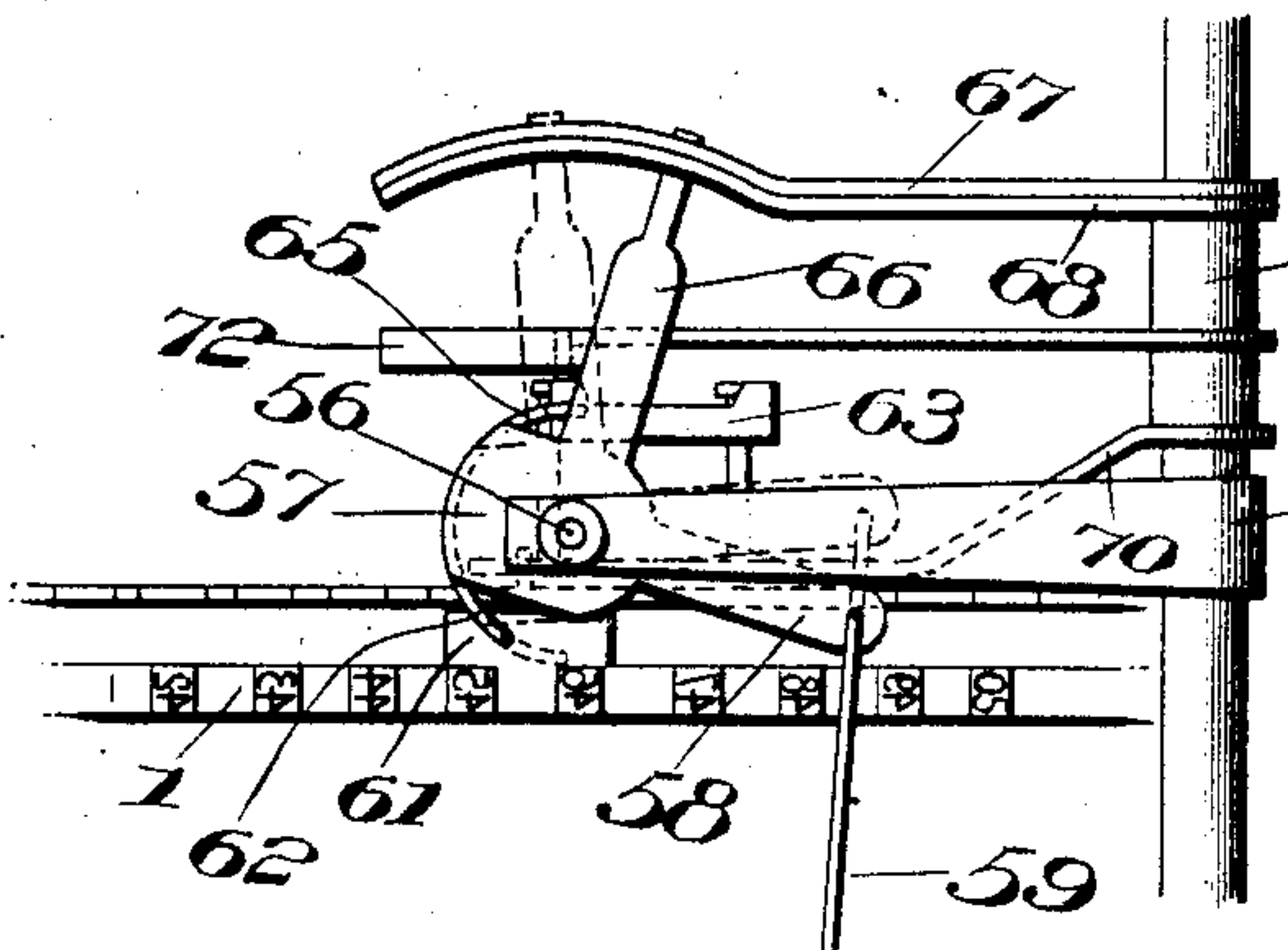
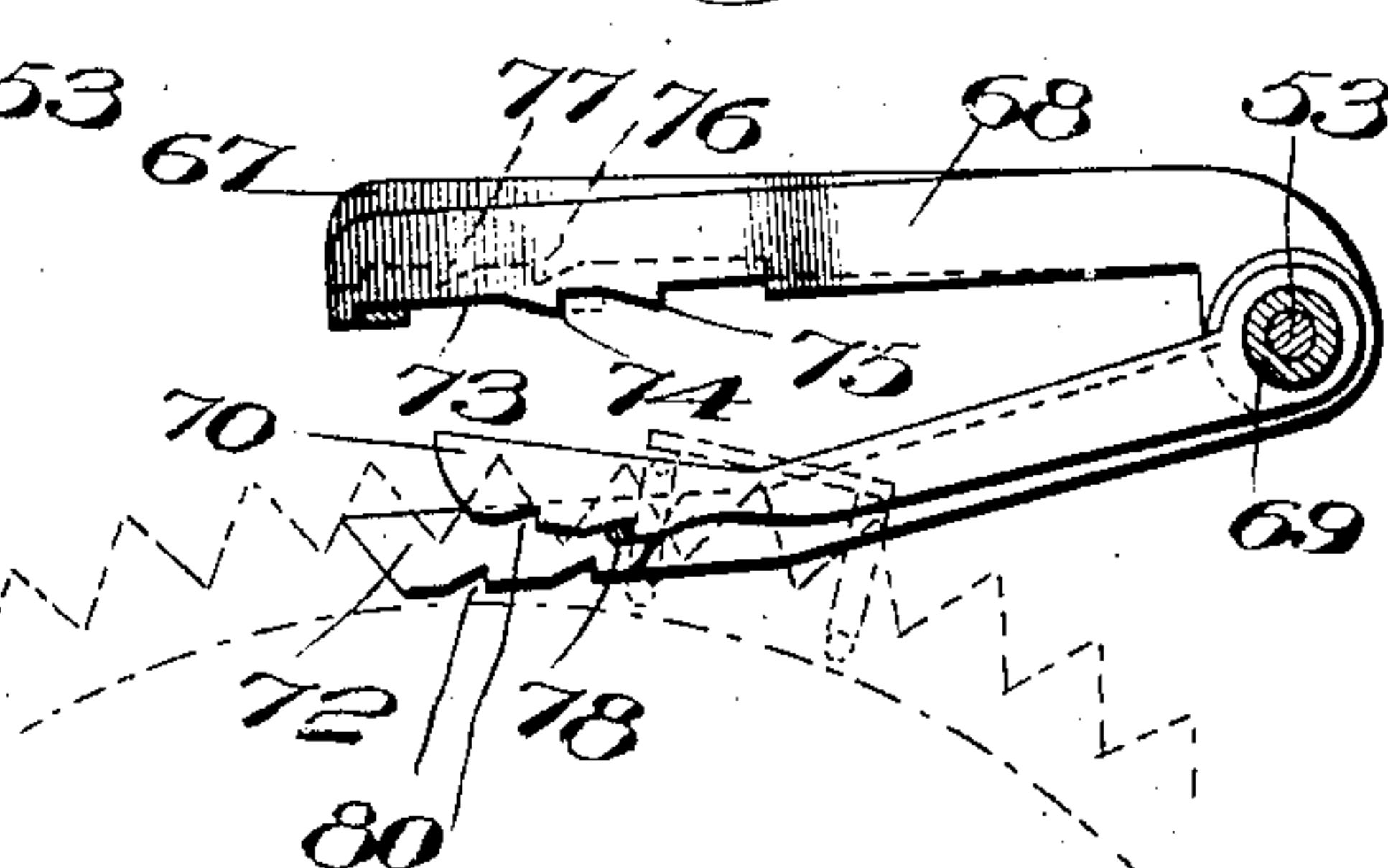


Fig. 8.

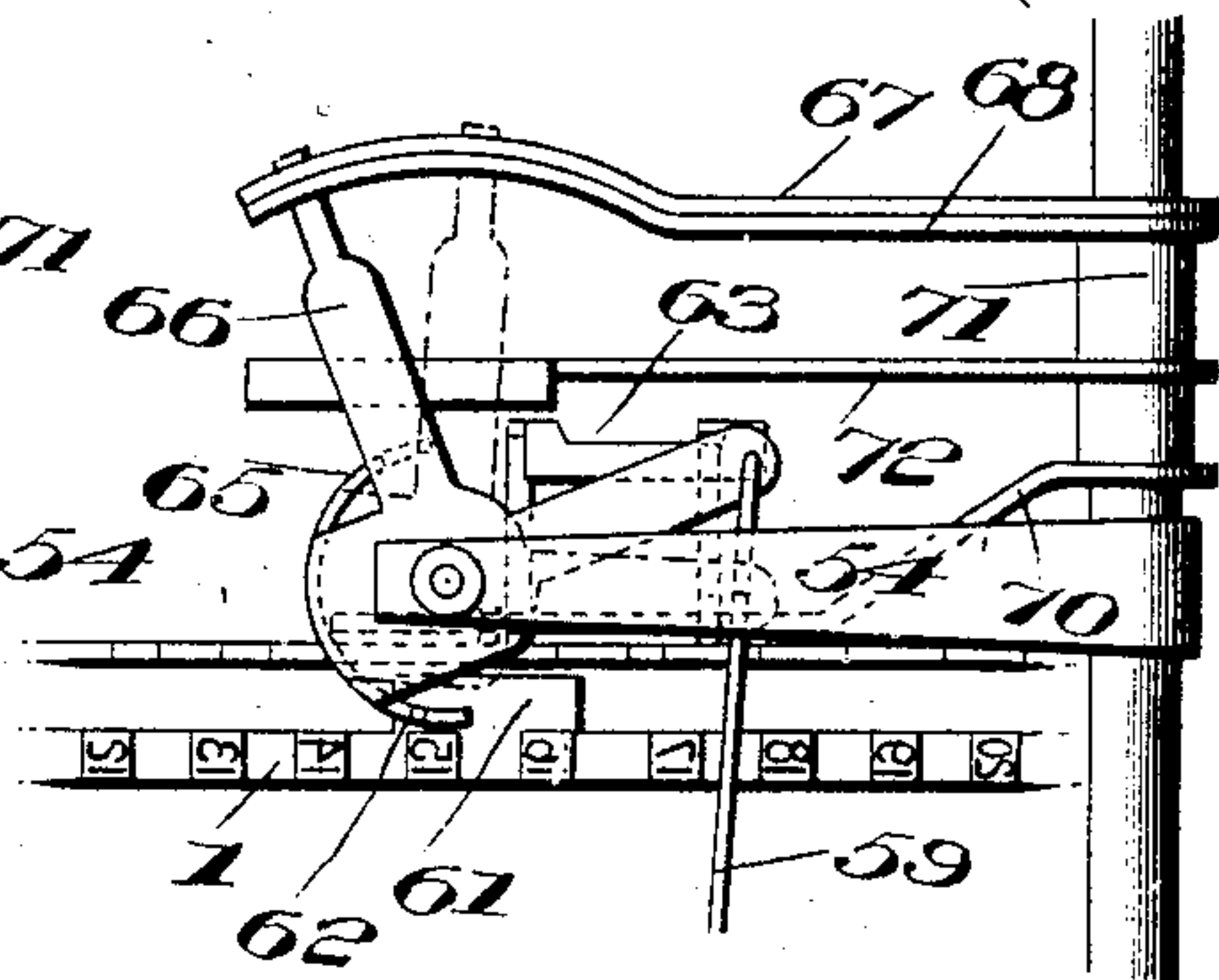


Fig. 11.

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UNITED STATES PATENT OFFICE.

JOHN DEY AND ALEXANDER DEY, OF SYRACUSE, NEW YORK.

TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 786,011, dated March 28, 1905.

Application filed November 15, 1904. Serial No. 232,792.

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-Recorders, 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, and while as to some of its features the invention may be applied to various classes of printing or recording machines the invention is more particularly directed to certain improvements in time-recorders adapted for recording the times of entering or leaving a factory or other establishment of the individuals employed therein.

One of the objects of the invention is to provide means in a workmen's time-recorder whereby records of different classes are made in marks of different colors or otherwise characteristic of the classes.

Another object thereof is to provide means whereby the operations of the machine are placed beyond the control of the workmen at all times.

More specifically, other objects of the invention are to provide a mechanism whereby a relative motion is provided between the surface on which the records are made and the means which produce the impressions in different colors; to provide means whereby this relative motion is automatically controlled by a clock mechanism; to provide a mechanism whereby a relative motion is produced by the manual recording operations performed on the machine, said mechanism being rendered operative by a clock-controlled mechanism; to provide a mechanism whereby the relative movement between the record-surface and the means for making impressions in different colors is rendered operative or controlled with the time-printing mechanism; to provide a locking mechanism whereby the relative motion between the record-surface and the means for making impressions in different colors is placed beyond the control of the individuals whose times are recorded upon the machine; to provide a locking mechanism whereby the

relation between the record-surface and the means for making impressions in different colors thereon is substantially unaffected by vibration or jarring, and to provide means for indicating visually the condition of the mechanism.

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 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 our invention, Figure 1 is a side elevation of the same. Fig. 2 is a similar view of certain parts appearing in Fig. 1, showing the same in a slightly different position. Fig. 3 is a vertical section of this embodiment of our invention, taken on the line *x x* of Fig. 1. Fig. 4 is a plan view of the same. Fig. 5 is a similar view of certain parts appearing in Fig. 4, showing the same in a different position. Fig. 6 is a detail elevation of certain parts of the controlling and locking mechanism. Fig. 7 is a similar view of the locking-levers. Fig. 8 is a plan of certain parts of the locking and controlling mechanism. Fig. 9 is a view similar to Fig. 6, showing the parts in another position. Fig. 10 is a similar view of the locking-levers, showing the same in a slightly different position from that appearing in Fig. 7. Fig. 11 is a plan view of the locking and controlling mechanism in its alternative position with reference to that shown in Fig. 8.

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

In order to render clearer the general nature of our invention, it may here be noted that in the use of apparatus of the nature of time-recorders the impressions made upon the recording-surface may in general be divided into two classes—namely, those made within the proper hours and those made without such hours, the latter denoting the early leaving or tardy arrival of a workman. Although an examination of the figures would show in

which class each record was made, nevertheless it would be of value if means could be provided whereby these entries could be more readily distinguished. In order to attain this and other desirable results, it is proposed to so arrange the mechanism as to stamp the impressions of the two classes above indicated in distinctive colors. In accordance with one feature of the invention a time-controlled printing mechanism is combined with means for making impressions therefrom upon a record-surface and means whereby the impressions made during different intervals of time are made with different inks. For example, if a time-recorder should be so set as to give an impression in red if made before twelve or after one and in green between the hours of twelve and one, assuming that the lunch-hour extends over that period of time, an impression upon the time-record of an employee would indicate at a glance that he had left work before the time set or was tardy upon his return without the necessity of examining the figures. In accordance with this illustrative embodiment it is proposed to accomplish this desirable result by means of a lateral shifting of the ribbon relative to a type-bearing member, so as to bring different portions thereof or separate ribbons of varying colors into operative position. It will readily be seen that if a practical and efficient mechanism of the above type were provided the same might be so arranged as to print any overtime work done by the laborer in a color which is distinctive with relation to the record of that done within the regular working hours. The advantage of this feature whereby the fact that a workman is entitled to extra pay is shown at a glance without the necessity for examining the figures upon the card will be readily appreciated.

The means whereby the impressions made upon the record-surface during different intervals of time are printed in different inks may be greatly varied in construction. In accordance with one feature of the invention this mechanism is so constructed that a relative motion is produced between the record-receiving surface and the means whereby the impressions are made in different inks. In accordance with the embodiment of the invention herein shown the means whereby the impressions are made in different inks are shifted with relation to the record-surface, the shifting operations being effected at predetermined intervals under control of the clock mechanism whereby the time-printing wheels are controlled. In accordance with this embodiment of the invention also a single time-printing mechanism is employed, and the means for making impressions therefrom in different colors comprises devices for supplying inks of different colors, the ink-applying devices being shifted with relation to both the time-printing mechanism and the record-

surface. In accordance with one feature of the invention the means for supplying inks of different colors consists of a ribbon mechanism, and in the particular embodiment of the invention illustrated the ribbon mechanism comprises a single ink-ribbon having different side-by-side longitudinal portions thereof supplied with inks of different colors, and the ribbon-carrying mechanism is so mounted that it may be shifted laterally with relation to both the printing-wheels and the record-surface. In accordance with one feature of the invention also the means whereby a relative movement is effected between the record-surface and the means for making impressions in different colors is controlled or rendered operative by the clock mechanism; but the actual shifting movement is produced automatically when the machine is actuated in the ordinary way to perform the recording operations. In accordance with one feature of the invention also means are provided whereby the shifting mechanism is under positive control at all times and is locked to prevent movement either by design of the workman or by accidental or incidental vibration or jarring at any other time than that for which the machine is set.

Referring now to the drawings, there is shown in Fig. 1 the minute-wheel 1 of a time-recorder, which is preferably actuated by clockwork, (not shown,) the power being transmitted by a vertical shaft 2, terminating in a bevel-pinion 3, which meshes with a similar pinion 4 upon the shaft 5 of the minute-wheel. An hour-wheel may be driven from this wheel in any desired manner; but as the same forms in itself no part of the present invention it has not been shown, as unnecessary complication in the drawings would thus result. The minute-wheel 1, the shaft 5 of which is journaled in frame 6, bears upon its outer surface type 7, adapted to make an impression upon the surface of a card or other registering-surface slipped within a guide 8. For this purpose the platen 9 upon lever 10, which is pivotally mounted upon post 11, is provided. Lever 10 is actuated by means of a connecting-rod 12, cushioned by spring 13 and connected to an arm 14, fixed upon the rock-shaft 15, which in turn is actuated by means of a bell-crank hand-lever 16, pivoted at 17, and rocking shaft 15, by means of a slotted connection with an arm 18, fixed thereon. In this manner upon the depression of the hand-lever 16 shaft 15 will be rocked and the arm 14 swung so as to force the platen 9 against the card within guide 8 and carry the latter into engagement with the type 7 upon minute-wheel 1.

A printing-ribbon 19, rolled upon reels or spools 20, is guided, by means of sleeves 21 and the double guide-rod 22, so as to pass between the type 7 and the receiver or guide 8, as shown in Fig. 1 of the drawings. This ribbon may

be fed longitudinally in any desired manner, as by gears 23, the feeding mechanism not being here shown, as it forms no part of the present invention. Spools 20 are mounted, by means of sleeves 24, upon what may be termed a "ribbon-bar" 25, the spools, sleeves, ribbon-bar, and parts fixed thereto being slidably supported upon spindles 26 and 27, fixed upon the frame 28. The double guide-rod 22 is secured to ribbon-bar 25 by means of an arm 29 fixed thereon, and is adapted to slide within the guiding-brackets 30 upon the card-receiver 8 of the instrument. It will thus be seen that upon the lateral movement of ribbon-bar 25 the guiding-sleeves, spools, guide-rod, and ribbon will be moved therewith, these parts all being moved as a whole without changes in their position with relation one to another. In this manner the ribbon may be shifted laterally with respect to minute-wheel 1 without producing folds or wrinkles therein or unnecessary wear upon the same. Ribbon 19 is herein shown as having portions of two colors, preferably red and green, and of substantially equal width. If desired, however, a greater number of colors could be used with certain changes in the mechanism herein described, or separate ribbons can be used in place of the single ribbon, the separate ribbons being upon the same or separate spools, as desired.

A suitable visual indicator 31 is preferable fixed upon ribbon-bar 25, as by means of the bent arm 32, this indicator being divided into substantially equal sections of colors corresponding with those of ribbon 19 and being so positioned as to expose at a window or opening in the casing of the instrument a surface of the color which the mechanism is in condition to print. For example, with the apparatus in the condition shown in Fig. 3 the printing-wheel 1 is shown to be opposite the left-hand ribbon and the target or indicator 31 exposes a portion which is of the same color as this ribbon. Upon a movement of the ribbon to the left, however, with reference to Fig. 3 the color of the ribbon opposite the printing-wheel 1 will be changed and that indicated by the indicator or target 31 will be found to correspond therewith. In this manner the user of the instrument is enabled to tell at a glance the color in which the impression will be made.

Ribbon-bar 25, with the associated parts, is shifted through a slotted link 33 connected therewith and having projecting through its slotted end a pin 34, fixed upon the end of a swinging lever 35, mounted upon a vertical spindle 36. Spindle 36 is journaled in arms 37, fixed upon a post 38, which is secured to the frame of the instrument. The slot in link 33 permits a movement of the lever 35 throughout a limited range without affecting the position of the ribbon-bar; but upon this movement exceeding the limit determined by the length of the slot any further swinging

of the lever will cause a lateral movement of the ribbon-bar with its associated parts. Lever 35 is flanged at its free end, as shown at 39, and has secured thereto a wedge-shaped member 40, the point of which is uppermost, as shown at Fig. 1 of the drawings. Adapted to engage member 40 is a knife-edge 41, fixed upon arm 42, which is rigidly connected with the rock-shaft 15. It will thus be seen that upon the hand-lever 16 being swung downwardly a corresponding movement of arm 42 will result and wedge-shaped member 40, if within the path of travel of knife-edge 41, will be engaged thereby and thrown laterally on account of the action of their inclined contacting surfaces. This movement will throw the pin 34 to one extreme of its path of travel and cause a corresponding movement of the ribbon-bar 25 unless the same is already in its extreme position in this direction.

The means for setting the mechanism so as to bring the wedge-shaped member into the path of travel of knife-edge 41, and thus cause a shifting of the ribbon, is substantially as follows: Fixed upon shaft 5 is a pinion 43, which by means of idle gear 44 and pinion 45 is adapted to drive at a low rate of speed a spur-pinion 46, having in fixed relation thereto and actuated thereby a disk 47. This reducing-gearing is preferably of such proportions as to cause the disk 47 to make one complete revolution every twenty-four hours. Resting upon the outer surface of this disk is a wiper-arm 48, adjustably mounted upon a rock-shaft 49, having fixed thereon an arm 50, which has a slotted connection with an arm 51, fixed upon a sleeve 52, mounted on a spindle 53, secured to the frame of the instrument. This sleeve is provided with a rigid arm 54, normally held in depressed position by reason of the weight of the parts attached thereto. A series of notches or recesses 55 are preferably cut in the outer portion of disk 47, and the wiper-arm 48, held in engagement with the outer surface of the disk, falls into these notches when opposite the same, and thus causes a slight oscillation of rock-shaft 49 and a corresponding movement of sleeve 52. In this way the lever-arm 54 is made to assume two alternative positions, according as the wiper-arm rests upon the outer surface of disk 47 or within a notch 55 cut therein.

Pivotaly mounted upon the outer end of arm 54 by means of a pin 56 is what may be termed a "controlling" member 57, provided with a projection 58, connected, by means of link 59, with a spring 60, adjustably fixed upon the upper end of spindle 36. It will thus be seen that the lever 35 may be swung throughout the range limited by the length of the slot within slotted link 33 by means of a corresponding movement of the controlling member 57. Formed upon the lateral surface of

minute-wheel 1 is a lug or projection 61, adapted under certain conditions to engage a fork 62 upon the controlling member 57. A small plate 63 offset from minute-wheel 1 by means of rods 64 upon the same being placed in its path of travel, is in a similar manner adapted to engage a fork 65. It will thus be seen that either fork 62 will be engaged by the lug 61 or fork 65 by means of plate 63 and the controlling member 57 rotated in one direction or the other, according as these forks are interposed in or removed from the path of travel of the coacting parts. Plate 63 and lug 61 are arranged substantially at the same level, whereas the forks with which they are adapted to engage are vertically offset, as shown most clearly in Fig. 6 of the drawings, and plate 63 is thus made to engage the corresponding fork or lug 61 to engage fork 62, according as the controlling member is in one or the other of its two alternative positions, corresponding to the position of the wiper-arm 48, either within a notch 55 or upon the raised surface of the disk 47. In Fig. 8 of the drawings the plate 63 is shown as about to engage with the fork 65, and thus swing the controlling member to the position shown in dotted lines in Fig. 8. In Fig. 11, however, the lug 61 is in engaging position, and the controlling member 57 is about to be swung to the position indicated in dotted lines in this figure. In this manner the lever 35 may be swung to a position with the pointed upper end of wedge-shaped member 40 slightly beyond the knife-edge 41, the movement thereof being determined by the relative positions of the fork and coacting member. A downward movement of the knife-edge with the parts in this position will result in the throwing of ribbon-bar 25, with its associated parts, into the other of its two alternative positions.

As the above-described mechanism would be of itself to a certain degree susceptible to the effect of vibration or jarring of the apparatus, it is highly desirable to provide means for locking the same, so as to render it unaffected in such manner. Upon the controlling member 57 is formed or affixed an arm 66, which is provided with a reduced extension adapted to coact with locking-arms 67 and 68. Locking-arm 67 is fixed to a sleeve 69, loosely mounted upon the spindle 53, and has at its opposite end a releasing-arm 70, for a purpose hereinafter described. In like manner locking-arm 68 is rigidly connected to an outer sleeve 71, journaled upon the sleeve 69 and having thereon a releasing-arm 72. Locking-arm 68 is shaped upon the lower surface of its free end as shown in Fig. 10 of the drawings, having a space 73, extending substantially throughout one-half of the path of travel of the arm 66, and a pair of ratchet-teeth 74 and 75, facing toward the pivotal mounting of the arm. Arm 67, on the other hand, is provided with an unobstructed re-

cessed portion upon the side toward the spindle 53 and upon the outer side thereof with a pair of ratchet-teeth 76 and 77, facing toward the free end of the arm. With the apparatus in normal condition and when the arm 66 is in either one or the other of its two extreme positions the same is locked in such position by one or the other of locking-arms 67 and 68 by teeth 77 and 75, respectively. It will be noted, however, that these arms are never simultaneously in locking relation to arm 66, thus rendering it necessary to raise one only of the locking-arms in order to release the controlling member 57. This release is accomplished by means of pins 78 and 79, positioned one upon the minute-wheel 1 and the other upon the supporting-rod 64 of plate 63 and adapted to coact, respectively, with the releasing-arms 70 and 72. Ratchet-teeth 80 are preferably provided upon the lower surface of releasing-arms 70 and 72 for a purpose hereinafter described.

The operation of the above-described embodiment of our invention is as follows: Assuming the parts to be in normal condition, with the red ribbon opposite the printing-wheel 1, as shown in Fig. 3 of the drawings, and with a notch 55 upon the disk 47 in such position as to be nearly opposite the wiper-arm 48, a slight further movement of the clockwork will permit the latter part to fall into the notch 55, this falling being accomplished by virtue of the weight of the parts connected with arm 54 or by a suitable spring, if desired. The several parts are so adjusted that this movement takes place at the time at which it is desired to change the color of the impressions made by the instrument. For example, if the lunch-hour is from twelve to one, and it is thus desired that an impression made before twelve shall be in red ink, whereas after twelve is in green ink, this movement will take place not later than and substantially at twelve o'clock. The downward movement of wiper-arm 48 causes a corresponding downward movement of the arm 54, with the parts connected therewith, and brings the fork 62 into the path of travel of the projecting lug 61. Immediately before engagement of the fork by lug 61 the pin 78 engages releasing-arm 70, as shown in Fig. 10 of the drawings, thus raising locking-arm 67 and releasing the arm 66. The movement of lug 61 in engagement with fork 62 rotates the controlling member 57 about its axis until the fork passes from the path of travel of the lug, the locking-arm 67 meanwhile being held in elevated position by means of pin 78, which is carried by the minute-wheel. Upon the passing of the lug 61 from engagement with fork 62 the arm 66 reaches the position indicated in dotted lines in Fig. 11, in which it is beyond the two ratchet-teeth of locking-arm 67 and the first ratchet-tooth of locking-arm 68. In this manner the fall of locking-arm 67, which takes place immediately

upon the disengagement of pin 78 with releasing-arm 70, does not affect the controlling member 57, as the same has already passed beyond the teeth thereof. The above-described movement of controlling member 57 throws the ribbon-lever 35 by means of link 59 into a position in which the point of wedge-shaped member 40 is beyond or outside of the edge of knife-edge 41. It may here be noted that this movement of ribbon-lever 35 causes of itself no shifting of the ribbon 19, as the pin 34 merely travels within the slot of the slotted link 33. Upon the machine being used for the first time after such movement has taken place, however, the downward movement of knife-edge 41 will cause the movement of ribbon-lever 35 to the outer extreme of its path of travel—that is, to the position in which the wedge-shaped member is entirely upon the outer side of the knife-edge. This movement will cause the shifting of the ribbon and of the mechanism upon which it is mounted by means of the sliding of the ribbon-bar and the sleeves affixed thereto upon the spindles within the same. In this manner the green ribbon is brought opposite the printing-wheel, and the impression made by the movement of the hand-lever causing this shifting will be in green, thus indicating that the same is made after twelve and that the time of leaving of the workman was satisfactory. With the parts in this condition any desired number of impressions may be made without changing the color thereof or affecting the ribbon-shifting mechanism. Upon the disk 47 rotating, however, so as to throw the wiper-arm 48 outwardly upon the raised surface thereof by a movement which is the reverse of that above described, the arm 54, together with the parts mounted thereon, is raised so as to bring the lower fork 65 within the path of travel of the plate 63 and remove fork 62 from the vertical position in which it was engaged by lug 61. This movement will under the above conditions take place at or shortly before one o'clock, and immediately thereafter the pin 79 will engage releasing-arm 72 and raise the locking-lever 68. This is followed by the engagement of plate 63 with the fork 65, as shown in Fig. 8 of the drawings, and a consequent rotation of controlling member 57 and arm 66 beyond the ratchet-teeth of locking-arm 68. This movement causes the movement of swinging lever 35 to a position in which the point of wedge-shaped member 40 is slightly inside the edge of knife-edge 41, and accordingly any impression made after this movement will result in the reshifting of the ribbon so as to bring the red color into operative position by an operation which is the reverse of that above described. Any impression made after this point will accordingly be made in red ink, the same indicating that the machine has been used after the hour set

for the return of the workman, or, in other words, that the user thereof was tardy.

The inner locking-teeth 74 and 76 are provided to prevent any retraction of the controlling member 57 after the same has been thrown into mid-position and before it has been forced into its extreme opposite position by the first subsequent user of the machine. The advantage of this feature lies in the fact that if a considerable period elapses between the actuation of controlling member 57, and consequent "setting" of the mechanism in shifting condition, and the actual shifting by the next user of the instrument the lever 35 cannot be thrown either by accidental or intentional jarring or vibration into a position in which the wedge-shaped member is upon the side of the knife-edge from which it has just been moved. These teeth thus render it impossible for a tardy workman who arrives, for example, at one minute after one to jar the machine or otherwise tamper with the same so as to prevent the shifting of the ribbon and a red impression being made upon his card.

The function of the ratchet-teeth 80 upon the lower surfaces of the release-arms is to prevent the jarring or swinging of the minute-wheel, which is preferably flexibly connected with the source of power, so as to print a time-record which is not in accordance with the color in which the impression is made. For example, if a workman arrives at one minute after one, assuming the lunch-hour as hereinbefore indicated, the mechanism is in condition to print in red, thus showing the tardy arrival of the workman. If a backward movement of the wheel were unrestricted, however, it might be possible to so swing or jar the instrument as to cause the minute-wheel to print the hour of one o'clock, which would appear to indicate the fact that the workman arrived on time, although the impression would nevertheless be made in red. Such a contradictory state of affairs is prevented by the ratchet-teeth 80, which, coacting with the pins 78 and 79, prevent a rearward movement of the minute-wheel after the same has arrived in a position to set the ribbon-shifting mechanism in operative condition.

It will thus be seen that we have provided simple and efficient mechanism for shifting a printing-ribbon which is reliable and durable to a marked degree. It will also be seen that the same is substantially unaffected by any attempted tampering therewith or jarring or vibration of the building in which it is placed. It will be apparent that the notches 55 may be positioned at any desired points about the periphery of disk 47 and may be of any desired length or shape. Thus the ribbon may be caused to shift at a reasonable time before the morning work-hour and again at that time, so as to print the records of the arriving workmen in green color. Throughout the morn-

ing work-hours—as, for example, from seven to twelve—the mechanism will be in such condition as to print in red the time when used, and the ribbon may be reshifted at the hour of
 5 twelve, so as to again print in green for the outgoing workmen. In this manner the mechanism may be formed so as to act in accordance with any desired hours of work and any number of notches—as, for example, an extra
 10 notch for evening work may be formed upon the disk. The latter member, it will be understood, is readily removable, and the notches upon the same may readily be changed in form or number or a new disk replaced, if desired.
 15 It may also here be noted that on account of the fact that the actual setting of the mechanism in operative condition is caused by the minute-wheel rather than the hour-disk the notch may be formed so as to cause a movement of the
 20 wiper-arm at any desired time before the engagement of the parts upon the minute-wheel with the forks upon the controlling member. In this manner a suitable period of time may be provided for the complete movement of the
 25 wiper-arm and parts connected therewith, so as to place the forks exactly in their correct position before engagement therewith by the parts upon the minute-wheel. It will also be seen that the mechanism may be constructed
 30 so as to cause a change in color of the impression made exactly at the desired minute or fraction of a minute without the necessity for any fine adjustment of the parts. Another advantageous feature lies in the fact
 35 that the clockwork is not burdened by the actual mechanical shifting of the ribbon mechanism, but merely sets the same in the proper condition, and the shifting itself is accomplished by the user. It may here be noted
 40 that owing to the vertical position of the ribbon and closed back of the card-receiver 8, as shown in Fig. 1 of the drawings, any displacement of the ribbon, as by means of inserting a wire in the receiver, is rendered
 45 practically impossible. The advantage of this feature whereby any tampering with the ribbon and altering of the position thereof or loosening the same, so as to render the shifting mechanism inoperative, is prevented should
 50 be largely apparent, as it will readily be seen that if a horizontal ribbon and open-backed receiver were used it would be comparatively easy to cause the recorder to print any desired color irrespective of the position of the ribbon-shifting parts.
 55

The construction of the above embodiment of our invention is inexpensive, and the same can be applied to machines now in use and is susceptible of use in apparently remote connections without loss of many of the advantageous features thereof.

It may here be noted that the term “mark” is used throughout this specification and in the following claims in a broad sense as denoting any perforation, impression, distortion,

or discoloration of a receiving-surface whereby a record may be made. It may also be noted that by “printing mechanism” is meant any means for forming a mark as above defined, and “impression” means the mark
 70 made as distinguished from the surface upon which it is made.

As many changes could be made in the above construction and many apparently widely different embodiments of our invention could be
 75 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 interpreted as illustrative and not in a limiting sense. We desire
 80 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,
 85 as a matter of language, might be said to fall therebetween.

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

1. In combination, a platen, printing mechanism, a ribbon interposed between said platen and said printing mechanism, and clock-controlled means for shifting said ribbon laterally with respect to its direction of travel.
 95

2. In combination, a platen, printing mechanism, a multicolored ribbon interposed between said platen and said printing mechanism, and clock-controlled means for shifting
 100 said ribbon laterally with respect to its direction of travel in such manner as to change the color of the portion of the ribbon in operative relation to said printing mechanism.

3. In combination, a type-bearing member, a printing-ribbon, and clock-controlled means
 105 adapted to control mechanism for shifting said ribbon laterally with respect to said type-bearing member.

4. In combination, a type-bearing member, a multicolored printing-ribbon, and automatic
 110 means adapted to control mechanism for shifting said ribbon laterally so as to change the color of the portion thereof opposite said type-bearing member.

5. In combination, a type-bearing member, ribbon-spools, a slidably-mounted ribbon-bar
 115 to which said spools are rotatably secured, a printing-ribbon upon said spools opposite said type-bearing member, and automatic means adapted to control mechanism for sliding said
 120 ribbon-bar and changing the portion of said printing-ribbon opposite said type-bearing member.

6. In combination, a type-bearing member, a printing-ribbon opposite thereto, spools
 125 upon which said printing-ribbon is mounted, a slidably-mounted bar having parts secured thereto upon which said spools are mounted, a lever connected with said ribbon-bar, automatically-actuated means for setting said le-
 130

ver, and means adapted to throw said lever to one extreme of its path of travel and shift said printing-ribbon laterally with respect to said type-bearing member.

5 7. In combination, a type-bearing member, a multicolored printing-ribbon in operative relation thereto, spools upon which said printing-ribbon is mounted, a slidably-mounted ribbon-bar having parts secured thereto upon which
10 said spools are mounted, a lever having a connection with said ribbon-bar, automatically-controlled means for setting said lever in operative condition, and means adapted to throw
15 said lever to one extreme of its path of travel and shift said ribbon laterally with relation to said type-bearing member so as to bring a portion thereof of different color into operative relation thereto.

20 8. In apparatus of the class described, in combination, printing mechanism comprising a minute type-wheel and mechanism for operating the same, a printing-ribbon in operative relation to said type-wheel, and means automatically controlled by said minute-wheel
25 adapted to shift laterally said printing-ribbon with respect thereto.

30 9. In apparatus of the class described, in combination, printing mechanism comprising a minute type-wheel and mechanism for operating the same, a multicolored printing-ribbon in operative relation to said type-wheel, and means automatically controlled by said wheel
35 adapted to shift laterally said printing-ribbon with relation thereto so as to bring a portion thereof of different color into operative position.

40 10. In apparatus of the class described, in combination, printing mechanism comprising a minute type-wheel and mechanism for operating the same, a slidably-mounted multicolored printing-ribbon in operative relation to said type-wheel, and means automatically
45 controlled by parts fixed upon said wheel adapted to shift laterally said printing-ribbon and bring a portion thereof of different color into operative position.

50 11. In apparatus of the class described, in combination, printing mechanism comprising a minute type-wheel and mechanism for operating the same, a slidably-mounted multicolored printing-ribbon in operative relation to said wheel, a lever connected with the part
55 upon which said ribbon is mounted, a pivotally-mounted member connected with said lever, parts fixed upon said minute-wheel adapted to engage and swing said pivotally-mounted member and throw said lever into operative condition, and means adapted to engage
60 said lever when in operative condition and throw the same to one extreme of its path of travel and shift said ribbon laterally so as to bring a portion thereof of different color into operative relation to said minute-wheel.

65 12. In an apparatus of the class described, in combination, printing mechanism compris-

ing a minute type-wheel and mechanism for operating the same, a slidably-mounted multicolored printing-ribbon in operative relation to said type-wheel, a ribbon-bar affixed to the mounting of said ribbon, a pivotally-
70 mounted lever connected with said ribbon-bar, a pivotally-mounted member having a connection with said lever, parts fixed upon said minute-wheel adapted to engage and swing
75 said pivotally-mounted member and throw said lever into operative condition, means adapted to engage said lever when in operative condition and throw the same to one extreme of its path of travel and slide said ribbon
80 laterally with respect to said minute type-wheel in such manner as to bring a portion thereof of different color into operative position, and means automatically controlling the engagement of said parts upon said minute-wheel with said pivotally-mounted member. 85

13. In an apparatus of the class described, in combination, printing mechanism comprising a minute type-wheel and mechanism for operating the same, a slidably-mounted multicolored printing-ribbon in operative relation to said type-wheel, a ribbon-bar affixed to the mounting of said ribbon, a pivotally-
90 mounted lever connected with said ribbon-bar, a pivotally-mounted member having a connection with said lever, parts fixed upon said minute-wheel adapted to engage and swing
95 said pivotally-mounted member and throw said lever into operative condition, means adapted to engage said lever when in operative condition and throw the same to one extreme of its path of travel and slide said ribbon
100 laterally with respect to said minute type-wheel in such manner as to bring a portion thereof of different color into operative position, a disk driven by said minute-wheel-operating mechanism having a recessed outer surface, a member adapted to rest against said
105 outer surface, and a connection between said last-mentioned member and said pivotally-mounted member whereby the engagement of
110 said parts upon said minute-wheel with said pivotally-mounted member is determined by the contour of said disk.

14. In combination, a type-bearing member, a platen, manually-actuated means adapted to bring said type-bearing member and
115 said platen into operative condition with relation one to another, a printing-ribbon between said type-bearing member and said platen, clock-controlled ribbon-shifting mechanism, and a connection between said ribbon-shifting mechanism and said manually-actuated means whereby the latter is adapted to
120 shift laterally said printing-ribbon.

15. In combination, a type-bearing member, a platen, manually-actuated means adapted to bring said type-bearing member and
125 said platen into operative relation one to another, a multicolored slidably-mounted printing-ribbon between said type-bearing member
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and said platen, shifting mechanism adapted to shift laterally said slidably-mounted printing-ribbon with respect to said type-bearing member, and a connection between said shifting mechanism and said manually-actuated means whereby the latter is adapted to operate said shifting mechanism and bring a portion of ribbon of different color into operative position.

16. In combination, a type-bearing member, a platen, manually-actuated means adapted to bring said type-bearing member and said platen into operative condition with relation one to another; a multicolored slidably-mounted printing-ribbon between said platen and said printing mechanism, shifting mechanism adapted upon operation to slide said ribbon laterally with respect to said type-bearing member and bring a portion thereof of different color into operative position, and means whereby said manually-actuated means is adapted to operate said shifting means upon the latter being set in operative condition.

17. In combination, a type-bearing member, a platen, manually-actuated means adapted to bring said type-bearing member and said platen into operative position with relation one to another; a multicolored slidably-mounted printing-ribbon between said platen and said type-bearing member, shifting mechanism adapted to slide said printing-ribbon laterally with relation to said type-bearing member and bring a portion thereof of different color into operative position, means automatically controlled by said type-bearing member adapted to set said shifting mechanism in operative condition, and means whereby said manually-actuated means is adapted to operate said shifting mechanism upon the same being set in operative condition.

18. In combination, a type-bearing member, a printing-ribbon in operative relation thereto, manually-actuated means adapted to cause said type-bearing member to make an impression, means for shifting said printing-ribbon laterally with respect to said type-bearing member, automatic means for setting said shifting means in operative condition, and means whereby said manually-actuated means is adapted to operate said shifting mechanism upon the same being set in operative condition.

19. In combination, printing mechanism, a printing-ribbon, means adapted to shift said printing-ribbon with respect to said printing mechanism, automatic means for controlling said shifting means, and means adapted to lock said controlling means in each of its extreme positions.

20. In combination, printing mechanism, a multicolored printing-ribbon, means adapted to shift said printing-ribbon laterally with respect to said printing mechanism so as to bring a portion thereof of different color into operative position, automatic means for controlling

said shifting mechanism, and means adapted to lock said controlling means in each of its extreme positions.

21. In combination, a type-bearing member, a printing-ribbon in operative relation thereto, means adapted to shift laterally said printing-ribbon with relation to said type-bearing member, means actuated by parts upon said type-bearing member controlling said shifting mechanism, and means adapted to lock said controlling means in each of its extreme positions.

22. In combination, a type-bearing member, a printing-ribbon in operative relation thereto, means adapted to shift laterally said printing-ribbon with relation to said type-bearing member, means actuated by parts upon said type-bearing member controlling said shifting mechanism, and means adapted to lock said controlling means in each of its extreme positions and to lock the same against movement in one direction when in an intermediate position.

23. In combination, printing mechanism, a multicolored slidably-mounted printing-ribbon in operative relation to said printing mechanism, a lever adapted to shift the same laterally with respect to said printing mechanism, a pivotally-mounted member connected with said lever and adapted to set the same in operative condition, automatic means for controlling the movement of said pivotally-mounted member, and means adapted to lock the same in each of its extreme positions against movement in either direction and in an intermediate position against movement in one direction.

24. In combination, printing mechanism, a multicolored slidably-mounted printing-ribbon in operative relation thereto, a lever adapted to shift said printing-ribbon laterally with respect to said printing mechanism so as to bring a portion thereof of different color into operative position, a pivotally-mounted member connected with said lever and adapted to set the same in operative condition, automatic means adapted to actuate said pivotally-mounted member, a plurality of locking-levers adapted to control the position thereof, one of said levers being provided with teeth adapted to prevent the movement of said pivotally-mounted member in one direction and the other of said levers being provided with oppositely-directed teeth adapted to lock said pivotally-mounted member against movement in the opposite direction, and means for releasing said levers.

25. In combination, printing mechanism, a multicolored slidably-mounted printing-ribbon in operative relation thereto, a lever adapted to shift said printing-ribbon laterally with respect to said printing mechanism so as to bring a portion thereof of different color into operative position, a pivotally-mounted member connected with said lever and adapted to set the same in operative condition, automatic

means adapted to actuate said pivotally-mounted member, a plurality of locking-levers adapted to control the position thereof, one of said levers being provided with teeth adapted to prevent the movement of said pivotally-mounted member in one direction and the other of said levers being provided with oppositely-directed teeth adapted to lock said pivotally-mounted member against movement in the opposite direction, and means for releasing said levers, said automatic means comprising parts upon said printing mechanism adapted to engage and swing said pivotally-mounted member.

26. In combination, a type-bearing member, a multicolored printing-ribbon, mechanism adapted to shift said printing-ribbon laterally with respect to said type-bearing member so as to bring a portion thereof of different color into operative position, automatic means adapted to control said shifting means, and a visual indicator connected with said shifting mechanism and adapted to change from one to another of two alternative positions when said ribbon is shifted.

27. In combination, a type-bearing member, a multicolored printing-ribbon, means adapted to shift said printing-ribbon laterally with respect to said type-bearing member so as to bring a portion thereof of different color into operative condition, and a visual indicator connected with said shifting mechanism adapted to move from one to another of two alternative positions when said ribbon is shifted and display a surface of a color substantially identical with that of the portion of the printing-ribbon which is in operative position.

28. In combination, a type-bearing minute-wheel, a platen, means adapted to bring said wheel and said platen into operative relation one to another, a multicolored slidably-mounted printing-ribbon between said platen and said type-bearing minute-wheel, a lever connected with a part upon which said ribbon is mounted and adapted to shift the same laterally with respect to said type-bearing minute-wheel so as to bring a portion thereof of different color into operative position, a pivotally-mounted member connected with said lever, parts upon said minute-wheel adapted to engage and swing said pivotally-mounted member and set the same in operative condition, and a part upon said manually-actuated means adapted to strike and actuate said lever and shift said ribbon upon said lever being set in operative condition.

29. In apparatus of the class described, in combination, printing mechanism comprising a minute type-wheel and mechanism for operating the same, a slidably-mounted multicolored printing-ribbon in operative relation to said type-wheel, means automatically controlled by said minute-wheel adapted to shift laterally said printing-ribbon and bring a portion thereof of different color into operative

position, and means adapted to lock said controlling mechanism in each of its two alternative positions.

30. In apparatus of the class described, in combination, printing mechanism comprising a minute type-wheel and mechanism for operating the same, a slidably-mounted multicolored printing-ribbon in operative relation to said type-wheel, means automatically controlled by said minute-wheel adapted to shift laterally said printing-ribbon and bring a portion thereof of different color into operative position, and positive means adapted to lock said controlling mechanism in each of its two alternative positions and to lock the same against movement in one direction when in an intermediate position.

31. In combination, a type-bearing member, a platen, manually-actuated means adapted to bring said type-bearing member and said platen into operative relation one to another, a slidably-mounted multicolored printing-ribbon between said platen and said type-bearing member, means adapted to shift said printing-ribbon with relation to said type-bearing member in such manner as to bring a portion thereof of different color into operative position, automatic means adapted to set said shifting means in operative condition, means adapted to lock said automatic means in its two extreme positions, and a connection whereby said manually-actuated means is adapted to cause the operation of said shifting means when the latter is in operative condition.

32. In apparatus of the class described, in combination, printing mechanism comprising a minute-wheel and mechanism for operating the same, manually-actuated means adapted to cause the operation of said printing mechanism, a multicolored slidably-mounted ribbon in operative relation to said printing mechanism, means adapted laterally to shift said ribbon and bring a portion thereof of different color into operative position, automatic means adapted to set said shifting mechanism in operative condition, means adapted to lock said setting means in each of its two extreme positions, and a member upon said manually-actuated means adapted to engage and operate said shifting mechanism upon the latter being set in operative condition.

33. A clock-controlled time-recorder comprising time-printing mechanism adapted to print records of different classes in distinctive impressions.

34. A clock-controlled time-recorder comprising time-printing mechanism adapted automatically to print records of different classes in distinctive colors.

35. A clock-controlled time-recorder having automatically-acting time-printing means adapted to print regular records in a certain color and irregular records in a certain other color.

36. In a time-recorder, in combination, a type-bearing member, a multicolored printing-ribbon in operative relation thereto, means adapted to shift said ribbon to bring a portion thereof of different color into operative position with respect to said type-bearing member, and a power-actuated disk adapted automatically to control said ribbon-shifting mechanism.

37. In a time-recorder, in combination, a type-bearing member, a multicolored printing-ribbon in operative relation thereto, means adapted laterally to shift said printing-ribbon to bring a portion thereof of different color into operative position with respect to said type-bearing member, and a power-actuated disk having irregularities in the outer surface thereof adapted to control said ribbon-shifting mechanism in accordance with the form and position of said irregularities.

38. In a time-recorder, a type-bearing member, a multicolored printing-ribbon in operative relation thereto, means adapted laterally to shift said printing-ribbon to bring a portion thereof of different color into operative position with respect to said type-bearing member, a disk having irregularities in the outer surface thereof, and a wiper-arm resting upon said disk adapted to control said ribbon-shifting mechanism in accordance with the position and form of said irregularities.

39. In a time-recorder, in combination, a type-bearing minute-wheel, a power-transmitting member adapted to drive the same, a multicolored printing-ribbon in operative relation to said wheel, a lever adapted to shift said printing-ribbon laterally to bring a portion of said printing-ribbon of different color in operative relation to said wheel, a disk driven from said power-transmitting member and having irregularities in its surface, and a wiper-arm resting upon said disk and adapted to control the position of said lever in accordance with the form and position of said irregularities upon said disk.

40. In combination, a platen, printing mechanism, a vertical multicolored printing-ribbon interposed between said platen and said printing mechanism, and automatic means for shifting said ribbon laterally with respect to its direction of travel in such manner as to change the color of the portion of the ribbon in operative relation to said printing mechanism.

41. In a time-recorder, in combination, a type-bearing member, a card-receiver having a closed back, a multicolored printing-ribbon in operative relation to said type-bearing member and positioned between the same and said closed card-receiver, and automatic means adapted to control mechanism for shifting said ribbon laterally so as to change the color of the portion thereof opposite said type-bearing member.

42. In a time-recorder, in combination, a

type-bearing member, a card-receiver having a closed back, a multicolored vertical printing-ribbon positioned between the back of said card-receiver and said type-bearing member, and automatic means adapted to control mechanism for shifting said ribbon laterally so as to change the color of the portion thereof opposite said type-bearing member.

43. In a time-recorder, printing mechanism, a multicolored printing-ribbon adapted to travel in operative relation thereto, said ribbon being mounted movable in a lateral direction with respect to its direction of travel, and a single means adapted to actuate said printing mechanism and to move said printing-ribbon laterally so as to bring a portion thereof of different color into operative position.

44. In a time-recorder, printing mechanism, a multicolored printing-ribbon adapted to travel in operative relation thereto, said ribbon being mounted movable in a lateral direction with respect to its direction of travel, means adapted to move said ribbon laterally, automatic means adapted to set the same in operative condition, and manually-actuated means adapted to actuate said printing mechanism and to move said printing-ribbon laterally so as to bring a portion thereof of different color into operative position upon said first-mentioned means being set in operative condition.

45. In a time-recorder, printing mechanism, a multicolored printing-ribbon adapted to travel in operative relation thereto, said ribbon being mounted movable in a lateral direction with respect to its direction of travel, means adapted to actuate said printing mechanism and to move said printing-ribbon laterally so as to bring a portion thereof of different color into operative position, and an automatically-actuated visual indicator adapted to indicate the color which the recorder is in condition to print.

46. In a time-recorder, printing mechanism, a multicolored printing-ribbon adapted to travel in operative relation thereto, said ribbon being mounted movably in a lateral direction with respect to its direction of travel, means adapted to move said printing-ribbon laterally, automatically-actuated means adapted to set said first-mentioned means in operative condition, manually-actuated means adapted to actuate said printing mechanism and to actuate said ribbon-moving mechanism so as to bring a portion of said ribbon of different color into operative position upon said ribbon-moving mechanism being set in operative condition, and an automatically-actuated visual indicator adapted to indicate the color which the recorder is in condition to print.

47. In a time-recorder, in combination, a platen, printing mechanism, a ribbon interposed between said platen and said printing

mechanism, and automatic clock-controlled means for shifting said ribbon laterally with respect to its direction of travel.

48. In a time-recorder, in combination, a platen, printing mechanism, a multicolored ribbon interposed between said platen and printing mechanism, and automatic clock-controlled means for shifting said ribbon laterally with respect to its direction of travel in such manner as to change the color of the portion of the ribbon in operative relation to said printing mechanism.

49. In a time-recorder, in combination, a type-bearing member, a printing-ribbon, and automatic clock-actuated means adapted to control mechanism for shifting said ribbon laterally with respect to said type-bearing member.

50. In a time-recorder, in combination, a type-bearing member, a multicolored printing-ribbon, and automatic clock-actuated means adapted to control mechanism for shifting said ribbon laterally so as to change the color of the portion thereof in operative relation to said type-bearing member.

51. In a time-recorder, in combination, a type-bearing member, a printing-ribbon in operative relation thereto, manually-actuated means adapted to cause said type-bearing member to make an impression, means for shifting said printing-ribbon laterally with respect to said type-bearing member, automatic means for setting one of the two last-mentioned means in operative condition, and means whereby said manually-actuated means is adapted to operate said shifting mechanism upon such setting taking place.

52. A clock-controlled time-recorder comprising time-printing mechanism adapted to print records of different classes with the colors of the impressions distinctive of each class.

53. A clock-controlled time-recorder comprising time-printing mechanism adapted automatically to print records of different classes with the impressions in distinctive colors.

54. A clock-controlled time-recorder having automatically-actuated time-printing means adapted to print regular records with an impression of a certain color, and irregular records with an impression of a certain other color.

55. In a time-recorder, a printing mechanism, a multicolored printing-ribbon adapted to travel in operative relation thereto, said ribbon being mounted movably in a lateral direction with respect to its direction of travel, means adapted to move said printing-ribbon laterally, automatically-actuated means adapted to set said first-mentioned means in operative condition, and manually-actuated means adapted to actuate said printing mechanism and to actuate said ribbon-moving mechanism so as to bring a portion of said ribbon of different color into operative relation to said printing mechanism upon said ribbon-

moving mechanism being set in operative condition.

56. In a time-recorder, in combination, a type-bearing member, a multicolored printing-ribbon in operative relation thereto, a clock-driven member, a lever adapted to be actuated by said clock-driven member, means adapted to shift said printing-ribbon laterally in such manner as to bring a portion thereof of different color in operative relation to said type-bearing member, a manually-actuated lever, and means controlled by said first-mentioned lever whereby a subsequent actuation of said manually-actuated lever will shift said ribbon.

57. In a time-recorder, in combination, a type-bearing member, a multicolored printing-ribbon in operative relation thereto, means adapted to shift said ribbon in such manner as to bring a portion thereof of different color in operative relation to said type-bearing member, a clock-actuated member, a lever controlled by said clock-actuated member, a manually-actuated lever, and means automatically controlled by said first-mentioned lever whereby, upon actuation thereof, a subsequent actuation of said manually-controlled lever will shift said ribbon.

58. In a time-recorder, in combination, a type-bearing member, a movable printing-ribbon adapted to travel adjacent thereto, means adapted to shift said printing-ribbon laterally with respect to its normal direction of travel, clockwork, a rotary member driven from said clockwork, a pivotally-mounted lever adapted to be contacted and actuated by parts upon said rotary member, a hand-lever, and means adapted to be set in operative condition by said first-mentioned lever, said means being adapted, upon being set in operative condition, operatively to connect said hand-lever and said shifting mechanism.

59. In a time-recorder, in combination, a type-bearing member, a multicolored printing-ribbon adapted to travel in operative relation thereto, means adapted to shift said ribbon laterally with respect to its direction of travel in such manner as to bring a portion of different color in operative relation to said type-bearing member, a hand-lever, a clock-actuated rotary disk, a pivotally-mounted lever adapted to be actuated by parts upon said disk, and means adapted to be set in operative condition by said last-mentioned lever, said hand-lever being adapted to be actuated without affecting said ribbon-shifting mechanism when said last-mentioned means is in inoperative condition and being adapted, upon actuation, to operate said ribbon-shifting mechanism when said means is in operative condition.

60. A time-recorder including, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record-surface, and

means whereby the impressions made by said printing mechanism during different predetermined intervals are made in different colors.

61. A time-recorder including, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record-surface, and automatic time-controlled means adapted to cause the impressions made by said printing mechanism during different predetermined intervals of time to appear in different colors.

62. In a time-recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record-surface, and automatic means whereby said impressions of different classes are made in colors distinctive of said classes.

63. In a time-recorder, in combination, time-controlled printing mechanism, means for taking impressions from said printing mechanism upon a record-surface, and automatic time-controlled means adapted to cause such impressions of different classes to appear in colors distinctive of said classes.

64. In a time-recorder, in combination, time-

controlled printing mechanism, means for taking impressions from said printing mechanism upon a record-surface, and automatic means whereby irregular records formed by said impressions are made in a certain color and regular records in a certain other color.

65. A time-recorder, including, in combination, time-controlled marking devices, means for producing records therefrom, and means whereby records of different classes are made by marks having distinguishing characteristics.

66. A time-recorder including, in combination, time-controlled marking devices, means for producing records therefrom, and means whereby records of regular and of irregular character are made by marks having distinguishing characteristics.

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

JOHN DEY.

ALEXANDER DEY.

Witnesses:

CARRIE M. JUNE,

C. E. MACDONALD.