

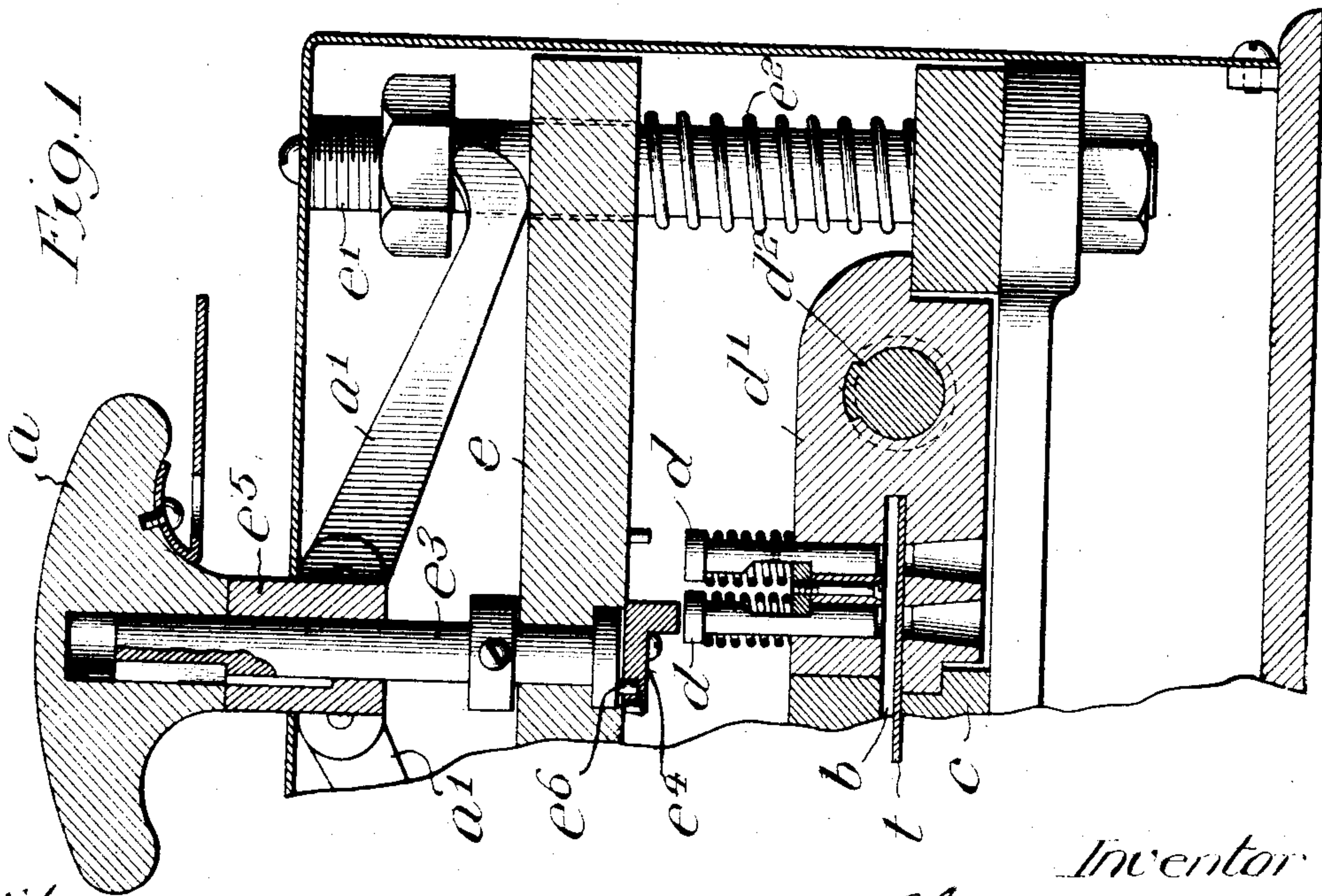
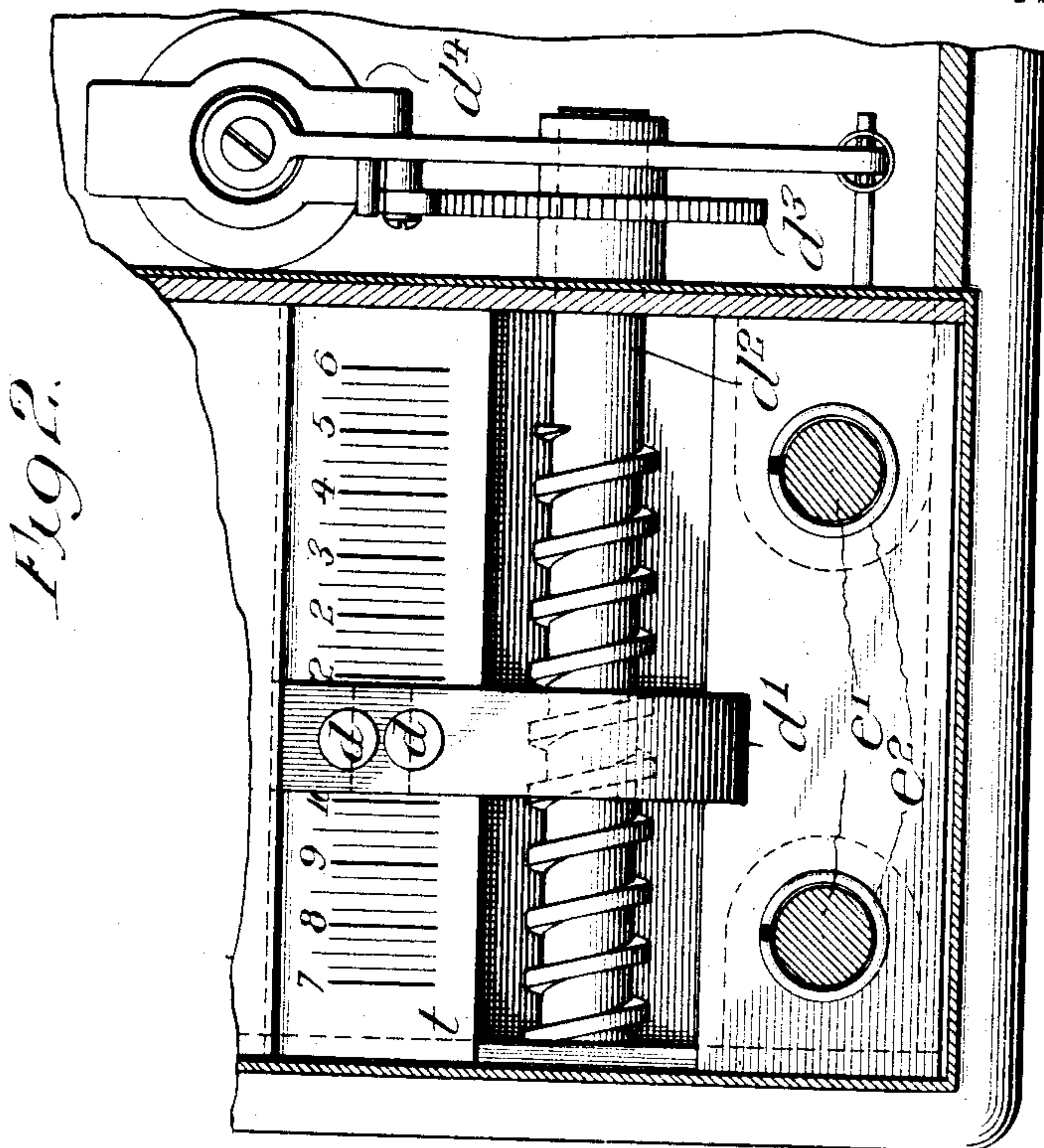
No. 870,667.

P. J. DARLINGTON.  
RECORDER.

PATENTED NOV. 12, 1907.

APPLICATION FILED OCT. 30, 1905.

2 SHEETS—SHEET 1.



Witnesses  
Edu. R. Barrett  
Geo. C. Darmon.

Inventor  
Philip J. Darlington  
By Barton & Tanner  
Attys

Fig. 3.

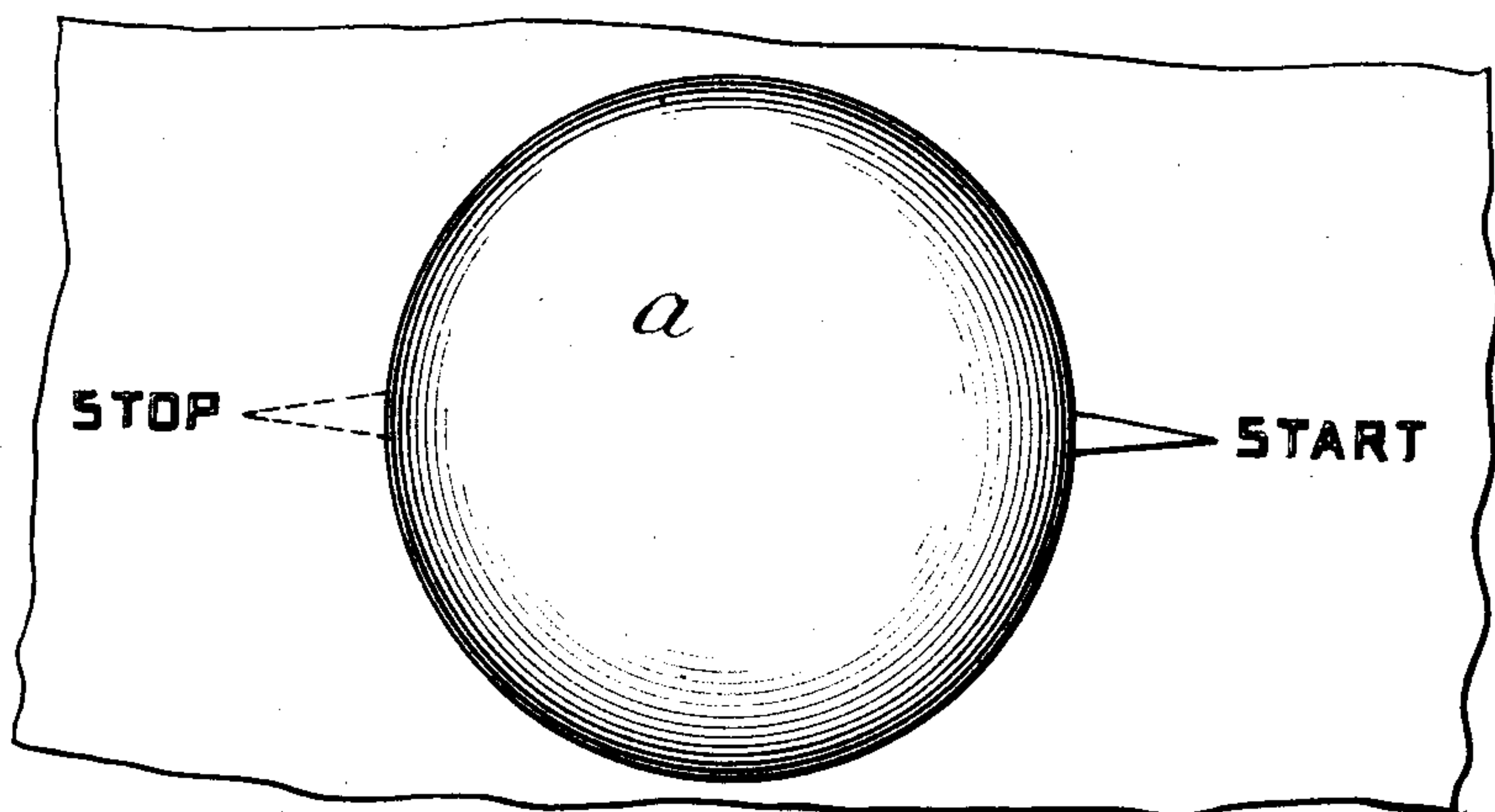


Fig. 4

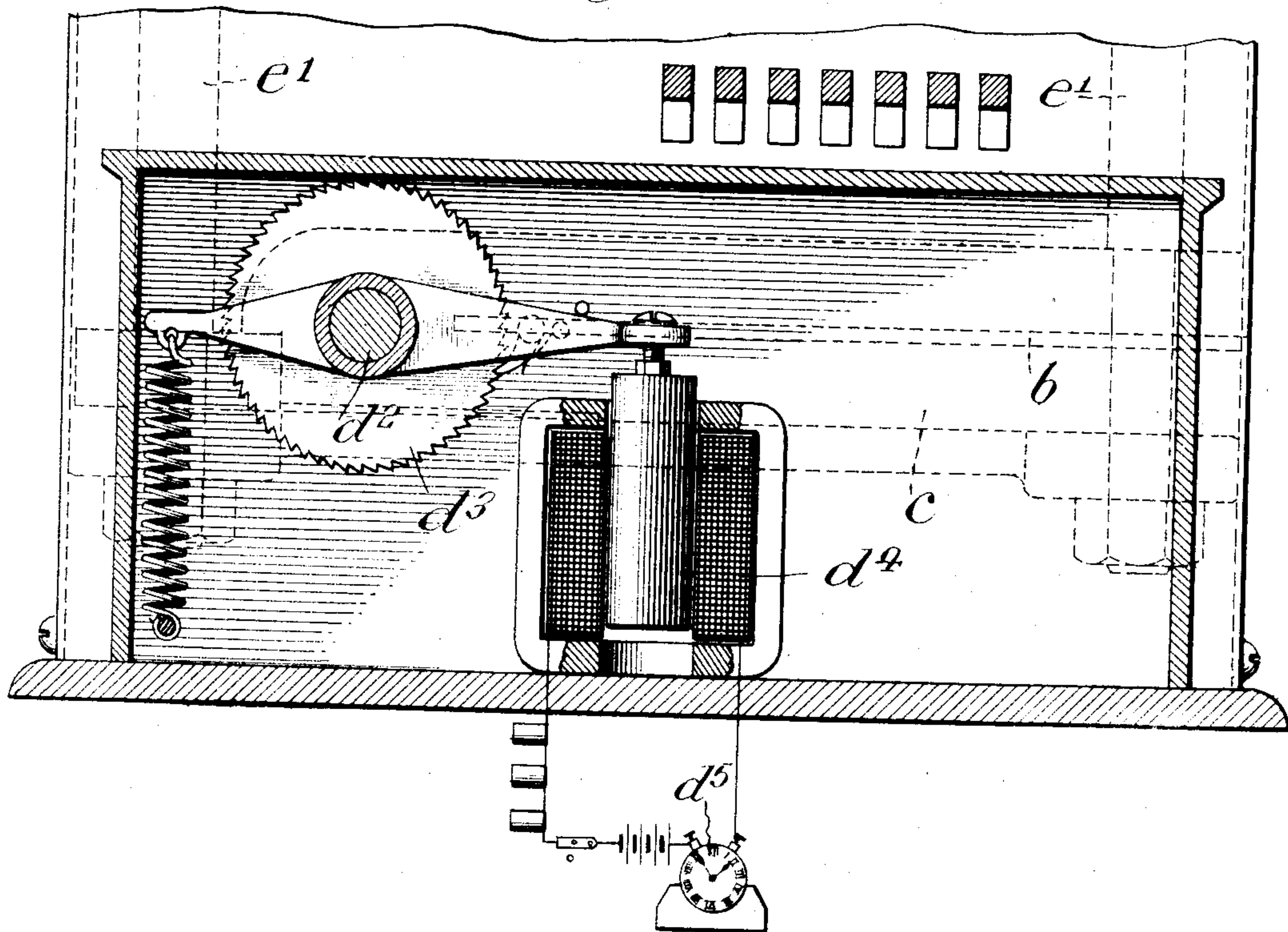
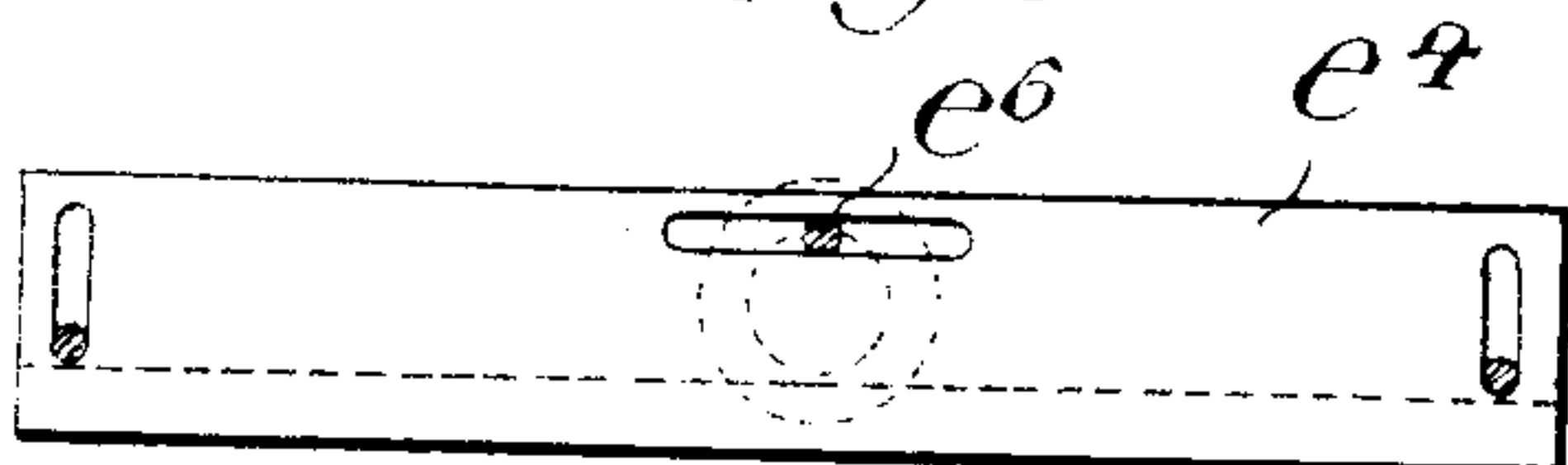


Fig. 5.



Witnesses:  
Edw. P. Barrett  
Geo. Darmon

Inventor  
Philip J. Darlington  
By Barton & Tanner  
Attys



# UNITED STATES PATENT OFFICE.

PHILIP J. DARLINGTON, OF HINSDALE, ILLINOIS.

## RECORDER

No. 870,667.

Specification of Letters Patent.

Patented Nov. 12, 1907.

Original application filed December 7, 1904, Serial No. 235,850. Divided and this application filed October 30, 1905.  
Serial No. 285,021.

To all whom it may concern:

Be it known that I, PHILIP J. DARLINGTON, a citizen of the United States, residing at Hinsdale, in the county of Dupage and State of Illinois, have invented a certain new and useful Improvement in Recorders, of which the following is a full, clear, concise, and exact description.

This application is a division of an application filed by me December 7, 1904, Serial No. 235,850, for recording machines, and the present invention relates to mechanism for automatically indicating elapsed time upon a record card or sheet.

The particular object of the present invention is to provide means for recording the elapsed time in such a manner that the record may not only be easily read, but may be automatically taken account of by an integrating or calculating machine, by which the total elapsed time indicated by a large number of cards may be automatically added.

It is a common practice in large workshops to issue to each workman an "operation ticket" for each piece of work assigned, and to require him to keep a record of the time spent on each such job, this record being used as a basis for computing the shop cost of the work, as well as the pay of the workman. It has been customary for the workman to make this record upon a daily time report, which is handed in each day, the report showing the name or number of the workman, the number or other identification of the job, and the time spent. It has been found, however, that much confusion and loss have occurred, because, among other reasons, of mistakes in calculating the time spent; and such calculation has furthermore involved considerable time and care. In accordance with the present invention, a machine is provided which the workman will operate upon starting a piece of work, and again upon finishing the same, and the machine will indicate the elapsed time by two different marks at a distance apart corresponding to the elapsed time, these two marks being of such a character that they may serve to control the mechanism of an automatic integrating or adding machine. In Patent No. 834,365, issued October 30th, 1906, I have described and claimed a machine by which a large number of such cards containing the records of elapsed time may be fed through in rapid succession, and the total time indicated by all the cards automatically added, so that the entire time spent on a particular job, or by a particular workman, may be quickly and accurately computed. The form of adding machine described in said other application is adapted to automatically integrate the distance between two holes in different positions upon a card, and the present invention relates to the machine by which a time card may be punched with holes, one at starting and one at stopping work, which holes,

by their relative positions, will indicate the time spent.

The preferred form of the invention will be described in detail by reference to the accompanying drawings, in which

Figure 1 is a sectional elevation of a time recording machine constructed in accordance with my invention; Fig. 2 is a sectional plan view thereof; Fig. 3 is a top view of a portion of the top of the machine showing the operating handle, with an alternative position thereof indicated in dotted lines; Fig. 4 is a transverse sectional elevation showing the time controlled mechanism. Fig. 5 is a detail view of a sliding distance block.

The same reference letters designate the same parts wherever they are shown.

The time card *t* is intended to be inserted in the machine through a horizontal slit *b* in the side thereof; and when in place said card rests upon the bed plate *c* in such a position that a traveling punch may be moved along the lower edge thereof where a scale is printed. Said scale may be marked off as shown in Fig. 2, to indicate, say, ten hours time, and the punching mechanism is arranged to be moved over this hour scale by a suitable time controlled mechanism, which is started, for example, at seven o'clock in the morning, arrested for an hour at noon, then started again and finally stopped at six o'clock in the evening. I preferably provide two punches upon the same carriage, so as to travel side by side in parallel paths, with means for operating said punches selectively so that a distinction may be made between the punch marks indicating "starting" and those indicating "stopping" work. The two punch pins or dies *d d* are mounted in a suitable carrier *d'* which has a slit therein for embracing the edge of the card, the portion of said carrier below the card constituting the die plate of the punch, and having holes therein registering with said pins *d d*. The carrier is arranged to be advanced by a worm shaft *d<sup>2</sup>* having screw-thread engagement therewith. Said worm shaft is arranged to be turned step by step by a ratchet and pawl gear *d<sup>3</sup>* which is operated by means of a solenoid magnet *d<sup>4</sup>* in an electric circuit. Said circuit is arranged to be controlled by a clock-operated switch of any well known type. The switch-controlling clock is indicated at *d<sup>5</sup>*. A number of recording machines may be all connected on the same controlling circuit, as indicated, these machines being located at different points in the factory.

In the form of machine herein illustrated, a plunger plate *e* is provided for operating the punch pins *d d* through an interposed block *e<sup>1</sup>*, said plate *e* being arranged to slide vertically upon uprights *e' e'*, and being normally held up by compression springs *e<sup>2</sup> e<sup>2</sup>*. Said plate *e* is arranged to be depressed by four cam le-



vers  $a'$   $a'$  which engage the said plate near the corners thereof, said cam levers being connected to a collar  $e^5$  sliding vertically on the shaft  $e^3$  which extends upward from the central portion of said plunger plate. A handle  $a$ , also sliding on said shaft  $e^3$  above the collar  $e^5$  serves as a convenient means for depressing said collar, and thereby actuating the cam levers  $a'$   $a'$  to depress the plunger plate  $e$ . The vertical shaft  $e^3$  is mounted to turn axially in the plunger plate  $e$ , and the handle  $a$  is splined to the upper end of said shaft, so that by turning the handle the shaft may be rotated. A crank pin  $e^6$  is carried by an enlarged head of the shaft on the under side of the plunger plate  $e$ , and said crank pin is adapted to engage a sliding block  $e^4$  (shown in detail in Fig. 5) to shift said block laterally, so as to bring the same above either one or the other of the punch pins, according to the position of the shaft. Thus when the handle  $a$  is turned to the point indicated "start" (Fig. 3) one of the pins of the time punch is brought into gear, so to speak, to be operated when the handle  $a$  is depressed; and when the handle is turned around to the point indicated "stop" the other pin of the time punch is brought into gear.

The operation of the device is as follows: The time card being inserted in the slit  $b$  of the machine until it rests in the position indicated in Fig. 2, the workman turns the handle  $a'$  of the machine to the "start" position, and the handle is then depressed by a sharp blow to operate the corresponding one of the punches  $d$   $d$  which indicates "starting" time. When the handle  $a$  is released, the springs  $e^2$   $e^2$  return the plunger plate to its normal position, and the punch pin  $d$  which was operated is simultaneously retracted by its spring  $x$ , whereupon the time card is removed and retained by the workman. When the work is finished, or at the end of the day, the "stopping" time is punched in a similar manner, the other punch of the pair having been selected by turning the handle  $a$  to the "stop" position.

It will be understood that in order to distinguish between the marks indicating "starting" and those indicating "stopping" time, any desired differentiating marking mechanism may be employed. I prefer, however, to employ the two punches traveling side by side, as the elapsed time indicated by the distance between the two marks is more easily calculated by an automatic integrating machine.

It is understood, of course, that each morning the traveling punch will be returned to its original position, which may be done by turning the shaft  $d^2$  manually. The relative position of the punches  $d$   $d$  upon the scale marked on the card will always correspond to the hour indicated by the scale, the travel of the punch being controlled by the clock mechanism.

Where mention is made in the specification or claims to the distance between the holes or marks in the record card, I means not necessarily the straight-line distance from hole to hole, but the effective or significant distance indicated by the relative positions of the holes. Thus a hole or mark may occupy any lateral position crosswise of the scale without varying the indication thereby given. In the card shown one mark is farther from the edge of the card than the other. The significant distance between the holes therefore is the distance which indicates quantity—the distance along the scale between the points indicated by the holes.

Having described my invention, I claim as new and desire to secure by Letters Patent the following:

1. In a recording machine, the combination with a traversing carriage and time controlled means for moving the same, of markers operatively mounted on said carriage, a plunger, and means for bringing either of said markers into operative relation to said plunger. 70
2. In a recording machine, the combination with a traversing carriage, of time-controlled mechanism for moving the same, differential marking mechanism, and a plunger adapted to set and operate said mechanism. 75
3. In a recording machine, the combination with a card receiver, of a longitudinally moving carriage and time controlled means for moving the same, a punch carried by said carriage adapted to engage a card, and means for actuating said punch in any position along its journey. 80
4. The combination with a traversing carriage having a slit therein adapted to receive the edge of a card, of time controlled mechanism for moving said carriage relatively to said card, a punch pin mounted in said carriage above the card receiving slit, a die plate below the card having a hole therein registering with said punch, and a plunger block located above the path of the punch pin and adapted to be depressed to operate said punch pin in any position along its journey. 85
5. In a time recorder, the combination with a traversing carriage and time controlled means for moving the same, of a pair of punch pins operatively mounted in said carriage, means for holding a card in position to be engaged by said punch pins in any position of said carriage, a reciprocating plunger plate  $e$  above said punch pins, a movable distance block  $e^4$  and means for interposing the same between said plunger plate and the head of either punch pin. 90
6. In a recorder, the combination with a traversing carriage and time controlled means for moving the same, of a pair of punches operatively mounted on said carriage, a card receiver adapted to hold a card in position to be engaged by either of said punches in any position to which said carriage is moved, and means for selectively operating either of said punches at any time during the travel of said carriage. 95
7. In a time recorder, the combination with a punch, of time-controlled means for causing a continuous movement of said punch along a time card, and a plunger adapted to successively actuate said punch, in any position thereof; whereby the lapse of time between successive operations of said punch is indicated by the distance between the punch marks on said card. 100
8. In a time recorder, the combination with a reciprocating traversing carriage, a screw for moving said carriage, an electromagnet time controlled means for operating said magnet and means operated by successive excitations thereof for turning said screw step by step to advance said carriage, a punch moved by said carriage along a record blank, and means for actuating said punch at any point in its journey. 105
9. In a time recorder, the combination with marking mechanism and time-controlled means for causing continuous relative movement between said marking mechanism and a record blank, an operating handle arranged to reciprocate and also to rotate, selector mechanism for causing a distinction in the marks of said marking mechanism, and means controlled by the rotation of said operating handle for adjusting said selector mechanism. 110
10. In a recording machine, the combination with a pair of markers adapted to mark a record blank, of time controlled means for governing the relative position of said markers and record card, and a plunger adapted in its rotation to render operative one of said markers, said plunger in its longitudinal movement being adapted to operate the selected marker. 115

In witness whereof, I, hereunto subscribe my name this 25th day of October A. D., 1905.

PHILIP J. DARLINGTON.

Witnesses:

WINFIELD W. LEACH,  
DE WITT C. TANNER.