

No. 874,047.

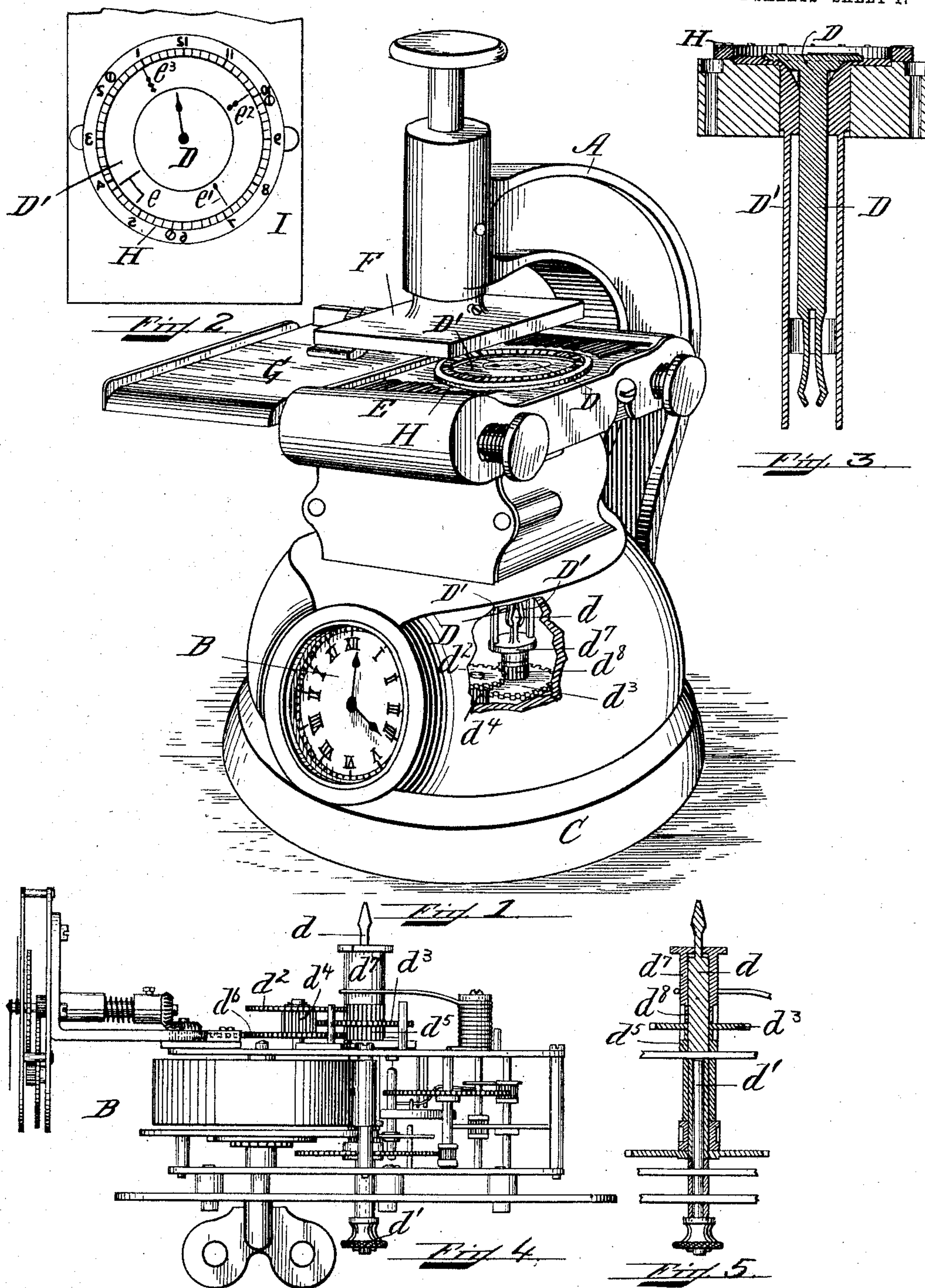
PATENTED DEC. 17, 1907.

J. C. WILSON.

PRINTING MACHINE OR TIME STAMP.

APPLICATION FILED FEB. 6, 1904.

2 SHEETS—SHEET 1.



Witnesses:  
A. R. Laroche  
G. X. Messer

Inventor:  
John C. Wilson  
By J. S. Rusk  
Atty

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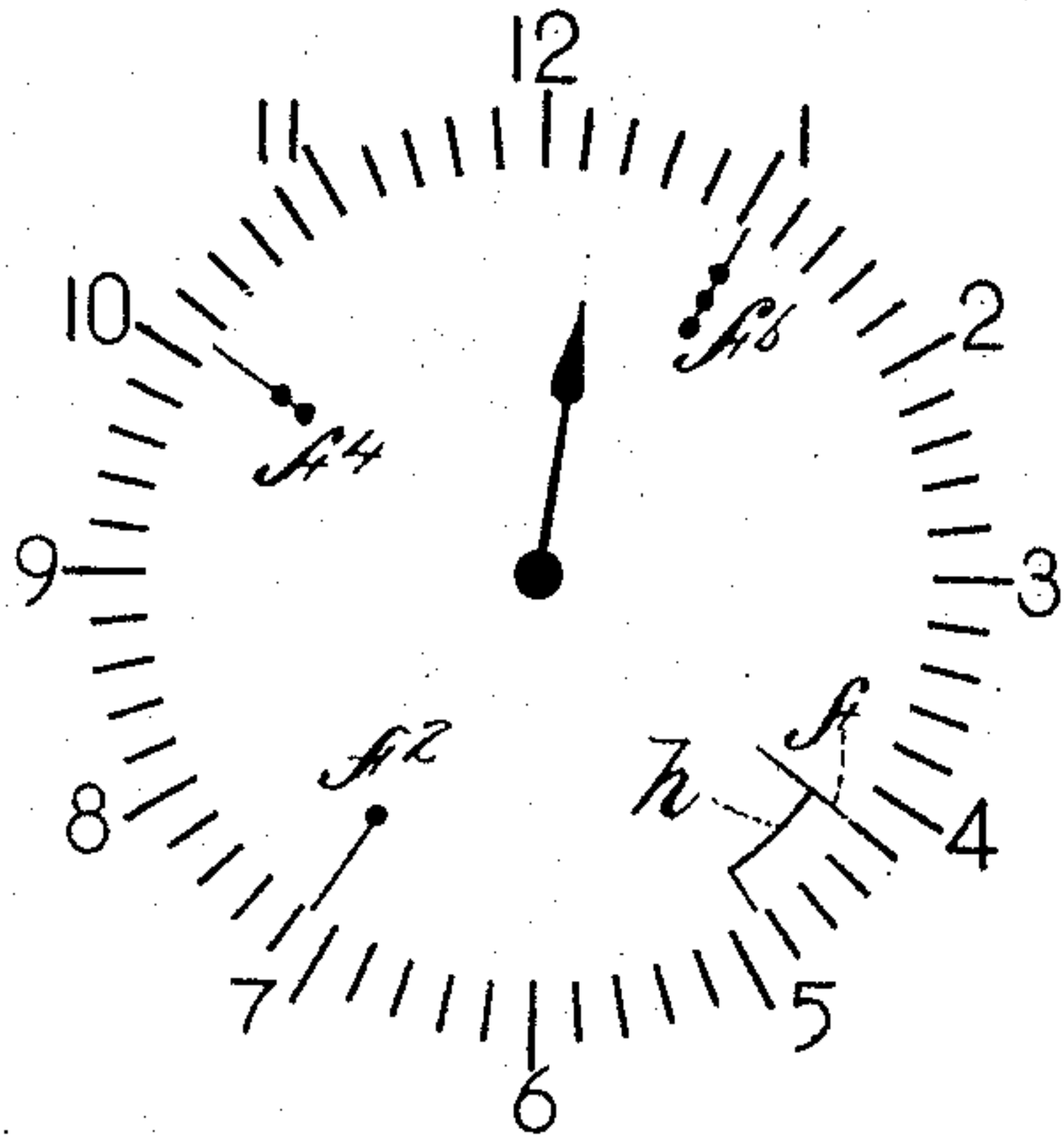


Fig. 6

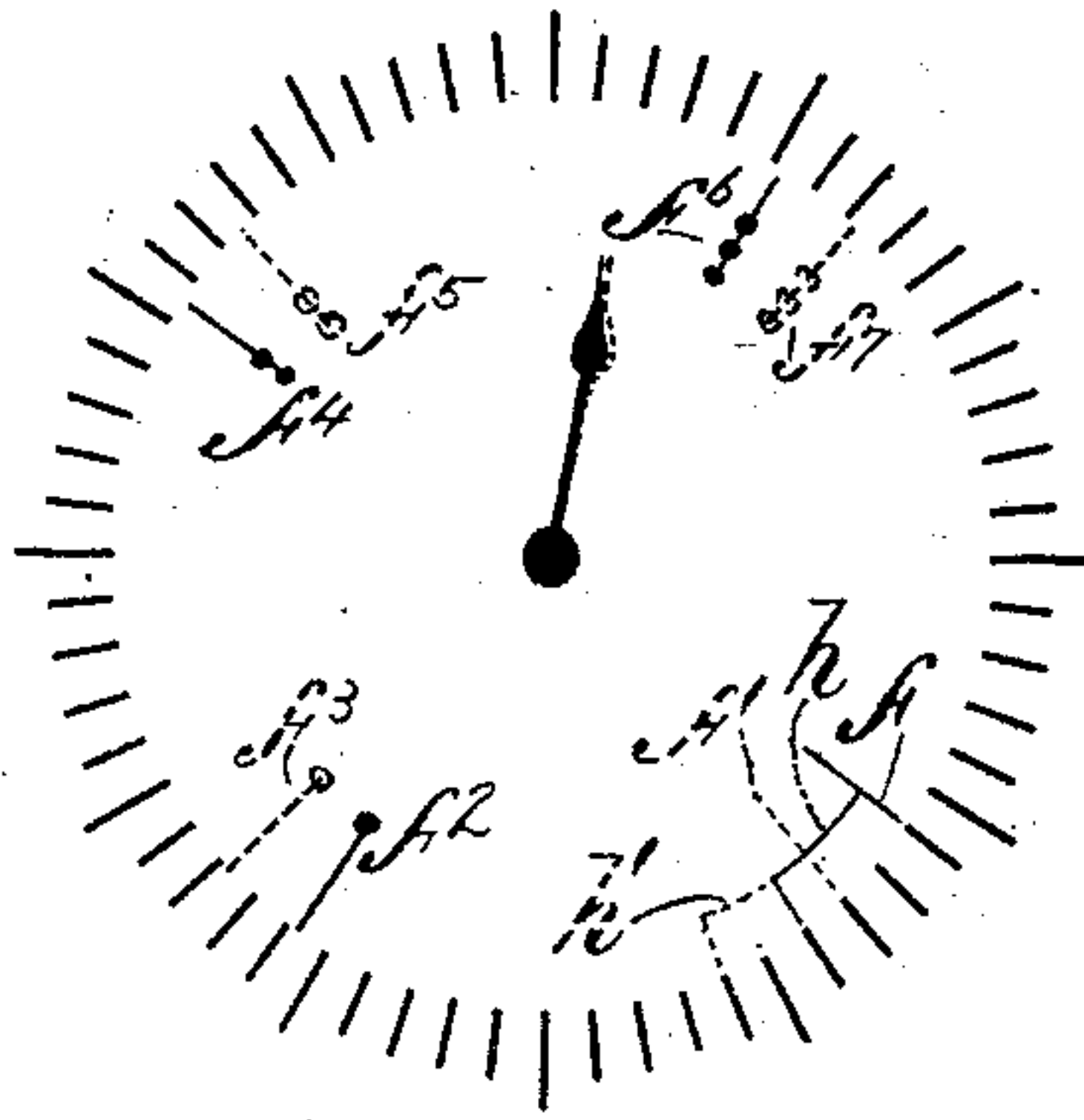


Fig. 7

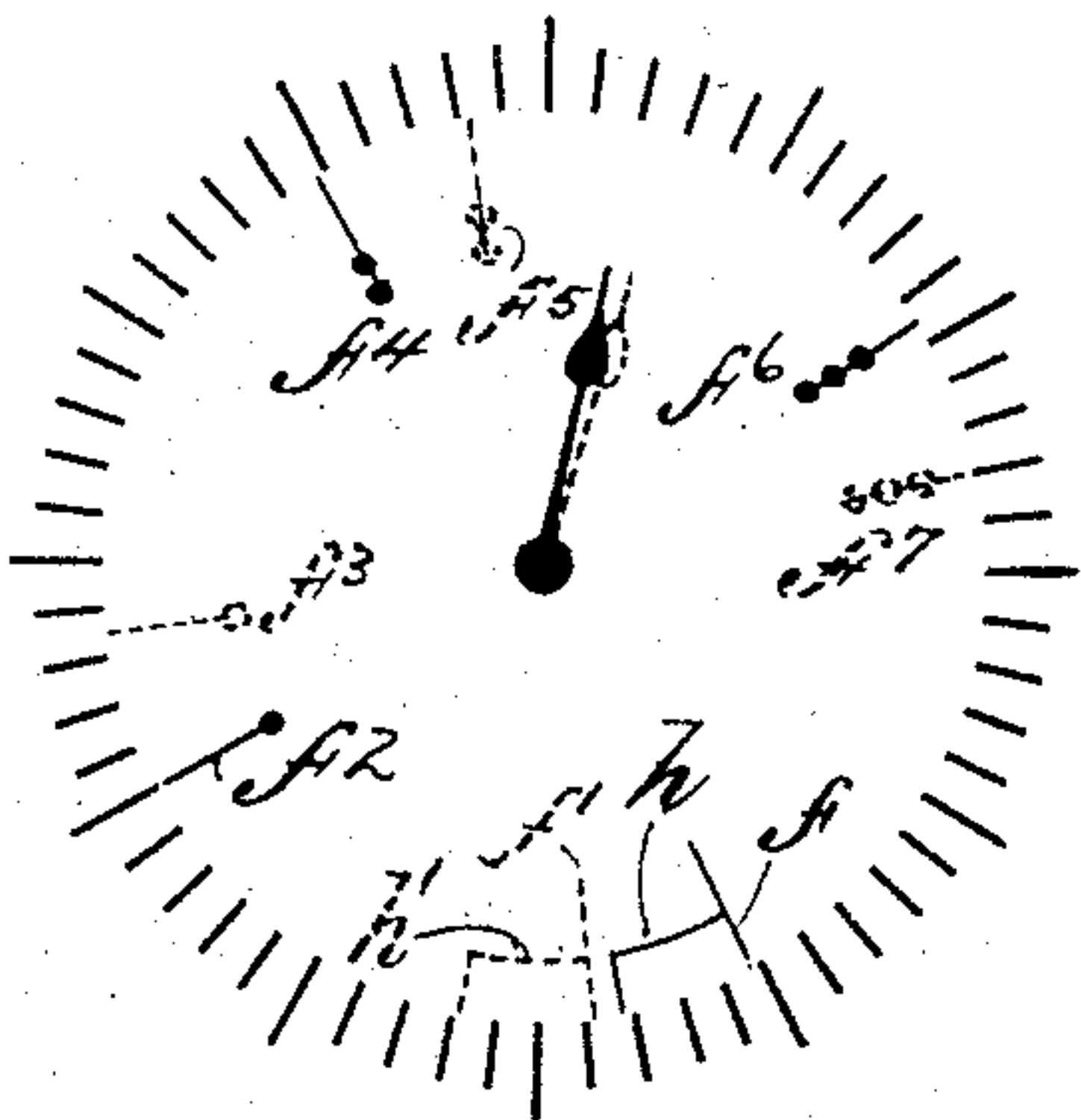


Fig. 8

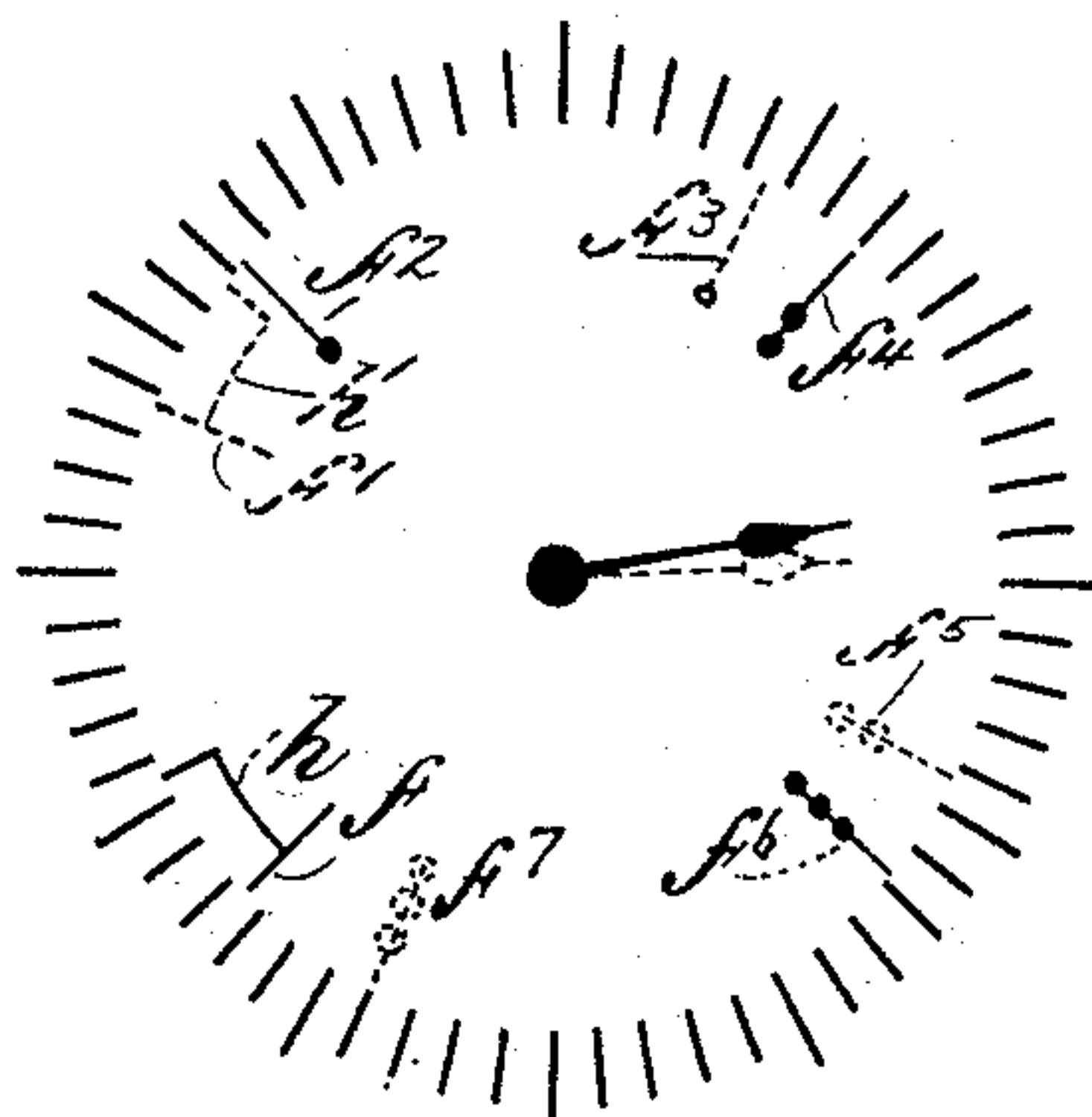


Fig. 9

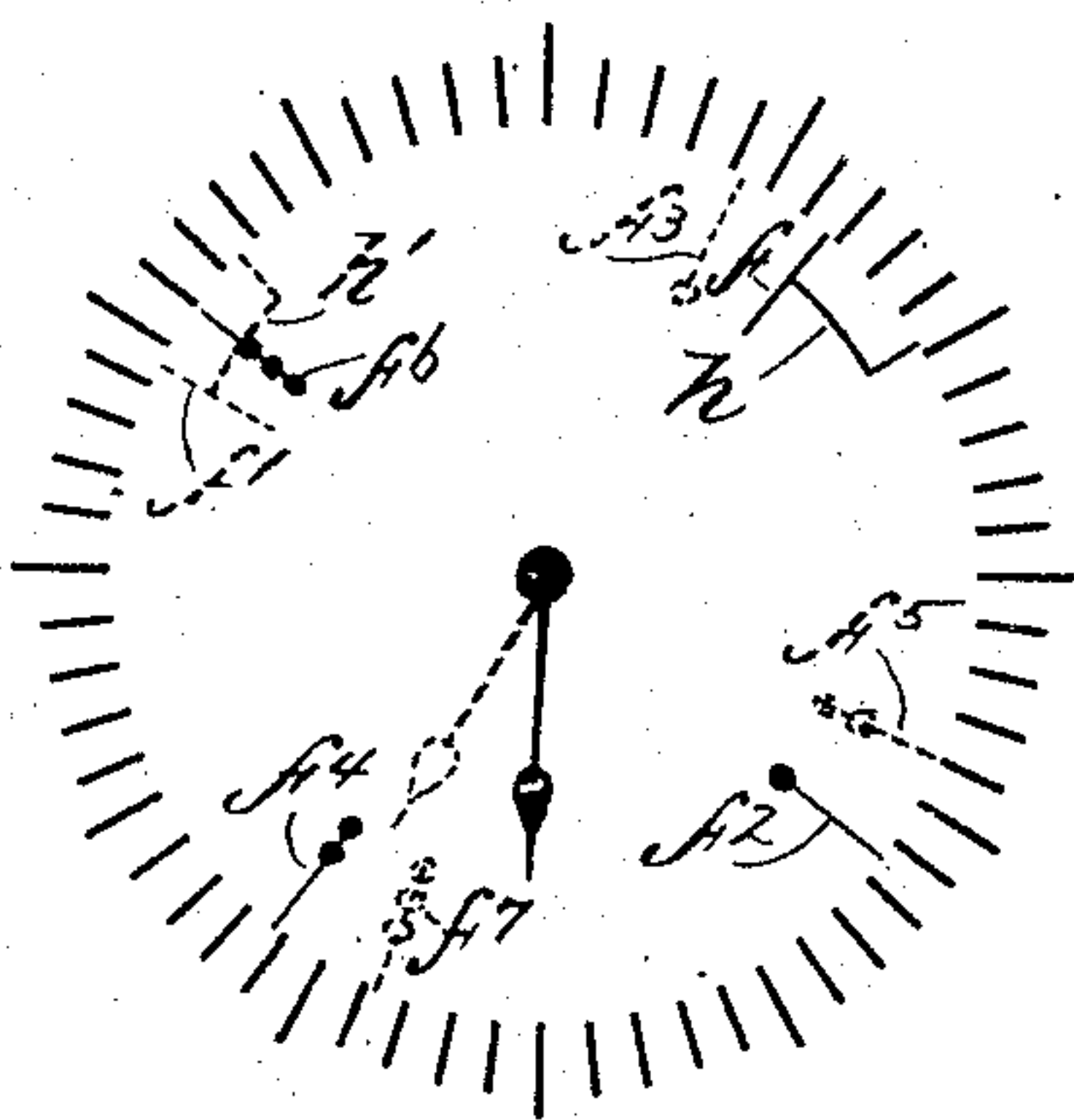


Fig. 10

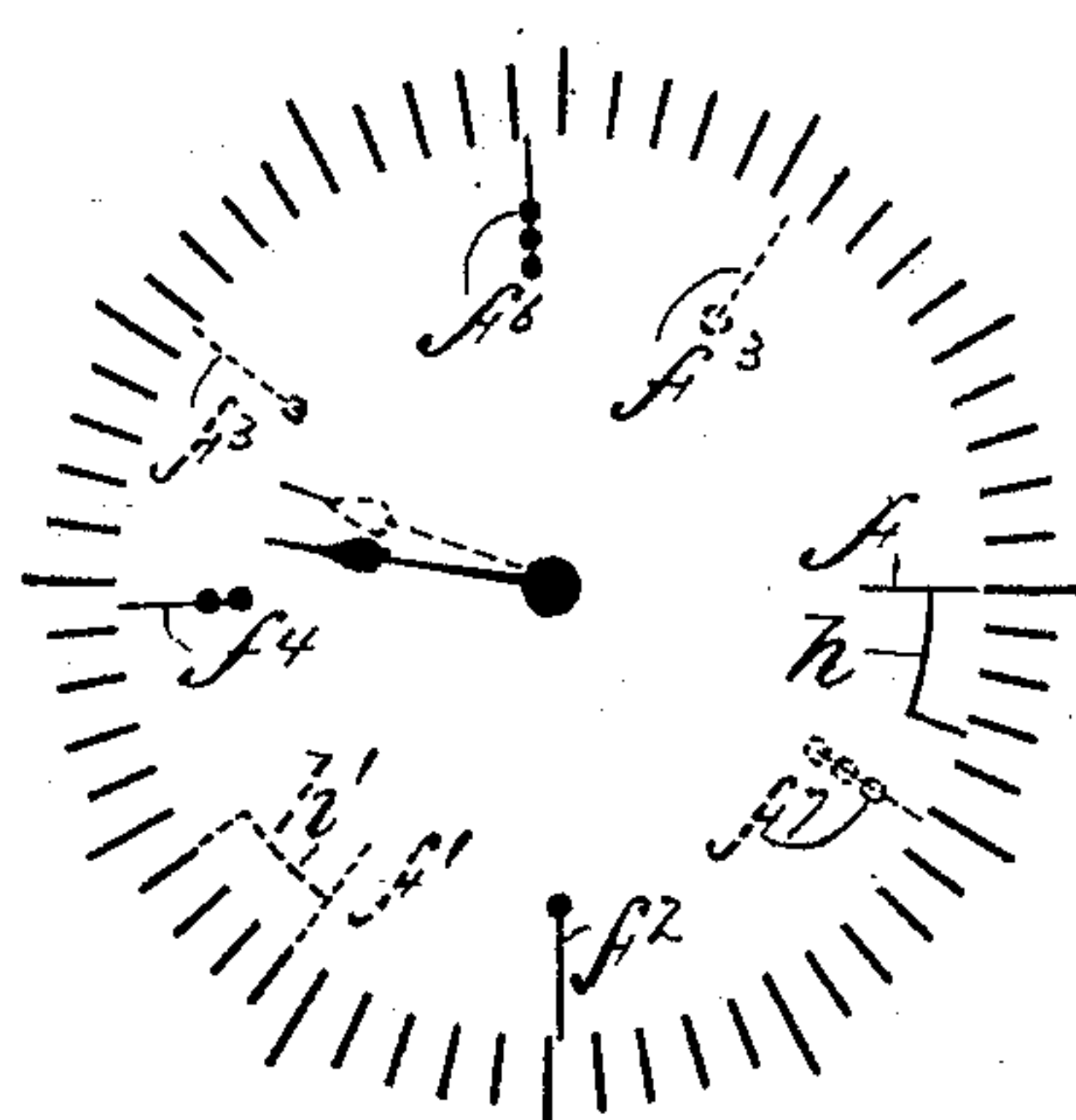


Fig. 11

Witnesses:  
A. R. Larrabee  
A. X. Munn

Inventor:  
John C. Wilson  
By J. L. Ruck  
Att'y



# UNITED STATES PATENT OFFICE.

JOHN C. WILSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO AUTOMATIC TIME STAMP COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

## PRINTING-MACHINE OR TIME-STAMP.

No. 874,047.

Specification of Letters Patent.

Patented Dec. 17, 1907.

Application filed February 6, 1904. Serial No. 192,301.

*To all whom it may concern:*

Be it known that I, JOHN C. WILSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Printing-Machines or Time-Stamped, of which the following is a specification.

My invention relates to certain improvements in that class of time printing machines or time stamps in which time printing parts or disks carrying representations of clock hands in printing form are connected with a clock time train and rotated thereby in juxtaposition with a clock dial printing die provided with graduations or divisions of time for making imprints. A time stamp of such a character is described in United States Letters Patent No. 576644 issued to me February 9, 1897 to which reference may be made.

The object of this invention is to produce a time printing machine, the record from which will enable the time intervening or elapsing between one imprint of the machine and a subsequent imprint to be more quickly, more accurately and more easily determined or counted than could be done by the use of the time stamp described in the aforesaid Letters Patent.

My invention is especially adapted to be used in connection with telephone toll line switchboards to record the time of day that a telephone conversation began and ended, from which record if a certain time limit has been exceeded it may be ascertained at a glance without counting or calculation of any kind, and if it has been exceeded, the time elapsing or intervening between the beginning and the ending of the conversation may be readily counted or determined.

My invention consists of certain novel features hereinafter described and particularly pointed out in the claims.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 is a perspective view in elevation of a time stamp embodying my invention, the usual inking ribbon in the inking device being cut away to expose the surfaces of the time printing parts, and the inclosing case being broken away to show the connection between the clock and the hour and minute printing parts. Fig. 2 is a plan view of the printing surfaces of the hour and minute printing parts and the clock dial printing die

in position on the supporting bed plate. Fig. 3 is a longitudinal central section of the same. Fig. 4 is a side elevation of the clock train and the gearing arbors and sleeves for operating the visible hands and for connecting with the hour and minute printing parts. Fig. 5 is a longitudinal central section of the center arbor of the clock train and the connected gearing arbors and sleeves. Fig. 6 is an enlarged facsimile of a single imprint from the stamp with the printing parts in the positions as shown in Fig. 2. Fig. 7 is an enlarged facsimile of two successive superimposed imprints the first imprint being shown in Fig. 6 and the second imprint being shown as taken two minutes after the first. Fig. 8 is an enlarged facsimile of two superimposed imprints taken two and one half minutes apart. Fig. 9 is an enlarged facsimile of two superimposed imprints taken fourteen and three-quarters minutes apart. Fig. 10 is an enlarged facsimile of two superimposed imprints taken forty-two and three-quarters minutes apart. Fig. 11 is an enlarged facsimile of two superimposed imprints taken twenty-nine and one half minutes apart.

For clearness of illustration in all of the superimposed imprints above referred to, the second imprint of the moving printing parts is shown in dotted lines.

Like letters of reference refer to like parts throughout the several views.

The time stamp A is of usual construction, consisting of a time clock train B within an inclosing case C, time printing parts D, D' rotative connection with the time clock train B, an inking device E and an imprinting platen F and a positioning device G for the ticket or slip to enable it to be imprinted successively in the same position, as shown in Fig. 1.

As it is much easier to read the record to the exact minute or a fraction of a minute when the imprint of the minute hand is made very close to the imprint of the clock dial die than when the imprints are far apart to allow the hour imprint to appear between the minute imprint and the clock dial imprint, as is usually done in time stamps of this class, I reverse the usual positions of the hour and minute imprints relatively to each other and to the clock dial imprint by utilizing the arrangement of gearing shafts, arbors and sleeves in connection with the clock train



and the hour and minute printing parts or hands shown in Figs. 4 and 5, and shown and described in U. S. Letters Patent No. 637,315 issued to me November 21, 1899, to which reference may be had, whereby the hour printing part or hand D is made to revolve inside of the minute printing part or hand D', the hour printing part or hand D being connected with the internal sleeve  $d$  which is loosely mounted upon the center arbor  $d'$  of the clock time train B, being geared to make a revolution once in twelve hours by the reducing gear wheels  $d^2$  and  $d^3$  and pinion  $d^4$  in connection with the pinion  $d^5$  attached to the center arbor  $d'$  and the translating gear wheel  $d^6$ . The minute printing part or hand D' is similarly connected with the external slotted sleeve  $d^7$  which is loosely mounted upon the internal sleeve  $d$  and it is caused to revolve once an hour or at the same rate as the center arbor  $d'$  by the pinion  $d^8$  which is integral with it being connected with the gear wheels  $d^2$   $d^3$  and the pinion  $d^4$ , the result being as shown that the imprint of the minute hand D' appears in close proximity to the imprint of the clock dial die H, and the imprint of the hour hand D appears inside of that of the minute hand D'.

It is customary for telephone companies to charge a fixed price for a conversation not exceeding three or five minutes and a proportional charge for the time occupied in excess of these limits, and as it has been found that about eighty-five per cent. of the conversations do not exceed the fixed time limit, this invention enables this fact to be ascertained at a glance by having the minute printing part D' provided with a time limit printing portion or measuring device I, which by its length or by its position will exactly indicate or measure the duration of the fixed time limit, and when two imprints are superimposed as shown in Figs. 7, 8, 9, 10 and 11, it may be noted at a glance, for instance, in Fig. 7, that the time limit of three minutes has not been exceeded, because the imprints  $h$ ,  $h'$  from the measuring device I are not separated in the imprint but have been printed over or within each other, while in Fig. 8 the time limit has been exceeded one half minute, as indicated by the space existing between the two imprints  $h$ ,  $h'$  from the measuring device  $h$ .

To enable an interval of time greater than the fixed limit to be readily counted, it is desirable that the counting should always be from a graduation mark and not from a point between two graduation marks, and this invention accomplishes this result, by providing the minute printing part D' with two or more minute printing hands or lines  $e$ ,  $e'$ ,  $e^2$ ,  $e^3$ , each of which are placed at suitable distances apart and each of which occupy positions fractionally different with relation to the

even minute graduations of the clock dial die H, the result being that in any two imprints at least one minute hand or line imprint will be found to be practically opposite one of the minute graduations of the clock dial imprint. As shown in this case, Fig. 2, the minute printing part D' has four independent and separate minute printing hands or lines  $e$ ,  $e'$ ,  $e^2$  and  $e^3$ , the first one,— $e$ , (the actual time printing minute hand) being opposite the graduation of the clock dial twenty-one minutes after twelve, and the second,  $e'$ , being fourteen and three-quarters minutes in advance of the first, and pointing to thirty-five and three-quarters minutes past the same hour, while the third,  $e^2$ , is fourteen and three-quarters minutes in advance of the second  $e'$ , and points to fifty and one half minutes past the hour, and the fourth,  $e^3$ , is fourteen and three-quarters minutes in advance of the third,  $e^2$ , and points to five and one-quarter minutes past the hour.

In Fig. 7, the first and second imprints,— $f$ ,  $f'$ , of the first minute printing hand or line  $e$ , are both opposite even minute graduations, and the interval of two minutes is easily read by counting forward from the first imprint  $f$  to the second imprint  $f'$ , or backward from the second imprint,  $f'$ , to the first imprint  $f$ , and these are the only minute hands exactly opposite a minute graduation in this imprint.

In Fig. 8 the first imprint,  $f^2$ , of the second minute printing hand  $e'$ , and the second imprint  $f^7$  of the fourth minute printing hand  $e^3$ , are each opposite a minute printing graduation, and the interval of three and one half minutes may be readily counted forward from forty to forty-three and one-half minutes past the hour in the case of the two imprints  $f^2$   $f^3$  from the second minute printing hand  $e$ , or backwards from the second imprint,  $f^7$ , to the first imprint,  $f^6$ , of the fourth minute printing hand  $e^3$ .

In Fig. 9, the interval of twelve and one-quarter minutes may be determined similarly as was done in Fig. 8, by comparing the first and second imprints,  $f^4$  and  $f^5$ , of the third imprint printing hand  $e^2$ , or the second and first imprints  $f^7$ ,  $f^6$  of the fourth minute printing hand  $e^3$ .

In Fig. 10, the interval of forty-two and three-quarters minutes may be found by comparing the first and second imprints,  $f^6$ ,  $f^7$ , of the fourth minute printing hand  $e^3$ , or the second and first imprints  $f^5$ ,  $f^4$  of the third minute printing hand  $e^2$ .

In Fig. 11, the only minute hand imprints opposite a minute graduation are  $f$ ,  $f'$  of the first minute printing hand  $e$  and the interval of twenty-one minutes is determined in the same way as was done in Fig. 7.

For the purpose of recording the actual time and the time intervening between one imprint and another, it is preferable to have



the two imprints superimposed, but it is evident that the machine may be used to give separate or non-superimposed imprints if desired.

5 This invention is not limited to the exact form of the time limiting or measuring device herein shown, as it is clear that the form or shape of the same may be varied without departing from the spirit of the invention,  
10 the essential features being that the first imprint of the time limiting or measuring device marks or records a certain invariable time limit or boundary line or point, while the second imprint makes a record that shows  
15 without counting or calculation whether or not the time limit or boundary line or point has been exceeded or passed over.

Although four separate minute printing hands are shown in this case distributed  
20 around the entire circle of the clock dial die, the imprints of which are distinguishable from each other by different number of dots appearing in connection with each one, it is evident that any suitable number of separate  
25 or independent minute printing devices may be employed, and that they may be grouped or distributed at any suitable point or points around the circle of the minute printing part, and that they may be made distinguishable  
30 from each other by any suitable means.

Having thus described the nature of my invention and set forth a construction embodying the same, what I claim as new and desire to secure by Letters Patent of the  
35 United States is:

1. In a machine of the character described, a rotatable time-printing die provided with a time limit printing character consisting of two joined boundary lines or printing marks  
40 defining or circumscribing an intermediate space or vacancy to indicate or define an arbitrary or definite time period or limit, the said intermediate space or vacancy having a greater width or time value than that of  
45 either of the said joined boundary lines or printing marks, and an impelling clock train for the said rotatable time printing die to determine the time value of the said arbitrary or definite time limit or period.

50 2. In a machine of the character described, a rotatable time printing die provided with a time limit printing character, consisting of two joined boundary lines or printing marks defining or circumscribing an intermediate  
55 space or vacancy to indicate or define an arbitrary or definite time period or limit, the said intermediate space or vacancy having a greater width or time value than that of either of the said joined boundary lines or  
60 printing marks, an impelling clock train for the said rotatable time printing die to determine the time value of the said arbitrary or definite time limit or period, and a positioning device to enable a ticket or slip to be  
65 imprinted successively in the said position.

3. In a machine of the character described, a rotatable time printing die provided with a time limit printing character consisting of two joined boundary lines or printing marks  
70 defining or circumscribing an intermediate space or vacancy to indicate or define an arbitrary or definite time period or limit, the said intermediate space or vacancy having a greater width or time value than that of  
75 either of the said joined boundary lines or printing marks, an impelling clock train for the said rotatable time printing die to determine the time value of the said arbitrary or definite time limit or period, and an imprinting  
80 platen.

4. In a machine of the character described, a rotatable time printing die provided with a time limit printing character, consisting of two joined boundary lines or printing marks  
85 defining or circumscribing an intermediate space or vacancy to indicate or define an arbitrary or definite time period or limit, the said intermediate space or vacancy having a greater width or time value than that of  
90 either of the said joined boundary lines or printing marks, an impelling clock train for the said rotatable time printing die to determine the time value of the said arbitrary or definite time limit or period, and a stationary  
95 graduated printing clock dial die in juxtaposition with the said rotatable time printing die.

5. In a machine of the character described, a rotatable time printing die provided with a time limit printing character, consisting of  
100 two joined boundary lines or printing marks defining or circumscribing an intermediate space or vacancy to indicate or define an arbitrary or definite time period or limit, the said intermediate space or vacancy having a  
105 greater width of time value than that of either of the said joined boundary lines or printing marks, an impelling clock train for the said rotatable time printing die to determine the time value of the said arbitrary or  
110 definite time limit or period, a positioning device to enable a ticket or slip to be imprinted successively in the same position, and an imprinting platen.

6. In a machine of the character described,  
115 a rotatable time printing die provided with a time limit printing character, consisting of two joined boundary lines or printing marks defining or circumscribing an intermediate space or vacancy to indicate or define an  
120 arbitrary or definite time period or limit, the said intermediate space or vacancy having a greater width of time value than that of either of the said joined boundary lines or printing marks, an impelling clock train for  
125 the said rotatable time printing die to determine the time value of the said arbitrary or definite time limit or period, a positioning device to enable a ticket or slip to be imprinted successively in the same position, an imprint-  
130



ing platen, and a stationary graduated printing clock dial die in juxtaposition with the said rotatable time printing die.

7. In a machine of the character described, a rotatable time printing die provided with a time limit printing character consisting of a pointer or index and a printing line or mark joined thereto at a right angle, and extending over or occupying a definite or arbitrary arc of the circle of rotation of the said rotatable time printing die, the length thereof indicating or defining an arbitrary or definite time limit or period, and an impelling clock train for the said rotatable time printing die.

8. In a machine of the character described, a rotatable time printing die provided with a time limit printing character consisting of a pointer or index and a printing line or mark joined thereto at a right angle, and extending over or occupying a definite or arbitrary arc of the circle of rotation of the said rotatable time printing die, the length thereof indicating or defining an arbitrary or definite time limit or period, an impelling clock train for the said rotatable time printing die, a stationary graduated clock dial printing die in juxtaposition with the said rotatable time printing die, and a positioning device to enable a ticket or slip to be successively imprinted in the same place.

9. In a machine of the character described, a rotatable time printing die provided with a plurality of time printing pointers or indexes cooperating with a stationary graduated clock dial printing die in juxtaposition therewith, the said printing pointers or indexes being so placed with relation to each other and to the graduations on the said stationary graduated clock dial printing die that when one of the said time printing pointers or indexes points directly to a graduation on the said stationary graduated clock dial printing die the other printing pointers or indexes will be at different fractional distances of a graduation from their respective adjacent graduations on the said stationary graduated clock dial printing die, and an impelling clock train for the said rotatable time printing die to successively and progressively change or vary the positions of the said time printing pointers or indexes relatively to the adjacent graduations of the said stationary clock dial printing die.

10. In a machine of the character described, a rotatable time printing die and provided with a plurality of time printing pointers or

indexes cooperating with a stationary graduated clock dial printing die in juxtaposition therewith, the said printing pointers or indexes being so placed with relation to each other and to the graduations on the said stationary graduated clock dial printing die that when one of the said time printing pointers or indexes points directly to a graduation on the said stationary graduated clock dial printing die the other printing pointers or indexes will be at different fractional distances of a graduation from their respective adjacent graduations on the said stationary graduated clock dial printing die, an impelling clock train for the said rotatable time printing die to successively and progressively change or vary the positions of the said time printing pointers or indexes relatively to the adjacent graduations of the said stationary clock dial printing die, and a positioning device to enable a slip or ticket to be successively imprinted in the same position.

11. In a machine of the character described, a rotatable time printing die provided with a plurality of time printing pointers or indexes cooperating with a stationary graduated clock dial printing die in juxtaposition therewith, the said printing pointers or indexes being so placed with relation to each other and to the graduations on the said stationary graduated clock dial printing die that when one of the said time printing pointers or indexes points directly to a graduation on the said stationary graduated clock dial printing die the other printing pointers or indexes will be at different distances of a graduation from their respective adjacent graduations on the said stationary clock dial printing die, an impelling clock train for the said rotatable time printing die to successively and progressively change or vary the positions of the same time printing pointers or indexes relatively to the adjacent graduations of the said stationary clock dial printing die, a positioning device to enable a slip or ticket to be successively imprinted in the same position, and an imprinting platen.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 1st day of February A. D. 1904.

JOHN C. WILSON.

Witnesses:

A. L. MESSER,  
A. R. LARRABEE.