

No. 842,132.

PATENTED JAN. 22, 1907.

R. S. BLAIR.
RECORDING APPARATUS.
APPLICATION FILED FEB. 2, 1906.

3 SHEETS—SHEET 2.

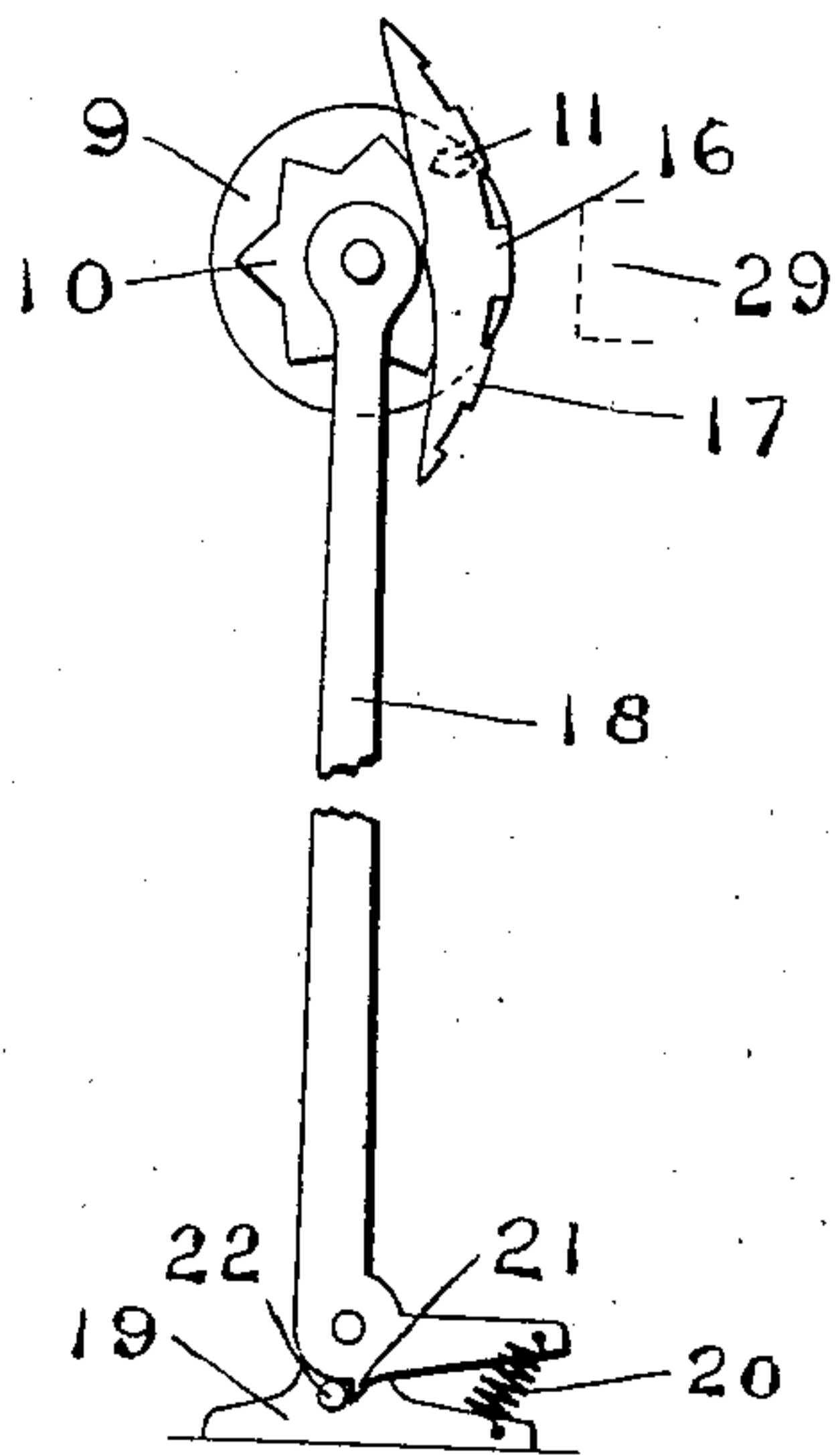


FIG. 3

FIG. 4

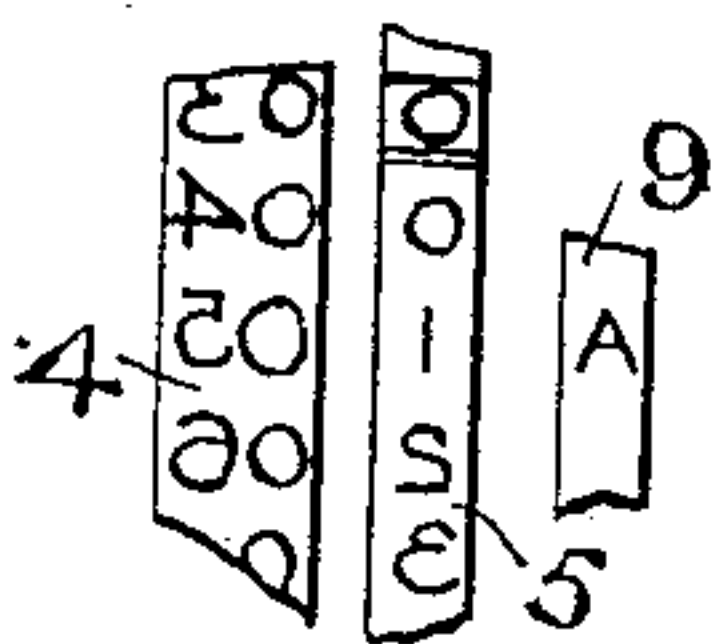


FIG. 5

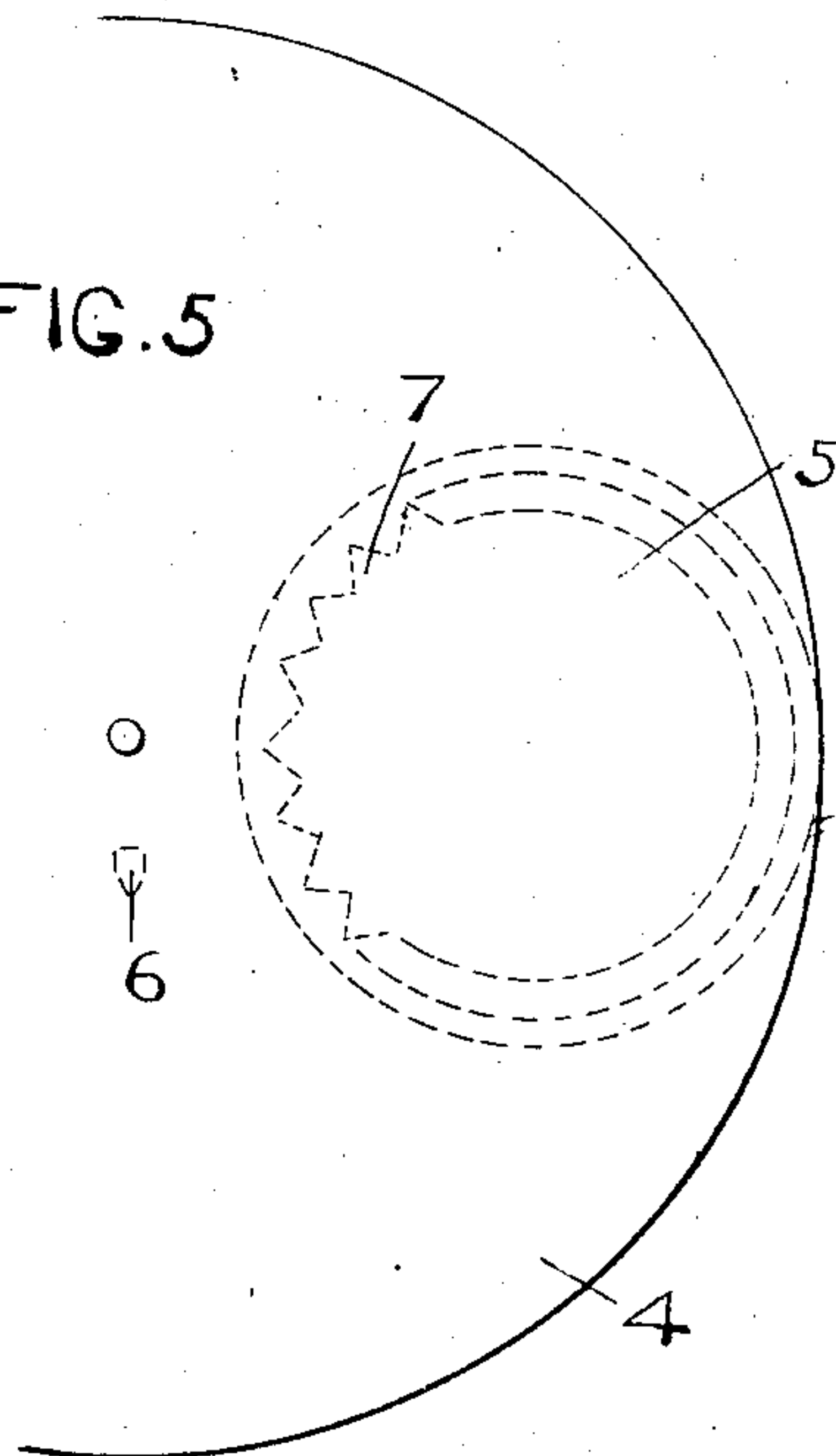


FIG. 6

NAME				
OR				
NUMBER.				
	MORN. IN	NOON OUT	NOON IN	NIGHT OUT
MON.	A 0	A 0	A 0 04	A 0
TUES.	B 0	B 0	B 0	B 0
WED.	C 1 20	C 0	C 0	C 0
THUR.	D 0	D 0	D 0	D 0
FRI.	E 0	E 0	E 0	E 0
SAT.	F 0	F 0	F 0	F 0
TOTAL TIME OUT -			1.24	
WAGES PER HOUR -			.20	
WAGES OUT -			.25	
			WAGES - 12.60	
			DEDUCT - .25	
			AMT. DUE - 12.35	

Witnesses

W. B. B. B. B.
W. B. B. B. B.

Inventor

R. S. Blair

No. 842,132.

PATENTED JAN. 22, 1907.

R. S. BLAIR.
RECORDING APPARATUS.
APPLICATION FILED FEB. 2, 1906.

3 SHEETS—SHEET 3.

FIG. 7

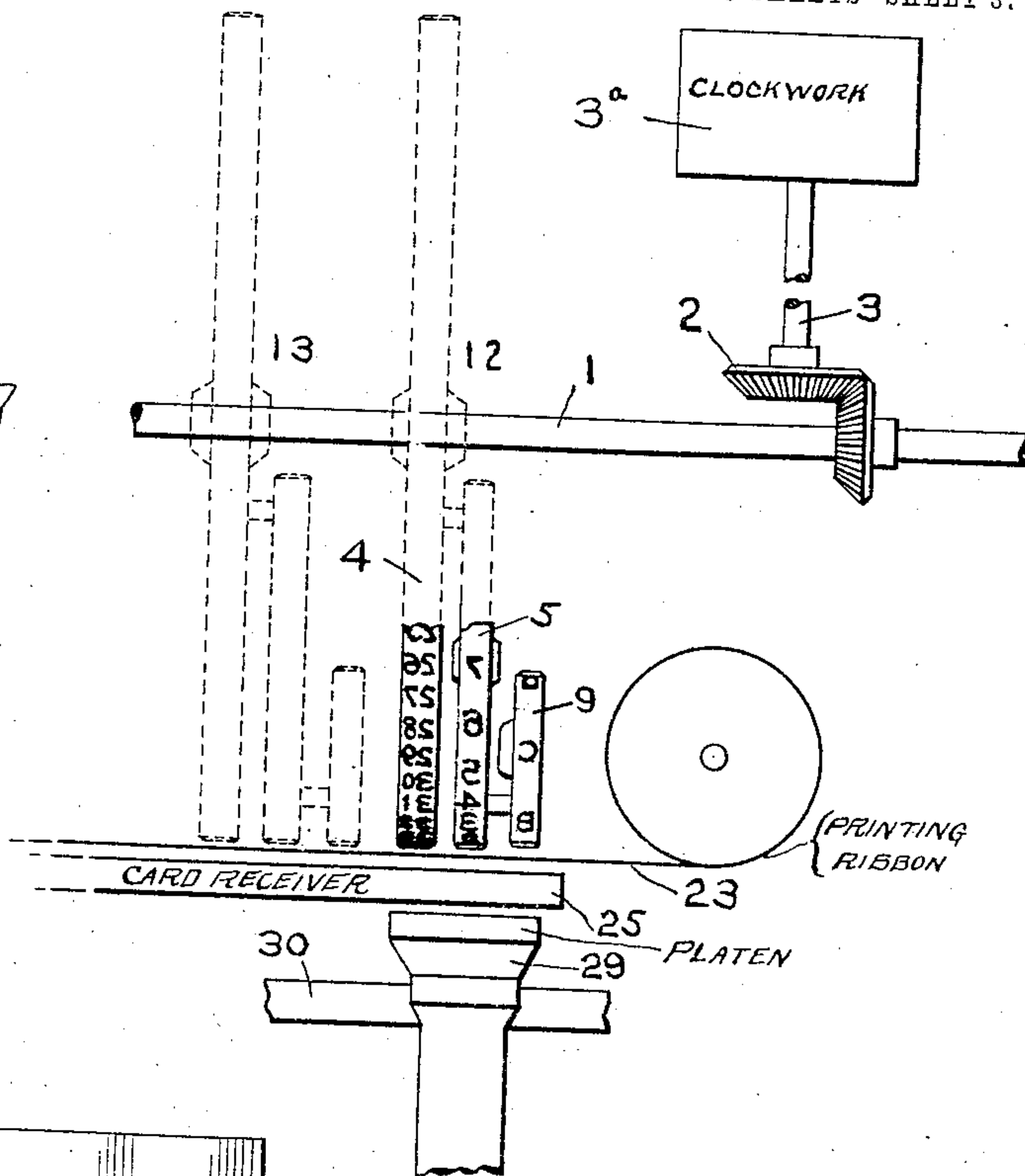


FIG. 8

NAME OR NUMBER					
	MORN. IN	NOON OUT	NOON IN	NIGHT OUT	
MON.	A 0	A 0	A 0 04	A 0	
TUES.	B 0	B 0	B 0	B 0	
WED.	C 1 20	C 0	C 0	C 0	
THUR.	D 0	D 0	D 0	D 0	
FRI.	E 0	E 0	E 0	E 0	
SAT.	F 0	F 0	F 0	F 0	
TOTAL TIME OUT—		1 24			
WAGES PER HOUR—		.20			
WAGES OUT		— .28			
		WAGES	— 12 .60		
		DEDUCT	— .28		
		AMT. DUE	12 .32		

WITNESSES:

Chas. J. Clagett
C. H. Wilcox

INVENTOR

R. S. Blair

RECORDING APPARATUS.

No. 842,132.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed February 2, 1906. Serial No. 299,160.

To all whom it may concern:

Be it known that I, ROBERT S. BLAIR, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Recording Apparatus, of which the following is a specification.

This invention relates to recording apparatus.

One of the objects thereof is to provide practical and efficient means adapted to record the hours of labor of a workman.

Another object is to provide means of the above type adapted to record working time with reference to predetermined periods of labor and to provide records of a simple character adapted for ready collation of the matter thereon should such be desired.

Another object is to provide means of inexpensive and non-complicated construction adapted directly to record deficiencies in the hours of labor of workmen in such manner as to render said deficiencies, both as regards number and extent, clearly evident.

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 embodiment thereof 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 my invention, Figure 1 is a diagrammatic plan of the same. Fig. 2 is a front elevation of the parts shown in Fig. 1. Fig. 3 is a detail elevation of a printing-wheel and associated parts. Fig. 4 is a front elevation of a portion of a set of printing members. Fig. 5 is a diagrammatic view showing means for moving one printing member from another, and Fig. 6 is a view of a record-card. Fig. 7 is a plan of a portion of this embodiment upon a larger scale. Fig. 8 is a view of a record-card.

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

In order that this invention be readily grasped, it may here be noted that in connection with apparatus of the general nature of that with which this invention deals it is highly desirable that the collation of the recorded data be readily accomplished. This

is of course peculiarly true of cases in which large numbers of workmen are employed, and the computation of the wages due each, with the proper deductions for absence during working hours, involves a large amount of labor. It may also be noted at this point that simplicity and reliability of action are features of prime importance in connection with recording devices of the nature of those herein dealt with. The above and other advantages are attained in constructions of the nature of that herein described.

Referring now to the accompanying drawings, there is shown a shaft 1, driven, as by bevel-gears 2, from a shaft 3, leading from a casing 3^a, which may represent clockwork of any desired type. It may here be noted that the term "clockwork" is used throughout this description and the following claims to denote any automobile mechanism parts of which travel at a predetermined rate of speed.

In the illustrative embodiment shown in the drawings there are mounted upon the shaft 1 a series of wheels 4, in this case four in number. Each wheel 4 is adapted to drive a smaller printing-wheel 5, the latter member being actuated throughout one twenty-fourth of a complete revolution at every revolution of the wheel 4. This intermittent movement of the wheel 5 may be brought about in any desired manner, but is preferably accomplished by providing a lug or tappet 6 upon the wheel 4, as best shown in Fig. 5 of the drawings, this part being so shaped and positioned as to engage one of the teeth of a star-wheel 7, fast upon the wheel 5, and to turn the latter, as above described. Any desired means may be provided for limiting the exact amount of rotation of the wheel 5 and bringing it into precisely the desired position at the time of forming a record, such means being common in this art. Adjacent each wheel 5, which is rigidly journaled, as at 8, is a smaller wheel 9, mounted as hereinafter described. This wheel 9 is preferably provided with a star-wheel 10, adapted to be engaged by a lug 11 upon the wheel 5 and rotated throughout a predetermined fraction of one complete revolution in a manner similar to the method of driving from wheel 4, as above described. In this embodiment the wheels 4 are preferably provided about their periphery with type ranging from "0" to "59" and are so driven from the clockwork as to turn throughout the angular space of

one type each minute. The wheel 5 is preferably provided with type ranging from "1" to "24," and upon being driven as above described will thus be turned throughout the angular space of one piece of type for every revolution of the wheel 4. In like manner wheel 9 is provided with characters, preferably seven in number, and in this embodiment being merely the first letters of the alphabet. These letters are thus adapted arbitrarily to indicate the day upon which an impression is made, as, assuming the wheel 4 to make one revolution every hour, the wheel 5 will complete its revolution each day and in so doing will turn the wheel 9 throughout the space of one type member.

The several sets of printing devices herein shown are provided for the purpose of recording irregularities, respectively, in the time of entry of the workman in the morning, his exit at noon, his reentry at noon, and his departure at night. Each set is provided with type adapted to record time with reference to some fixed point—as, for example, the set 12, which is to make record of the time of entry of the workman in the morning, is adapted to print the elapsed time with reference to the time of commencement of the morning hours of labor. Thus at seven o'clock this set of printing-wheels would record first the letter—as, for example, "A," to signify that it is Monday morning, and then "0," to show that the workman has arrived on time. If, however, these devices are actuated or an impression taken therefrom at three minutes after seven, the record will show the character corresponding to the day of the week, "0," in the hour-column and "03" in the minute-column. In like manner if the workman does not arrive until 8.30, which under the above assumption is one and one-half hours late, the printing device 12 will record this fact directly. This is brought about, of course, merely by a proper disposition of the type about the several wheels, it being clear that the several printing devices if so arranged as to print "0" at any given point of time and being driven at the proper rate of speed will at any subsequent point of time print directly the time which has elapsed between the time of printing and the point of time at which it would have printed "0." In a similar manner the set of printing devices 13, the wheel 4 of which is driven at the same rate of speed and in the same direction as the wheel 4 of the device 12, is adapted to print the total time from the time of printing up to the time of ending of the morning hours of labor. That is, if actuated at 11.55 a. m. and if the morning hours of labor terminate at 12.30 p. m. the impression would read "0 hours, 35 minutes." This may of course be accomplished by disposing the type reversely about the wheels with respect to their disposition in the case of the printing devices 12,

and thus, in effect, driving them in the reverse direction, and by so forming and setting these parts as to cause them to print "0" at the hour of 12.30. In like manner the printing devices 14 will record tardiness of reentry of the workman at noon, and the devices 15 will make record of his exit at night should the same be before the prescribed time for ceasing work.

It will be seen that means should be provided for rendering inoperative the several printing devices or portions of the same during certain periods of each day. That is, if the workman arrives before seven in the morning the record of his time of arrival should be clean, and in like manner if he remain at work until after the end of the hours of labor for the morning period no time should be charged against him upon the record-receiving member. This is preferably accomplished by providing certain type or other projecting parts upon the several wheels 5 at a greater distance from its axis of revolution than the majority of the type. Thus if it be desired that the wheels 4 remain inoperative between the hours of six and seven in the morning the hour-type corresponding to this hour is slightly raised, as shown at 16, as compared with the remaining type 17, and this prevents the record-receiving member from being brought into engagement with the printing-wheel 4, the printing-surface of which is even with that of the type 17. The raised type 16 preferably prints "0," though, if desired, it may form any other type of record or merely act as a stop.

In order that the wheels 9 remain operative irrespective of the angular position of the wheels 5, the same are mounted by the lever-arms 18 upon brackets 19 and are held forwardly, as by a spring 20, into a position determined by the stop 21 engaging the pin 22 on the bracket. In this position the outer surface of the type of the wheels 9 is even with that of the raised type 16, as shown in Fig. 3 of the drawings, and hence will form an impression, even though the printing-wheel 4 be inoperative. This wheel, moreover, is in operative condition, even though the type 17 be at the printing-point, as it remains thrown forwardly by the spring 20 and is pressed back by the record-receiving member, so as to permit the latter to come into operative relation to the printing-wheels 4 and 5.

Adjacent the several sets of printing devices there is preferably positioned a printing-ribbon 23, which may be actuated in any desired manner and is adapted to coact with the type upon the printing devices in the well-known way. Fixed to the casing 24 of the instrument is a card-receiver 25, adapted to support a record-card of any desired form. This receiver is provided with a portion cut away, as shown at 26, in order to permit a

platen 29 to throw an inserted record-card into operative relation to the printing-wheels. The receiver is also cut away, as shown at 27, to provide a passage for a vertically-movable abutment 28, which is intermittently moved in any desired manner in order to determine the vertical position of the record-card with reference to the printing-wheels.

10 The platen 29 is mounted upon a splined shaft 30 and is provided with a handle 31, which projects through the casing in a position adapted to be readily seized by the workman. The shaft 30 is provided with a
15 fixed crank 32, adapted either directly or indirectly to actuate a gong 33 upon the platen being thrown into operative position. It is to be understood that the platen is merely keyed upon the shaft and may be moved longitudinally thereon into a position to bring
20 it opposite any desired set of printing devices, such positions being preferably indicated upon the exterior of the casing, as by the dotted arrows 34.

25 The operation of the above-described embodiment of my invention is as follows: Assuming the hours of labor to be from 7 a. m. until 12.30 p. m. and 1 p. m. until 6, if a workman enters before seven o'clock in the
30 morning his record-card is inserted, and upon the platen being thrown into operative position the card takes an impression from the wheels 5 and 9 only, inasmuch as the raised type 16, which is then at the printing-point, prevents contact with the wheel 4. The record thus appears merely as the letter indicating the day, and a "0," showing that no time
35 is to be deducted. If he is tardy, however, the exact number of minutes which he is absent during working hours is recorded, as above described. In like manner his exit at noon, if before 12.30, is recorded with reference to this hour, but if after 12.30 appears
40 merely as a "0" upon his record. The afternoon hours of labor are recorded in like manner, and if it be desired to provide for evening hours the same may readily be accomplished by the employment of extra sets of
45 printing devices carrying out the principles herein set forth. At the end of the week the record-card would be substantially of the form indicated at Fig. 8, in which the irregularities are shown as an entry four minutes late Monday noon and one hour and twenty
50 minutes late Wednesday morning. The remaining records are clear, and hence the total time to be charged against the workman is one hour and twenty-four minutes. If the wages be at, for example, twenty cents per
55 hour, the amount to be deducted is twenty-eight cents, leaving a total for the week of twelve dollars and thirty-two cents if the hours of labor amount to ten and one-half per day. If the decimal-type shown by the

computation in the record-card appearing in 65 Fig. 6 be employed, the amount deducted is twenty-five cents, leaving a total for the week of twelve dollars and thirty-five cents if the hours of labor amount to ten and one-half per day. It will thus be seen that simple and efficient means are provided for accomplishing the several objects of my invention and that the entire construction is of the most inexpensive and non-complicated character and reliable action.

75 It may here be noted that this invention is by no means limited to the "card" type of time-recorders, as it is equally applicable to recording instruments employing a single sheet for a plurality of workmen, as in those of the "dial" type. It may also be noted that not only may the time of absence of the workman during working hours be recorded directly, as above described, but any function of this time, using the term "function" 85 in its mathematical sense, may be recorded in like manner by a proper conformation and disposition of the type about the printing members.

90 In order to avoid the chance of ambiguity in the use of certain terms used throughout the description and the following claims, it may here be noted that they are employed with the following significance: By "printing" or words of like character is meant the forming of a record, whether by perforating, embossing, or discoloring the surface of the record-receiving member or otherwise, and by "bringing a record-receiving surface into operative relation with a device" is meant 100 merely the bringing of the two together, irrespective of which is moved. It may also be noted that the term "time-recorder" is used broadly, as it is meant to comprehend an instrument adapted not only for recording 105 time, but for recording any function of time. It may here be noted that the term "significant" with reference to numerals is here used in its mathematical sense as denoting numerals of effective arithmetical value, as those from "1" to "9," inclusive. 110

As many changes could be made in the above construction and various apparently-different embodiments of my invention could be made without departing from the scope 115 thereof, I intend that all matter herein described or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim is— 120

1. In a workman's time-recorder, in combination, clockwork, means connected with said clockwork adapted at a given point of time to record by a single impression upon a blank record-receiving member the elapsed 125 time between said point and the time of commencement of a predetermined period of

labor, and means adapted to bring a record-receiving member into operative relation thereto.

2. In a workman's time-recorder, in combination, clockwork, means connected with said clockwork adapted at a given point of time to record the amount of time between said point and the time of ending of a predetermined period of labor, and means adapted to bring a record-receiving member into operative relation thereto.

3. In a workman's time-recorder, in combination, clockwork, means connected with said clockwork adapted at a given point of time to record by a single impression upon a blank record-receiving member a function of the time elapsed between said point and the time of commencement of a predetermined period of labor, and means adapted to bring a record-receiving member into operative relation thereto.

4. In a workman's time-recorder, in combination, clockwork, means connected with said clockwork adapted at a given point of time to record the amount of time between said point and the time of ending of a regular predetermined period of labor; means adapted to bring a record-receiving member into operative relation therewith, and means adapted to render said first means inoperative during a period of each day.

5. In a workman's time-recorder, in combination, clockwork, means connected with said clockwork adapted at a given point of time to record the elapsed time between said point and the time of commencement of a predetermined period of labor, means connected with said clockwork adapted at a given point of time to record the amount of time between said point and the time of ending of a predetermined period of labor, and means adapted to bring a record-receiving member into operative relation with either of said first and second mentioned means.

6. In a workman's time-recorder, in combination, clockwork, means connected with said clockwork adapted at a given point of time to record a function of the elapsed time between said point and the time of commencement of a predetermined period of labor, means connected with said clockwork adapted at a given point of time to record a function of the amount of time between said point and the time of ending of a predetermined period of labor, and means adapted to bring a record-receiving member into operative relation with either of said first and second mentioned means.

7. In a workman's time-recorder, in combination, clockwork, record-forming means connected therewith adapted upon actuation by a workman upon entry and exit to record directly the time of absence of said workman with respect to a predetermined period of

labor, and means adapted to bring a record-receiving member into operative relation to said first-mentioned means.

8. In a workman's time-recorder, in combination, clockwork, record-forming means connected therewith adapted upon actuation by a workman upon entry and exit to record directly a function of the time of absence of said workman with respect to a predetermined period of labor, and means adapted to bring a record-receiving member into operative relation to said first-mentioned means.

9. In a time-recorder, in combination, a time-controlled recording device, means adapted to bring a record-receiving member into operative relation thereto, and means adapted to render inoperative said first-mentioned means during a period of each day.

10. In a workman's time-recorder, in combination, clockwork, means connected with said clockwork adapted upon actuation to record the elapsed time between the time of actuation and the time of commencement of the regular daily period of labor, and means adapted to bring a record-receiving member into operative relation therewith, said recording means being formed and driven to automatically be in condition to perform its functions upon successive days and to accomplish its functions upon a blank record-receiving member.

11. In a workman's time-recorder, in combination, a clockwork, means connected with said clockwork adapted upon actuation to record directly in Arabic numerals the time elapsed between the time of actuation and the time of commencement of a regular daily period of labor, a record-card holder, a movable stop or abutment adapted to limit the depth of insertion of the record-card within said holder at different points and space the records thereon in the desired positions, printing means adapted to record upon a member within said card-holder the day of actuation thereof, and means adapted to bring a record-receiving member within said card-holder into operative relation to said first-mentioned means.

12. In a time-recorder, in combination, a time-controlled printing-wheel, means adapted to cause a relative movement of said printing-wheel and a record-receiving member toward one another, and means adapted during a predetermined period of each day to prevent said printing-wheel and said record-receiving member coming into operative relation one with another upon said movement taking place.

13. In a time-recorder, in combination, a printing device, means adapted to cause a relative movement of the same and a record-receiving member toward one another, and means adapted during a predetermined pe-

riod of the day to limit said relative movement at one point and during another period of the day to limit the same at another point.

14. In a time-recorder, in combination, a printing device, means adapted to cause a relative movement of said printing device and record-receiving member toward one another, and means controlled from said printing device adapted to limit said movement during a predetermined period of the day at a certain point and during another period of the day at another point.

15. In a time-recorder, in combination, a rotary printing device, means adapted to cause a relative movement of said printing device and a record-receiving member toward one another, and means positioned upon said printing device at different distances from its axis of rotation adapted to limit said relative movement at different points.

16. In a time-recorder, in combination, a printing device, a second printing device adjacent thereto, means adapted to cause a relative movement of said printing devices and a record-receiving member toward one another, means adapted during a predetermined period of the day to limit said relative movement in a position in which said record-receiving member is in operative relation to both of said printing devices, and means adapted during another period of the day to limit the said relative movement in a position in which said record-receiving member is in operative relation to one only of said printing devices.

17. In a time-recorder, in combination, a printing device, a second printing device adjacent thereto, means adapted to cause a relative movement of said printing devices and a record-receiving member toward one another, means adapted during a predetermined period of the day to limit said relative movement in a position in which said record-receiving member is in operative relation to both of said printing devices, and means adapted during another period of the day to limit the said relative movement in a position in which said record-receiving member is in operative relation to one only of said printing devices, said last means comprising a part mounted upon said first printing device and projecting beyond said second printing device.

18. In a time-recorder, in combination, a rotary printing device having parts positioned at unequal distances from its axis of rotation, a second printing device mounted adjacent thereto, spring-pressed means adapted to hold said second printing device in alinement with the parts upon said first printing device at the extreme distance from its axis of rotation, said last-mentioned means being adapted to permit said second

printing device to fall into alinement with the parts upon said first printing device at the lesser distance from its axis of rotation, and means adapted to bring a record-receiving member into operative relation to said printing devices.

19. In a time-recorder, in combination, a printing-wheel having two type at unequal distances from its axis, a second printing-wheel adjacent thereto, and resilient means adapted to press said second printing-wheel into a position even with the type at the greater distance from the axis and to permit it to swing into a position even with the type at the lesser distance from the axis.

20. In a time-recorder, in combination, a printing device, a second printing device, means adapted to cause a relative movement between a record-receiving member and said printing devices in a direction toward one another, means adapted during a predetermined period of the day to limit said relative movement in a position in which said record-receiving member is in operative relation to both of said printing devices, means adapted during another period of the day to limit said relative movement to the position in which said record-receiving member is in operative relation to one only of said printing devices, and a third printing device resiliently pressed into a position in which it is adapted to coact with said record-receiving member throughout the entire day.

21. In a workman's time-recorder, in combination, a card-holder, a movable stop or abutment adapted to limit the depth of insertion of a card within said holder at different points and space the daily records in transverse columns, a plurality of printing mechanisms each adapted independently to form a record in said transverse columns whereby the records of each of said printing mechanisms are substantially in vertical columns, and means adapted to bring a card in said card-holder into operative relation with any of said printing mechanisms.

22. In a time-recorder, in combination, a plurality of time-controlled printing devices, means adapted to hold a record-receiving member and means adapted to bring a record-receiving member in said holding means into operative relation with any of the same, each of said printing devices being adapted to record time with reference to a different regular daily period of labor.

23. In a time-recorder, in combination, a plurality of time-controlled printing devices, means adapted to hold a record-receiving member, means adapted to bring a record-receiving member in said holding means into operative relation with any of the same, each of said printing devices being adapted to record time with reference to a different predetermined point of time, and means adapted

automatically to render one of said printing devices inoperative during a period of each day.

24. In a time-recorder, in combination, a plurality of time-controlled printing devices, means adapted to bring a record-receiving member into operative relation with any of the same, each of said printing devices being adapted to record time with reference to a different predetermined point of time, and means adapted automatically to render each of said printing devices inoperative during a different period of each day.

25. In a time-recorder, in combination, a plurality of printing devices, a card-receiver mounted adjacent thereto, movable means adapted to limit the depth of insertion of a record-card therein, and a laterally-movable platen adapted to bring said record-card into operative relation with any of said printing devices.

26. In time-recording apparatus, in combination, printing means, means adapted to take an impression therefrom upon a record-receiving member, and means adapted to actuate said printing means to cause said impression to represent directly and typographically the time of absence during working hours of the workman using the same upon each arrival and each departure.

27. In a workman's time-recorder, in combination, clockwork, printing mechanism comprising an hour-wheel and a wheel for decimal fractions of an hour driven from said clockwork, the type upon said wheels being so disposed and driven as to be in position for printing in effect zero at the beginning of each regular daily period of labor, and during the time following the same to be in condition to print in hours and decimal fractions of hours the total elapsed time between the beginning of said period of labor and the time of actuation.

28. In a workman's time-recorder, in combination, clockwork, printing mechanism driven from said clockwork and provided with type so formed and disposed as upon actuation subsequent to the beginning of a regular period of labor to print the elapsed time between the time of actuation and the time of beginning of said period of labor, printing mechanism driven from said clockwork and provided with type so formed and disposed as upon actuation prior to the time of ending of the regular daily period of labor to print the amount of time between the time of actuation and said time of ending of the regular daily period of labor, and means adapted to bring a single record-receiving member into operative relation with either of said printing mechanisms.

29. In a workman's time-recorder, in combination, clockwork, printing mechanism driven from said clockwork provided with type so formed and disposed as upon actua-

tion by a workman upon entry and exit to record directly in Arabic numerals the time of absence of said workman with respect to the regular daily period of labor, and means adapted to bring a record-receiving member into operative relation to said first-mentioned means.

30. In a workman's time-recorder, in combination, a card-holder, a stop or abutment adapted to limit the depth of insertion of a record-receiving member at different points and space the daily records in transverse columns, a plurality of printing mechanisms mounted upon the same shaft, each of which is adapted independently to form a record upon one of said transverse columns whereby the records of each of said printing mechanisms form substantially vertical columns, and means adapted to bring a record-receiving member within said card-holder into operative relation with any of said printing mechanisms.

31. In a time-recorder, in combination, a plurality of time-controlled printing devices, means adapted to hold a record-receiving member, and means adapted to bring a record-receiving member within said holding means into operative relation with any of said printing devices, one of said printing devices being adapted to record time directly with reference to the beginning of a regular daily period of labor as zero, and another of said printing devices being adapted to record time inversely with reference to the ending of said period of labor as zero.

32. In a time-recorder, in combination, a plurality of time-controlled printing devices, means adapted to hold a record-receiving member, means adapted to bring a record-receiving member within said holding means into operative relation with any of said printing devices, one of said printing devices being adapted to record time directly with reference to the beginning of a regular daily period of labor as zero and another of said printing devices being adapted to record time inversely with reference to the ending of said period of labor as zero, and means adapted automatically to render each of said devices inoperative during a period of each day.

33. In a workman's time-recorder, in combination, clockwork, printing mechanism driven therefrom provided with time-printing type, means adapted to support a record-receiving member, and means adapted to bring together said type and said record-receiving member and form an impression upon said member, said type being so disposed as at any point of time in a period following the beginning of the regular working hours to bring to the printing-point type representing the elapsed time between said point and the time of beginning of said regular working hours, whereby the impression

formed indicates directly the tardiness of actuation of the recorder with reference to the regular daily hours of labor.

34. In a workman's time-recorder, in combination, clockwork, printing mechanism driven therefrom provided with time-printing type, means adapted to support a record-receiving member, and means adapted to bring together said type and said record-receiving member and form an impression upon said member, said type being so disposed as at any point of time during a period preceding the ending of a regular daily period of labor to bring to the printing-point type representing the amount of time between said point of time and said time of ending of the regular daily period of labor, whereby upon actuation upon leaving the impression formed indicates directly the deficiency of the hours of labor with respect to the regular daily period.

35. In a workman's time-recorder, in combination, clockwork, printing mechanism driven therefrom provided with time-printing type, means adapted to support a record-receiving member, and means adapted to bring together said type and said record-receiving member and form an impression upon said record-receiving member, certain of said type being so disposed as upon actuation in a period following the beginning of the regular working hours to bring to the printing-point type representing the elapsed time between said time of actuation and said time of beginning of the regular working hours whereby the impression formed is directly indicative of the tardiness of actuation, and certain of said type being so disposed as upon actuation at any time in a period preceding the time of ending of the regular working hours to bring to the printing-point type representing the amount of time between said time of actuation and said time of ending, whereby the impression formed is directly indicative of the deficiency of the workman with respect to said regular working hours.

36. In a workman's time-recorder, in combination, time-printing mechanism provided with type adapted to print hours and type adapted to print portions of an hour, means adapted to support a record-receiving member, and means adapted to bring together said type and said record-receiving member and form an impression upon said record-receiving member, said type being so disposed as upon actuation at any time in a period following the beginning of the regular working hours to bring to the printing-point type representing the elapsed time between said time of actuation and the time of beginning of the regular working hours.

37. In a workman's time-recorder, in combination, clockwork, printing mechanism driven therefrom provided with time-printing

type, means adapted to support a record-receiving member, and means adapted to bring together said type and said record-receiving member and form an impression upon said record-receiving member, certain of said type being so disposed as upon actuation in a period following the beginning of the regular working hours to bring to the printing-point type representing the elapsed time between said time of actuation and said time of beginning of the regular working hours whereby the impression formed is directly indicative of the tardiness of actuation, and certain of said type being so disposed as upon actuation at any time in a period preceding the time of ending of the regular working hours to bring to the printing-point type representing the amount of time between said time of actuation and said time of ending, whereby the impression formed is directly indicative of the deficiency of the workman with respect to said regular working hours, and a plurality of members of said printing mechanism being mounted directly upon the same shaft.

38. In a workman's time-recorder, in combination, clockwork, printing mechanism driven therefrom provided with time-printing type, means adapted to support a record-receiving member, and means adapted to bring together said type and said record-receiving member and form an impression upon said record-receiving member, certain of said type being so disposed as upon actuation in a period following the beginning of the regular working hours to bring to the printing-point type representing the elapsed time between said time of actuation and said time of beginning of the regular working hours whereby the impression formed is directly indicative of the tardiness of actuation, and certain of said type being so disposed as upon actuation at any time in a period preceding the time of ending of the regular working hours to bring to the printing-point type representing the amount of time between said time of actuation and said time of ending, whereby the impression formed is directly indicative of the deficiency of the workman with respect to said regular working hours, and means adapted to place a record-receiving member in said supporting means in operative relation with either of said sets of type.

39. In a workman's time-recorder, in combination, clockwork, printing mechanism driven thereby, and means adapted to bring a record-receiving member into operative relation with said printing mechanism and form a record thereon, said printing mechanism being adapted throughout a period of time preceding the regular daily hours of labor to form a substantially constant impression.

40. In a workman's time-recorder, in com-

bination, clockwork, printing mechanism
 driven therefrom provided with time-printing
 type, means adapted to support a record-re-
 ceiving member, and means adapted to
 5 bring together said type and said record-re-
 ceiving member and form an impression
 upon said member, certain of said type being
 so disposed as at any point of time in a period
 following the beginning of the regular work-
 10 ing hours to bring to the printing-point type
 representing the elapsed time between said
 point and the time of beginning of said regu-
 lar working hours whereby the impression
 formed indicates directly the tardiness of ac-
 15 tuation of the recorder with reference to the
 regular daily hours of labor, and certain of
 said type being so disposed as upon any ac-
 tuation in a period preceding the regular
 working hours to form a substantially con-
 20 stant impression.

41. In a workman's time-recorder, in com-
 bination, clockwork, printing mechanism
 driven therefrom, provided with time-print-
 ing type, means adapted to support a record-
 25 receiving member, and means adapted to
 bring together said type and said record-re-
 ceiving member and form an impression
 upon said member, certain of said type being
 so disposed as at any point of time in a pe-
 30 riod following the beginning of the regular
 working hours to bring to the printing-point
 type representing the elapsed time between
 said point and the time of beginning of said
 regular working hours whereby the impres-
 35 sion formed indicates directly the tardiness
 of actuation of the recorder with reference to
 the regular daily hours of labor, and certain
 of said type being so disposed as upon any
 actuation in a period preceding the regular
 40 working hours to form the impression 0.

42. In a workman's time-recorder, in com-
 bination, clockwork, printing mechanism
 driven therefrom provided with time-print-
 ing type, means adapted to support a record-
 45 receiving member, and means adapted to
 bring together said type and said record-re-
 ceiving member and form an impression upon
 said member, certain of said type being so
 disposed as at any point of time in a period
 50 following the beginning of the regular work-
 ing hours to bring to the printing-point type
 representing the elapsed time between said
 point and the time of beginning of said regu-
 lar working hours whereby the impression
 55 formed indicates directly the tardiness of ac-
 tuation of the recorder with reference to the
 regular daily hours of labor, and certain of
 said type being so disposed as upon any
 actuation in a period preceding the regular
 60 working hours to form an impression free
 from significant Arabic numerals.

43. In a workman's time-recorder, in com-
 bination, printing mechanism provided with
 type, means adapted to support a record-re-
 65 ceiving member, and means adapted to bring

together said type and said record-receiving
 member and form an impression upon said
 record-receiving member, said type being so
 disposed as upon actuation during the regu-
 lar daily noon intermission of labor to bring
 70 to the printing-point type adapted to form
 a substantially constant impression.

44. In a workman's time-recorder, in com-
 bination, printing mechanism provided with
 type, means adapted to support a record-re- 75
 ceiving member, and means adapted to bring
 together said type and said record-receiving
 member and form an impression upon said
 record-receiving member, certain of said type
 being so disposed as upon actuation during 80
 the regular daily noon intermission of labor
 to bring to the printing-point type adapted
 to form an impression free from significant
 Arabic numerals, and certain of said type be-
 85 ing so disposed as upon actuation during the
 regular working hours to bring to the print-
 ing-point type representing time in Arabic
 numerals.

45. In a workman's time-recorder, in com-
 bination, clockwork, printing mechanism 90
 driven therefrom, and means adapted to
 bring a record-receiving member into opera-
 tive relation to said printing mechanism and
 form a record thereon, said printing mechan-
 ism comprising type formed to print a record 95
 free from significant Arabic numerals and so
 disposed as to be in position for printing upon
 actuation of the recorder out of hours of labor
 whereby such actuation is recorded and the
 record thereof is free from significant Arabic 100
 numerals, and said printing mechanism com-
 prising type formed to print time in Arabic
 numerals and so disposed as to be in position
 upon actuation of the recorder during a pe-
 105 riod of labor for printing in Arabic numerals
 time with reference to a terminal point of
 said period of labor.

46. In a workman's time-recorder, in com-
 bination, clockwork, printing mechanism
 driven therefrom, and means adapted to 110
 bring a record-receiving member into opera-
 tive relation to said printing mechanism and
 form a record thereon, said printing mechan-
 ism comprising type formed to print a record
 having a single character and so disposed as 115
 to be in position for printing upon actuation
 of the recorder out of the hours of labor
 whereby such actuation is recorded in single
 figures or characters, and said printing mech-
 120 anism comprising type adapted to print
 time in a plurality of characters so disposed
 as to be in position for printing upon action
 of the recorder during the hours of labor.

47. In a workman's time-recorder, in com-
 bination, clockwork, printing mechanism 12
 driven therefrom comprising an hour-wheel
 and a wheel adapted to print portions of an
 hour, and means adapted to bring a record-
 receiving member into operative relation
 to said printing mechanism and form a record 13

thereon, the type upon said wheels being so disposed and driven as upon actuation of the recorder during a period preceding the regular morning hours of labor to be in position to form a substantially constant impression, and upon actuation of the recorder in a period following the beginning of the regular hours of labor to print time with reference to said time of beginning of the hours of labor, whereby the impression is directly indicative of the tardiness of actuation of the recorder.

48. In a workman's time-recorder, in combination, clockwork, a plurality of printing mechanisms driven therefrom, and means adapted to bring a record-receiving member into operative relation to said printing mechanisms and form a record thereon, the type upon one of said printing mechanisms being so disposed as upon actuation in a period following the beginning of the regular hours of labor to print time directly indicative of the time elapsed between said time of actuation and said time of beginning of the hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the ending of the morning hours of labor to form a record directly indicative of the amount of time between said time of actuation and the time of ending of the regular morning hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period following the time of beginning of the regular afternoon hours of labor to form a record directly indicative of the elapsed time between the beginning of said afternoon hours of labor and the time of actuation, and the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the time of ending of the afternoon hours of labor to form a record directly indicative of the amount of time between said time of actuation and said time of ending of the afternoon hours of labor.

49. In a workman's time-recorder, in combination, clockwork, a plurality of printing mechanisms driven therefrom, and means adapted to bring a record-receiving member into operative relation to said printing mechanisms and form a record thereon, the type upon one of said printing mechanisms being so disposed as upon actuation in a period following the beginning of the regular hours of labor to print time directly indicative of the time elapsed between said time of actuation and said time of beginning of the hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the ending of the morning hours of labor to form a record directly indicative of the amount of time between said time of actuation and the time of ending of the regular morning hours of labor, the type upon another of said mechanisms being so

disposed as upon actuation in a period following the time of beginning of the regular afternoon hours of labor to form a record directly indicative of the elapsed time between the beginning of said afternoon hours of labor and the time of actuation, and the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the time of ending of the afternoon hours of labor to form a record directly indicative of the amount of time between said time of actuation and said time of ending of the afternoon hours of labor, and said several mechanisms being provided with type so disposed as upon actuation of the recorder out of hours of labor to form a record free from significant Arabic numerals.

50. In a workman's time-recorder, in combination, clockwork, a plurality of printing mechanisms driven therefrom, and means adapted to bring a record-receiving member into operative relation to said printing mechanisms and form a record thereon, the type upon one of said printing mechanisms being so disposed as upon actuation in a period following the beginning of the regular hours of labor to print time directly indicative of the time elapsed between said time of actuation and said time of beginning of the hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the ending of the morning hours of labor to form a record directly indicative of the amount of time between said time of actuation and the time of ending of the regular morning hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period following the time of beginning of the regular afternoon hours of labor to form a record directly indicative of the elapsed time between the beginning of said afternoon hours of labor and the time of actuation, and the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the time of ending of the afternoon hours of labor to form a record directly indicative of the amount of time between said time of actuation and said time of ending of the afternoon hours of labor, a member of each of said printing mechanisms being mounted upon a common shaft.

51. In a workman's time-recorder, in combination, clockwork, a plurality of printing mechanisms driven therefrom, the type upon one of said printing mechanisms being so disposed as upon actuation in a period following the beginning of the regular hours of labor to print time directly indicative of the time elapsed between said time of actuation and said time of beginning of the hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the ending of the morning hours of labor to form a record directly in-

dicative of the amount of time between said time of actuation and the time of ending of the regular morning hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period following the time of beginning of the regular afternoon hours of labor to form a record directly indicative of the elapsed time between the beginning of said afternoon hours of labor and the time of actuation, and the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the time of ending of the afternoon hours of labor to form a record directly indicative of the amount of time between said time of actuation and said time of ending of the afternoon hours of labor, a card-holder, and means adapted to throw a record-card within said card-holder into operative relation to any of said printing mechanisms.

52. In a workman's time-recorder, in combination, clockwork, a plurality of printing mechanisms driven therefrom, the type upon one of said printing mechanisms being so disposed as upon actuation in a period following the beginning of the regular hours of labor to print time directly indicative of the time elapsed between said time of actuation and said time of beginning of the hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the ending of the morning hours of labor to form a record directly indicative of the amount of time between said

time of actuation and the time of ending of the regular morning hours of labor, the type upon another of said mechanisms being so disposed as upon actuation in a period following the time of beginning of the regular afternoon hours of labor to form a record directly indicative of the elapsed time between the beginning of said afternoon hours of labor and the time of actuation, and the type upon another of said mechanisms being so disposed as upon actuation in a period preceding the time of ending of the afternoon hours of labor to form a record directly indicative of the amount of time between said time of actuation and said time of ending of the afternoon hours of labor, a card-holder, movable means adapted to limit the depth of insertion of a record-card at different points whereby the daily records thereon are spaced in separate transverse columns, said several printing mechanisms being positioned to form their several records in substantially vertical columns upon a card within said card-holder, and means adapted to throw a record-card within said card-holder into operative relation to any of said printing mechanisms.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT S. BLAIR.

Witnesses:

C. CARSON,

C. U. BURDINE.