

(No Model.)

3 Sheets—Sheet 1.

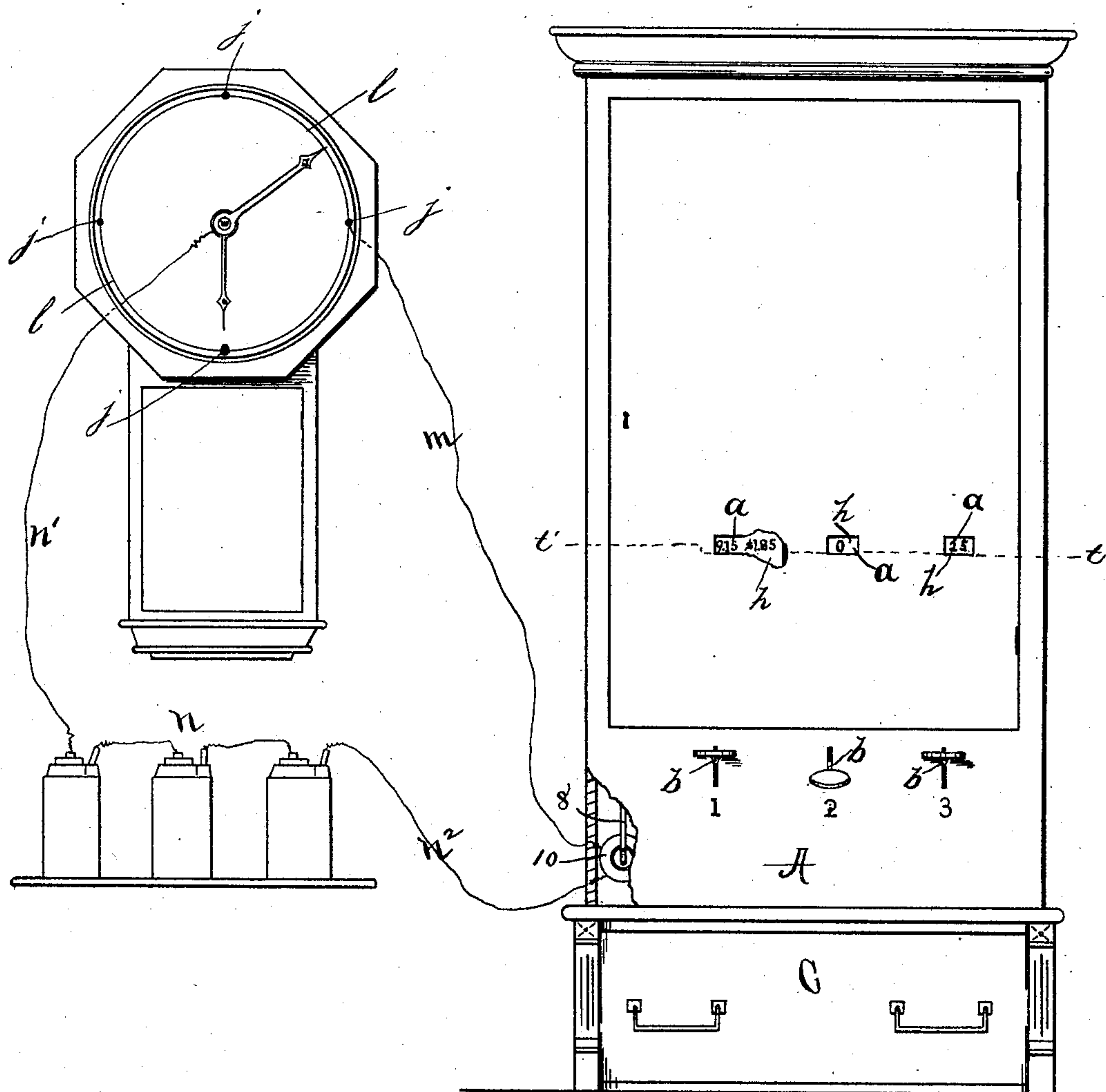
F. L. FULLER.

DEVICE FOR REGISTERING AND RECORDING THE TIME WORKED BY
EMPLOYÉES AND AUTOMATICALLY COMPUTING THEIR WAGES.

No. 379,865.

Patented Mar. 20, 1888.

Fig. 1.



Witnesses.

Allen Terry,
Philip Miller.

Inventor

Fredrick L. Fuller,
By his Attorney
Frank H. Allen

(No Model.)

3 Sheets—Sheet 2.

F. L. FULLER.

DEVICE FOR REGISTERING AND RECORDING THE TIME WORKED BY
EMPLOYÉES AND AUTOMATICALLY COMPUTING THEIR WAGES.

No. 379,865.

Patented Mar. 20, 1888.

Fig. 2.

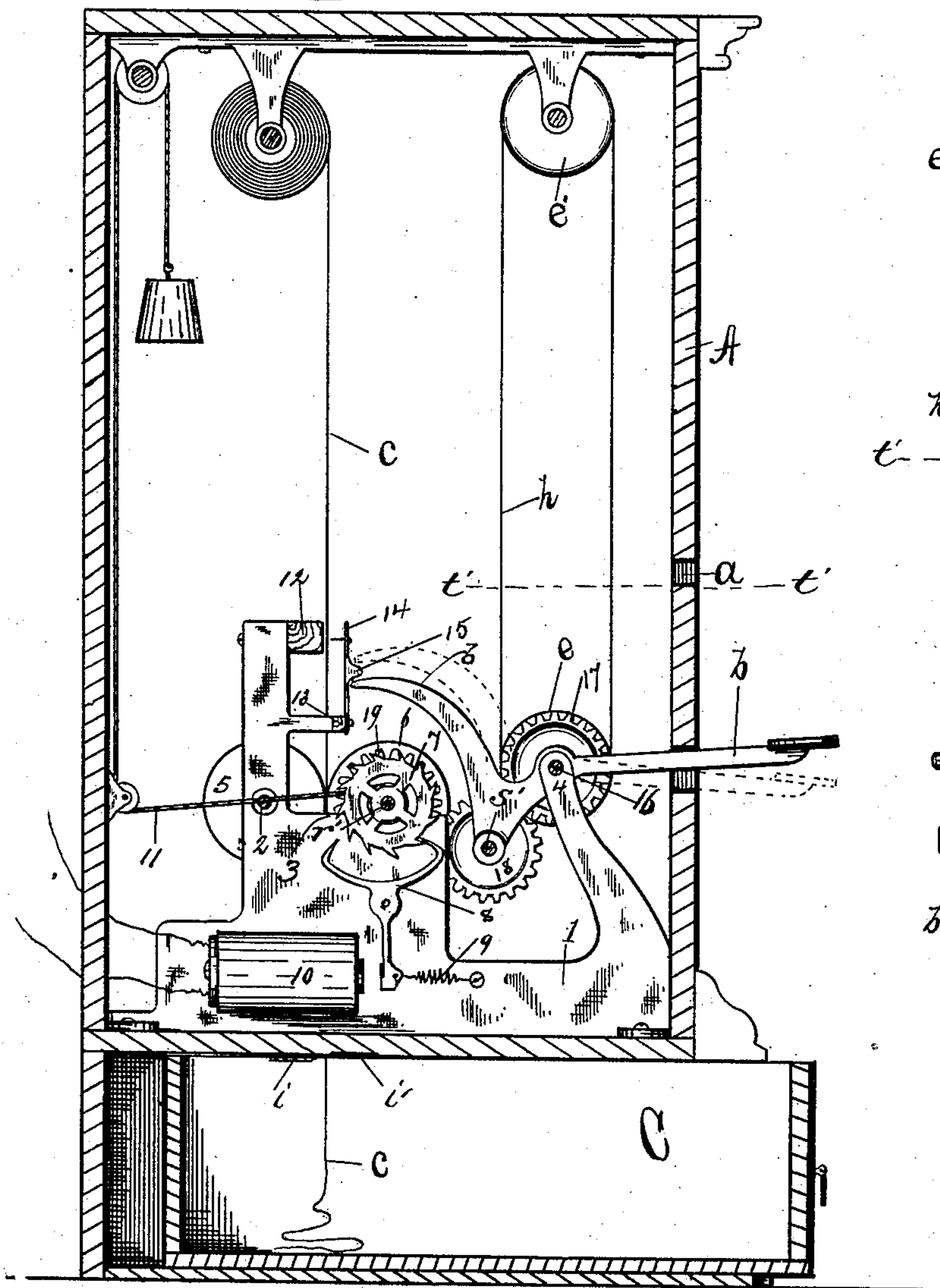
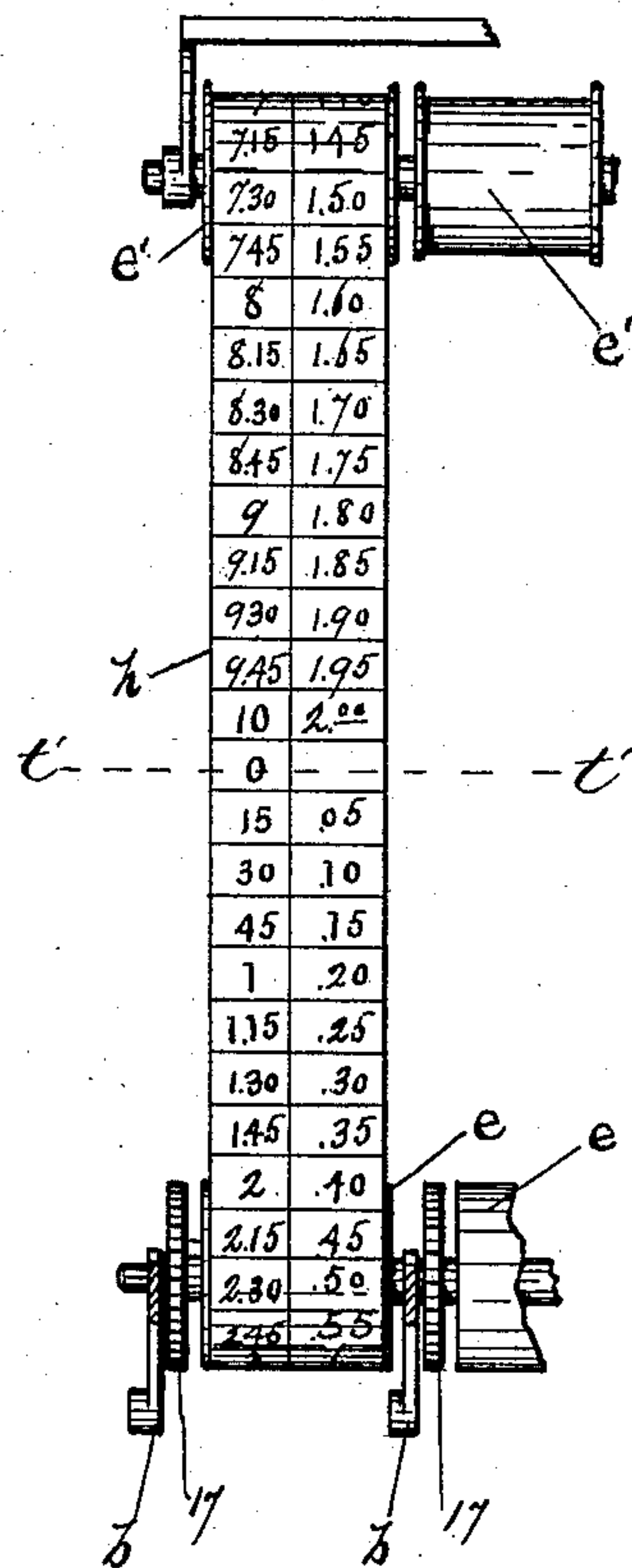


Fig. 6.



Witnesses,

H. L. Allen.
Tyler J. Howard.

Inventor,

Fredrick L. Fuller.
By his Attorney
Frank H. Allen

(No Model.)

3 Sheets—Sheet 3.

F. L. FULLER.

DEVICE FOR REGISTERING AND RECORDING THE TIME WORKED BY
EMPLOYÉES AND AUTOMATICALLY COMPUTING THEIR WAGES.

No. 379,865.

Patented Mar. 20, 1888.

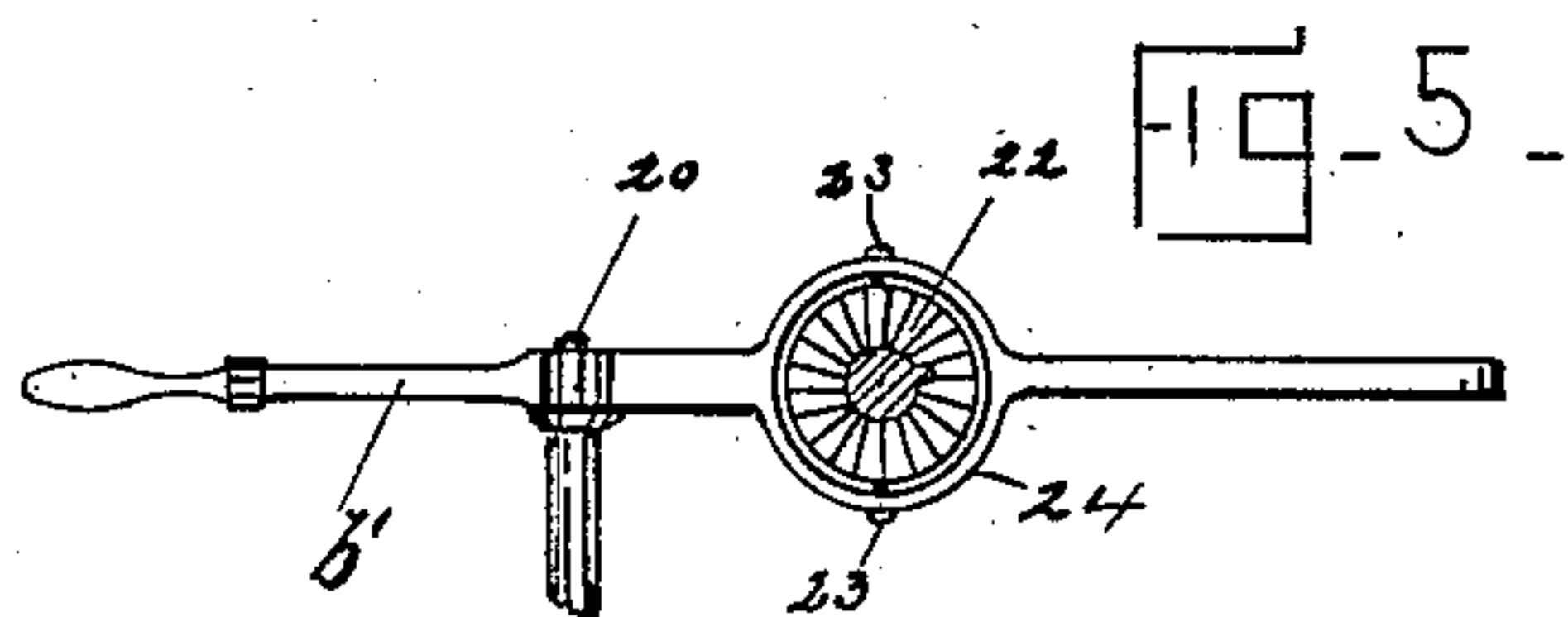
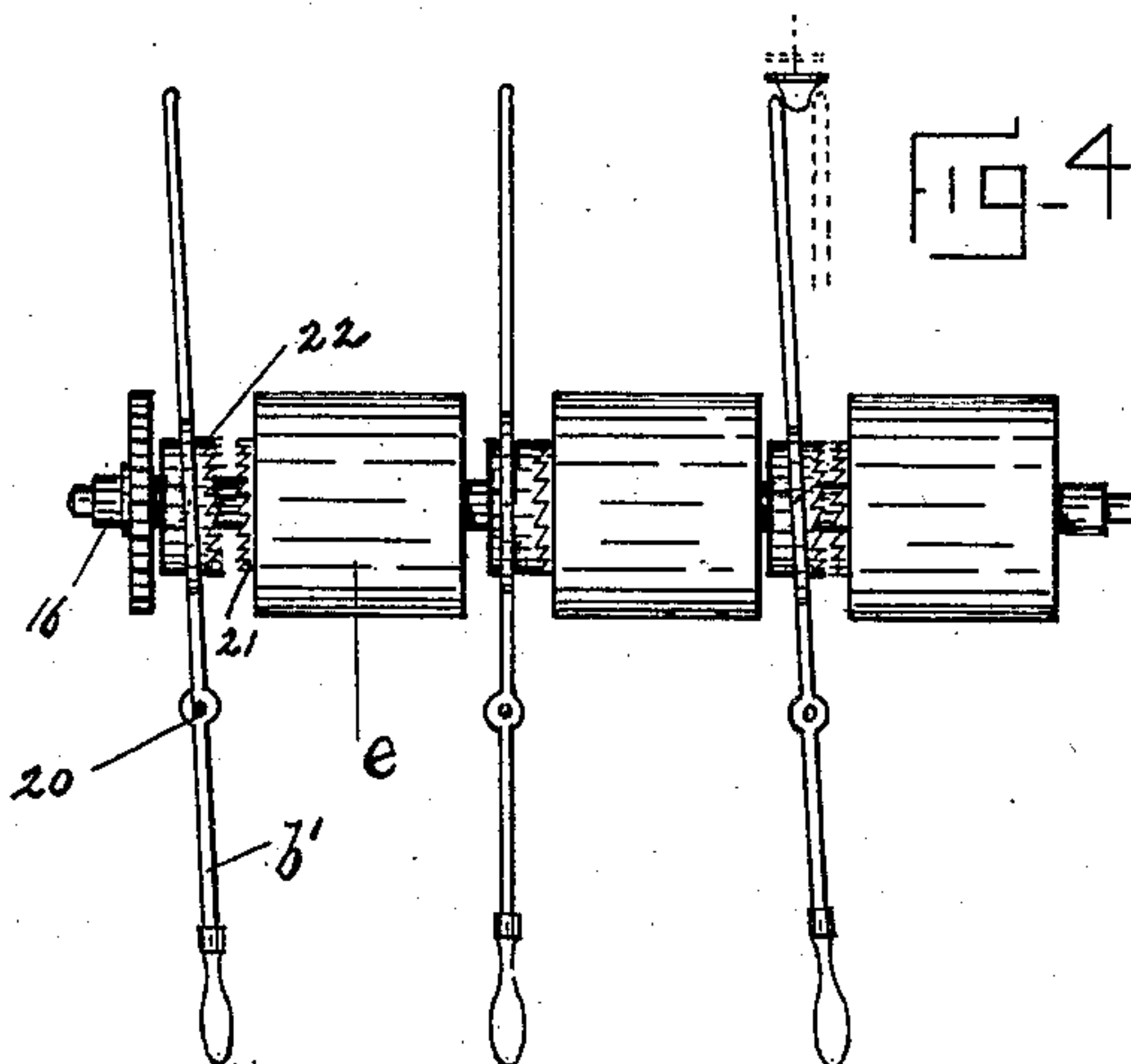
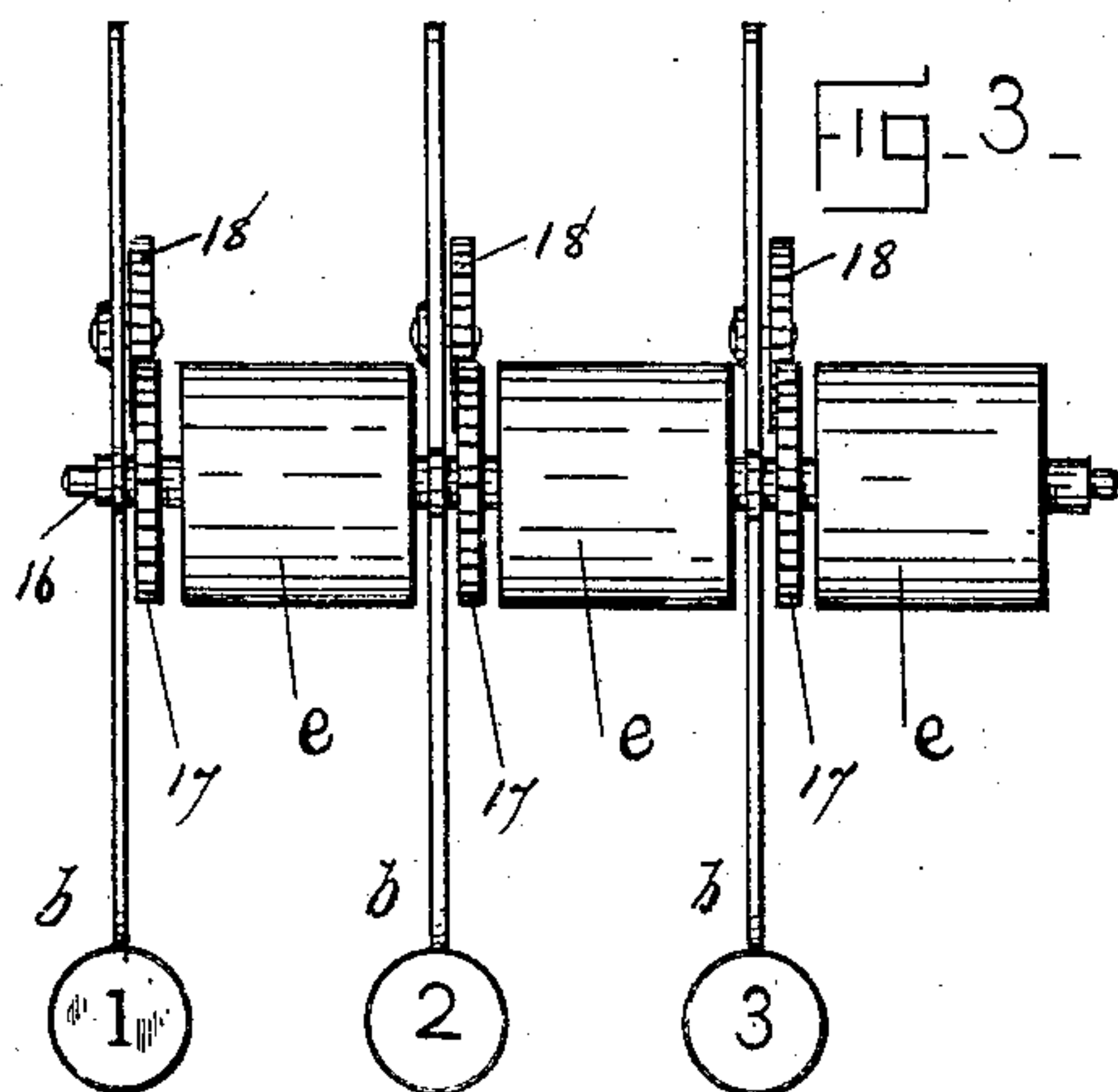


Fig. 7.

6.45			
Monday	.		
7.15 a.m.			
7.30			
7.45		.	
8.			
8.15			
8.30			
8.45			
9.			
9.15			
9.30			
9.45			
10.		.	
10.15			
10.30			
10.45			
11.			
11.15			
11.30			

Witnesses,

J. L. Allen.
Tyler J. Howard.

Inventor,

Frederick L. Fuller.

By his Attorney

Frank H. Allen.

UNITED STATES PATENT OFFICE.

FREDERICK L. FULLER, OF NORWICH, CONNECTICUT.

DEVICE FOR REGISTERING AND RECORDING THE TIME WORKED BY EMPLOYÉS AND AUTOMATICALLY COMPUTING THEIR WAGES.

SPECIFICATION forming part of Letters Patent No. 379,865, dated March 20, 1888.

Application filed January 8, 1887. Serial No. 223,813. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK L. FULLER, of the city of Norwich, county of New London, and State of Connecticut, have invented a certain new and useful Improvement in Devices for Mechanically Registering the Time Worked by Employés and Automatically Computing their Wages, which improvement is fully set forth and described in the following specification, reference being had to the accompanying three sheets of drawings.

This invention is one of that class of devices provided to register the exact time worked by employés in factories, mills, and other establishments of like kind where a large number of persons are variously employed.

My object is to provide a mechanical device a portion of whose works shall be in constant connection with a motive power, (preferably a clock at the office or other central station,) and which shall also have certain portions of said works adapted to be thrown into engagement with the continuously-moving parts during the time worked by the employé, and to be moved out of such engagement when he ceases work; and my invention consists in an instrumentality adapted for progressive movement, upon the surface of which is notated a series of numbers in arithmetical progression, which numbers will serve to represent the number of hours of labor performed by an employé from time to time, or the amount of wages due for said labor, in combination with an escapement mechanism which is operated at specified intervals of time, and a clutch mechanism whereby the said notated instrumentality can be brought into operative connection with the said escapement mechanism, or be disengaged therefrom by the employé when commencing or leaving off work, and in the improved combination of mechanism and means for making a record of the clock-time of commencing or leaving off work by the employé.

Figure 1 is a front view of the case which contains my recording and registering devices, and also shows the relative positions of the galvanic battery which supplies the motive power, and the clock which at stated intervals of time closes the electric circuit to cause the mechanism to act. Fig. 2 is a view of the escapement mechanism and recording and reg-

istering devices from the left-hand side, the side of case being removed to expose the works or operative parts. Fig. 3 is a detached top view showing the operative levers of the clutch mechanism, which is controlled by the employé, and illustrates my preferred form of construction, the engagement of the teeth of opposite spur-gears forming the clutch proper. Fig. 4 is a similar view showing a modification, in which the engaging levers are moved sidewise instead of downward, as in Fig. 3, and the ordinary sliding clutch is employed. Fig. 5 is a side view showing one of the levers of said modified form. Fig. 6 shows the band or strip upon the surface of which is notated a series of numbers in arithmetical progression, which numbers will serve to represent the number of hours of labor performed by an employé, and a parallel series of numbers which will represent the amount of wages due for such labor, the said band or strip being mounted for progressive movement. Fig. 7 shows a portion of the time-record strip, upon which is shown the time of commencing and leaving off work by the employés.

Referring to said drawings, A represents a case adapted to receive, support, and protect the operative mechanism of my device. This case is provided with a lock and key, which are under the control of the book-keeper, superintendent, or other authorized or responsible person. The front of the case is provided with openings *a*, through which the performed hours and quarter-hours of labor registered by the notated instrumentality *h* at the datum-line *t'* may be read. A series of projecting levers, *b*, corresponding in number with said openings, are provided, one for each employé, by means of which the notated instrumentality or band *h*, pertaining to each independent lever *b*, may be set in motion or stopped.

Referring now to Fig. 2, 1 indicates a plate secured to the case A and provided with bearings 2, 3, and 4, and a similar plate with corresponding bearings is provided at the opposite side of the case. The roll 5, which is journaled in bearings 2, extends from side to side of the case A, and the roll 6 is divided into sections, which are secured upon a shaft, *r'*, with alternating gears 19, the said shaft being journaled in the bearings 3, so that the perim-

eters of the rolls 5 and 6 are in such close contact that a strip of paper or other suitable material, *c*, may be drawn forward by them as the said rolls are rotated. Bearing 4 and its corresponding bearing at the opposite side of the case may support a fixed rod, 16, upon which are placed a series of rolls, *e*, which are each provided with an attached gear, 17, and adapted to revolve loosely upon the said fixed rod. In close proximity to the gears 17 and upon the rod 16 are loosely supported the levers *b*, which carry a gear, 18, which engages with the gear 17 and is loosely held upon a stud, *s'*. On the outer end of the shaft *r* of roll 6 is an escapement-wheel, 7, which is engaged by an anchor, 8, whose depending free arm is moved alternately by an electro-magnet, 10, connected with a galvanic battery and clock, as in Fig. 1, and a spring, 9. A weighted cord, 11, is wound about the shaft *r'* of roll 6, and is allowed to act to partially rotate said shaft at stated intervals by the movement of the anchor and escapement-wheel.

Under the dial of the clock I have fixed a stud, *j*, at the points usually marked 3, 6, 9, and 12, which studs project through said dial into the path of the minute-hand and are connected to each other by a wire, *l*. From one of said studs *j* a wire, *m*, leads to the electro-magnet 10 in the case A. One pole of the battery *n* is then connected with the center arbor of the clock by a wire, *n'*, and the other pole is connected with the electro-magnet by wire *n''*. When the minute-hand, as it travels forward, comes in contact with either of the studs *j*, a current of electricity is passed through the coil of magnet 10, causing it to attract the pendent arm of the anchor 8. As the clock-hand moves forward and away from the stud *j*, the circuit will be broken and the spring 9 will bring the anchor to its normal position, the rolls 5 and 6 and time-record strip *c* having meanwhile moved a distance corresponding to one tooth of the escapement-wheel. The strip *c* is of a width equal to the length of roll 5 and is graduated lengthwise into sections corresponding to each one-quarter hour, and is also separated by longitudinal lines into as many spaces as there are employes, said spaces being numbered to correspond with levers *b*. (See Fig. 7.) The strip *c* is provided to receive a permanent record of each man's time, and is not referred to except in case of dispute after the register kept by the employe, as hereinafter explained, has been destroyed. Supported above roll 5 is a bar, 12, which is perforated at intervals corresponding with the spaces above noted, and below said bar 12 is a similar bar, 13, on the opposite side of the paper, having secured thereto a series of springs, 14, whose free ends carry a pin coincident with and adapted to enter the holes in bar 12 to puncture the paper strip. These springs are actuated by levers *b*, whose inner ends are so extended that they rest immediately beneath a cam projection, 15,

on said springs 14. When the outer end of lever *b* is forced downward to start the time or wages registering mechanism controlled by the employe, said inner end of lever, as it passes cam 14, forces the spring-pin toward the paper strip *c* and punctures said strip, returning to its normal position as the lever passes above said cam. This prick in strip *c* indicates the time at which the employe begins his work. At the close of the forenoon or afternoon labors (as the case may be) the lever *b* is raised to stop the individual time-keeping device, which motion again punctures the strip *c* and thus records the time when the employe ceased working. Immediately over each of rolls *e* is a corresponding spool, *e'*. These rolls *e e'* support continuous bands or belts *h* of paper, cloth, or other material on which may be printed the hours and fractions of hours worked, also the amount earned by the employe, or any other similar memoranda. It should be noted that the bands *h* are intended to be used continuously, week after week, or day after day; but the strip *c* is used but once and is removed in sections, as at the end of the week or month, or as often as the day of settlement occurs.

I have provided a drawer, C, in the base of the case A, into which the strip *c* passes as it is fed downward and as a simple means for severing said strip, I have secured to the upper side of said drawer a knife, *i*, which, as the drawer is drawn forward, engages a corresponding fixed knife, *i'*, in the frame of the case. As these knives come into engagement, they sever the strip, which then drops into the drawer. After removing said strip, the drawer is returned to its closed position, and the strip *c* continues to move downward at stated intervals, as before.

It should be kept in mind that strip *c* moves night and day, being governed by the office-clock; but bands *h* move only while the employes whom the bands represent are at work, as hereinafter explained.

In order to connect in a simple and inexpensive manner the shaft *r* of roll 6 and the bands *h*, I have hung the idle-gear 18 on the lever *b* in such position that when said lever is moved to puncture paper *c* said idle-gear engages a corresponding gear, 19, on the shaft of roll 6, and thus the rotary motion of the shaft *r* is imparted from the gear 19 to the corresponding roll, *e*, on shaft 16 and to the corresponding band, *h*.

Referring now to Figs. 1 and 6, it will be noted that the band *h* has two rows of figures, that at the left hand indicating the hours and quarter-hours worked and that at the right hand the amount of wages earned by the employe in the time shown in the opposite column. Thus, if the time recorded be nine hours and fifteen minutes, the wages due the operative up to that time will amount to one dollar and eighty-five cents (\$1.85) at the rate of twenty cents per hour, (each operative's time-

band being computed to correspond with his price per diem.) The left-hand or "time" column on band *h* may be seen at all times through the openings *a* in case A; but said openings are of such width that the "wages-column" is concealed. I have cut away a portion of the door of the case near the left-hand opening, Fig. 1, to expose said wages-column; but in practice it is concealed.

By the arrangement described the wages of all the operatives are always computed up to the time they cease work, and said computations may be transferred to the office pay-roll book each month or week, or as often as desired, by unlocking the door of the case and exposing the several bands *h*. After the time and wages thus registered have been so transferred to the pay-roll book, the bands are moved around until zero arrives at the datum-line *t'*, which is in line with the openings *a*, and the device is again ready for use.

Having thus described my invention in detail, I will now describe briefly the manner in which it is designed to be used.

In large establishments several cases of perhaps fifty levers each should be disposed about the mill in convenient positions and should be under the control and authority of the foremen or superintendents of the several rooms or divisions. These several cases are connected with the office-clock by wires and battery, as before referred to. As the hour for commencing work draws nigh, each operative, as he enters his room or department, pulls his individual lever *b* down, and so connects his time-band *h* with the mechanism which moves every fifteen minutes, as hereinafter described. When he ceases work, whether at noon or at night, he raises his lever and disconnects his band before leaving the mill. Should he fail to stop his band at noon or night, the foreman of his department notes the fact, raises the lever, and reports the neglect to the proper official at the office. The clock is preferably constructed to close the electric circuit and thus move the strip *c* at a few minutes past the hour or quarters, so that a reasonable leeway is allowed the operative in which to begin work without loss of a quarter-hour. In other words, instead of causing said strip to move exactly at seven o'clock, (if that be the hour for beginning work,) the circuit is not closed until three or five minutes past seven, so that all who move their levers *b* to start their time-bands within said leeway receive pay from seven o'clock. If, on the other hand, they do not enter until after strip *c* has moved forward, the prick in said strip records that they began work at one-quarter past seven o'clock.

In Fig. 7 the record shows that employé No. 1 commenced work on Monday morning at seven o'clock, employé No. 2 at seven forty-five o'clock, and employé No. 3 at ten o'clock. An allowance of time should also be made for making the proper record upon the strip *c* upon leaving off work.

I have shown the band *h* in Fig. 6 as graduated for a day's work of ten hours; but in practice such bands may be long enough for a weekly or even monthly register. Thus it will be understood that my device is an automatic time and wages keeper, which is in operation while the man it represents is at work, but which stops when he ceases his labors.

In the modification in Fig. 4 I provide levers *b*, fulcrumed at 20 and adapted to be moved sidewise to start the time bands or strips *h*; and instead of the fixed rod 16, as before described, an equivalent revoluble shaft, 16, is connected with gear 19 by an intermediate gear corresponding to gear 18, said gear being loosely held upon a fixed stud and serving to cause the shaft 16 to revolve with the intermittingly-rotated shaft *r'*. Rolls *e* on shaft 16 fit loosely, and have at one end a clutch, 21, formed to receive a companion clutch, 22, which is splined on shaft 16. This clutch 22 is connected to and adapted to move sidewise with its lever *b*, which action serves to impart rotary motion to rolls *e* from the shaft 16 and to the time-bands *h*. The splined clutches 22 have annular grooves to receive pins 23 in the collars 24, forming a part of levers *b*.

I claim as my invention—

1. In combination, an instrumentality adapted for progressive movement, upon which is notated a series of numbers in arithmetical progression, which will serve to represent the number of hours of labor performed by an employé from time to time or the amount of wages due for said labor, an escapement mechanism, an independent source of power for operating the controlling-lever of the escapement mechanism, a clock-movement for dispensing the said power to cause the proper movement of the said controlling-lever at specified intervals of time, and a clutch mechanism whereby the said notated instrumentality can be brought into operative connection with the said escapement mechanism or be disengaged therefrom by the employé when commencing or leaving off work, substantially as described.

2. In combination, an instrumentality adapted for progressive movement, upon which is notated a series of numbers in arithmetical progression, which will serve to represent the number of hours of labor performed by an employé from time to time or the amount of wages due for said labor, an escapement mechanism, an electro-magnet for operating the escapement, a generative source of electricity from which connection is made with the coils of the electro-magnet, a clock-movement for closing the circuit from the electric generator through the coils of the magnet at specified intervals of time, and clutch mechanism whereby the operative connection of the said notated instrumentality with the said escapement mechanism and the disengagement of the same therefrom can be

effected by the employé, substantially as described.

3. In combination, an instrumentality adapted for progressive movement, upon which is notated a series of numbers in arithmetical progression, which will serve to represent the number of hours of labor performed by an employé from time to time or amount of wages due for said labor, an escapement mechanism which is operated at specified intervals of time, a time record strip permanently held in operative connection with the said escapement mechanism, a clutch mechanism by means of which the said notated instrumentality can be brought into operative connection with the said escapement mechanism or be disengaged therefrom by the employé, a device for making a record upon the time-record strip, and means for moving said recording device into contact with the said time-record strip to cause the proper record to be made upon the engagement or disengagement of the clutch mechanism, substantially as described.

4. In combination, a notated time-record strip for recording the clock-time of commencing and leaving off work by an employé, a shaft which is in operative connection with the said time-record strip and has an intermittent rotary movement, an escapement for controlling the movement of the shaft, an electro-magnet for operating the escapement, a generative source of electricity from which connection is made with the coils of the electro-magnet, a clock-movement for closing the circuit from the electric generator through the coils of the magnet at specified intervals of time, a device for making a record on the time-record strip, and means for moving said recording device into contact with the said time-record strip to cause the proper record to be made by the employé at the time of commencing or leaving off work, substantially as described.

FREDERICK L. FULLER.

Witnesses:

FRANK H. ALLEN,
F. L. ALLEN.