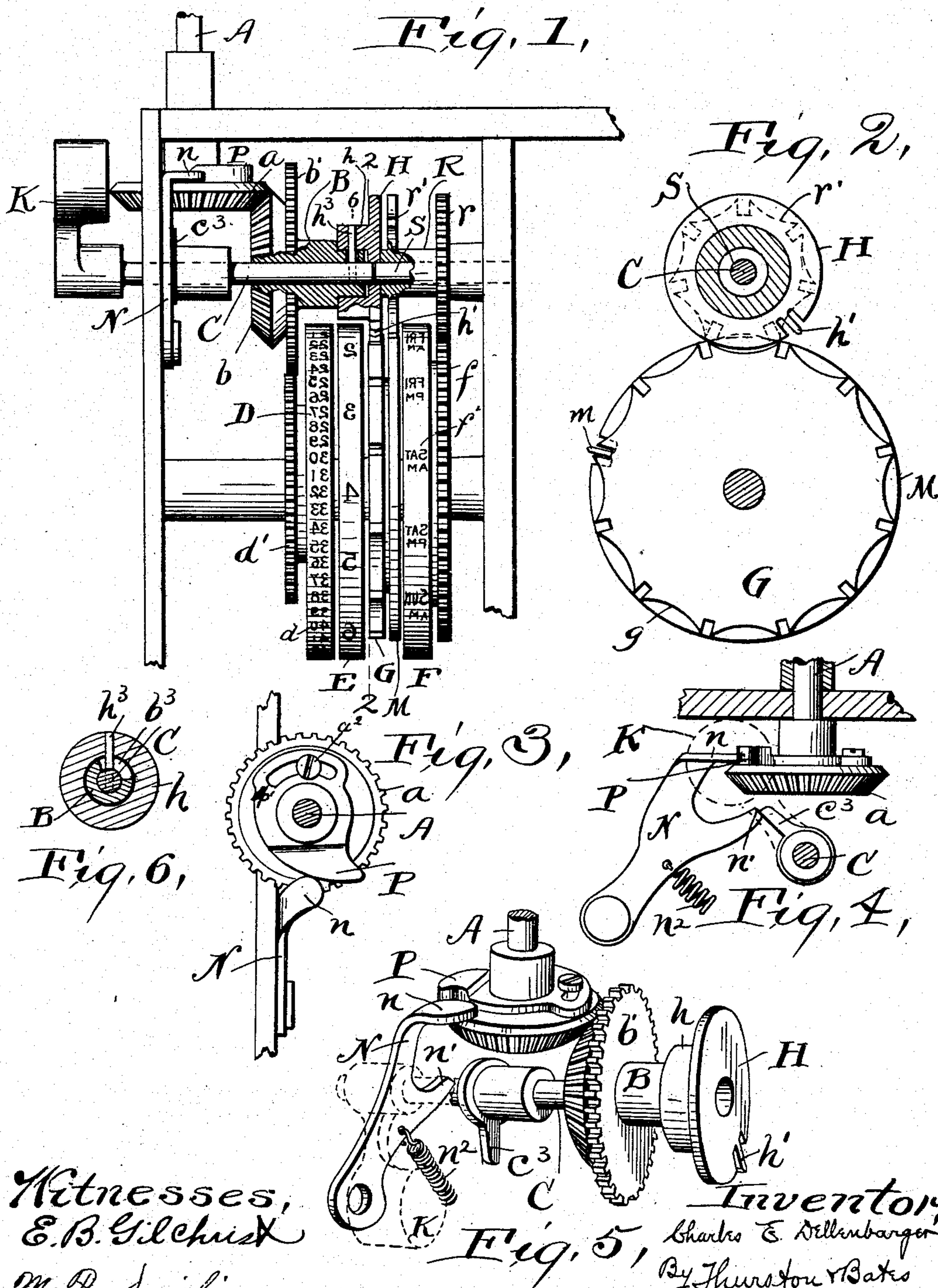


C. E. DELLENBARGER.
WORKMAN'S TIME RECORDER.

(Application filed Sept. 1, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

CHARLES E. DELLENBARGER, OF CLEVELAND, OHIO.

WORKMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 675,325, dated May 28, 1901.

Application filed September 1, 1900. Serial No. 28,792. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. DELLENBARGER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Workmen's Time-Recorders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to improvements in the class of workmen's time-recording machines which employ as a part of their mechanism hour and minute printing-wheels which are operated by clockwork.

The primary object of the invention is to provide means whereby the hour-wheel will remain stationary with one figure thereon at the impression-point for one hour, but will be compelled at the expiration of each hour to turn instantly the distance between two consecutive figures thereon, and thereby bring the next figure to the impression-point.

Another object of the invention is to incorporate into machines of this class a third wheel bearing characters indicating longer periods of time—as, for example, half-day periods containing as many hours as are indicated by the hour-wheel, (which are indicated as follows, to wit: "Monday A. M., Monday P. M., Tuesday A. M.," &c.)—and to provide mechanism which will instantly move said wheel the distance between two consecutive characters thereon at the termination of each revolution of the hour-wheel.

The invention consists in the construction and combination of parts hereinafter described, and pointed out definitely in the claims.

In the drawings, Figure 1 is a side elevation of so much of a workman's time-recording machine as involves my invention. Fig. 2 is a sectional view on the line indicated by 2 2 of Fig. 1. Fig. 3 is a plan view of the bevel-gear α , the cam attachments, and the stop and the release arm, which is operated by said cam. Fig. 4 is a rear elevation of the parts shown in Fig. 3. Fig. 5 is a perspective view of the same parts and other parts associated with them. Fig. 6 is a sectional rear view on line 6 of Fig. 1.

Referring to the parts by letters, A represents the driving-shaft of the mechanism

shown. In a complete machine this shaft is driven through suitable connections by a clock. On its lower end a bevel-gear α is attached, and this bevel-gear meshes with a bevel-gear b , which is fast to a hub B. This hub is loosely mounted on an independently-rotatable shaft C.

D, E, and F represent, respectively, the minute-wheel, the hour-wheel, and the half-day wheel, all of which are independently rotatable about the same axis. Equally-spaced and consecutively-arranged indicating-figures d , from "1" to "60," inclusive, project from the periphery of the minute-wheel. Equally-spaced and consecutively-arranged indicating-figures from "1" to "12," inclusive, project from the periphery of the hour-wheel. Equally-spaced and consecutively-arranged characters f' , indicating successive periods, project from the periphery of the wheel F. A gear d' is secured to the minute-wheel, and it meshes with a gear b' , which is fast to the sleeve B. It is obvious that the continuous rotation of the shaft A by the clock will produce a continuous rotation of the minute-wheel.

Rigidly connected with the hour-wheel E is a gear G. The tops of the teeth of this gear are concave, substantially as shown. A disk H is rotatably mounted on the same axis as the shaft C and is connected to rotate with said shaft, and its hub h embraces the sleeve B. At one point this disk H is cut away, and tooth h' projects radially at this point and is adapted to engage between the teeth g , and thereby to move the gear G and the attached hour-wheel E. There are as many teeth in the gear G as there are figures on the hour-wheel—viz., twelve—wherefore the movement of the gear G at a distance equal to the distance between two consecutive teeth causes the hour-wheel to move the distance between two consecutive figures thereon. The shaft A, through its connection with the clock, will make one revolution per hour, which through the described intermediate mechanism will cause the minute-wheel to make one revolution per hour, and the sleeve B will also make one revolution per hour. In this sleeve B is a circumferential slot b^3 , which extends about ninety degrees. A pin h^3 is driven through a radial hole in the hub h and into the shaft

C, passing through this circumferential slot. It is obvious that as the sleeve B rotates it will not rotate the shaft C or the hub *h* until the end of the slot *b*³ is brought against said pin, and thereafter all the said parts rotate in unison until a weighted arm K, which is attached to the shaft C, is brought up to and slightly past the vertical position. This rotation of the shaft C and of the disk H transmits no motion to the gear G. As the weighted arm K passes over the center it drops, turning the shaft with it until an arm *c*³, attached to that shaft, comes into contact with a shoulder *n'* on the stop and release arm N. This stop and release arm is pivoted to the frame of the machine, and the bent-over end *n* of this arm engages with a cam P, made fast adjustably to the shaft A by means of the circumferential slot *p'* and set-screw *a*², which screws into the gear *a*. A spring *n*² yieldingly holds said end of the stop and release arm in engagement of this cam. The rotation of the cam, however, slowly pushes back this stop and release arm, and at exactly the expiration of each hour it has pushed it back so far that the arm *c*³ on shaft C is released from the shoulder *n'* on the arm N. Instantly, then, the weighted arm K falls by gravity, turning the shaft C and the disk H with it. During this movement the tooth *h* engages between two teeth of the gear G and moves said gear, and consequently the hour-wheel, the exact distance between two said figures on said hour-wheel. The disk then engages with the concave top of the tooth *g* and holds the hour-wheel in this position until at the expiration of another hour these operations are repeated.

The mechanism whereby the wheel F is instantly advanced one space at the completion of each revolution of the hour-wheel is as follows: A sleeve R is independently mounted in axial line with the shaft C on a stub-shaft S. A gear *r*, attached to this sleeve, meshes with a gear *f*, attached to the wheel F, (which gear *f*, as shown, has twice as many teeth as the gear *r*.) Another gear having one-half as many teeth as there are characters on the wheel F is also attached to the sleeve R. A disk M, which normally engages with the concave face of said teeth, and thereby prevents any rotary movement of said gear, is attached to the gear G. At one point this disk is cut away, and a long tooth *m* projects radially at this point and is adapted to engage with the teeth of the gear *r'*. Once during each complete revolution of the hour-wheel this tooth is brought into operative relation with said gear *r'*. This occurs just as the hour-wheel makes that movement which carries the "12" thereon away from the impression-point and brings the "1" thereon to said impression-point. This movement of the hour-wheel is therefore accompanied by a movement of the wheel F a distance equal to the distance between two consecutive sets of indicating characters thereon.

I claim—

1. In a workman's time-recorder, in combination, a rotatable minute-wheel, mechanism for rotating it continuously, an independently-rotatable hour-wheel, a rotatable shaft having a weighted arm secured to it, mechanism intermediate of said shaft and one of the rotatable elements of the minute-wheel-driving mechanism whereby it transmits motion to the shaft, but permits a limited independent rotation of said shaft, mechanism for transmitting motion from said shaft to said hour-wheel, a pivoted stop and release arm, an arm secured to said shaft and adapted to engage with said stop and release arm, and a rotatable cam, operated by the minute-wheel-driving mechanism, for moving said stop and release arm out of the path of the arm secured to said shaft, substantially as and for the purpose specified.

2. In a workman's time-recorder, the combination of independently-rotatable hour and minute wheels mounted on the same axis, mechanism for rotating minute-wheel, a cam rotated by said mechanism, a stop and release arm adapted to be operated by said cam, a shaft carrying a weighted arm and an arm adapted to engage with said stop and release arm, mechanism intermediate with said shaft and the hour-wheel, and connections between the minute-wheel-driving mechanism and shaft whereby the latter is turned until its weighted arm passes over the center and is then allowed to rotate independently, substantially as and for the purpose specified.

3. In a workman's time-recorder, in combination, a minute-wheel, an hour-wheel independently mounted on the same axis, a gear secured to said hour-wheel and having concave-faced teeth, a shaft mounted on an axis parallel with the axis of said two wheels, a disk rotatable upon the same axis with said shaft and in unison with it and having one tooth adapted to engage with said gear, a weighted arm attached to said shaft, a rotatable sleeve mounted upon said shaft, connections between this sleeve and the shaft by which the latter is driven by the former but is permitted a limited rotation independent thereof, mechanism transmitting motion from said sleeve to the minute-wheel, mechanism for turning said sleeve, a cam rotated by the same mechanism, a stop and release arm adapted to be operated by said cam, and an arm secured to said shaft and adapted to engage with said stop and release arm, substantially as and for the purpose specified.

4. In a workman's time-recorder, in combination, recording-wheels, a driving-shaft, a weight, means operated by said shaft to elevate said weight, means operated by the descent of said weight for controlling the rotation of some of said recording-wheels, a release-arm, a cam controlling the same, and a shaft carrying said cam, substantially as described.

5. In a workman's time-recorder, in combination, recording-wheels, a driving-shaft, a weight, means operated by said shaft to elevate said weight, means operated by the descent of said weight for controlling the rotation of some of said recording-wheels, a release-arm, a cam controlling the same, a shaft carrying said cam, and means for adjusting

the angular position of said cam upon its shaft, substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES E. DELLENBARGER.

Witnesses:

E. B. GILCHRIST,

E. L. THURSTON.