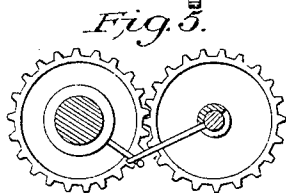
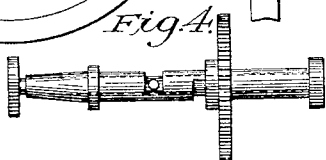
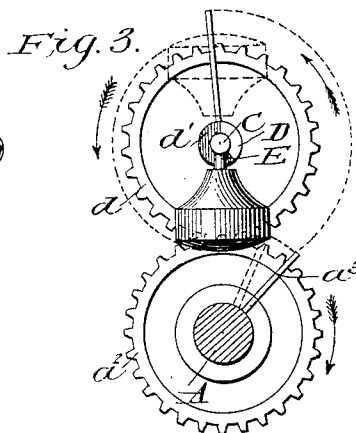
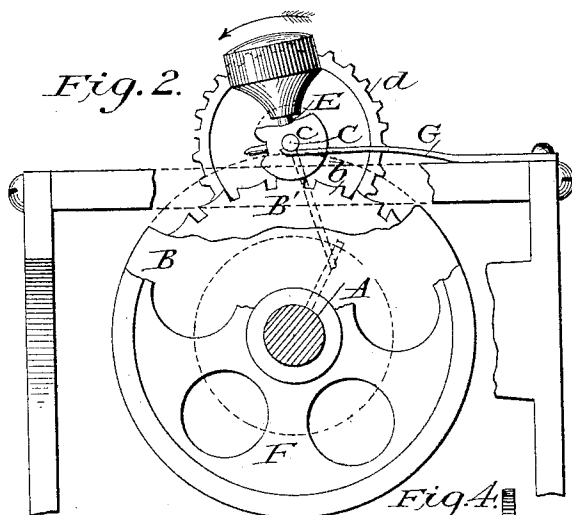
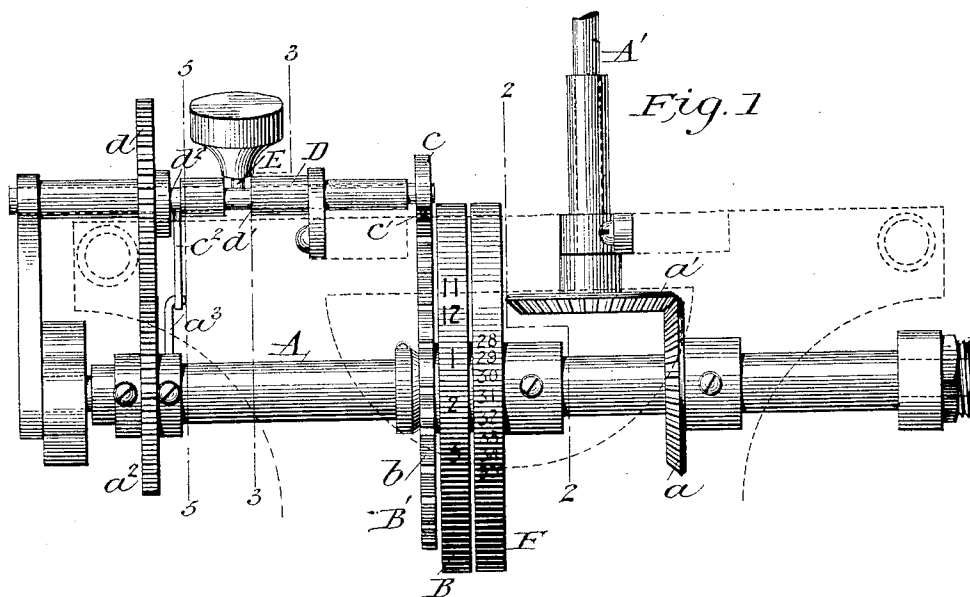


(No Model.)

G. W. HEENE.
WORKMAN'S TIME RECORDER.

No. 582,860.

Patented May 18, 1897.



Witnesses.

E. B. Gilchrist.
A. M. Rankin.

Inventor.

George W. Heene
By E. L. Hurston
his attorney

UNITED STATES PATENT OFFICE.

GEORGE W. HEENE, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND TIME REGISTER COMPANY, OF SAME PLACE.

WORKMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 582,860, dated May 18, 1897.

Application filed October 1, 1895. Serial No. 564,337. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HEENE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Employees' Time-Recorders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in employees' time-recorders of the class which includes as a part of the mechanism hour and minute wheels which are operated by clockwork. In devices of this kind a key is generally used, which being inserted and manipulated causes a recording-paper, usually in the form of a tape, to be forced against the hour and minute wheels and to receive from them an impression of the figures thereon, which have, by the movement of said wheels, been brought into printing relation with said paper. These wheels being moved by clockwork, the minute-wheel is moved every minute the distance which separates two consecutive figures thereon, and every hour the hour-wheel is moved the distance which separates two consecutive figures thereon, said movements being generally uniform. At one point in the hourly movement of the hour-wheel one of the figures thereon, indicating the hours, will be squarely presented to the printing mechanism, and in an hour from that time the next figure will reach a corresponding position; but in the intervening period the first figure is slowly moved away from the first position into position where it will, when the key is turned, be printed less and less distinctly until it finally passes out of range. The second figure will be slowly brought into range of the printing mechanism, so that at some time within the hour a part of both figures will be printed more or less distinctly when the key is manipulated, and then this second figure will move into position where it will be printed more and more distinctly and completely until it reaches the position squarely in line with the printing mechanism. Now it is very objectionable to have two hour-figures printed even incompletely upon the re-

ording-tape, because it is confusing to the person who subsequently examines said tape. It is objectionable to have any of the figures indistinct or incomplete. In the ideal machine of this character the hour-wheel will be moved instantly at the hour to a position where one figure will be squarely in line with the printing mechanism and will remain in this position for exactly an hour, when it will instantly move to the position when the next hour-figure will be brought into like relation to the printing mechanism.

My invention, illustrated in the drawings and hereinafter described, is designed to and does produce the desirable result above mentioned, viz: It moves the hour-wheel instantly at hourly intervals from one position to another and holds it immovable in the meantime.

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

In the drawings, Figure 1 is a front elevation of the printing-wheels and the mechanism for operating them. Fig. 2 is a sectional view on line 2 2 of Fig. 1, viewed from the right, the printing-wheels being partly broken away; and Fig. 3 is a sectional view on line 3 3, Fig. 1. Fig. 4 is a plan view of the sleeve D and so much of the shaft C as will appear, the weight on the end of the arm E being removed. Fig. 5 is a sectional view on line 5 5 of Fig. 1, looking to the right.

Referring to the parts by letters, A represents a shaft mounted in suitable bearings. F represents the minute-wheel, which is rigidly secured to said shaft. B represents the hour-wheel, which is loosely mounted upon said shaft.

The shaft A is suitably connected with clockwork or other driving mechanism. For the purpose of making this connection, I prefer to employ the following mechanism—viz., a bevel gear *a*, secured to the shaft A, which meshes with a bevel-gear *a'* on shaft *A'*, the latter shaft being a part of or connected with the clockwork or other motor. A shaft C is mounted in suitable bearings. Surrounding it and supported by it is a sleeve D, to which is rigidly secured a gear *d*. This gear meshes with a gear *a''* of the same size secured to

shaft A, whereby the sleeve receives motion from the shaft A and revolves once for each revolution of said shaft A. The sleeve D has a transverse slot d' , which extends a little more than half around it, and the weighted arm E, which is fast to the shaft C, passes loosely through said slot.

Rigidly connected with the hour-wheel B is a gear B' , the tops of the teeth of this gear being concave, substantially as shown. On the end of the shaft C is a disk c , which engages with and fits the concave tops of the teeth b . At one point the disk is cut away, and a long tooth c' projects radially at this point and is adapted to engage between the teeth b and to move the gear B' , and consequently the hour-wheel B. It should be stated that there are as many teeth on the gear B' as there are figures upon the hour-wheel, usually twenty-four, wherefore the movement of the gear a distance equal to the distance between the center of two adjacent teeth thereon causes the hour-wheel to move the distance between two adjacent figures thereon.

The shaft A is revolved once each hour. It revolves the sleeve D, which does not transmit any motion to the shaft C until the end of the slot d' comes into contact with the weighted arm E, whereupon the shaft and sleeve revolve together. The revolution of the disk c transmits no motion to the gear B' . In fact by engaging with the concave tops of the teeth thereon it prevents the gear from moving. When the weight E has been carried over the center, as shown in Figs. 1 and 2, and is permitted to do so, it falls by gravity to the position shown in Fig. 3. The shaft C necessarily turns at the same time, thereby carrying the tooth c' into engagement with the gear B' and moving said gear the distance of one tooth, and the disk c engages with the concave top of the next tooth on said gear B' .

The mechanism heretofore explained might be alone used to impart to the hour-wheel B its instantaneous movement at the expiration of each hour; but where reliance is wholly placed upon the overbalancing of the weight great care has to be taken in adjusting its position and the machine has to be kept in perfect condition or else the weight will not always fall exactly upon the hour. To insure the falling of the weight at the appointed time, I secure to the shaft C an arm c^2 , which extends through a second transverse slot d^2 in the sleeve D, and I secure to the shaft A a radial arm a^3 , having its end bent at substantially right angles. As the shaft A revolves the arm a^3 will reach substantially the position shown in Figs. 1 and 2 at the instant when the revolution of the sleeve D has turned the shaft C to the point where the weighted arm is about to move over the center. The movement of said shaft C has also moved the arm c^2 to the position where it is in contact with the bent end of the arm a^3 , and these parts will remain in contact for several minutes and until the weighted arm has be-

come so inclined to the vertical position that it will surely fall when released.

When the rod a^3 , carried by the shaft A, is moved so as to release the rod c^2 , the weighted arm falls, with the result heretofore explained. These arms are preferably made of wire, which may be bent easily, whereby the position of the arms may be regulated and adapted to disengage at the desired instant.

Having described my invention, I claim—

1. The combination of a minute-wheel and an independent hour-wheel, with a revoluble shaft, a weighted arm secured thereto, a sleeve mounted on said shaft having a transverse slot through which the weighted arm extends, mechanism connecting the last-named shaft and hour-wheel, and mechanism for revolving said sleeve, substantially as and for the purpose specified.

2. The combination of a minute-wheel, an independent hour-wheel, and a gear connected therewith, with a shaft having a weighted arm secured to it, a tooth secured to said shaft for engaging with said gear, a sleeve mounted upon said shaft and having a transverse slot through which the weighted arm projects, and mechanism for revolving said sleeve, substantially as and for the purpose specified.

3. The combination of a driven shaft, a minute-wheel secured thereto, a loosely-mounted hour-wheel, and a gear secured to said hour-wheel, with a revoluble shaft, a weighted arm secured thereto, a tooth for engaging with said gear secured to said shaft, a sleeve mounted on said last-named shaft and having a transverse slot through which the weighted arm extends, and gears secured to said sleeve and driven shaft respectively, substantially as and for the purpose specified.

4. The combination of a driven shaft, a minute-wheel secured thereto, a loosely-mounted hour-wheel and a gear secured thereto, with a revoluble shaft, a tooth secured thereto for engagement with the gear, a weighted arm secured to said shaft, a sleeve mounted on said shaft and having a transverse slot through which the weighted arm extends, mechanism connecting said driven shaft and sleeve, and arms secured to said sleeve and driven shaft respectively and adapted to engage with each other, substantially as and for the purpose specified.

5. The combination of a minute-wheel, an independent hour-wheel, and a gear secured to said hour-wheel and having teeth with concave tops, with a revoluble shaft, a disk secured thereto which engages with the concave tops of the gear-teeth and is in part cut away, a substantially radial tooth projecting from the cut-away part of said disk, a sleeve mounted on said shaft having a transverse slot, a weighted arm projecting through the slot and secured to the shaft, and mechanism for revolving the sleeve, substantially as and for the purpose specified.

6. The combination of a driving-shaft, a minute-wheel secured thereto, and an inde-

pendent hour-wheel, with a revoluble shaft
C, a weighted arm secured thereto, a driven
sleeve mounted on said shaft having a trans-
verse slot through which the weighted arm
5 projects, mechanism transmitting motion
from the shaft to the hour-wheel, and two
arms movable into and out of engagement
with each other, and secured in fixed relation

to the minute-wheel and shaft C respectively,
substantially as and for the purpose specified. 10

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

GEORGE W. HEENE.

Witnesses:

E. L. THURSTON,

J. E. ERP.