(No Model.)

W. H. GILLETTE.

TIME STAMP.

No. 300,966. Patented June 24, 1884.

Fig. 2

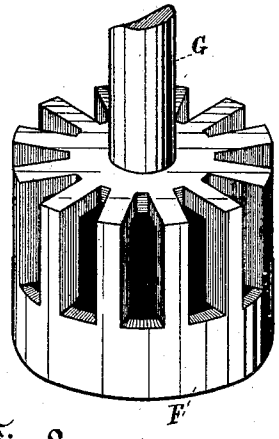


Fig. 1

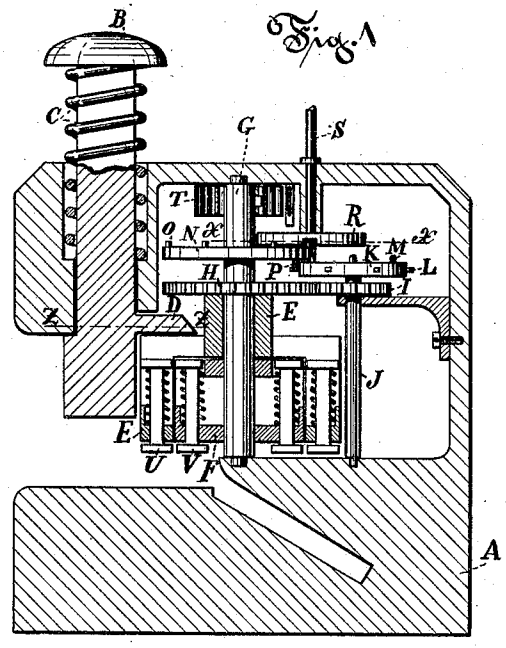


Fig. 8

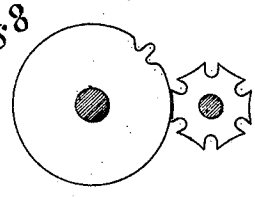


Fig. 5

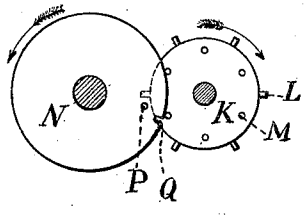


Fig. 6

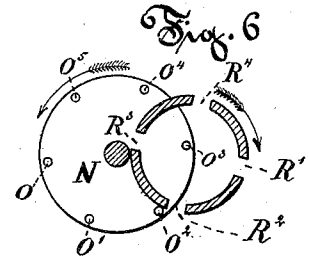


Fig. 3

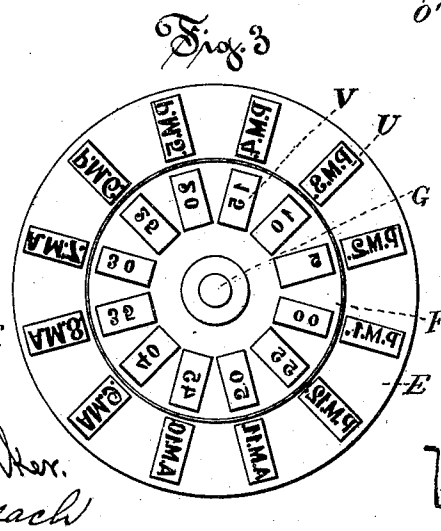


Fig. 4

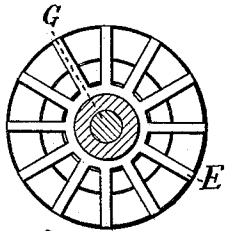
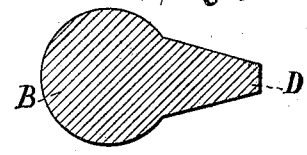


Fig. 7



Witnesses.
Albert H. Walker.
Morgan W. Beach

Inventor.
William H. Gillette

UNITED STATES PATENT OFFICE.

WILLIAM H. GILLETTE, OF HARTFORD, CONNECTICUT.

TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 300,966, dated June 24, 1884.

Application filed May 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GILLETTE, of Hartford, Connecticut, have invented a new and useful Time-Stamp, of which the following description and claims constitute the specification, and which is illustrated by the accompanying drawings.

This apparatus is such a time-stamp as stamps upon the upper side of papers Arabic or other characters approximately representing the time of day at which the papers stamped by it were respectively so stamped, and as automatically changes those characters at stated intervals, so as to make them approximately correspond with exact current time.

Figure 1 in the drawings represents the interior of the apparatus, showing certain gears, shafts, and wheels in side view, and showing the residue of the apparatus in central vertical section. Fig. 2 is a perspective view of the cylinder F, drawn on a scale suitable for a working-instrument and twice as large as the scale upon which Fig. 1 is drawn. Fig. 3 is a plan view of the bottom of the cylinder F within the cylinder E, both cylinders being fitted with their respective reciprocating printing-pieces, and drawn on the same scale as Fig. 2. Fig. 4 is a plan view of the top of the cylinder E, drawn on the same scale as Fig. 1, and showing the tops of the printing-pieces of the outer cylinder, and also showing parts of the tops of the printing-pieces of the inner cylinder. Fig. 5 is a plan view of the top of the wheel K, and a like view of the bottom of the wheel N as the latter wheel, if transparent, would appear to an eye looking from above, and disregarding whatever is on the upper surface of that wheel. Fig. 6 is a view of the upper surface of the wheel N and a horizontal section of the wheel R, that section being on the line *x x* of Fig. 1. Fig. 7 is a horizontal section of the reciprocating handle B on the line *z z* of Fig. 1 and on the same scale as Fig. 2. Fig. 8 represents a mechanical movement which may be substituted for that represented by Fig. 5. It is an old movement, capable of performing the same function as that of Fig. 5, and, being well known to constructers of fine machinery, need not be particularly described.

A is the casing of the apparatus.

B is the reciprocating handle, which the user depresses when he desires to stamp a paper.

C is a strong spiral spring, which carries the handle to the position shown in Fig. 1 immediately after an impression has been made, and which holds the handle in that position at all times, except at the instant when the user depresses that handle to stamp papers.

D is a projection of the handle B, the function of which is to depress the printing-pieces in the cylinders E and F.

E is the outer cylinder, revolving upon and around the inner cylinder, F, and revolving on a running fit on the shaft G.

F is the inner cylinder, keyed to the shaft G.

H is a gear revolving on a running fit on the shaft G, and rigidly attached to the top of the upper annular part of the cylinder E.

I is a gear having half as many spurs as H, and meshing with it, and keyed to the shaft J.

K is a wheel keyed to the shaft J, and having upon its periphery a series of six horizontal studs, one of which is marked L, and having upon the border of its upper surface a series of six vertical studs, one of which is marked M. The individuals of each of these series of studs are equidistant from each other, and the radial line which connects each individual of each series with the center of the sheet is half-way between the two radial lines which connect two adjacent individuals of the other series with the same center.

N is a wheel keyed to shaft G, and having upon the border of its offset-surface a series of six vertical studs, one of which is marked O. All these studs are equidistant from each other, and are equidistant from the center of the wheel. The wheel N also has upon the border of its lower surface one vertical stud, P, which is fifteen degrees in advance of the radial line which connects one of the studs O to the center of the wheel, and which is such a distance from that center that it will never quite touch the nearest part of the periphery of the wheel K.

Q is a recess in the lower half of the periphery of the wheel N, fifteen degrees in the rear of the radial line which connects the stud P to the center of that wheel. That recess should be about two and one-half times farther from the center of the wheel N than the studs M are from the center of the wheel K.

R is wheel keyed to the end of the shaft S, and having a discontinuous flange extending

downward from the border of its lower surface. The openings which interrupt the continuity of that flange are four in number, and are equidistant from each other, and are wide enough to allow either of the studs O to pass through them. The wheel N, with the studs O, in combination with the wheel R and its discontinuous flange, constitute the escapement. The wheel N, with the stud P and the recess Q, in combination with the wheel K and its studs L and M, constitute the intermittent lock-motion.

T is a spring which encircles the shaft G, and is so attached to it as to cause it to tend to revolve in the direction indicated by the arrow adjacent to the wheel N in Fig. 6. The details of its attachment and the devices for winding it up are not shown in the drawings, because those details and those devices are well known to all persons skilled in horology.

U represents one of a series of twelve printing-pieces in the cylinder E, and V represents one of a series of twelve printing-pieces in the cylinder F. Each of the twenty-four is encircled by a spiral spring, which raises it to the position shown in Fig. 1 immediately after the projection D has depressed it and been raised again. Each of these pieces reciprocates in a boxing in the lower wall of the cylinder in which it is placed. All revolve with their respective cylinders; but neither of them revolves in its cylinder. On the lower end of the various printing-pieces the various characters shown in Fig. 3 appear in relief and reversed in position as printers' types are.

The mode of operation of this apparatus now becomes the subject of explanation and review. The shaft S being so connected to a proper chronometer that the wheel R will continuously revolve once every forty minutes in the direction indicated by the shorter arrow in Fig. 6, it is apparent that the stud O^2 will soon escape through the opening R′, and that thereupon the wheel N will revolve until the stud O^3 strikes the inner side of the flange about half-way between the openings R^3 and R^4. Five minutes later the stud O^3 will escape through the opening R^3, and the wheel N will thereupon revolve until the stud O′ strikes the outer side of the flange about half-way between the openings R′ and R^2. Five minutes later still the stud O′ will escape through the opening R′, and thereupon the wheel N will revolve until the stud O^2 strikes the inner side of the flange about half-way between the openings R^2 and R^3. Thus the wheel N will continue to revolve intermittently one-twelfth of its circumference every five minutes, and its whole circumference every hour. These intermittent motions are shared by the shaft G and the cylinder F. Every twelfth motion of the wheel N is also communicated to the wheel K, and causes the latter to revolve one-sixth of its circumference. The mode of that operation is as follows: At the end of the eleventh motion of the wheel N the stud P is carried nearly into contact with one of the studs L and the recess Q is carried nearly opposite one of the studs M. The twelfth motion causes the stud P to approach that stud L, and the recess Q to come opposite that stud M, and thereupon, by pushing the stud P against that stud L, causes the wheel K to revolve enough to force that stud M into that recess, and thereupon carries that stud in that recess until the orbits of their revolution separate, and thereupon ejects that stud from that recess, and thereupon carries that recess a little beyond that stud. This twelfth motion finds two of the studs M locked against the periphery of the wheel N slightly in advance of the recess Q, and it leaves two of the studs M likewise locked slightly in the rear of that recess. The wheel K is therefore locked from revolving at all times save at the instant when the twelfth intermittent revolution of the wheel N is occurring, and at such time it is made to revolve precisely one-sixth of its circumference. On the recurring of the twelfth succeeding movement of the wheel N, the stud P and the recess Q will operate as before, and will cause the wheel K to revolve one-sixth of its circumference. That motion, happening once each hour, is shared by the shaft J and the gear I, and through the gear H it is communicated to the cylinder E. Inasmuch, however, as the gear H is twice as large in circumference as the gear I, the motion of the wheel K will cause the cylinder E to revolve only one-twelfth of its circumference.

The foregoing explanation shows that the cylinder F revolves one-twelfth of its circumference at the end of every five minutes, and, coincident with every twelfth of those movements, that the cylinder E revolves in the same direction one-twelfth of its circumference, and that both cylinders are held rigidly in place at all other times. Now, suppose the apparatus is started at 7.30 on any morning, with the cylinders in such positions that the printing-pieces which have "A. M. 7" and "30" in relief on their respective lower ends are directly under the projection D. Then, if the handle B is depressed, the projection D will pass down into those niches in the cylinders in which those printing-pieces are located, and will press those printing-pieces upon any paper that rests upon the platen beneath them. The lower end of the handle B, having any desired characters upon its surface, will also, by the same motion, be pressed upon the same paper. At 7.35 the cylinder F will revolve one-twelfth of its circumference, and in so doing will bring the printing-piece which has the figures "35" on its lower end under the projection D. That cylinder will thus continue to change its position at the end of every five minutes throughout the day. Whenever it changes from "55" to "00," the cylinder E will revolve one-twelfth of its circumference, and thus bring the printing-piece which prints the next later hour under the projection D. Should the user of the stamp happen to depress the handle B at any instant

whereon the cylinder F is revolving, the projection D will indeed enter the adjacent niche in the cylinder E, but it will strike upon the top of one of the flying buttresses of the cylinder F, and not upon either of the printing-pieces. To this end the normal plane of the top surfaces of all the printing-pieces is slightly below the plane of the top of the cylinder F. The user will, in such a contingency, feel or see that he has not depressed the handle to its full extent of range, and will know the cause of limitation. As soon, however, as he can raise and depress the handle again the cylinder F will have completed its motion, and thus have enabled the projection D to now descend to its full extent and to do its work. So, also, if the user happens to depress the handle at the instant the outer as well as the inner cylinder is revolving, then the projection D will strike upon the top of one of the flying buttresses of the outer cylinder, and will not strike upon any printing-piece. In that event, also, the movements of the cylinders will be completed as soon as the user can raise and again depress the handle. If either or both of the cylinders attempt to revolve when the projection D is within the niches, no such revolution can take place till that projection is withdrawn. As soon, however, as it is withdrawn the delayed movement will occur, unless the delay is long enough to carry that opening in the flange of the wheel R through which one of the studs O ought to escape beyond that stud. The openings in the flange may be made wide enough to allow a delay of at least a minute, and no longer delay is ever necessary.

It is apparent from the foregoing that if the lower end of the handle B is provided with suitable fixed type, representing the year, month, and day of the month, or other matter, the stamp will print that matter, followed by the approximate time of day as often as it is used at or after seven a. m. and before seven p. m. on any day. If it is desired to use the stamp at or after seven p. m., and before seven a. m., as well as at other times, some modification will be required in the construction of the apparatus. That modification may consist in removing the letters "A. M." and "P. M." from the printing-pieces and by inserting those letters in the bottom of the handle B. If so inserted, some one of several known methods will need to be adopted for changing "A. M." to "P. M." at noon and "P. M." to "A. M." at midnight. So, also, the apparatus may be so made that the outer cylinder shall carry twenty-four printing-pieces instead of twelve, and shall revolve one twenty-fourth of its circumference each hour. If that is done, those pieces may include one series of twelve, which have the letter "A." or the letters "A. M." under the figures representing the hours, and one series of twelve which have the letter "P." or the letters "P. M." in a similar position. If the letters "A." and "P." only are placed on those printing-pieces, then the letter "M." should be placed under the figures on each of the printing-pieces of the inner cylinder. A third modification may consist in placing a third cylinder within the cylinder F, and in placing in that third cylinder one printing-piece having the letters "A. M." and another having the letters "P. M." in relief on its printing end. That cylinder would require to be intermittently revolved half its circumference every twelve hours, and that movement could be accomplished by connecting that third cylinder with the shaft J in the same mode in which that shaft receives its intermittent motion from the shaft G.

I claim as my invention—

1. An escapement consisting of the wheel N, provided with the series of studs O, and the wheel R, provided with its discontinuous flange, the two wheels operating together substantially as described.

2. An intermittent lock-motion consisting of the wheel N, provided with the stud P and the recess Q, and the wheel K, provided with the series of studs L and provided with the series of studs M.

3. The combination of the cylinder F, the wheel N, the wheel R, and the spring T, so arranged as that a continuous revolution of the wheel R will so control the action of the spring T as that the wheel N and the cylinder F will receive a quick intermittent motion at regular intervals of time.

4. The combination of the cylinder F, the cylinder E, the wheels N, R, and K, the gears I and H, and the spring T, so arranged that the wheel R will so control the action of the spring T that the wheel N and the cylinder F will receive a quick intermittent motion at regular intervals of time, and that the wheel K and the cylinder E will receive a quick intermittent motion at other intervals of time.

WILLIAM H. GILLETTE.

Witnesses:

ALBERT H. WALKER,

MORGAN W. BEACH.

Correction in Letters Patent No. 300,966.

It is hereby certified that in Letters Patent No. 300,966, granted June 24, 1884, upon the application of William H. Gillette, of Hartford, Connecticut, for an improvement in "Time-Stamps," errors appear in the printed specification requiring correction, as follows: In line 80, page 1, the word "sheet" should read *wheel;* in line 84, same page, the word "offset" should read *upper;* and in line 43, page 2, the reference letter "R^1" should read R^2; and that the Letters Patent should be read with these corrections therein to make it conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 22d day of July, A. D. 1884.

[SEAL.]

M. L. JOSLYN,
Acting Secretary of the Interior.

Countersigned:

BENJ. BUTTERWORTH,
Commissioner of Patents.

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[SEAL.]

M. L. JOSLYN,
Acting Secretary of the Interior.

Countersigned:

BENJ. BUTTERWORTH,
Commissioner of Patents.