(No Model.) 3 Sheets—Sheet 1.

W. H. GILLETTE.

TIME STAMP.

No. 302,559. Patented July 29, 1884.

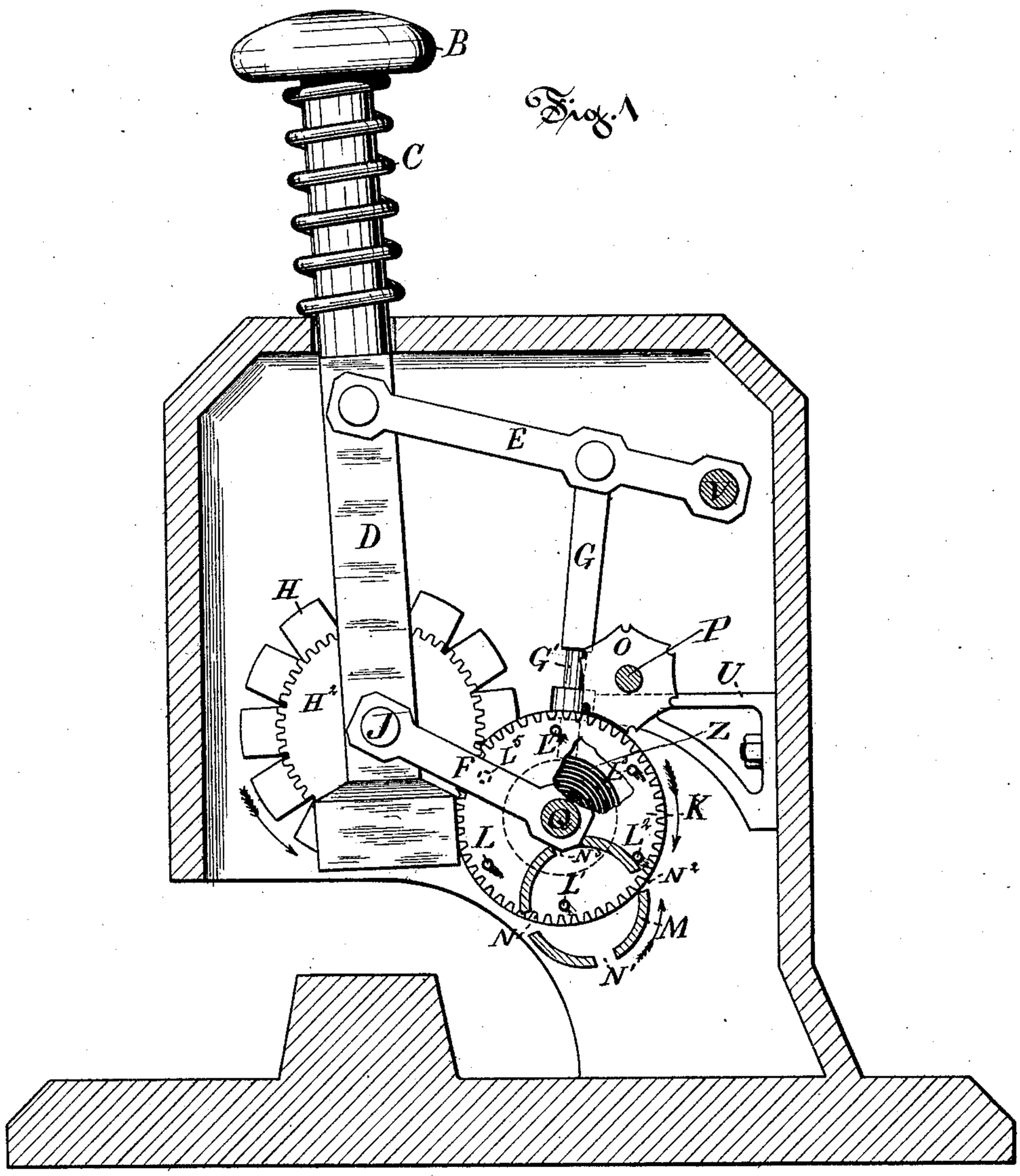


Fig. 1

Witnesses
John A. Lee
Charles MacGeachy

Inventor
Wm. H. Gillette

(No Model.) 3 Sheets—Sheet 2.

W. H. GILLETTE.

TIME STAMP.

No. 302,559. Patented July 29, 1884.

Fig. 3

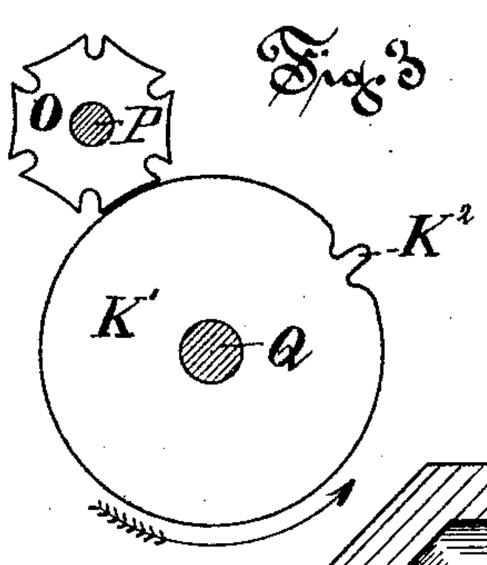


Fig. 2

A

Witnesses
John A. Lee
Charles Mac Geachy

Inventor
Wm H Gillette

(No Model.) 3 Sheets—Sheet 3.

W. H. GILLETTE.

TIME STAMP.

No. 302,559. Patented July 29, 1884.

Fig. 4

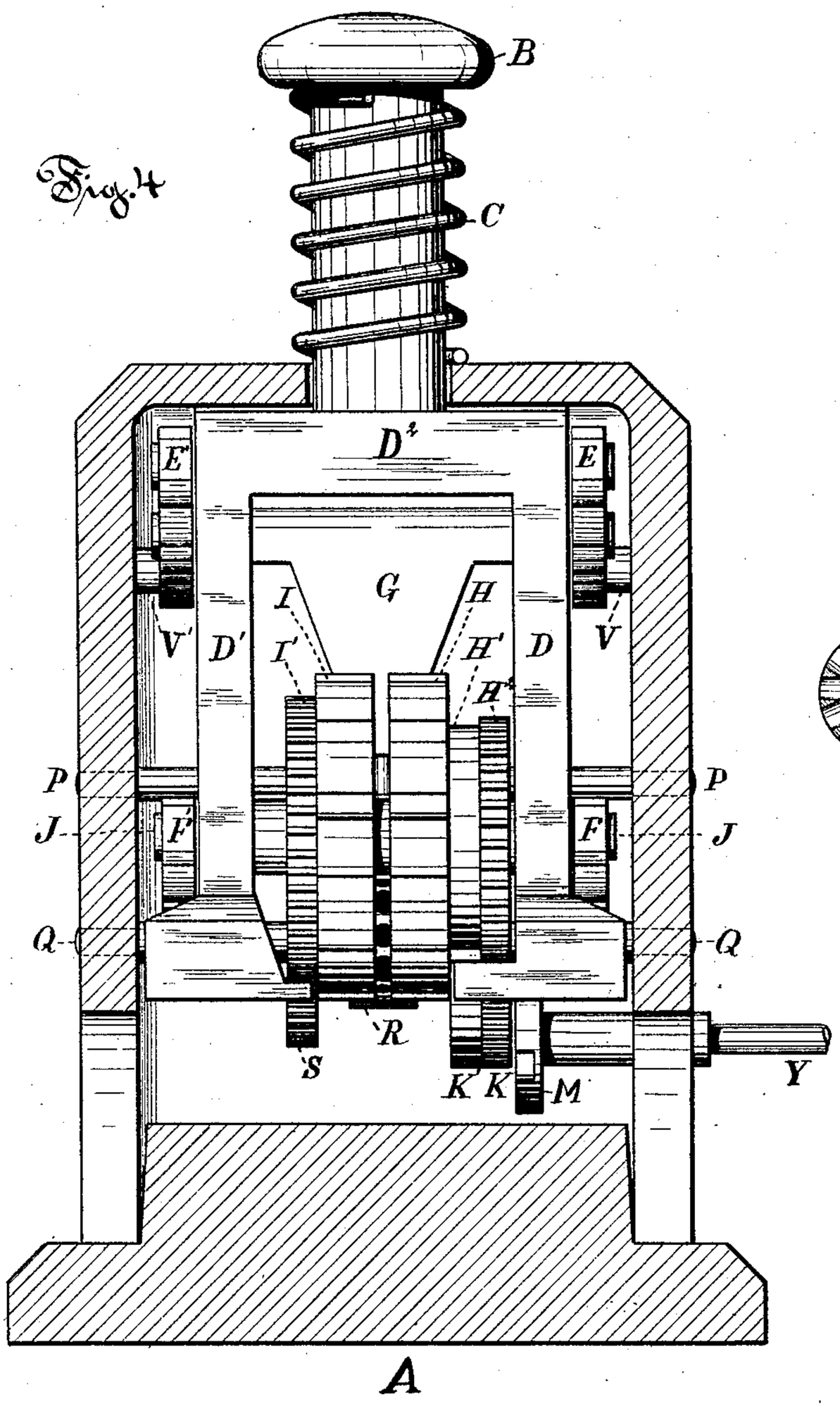
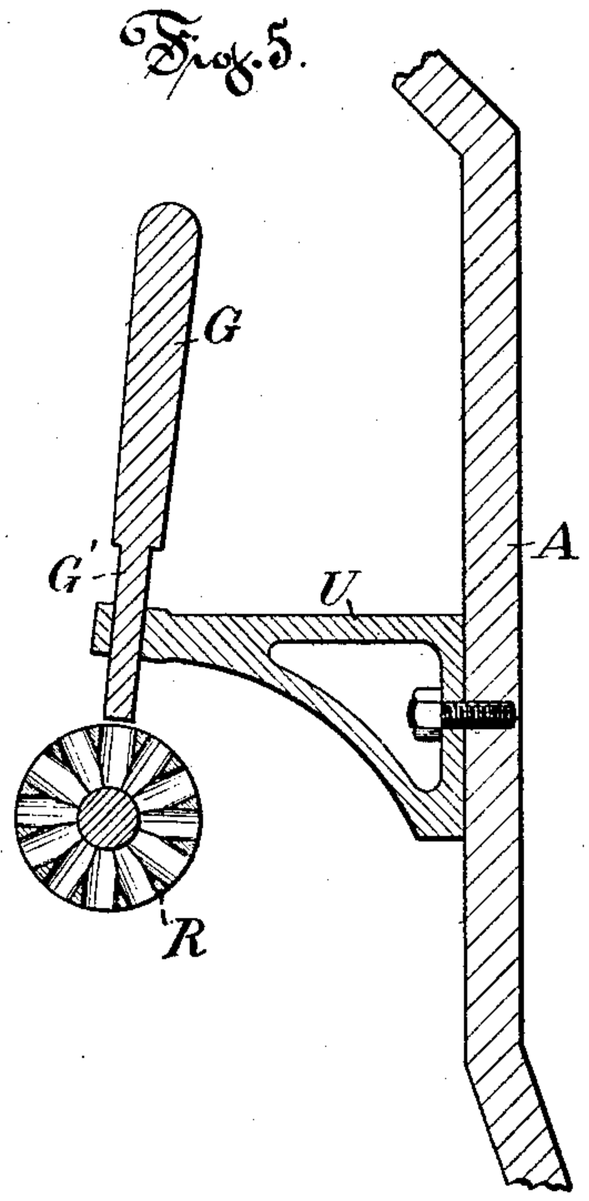


Fig. 5.



Witnesses

John A. Lee

Charles Mac Geachy

Inventor

Wm H Gillette

UNITED STATES PATENT OFFICE.

WILLIAM H. GILLETTE, OF HARTFORD, CONNECTICUT.

TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 302,559, dated July 29, 1884.

Application filed May 14, 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 machine is such a time-stamp as stamps upon the upper sides of papers Arabic or other characters representing, approximately, the time of day at which the respective papers stamped by it were respectively so stamped, and automatically changes part or all of its printing-surfaces at stated intervals, so as to make its operating printing-characters to approximately correspond with current time. It performs these functions by means of machinery and a mode of operation substantially different from every other time-stamp known to me.

Figure 1 in the drawings shows the case of the machine in vertical section, and shows a view of the right-hand side of the machinery within that case, except that the wheel M and the shafts P, Q, and V are shown in vertical section, and except that the shaft Y is not shown. Fig. 2 shows the case of the machine in vertical section, and shows a view of the left-hand side of the machinery within that case, except that the shafts P, Q, and V′ are shown in vertical section. Fig. 3 is a view of the left-hand side of the wheels K′ and O. Fig. 4 is a vertical section of the machine in a plane transverse to that of Figs. 1 and 2, and shows a front view of the machinery within that case. Fig. 5 is a central vertical section of the rear wall of the case of the machine and of the bracket U, which guides the arm G′, and of the cylinder R, into the holes of which the arm G′ is adapted to penetrate.

A is the case of the machine.

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

C is a strong spiral spring, which encircles that handle, and which raises and holds it and its attachments to the position shown in Figs. 1, 2, and 4, whenever the user ceases or omits to depress the handle C.

D and D′ are the side pieces, and D^2 is the top piece, of a U-shaped frame rigidly attached to the bottom of the handle B.

E and E′ are levers of the second order, the power-points of which are journal-boxes fitted to journals which project from the ends of the top piece, D^2, and the fulcrum-points of which are journal-boxes fitted to journals which constitute the inner ends of the shafts or arms V and V′, and the resistance-points of which levers are journal-boxes fitted to journals which constitute the ends of the shaft portion of the armed shaft G.

F and F′ are arms, the front ends of which are journal-boxes fitted to the shaft J, and the rear ends of which are journal-boxes fitted to the shaft Q.

G is an armed shaft, the journals of which are fitted to the middle journal-boxes of the levers E E′, and the arm of which projects downward from the axis of the shaft and terminates in the round arm G′.

H is a printing-wheel, which may form one piece with the gear H^2, if an intermediate part, H′, is constructed. H and H^2 are both keyed to the shaft J, so as to revolve with it.

I is another printing-wheel, which may form one piece with the gear I′, and which must be so attached to the latter that both will revolve together on a running fit on the shaft J. Each of these printing-wheels has twelve surfaces, or parts of a surface, on its periphery, and on each of those surfaces, or parts of a surface, one or more Arabic or other characters appear in relief, and reversed in form, as printers' types are. Those characters are not shown on the drawings, and may be varied at the will of the constructor. For the purposes of this specification let it be supposed that the surfaces on the wheel H carry the characters 00 5 10 15 20 25 30 35 40 45 50 55, respectively, the 00 being on that surface which is adjacent to the point of the arrow, and the others following in their order, opposite in direction to that in which the arrow is flying. Let it also be supposed that the surfaces on the wheel I carry the characters 7 8 9 10 11 12 1 2 3 4 5 6, respectively, the 7 being on that surface next the point of the arrow, and the others following in rotation in the direction opposite to that of the arrow.

J is a shaft journaled in the arms F F′ and also in the side pieces, D D′.

K is a gear keyed to the shaft Q, and may form one piece with the wheel K′, which is also keyed to the same shaft.

K^2 is a spur, which forms a part of the wheel K′, projecting, as it does, from the base of a notch in the periphery of that wheel.

L, L′, L^2, L^3, L^4, and L^5 are studs projecting horizontally from the border of the right-hand side of the gear K.

M is a wheel keyed to the inner end of the shaft Y, and having on the border of its left-hand side a discontinuous flange. The openings N, N′, N^2, and N^3, 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 to pass through.

O is a wheel keyed to the shaft P, and having the peculiar form shown in the drawings.

Q is a shaft, which, like the shaft P, is journaled in the side walls of the case A.

R is a cylinder keyed to the shaft Q, and having twelve equidistant holes penetrating the central circle of its periphery, and running directly toward its axis.

S is an intermediate gear, meshing with the gear I′, and revolving with a running fit on the shaft Q.

T is a gear keyed to the shaft P, and meshing with the gear S.

U is a bracket projecting from the inner side of the rear wall of the case A, and having at its end a hole through which the arm G′ reciprocates.

V V′ are shafts or arms which project from the inner sides of the side walls of the case A, respectively, and which have journals on their inner ends fitted to journal-boxes at the fulcrum ends of the levers E and E′, respectively.

Y is a shaft revolving in a long journal-box in the right-hand wall of the case A, and having the wheel M keyed to its inner end.

Z is a strong chronometer-spring encircling the shaft Q, and so attached as to cause that shaft to tend to revolve in the direction shown by the arrow adjacent to the gear K in Fig. 1.

To the right-hand end of the shaft Q a key may be fitted, and the shaft Y may be telescoped, so that when occasion requires the wheel M may be temporarily withdrawn from all contact with the studs on the gear K, and the shaft Q be turned by that key in whichever direction and to whatever extent the setting of the printing-wheels H and I to current time may be found to require. After they are so set, they may be held in position by the key until the wheel M is again adjusted to the proper studs on the wheel or gear K.

The mode of operation of this machine is as follows: The shaft Y, being so attached to a proper chronometer that it will continuously revolve and cause the wheel M to revolve once in every forty minutes in the direction indicated by the arrow adjacent to the wheel M in Fig. 1, it is apparent that the opening N^2 will soon come into conjunction with the stud L^2, and that thereupon the gear K will be caused by the mainspring on the shaft Q to revolve until the stud L′ strikes the inside of the flange about half-way between the openings N and N^3. Five minutes later, the stud L′ will escape through the opening N^3, and the gear K will thereupon revolve till the stud L^3 strikes the outer side of the flange about half-way between the openings N′ and N^2. Five minutes later still, the stud L^3 will escape through the opening N′, and thereupon the wheel K revolve until the stud L^2 strikes the inner side of the flange about half-way between the openings N^2 and N^3. Thus the gear K will continue to revolve intermittently one-twelfth of its circumference every five minutes and its whole circumference once every hour. Those intermittent motions are shared by the wheel K′ and the cylinder R, and they also cause the gear H^2 and the printing-wheel H to have corresponding intermittent motions in the opposite direction. Every twelfth motion of the wheel K′ is communicated to the wheel O, so as to cause the latter to revolve intermittently one-sixth of its circumference; but neither of the eleven other motions of the wheel K′ affects the wheel O in any way, the latter wheel being locked against the periphery of the wheel K′ at all times, except when every twelfth motion of the latter wheel is occurring. The diameter of the wheel O should be somewhat less than one-half as great as the diameter of the wheel K′. The relation of these parts to each other is shown in Fig. 3. The movement which they constitute is an old one, and needs not to be more minutely described. The intermittent motion of the wheel O, happening once every hour, is shared by the shaft P and the gear T, and is communicated through the gears S and I′ to the printing-wheel I. Inasmuch, however, as the gear I′ has spurs, which are double in number to those on the gear T, each motion of the wheel O will cause the printing-wheel I to revolve only one-twelfth of its circumference.

The foregoing explanation shows that the printing-wheel H revolves one-twelfth of its circumference at the end of every five minutes, and that coincident with every twelfth one of those movements the printing-wheel I revolves in the same direction one-twelfth of its circumference, and that both printing-wheels are held rigidly in place at all other times, except as hereinafter explained.

Now, suppose the machine is started at seven a. m. on any day, with the printing-wheels in such positions as those hereinbefore specified. Then, if the handle B is depressed, the levers E E′ and the arms F F′ will cause the pieces D D′ to assume a perpendicular position when their bottoms strike any paper resting on the platen beneath them. The downward motion of the handle B and of the pieces D, D′, and D^2 will carry the shaft J and the printing-wheels

H and I and the gears H^2 and I′ along with those parts, and will cause those gears and those wheels to revolve one-twelfth of their circumference in the direction indicated by the adjacent arrows, and will print on the upper side of any paper resting on the platen, the character 7 being the character on the then lower surface of the printing-wheel I, and also print the characters 00, being the characters on the then lower surface of the printing-wheel H, and will also print any characters which may appear in relief or otherwise on the lower ends of the side pieces, D D′, respectively. It will be convenient to have the letters "A. M." or "P. M." on the bottom of the side piece D, and to have the month and day of the month on the bottom of the side piece D′. Any one of several known methods of changing A. M. to P. M., and vice versa, and of changing the month and day of the month, from time to time, may readily be adapted by the constructor. The machine will repeat its impression as often as used prior to 7.05 a. m., and at that moment the printing-wheel H will revolve one-twelfth of its circumference, and in so doing will bring that one of its surfaces which has the figure 5 upon it in such a position as that a future depression of the handle B will press it upon the paper, instead of pressing the figures 00 there, as before. The printing-wheel H will thus continue to change its position at the end of every five minutes, and whenever it changes from 55 to 00 the printing-wheel I will also revolve one-twelfth of its circumference, and thus bring that one of its printing-surfaces which prints the next hour in a position to print when the handle B is again depressed.

Should the user of the machine attempt to depress the handle B at any instant whereon the gear K is revolving, then the arm G′, which at other times will be in a position to enter one of the holes in the cylinder R, will strike one of the bridges between two of those holes, and will thus prevent the attempted depression of the handle B from occurring. As soon, however, as the user can relax his arm and again attempt to depress the handle, the gear K and the cylinder R will have completed the movement, and thus have enabled the arm G′ to penetrate one of the holes in the cylinder R, and thus permit the printing wheels and pieces to be pressed upon the platen and to do their work there. If the gear K attempts to revolve when the arm G′ is within either of the holes in the cylinder R, no such revolution can take place till that arm 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 M, through which one of the studs L ought to escape beyond that stud. The openings in the flange may be made wide enough to allow a delay of at least one minute, and no longer delay will ever be necessary. No proper or necessary delay of one intermittent motion can delay any subsequent intermittent motion.

This machine may be modified in many respects without altering its distinctive character. If only one printing-wheel is wanted, the printing-wheel I and the gears I′, S, and T, and the shaft P and the wheels O and K′, may all be dispensed with. If more than two printing-pieces are wanted, more may be placed on the shaft J, and may be operated by duplicating sundry of the parts of the described mechanism. Some one of several other forms of locking device may be used in place of the armed shaft G and the cylinder R. Some one of several other movements may be used to perform the function of the wheels K′ and O. The speed of the wheel M and the number of intermittent motions in one complete revolution of either of the other wheels may be varied, and the number of the openings in the flange of the wheel M will need to be altered whenever the relative diameter of that wheel to the diameter of the wheel K is greatly changed. Ink may be supplied to the printing-surfaces of the machine by any of several known devices applicable to that purpose.

I do not herein claim an escapement consisting of a wheel provided with a series of studs, and of another wheel provided with a discontinuous flange; nor a combination consisting of a cylinder, two wheels, and a spring, so arranged as that a continuous revolution of one of the wheels will so control the action of the spring as that the other wheel and the cylinder will receive a quick intermittent motion at regular intervals of time, because both of those inventions are claimed in my application No. 93,662 for Letters Patent for an improvement in time-stamps filed May 2, 1883.

I claim as my invention—

1. The combination of the frame D D′ D^2, the arms F F′, the shaft J, the printing-wheels H and I, the gear H^2, the gear K, having studs, the wheel M, having a discontinuous flange, the wheel K′, having the spur K^2, the spring Z, the wheel O, and suitable gearing to connect the wheel O to the printing-wheel I.

2. The combination of the frame D D′ D^2, the arms F F′, the printing-wheel H, the gear H^2, the gear K, having studs, the spring Z, and the wheel M, having a discontinuous flange.

3. A locking device consisting of the combination of one or both of the levers E E′, the armed shaft G, and the cylinder R.

WM. H. GILLETTE.

Witnesses:
JOHN H. LEE,
CHARLES MACGEACHY.