No. 678,656. Patented July 16, 1901.

P. G. GIROUD.

TIME STAMP.

(Application filed Apr. 22, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

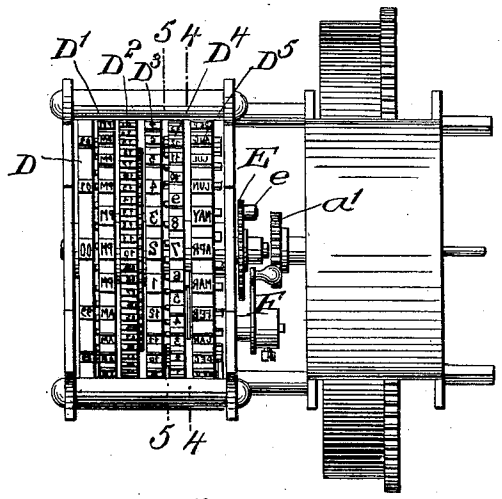


Fig. 4.

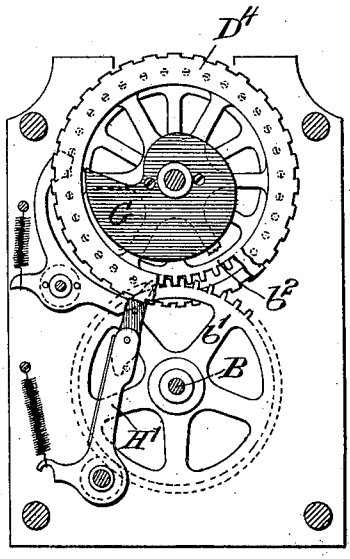


Fig. 6

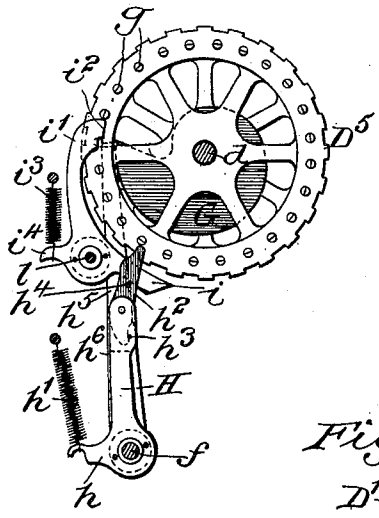


Fig. 7.

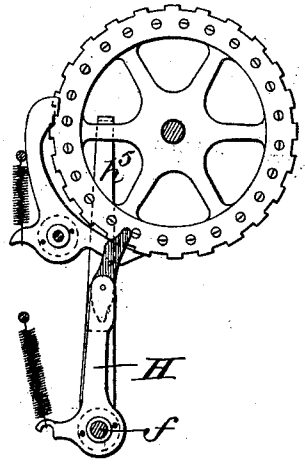
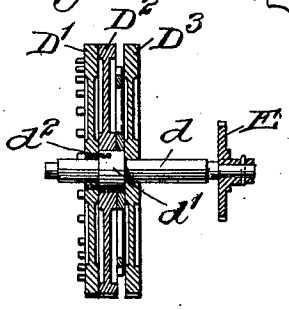


Fig. 8



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Fig. 2.

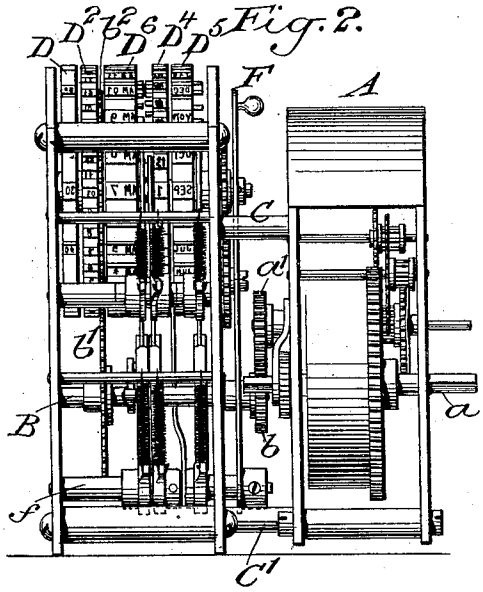


Fig. 3.

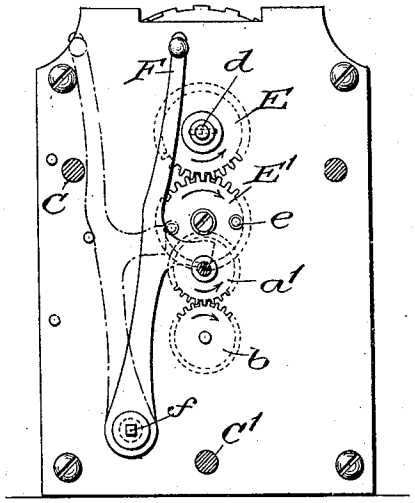


Fig. 7.

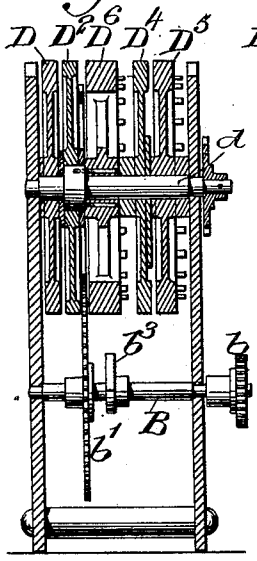


Fig. 10.

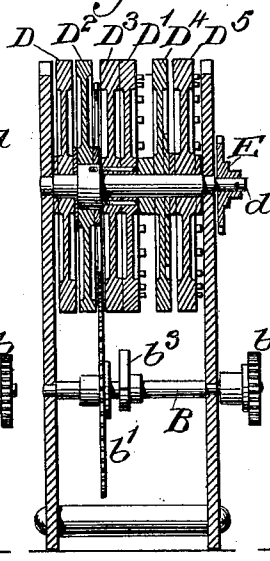
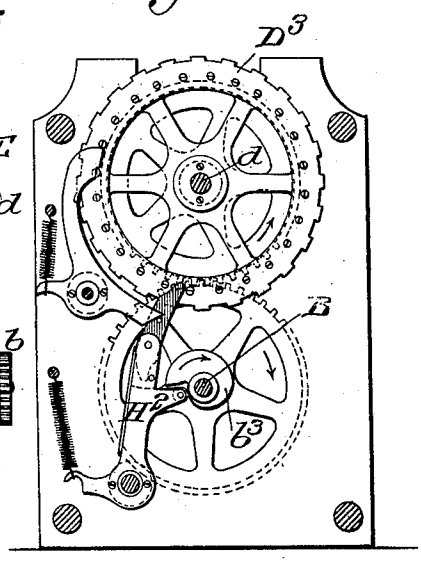


Fig. 5.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PETER G. GIROUD, OF BINGHAMTON, NEW YORK, ASSIGNOR TO THE INTERNATIONAL TIME RECORDING COMPANY, OF NEW JERSEY.

TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 678,656, dated July 16, 1901.

Application filed April 22, 1901. Serial No. 56,868. (No model.)

To all whom it may concern:

Be it known that I, PETER G. GIROUD, a citizen of the United States, and a resident of Binghamton, in the county of Broome and State of New York, have invented a new and useful Time-Stamp, of which the following is a specification.

My invention relates to a time-stamp, with the object in view of simplifying the structure and improving the action of the moving parts.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a top plan view showing an arrangement of the several series of time-indicating symbols in which the minute-indicating series of symbols is located intermediate of the hour and meridian series. Fig. 2 is a view in side elevation, showing an arrangement of the series of time-indicating symbols in which the hour and meridian series are located upon a single rim with the minute-indicating symbols at one side. Fig. 3 is a view in end elevation, the time-movement being removed, showing the position of the driving-gear on the time-train in its position relative to the driven gear on the stamp-train, the position of the day-shifting lever being shown in full lines in the position which it occupies from the beginning until near the end of the day and in dotted lines the position which it assumes just before it is tripped to change the number of the day. Fig. 4 is a transverse section in the plane of the line 4 4 of Fig. 1. Fig. 5 is a transverse vertical section on the line 5 5 of Fig. 1. Fig. 6 is a view in detail of the month-wheel and the cam on the day-wheel back of it, showing the position of the operating-pawl at the limit of its backward movement and the position of the locking-dog just before it is released from the wheel. Fig. 7 is a similar view of the month-wheel, showing the position of the actuating-dog when midway of its forward movement just as it has released the locking-dog and is about to push the wheel forward one step. Fig. 8 is a sectional view in detail, showing the shaft on which the hour-wheel and the meridian-wheel are fixed, with the minute-wheel loosely mounted between them, as in Fig. 1, and the gear for operating the day-wheel; and Figs. 9 and 10 represent vertical sections from front to rear through the stamp-train, the former showing the manner of mounting the series of time-indicating symbols when the hour and meridian are on the rim of a single wheel and in juxtaposition and the latter showing the manner of mounting the said symbols when the hour and meridian series are on separate rims and in juxtaposition.

In the accompanying drawings the casing of the stamp is not shown, and the plunger for pressing the record-receiving strip and ribbon into contact with the printing-wheels is also omitted, it being understood that it may be of any well-known or approved form, my present invention relating particularly to the means for mounting and actuating the several series of time-indicating symbols and the arrangement of the stamp-train with respect to the time-train.

For the purpose of economizing space within the casing and for the further purpose of bringing the time-train and stamp-train into such relation that they may be supported in a manner to lend firmness and rigidity to the structure I locate the time-train, denoted as a whole by A, and which may be of any well-known or approved form, with its central arbor *a* above the actuating-shaft B of the stamp-train and connect the two by means of a gear-wheel *a'* on the rear end of the central arbor *a* of the time-train and a gear-wheel *b* on the front end of the drive-shaft B of the stamp-train. This brings the foot of the time-train-supporting frame on a level with the foot of the stamp-train-supporting frame and the top of the time-train frame somewhat below the top of the printing-wheels of the stamp-train and admits of firmly securing the parts together by upper and lower posts or girders C C' in a firm and compact manner.

The several series of time-indicating symbols are preferably formed on the rims of wheels which may be conveniently termed "printing-wheels." In the present instance six series of time-indicating symbols are shown, each series formed on the rim of a separate wheel, with the exception of the ar-

rangement shown in Figs. 2 and 9, where the hour and meridian series are formed on the rim of a single wheel.

Referring to the arrangement shown in Fig. 1, the year-wheel is denoted by D, the meridian-wheel by D′, the minute-wheel by D^2, the hour-wheel by D^3, the day-wheel by D^4, and the month-wheel by D^5. Of these printing-wheels the meridian-wheel and the hour-wheel (denoted, respectively, by D′ and D^3) are fixed to rotate with the shaft or spindle d, while the minute-wheel D^2 is mounted loosely on a hub or sleeve d', fixed on the shaft d intermediate of the wheels D′ D^3, and the year, day, and month wheels are loosely mounted on the shaft d. The meridian-wheel is removably fastened to the shaft d by means of screws d^2, which extend through its hub into the hub or sleeve d' on the shaft d, as clearly shown in Fig. 8, while the hour-wheel D^3 is fastened to the shaft d with its hub abutting against the end of the sleeve d', leaving space between it and the meridian-wheel for the minute-wheel to rotate freely on the hub or sleeve d'. The shaft d also has fixed on its front end a gear-wheel E, which is in position to intermesh with a crank-wheel E′, mounted on the supporting-frame immediately below it, the said crank-wheel being provided with a crank-pin e for engaging a lever-arm F, fixed to a shaft f at or near the foot of the stamp-train-supporting frame, which shaft f has fixed thereon the support for the pawl which actuates the day-wheel. It thus follows that the rotary movement of the shaft d actuates the meridian-wheel, the hour-wheel, and the day-wheel, the month-wheel being actuated by a cam on the day-wheel, as will be hereinafter more particularly explained, the year-wheel by hand, and the minute-wheel by a spur-wheel b', fixed on the drive-shaft B of the stamp-train and intermeshing with a gear-wheel b^2, fixed on the side of the minute-wheel.

The shaft d, which operates the three wheels D′ D^3 D^4, is given a step-by-step movement at intervals of one hour by means of a cam b^3, (see Fig. 5,) fixed on the drive-shaft B, driven directly from the arbor a of the time-train.

The several sets of actuating-pawls and their companion locking-levers are quite similar in structure and operation, although their respective sizes and lengths of stroke may be more or less modified to suit their particular locations and the parts which actuate them. A specific description of one set will suffice to clearly disclose the structure and operation of the remaining sets. The set chosen for specific explanation is that which operates the month-wheel D^5 and is under the control of a snail-cam G, fixed to rotate with the day-wheel D^4. The pawl-support for this set is denoted by H (see Figs. 6 and 7) and consists of an arm uprising from a hub loosely mounted on the shaft f and provided with a heel h, to which an actuating-spring h' is attached, the opposite end of the spring being attached to the supporting-frame. In the upper end of the support H the pawl h^2 is pivoted to swing freely in one direction, but is prevented from swinging in the opposite direction by means of a stop h^3 on its support. The pawl h^2 is provided with a laterally-projecting pin h^4 on its side, which when the pawl is in its advanced position (shown in Fig. 5) rests under the foot of the short arm i of a locking-lever pivotally mounted on a pin 1, the long arm i' of said dog being provided with a nose i^2, adapted to fit between two successive teeth g on the face of the month-wheel D^5. The teeth g on the face of the month-wheel preferably consist of pins having their outer faces flattened. The locking-dog is held normally with its nose i^2 in locking position between two successive teeth g by means of an actuating-spring i^3, one end of which is secured to a heel i^4 on the locking-dog and the opposite end to a pin or suitable fastening on the supporting-frame. An operating-arm h^5 is fixed to and projects upwardly from the hub of the pawl-support into position to be engaged by the periphery of the snail-cam G. As the snail-cam rotates, together with the wheel D^4, to which it is attached, it gradually forces the arm h^5 backward and with it the pawl-support H, the pawl h^2 rocking forwardly to permit the pin h^4 to pass under the foot of the lock-lever until the parts reach the position shown in Fig. 6, where the arm h^5 is about to drop from the outermost point of the cam C to the innermost point. In this position the pawl h^2 has been thrown back into extended position by its actuating-spring h^6 on the back of the support H, and the spring h' is distended, tending to rock the support H forward as soon as the arm h^5 is released from the cam. As soon as this release takes place the first effect of the pawl h^2 is to rock the locking-lever out of engagement with the teeth on the month-wheel, as shown in Fig. 7, by the engagement of the pin h^4 with the back of the short arm i of the locking-lever, and the further movement of the support H and the pawl carried thereby in a forward direction under the tension of its actuating-spring h' will be to rotate the month-wheel one step by the engagement of the pawl h^2 with one of the teeth g of the wheel. Before the pawl h^2 has advanced the wheel a complete step the pin h^4 will have passed under the foot of the locking-lever into the position shown in Fig. 5, permitting the latter to rock back with its nose i^2 resting on one of the teeth g of the said month-wheel D^5, and the moment the pawl h^2 has completed its forward movement or has rocked the wheel D^5 the distance between two consecutive teeth the nose i^2 of the lock-lever will drop into position between two consecutive teeth of the wheel D^5 and stop the further rotation of said wheel. In the same manner the day-wheel D^4 will be operated by the rocking of its pawl-support H′ through the rocking movement of the lever F under the control of the crank-pin e on the crank-wheel E′,

in gear with the wheel E on the shaft d. The position where the lever F is about to be tripped by the passing of the crank-pin is shown in dotted lines in Fig. 3. In the same manner also the meridian and hour wheel or wheels, and hence the shaft d and parts carried thereby, are operated by the pawl on the support H^2 under the control of the snail-cam b^3 on the shaft B. The position of the parts shown in Fig. 5 is that which they assume just after the snail-cam b^3 has permitted the pawl and its support H^2 to rock forward to the limit of its forward movement on the meridian or hour wheel D' or D^3.

The operation as a whole may be briefly stated as follows: The time-train through its central arbor a and the gear a' b rotates the shaft B and the spur-wheel b', which in turn rotates the minute-wheel D^2, causing it to present at its top or wherever the printing is to take place that type which denotes the particular minute corresponding to the minute of time. When the sixty minutes have been successively presented, the cam b^3 on the shaft B will have reached the point where the pawl h^2 will escape from its outermost point and fall toward the center of the cam, thereby, in the manner hereinbefore particularly described, rotating the meridian and hour wheels D' and D^3 one step. As the meridian-wheel is provided with "A. M." type at each step for twelve consecutive hours and then with "P. M." type for twelve consecutive hours, it will denote the proper position of the hour, whether forenoon or afternoon. As the hour-wheel D^3 is fixed to turn together with the meridian-wheel and the shaft d, the type denoting the successive hour will be brought into printing position and the shaft d, through the gear E, will have advanced the crank-wheel E' one of its twenty-four steps toward the completion of a day. When the twenty-fourth hour or the termination of the twelfth hour "P. M." has arrived, the crank-pin e will have been brought into position to escape from the lever F and under the tension of its actuating-spring and the support H' will be rocked forward, forcing the day-wheel D^4 one step to bring the type denoting the succeeding day into printing position. When thirty-one consecutive days have been thus presented, the cam G, carried by the day-wheel, will have reached a position where the arm h^5 will have been allowed to escape from it and the month-wheel under the control of the pawl h^2 will be advanced to bring the type denoting the succeeding month into printing position. Whenever the month has twenty-eight or thirty days instead of thirty-one, the operator may advance the day-wheel three steps or one step to complete the thirty-one by operating the lever F by hand. When the year has been completed, the operator may move the year-wheel D one step by hand, the latter being conveniently held in its adjusted position by a friction-brake of any well-known or approved form.

Among the advantages which my present structure and arrangement presents particular attention is called to the simple movement of the pawl h^2 and its companion, by which it passes the locking-lever without any tendency to disturb it and with very slight drag and the simple manner in which it on its return movement rocks the locking-lever out of engagement with the wheel and then at the proper moment releases it so that it may surely drop into locking position and hold the wheel against lost motion. The arrangement of the wheels on the shaft d and the manner in which it serves by its rotary movement to transmit power to the several wheels while forming a support for those wheels that move loosely thereon is also a matter of economy in construction and serves to simplify and render more durable the structure as a whole.

Where the series of time-indicating symbols denoting the hour and meridian are placed upon a single rim, as represented by D^6 in Figs. 2 and 9, bringing the hour and meridian into juxtaposition, the minute series is placed after these two series, making the reading "Month," "Day," "Meridian," and "Minute." The same reading may also be obtained when the hour and meridian series are on separate wheels, as in Fig. 10, and placed in juxtaposition.

It is obvious that changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. In a time-stamp, a rotary shaft, several series of time-indicating symbols mounted and arranged to bring the symbols of each series successively into printing position, connections between the said rotary shaft and different series of symbols whereby a series of symbols moves together with the shaft and another series under the control of the rotary movement of the shaft moves relatively to the shaft and means for rotating the shaft, substantially as set forth.

2. In a time-stamp, a rotary shaft, means for operating the shaft, a plurality of series of time-indicating symbols fixed to rotate with the shaft, another series of time-indicating symbols loosely mounted on the shaft and means for imparting a rotary movement thereto independent of the rotary movement of the shaft and still another series of time-indicating symbols mounted to rotate on the shaft and means under the control of the shaft for imparting a rotary movement to said last-named series of time-indicating symbols, substantially as set forth.

3. In combination, a rotary drive-shaft, two time-indicating wheels fixed to rotate with the drive-shaft, a third time-indicating wheel mounted to rotate on the drive-shaft intermediate of the aforesaid time-indicat-

ing wheels, a fourth time-indicating wheel loosely mounted on the drive-shaft and under the control of the said drive-shaft to be operated thereby and means for actuating the third aforesaid time-indicating wheel, substantially as set forth.

4. In combination, a rotary shaft, a sleeve or collar fixed on the shaft, a meridian-wheel abutting one end of the collar, an hour-wheel abutting the opposite end of the collar, the said wheels being fixed to rotate with the shaft, a minute-wheel loosely mounted on the sleeve or collar intermediate of the aforesaid wheels and means under the control of a time-train for actuating the minute-wheel and shaft, substantially as set forth.

5. In combination, a rotary shaft, a meridian-wheel and an hour-wheel fixed to rotate with the shaft, a minute-wheel loosely mounted on the shaft intermediate of the aforesaid wheels, a gear-wheel fixed to rotate with the shaft, a day-wheel loosely mounted on the shaft, means under the control of the gear on the shaft for operating the said day-wheel and means under the control of a time-train for actuating the minute-wheel and shaft, substantially as set forth.

6. In combination, a rotary shaft, a meridian-wheel and an hour-wheel fixed to rotate with the shaft and a minute-wheel loosely mounted on the shaft intermediate of the meridian and hour wheels, a gear-wheel fixed to rotate with the shaft, a day-wheel loosely mounted on the shaft, a month-wheel loosely mounted on the shaft and under the control of the day-wheel, intermediate mechanism for placing the day-wheel under the control of the gear fixed on the shaft and means under the control of a time-train for actuating the minute-wheel and shaft, substantially as set forth.

7. In combination, printing-wheels denoting different subdivisions of time, a spring-actuated locking-lever for holding one of the wheels in its position, a pawl for advancing the said wheel, a rocking spring-actuated support for the said pawl, a projection on the pawl for engaging the foot of the locking-lever to permit the pawl to pass when the pawl moves in one direction and for releasing the locking-lever when the pawl moves in the opposite direction and means under the control of the other wheel for rocking the pawl-support, substantially as set forth.

8. In combination, several wheels for printing different subdivisions of time, a rock-shaft, locking-levers and rocking pawls for operating the said wheels at predetermined intervals, a rocking shaft forming a support for the several pawl-supports, one of said pawl-supports being fixed to said rocking shaft and other pawl-supports being loosely mounted on said shaft, a drive-shaft under the control of a time-train, a cam on said drive-shaft for rocking another of said pawl-supports and means in connection with one of the said printing-wheels for operating another of said pawl-supports, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of April, 1901.

PETER G. GIROUD.

Witnesses:
FREDK. HAYNES,
C. S. SUNDGREN.