

(No Model.)

3 Sheets—Sheet 1.

F. H. SYMONDS.
TIME STAMP.

No. 465,683.

Patented Dec. 22, 1891.

Fig. 2.

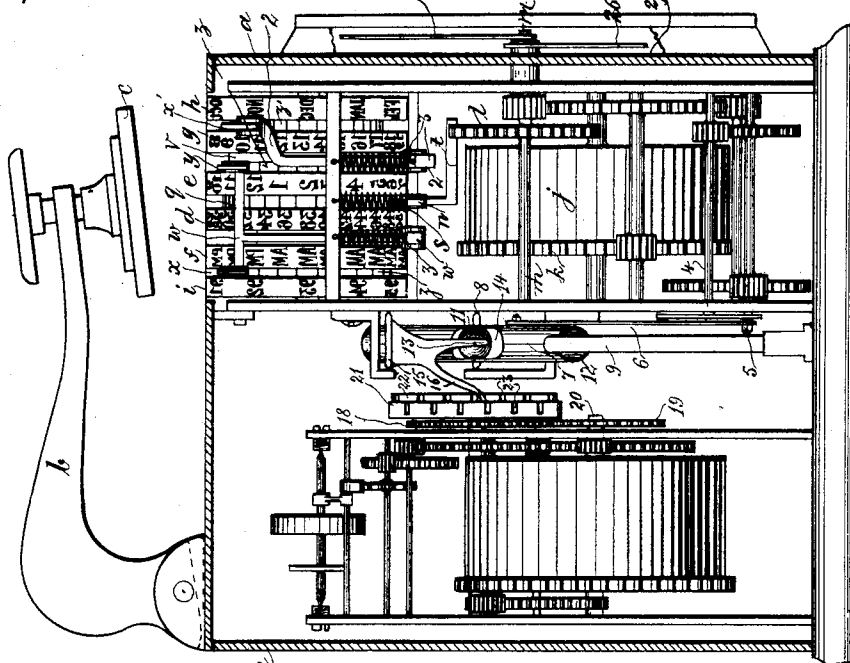
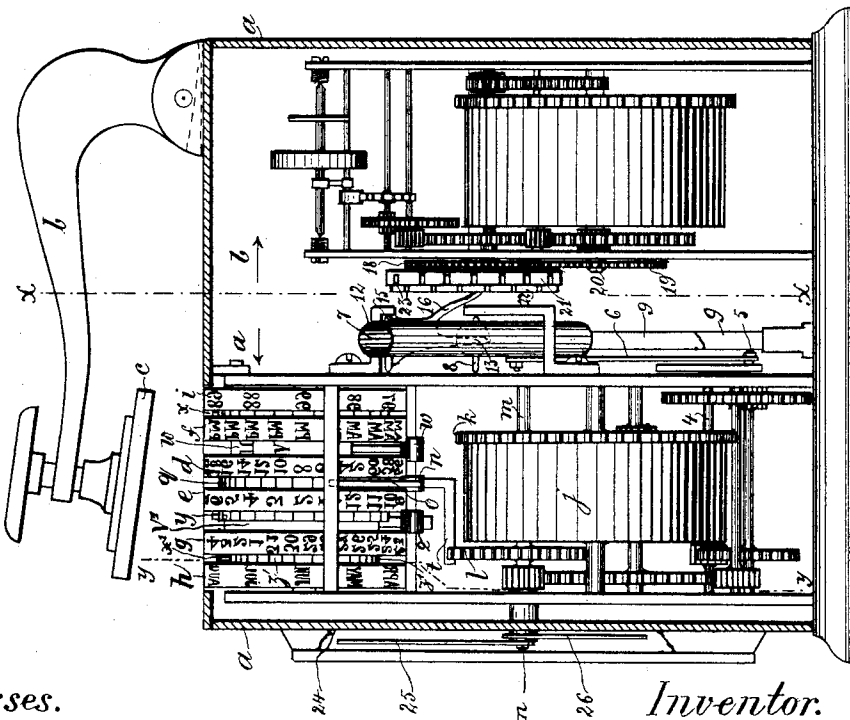


Fig. 1



Witnesses.

W. J. Morgan
Ernst Lundgren

Inventor.

Fred H. Symonds
By *A. P. Thayer*
attn

(No Model.)

3 Sheets—Sheet 2.

F. H. SYMONDS.
TIME STAMP.

No. 465,683.

Patented Dec. 22, 1891.

Fig. 3.

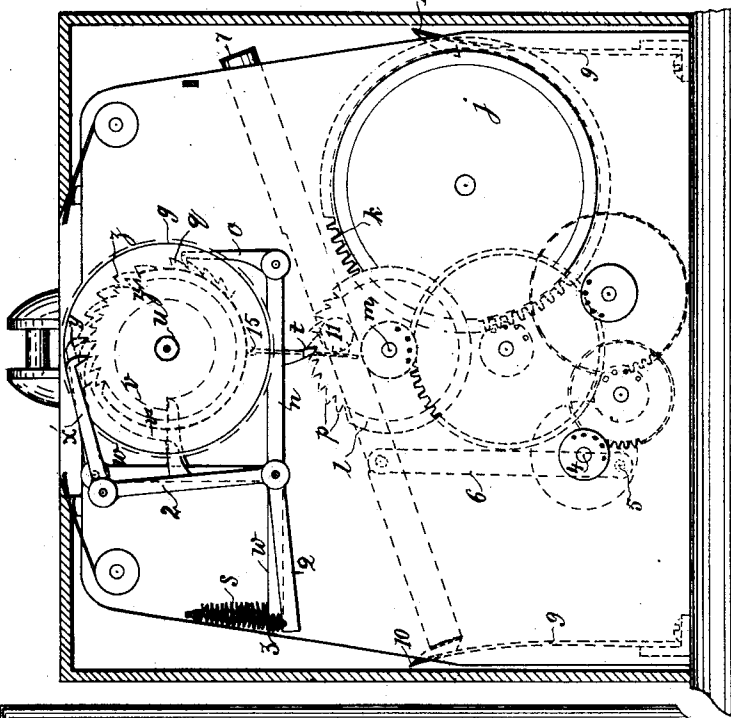
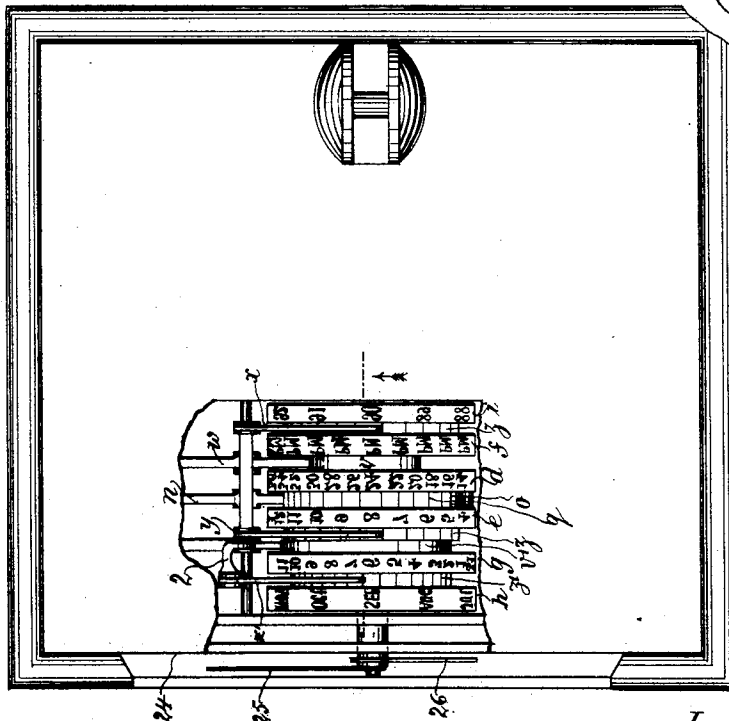


Fig. 4.



Witnesses.

W. J. Morgan
Ernst Lindgren

Inventor.

Fred H. Symonds
By A. O. Thayer
att'y.

(No Model.)

3 Sheets—Sheet 3.

F. H. SYMONDS.
TIME STAMP.

No. 465,683.

Patented Dec. 22, 1891.

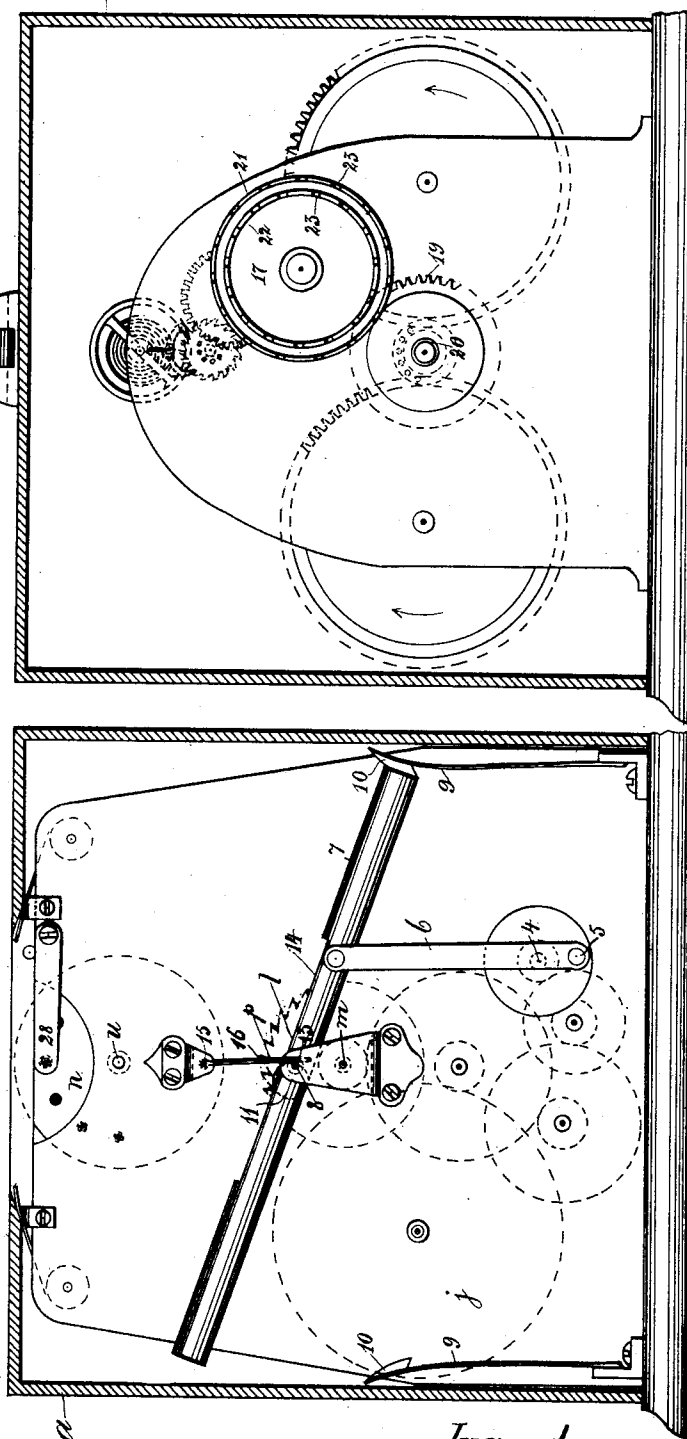


Fig. 6.

Fig. 7.

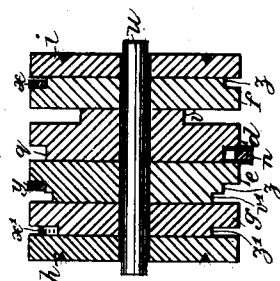


Fig. 5.

Witnesses.

Wm. J. Morgan
Ernst Lundgren

Inventor.

Fred H. Symonds.
By A. O. Thayer. atty

UNITED STATES PATENT OFFICE.

FREDERICK H. SYMONDS, OF NEW YORK, N. Y.

TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 465,683, dated December 22, 1891.

Application filed July 23, 1890. Serial No. 359,600. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. SYMONDS, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Time-Stamp, of which the following is a specification.

My invention consists in a spring-power device for periodically shifting the type-disks, a time-clock for determining the periods of action, and a trip and stop device of novel contrivance controlled by the clock in such a way as not to sensibly affect the time-keeping functions of it, and being a very simple and effective controlling device for the disk-shifting power, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved time-stamp with the plate of the case removed and part of the rim of the case inclosing the hands and the dial broken out. Fig. 2 is an elevation of the reverse side, also with the plate of the case removed, also with a part broken out same as in Fig. 1. Fig. 3 is a transverse section on line *y y*, Fig. 1. Fig. 4 is a top view with the impression-arm and part of the top plate removed. Fig. 5 is an elevation of the stamp power releasing and stopping device, as seen in the direction of arrow *a*, Fig. 1, the case and impression-arm being sectioned on line *x x*. Fig. 6 is an elevation of the clock attachment for controlling the releasing and stopping device, as seen in the direction of arrow *b*, Fig. 1, the case being sectioned same as in Fig. 5. Fig. 7 is a section of the type-disks in the plane of the shaft.

In the front upper portion of the short case *a*, only long enough for the arm *b* of shortest practicable length for carrying the impression-plate *c*, I arrange the system of type-disks, as the minute-disk *d*, hour-disk *e*, meridian-disk *f*, day-disk *g*, month-disk *h*, and the year-disk *i*, with a spring-power device directly under these disks for driving them, a clock in the back part of the case for controlling the periods of the disk movements, and the trip and stop devices for the disk power in the space between the disks and the spring-power driver and the clock.

For the power device for operating the disks I employ an ordinary clock motion or simi-

lar motor apparatus, whereof *j* indicates the spring-barrel, from which the power is transmitted by the toothed rim *k* to the usual train of multiplying gears, in which train I apply the cam-disk *l* on the shaft *m*, which corresponds to the minute-hand-carrying shaft of the clock. This cam-disk actuates the type-disks through the pawl-lever *n* and pawl *o* and has thirty cam projections *p* for shifting said disks every two minutes, said disk making one revolution per hour. These projections raise the lever and pawl to engage one notch of the ratchet *q* on the minute-disk *d*, and the spring *s* thrusts them down and shifts the disk when the cam projections escape from the tappet *t* on the lever.

The disk *d* turns loosely on the shaft *u* and has a cam *v*, which at each revolution of said disk sets and releases pawl-lever *w*, which, by its pawls *x* and *y*, shifts the hour-disk *e* and the meridian-disk *f*, which have ratchets *z*, on which said pawls take effect to shift them both alike, it being preferred to have the characters of the meridian-disk repeated and to shift it each hour in unison with the hour-disk, so that it may be shifted by the same pawl-lever *w* that shifts the hour-disk rather than provide the extra cam and pawl-lever that would otherwise have to be provided for shifting it twice each day. The hour-disk *e* has a similar cam *v'*, which at one revolution of said disk sets and releases pawl-lever *2*, which by its pawl *x'* shifts the day-disk *g* through a similar ratchet *z'*. Said pawl-lever and pawl-lever *w* also are thrown by their respective springs *3* when released by the cams by which they are set. In this case I have preferred to omit the cams, levers, pawls, and springs for actuating the month and year disks *h* and *i*, leaving them to be set by hand; but they may be provided with these requisites for automatic action, if desired. All the disks will have spring or equivalent stops, as 28, or some equivalent thereof, to hold them at rest, but releasing them by the force of the shifting-pawls.

In another position in the multiplying train of the spring-power I provide the shaft 4, timed to make half a revolution to the movement of wheel 1 the length of one cam projection *p* and carrying a crank-pin 5, which is connected by the rod 6 with the tilting tube

7, pivoted at 8, which is the middle of its length, the arrangement being such that the throw of the crank will vibrate the tube from one to the other of the inclined positions of it represented in Figs. 1, 2, 3, and 5. At each end of this tube, when in the lowest position, is a spring-catch 9, which catches and holds the tube when it comes to that position, and thereby stops and holds the spring-power train against further movement until the tube is released from the spring-catch. For so releasing it the nose 10 of the catch extends upward across the bore of the tube so as to be exposed to the impact of a ball 11, which is carried in the tube and which, being released at the proper time from the position where it is retained at the middle of the tube until allowed to fall, strikes the nose of the catch and forces it back so as to release the end of the tube and then permit the power-train to move another stage and bring down the other end of the tube, which is then caught and held by the other catch. The tube has lips 12 projecting inwardly at the ends to prevent the escape of the ball without interfering with the action of the catches on the tube or of the ball on them. When the tube is so released, the ball is carried upward with the rising end of said tube, and when reaching an altitude above the level of the pivot of the tube the ball rolls downward along said tube until arrested at the middle by the finger 13 reaching into the tube through the slot 14 in its upper side. This finger swings from the pivot 15 at a suitable position over the center of the tube, and has an arm 16, which, with the duplex crown-wheel 17, which I apply to the clock, is the means of controlling the periodicity of the ball's action. This crown-wheel is geared by the spur-wheels 18 and 19 with the axis 20, usually carrying the minute-hand of the clock, and preferably for the same rate of speed; but it may vary in certain proportions either faster or slower—as, for instance, half the speed. It is made with two side flanges 21 and 22, placed a suitable distance apart for a channel-way in which the end of the arm 16 may rest while the flanges rotate past the said arm, one on each side. These flanges are notched radially and immediately, respectively, as at 23, suitably for the arm 16 to swing through the notches and at such distance apart that said arm will escape through them alternately at intervals of two minutes when it is desired that the type-disks shall be shifted at such intervals of time. When in the course of the rotation of the crown-wheel a notch 23 comes into the relation with arm 16, permitting it to swing through the notch, the ball resting against the stop-finger in the upper side of the tube escapes by swinging the stop-finger away by its gravitating power and runs down to detach the catch then holding the tube, and thus permit another shift of the stamp-disk-driving power. Immediately after the ball escapes from the stop-finger said

finger gravitates back to its normal position, the arm 16 swinging back through the same notch out of which it escaped for the release of the ball and coming to rest against the opposite flange for holding the stop-finger to catch the ball on its return and hold it another period of time, and release it for the reverse movement of the ball by escaping the reverse way through said opposite flange when its notch comes to the arm. Thus it will be seen that I provide a stop and trip device for the disk-power controlled by the clock without subjecting the clock to such amount of friction as will have any appreciable effect of interference with the time-keeping qualities of it, the only friction being what is due to the pressure of the arm 16 against the side of a flange of the crown-wheel by the pressure of the ball against the stop-finger, said crown-wheel being turned by the minute-hand shaft of the clock.

The radius of the crown-wheel may be reduced if the notches be placed closer together, or its speed may be reduced, say, one-half, if the notches be doubled, both of which modifications would still further diminish the friction. If it is preferred to have the stamp shift at intervals of one minute, the notches in the crown-wheel will be doubled. As it is not practicable in this arrangement of the clock in the back of the case to utilize the dial 24 and the hands 25 and 26 in their usual relation to the clock, as at the axis 20, because they would be at the back of the case, where they would not be available to the user of the machine at the front, I arrange them with the power device instead of the clock, and in the corresponding axis *m* thereof, where they have substantially the same functions, except that the hands shift synchronously with the periodical movements of the stamp-disks instead of moving continuously with the clock.

I claim as my invention—

1. In a time-stamp, the combination, with the rotating type-disks, of the spring-power driver connected therewith for moving the said disks, stop and releasing mechanism connected with said spring-power driver and controlling the movements of the same periodically, and a clock connected with and controlling the movements of the stop and releasing mechanism, said spring-power driver and clock being independent power mechanisms, substantially as described.

2. The combination, in a time-stamp, of the spring-power stamp-disk driver, the periodically releasing and stopping device for said driver consisting of the vibratory tube and stop catches, and the clock and gravity ball device controlling said releasing and stopping device, substantially as described.

3. The combination, in a time-stamp, of the spring-power stamp-disk driver, and the periodically releasing and stopping device consisting of the vibratory tube connected with the said driving power, so as to be vibrated

thereby, the spring-catches for engaging the ends of said tube alternately, the gravitating ball for detaching said catches, the retaining and tripping device for the ball, and the clock controlling said retaining and tripping device, substantially as described.

4. The combination, in a time-stamp, of the spring-power stamp-disk driver, the periodically releasing and stopping device consisting of the vibratory tube connected with the said driving power, so as to be vibrated thereby, the spring-catches for engaging the ends of said tube alternately, the gravitating ball for detaching said catches, the retaining and tripping device for the ball consisting of the clock, the duplex crown-wheel escapement of the clock-train, and the stop-finger entering the slot of the tube and having an arm subject to the control of the crown-wheel, substantially as described.

5. The combination, in a time-stamp, of the spring-power stamp-disk driver, the vibratory tube connected with the spring-power, so as to be vibrated thereby, the clock, the crown-wheel escapement connected with the clock, the gravitating ball in the tube, and the retaining-finger and releasing-arm thereof in the arrangement of the vibrating tube on the side of the spring-power frame, and the escapement on the side of the clock-frame and intermediate of the two frames, substantially as described.

6. In a time-stamp, the combination of the intermittently-operating clock-power stamp-disk driver having the usual time-hand shafts, the stop and releasing mechanism controlling the movements of said driver, the

clock controlling said stop and releasing mechanism, the time-indicating hands connected with the said hand-carrying shafts of the stamp-disk-driving power, and the dial, said spring-power driver and clock being independent power mechanism suitably arranged therewith, substantially as described.

7. The combination, with the primary type-disk in a time-stamp and the actuating-pawl therefor, of the intermittently-moving spring-power driver, the cam-disk in said driver having a cam projection effecting one throw of the pawl-lever to each movement of the spring-power, and the vibratory stopping and releasing tube and spring-catches, said tube connected with said spring-power and having intermittent motion synchronously with the cam-disk, substantially as described.

8. In a time-stamp having the minute, hour, and meridian disks all independently mounted on one shaft side by side, with the minute-disk in the middle position, the combination, with said hour and meridian disks, of a pawl-lever having a separate pawl for each of said disks, said meridian-disk having its type-characters repeated correspondingly with the characters of the hour-disk, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 14th day of June, 1890.

FREDERICK H. SYMONDS.

Witnesses:

W. J. MORGAN,
W. B. EARL.