

No. 629,580.

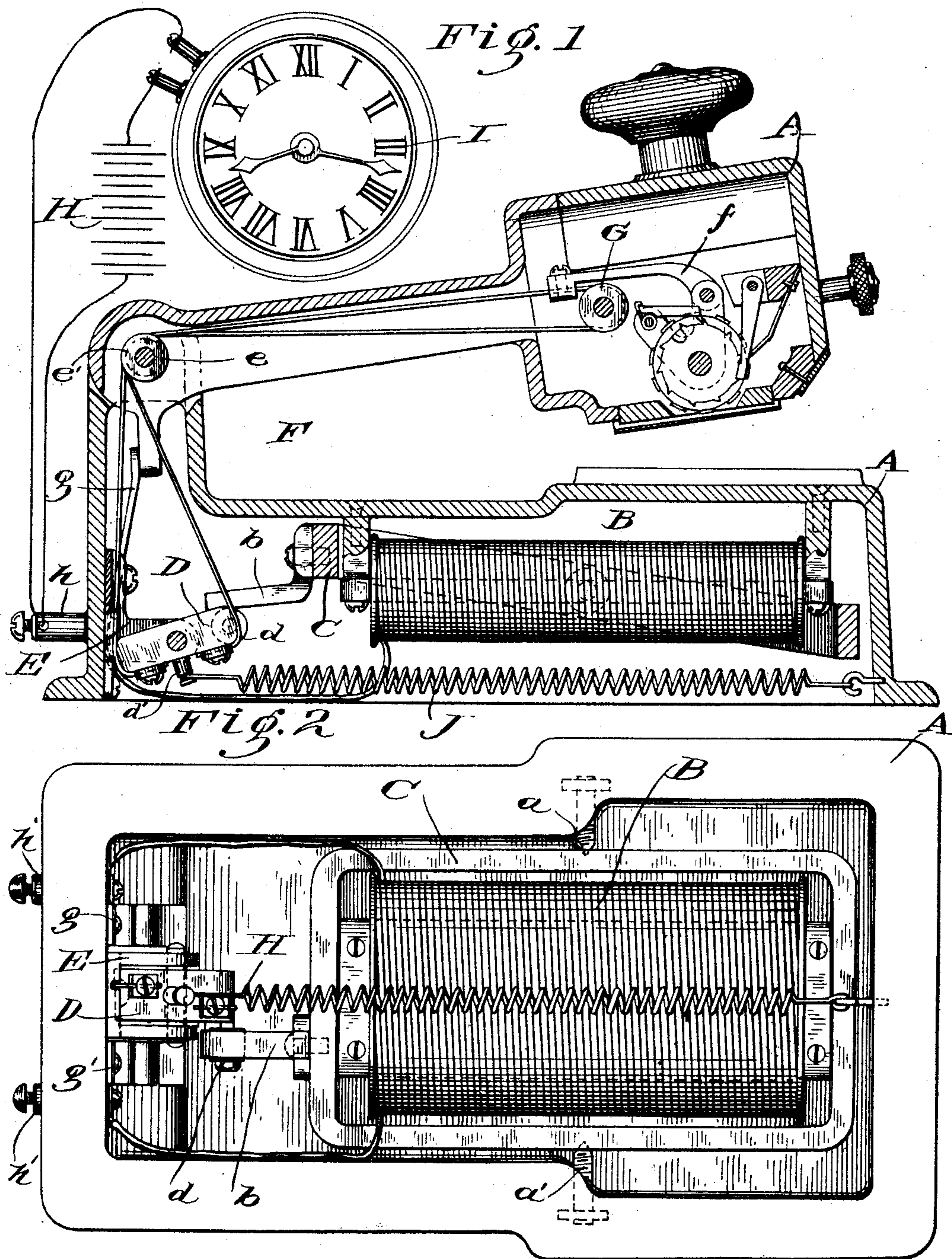
Patented July 25, 1899.

E. R. MALMBORG.

TIME STAMP.

(Application filed Jan. 20, 1899.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

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## TIME-STAMP.

SPECIFICATION forming part of Letters Patent No. 629,580, dated July 25, 1899.

Application filed January 20, 1899. Serial No. 702,865. (No model.)

*To all whom it may concern:*

Be it known that I, ERNST R. MALMBORG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Time-Stamp, of which the following is a specification.

This invention relates to that class of time-stamps in which the impression is made on the upper side of the paper, and is of the particular type in which the time printing or indicator mechanism is mounted on the end of a swinging arm and is automatically changed by means of time mechanism external to the printing-head.

My improvement consists in part in the means employed for transmitting time impulses from the time mechanism to the printing mechanism. Heretofore a longitudinally-movable rod connecting the time mechanism with the printing or indicator mechanism has been employed for transmitting time impulses and automatically changing said indicator mechanism, said rod being mounted on the long end of a rocking lever, to the opposite end of which is attached, near its fulcrum, the armature of an electromagnet, as shown in Letters Patent No. 434,396, granted to Joseph D. Mallonee, dated August 12, 1890. In the construction just described the impetus given the longitudinally-moving rod has a tendency to cause a certain amount of backlash, and consequently to cause the momentum to carry the indicator-wheels too far, which I avoid in the improvement that I will now proceed to describe.

Referring to the accompanying drawings, Figure 1 is a vertical longitudinal section. Fig. 2 is a view from the bottom.

Similar letters of reference designate corresponding parts in each of the figures.

The time printing or indicator mechanism is the same as that described in Letters Patent No. 434,396, heretofore referred to, and need not therefore be further described.

Referring to the drawings, A is a casing or frame composed of a box-shaped base on which is hinged a swinging arm, the outer end of which arm is enlarged and suitably adapted to contain the time-printing mechanism.

In the box-shaped base of the case A is mounted an electromagnet B, which in the example shown consists of a single coil wound on a flat core. The magnet B is provided with an armature C, mounted parallel with the magnet and pivoted on each side thereof on the frame A at *a a'* and is therefore within the attraction of the magnetic field at each end of the magnet. To the armature C is rigidly attached a short lever *b*, the opposite end of which rests on a small roller *d*, carried by a rocking arm D. The rocking arm D is pivoted at its center on a small bracket E, which bracket is rigidly attached to the frame A. To each end of the rocking arm D is attached the ends of a flexible band F, which band may be of any suitable material, such as catgut, silk, or metal. The band F passes over small pulleys *e e'*, journaled on the shaft of the hinge in the frame A, and is looped over a small pulley G in the head of the swinging arm of said frame. The pulley G is journaled on a shaft having its support at each end in the frame A. Band F is connected with the actuating mechanism of the printing-wheels by the link *f*. The rocking arm D is provided with a stud *d'*, to which is connected a spring J. The arm of the frame A is held up by flat springs *g g'*. The magnet B is provided with binding-posts *h h'*. The binding-posts *h h'* are connected by a wire conductor with the time-train I, in circuit with a battery H.

The operation of the above-described mechanism is as follows: When the time-train closes the electric circuit, the magnet B attracts its armature, drawing its ends to the center of the magnetic field, thereby depressing the lever *b*, which carries down the end of the rocking arm D on which it rests, thereby moving the band F, which causes the actuating-pawl of the indicator mechanism to retract and engage another tooth of its ratchet. As soon as the electric circuit is broken the spring J causes the arm D to resume its normal position, carrying with it the armature C and causing the indicator mechanism to move forward one step. Impressions are taken by placing the paper to be imprinted on the platen under the printing-head and depressing the arm of the frame A.

The time mechanism shown in the present

example is electric; but I do not confine myself to any specific mechanism for producing the time impulses. It is obvious that this may be accomplished by direct connection  
 5 with a time-train. It is also evident that a single band might be used instead of the loop or belt shown by placing a retracting-spring in the printing-head. I consider the construction here shown to be preferable, but  
 10 do not confine myself to this construction.

It will be seen that the use of a band for transmitting the time impulses will not cause the backlash or excessive momentum met with in ordinary constructions; but the motion im-  
 15 parted to the printing-wheels can be adjusted to the exact point at which it is desired to have them stop. It will also be seen that the arm of the frame A may be elevated to a point where the face of the type on the printing-  
 20 wheels can be readily seen for the purpose of setting or adjusting them without the danger of bending any levers or disturbing the mechanism, as in other constructions.

Having fully described my invention, what  
 25 I claim is—

1. In a time-stamp, the combination with the prime motor comprising time mechanism, and time-indicator mechanism, of a flexible band connected with the prime motor and  
 30 with the indicator mechanism, said indicator mechanism being operated through the movement of said band, whereby the overmovement or throwing action due to rigid connections between the motor and indicator mechanism is prevented.  
 35

2. In a time-stamp, the combination with the time mechanism comprising an electromagnet, and time-indicator mechanism, of a flexible band movable by the time mechanism and adapted to operate said indicator mechanism, and a movable head upon which  
 40 said time-indicator mechanism is mounted, said flexible band permitting the time-indi-

cator mechanism and its head to be moved up and down, substantially as described. 45

3. In a time-stamp, the combination with the time mechanism comprising an electromagnet of an armature for said magnet, a rocking arm actuated by said armature, a flexible band actuated by said rocking arm  
 50 and time-indicator mechanism actuated by said flexible band, said flexible band forming a non-rigid connection between said rocking arm and the time-indicator mechanism, whereby the throwing action due to momentum of  
 55 rigid connections is overcome, substantially as described.

4. In a time-stamp, the combination of time mechanism located in the base of a suitable frame, and indicator mechanism mounted on  
 60 a swinging arm hinged to said base, of a flexible band connecting said time mechanism with said indicator mechanism, the indicator mechanism being mounted upon said hinged arm and permitted to move up and down by  
 65 the flexibility of said band, substantially as described.

5. In a time-stamp, the combination with time-indicator mechanism, of time mechanism comprising an electromagnet, an arma-  
 70 ture for said magnet mounted parallel thereto and adapted to be actuated at each end of the magnet, and a flexible band connection between said armature and said time-indicator mechanism, whereby the effect of momentum  
 75 of rigid connections between said armature and said indicator mechanism is eliminated, substantially as specified.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses. 80

ERNST R. MALMBORG.

Witnesses:

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