P. J. SIMMEN.

DEVICE FOR PERFORATING PAPER.

APPLICATION FILED JUNE 27, 1913.

1,138,804. Patented May 11, 1915.

Fig. 1.

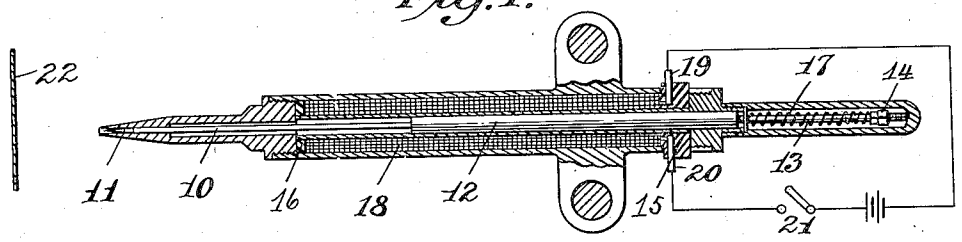


Fig. 2.

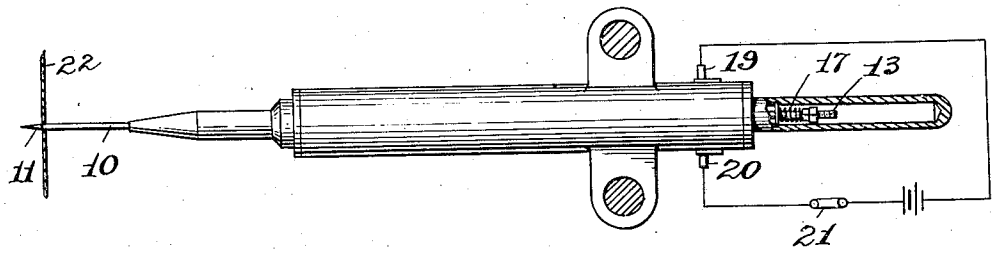
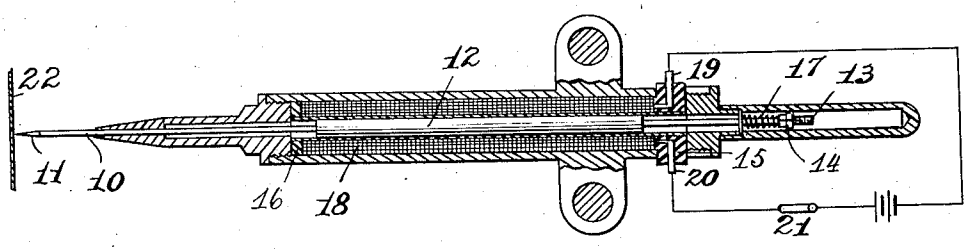


Fig. 3.



Attest:

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UNITED STATES PATENT OFFICE.

PAUL J. SIMMEN, OF INDIANAPOLIS, INDIANA.

DEVICE FOR PERFORATING PAPER.

1,138,804. Specification of Letters Patent. Patented May 11, 1915.

Application filed June 27, 1913. Serial No. 776,081.

To all whom it may concern:

Be it known that I, PAUL J. SIMMEN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Devices for Perforating Paper, of which the following is a specification.

This invention relates to record making mechanisms for train despatching and signal systems and particularly to the means employed to perforate a continuously moving record sheet at a train despatcher's office to indicate the time at which a particular vehicle was at a particular place and thereby set into operation electrical means for energizing a solenoid coil.

The details of the despatching system are not material to the present invention which relates merely to the manner of operating the perforating needle of the recording mechanism, and its novelty resides in the construction and adaptation of the parts as will be more fully hereinafter pointed out.

In general, the perforating needles are arranged in series in front of a moving sheet of paper actuated by suitable clockwork. Each needle is secured to, or made integral with, an armature arranged inside of an electric coil, which is magnetized in the usual way when the circuit is closed and the current is on.

The object of the construction is to cause the needle to move forward to perforate the record sheet and then while the current is still on to have the needle withdrawn from the paper. Such withdrawal is effected either by the tension of a spring acting against or with the magnetism of the coil. When a solenoid of the kind described is energized and becomes a magnet the armature inside is sucked to a neutral position. Any movement of the armature must thereafter be against the magnetic force tending to keep it in such position. Advantage is taken of this to produce the result that the moment the current is turned on the needle is hurled forward against the paper and perforates it, being carried by its momentum beyond the neutral point, and while the current is still on the needle is withdrawn and will not remain sticking in the paper.

In the drawings, Figure 1 represents a construction embodying the invention, the parts being shown with the current off; Fig. 2 is a similar view showing the needle in the act of perforating the paper, and Fig. 3 is a similar view showing the position to which the needle is withdrawn, with the current still on.

The views are all diagrammatic in character and constructional details are omitted in order to clarify the description.

In the drawings, 10 represents a needle of which 11 is the point, 12 is an armature to which the needle is secured or with which it is made integral.

13 is a shank terminating in a cross arm 14 constituting a stop. The armature is adapted to be reciprocated between two bearings 15 and 16, which serve as guides to direct the course of the needle. A spring 17 is coiled around the shank, 13, and impinges against the bearing 16 and arm 14. Surrounding the armature 12 is an electric coil 18 having terminals 19 and 20 and with a switch 21 in circuit therewith.

22 represents a record sheet which is adapted to be moved by clockwork or other suitable mechanism a proper distance in front of the needle.

When the current is off and the switch 21 is open the armature and needle are in the positions shown in Fig. 1. When the current is turned on, the tendency of the magnetic force in the coil is to move the armature to a neutral position (as shown in Fig. 3), but after the armature moves it acquires a momentum and moves beyond this neutral position and carries the needle to a point where it will perforate the paper, but as the current continues the armature is sucked back to such neutral position, being assisted in so doing by the spring 17.

What I claim is:

1. In apparatus of the character set forth, the combination with a solenoid coil, of means for supplying current to the coil continuously for a material period of time, a marking implement, and means actuated by the energization of the coil to cause the marking implement to operate on a record sheet and be withdrawn therefrom while the coil is still energized.

2. In apparatus of the character set forth, the combination with a solenoid coil, of means for supplying current to the coil continuously for a material period of time, a marking implement, and an armature carrying the marking implement and actuated by the energization of the coil to cause the marking implement to operate on a record

sheet, said marking implement being automatically withdrawn from such sheet while the coil is still energized, and said current supplying means being independent of the armature.

3. In apparatus of the character set forth, the combination with a solenoid coil, of means for supplying current to the coil continuously for a material period of time, a marking implement, and an armature carrying the marking implement and actuated by the energization of the coil to cause the marking implement to operate on the record sheet, said armature and implement being sufficiently heavy to cause the armature to be carried past the neutral position and the implement to operate on a record sheet and then be withdrawn therefrom while the coil is still energized.

4. In apparatus of the character set forth, the combination with a solenoid coil, of means for supplying current to the coil continuously for a material period of time, a marking implement, an armature carrying the marking implement and actuated by the energization of the coil, and means for holding the armature at one side of the neutral position of the same when the coil is deenergized, said armature when actuated by the energization of the coil being sufficiently heavy to cause it to be carried by its momentum past the neutral position, to thereby cause the marking implement to operate on a record sheet, the armature then returning to the neutral position and withdrawing the implement from the record sheet while the coil is still energized, said current supplying means being independent of the armature.

5. In apparatus of the character set forth, the combination with a solenoid coil, of means for supplying current to the coil continuously for a material period of time, a marking implement, an armature carrying the marking implement and actuated by the energization of the coil, and a spring for holding the armature at one side of the neutral position of the same when the coil is deenergized, said armature when actuated by the energization of the coil being sufficiently heavy to cause it to be carried by its momentum past the neutral position, to thereby cause the marking implement to operate on a record sheet, the armature then returning to the neutral position and withdrawing the implement from the record sheet while the coil is still energized.

6. In apparatus of the character set forth, a solenoid coil adapted to be located adjacent to a record sheet, means for energizing the coil for a material period of time, an armature operating in the coil, a marking implement carried by the armature and movable therewith into and out of contact with such record sheet, means for normally holding the armature at one side of its neutral position in the coil with the marking implement out of contact with the record sheet, said means permitting the movement of the armature by the coil, and said armature being of sufficient weight to cause it when so actuated to pass the neutral position and carry the marking implement into contact with the record sheet and then return to withdraw the marking implement from the record sheet while the solenoid coil is still energized.

7. A marking mechanism adapted to operate on a record sheet, said marking mechanism comprising a solenoid coil, an armature actuated thereby, a marking element operated by the armature and movable into and out of contact with such record sheet, and means for continuously energizing the coil for a length of time sufficient to cause the armature to be moved to a maximum limit and be returned to a neutral position, the marking element being adapted to be placed at such a distance from the record sheet that the said element will contact with the sheet when the armature is at its said maximum limit and will be withdrawn from said contact while the coil is still energized.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL J. SIMMEN.

Witnesses:
LINDEN GROMER,
KATHERINE I. SMITH.