

(No Model.)

J. BURY.

SPRING WINDING MEANS FOR PRINTING TELEGRAPH INSTRUMENTS.

No. 535,810.

Patented Mar. 19, 1895.

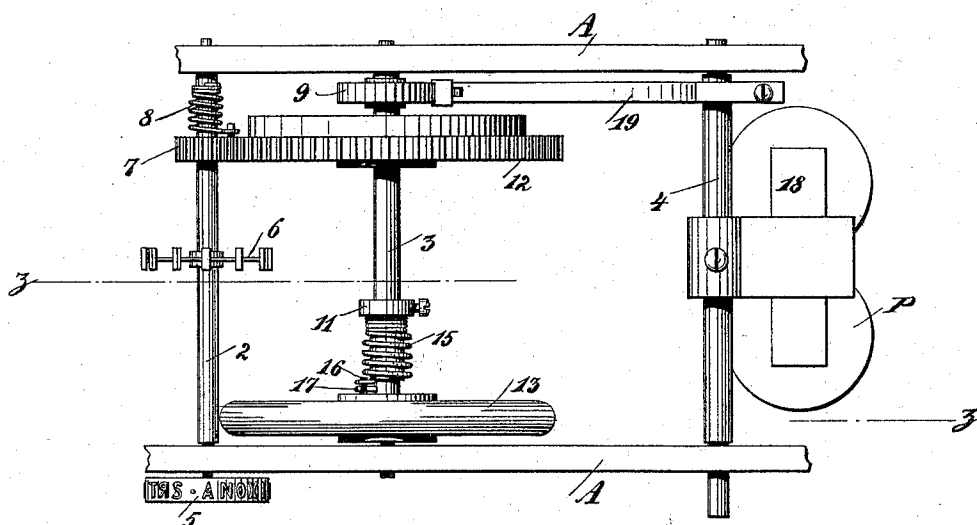


Fig:1.

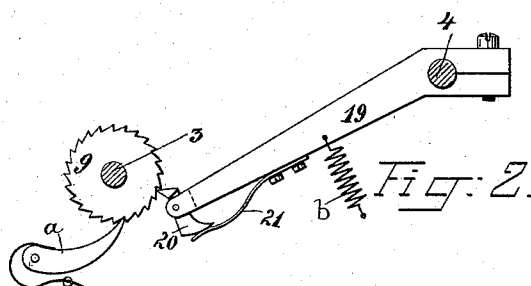


Fig. 2.

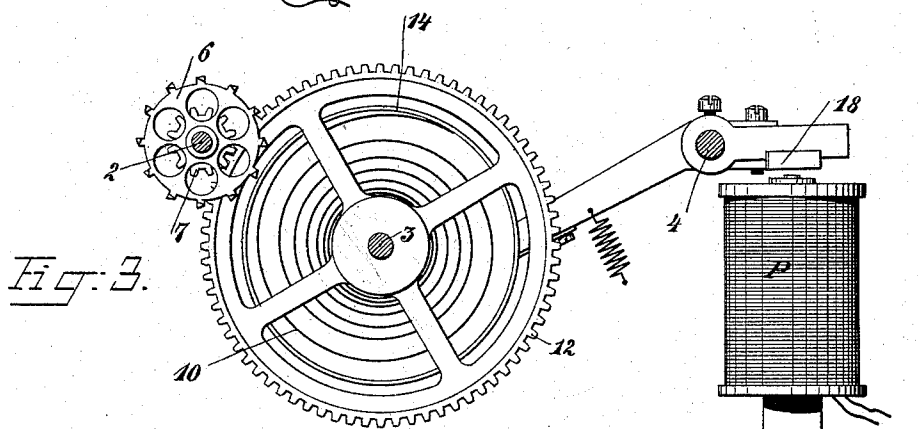


Fig. 3.

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UNITED STATES PATENT OFFICE.

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SPRING-WINDING MEANS FOR PRINTING-TELEGRAPH INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 535,810, dated March 19, 1895.

Application filed May 12, 1894. Serial No. 510,965. (No model.)

To all whom it may concern:

Be it known that I, JOHN BURRY, a citizen of the United States, and a resident of Long Island City, in the county of Queens and State of New York, have invented certain new and useful Spring-Winding Means for Printing-Telegraph Instruments, of which the following is a specification:

This invention relates more particularly to that class of power-driven instruments known as receivers or tickers in printing telegraphy. Ordinarily, these are driven by weights or springs which are wound by hand from time to time, an expensive and bothersome matter, as the tickers are ordinarily scattered through a city. Attempts have been made with more or less success to wind these weights or springs automatically. Electro-motors with reciprocating or rotating armatures have been proposed or used in some cases. Notwithstanding all this, weights are commonly used at present to drive these instruments. As ordinarily constructed, a ticker includes quick acting escapement-operating electro-magnets, and sluggish "printing" electro-magnets, and it has been proposed to use the latter to wind the main-spring; but as the time intervals between "printing impulses" are subject to great variations in practice, (though they may and do, when long intervals are considered, bear a substantially fixed relation to the number of impulses for operating the escapement magnets,) it sometimes happens that the main-spring runs down or becomes so weakened that the type-wheel is not properly driven thereby or the spring may be overwound. It has also been found that there is not flexibility enough in the spring-driven mechanism of this class of machines. Various attempts have been made with more or less success to overcome the difficulties inherent in the use of the current to do the additional work of weight- or spring-winding.

The object of this invention is to use the current in winding the main-spring or weight in an economical and efficient manner.

To this end, the invention includes the combination with the escapement, such as that controlling the type-carrier, of an automatically wound main-spring, and connections between them provided with a yielding or

resilient member. It also includes a friction device between the main-spring and escapement so that the strain on the latter will have a maximum. It also includes a device for storing and restoring the surplus energy of an automatic spring-winding mechanism which acts intermittently or at intervals; and various combinations of devices, all as herein-after described and more particularly pointed out in the claims concluding this specification.

The preferred form of the invention is shown in the accompanying drawings, forming part hereof, wherein—

Figure 1 is a plan view of said form of the invention showing a type-wheel, an escapement wheel, gearing and springs for driving said parts, a fly-wheel connected with the main-spring, and electro-magnetically operated spring-winding means. Fig. 2 is a side view of the lever, pawl, and ratchet for turning the shaft of the main-spring, and Fig. 3 is a sectional side elevation, on line *z-z* of Fig. 1, showing the escapement-wheel, the main-spring gearing, printing-magnets, and lever.

The reference A indicates the side frames of a ticker, in which are journaled the shafts 2, 3, and 4. On the shaft 2 are the type-wheel 5, the escapement-wheel 6, and the loose gear 7, which is connected to the shaft by means of the spring 8, coiled about the shaft and fast thereto and to the gear. The ratchet-wheel 9, main-spring 10, and sleeve 11 are fast on shaft 3, while the gear 12 and fly-wheel 13 are loose thereon. The main-spring 10 is not fast to the gear 12, but its outer convolution rests against the rim of drum 14. The spring 15 is fast to the sleeve 11 and to the hook or pin 16 in the side of the fly-wheel 13. A pin 17 in shaft 3 coacts with pin 16 whereby the forward motion of the wheel turns shaft 3 and winds the spring 10. The sleeve 11 is adjustable on the shaft so that the tension of spring 15 may be adjusted. The armature 18 of the printing-magnets P is carried by the shaft 4, which also has a lever 19 fast thereto. A suitable pawl 20 is pivoted in the forked end of the lever and is held in working position by a spring 21 which is fast at one end to the lever. A suitable

detent *a* may be used to prevent back motion of the wheel 9. A spring *b* may return lever 19 to its lower position.

The operation of the described parts is as follows:—Whenever a prolonged or printing impulse is sent over the line, the magnet *P* attracts armature 18 to itself, thereby raising the free end of lever 19, and causing pawl 20 to actuate the ratchet-wheel 9, shaft 3 and fly-wheel 13. The pawl 20 moves wheel 9 forward a tooth or so and winds the spring 10 to that extent. The turning of shaft 3 winds the spring 15 also, the wheel 13 not moving owing to its inertia. As soon as the pull of spring 15 overcomes the inertia of wheel 13, the latter moves forward as or after pawl 20 ceases to act. Pin 16 strikes the pin 17. The momentum of wheel 13 turns shaft 3 and still further winds spring 10. This construction avoids undue shocks and strains in the instrument. Of course, if the "printing impulses" are unusually frequent, there may be an overwinding of the spring 10 by the pawl 20, in which case the outer end of spring 10 slips along the inner face of drum 14, this construction being equivalent to a friction clutch, and answers very well in the case illustrated. The spring 10 acts through gears 12 and 7 and spring 8 to turn shaft 2 and wheel 6. In case the spring 10 is wound faster than its force is expended in turning the type-wheel, the spring 8 is wound to a greater or less extent, (it is normally under tension) thus distributing the stored power. In case the main-spring 10 slips in its box, the spring 8 drives the type-wheel. Thus, the described construction renders the whole instrument fully flexible or capable of meeting the various and varying conditions of its work.

The electro-magnets and pallets for controlling the escapement-wheel 6 are not shown, nor are any of the usual details of instruments of this class shown, since these form no specific part of the present invention. However, this invention is not limited to the precise details nor to the arrangement thereof shown, nor to this particular class of instruments, for many changes in details and arrangement may be made without departing from the spirit thereof. For instance, the work to be done by the main-spring may be comparatively heavy, so heavy in fact, that the friction between its outer convolution and the drum would not be sufficient. In such case, a suitable friction clutch could be used to attain the same end. Also, the spring 10 may be wound by a magnet other than the "printing magnet," with which it may be connected in series or in multiple; or the separate magnet may be on an independent circuit, or a local circuit. Also, a friction-feed may replace the pawl-and-ratchet-mechanism shown.

Having thus fully described my invention, what I claim as new, and desire Letters Patent for, is—

1. In a printing-telegraph or other machine, the combination with the escapement, of an

automatically wound main-spring, and gearing containing a spring connecting the main-spring and escapement and operating the escapement wheel, substantially as described. 70

2. In a printing-telegraph or other machine, the combination with the escapement, of an automatically wound main-spring, a main gear to which it is connected, a second gear in mesh with the main gear and loose on its shaft, and a spring connecting it with said shaft, substantially as described. 75

3. In a printing-telegraph or other machine, the combination with the escapement, of an automatically wound main-spring loose in its box, and gearing having a resilient member between said spring and said escapement, substantially as described. 80

4. In a printing-telegraph or other machine, the combination with the escapement, of an automatically wound main-spring, loose in its box, a gear to which the box is connected, and gearing containing a second spring connecting said gear and said escapement, substantially as described. 90

5. In a printing-telegraph or other machine, the combination with the escapement, of an automatically wound main-spring loose in its box, a main gear to which the box is connected, a second gear in mesh with said gear and loose upon its shaft, and a spring connecting said second gear and shaft, substantially as described. 95

6. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, an intermittently acting automatic spring-winding mechanism therefor, and a momentum-device for continuing the spring-winding, substantially as described. 105

7. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, an intermittently acting automatic spring-winding mechanism, a momentum-device for continuing the spring-winding, and a spring connecting said device with said mechanism, substantially as described. 110

8. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, a shaft to which it is fast, means acting intermittently on said shaft to wind said spring, and a momentum-device connected to said shaft for continuing the motion thereof to further wind said spring, substantially as described. 120

9. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, a shaft to which it is fast, means acting intermittently on said shaft to wind said spring, a momentum-device loose on said shaft, and a spring connecting said shaft to said device, substantially as described. 125

10. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, a shaft to which it is fast, means acting intermittently on said shaft to wind said spring, a momentum-device loose on said shaft, a spring connecting said shaft and said device, means for adjusting the ten-

sion of said spring, and means for preventing forward motion of said device relatively to the shaft and unwinding of the spring beyond certain limits, substantially as described.

5 11. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, means for automatically winding it at intervals, connections having a resilient member between said spring and escapement, and a momentum-device for continuing the spring winding, substantially as described.

12. In a printing-telegraph or other machine, the combination with the escapement, 15 of a main-spring, means for automatically winding it at intervals, gearing containing a spring connecting said main-spring with and operating the escapement wheel, and a momentum-device for continuing the spring winding, substantially as described.

13. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, means for automatically winding it at intervals, a main gear connected 25 to said spring, a second gear driven by said main gear and loose on its shaft, a spring connecting it with its shaft, and a momentum-device for continuing the spring-winding, substantially as described.

14. In a printing-telegraph or other instrument, the combination with the escapement, of a main-spring, means for automatically winding it at intervals, gearing frictionally connected with said spring and connecting it 35 with said escapement, and a momentum-device for continuing the spring-winding, substantially as described.

15. In a printing-telegraph or other instrument, the combination with the escapement, 40 of a main spring, means for automatically winding it at intervals, a main gear frictionally connected to said spring, connections containing a spring between said gear and said escapement, and a momentum-device for continuing the main-spring-winding, substantially as described.

16. In a printing-telegraph or other machine, the combination with the escapement, of a main-spring, means for automatically winding it at intervals, a main gear frictionally connected to said spring, a second gear 50 driven by said main gear and loose on its shaft, a spring connecting said second gear and its shaft, and a momentum-device for continuing the winding of the main-spring, substantially as described.

17. In a printing-telegraph or other machine, the combination with the escapement, a main-spring, a shaft to which it is fast, 60 means automatically turning said shaft at

intervals to wind said spring, a momentum-device loose on said shaft, a spring connecting it therewith for continuing the winding of said spring, and gearing containing a spring connecting said main-spring and escapement, 65 substantially as described.

18. In a printing-telegraph or other instrument, the combination with the escapement, of a main-spring, a shaft to which it is fast, means automatically turning said shaft at intervals to wind said spring, a momentum-device loose on said shaft, a spring connecting it therewith for continuing the winding of said main-spring, means for limiting the forward motion of said device and unwinding of said connecting spring, and gearing containing a spring connecting said main-spring and escapement, substantially as described.

19. In a printing-telegraph or other machine, the combination with the escapement, 80 of a main-spring, a shaft to which it is fast, means automatically turning said shaft at intervals to wind said spring, a momentum-device loose on said shaft, a spring connecting it therewith for continuing the winding of said spring, and gearing frictionally connected with said main-spring and connecting it with said escapement, substantially as described.

20. In a printing-telegraph or other machine, the combination with the escapement, 90 of a main-spring, a shaft to which it is fast, means automatically turning said shaft at intervals to wind said spring, a momentum-device loose on said shaft, a spring connecting it therewith for continuing the winding of said spring, means for limiting the forward motion of said device and unwinding of said connecting spring, and gearing frictionally connected with said main-spring and connecting it with said escapement, substantially as described. 100

21. In a printing-telegraph or other machine, the combination with the type-controlling escapement, of a main-spring, a shaft to which it is fast, means automatically turning said shaft at intervals to wind said spring, 105 a momentum-device loose on said shaft, a spring connecting it therewith for continuing the winding of said spring, and gearing having a spring and frictionally connected with said main-spring and connecting the main-spring with said escapement, substantially as described. 110

Signed at New York, in the county of New York and State of New York, this 5th day of May, A. D. 1894.

JOHN BURRY.

Witnesses:

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