G. S. HILTZ.

TYPE CARRIAGE PROPELLING MECHANISM FOR PRINTING TELEGRAPH RECEIVERS.

APPLICATION FILED NOV. 16, 1908.

962,431. Patented June 28, 1910.

Fig. 1

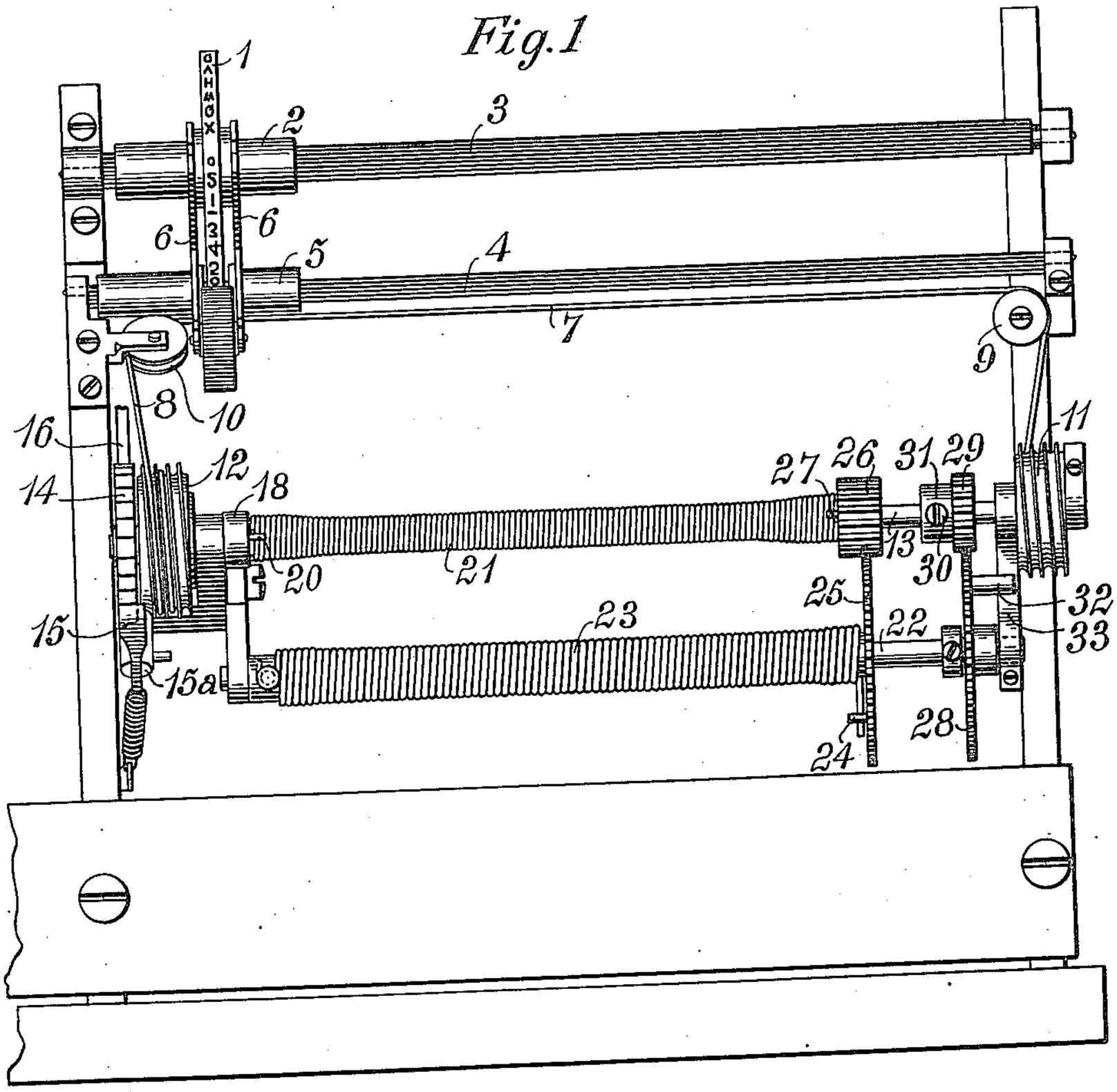
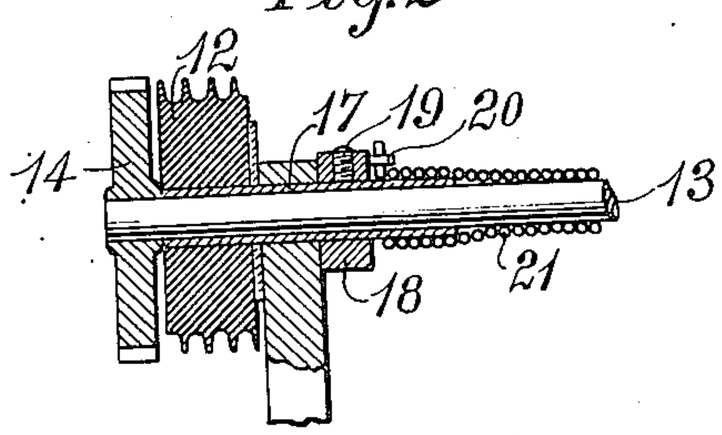


Fig. 2



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UNITED STATES PATENT OFFICE.

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TYPE-CARRIAGE-PROPELLING MECHANISM FOR PRINTING-TELEGRAPH RECEIVERS.

962,431. Specification of Letters Patent. Patented June 28, 1910.

Application filed November 16, 1908. Serial No. 462,756.

To all whom it may concern:

Be it known that I, GEORGE S. HILTZ, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Type-Carriage-Propelling Mechanism for Printing-Telegraph Receivers, of which the following is a full, clear, and exact description.

This invention relates to type-carriage propelling mechanism for printing telegraph receivers, more particularly to the devices which effect the return of the carriage from any point in its travel to its initial position for the beginning of a new line.

While the invention is adapted for use with receivers of various kinds, the present embodiment is designed with special reference to the type of instrument described in the prior patent of John Burry, No. 680,693, dated August 20, 1901. In receivers of that type, used in large numbers with marked success, the typewheel carriage is moved axially along a suitable shaft by two cords winding on a pair of drums, one cord serving to shift the carriage to effect the letter spacing and the other to retract the carriage to its initial position. The drums themselves are fixed on a shaft, which is rotated in one direction by a ratchet and pawl to advance the carriage, and in the reverse direction by a coil spring or springs to return the carriage when the ratchet is released. It is found that these cords, if made of organic material, such as linen or gut, are subject to stretching, and are also affected by the weather or condition of the atmosphere, so that the tension of the cords is altered, making the operation of the machine at times uncertain. Metallic cords, of fine woven wire, are hardly flexible enough if sufficiently heavy to possess the requisite durability, while thin flat bands of metal are too liable to become kinked or otherwise distorted. On the whole, cords composed of fibrous organic material are the most satisfactory, but, as before stated, they suffer at times from shrinkage or stretching. I have therefore been led to devise my present invention, which has for its chief object to provide simple and effective means for keeping the cords taut under all conditions.

To this and other ends the invention consists in the novel features of construction and combinations of elements hereinafter described, and more particularly pointed out in the claims.

Referring now to the annexed drawing, which illustrates the invention as applied to a machine of the Burry type, Figure 1 is a front view, showing the type wheel carriage in its initial position. Fig. 2 is a detail sectional view, showing the construction and arrangement of the retracting drum with respect to the shaft on which it is mounted and the spring which rotates it.

The type-wheel, designated by 1, is carried by a hub or carriage 2 mounted on a triangular or knife-edge shaft 3, so as to rotate with the shaft but to be capable of axial movement thereon to effect the letter spacing; said shaft being rotated by suitable mechanism, not shown, to bring any desired character on the type-wheel to the impression point in the usual way.

Parallel with the type-wheel shaft 3 is a second triangular or knife-edge shaft 4, which, from its functional connection with the former may also be conveniently termed a type-wheel shaft, and thereon is a sliding sleeve or hub 5 having a pair of arms 6 embracing the carriage or hub 2, so that movement of the sleeve on its shaft will effect a corresponding movement of the carriage in unison with it.

Extending in opposite directions from the sleeve or carriage-shifting device 5 are two cords 7, 8, running over pulleys 9, 10 at opposite ends of the shaft 4 and winding on two drums 11, 12, which are preferably provided with helical grooves to receive the cords and insure accurate positioning thereof on the drums and hence a more uniform pull on the shifter and the carriage. The drum 11 is fixed on a spacing shaft 13, preferably parallel with the type-wheel shafts 3, 4, and having fixed to it at its opposite end a ratchet 14 engaged by a holding pawl 15, which is pivoted in an arm 15ª. At the rear of the ratchet is an actuating pawl, merely indicated at 16, the vertical reciprocation of which, by suitable mechanism not shown, rotates the ratchet and with it the shaft 13 and drum 11 in the counter-clockwise direction as viewed from the left of Fig. 1, thereby winding the cord 7 on the drum and shifting the type-wheel to the right step by step. The other drum, 12, is fast to a sleeve 17 (see Fig. 2) rotatably mounted on the

shaft 13. On the sleeve is a collar 18 capable of rotary adjustment but held in adjusted position by a set screw 19, and provided with an axially extending pin or stop 20. Surrounding the spacing shaft 13 is a coil spring 21, exerting its tension in the clockwise direction as viewed from the left, and having its end bearing on the stop or pin 20. It will now be seen that if the other end of the spring be held against rotation or is allowed to have only a limited rotary movement, the spring will on release of the ratchet 14 by the associated pawls quickly revolve the sleeve 17 and drum 12 in the clockwise direction, thereby winding the cord 8 on the said drum and retracting the type-wheel to the left of its line of travel; it being understood of course that the spacing shaft 13, with the advancing drum 11, is free to rotate as the latter drum is turned by the winding of cord 7. It will also be apparent that in all positions of the type-wheel on its shaft 3 the tension of spring 21 is exerted on the retracting drum 12, with the result that the cord 8 is always wound on the said drum as far as permitted by the cord 7, which is prevented from unwinding from its drum 11 by the pawl 15 engaging the ratchet. In other words, both cords are kept constantly taut; shrinkage of either causing cord 8 to unwind from its drum and stretching or expansion of either permitting the cord 8 to wind a little farther on the drum. It will be further apparent that the advance or rightward movement of the type-wheel, by the counter-clockwise rotation of ratchet 14 and shaft 13, serves to tension the spring 21 and store power therein.

Any convenient and suitable means may be provided for holding the right end of spring 21 against rotation, whereby the said spring will serve to return the type-wheel to its initial position as well as to keep the traction cords taut, but I prefer to employ an additional spring to aid in the work, in fact to take the greater part thereof. For this purpose the following instrumentalities are provided. Parallel with the shaft 13 is a non-rotatable shaft or rod 22 surrounded by a strong coil spring 23 having its left end fixed to the rod and its right end bearing on a pin or stop 24 extending from a gear wheel 25 which is loosely mounted on said rod. This gear is in mesh with a pinion 26, loosely mounted on the shaft 13 and provided with a pin or stop 27 on which the right end of spring 21 bears. The spring 23 being arranged so as to exert its tension on the pinion 26 in the opposite direction to that in which the spring 21 tends to rotate the pinion, it will be seen (remembering that the said pinion is loose on its shaft) that the counter-clockwise rotation of the drum 12, produced by the unwinding of cord 8 as cord 7 is wound on drum 11, will act against the force of spring 23,—tensioning spring 21 until its tension equals that of spring 23 and thereafter tensioning both together. Upon release of the ratchet both springs relax and spring 21 also turns with the pinion 26 about the shaft 13. In this way the work of keeping the traction cords taut and returning the type-wheel is divided between the springs 21 and 22, the latter supplying most of the power required.

The disengagement of the pawls 15 and 16 from the ratchet 14, to permit the retraction of the type-wheel, is effected by suitable mechanism under the control of or actuated by the electromagnetic devices of the receiving instrument, but as such mechanism forms no part of the present invention the same need not be further described herein.

For the purpose of making the initial position of the type-wheel carriage such that when the carriage comes to rest the ratchet wheel 14 will have a tooth in close engagement with the pawl 15, the following devices are provided. On the rod or shaft 22 is a gear 28, rotatably mounted thereon and meshing with a pinion 29 fixed on the shaft 13 by one or more set screws, as 30, which extend through the hub 31 of the pinion. Extending laterally from the gear 28 is a pin 32. When the shaft 13 is rotated (clockwise as viewed from the left) to retract the type-wheel, the gear 28 will be revolved in the opposite direction until the pin 32 strikes a stop 33 arranged in its path; whereupon all the parts come to rest. With the pin 32 in this position the set screw 30 is loosened and while the pinion 29 is held by the hand the shaft 13 is turned until the ratchet and the pawl are in the desired condition of engagement, after which the pinion 29 is again clamped tightly on the shaft by the set screw. Thereafter the parts will all be arrested in the position determined by the adjustment just described, whenever the pin 32 strikes its stop.

From the foregoing it will be seen that my invention provides simple means for obviating the difficulties ordinarily incident to the use of cords for shifting the type-wheel and for accurately locating the type-wheel and the actuating ratchet in their initial position. Practical use of the invention on instruments of the type referred to has demonstrated its effectiveness.

The construction herein specifically described is of course merely the preferred form, and may be modified in various ways without departure from the proper scope of the invention as defined by the appended claims.

What I claim is:

1. In a printing telegraph receiver, the combination with a type-wheel movable axially to effect the letter spacing, and a pair of traction cords connected with said type-

wheel and extending therefrom in opposite directions to advance and retract the type-wheel in its line of travel, of a winding drum on which one of the cords is wound to advance the type-wheel, a winding drum on which the other cord is wound in the opposite direction to retract the type-wheel, said drums being independent of each other save through the said traction cords, releasable means connected with the advancing drum for actuating the same to wind up its traction cord, a spring connected with the retracting drum and constantly exerting its tension thereon, for rotating the said drum to wind up its traction cord and retract the type-wheel upon release of the means for actuating the advancing drum, releasable means associated with the retracting drum serving normally to prevent retraction of the type-wheel, and means operatively connected with one of said drums to arrest the drum and bring the type-wheel to rest when the same has been retracted to a predetermined position, as set forth.

2. In a printing telegraph receiver, the combination with an axially movable type-wheel, and a pair of traction cords connected with the type wheel and extending therefrom in opposite directions to advance and retract the type-wheel; of a winding drum on which one of said cords is wound to advance the type-wheel; a winding drum on which the other cord is wound in the opposite direction to retract the type wheel; said drums being independent of each other save through the said traction cords; a ratchet operatively connected with the advancing drum for rotating the same to wind up its traction cord; a pair of pawls engaging the ratchet; a spring connected with the retracting drum and constantly exerting its tension thereon, for rotating the said drum to wind up its traction cord when the said pawls are disengaged from the ratchet; and means operatively connected with the advancing drum to arrest the same and bring the type-wheel to rest with the ratchet in predetermined position with respect to the pawls when the type-wheel is retracted; as set forth.

3. In a printing telegraph receiver, the combination with an axially movable type-wheel, and a pair of traction cords operatively connected therewith and extending therefrom in opposite directions to advance and retract the type-wheel; of a spacing shaft; a winding drum fixed thereon, on which one of the traction cords is wound to advance the type-wheel; releasable means connected with the said spacing shaft for rotating the same and the said drum to advance the type-wheel; a winding drum rotatably mounted on the spacing shaft, on which the other traction cord is wound to retract the type-wheel; and a spring connected with the last-named drum and constantly exerting tension thereon, for rotating the said drum to wind up its traction cord and retract the type-wheel upon release of the means for rotating the spacing shaft; as set forth.

4. In a printing telegraph receiver, the combination with an axially movable type-wheel, and a pair of traction cords connected with the type-wheel and extending in opposite directions therefrom to advance and retract the type-wheel; of a spacing shaft; a winding drum fixed thereon, on which one of said cords is wound to advance the type-wheel; a ratchet fixed on the spacing shaft for rotating the same and the said drum to advance the type-wheel; a pawl engaging the ratchet; a winding drum rotatably mounted on the spacing shaft, on which the other cord is wound to retract the type-wheel; and a spring connected with the retracting drum and constantly exerting its tension thereon, for rotating the said drum to wind up its tension cord when the said pawl is disengaged from the ratchet; as set forth.

5. In a printing telegraph receiver, the combination with an axially movable type-wheel and a pair of traction cords connected therewith and extending in opposite directions therefrom to advance and retract the type-wheel; of a spacing shaft; a winding drum fixed thereon, on which one of said cords is wound to advance the type-wheel; a ratchet fixed on the spacing shaft for rotating the same and the said drum to advance the type-wheel; a pawl engaging the ratchet; a winding drum rotatably mounted on the spacing shaft, on which the outer cord is wound to retract the type-wheel; a spring connected with the retracting drum and constantly exerting its tension thereon, for rotating the said drum to wind up its traction cord when the said pawl is disengaged from the ratchet; and means operatively connected with one of the winding drums to arrest the same and bring the type-wheel to rest with the ratchet in a predetermined position with respect to the pawl, when the type-wheel is retracted; as set forth.

6. In a printing telegraph receiver, the combination with an axially movable type wheel, and a pair of traction cords connected with the type-wheel and extending in opposite directions therefrom to advance and retract the type-wheel; of a spacing shaft; a winding drum fixed thereon, on which one of said cords is wound to advance the type-wheel; a ratchet fixed on the spacing shaft for rotating the same and the said drum to advance the type-wheel; a pawl engaging the ratchet; a winding drum rotatably mounted on the spacing shaft, on which the other cord is wound to retract the type-

wheel; a spring connected with the retracting drum and constantly exerting its tension thereon, for rotating the said drum to wind up its traction cord when the said pawl is disengaged from the ratchet; a pinion rotatable with the spacing shaft; a gear in mesh with the pinion; a pin carried by the gear; and a stop in the path of said pin; as set forth.

7. In a mechanism of the kind described, the combination of a spacing-shaft, a pinion adjustably fixed thereon, a gear in mesh with the pinion, a pin carried by the gear, and a stop in the path of the pin, as set forth.

8. In a printing telegraph receiver, the combination of a spacing shaft, a winding drum rotatably mounted on said shaft and a winding drum fixed thereon, a spring encircling the spacing shaft and connected at one end with the rotatably mounted drum, a pinion rotatable on the spacing shaft and connected to the other end of the said spring, an auxiliary shaft, a gear thereon in mesh with said pinion, and a spring encircling the auxiliary shaft having one end fixed and the other connected with said gear, as set forth.

9. In a printing telegraph receiver, the combination of a spacing shaft, a winding drum rotatably mounted on said shaft and a winding drum fixed thereon, a spring encircling the spacing shaft and connected at one end with the rotatably mounted drum, a pinion rotatable on the spacing shaft and connected to the other end of the spring, an auxiliary shaft, a gear thereon in mesh with said pinion, a spring encircling the auxiliary shaft having one end fixed and the other connected with said gear, a pinion adjustably fixed on the spacing shaft, a gear mounted on the auxiliary shaft and rotatable with respect to the other gear thereon, a pin carried by the said rotatable gear, and a stop in the path of the pin, as set forth.

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

GEORGE S. HILTZ.

Witnesses:
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STURGES S. DUNHAM.