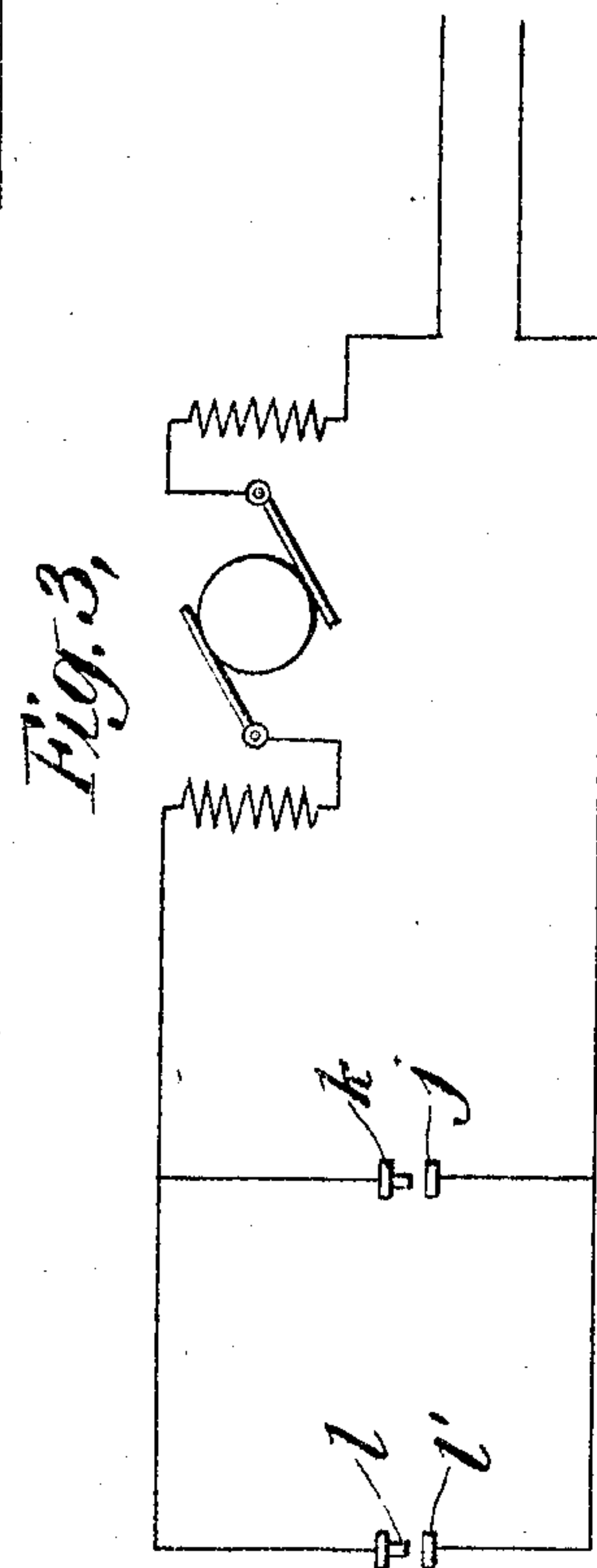
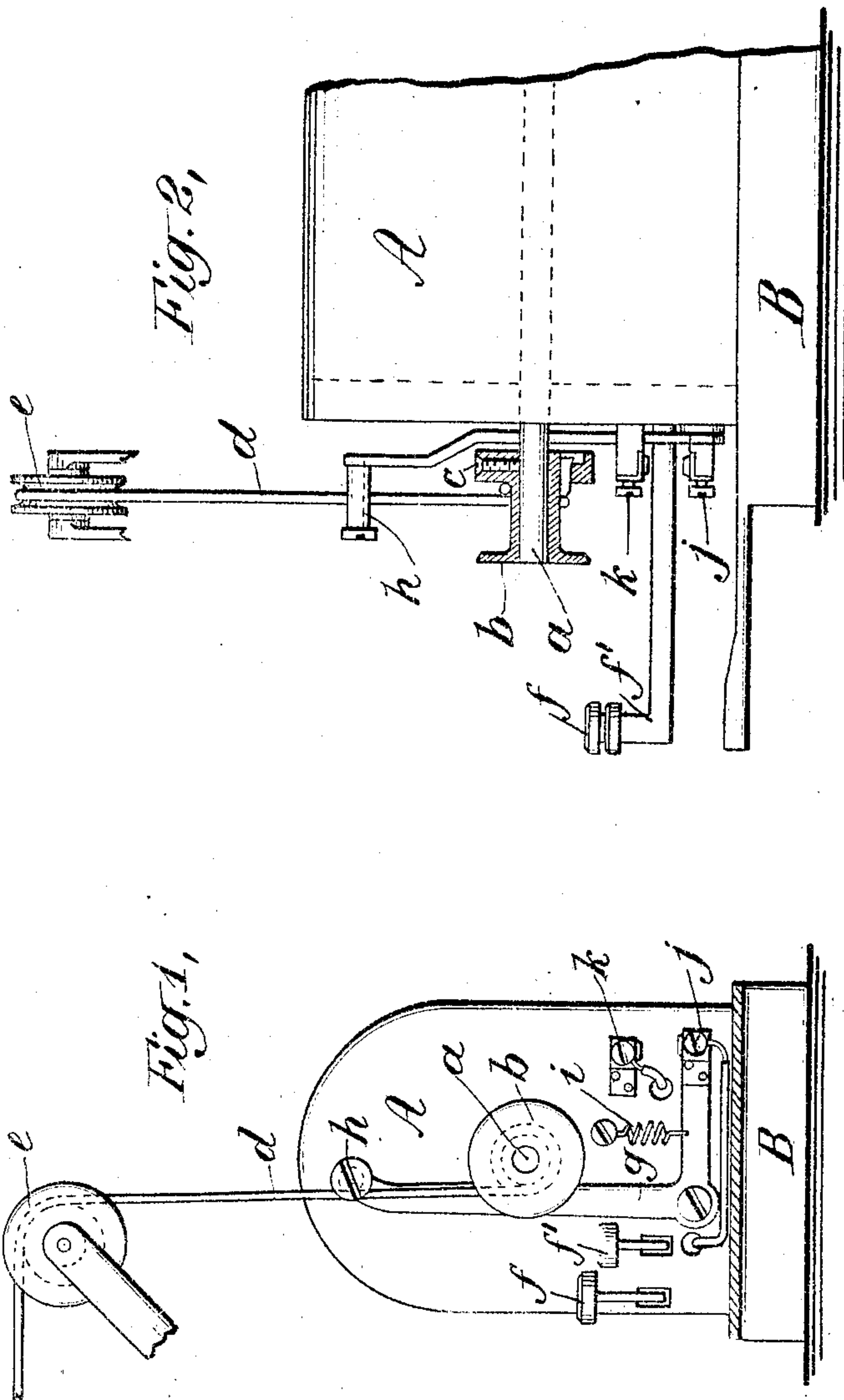


N. L. ANDERSON.
TYPE WRITER CARRIAGE RETURN MECHANISM.
APPLICATION FILED DEC. 27, 1909.

953,938.

Patented Apr. 5, 1910.



WITNESSES:

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NEAL LARKIN ANDERSON, OF WINSTON SALEM, NORTH CAROLINA.

TYPE-WRITER CARRIAGE-RETURN MECHANISM.

953,938.

Specification of Letters Patent.

Patented Apr. 5, 1910.

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To all whom it may concern:

Be it known that I, NEAL LARKIN ANDERSON, a citizen of the United States, residing at Winston Salem, in the county of Forsyth and State of North Carolina, have invented certain new and useful Improvements in Type-Writer Carriage-Return Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to typewriter carriage-return mechanism of the class in which a carriage-return cord or band is connected at one end to the typewriter carriage and at the other end to a winding drum or pulley which is turned by a suitable motor to wind the band onto the pulley and draw back the carriage. A typewriter carriage-return mechanism of this class is disclosed in my Patent No. 900,652 of October 6, 1908.

The object of the invention is to increase the smoothness and elasticity of the operation of such mechanism, by reducing to a minimum the jar incident to the stopping of the carriage and the drag on the carriage during its forward movement; and to increase the efficiency of the transmission of power from the operating motor to the carriage so that the size of the motor may be reduced, and (in case a motor capable of use on either a direct or an alternating current circuit, such as the motor of my said patent, is employed) the rearrangement of circuit connections necessary in passing from direct to alternating current may be simplified.

In the operation of such devices it is necessary to provide some means for turning the winding drum or pulley in a direction to wind up the band or cord when the carriage is returned by hand. This has heretofore been accomplished in a simple mechanical way by such a mechanism as is illustrated in my said patent, comprising a gear wheel mounted on a stub-shaft and meshing with a gear wheel on the drum and having connected to it one end of a coiled spring the other end of which is fastened to the stationary frame of the machine, so that the turning of the drum or pulley during the advance movement of the carriage puts the spring under torsion. This mechanism is used in the said patent in conjunction with a drum which is normally free from the

motor shaft but is clutched thereto for the return movement of the carriage. It is, however, as I have found in practice, preferable to connect the drum directly to the shaft of the motor and in that case the coiled spring might be connected at one end to the side of the drum and at the other end to a stationary part of the frame of the motor. I have found, however, that such a spring puts a drag on the carriage, and will interfere with the forward movement thereof, under the force of its propelling spring, which must be rather nicely adjusted in practice, unless the drum is made large so that the spring may be long and light, and even then the drag is not entirely done away with. This necessary increase in the size of the pulley is detrimental to the smooth operation of the machine because it applies the force of the motor through a longer leverage, somewhat retarding the start of the carriage and adding to the jar when the carriage is brought to rest.

By the arrangement of the present invention I am able to reduce the size of the pulley to a minimum and entirely remove the drag on the forward movement of the carriage. I accomplish this by providing normally inactive cord tightening mechanism for imparting a turning effort automatically to the pulley in a direction to wind up the cord whenever the cord becomes slack, thereby leaving the pulley entirely free to turn under the forward pull of the carriage without any drag.

In the particular embodiment of the invention which I prefer, and which is fully illustrated and described in the following specification, I employ an electrical device for thus automatically winding up the loose cord and utilize the propelling motor itself as a source of power from which the turning effort is derived.

In the drawings Figure 1 is an end elevation of the motor casing and shows the carriage return cord and a sheave on the machine over which the cord runs, together with the carriage return keys and the automatic tightening device. Fig. 2 is a side elevation of the same parts and Fig. 3 is a diagram of the circuit connections.

In the drawings A is the casing of the propelling motor mounted on a base B which forms part of, or is attached to the base of the machine. On the shaft *a* of the motor which projects through the end wall of the

casing is a pulley or drum *b* fastened to the shaft by a set screw *c* and of very small diameter. To this drum is attached one end of the carriage-return cord *d* which runs over a sheave *e* on the typewriter and has its other end fastened to the spacing lever of the typewriter carriage. The long and short line carriage-return keys *f* and *f'* control the circuit of the motor to return the carriage when either of those keys is depressed, after the manner set forth in my said patent. All of these parts are like those shown in my said patent with the exception of the pulley which is much smaller. In the drawings I have shown in conjunction with them a mechanism for closing the circuit of the motor whenever the carriage-return cord becomes slack so that the motor will be energized to tighten the cord by winding it up on the drum; the mechanism responding to the tightening of the cord so as to open and close the circuit of the motor intermittently. This mechanism may obviously be embodied in many different forms, and in the drawings I have shown a convenient one comprising a bell-crank lever *g* pivoted on the casing of the motor near the bottom thereof and carrying at the upper end of its longer arm a roller *h* which lies against the carriage-return cord *d*. Connected between the other arm of the lever and a pin fixed to the casing of the motor is a light spring *i* which tends to turn the lever arm *g* and the roller *h* against the carriage-return cord. The outer end of the short arm of the lever carries an electrical contact *j* cooperating with a fixed contact *k* on the motor casing, these contacts being connected in shunt to the contacts *l* and *l'* of the carriage-return keys so that when these contacts are closed the motor is energized (see Fig. 3).

From the foregoing description the operation will be readily understood. So long as the carriage-return cord *d* is tight it will, by engaging the roller *h*, hold the bell-crank lever in the position shown in the drawings against the action of the spring *i*, but as soon as the cord *d* is slackened, by returning the carriage by hand for example, the spring *i* will turn the bell-crank lever on its pivot until the contacts *j* and *k* touch one another to close the circuit of the motor, whereupon the shaft of the motor will turn and with it the winding drum, to wind up the cord and separate the contacts *j* and *k*; and this operation will be repeated throughout the return movement of the carriage to automatically keep the cord tight. With this arrangement it is possible to reduce the pulley to a minimum diameter and there is no drag at all on the forward movement of the carriage excepting the resistance of the armature shaft which is negligible. As a result there is no necessity for increasing the tension of the main spring of the carriage;

the starting of the carriage is facilitated, and the shock incident to the stopping of the carriage at the end of the return movement, which shock was especially manifest on the spacing lever of the carriage, is reduced. In fact, I find that with the change in the size of the pulley the power of the motor is applied to much greater advantage so that the reduction of the resistance necessary in changing from direct to alternating current is minimized and the rearrangement of the circuit connections may be correspondingly simplified.

It will be understood that the invention is not limited at all to the specific mechanical embodiment of the circuit-closing mechanism herein illustrated and described; and though it is convenient to use the propelling motor as the source of the automatic turning effort applied to the drum when the cord slacks, yet that is not essential to the invention, which may find its embodiment in a separate power mechanism actuated by the slacking of the cord and adapted to turn the drum.

What I claim is:—

1. The combination with a carriage-return mechanism having a winding pulley and a carriage-return cord attached at one end to the carriage and at the other end to the pulley, of a cord-tightening device therefor comprising power mechanism adapted when active to impart a turning effort to the pulley in a direction to wind the cord thereon, and a controller responding to the slackening of the cord to actuate said power mechanism, whereby the power mechanism remains inactive during the advance movement of the carriage; substantially as described.

2. The combination with a carriage-return mechanism having a winding pulley and a carriage-return cord attached at one end to the carriage and at the other end to the pulley, of a cord-tightening device therefor comprising electrical mechanism adapted when active to impart a turning effort to the pulley in a direction to wind the cord thereon, and a controller responding to the slackening of the cord to close the circuit of said mechanism, whereby the said electrical mechanism remains inactive during the advance movement of the carriage; substantially as described.

3. In a typewriter carriage-return mechanism, an electric motor, a pulley secured to the shaft of the motor, and a carriage-return cord attached at one end to the pulley and at the other end to the typewriter carriage, in combination with circuit-closing mechanism for the motor actuated upon the slackening of the cord, whereby the cord is automatically wound on the pulley when the carriage is returned by hand; substantially as described.

4. In a typewriter carriage-return mechanism, an electric motor, a pulley secured to the shaft of the motor, and a carriage-return cord attached at one end to the pulley
5 and at the other end to the typewriter carriage, in combination with normally inactive cord-tightening mechanism actuated, by the slacking of the cord when the carriage is re-

turned by hand, to wind the cord on the pulley; substantially as described. 10

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

NEAL LARKIN ANDERSON.

Witnesses:

THOS. P. PATTERSON,
FRED SHEETZ.