F. C. BREUCKMAN AND G. T. ARNOLD.

CARRIAGE RETURN MECHANISM FOR TYPEWRITERS.

APPLICATION FILED JULY 28, 1919.

1,342,940.

Patented June 8, 1920.

3 SHEETS—SHEET 1.

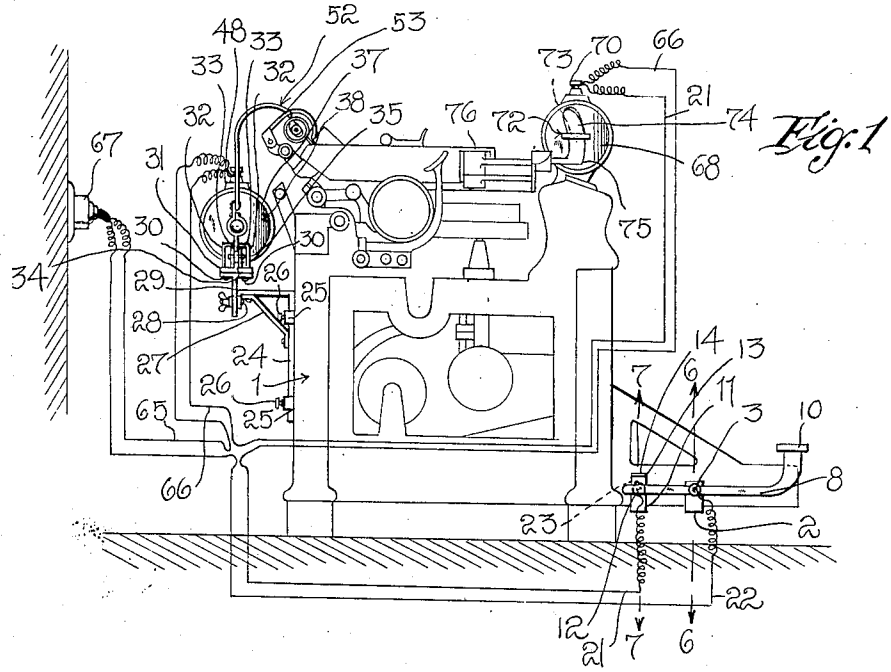


Fig. 1

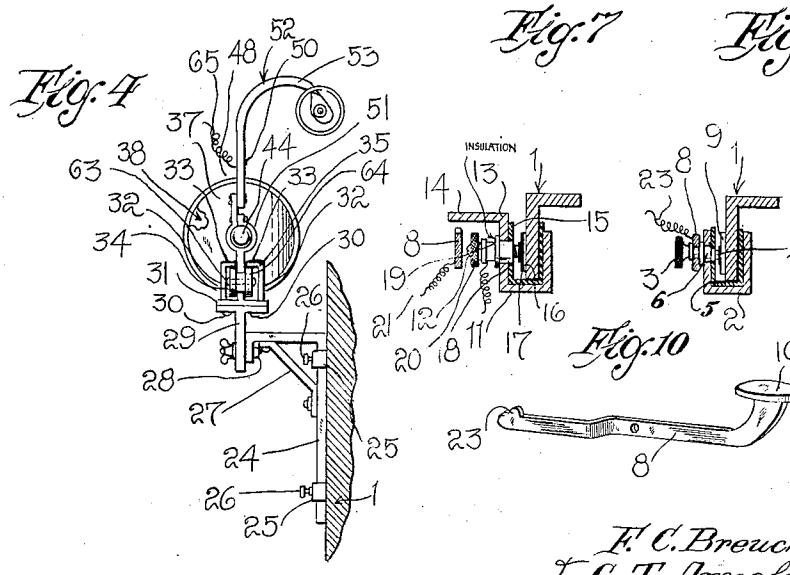


Fig. 4

Fig. 7

Fig. 6

Fig. 10

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3 SHEETS—SHEET 2.

Fig. 2

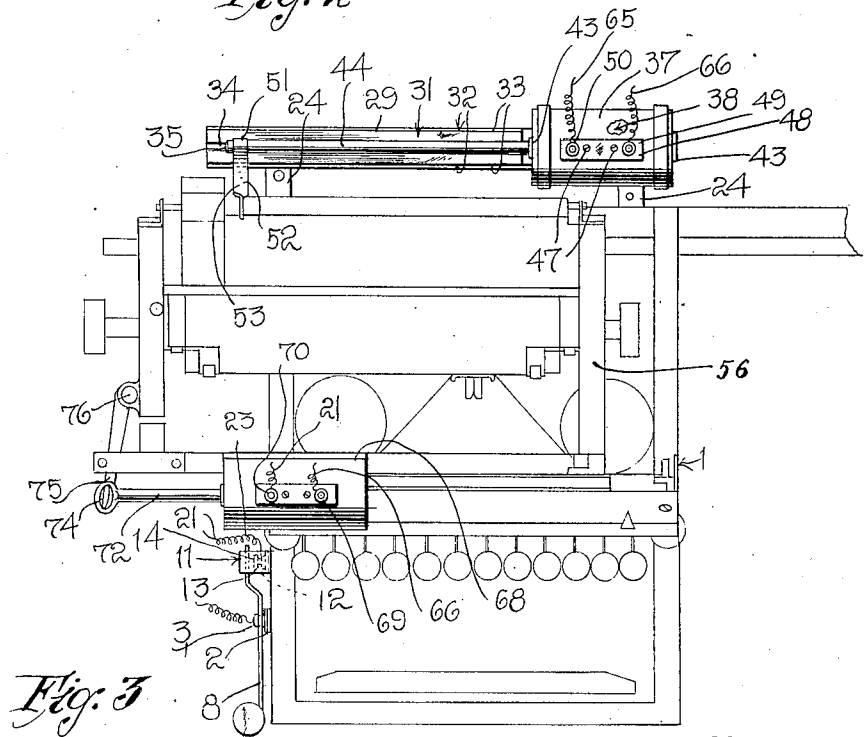
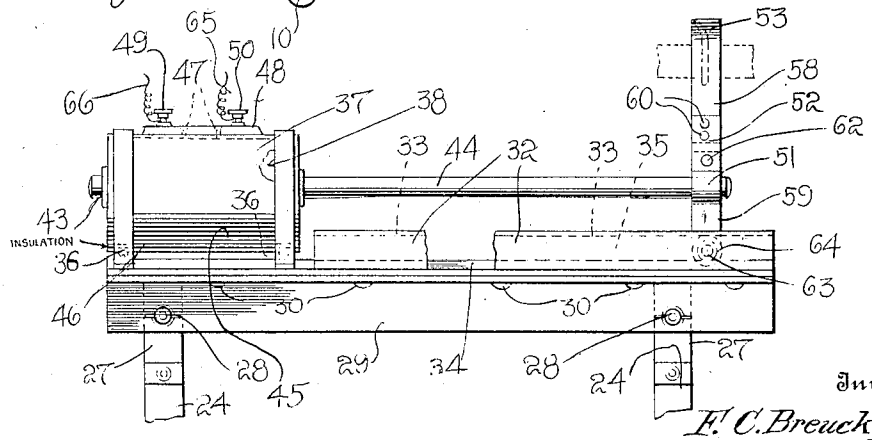


Fig. 3



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3 SHEETS—SHEET 3.

Fig. 8

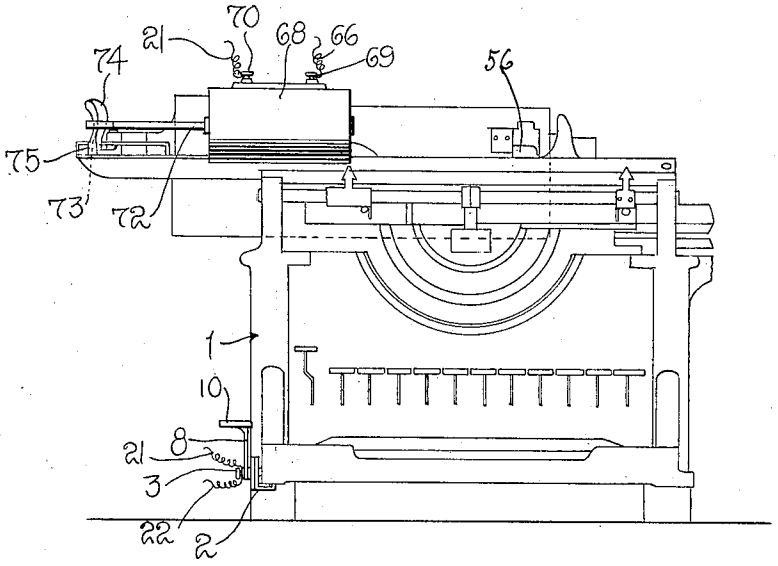


Fig. 5

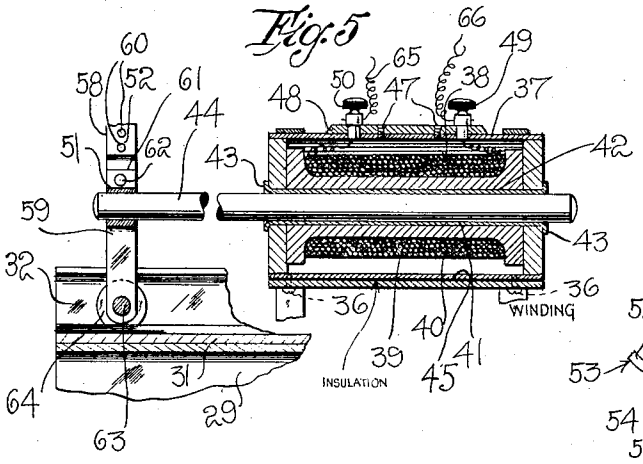


Fig. 9

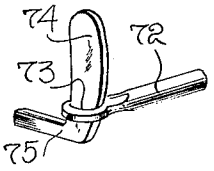


Fig. 11

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UNITED STATES PATENT OFFICE.

FRANKLIN C. BREUCKMAN AND GEORGE T. ARNOLD, OF MACKINAC ISLAND, MICHIGAN.

CARRIAGE-RETURN MECHANISM FOR TYPEWRITERS.

1,342,940. Specification of Letters Patent. Patented June 8, 1920.

Application filed July 28, 1919. Serial No. 313,923.

To all whom it may concern:

Be it known that we, FRANKLIN C. BREUCKMAN and GEORGE T. ARNOLD, citizens of the United States, residing at Mackinac Island, in the county of Mackinac and State of Michigan, have invented certain new and useful Improvements in Carriage-Return Mechanism for Typewriters, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved carriage return mechanism for typewriters including means for imparting intermittent movement to the platen roller when the carriage is returned, thereby spacing the lines.

The invention aims to provide a very simple, efficient and practical electrically operated carriage return mechanism of this kind, which may be manufactured for a relatively low cost and sold at a reasonable profit.

A further object of the invention is to provide an improved electrically operated carriage return mechanism including a key actuator for closing an electric circuit, in which a solenoid is included to be energized, by closing the circuit, for sucking a core into the solenoid, to return the carriage, subsequently to the carriage completing its movement across the machine.

A further general and most important object of the invention is the provision of a very simple and efficient construction of means for supporting and mounting the mechanism on the rear of the frame of the typewriter, in such a position that a coupling connection may be afforded between the core and the carriage, in order to facilitate the return of the carriage.

A further and also an important object of the invention is the provision of means for guiding the core, so that it may readily enter the solenoid drawn thereinto without binding, said guiding means including anti-frictional means, in order to reduce the friction to a minimum, during the transverse movement of the core, particularly when the carriage is being returned.

A further object of the invention is the provision of electrically operated means in circuit with the circuit of the carriage return mechanism, and adapted to be actuated by closing such circuit, for imparting an intermittent movement to the platen roller, for the purpose of spacing the lines when the carriage is returned.

A further object of the invention is to provide a platen roller actuating means including a solenoid having a core provided with a loose connection with the usual lever which actuates the dog which imparts an intermittent movement to the roller, thereby permitting the platen roller actuating means to be applied to all typewriter machines generally in use.

A further object of the invention is the provision of improved means for mounting the key on the frame of the typewriter, particularly in such a manner as to prevent short circuiting.

While the design and construction at present illustrated and set forth is deemed preferable, it is obvious that as a result of a reduction of the invention to a more practical form for commercial purposes, the invention may be susceptible to changes, and the right to these changes is claimed, provided they are comprehended within the scope of what is claimed.

The invention comprises further features and combination of parts, as will be hereinafter set forth, shown in the drawings and claimed.

In the drawings:

Figure 1 is a view in side elevation of a conventional form of typewriter, showing the carriage return mechanism and the platen roller operating means applied thereto.

Fig. 2 is a plan view of the typewriter showing the application of the carriage return and platen roller operating mechanisms.

Fig. 3 is an enlarged detail view in rear elevation of the carriage return mechanism, showing the supporting and guiding means therefor.

Fig. 4 is an enlarged end view of the carriage return mechanism and the guiding means, showing the anti-frictional members of the guiding means.

Fig. 5 is a longitudinal sectional view through the solenoid of the return mechanism, showing the guiding means for the plunger.

Fig. 6 is a sectional view on line 6—6 of Fig. 1.

Fig. 7 is a sectional view on line 7—7 of Fig. 1.

Fig. 8 is a front view of the typewriter

showing the carriage return and platen roller operating mechanisms applied.

Fig. 9 is a detail perspective view of the parts 72 and 75.

Fig. 10 is a detail view of the lever or key 8.

Fig. 11 is a detail view of the arm 52.

Referring more especially to the drawings, 1 designates the frame of a conventional form of typewriter, and 2 denotes a U-shaped clamp, which is secured to the lower edge of the forward part of the frame, by means of a set screw 3. This set screw has a reduced threaded portion 4, which is threaded to one side of the clamp, and contacts with the side of the frame to hold the clamp in place. A suitable insulation 5 of U-form engages the clamp 2, that is between the sides and the bottom of the clamp and the frame of the typewriter, thereby preventing short circuiting of the current. In fact, the shoulder 6 adjacent where the reduced extension 4 is formed, contacts with one of the outer portions of the clamp, so as to draw the clamp tight against the side of the frame of the typewriter. The larger portion of the set screw 3 constitutes a pivot for the lever 8, there being a piece of insulation 9 between the end of the reduced portion of the screw and the frame of the machine, thereby preventing short circuiting. One end of this lever has a conventional form of key 10, to be engaged by the finger of the operator.

A suitable clamp 11 is also secured to the side of the forward portion of the frame by means of the set screw 12. The clamp 11 is U-shaped, but one of its arms 13 extends upwardly farther than the other arm, and this upwardly extending arm 13 has an overhanging stationary contacting part 14. A piece of insulation 15, U-shaped in form, is inserted in the clamp 11, and through one side of which the set screw 12 also passes. This insulation also prevents short circuiting, and engaging between the end of the set screw 12 and the side of the frame is a piece of sheet metal 16 and a piece of insulation 17. The insulation 17 avoids short circuiting through the set screw and the frame of the typewriter. This set screw is somewhat similar in construction to the set screw 3, that is, in so far as the provision of a reduced threaded extension 18 is concerned, which is threaded through the clamp 11 and the insulation 15 and contacts with the insulation 17. The shoulder 19, where the reduced extension is formed on the larger part of the set screw, contacts with the outer face of the longer side of the U-shaped clamp 11, thereby securely fastening the clamp in place. A thumb nut 20 is threaded upon the set screw, and by means of this thumb nut a suitable wire or conductor or lead 21 may be clamped, so that the current may be carried to the clamp 11. Another lead or conductor 22 is connected to the screw 3 in any suitable manner, so that the current may pass from the screw over the lever, and then to the overhanging part 4, with which the contacting end 23 of the lever engages, that is when the key end of the lever is depressed.

Mounted upon the rear part of the frame of the typewriter are brackets 24, which are secured in place by the U-shaped clamps 25 and set screws 26. These brackets are angular form, and are provided with braces 27, to reinforce the parts of the brackets. Secured by screws 28 to the downwardly turned ends of the upper parts of the brackets is an elongated strip or plate 29 T-shaped in cross-section. Secured upon the upper part of the T-shaped strip or plate 29 by means of the screws 30 is a plate 31, provided with upstanding spaced flanges 32, having overhanging flanges 33, the edges of which are spaced. Also rising upwardly from the plate 31 is a central rib 34. The spaces between the adjacent edges of the flanges 33 may be termed a slot 35, to act as a guide for a supporting arm of the core of a solenoid, which will be subsequently described.

Also secured to the T-shaped plate 29 by screws 36 is the shell or casing 37 of a solenoid 38. This solenoid comprises the usual spool 39, which is provided with a winding of wire 40, and has a bore 41, which receives the brass sleeve 42. The marginal edges of the ends of this brass sleeve are over-turned or flanged as at 43, to hold the sleeve in place, so that it may receive the solenoid core 44. The casing or shell 37 has a flat base 45, between which and the T-shaped plate or strip 29 is a piece of insulation 46, thereby preventing short circuiting. Secured by screws 47 to the shell or casing is a plate 48, having binding posts 49 and 50. The casing or shell is provided for the purpose of protecting the windings of the solenoid. The solenoid core is secured in any suitable manner in the opening of the loop 51 of the arm 52, and the upper part of this arm 52 is provided with an overhanging part 53, which terminates in an enlargement 54 having a loose connection, by means of the opening 55 with a part of the carriage 56 of the typewriter, as shown. This arm 52 comprises two sections 58 and 59. The section 59 carries the loop 51, and is bolted at 60 to the section 58. The loop 51 is split or separable as at 61, and it is obvious that the loop may be securely tightened on the core 44 by means of the screw 62. The lower end of the section 59 of the arm is provided with oppositely disposed axially arranged lugs 63. In fact, these lugs 63 are constructed in the form of a single pin, which is fixed transversely of the lower end of the section 59 of

the arm, whereby the opposite ends of the pin project from the opposite sides of the lower end of the arm, to provide the lugs, and on which lugs suitable anti-frictional rollers or wheels 64 are journaled. These anti-frictional rollers or wheels are spaced, and are large enough to project below the lower extremity of the section 59 of the arm so that said wheels may engage upon opposite sides of the upstanding rib 34 of the plate 31. The lower part of the section 59 of the arm, at a point just above the marginal peripheries of the wheels or rollers 64 engage between the adjacent edges of the flanges 33. These flanges 33 are angular and parallel, and rise upwardly and have horizontal portions extending toward each other, thereby causing the slot 35 to be formed. It will be observed that the wheels or rollers not only ride upon the plate 31, upon opposite sides of the rib 34, but they also move under the flange 33. In fact, the vibration of the carriage may cause the wheels to lift or raise from contact with the plate 31, and hence will contact with the under surfaces of the flanges 33, the wheels or rollers at all times being in motion, that is while the carriage is moving. By this method of mounting the arms, it will be observed that friction is practically reduced to a minimum, and furthermore, the core will move freely with the arm and the carriage. It has been stated in this specification that the overhanging part of the arm is loosely connected to the carriage. This, in fact, means that a part of the carriage engages through the slot 55, say for instance a rod 55[a] of the carriage engages through the slot and in this case nuts or any other suitable means such as collars, though not necessarily, engage upon opposite sides of the enlargement of the overhanging part 53 of the arm, to hold the arm substantially more or less rigid with the rod. The leads or conductors 65 and 66 are connected to the binding posts 49 and 50, and the conductor 65 is wrapped into engagement with the conductor 22, and these two conductors 22 and 65 may terminate into a suitable plug 67, for entering a socket, whereby current from any suitable source of supply may be put into circuit with the carriage return mechanism.

Also mounted upon the carriage forwardly thereof is a second solenoid 68, which, if desired, may be similar in construction to the solenoid heretofore mentioned, though not necessarily, for it is obvious that any other construction of solenoid may be used. The wire or lead 66 is connected to a binding post 69 of the solenoid 68, and the lead or conductor 21 is connected to the other binding post 70 of the solenoid 68. The solenoid 68 has a core 72, the reduced end of which is provided with an elongated opening 73, which engages the upstanding arm 74 of the lever 75, which is pivoted at 76 to the carriage of the typewriter. This lever 75 is of the usual or conventional form, preferably as shown, though not necessarily, and is designed to actuate a ratchet dog, which coöperates with the ratchet end of the platen roller, so that when the lever 75 is actuated, an intermittent motion may be imparted to the roller. For example, after the carriage has moved to the left, during the typewriting of a line, the operator may depress the key 10, thereby closing the circuit on both solenoids at the same time. The solenoids will be energized, and their cores will be respectively drawn or sucked into the bores of the solenoids. The core 44 will be drawn into the bore of its solenoid and hence return the carriage in a direction toward the right. The core 72 of the solenoid 68 will be drawn into its bore, thereby oscillating the lever 75, which in turn will operate the ratchet dog of the typewriter, and impart a limited movement to the platen roller, thereby moving the roller sufficiently to space the line of typewriting. At the end of each movement of the carriage, the key may be depressed and in this way the carriage may be consecutively returned automatically and electrically.

The invention having been set forth, what is claimed as new and useful is:

1. In combination with a typewriter frame, of a carriage mounted thereon for reciprocation, a solenoid mounted on the frame, a guide mounted on the frame and comprising spaced flanges provided with overhanging parts, an arm attached to the carriage and having means engaging in the guide and riding between the bottom of the guide and the overhanging parts, for guiding the arm, a core carried by the arm electrically coöperating with the solenoid, whereby, when the solenoid is energized, the core will be drawn therein, and cause the return of the carriage to initial position.

2. In combination with a typewriter frame, of a carriage mounted thereon for reciprocation, an electric circuit, a solenoid mounted on the frame and in said circuit, a guide mounted on the frame and comprising spaced flanges provided with overhanging parts, an arm attached to the carriage and having means engaging in the guide and riding between the bottom of the guide and the overhanging parts, for guiding the arm, a core carried by the arm electrically cooperating with the solenoid, whereby, when the solenoid is energized, the core will be drawn therein, and cause the return of the carriage to initial position, and stationary and movable lever actuated contacts in the circuit, for energizing the solenoid.

3. In combination with a typewriter frame, of a carriage mounted thereon for reciprocation, an electric circuit, a solenoid

mounted on the frame and in said circuit, a guide mounted on the frame and comprising spaced flanges provided with overhanging parts, an arm attached to the carriage and having means engaging in the guide and riding between the bottom of the guide and the overhanging parts, for guiding the arm, a core carried by the arm electrically coöperating with the solenoid, whereby, when the solenoid is energized, the core will be drawn therein, and cause the return of the carriage to initial position, means on the carriage for imparting intermittent motions to the platen roller of the carriage, electrical means in said circuit for actuating the first named means, and means comprising a stationary contact and a lever actuated movable contact in the circuit for closing the same, for energizing the solenoid and operating the electrical means, whereby the carriage may return to initial position, and partial movement imparted to the platen roller.

4. In a carriage return mechanism for typewriters, the combination with a frame, of a carriage thereon, an electric circuit, a solenoid in said circuit and mounted on the frame, a core electrically coöperating with the solenoid, a guide mounted on the frame, said guide comprising spaced flanges having overhanging parts, the bottom of the guide having an upstanding rib, an arm attached to the carriage and provided with a depending part having means engaging in the guide and riding upon opposite sides of the upstanding rib between the bottom of the guide and the overhanging parts, for guiding the arm, means for connecting the core to the arm, and means lever actuated and being in circuit with the solenoid, whereby as said means is actuated, the solenoid is energized, thereby causing the core to be drawn into the solenoid and hence returning the carriage to initial position.

5. In a carriage return mechanism for typewriters, the combination with a typewriter frame, of a reciprocable carriage thereon, an electric circuit, a solenoid in said circuit and being mounted on the frame of the machine, a guide mounted on the frame of the machine, an arm detachably but rigidly connected to the carriage and having anti-frictional operative engagement with said guide, said guide having upper and lower parts to prevent upward and downward movement of the arm swivelly relatively to the guide, said guide having means on its bottom coöperating with the anti-frictional means of the arm to prevent lateral movement of the arm thereby preventing contact of the anti-frictional means with the sides of the guide, a core carried by the arm and electrically coöperating with the solenoid whereby when the solenoid is energized, the core will be drawn therein, and cause the return of the carriage to initial position.

6. In a carriage return mechanism for typewriters, the combination with a typewriter frame, of a reciprocable carriage thereon, a guide mounted on the frame of the machine, an electric circuit, a solenoid in said circuit and supported on one end of the guide, an arm fixedly connected to the carriage and having a depending part provided with a rolling device engaging in said guide, said guide having a rail on its bottom and provided with upper and lower parts cooperating with the rolling devices to prevent upward movement of the same and hold them on either side of the rail, a core connected to the arm and electrically cooperating with the solenoid whereby when the solenoid is energized the core will be drawn therein, and cause the return of the carriage to initial position.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

FRANKLIN C. BREUCKMAN.
GEORGE T. ARNOLD.

Witnesses:
MICHAEL DOUD,
LAURENCE G. LAPME.