June 17, 1969 G. E. ECKERT 3,449,850

COPYHOLDER FOR ELECTRIC TYPEWRITER

Filed Jan. 30, 1967 Sheet 1 of 2

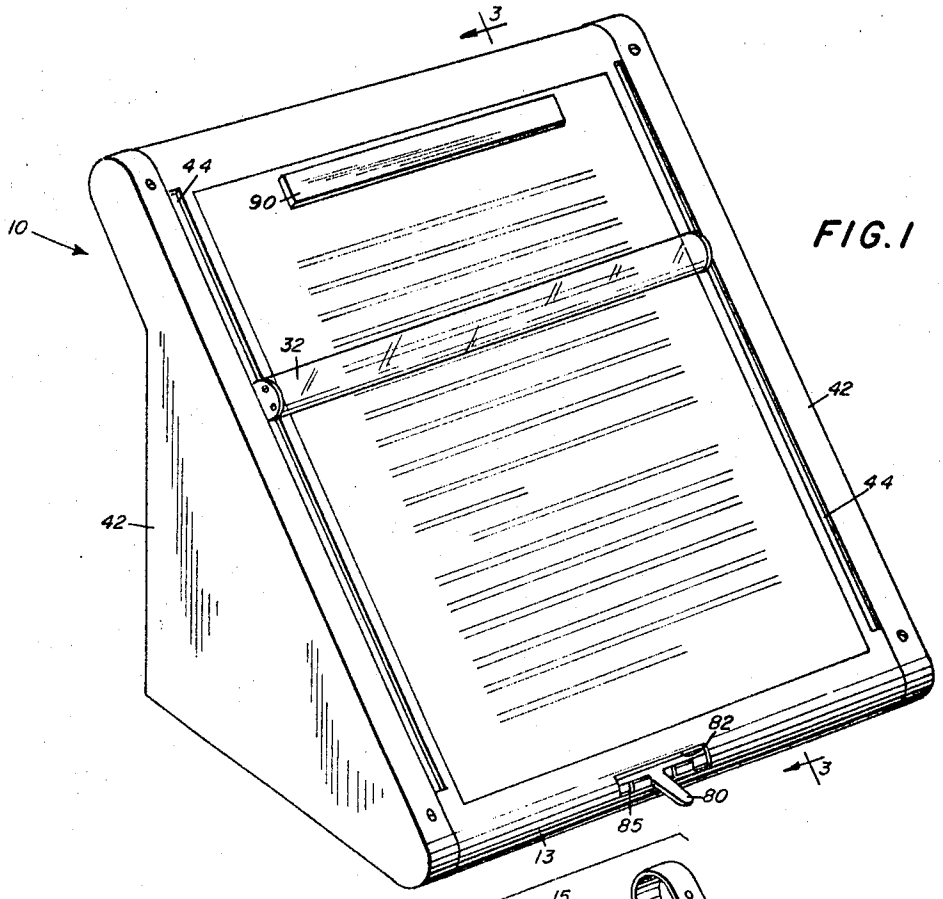
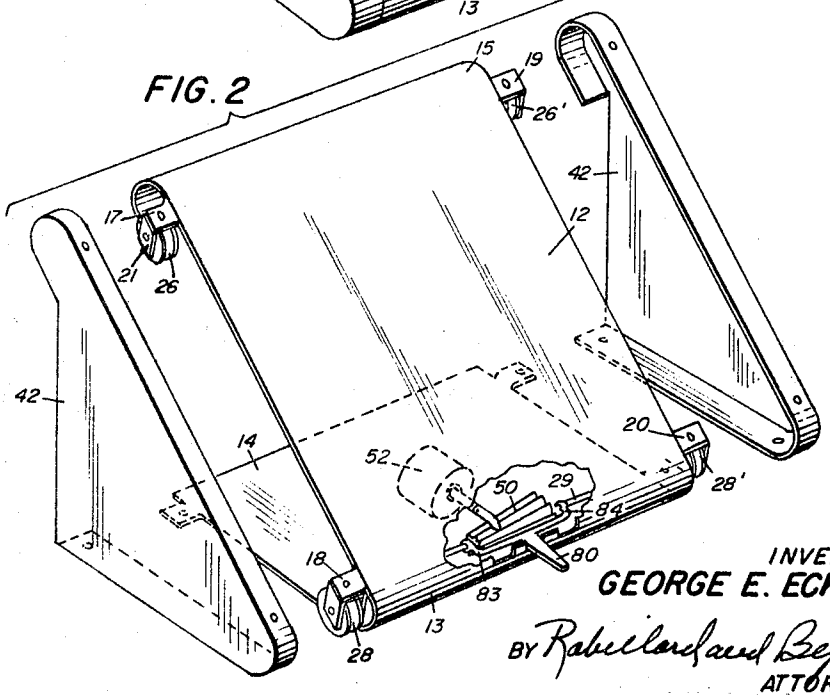


FIG. 1

FIG. 2



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FIG. 4

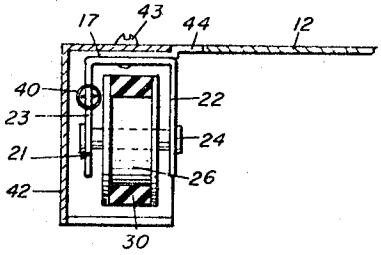


FIG. 5

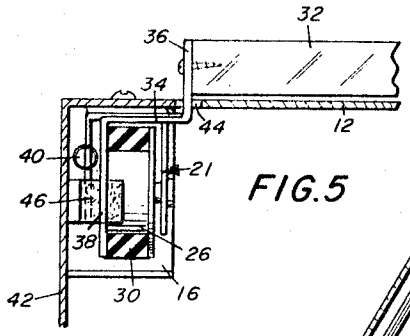


FIG. 6

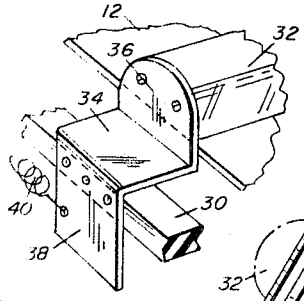
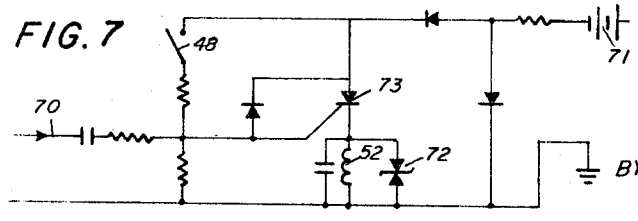


FIG. 3

FIG. 7



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COPYHOLDER FOR ELECTRIC TYPEWRITER

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Int. Cl. B41j 11/64
U.S. Cl. 40—356 3 Claims

ABSTRACT OF THE DISCLOSURE

A copyholder for use with an electric typewriter of a type which generates an electric signal when a carriage return key is depressed. The copyholder includes a generally inclined plate having parallel sides and a top and bottom for the reception of a sheet of paper. A pair of conveyor belts supporting a line indicator bar are disposed adjacent to and parallel to opposite sides of the plate. An axle member having rollers thereon frictionally circumscribed by the belts is rotatably mounted with respect to the plate. A ratchet member having a plurality of teeth about its periphery carried by the axle. A solenoid is affixed to the plate and has an opening member mounted for reciprocating movement over a predetermined operating stroke length, which solenoid operates in response to the electric signal generated by the depression of the carriage return key. The operating member is in engagement with the ratchet and upon actuation of the solenoid rotates the ratchet through an arc whose length is dependent on the operating stroke length. The ratchet is cone-shaped along its longitudinal axis on said axle with respect to the operating member. Means are provided for sliding the ratchet on the axle to adjusted positions relative to the operating member to present areas of different radius at the point of engagement between said operating member and ratchet whereby the angle of rotation of the longitudinal axis of the ratchet varies in response to a change in radius of the ratchet at the point of engagement between the operating member and ratchet for a given length of the operating stroke.

This invention relates to a copyholder having an automatically displaced magnifying bar and more particularly relates to a copyholder having a magnifying bar which is automatically displaced by an electric signal from a typewriter.

Although it is known in the prior art to have an electrically operated copyholder with a line indicator which functions in response to typewriter carriage return, the necessity for cumbersome mechanical devices which must be acted upon physically by the carriage in order to mechanically translate kinetic energy into electrical energy has rendered them inefficient and troublesome to maintain. It is a primary object of the present invention to provide a copyholder for an electric typewriter having a line magnifier which automatically responds to return pulse generated by the typewriter electric circuit.

Another objective of the invention is to provide means to vary the length of the step-by-step movement of the magnifying bar to adjust for spacing between the lines of the typing to be copied.

Yet another objective of the invention is to provide a copyholder having a magnifying bar displaced by means of a solenoid which is controlled by the electric circuitry of an electric typewriter.

A still further objective of the invention provides means to facilitate the moving of the magnifying bar to the top of the next sheet to be typed and accurately locate it over the top line thereof.

These and other objects of the invention will become better understood to those skilled in the art by reference to the following detailed description when viewed in light of the accompanying drawings wherein like numerals indicate like components throughout the figures thereof and wherein:

FIGURE 1 is a perspective view of the copyholder;

FIGURE 2 is an exploded view of the support plate and housing covers;

FIGURE 3 is a sectional view taken along line 3—3 of FIGURE 1;

FIGURE 4 is a sectional view taken along line 4—4 of FIGURE 3;

FIGURE 5 is a sectional view taken along the line 5—5 of FIGURE 3;

FIGURE 6 is a detailed perspective view of the connection between the magnifying bar and the pulley belt; and

FIGURE 7 is a diagram of the electric circuit used.

Turning now to the drawings wherein like numerals indicate like parts, the numeral **10** generally indicates the copyholder stand of this invention. The stand includes a copy support plate **12** for the reception of the copy sheet which is to be supported for viewing by the typist. The plate is of generally rectangular configuration and can be formed of sheet metal, aluminum, or a suitable plastic. The support plate is bent gently at **13** to provide a base **14** which, when set on a horizontal surface, disposes the support plate **12** at a convenient viewing angle. At its upper end the support plate is gently bent at **15**, which forms a short return leg **16** spaced from and parallel to the plate **12**.

A plurality of lug extensions **17**, **18**, **19** and **20** are provided at the side corner edges of the generally rectangular supporting surface of plate **12**. Since each supporting bracket is substantially the same, only one is described.

Attached to the lug extension **17** is an inverted U-shaped bracket **21**. Referring to FIGURE 4, it can be seen that the base of bracket **21** is affixed to the lower surface of the extension. The two downwardly extending legs **22** and **23** rotatably support an axle **24** to which a roller member **26** is secured. The rollers **26** and **26'** supported by extensions **17** and **18** are idlers. However, the rollers **28** and **28'** supported by extensions **18** and **20** are drive members and are joined by a common axle **29**. A first drive belt **30** circumscribes the rollers **26** and **28** and a second drive belt (not shown) circumscribes the rollers **26'** and **28'**. A magnifying bar **32** extends transversely across the surface **12** and is secured to belts **30** by brackets **34**.

The magnifying bar has a flat bottom surface and a rounded upper surface and may be made of plastic or glass as is well known in the art. Each end of the bar **32** is secured to the belt **30** by means of rivets as best seen in FIGURE 6. A relatively long, fine spring **40** has one end attached to bracket **34** and at its other end is secured

to downwardly extending leg 22 of the roller-supporting bracket 17. Thus, the bar 32 is biased toward the top of plate 12. The sides of the stand are enclosed by way of covers 42 and 43.

An elongated tapered ratchet wheel 50 is rigidly secured intermediate the ends of the axle 29. A solenoid 52 having an armature or operating rod 54 is mounted on base 14 adjacent the ratchet wheel. The operating rod 54 of the solenoid has an enlarged head 56 at one end and, at its other end, a pawl 58 which engages the teeth of the ratchet. The rod 54 is articulated into two segments 60 and 62 by a pivotal connection at 64. The segment 60 is maintained in approximately tangential engagement with the ratchet by a leaf spring 66.

The solenoid 52 is of the type well known in the art. Upon receiving an electrical pulse it will cause rod 54 to move to the left as shown in FIGURE 3. The stepping wheel 50 will thus be rotated a set distance, depending on the radius of the ratchet and the stroke of the solenoid, upon each actuation of the solenoid. The rod 54 in FIGURE 3 is shown in its extended position, that is, at a point in time just after pivoting the ratchet wheel one step. As soon as the solenoid is deactivated, the bias provided by a spring 68 will cause the armature to withdraw rearwardly and, because of the downward bias of the spring 66, also downwardly a distance such that the projection 58 will engage the next ratchet tooth. A spring 67, secured to the base 14, bears frictionally against the wheel 50 to prevent free rotation thereof.

A representative electric circuit is shown in FIGURE 7. In the standard electric typewriter, an electric motor powers the carriage to the left-hand margin in response to a key depression signal. A tap of that signal by conventional means enters the schematic of FIGURE 7 at 70 as an actuating pulse whereby the current source 71 (also at the typewriter) is sent to the solenoid. A silicon controlled rectifier and a surge protector are shown at 73 and 72. The resistors shown vary in size and depend upon the pulse size of the particular make typewriter. Contemplated within the scope of this invention is any electric circuit capable of sending an activation current to solenoid 52 in response to a particular key depression by the typist.

From the above, and with reference to the drawings, it can be seen that the magnifying bar 32 is normally biased to the top portion of plate 12. A resilient pad 46 is provided at this point against which the flange 38 abuts when the bar is in its initial upper position. A microswitch 48 is disposed near the bottom on the inside surface of cover 42. This switch is disposed across the power line leading to the solenoid coil and terminates the movement of bar 32 when flange 38 abuts its switch arm.

In operation, the copy is placed flat against the support plate 12 and can be held in place by magnet 90, if necessary. The magnifying bar is manually located over the top line to be copied. The spring 68 and the pawl 58 will maintain the bar in position. Upon completion of the first line of type on the electric typewriter, the carriage return key is depressed. The pulse therefrom is fed to the input 70 and the solenoid 52 is activated. The arm 62 moves outwardly to rotate the ratchet wheel one step and thus move the magnifying bar downwardly over the next line of copy. The bar will continue this step-by-step movement until the flange 38 strikes the switch 48.

As previously mentioned, the ratchet 50 is in the shape of a truncated cone. Although the ratchet is non-rotatably affixed to axle 29, it is keyed for slidable movement along the length thereof. An adjustment handle 80 is provided to position the ratchet along the shaft 29. The handle extends through a slot 82 formed in curve portion 13 and has loops 83 and 84 engaging either side of the ratchet. The slot is formed with a series of depressions 85 in which the handle 80 is received.

By moving the ratchet lengthwise of shaft 29, the lineal length of each step movement in bar 32 is adjustable. If that portion of the ratchet of reduced diameter is presented to arm 62, the movement transmitted to bar 32 will be reduced. When a portion of the ratchet of reduced diameter is presented to arm 62, each step movement in bar 32 will be reduced. This feature can best be understood when it is realized that the length of each stroke of the arm 62 is constant regardless of the portion of the ratchet presented to the arm. If the stroke is half an inch for example, the peripheral distance of rotation of the ratchet will be approximately half an inch whether it be the portion of larger radius or that of smaller radius. The angle of rotation of an axis of a wheel of one radius will be greater than the angle of rotation of an axis of a wheel of greater radius if each is rotated an equal peripheral distance. The depressions 85 can be conveniently arranged for single-space, double-space, and triple-space drafts. In some instances, a clatter may occur due to a change in the tooth length presented to the solenoid. In order to eliminate such clatter, the solenoid 52 is of an adjustable stroke type well known to the art. An operator knob 87 is provided for these purposes.

In a general manner, while there has been disclosed effective and efficient embodiments of the invention, it should be well understood that the invention is not limited to such embodiments, as there might be changes made in the arrangement, disposition, and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claims.

I claim:

1. A copyholder for use with an electric typewriter of a type which generates an electric signal when a carriage return key is depressed, said copyholder including a generally rectangular inclined plate having parallel sides, a top and bottom for the reception of a sheet of paper having the material to be retyped imprinted thereon wherein the improvement comprises

a pair of conveyor belts having portions of their lengths disposed adjacent to and parallel to opposite sides of said plate as said conveyor belts move with respect to said plate,

a line indicator bar affixed to said belts and extending laterally across said plate,

an axle member rotatably mounted with respect to said plate member,

rollers affixed to opposite ends of said axle and frictionally circumscribed by said belts,

a ratchet member having a plurality of teeth about its periphery carried by said axle, and

a solenoid responsive to said electric signal having an operating member mounted for reciprocatory movement over a predetermined operating stroke length upon actuation of said solenoid responsive to said electric signal, said electric signal being generated by the depression of said carriage return key to rotate said ratchet through an arc whose length is dependent of the length of the operating stroke of the operating member,

said ratchet being cone-shaped along its longitudinal axis and mounted for slidable non-rotatable movement along its longitudinal axis on said axle with respect to said operating member, means for sliding said ratchet on said axle to adjusted positions relative to said operating member to present areas of different radius at the point of engagement between said operating member and ratchet whereby the angle of rotation of the longitudinal axis of said cone-shaped ratchet varies responsive to a change in the radius of the ratchet at the point of engagement between said member and ratchet for a given length of the operating stroke of the operating member,

said operating arm being articulated and having means urging it into constant engagement with said ratchet throughout the length of its operating stroke.

2. The invention of claim 1 wherein said line indicator bar is an elongated magnifying bar.

3. The invention of claim 1 wherein said indicating bar has an initial position near said top portion of said plate and a stop position near the bottom portion thereof and said bar moves from said initial position toward said stop position a particular distance proportional to the length of one of said tooth members upon each actuation of said means.

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