June 28, 1955 H. GREENSPAN 2,711,810

LINE-DRAWING DEVICE

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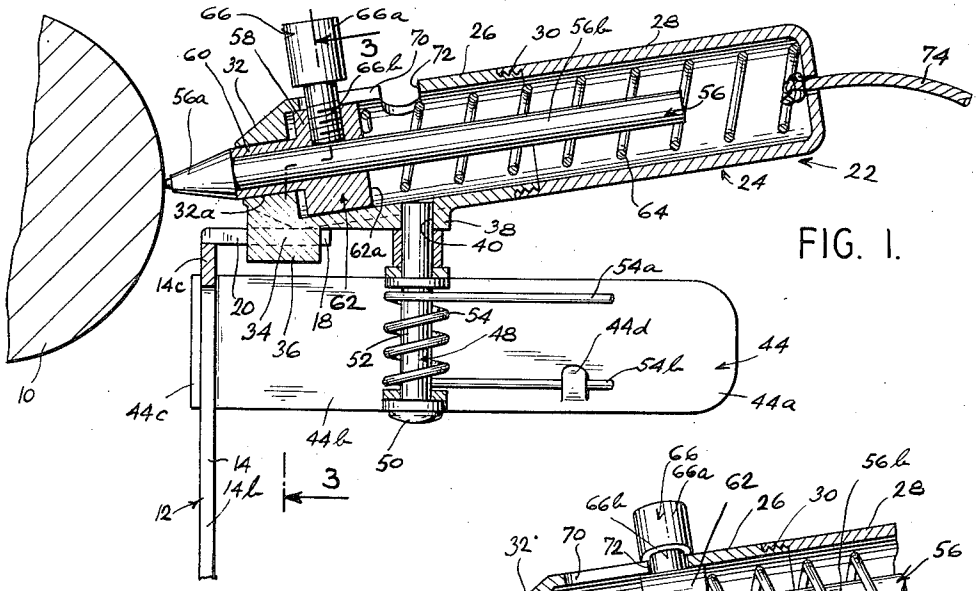


FIG. 1.

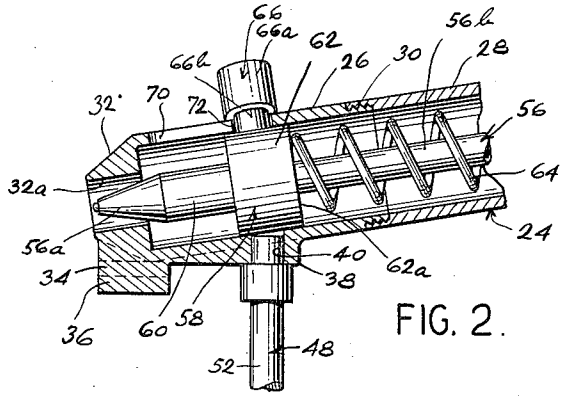


FIG. 2.

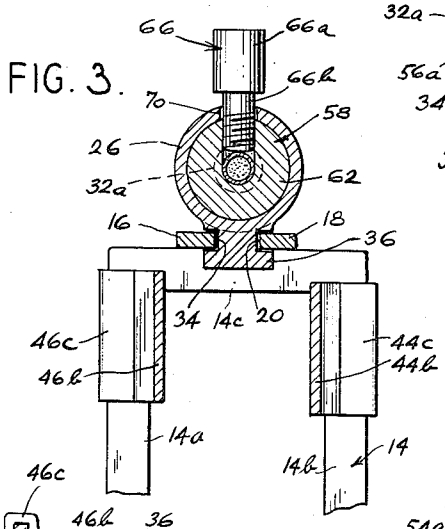


FIG. 3.

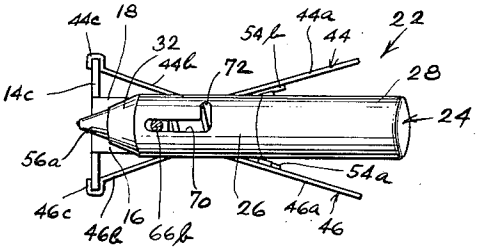


FIG. 4.

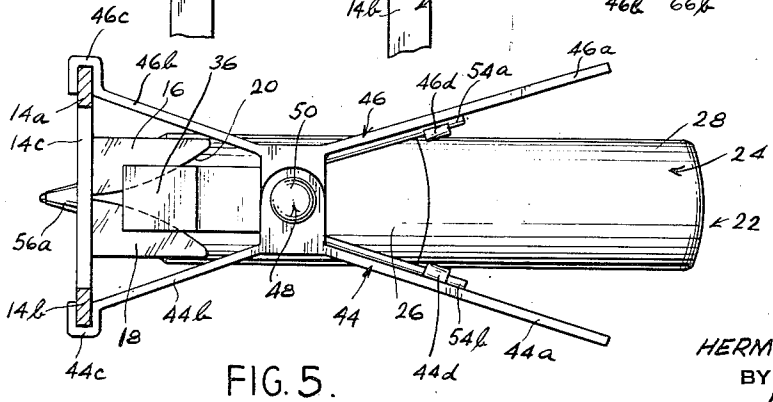


FIG. 5.

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LINE-DRAWING DEVICE

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8 Claims. (Cl. 197—113)

The present invention relates to line-drawing devices for use on typewriters and the like, and in particular to a removable typewriter accessory for drawing horizontal and vertical lines.

The variety of work being done on a standard typewriter suggests the need for a line-drawing device which may be readily attached to an existing frame part of the typewriter for producing horizontal and vertical lines, as well as combinations thereof, without interfering with normal typewriter operation and running the risk of ruining the work. Examples of the most common difficulties heretofore encountered with known attachments have been penetration or ripping of the work, random variations in thickness and shadings in the lines produced, faulty carbons, and/or the inability to make the requisite number of carbons.

Accordingly, it is an object of the present invention to provide a novel line-drawing device which obviates one or more of the aforesaid difficulties.

Specifically, it is among the objects of the present invention to provide a scribing accessory for a typewriter facilitating rapid drawing of horizontal and vertical lines without requiring modification of the typewriter, running the risk of ruining the paper being worked upon, or producing faulty carbons.

In accordance with this aspect of the present invention, the line-drawing attachment embodies an extensible and retractable ball-point writing tip adapted to uniformly contact the movable cylinder of the typewriter thereby assuring uniformity in shading and thickness of the lines being drawn, as well as the requisite pressure to obtain multiple legible carbons.

Further, it is within the contemplation of the present invention to provide a ball-point line-drawing attachment of the aforesaid character which may be readily dismantled for inspection and/or replacement of the ball-point cartridge.

Many other objects and advantages will occur to those skilled in the art as the description proceeds. In order to render the understanding of the invention complete and lucid and further to comply with the statutes relating to the same and to point out where I have made a patentable advance in the arts and sciences, I have shown and described the invention with certain specific embodiments thereof in the accompanying drawings, wherein:

Fig. 1 is a vertical section through a line drawing device constructed in accordance with the present invention, shown mounted on a typewriter in an extended position engaging the cylinder of the typewriter;

Fig. 2 is a fragmentary sectional view similar to Fig. 1, but showing the line drawing device in its retracted position;

Fig. 3 is a fragmentary sectional view taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is a reduced top plan view of the device shown in Fig. 1; and

Fig. 5 is an enlarged bottom plan view of the device shown in Fig. 1.

Referring now specifically to Fig. 1, there is shown a line drawing attachment embodying features of the present invention which is adapted to be supported on a typewriter having a movable cylinder 10 on a carriage, not shown. The cylinder 10 is arranged forwardly of a support 12 which is in the form of a printing point indicator including a vertically-extending frame part 14 and horizontally-extending fingers 16, 18. As seen best in Figs. 3 and 5, the vertically extending frame part 14 includes sides 14*a*, 14*b* interconnected by a cross-bar 14*c* adjacent the uppermost ends thereof. Secured to or formed integrally with the cross-bar 14*c* are the fingers 16, 18 which diverge relative to each other to form a wedge-shaped opening 20 therebetween.

The line-drawing device, generally designated by the numeral 22, includes a bipartite housing 24 consisting of two end to end sections 26, 28 joined at their adjacent ends by appropriate internal and external threading 30. The forward end of the section 26 is in the form of a frustro-conical head 32 and carries an integral depending wedge 34 shaped complementarily to the opening 20 and embracingly received therein. At its lowermost end the wedge 34 is formed with a laterally-extending flange 36 adapted to underlie the fingers 16, 18 and to cooperate with the wedge proper to preclude vertical displacement of the housing 24 relative to the support 12. Rearwardly of the wedge 34, the undersurface of the housing section 26 is formed with a reinforced part 38 having an upwardly extending bore 40.

Horizontal movement of the housing is precluded by the provision of a clip, including two gripping members 44, 46 pivotally interconnected by a pin 48. The pin 48 is formed with a head 50 underlying the gripping members 44, 46 and a shank 52 which is force fitted into the bore 40 on the reinforced part 38 of the housing section 26. The grip members 44, 46 include handle parts 44*a*, 46*a* extending rearwardly from the pivot pin 48 and jaw supporting parts 44*b*, 46*b* extending forwardly from the pin 48. The jaw supporting parts 44*b*, 46*b* terminate in jaws 44*c*, 46*c* of substantially U-shaped cross-section and adapted to conformably embrace the sides 14*a*, 14*b* of the frame 14.

Surrounding the shank 52 of the pin 48 intermediate the gripping members 44, 46 is a coil spring 54 which has its ends 54*a*, 54*b* anchored on the handle parts 44*a*, 46*a* of the gripping members 44, 46 by integral ears 44*d*, 46*d* struck from the respective gripping members 44, 46. The spring 54 is arranged to bias the gripping jaws 44*c*, 46*c* toward each other thereby precluding displacement of the housing 24 transversely of the support 12.

Mounted within the housing 24 is a line-marking instrument 56 which is slidably supported for extensile and retractile movement relative to the frusto-conical head 32 of the housing. The line-marking instrument 56 is in the form of a ball-point pen including a writing tip 56*a* adapted to be extended beyond the head 32 and a cartridge 56*b* adapted to remain within the housing 24 and to extend axially thereof. Surrounding the cartridge 56*b* and within the housing 24 is an adjustment block 58 including a sleeve 60 commensurate in cross-section with the cross-section of an axial bore 32*a* in the enlarged frustro-conical head 32 of the housing 24 and a securement collar 62 commensurate in cross-section with the internal diameter of the housing 24. The rearmost face of the collar 62, designated by the reference numeral 62*a*, serves as an abutment for a coil spring 64 arranged within the housing 24 and serving to bias the line-marking instrument 56 into the extensile position of Fig. 1.

In order to retract the line-marking instrument 56 into the position of Fig. 2 and further to fix the adjustment block 58 to the cartridge 56*b*, there is provided an operator 66 including a grip part 66*a* arranged externally of

the housing 24 and a threaded shank 66b which is passed through a longitudinal slot 70 provided in the uppermost face of the housing 24. The threaded shank 66b is received within a suitably tapped hole in the enlarged collar 62 and includes an end face 66c serving as an abutment or bearing member engaged against the cartridge 56b. As clearly seen in Figs. 1, 2 and 4 the slot 70 includes a laterally offset seating part 72 which is adapted to accommodate the shank 66b when the line-marking instrument 56 is drawn into the retracted position of Fig. 2 against the force of the spring 64. Any suitable tie, such as designated by the reference numeral 74, may be employed to fix the removable housing section 28 to the typewriter proper.

The device is used in substantially the following manner:

The clip 42 is grasped and the handle parts 44a, 46a squeezed toward each other against the oppositely exerted force of the spring 54 so that the gripping jaws 44c, 46c may be applied to the sides 14a, 14b of the frame 14. Simultaneously, the wedge 34 is engaged within the opening 20 defined by the fingers 16, 18 with the flange 34 underlying the fingers. Upon release of the inwardly directed force on the handle parts 44a, 46a, the housing 24 is firmly mounted with adequate horizontal and vertical rigidity, yet in a manner calculated to take advantage of the existing frame parts of the typewriter. Thereupon, the line-marking attachment may be brought into operation by removing the shank 68 from the bearing or seating part 72 formed at the extremity of the slot 70 remote from the cylinder 10. Thereupon, the spring 64 urges the ball point 56a of the scribing device 56 into the position of Fig. 1 wherein the ball point uniformly contacts the cylinder 10. Thereupon, horizontal lines can be drawn by displacing the carriage for the cylinder 10, vertical lines being drawn by merely rotating the cylinder while in a selected position of the carriage movement.

Periodic replacement and inspection of the ball point pen 56 may be readily accomplished by merely disengaging the rearmost section 28 of the housing 24 from the forward section 26, removing the spring 64, and disengaging the operator 66 from its supported position in the adjustment block 58. Thereupon the entire ball-point pen 56 and the fixture 58 may be removed from the housing. If the ball point pen no longer has a sufficient supply of ink, or it is desired to change the color of the ink, it is merely necessary to replace the unit, engage the fixture 58 thereabout, and once again assemble the operator 66 and the spring 64, as seen in Fig. 1.

From the foregoing, it is apparent that there is provided a clip-supported ball-point line-drawing attachment which may be rigidly positioned on a typewriter with the ball point uniformly contacting the typewriter paper at the location where the imprint of the underline symbol would normally occur with the conventional typewriter mechanisms. The typist is able to draw vertical and horizontal lines quickly and accurately and without running the risk of penetrating and ripping the paper, drawing lines of different thickness and shading, or making unclear carbons.

Although only one embodiment of the present invention has been disclosed and described, it is apparent to those skilled in the art that numerous modifications may be made without departing from the spirit of the invention as defined in the appended claims, and that in some instances certain features of the invention may be used without use of other features.

What I claim is:

1. A line-drawing device for a typewriter having a support and a movable cylinder spaced forwardly of said support comprising a housing, means operatively connected to said housing and engageable with said support for detachably securing said housing to said support, a line-marking instrument including a ball-point writing tip and an ink cartridge slidably and rotatably mounted within said housing for extensile and retractile movement relative to said movable cylinder, spring means normally biasing said line-marking instrument into an extended position wherein said ball-point writing tip contacts said movable cylinder, and an operator engageable with said housing and connected to said line-marking instrument for moving the latter into a retracted position, said housing being provided with a longitudinal slot for the extension therethrough of said operator, said slot having a laterally offset seating part adapted to embracingly engage said operator in said retracted position.

2. The combination with a typewriter including a vertical printing point indicator frame having horizontal divergent fingers, and a movable cylinder spaced forwardly of said frame, of a line-drawing device for said typewriter comprising a housing, clip and wedge means operatively connected to said housing and respectively engageable with said frame and fingers for detachably securing said housing to said typewriter, a line-marking instrument including a ball-point writing tip mounted within said housing for extensile and retractile movement relative to said movable cylinder, spring means normally biasing said line-marking instrument into an extended position wherein said ball-point writing tip contacts said cylinder, and means operable exteriorly of said housing and connected to said line-marking instrument for moving the latter into a retracted position.

3. The combination according to claim 2, wherein said clip and wedge means includes a pair of spring-biased jaws pivotally connected together and adapted to embrace said frame to fix said housing against displacement in one direction, and a depending wedge on said housing receivable between said divergent fingers and including a lateral flange extensible beneath said divergent fingers to fix said housing against displacement in a direction substantially normal to said one direction.

4. A line-drawing device for a typewriter having a support and a movable cylinder carriage spaced forwardly of said support comprising a bipartite housing, means operatively connected to said housing and engageable with said support for detachably securing said housing to said support, a line-marking instrument including a ball-point writing tip and a cartridge mounted within said housing for extensile and retractile movement relative to said movable cylinder carriage, spring means normally biasing said line-marking instrument into an extended position wherein said ball-point writing tip contacts the cylinder, a collar surrounding said cartridge and adapted to be fixed thereto and operating means accessible exteriorly of said housing and operatively connected to said line-marking instrument for moving the latter into a retracted position, said operating means including a threaded stem extending through a longitudinal slot in said housing and receivable within a complementary threaded bore in said collar, said stem having an abutment face normally bearing against said cartridge and fixing said collar to said cartridge.

5. A line-drawing device for a typewriter having a support and a movable cylinder carriage spaced forwardly of said support comprising a housing having a slot and adapted to be connected to said support, a line-marking instrument including a ball-point writing tip and a cartridge mounted within said housing for extensile and retractile movement relative to said movable cylinder carriage, spring means normally biasing said line-marking instrument into an extended position wherein said ball-point writing tip contacts the cylinder, a collar having a threaded bore surrounding said cartridge and adapted to be fixed thereto, and operating means accessible exteriorly of said housing and operatively connected to said line-marking instrument for moving the latter into a retracted position, said operating means including a threaded stem extending through said slot in said housing and receivable within said threaded bore, said stem bear-

ing against said cartridge and fixing said collar to said cartridge.

6. A line-drawing device for a typewriter having a support comprising a housing, releasable clip means operatively connected to said housing and engageable with said support for detachably securing said housing to said support, a line-marking instrument including a ball-point writing tip and a cartridge mounted within said housing for movement relative to said housing, a collar surrounding said cartridge and adapted to be fixed thereto, and operating means accessible exteriorly of said housing and operatively connected to said line-marking instrument for moving the latter relative to said housing, said operating means including a threaded stem extending through a longitudinal slot in said housing and receivable within a complementary threaded bore in said collar, said stem having an abutment face normally bearing against said cartridge and fixing said collar to said cartridge.

7. The combination with a typewriter including a vertical printing point indicator frame having horizontal divergent fingers, and a movable cylinder spaced forwardly of said frame, of a line-drawing device for said typewriter comprising a housing, clip and wedge means operatively connected to said housing and respectively engageable with said frame and fingers for detachably securing said housing to said typewriter, said clip and wedge means including a pair of springbiased jaws pivotally connected together and adapted to embrace said frame to fix said housing against displacement in one direction, and a depending wedge on said housing receivable between said divergent fingers and including a lateral flange extensible beneath said divergent fingers to fix said housing against displacement in a direction substantially normal to said one direction, a line-marking instrument including a ball-point writing tip mounted within said housing for extensile and retractile movement relative to said movable cylinder, and means operable exteriorly of said housing and connected to said line-marking instrument for moving the latter.

8. The combination with a typewriter including a printing point indicator frame having divergent fingers, and a movable cylinder spaced forwardly of said frame, of a line-drawing device for said typewriter comprising a housing, a line-marking instrument including a ball-point writing tip mounted within said housing for extensile and retractile movement relative to said movable cylinder, and clip and wedge means operatively connected to said housing and respectively engageable with said frame and fingers for detachably securing said housing to said typewriter, said clip and wedge means including a pair of spring-biased jaws pivotally connected together and adapted to embrace said frame to fix said housing against displacement in one direction, and a depending wedge on said housing receivable between said divergent fingers and including a lateral flange extensible beneath said divergent fingers to fix said housing against displacement in a direction substantially normal to said one direction.

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