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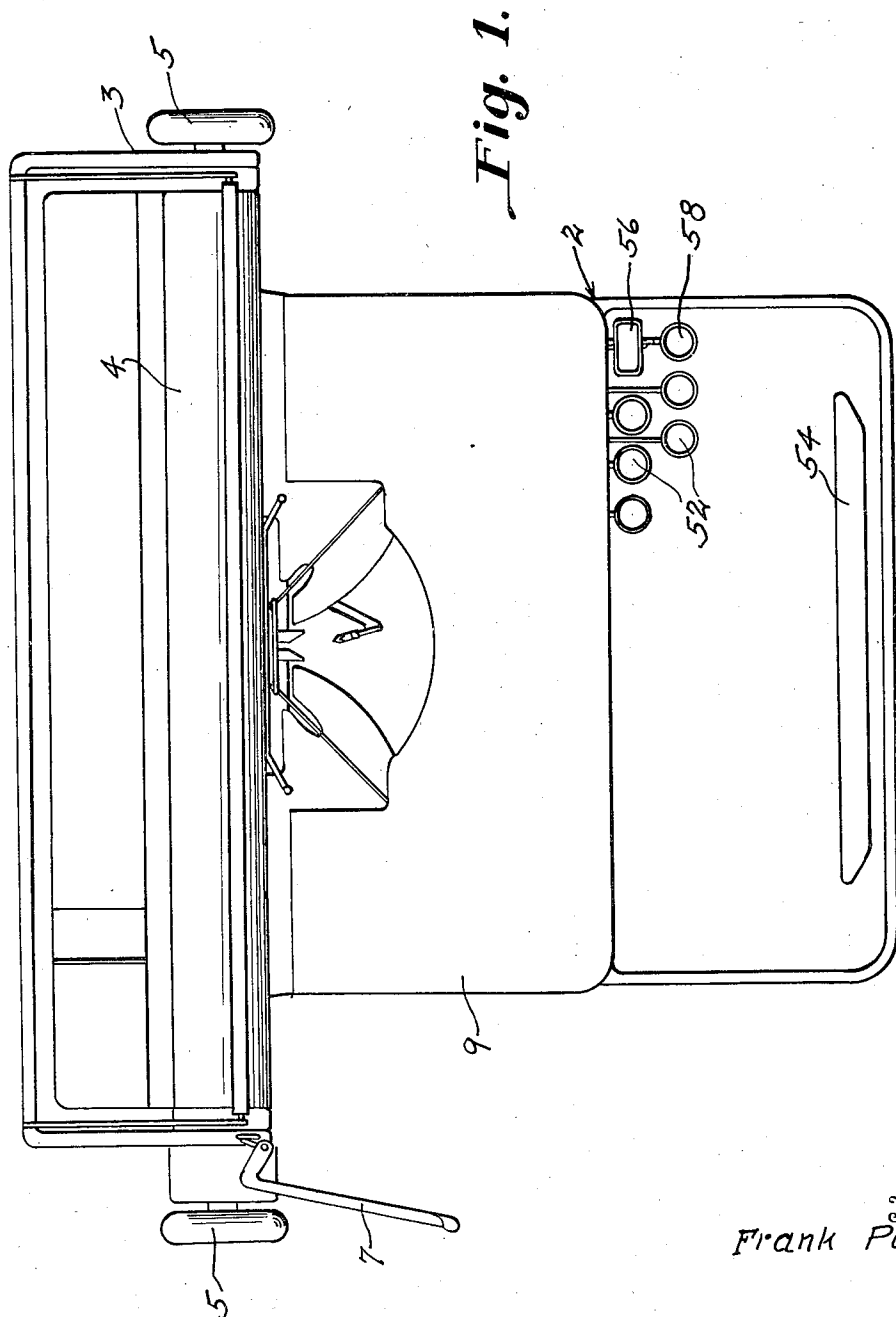
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2,494,056

TYPEWRITER LINE SCRIBING DEVICE

Filed July 23, 1947

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

Fig. 2.

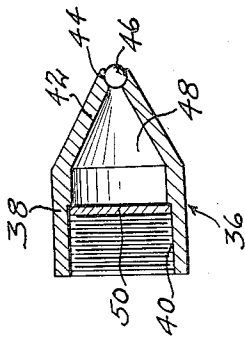
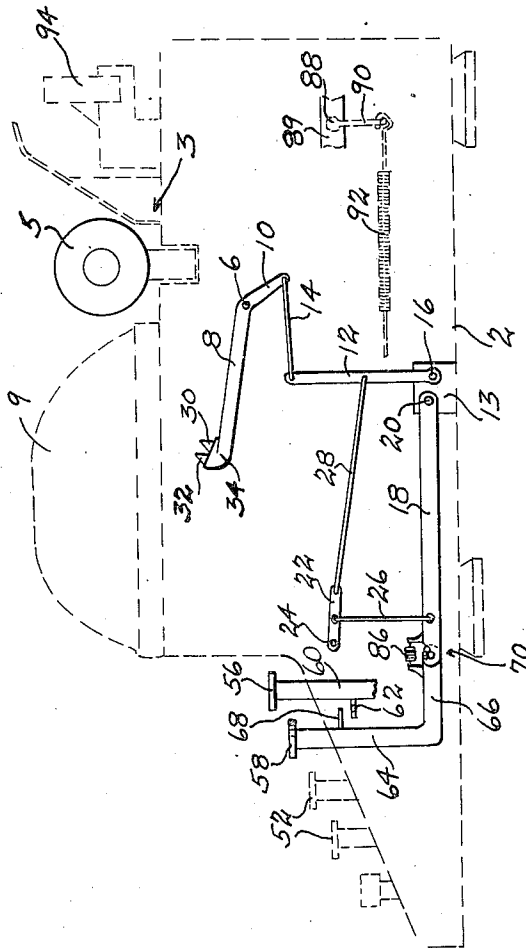


Fig. 3.



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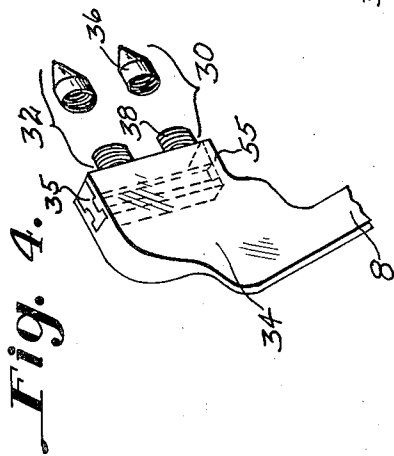
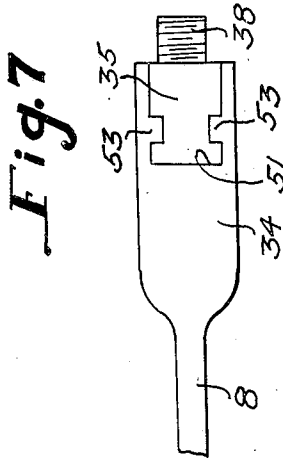
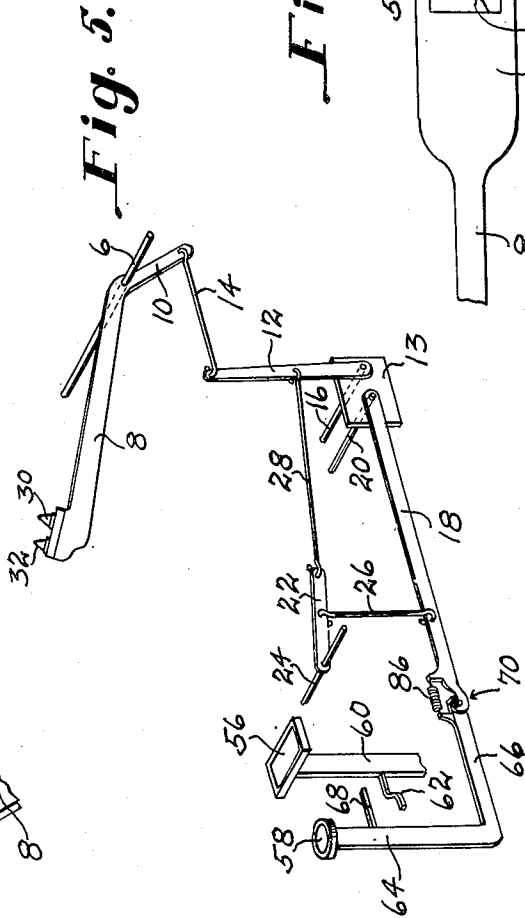
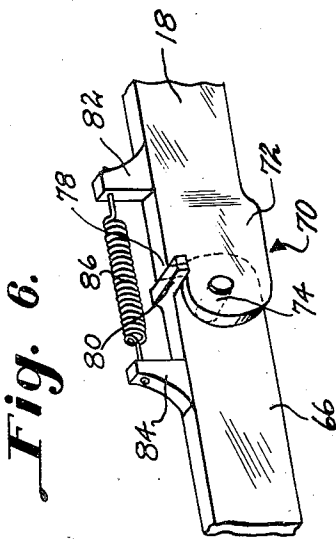
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TYPEWRITER LINE SCRIBING DEVICE

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3 Sheets-Sheet 3



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TYPEWRITER LINE SCRIBING DEVICE

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Application July 23, 1947; Serial No. 762,952

14 Claims. (Cl. 197-113)

1

This invention relates to a line scribing device incorporated in a typewriter, and to an improved line scribing instrument and the mounting therefor in the above device.

The invention has among its objects the provision of a simple, sturdy line scribing device in a typewriter, such device operating in conjunction with the tabulating system of the typewriter, to produce lines such as underscores, dashes, and the like, of predetermined length.

The invention has as a further object the provision of a device of the indicated character which may be readily added to existing typewriters or may be incorporated as an added feature in new typewriters.

A further object of the invention resides in the provision of such line scribing device which insures a predetermined pressure between the scribing instrument and the paper on the platen before the typewriter carriage is traversed, thus making certain the production of a uniform line.

A still further object of the invention lies in the provision of such line scribing device in a typewriter which allows lines to be drawn when the typewriter carriage is in either lower case or capital position without requiring shifting of the carriage.

Yet another object of the invention is the provision of an improved line scribing instrument, and a mounting therefor, for use in the line scribing device, the instrument being a self-contained marking device, and the mounting allowing the ready removal and replacement of the instrument from its supporting arm or bar in the typewriter.

These and further objects of the invention will be more readily apparent from the following description of a preferred embodiment of the invention, as shown in the accompanying drawings, in which:

Figure 1 is a view in plan of a typewriter with the line scribing device of the invention installed thereon;

Figure 2 is a view in section along the longitudinal axis of a line scribing instrument employed in the device;

Figure 3 is a somewhat diagrammatic view in side elevation of the line scribing device attached to a typewriter, parts of the typewriter being shown in dotted lines;

Figure 4 is a fragmentary view in perspective of the line scribing instrument attaching end of the mounting bar;

Figure 5 is a view in perspective of the parts

2

of the line scribing device and the tabulator key of the typewriter cooperating therewith;

Figure 6 is an enlarged view in perspective of the yieldable connection in the line scribing device actuating lever; and

Figure 7 is a view in plan of the top of the line scribing instrument mounting means shown in Figure 4.

The line scribing device of the invention is shown and described as incorporated as an alteration in a late model Royal typewriter of the noiseless type, which is provided with a tabulating system which may be set from the front of the machine by means not shown, and which has a tabulator key which, when actuated, allows the carriage to move to the left a distance predetermined by the setting of the next tabulator stop. It is to be understood, however, that the line scribing device of the invention may be incorporated in any new typewriter which is provided with a tabulator key, regardless of where the key is located or whether or not the tabulator stops may be set from the front of the machine. It will further be apparent that the line scribing device may be added to any existing typewriter equipped with a tabulator key, either by employing the key of a little used character located adjacent the tabulator key, as here shown, such first key and the linkage operated thereby being changed in accordance with the invention, or where space permits by the addition of a line scribing device operating key adjacent the tabulator key.

The typewriter, which is shown somewhat schematically, is provided with a frame generally designated 2, a movable carriage 3 carrying a platen 4 equipped with the hand knobs 5, the platen being rotated and the carriage traversed to the right by the conventional shift lever 7. The type bars, by which the type characters are presented to the platen, are carried on a sector provided with an elongated pintle 6. In the device as shown, one of the type bars of a little used character, the key of which lies near the tabulator key, has been removed and replaced by the modified bar 8 which is identical, but for its upper end carrying in this instance two scribing instruments, with the type bar which was removed. The sector and type bars lie, as is well known, beneath the noise damping cover or hood 9.

Lever 8 has a lower angularly related end 10 below the pintle 6, such lower end being connected by means of the link 14 to the upper end of the upright lever 12. Lever 12, which is one

3

of a series corresponding in number to the number of type keys and type bars in the typewriter, is mounted on the elongated pintle 16 carried by the sub-frame 13. The inner portion 18 of the line scribing device operating lever is mounted on elongated pintle 20. Downward movement of lever 18 about its axis swings lever 12 counterclockwise to rotate bar 8 clockwise, thus to present the scribing instruments carried thereby to the platen. In the typewriter in which the device is shown incorporated by way of example, motion is transmitted from lever 18 through the link 26 to the generally horizontal lever 22 pivoted on stationary pintle 24, the outer end of lever 22 being connected to lever 12 at approximately the mid-point of the latter by link 28. The mechanism thus far described from the lever 18 to the bar 8 is the conventional type bar operating mechanism of the described typewriter, by which a type bar is presented to the platen, the ribbon raising and carriage indexing mechanism being disconnected from such particular bar operating linkage, however, so that operation of the line scribe carrying bar does not raise the ribbon or move the carriage. The scribe is thus presented directly to the paper on the platen, and the carriage does not move except by virtue of the interlock with the tabulator mechanism.

The upper end 34 of the bar 8 is, as indicated, modified so as to carry two scribing instruments 30 and 32, the former being mounted vertically below the latter. Such enlarged upper end 34 of lever 8 shown more clearly in Figures 4 and 7, is provided with a passageway 51 extending generally parallel to the length of the upper portion of the bar. Such passageway is provided with the confronting longitudinal guide ribs 53 which fit within correspondingly shaped grooves in the removable slide member 35 to prevent withdrawal of such member from the end 34 of the bar 8 in a forward direction. Passageway 51 is closed at the bottom by a shelf member 55 which provides a stop for accurate location of the slide on the bar. It has been found that the slide is sufficiently tightly held on the bar if guideway 51 is made slightly undersize, particularly at its forward end, so that the forward side portions of part 34 resiliently press upon the slide.

Slide 35 carries on its forward face the two threaded studs 38 each of which receives the forward portion 36 of the scribing instrument shown in Figure 2. Portion 36 of the instrument, which is complete in itself, may thus readily be removed from the bar by being unscrewed from slide 35. Such portion consists of a hollow shell having a cylindrical rear portion 38 internally threaded at 40 and a conical forward portion 42 which is provided at the apex thereof with the seat 44 having the configuration of a portion of a sphere within which is held the ball 46 which fits such seat very accurately but with sufficient clearance for the passage of a film of ink in paste form on the ball. Such ink is held within the cavity 48 in communication with the rear surface of the ball, the cavity being closed by the rear partition member 50 threaded into the rear portion of part 38.

The two scribing instruments 30 and 32 are provided so that the desired line may be scribed with the typewriter carriage in either lower case or capital position, without shifting the carriage. Thus, scribing instrument 30 is employed when the carriage is in its lower case position, and instrument 32 is employed when the carriage is in its raised, capital position. Although the two

4

such scribing instruments have been described as producing a line located in the same position with respect to the characters, regardless of the carriage shift position, it will be apparent that by a suitable change of spacing between the scribing instruments and by a change of their spacing as a whole from pintle 6, such instrument may, for example, be employed to produce underscores and other desired lines in one position of the carriage, and when the carriage is shifted, may be employed to form dashes. It will further be apparent that by reason of the mounting of the scribing instruments both to be separately removable from their mounting slide, and to be removable as a pair from the bar with such slide, various combinations of colors are easily and quickly available to the typist in making scribed lines since the instruments may be replaced very quickly, either singly or in pairs.

Operation of the lever portion 18, previously described, is effected by the line scribing key 58 which, as shown, is located in the vicinity of the tabulator key 56. The typewriter is, of course, provided with the customary keys for letters and other characters, some of which are shown at 52, and with the spacer bar 54. The tabulator key, which is attached to an operating lever having an upright portion 60, upon being pressed releases the carriage escapement mechanism and allows the carriage to travel to the left to a position determined by the next adjacent setting of the tabulator stop in the tabulator system, shown generally at 94. The line scribing device actuating means of the invention is so constructed and arranged that after a predetermined travel of the scribing instrument actuating mechanism, so that the instrument is presented to the paper on the platen with a predetermined pressure, the tabulator key is operated to release the carriage. In the embodiment shown, such last described mechanism takes the form of an L-shaped mounting lever for the key 58 having the upright arm 64 and the horizontal arm 66, the latter arm being connected at its rear end to the forward end of the lever 18 by a yieldable connection 70. Such connection, which is shown more clearly in Figure 6, consists of the forward laterally off-set end 72 of lever 18, the headed pintle pin 74 projecting through such portion of lever 18 and the rear end of arm 66. The upper rear end of arm 66 is provided with a laterally projecting arm 80 confronting which, and contacting which, when the parts 18 and 66 are generally in alignment, is the stop shoulder 78 on portion 72 of lever 18. Adjoining portions of lever 18 and arm 66 are provided with confronting upright extensions 82 and 84, respectively, between which extends the tension spring 86 which normally holds stops 78 and 80 in contact with each other and is of sufficient strength to hold the parts in this relationship until lever 18 has been depressed sufficiently to present the scribing instruments against paper on the platen with a predetermined force.

The lost-motion operating connection between the tabulator system and the line scribing instrument operating mechanism is provided in this instance by the bent forwardly projecting dog member 62 mounted on the upright arm 60 of the tabulator key, and the dog 68 mounted on the arm 64 of the line scribe key. Dog 68 is positioned above dog 62 and in alignment therewith, so that upon predetermined travel of dog 68 downwardly it contacts dog 62. The dogs are so spaced verti-

5

cally when the keys are in their upper inoperative positions, that upon the application of downward pressure to key 58, the dog 68 travels freely until the scriber is presented with a predetermined force to the paper on the platen. Thereupon dog 68 contacts dog 62 and upon further movement downwardly of key 58 the tabulator key 56 is likewise thrust downwardly. During such further motion of key 58 the connection 70 yields, by virtue of the spring 86, so that arm 66 pivots downwardly with respect to lever 18 about pintle pin 74. After a relatively small amount of such added travel of key 58, depending, of course, upon the adjustment of the tabulator operating mechanism, the carriage is released by travel of tabulator key 56 and lever 60 and travels to the left, thereby forming a scribed line on the paper of the length determined by the previously set next adjacent tabulator stop.

As has been indicated above, the conventional ribbon operating and carriage indexing mechanism, associated with all the type bars and type keys in the conventional typewriter, is not employed with the line scribing instrument supporting bar 8. Such ribbon and carriage operating mechanism, shown generally in Figure 3, includes an elongated axle or pintle 88 mounted in sub frame 89, and a depending lever 90 on pintle 88 for each character, connection between each such lever 90 and the corresponding linkage for each character being effected by a means including spring 92. Such ribbon raising and carriage indexing means are, of course, retained for all characters to be printed by the typewriter, by use of the ribbon, in the typewriter modified in accordance with the invention.

I have described and illustrated preferred embodiments of the line scribing device incorporated in a typewriter and preferred embodiments of the line scribing instrument and the mounting therefor in accordance with the invention. It is to be understood, however, that the invention is not restricted to such preferred embodiments, but that it is capable of considerable variation as to details within the teachings thereof. The invention is, therefore, defined by the scope of the following claims.

I claim as new the following:

1. In combination with a typewriter having a carriage, a platen thereon, and a tabulator mechanism, a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter carrying the line scribing instrument for presentation to the platen, means for swinging the arm to move the line scribing instrument into operative position confronting the platen, and means operative in response to further movement of the last named means after the line scribing instrument has reached such operative position to operate the tabulator mechanism.

2. In combination with a typewriter having a carriage, a platen thereon, and a tabulator mechanism, a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter carrying the line scribing instrument for presentation to the platen, a line scribing device operating mechanism including means for swinging the arm to move the line scribing instrument into operative position confronting the platen, and lost motion means between the line scribing device operating mechanism and the tabulator mechanism operative in response to further movement of the last named means after the line scribing instrument has

6

reached such operative position to operate the tabulator mechanism, thereby to allow the carriage to move only after the line scribing instrument is in operative position.

3. In combination with a typewriter having a type bar segment, a carriage, a platen thereon, a tabulator mechanism, and a first tabulator key connected thereto for operating such mechanism, a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter type bar segment carrying the line scribing instrument for presentation to the platen, a line scribing device operating mechanism including a second key located in proximity to the tabulator key, means connected to the second key for swinging the line scribing instrument carrying arm to move such instrument into operative position confronting the platen, and lost motion means between the second key and the first key operative in response to further movement of the second key, after such scribing instrument has reached its operative position, to depress the tabulator key, and thus to operate the tabulator mechanism thereby to allow the carriage to move only after the line scribing instrument is in operative position.

4. In combination with a typewriter having a type bar segment, a carriage, a platen thereon, a tabulator mechanism, and a first tabulator key connected thereto for operating such mechanism, a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter type bar segment carrying the line scribing instrument for presentation to the platen, a line scribing device operating mechanism including a second key located in proximity to the tabulator key, means connected to the second key for swinging the line scribing instrument carrying arm to move the instrument into operative position confronting the platen, and lost motion means between the second and first keys comprising a first horizontally projecting member on the first key and a second horizontally projecting member on the second key, the second horizontally projecting member being positioned vertically above the first and so spaced that such second projecting member contacts the first only after such scribing instrument has reached its operative position, continued movement of the second key, after such contact, depressing the tabulator key and thus operating the tabulator mechanism, thereby to allow the carriage to move only after the line scribing instrument is in operative position.

5. In combination with a typewriter having a type bar segment, a carriage, a platen thereon, a tabulator mechanism, and a first tabulator key connected thereto for operating such mechanism, a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter type bar segment carrying the line scribing instrument for presentation to the platen, a line scribing device operating mechanism including a second key located in proximity to the tabulator key, means connected to the second key for swinging the line scribing instrument carrying arm to move the instrument into operative position confronting the platen, and lost motion means between the second and first keys comprising a first horizontally projecting member on the first key and a second horizontally projecting member on the second key, the second horizontally projecting member being positioned vertically above the first and so spaced that such second projecting member contacts the first only

7

after such scribing instrument has reached its operative position, continued movement of the second key after such contact, depressing the tabulator key and thus operating the tabulator mechanism, thereby to allow the carriage to move only after the line scribing instrument is in operative position, the line scribing device operating mechanism including a spring-tensioned yieldable connection which allows such continued movement of the second key after the scribing instrument has reached its operative position.

6. In combination with a typewriter having a type bar segment, a carriage, a platen thereon, a tabulator mechanism, and a first tabulator key connected thereto for operating such mechanism, a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter type bar segment carrying the line scribing instrument for presentation to the platen, a line scribing device operating mechanism including a second key located in proximity to the tabulator key, means connected to the second key, including a lever connected to such key for swinging the line scribing instrument carrying arm to move such instrument into operative position confronting the platen, and lost motion means between the second and first keys comprising a first horizontally projecting member on the first key and a second horizontally projecting member on the second key, the second horizontally projecting member being positioned vertically above the first and so spaced that such second projecting member contacts the first only after such scribing instrument has reached its operative position, continued movement of the second key, after such contact, depressing the tabulator key and thus operating the tabulator mechanism, thereby to allow the carriage to move only after the line scribing instrument is in operative position, the lever connected to the second key including a spring-tensioned yieldable pivoted joint which allows such continued movement of the second key after the scribing instrument has reach its operative position.

7. In combination with a typewriter having a carriage, a platen thereon, and a tabulator mechanism, a line scribing device comprising a line scribing instrument, means mounted on the typewriter carrying the line scribing instrument selectively to present it to the platen, means for operating such scribing instrument mounting means to move the line scribing instrument into operative position confronting the platen, and means operative in response to further movement of the last named means after the line scribing instrument has reached such operative position to operate the tabulator mechanism.

8. In combination with a typewriter having a platen, a line scribing device comprising a line scribing instrument, and means comprising an arm on the outer end of which the instrument is connected mounted on the typewriter selectively to present the instrument to the platen, said instrument comprising a container having a space therein for ink, a partially spherical seat in the forward end of the container communicating with such space, and a ball retained in the seat for rotation therein, whereby it deposits ink upon the surface of material which its outwardly exposed surface contacts, said line scribing instrument being detachably connected to the arm for ready removal therefrom, said detachable connection including a guideway on the outer end of the arm, a removable slide retained in said guideway, a threaded stud on the platen con-

8

fronting face of the slide, and an internally threaded sleeve cooperating with such stud on the rear end of the scribing instrument.

9. In combination with a typewriter having a type bar carrying segment, a carriage, a platen thereon, and means for shifting the type bars and platen vertically with respect to each other, a line scribing device comprising two spaced line scribing instruments, and means comprising an arm on the outer end of which the instruments are connected, selectively to present the instruments to the platen, the arm being mounted on the type bar segment, each of said scribing instruments comprising a container having a space therein for ink, a partially spherical seat in the forward end of the container communicating with such space, and a ball retained in the seat for rotation therein, whereby it deposits ink upon the surface of material which its outwardly exposed surface contacts, said line scribing instruments being so spaced on the arm that one of the scribing instruments is presented in operative position to the platen when the carriage and type bars are in lower case position relative to each other, and that the other of the scribing instruments is presented in operative position to the platen when the carriage and type bars are shifted to capital position with respect to each other.

10. In combination with a typewriter having a type bar carrying segment, a carriage, a platen thereon, and means for shifting the type bars and platen vertically with respect to each other, a line scribing device comprising two spaced line scribing instruments, and means comprising an arm on the outer end of which the instruments are detachably connected, selectively to present the instruments to the platen, the arm being mounted on the type bar segment, each of said scribing instruments comprising a container having a space therein for ink, a partially spherical seat in the forward end of the container communicating with such space, and a ball retained in the seat for rotation therein, whereby it deposits ink upon the surface of material which its outwardly exposed surface contacts, said line scribing instruments being so spaced on the arm that one of the scribing instruments is presented in operative position to the platen when the carriage and type bars are in lower case position relative to each other, and that the other of the scribing instruments is presented in operative position to the platen when the carriage and type bars are shifted to capital position with respect to each other, said detachable connection including a guideway on the outer end of the arm, a removable slide retained in said guideway, and means on the platen confronting face of the slide attaching the scribing instruments thereto at the rear ends of such instruments.

11. In a typewriter having a carriage, a platen thereon, and a tabulator mechanism, the combination therewith of a line scribing device comprising a line scribing instrument, means mounted on the typewriter carrying the line scribing instrument selectively to present it to the platen, means for operating such line scribing instrument mounting means to move the line scribing instrument into operative position confronting the platen, said last named means comprising a first operating system connected to the scribing instrument mounting means, a second operating system serially connected to the first such system, the second such system including a line scribing instrument operating key, and a yieldable connection between the first and second operating

systems whereby movement of the operating key and thus of the second operating system may be continued after the scribing instrument has reached its operative position, and means operative in response to further movement of the second operating system after the line scribing instrument has reached such operative position to operate the tabulator mechanism.

12. In a typewriter having a carriage, a platen thereon, and a tabulator mechanism, the combination therewith of a line scribing device comprising a line scribing instrument, means mounted on the typewriter carrying the line scribing instrument selectively to present it to the platen, means for operating such line scribing instrument mounting means to move the line scribing instrument into operative position confronting the platen, said last named means comprising a first lever system connected to the scribing instrument mounting means, a second lever system serially connected to the first such lever system, the second such lever system including a line scribing instrument operating key, and a yieldable connection between the first and second lever systems whereby movement of the operating key and thus of the second lever system may be continued after the scribing instrument has reached its operative position, and means operative in response to further movement of the second lever system after the line scribing instrument has reached such operative position to operate the tabulator mechanism.

13. In a typewriter having a carriage, a platen thereon, and a tabulator mechanism, the combination therewith of a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter carrying the line scribing instrument for presentation to the platen, means for swinging the arm to move the line scribing instrument into operative position confronting the platen, said last named means comprising a first lever system connected to the line scribing instrument mounting arm, a second lever system serially connected to the first such lever system, the second such lever system including a line scribing instrument operating key, and a yieldable connection between the first and second lever systems whereby movement of the oper-

ating key and thus of the second lever system may be continued after the scribing instrument has reached its operative position, and means operative in response to further movement of the second lever system after the line scribing instrument has reached such operative position to operate the tabulator mechanism.

14. In a typewriter having a carriage, a platen thereon, and a tabulator mechanism, the combination therewith of a line scribing device comprising a line scribing instrument, an arm pivotally mounted on the typewriter carrying the line scribing instrument for presentation to the platen, a line scribing device operating mechanism including means for swinging the arm to move the line scribing instrument into operative position confronting the platen, said last named means comprising a first lever system connected to the line scribing instrument mounting arm, a second lever system serially connected to the first such lever system, the second such lever system including a line scribing instrument operating key, and a yieldable connection between the first and second lever systems whereby movement of the operating key and thus of the second lever system may be continued after the line scribing instrument has reached its operative position, and lost motion means between the second lever system of the scribing device operating mechanism and the tabulator mechanism operative in response to further movement of the second lever system after the line scribing instrument has reached its operative position to operate the tabulator mechanism, thereby to allow the carriage to move only after the line scribing instrument is in operative position.

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