Oct. 13, 1964 O. WALTER 3,153,240

TAPE RECORDING TYPEWRITERS

Filed April 9, 1959 2 Sheets-Sheet 1

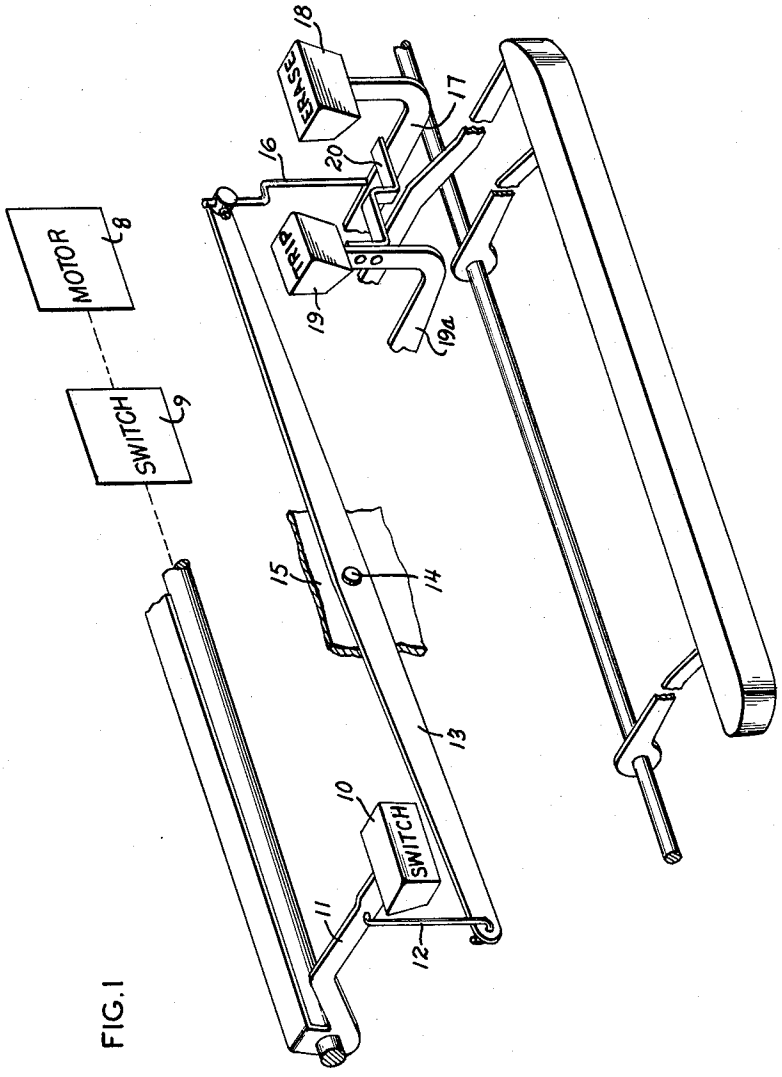


FIG. 1

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FIG. 2

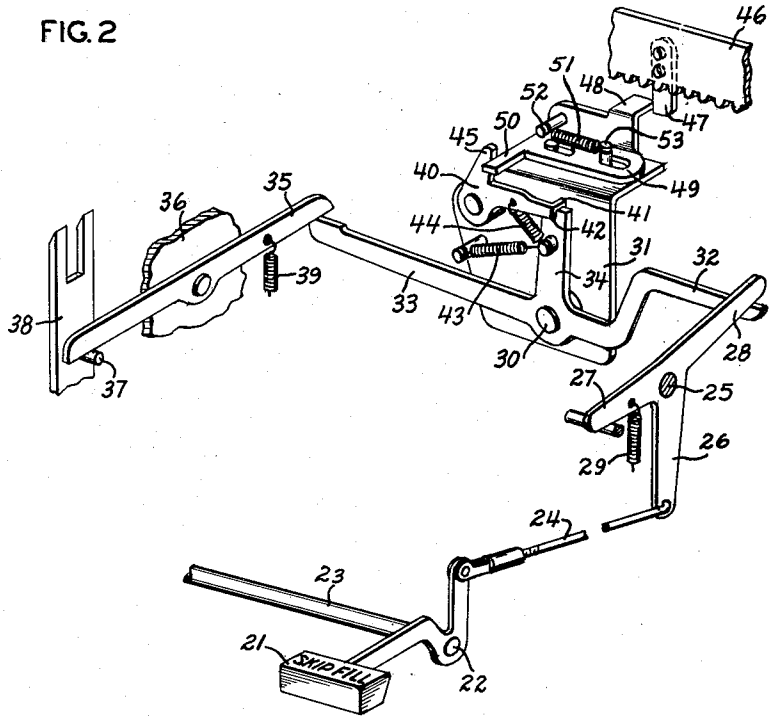
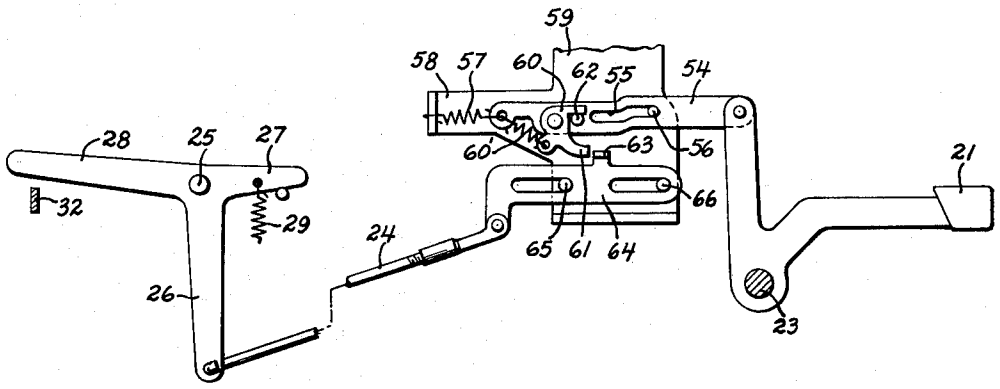


FIG. 3



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TAPE RECORDING TYPEWRITERS

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9 Claims. (Cl. 346—74)

This invention relates to new and useful improvements in tape recording typewriters and is especially related to the type of such a machine as is shown in U.S. Patent No. 2,874,369 issued February 17, 1959, to A. Blain et al. and entitled "Machine for Recording on Magnetic Tape." The patented machine is provided with an Erase key, a Trip key, a motor switch, and a Skip-Fill key. The operations brought about by the manipulation of these keys is fully described in the patent.

It is an object of this invention to present a novel combination of operations related to the Erase and Skip-Fill keys which greatly enhance the operation of the machine.

A more specific object is to condition the erase mechanism when the motor switch is turned off and to disable tabulation temporarily when the Skip-Fill key is operated.

Generally speaking the invention provides a connection between the Motor switch and the Erase key which will cause the depression of the Erase key when the switch is turned off and thus set the erase mechanism for effective operation when the switch is turned on again. This is for the purpose of erasing any part of a blockette on the tape if the operator turns off the switch before a line is finished. The Skip-Fill key is connected to the tabulator stop blade in such a manner that when the key is operated the tabulator stop blade is disabled until the operated parts are restored to normal by the full movement of the carriage in letter spacing direction. These two mechanisms are operable independently of each other, but each performs its part when called upon in the ordinary cycle of operations of the machine in every day use. Each mechanism in its own time and place in the normal operation of the machine contributes its respective effect to the achievement of the end result for which the machine was designed.

The preferred forms of the invention are shown in the drawings, of which,

FIG. 1 is a perspective of cooperative mechanism disposed between the power switch and the Erase key;

FIG. 2 is a perspective view of cooperative mechanism disposed betwen the Skip-Fill key and the tabulator stop blade; and

FIG. 3 is a modified form of the mechanism shown in FIG. 2, in which the Skip-Fill key is allowed to return to normal position immediately after depression.

This invention is adapted to be used on a tape recorder of the type shown in the above mentioned patent in which there is a Motor Switch, an Erase key, a Trip key, and a Skip-Fill key. In the following description of the invention, the various elements shown in the drawings will be related to corresponding or complementary elements in the tape recorder of Blain et al. in order to illustrate how the instant invention cooperates with the structure of that device. However, it is to be understood that this description of the relation of the instant invention to the device of the above-mentioned patent is for purposes of illustrating one possible use of the invention and is not meant to infer that the invention is restricted solely to use with this device.

Referring to FIG. 1 of the drawings the Motor switch key **10** has an operating arm **11** which serves to energize and de-energize the drive motor **8** via a main switch **9**. The motor **8** and switch **9** correspond to elements **28** and **606**, respectively, as shown in FIGURE 43 of Blain et al. From the operating arm **11** there depends a link **12** connected to one end of a lever **13** pivoted at **14** to a plate **15** of the machine frame. The other end of lever **13** has thereon an adjustable dependent stem **16** which extends downwardly and rests upon the top of the arm **17** to which the Erase key **18** is connected. Adjacent the Erase key is disposed the Trip key **19** which has a laterally extending tongue **20** extending from the arm **19***a* over and resting on the arm **17** of the Erase key. The arm **19***a* of the Trip key **19** operates a trip mechanism such as illustrated in FIGURE 15 of Blain et al. and would directly cooperate with the lever arm **238** illustrated therein to effect a movement of the carriage in letter-spacing direction. The arm **17** of the Erase key **18** operates an erase mechanism such as illustrated in FIGURE 16 of Blain et al. and would directly cooperate with the lever arm **253** illustrated therein to effect operation of that mechanism.

In the operation of this device, when the motor switch **10** is in its operative position, shown in FIG. 1, the Erase mechanism may be operated by the manual depression of the Erase key in the usual manner as set forth in the above patent. In this machine each line of typing must be completed to fill a blockette on the tape. Should the operator, for some reason, need to shut off the switch **10** during the typing of a line of data, this is effected by moving the switch **10** upward. This will cause the stem **16** to be moved downwardly against the arm **17** of the erase key which will depress this arm so that the erase power mechanism is conditioned for use and when the switch key **10** is pushed down to the "On" position, the carriage is returned and the data on the tape, corresponding to what has been written in the unfinished line, will be erased. It is clear that the Erase key may be depressed independently of the stem **16** and will control the return of the carriage. It is also clear that the Erase key may be depressed by the depression of the Trip key **19**, through the intermediary of the tongue **20**.

Referring to FIG. 2, there is shown the Skip-Fill key **21** connected at **22** to rod **23**. To the rear end of this key is connected an adjustable link **24** the other end of which is connected to the lower end of arm **26** of a bell crank lever pivoted to a stud **25**. The bell crank has other arms **27** and **28**. Arm **27** is urged downwardly by a spring **29** and the end of arm **28** rests upon the end of an arm **32** of a lever pivotally mounted at **30** to a plate **31** of the machine. Above the pivot point **30** the lever has an upward extension **34**. The other end **33** of the lever rests beneath the end **35** of another lever pivoted to a frame plate **36**. The other end of this last named lever **35** rests above a stud **37** extending laterally from the side of the tabulator stop blade **38**, which corresponds to a tabulator abutment such as the arresting stop **331** illustrated in FIGURES 17 and 18 of Blain et al. The parts are shown in the position occupied by them when the Skip-Fill key has been depressed, in which position the tabulator stop blade is lowered. One end of the lever **35** is engaged by a spring **39** tending to move it down at that point to release the pressure of the other end of the lever on the blade **38** and permit it to move upwardly. With the parts in the illustrated operated position the extension **34** has been moved to permit a latch pawl **40** to drop and dispose its end **41** back of a shoulder **42** on the top of the extension **34** to hold the extension and associated parts in the operated position. A spring **43** is connected to the extension **34** at one end and to the plate **31** at the other and tends to restore the extension when it is released by the pawl. A spring **44** connected at one end to the pawl **40** and at the other end to the extension **34** tends to hold the pawl engaged. The pawl **40** has a rear upwardly extending finger **45**. The carriage return rack shown at **46** is similar to car-

riage rack 214 illustrated in FIGURE 1A of Blain et al. and has a dependent finger 47 adapted, when the carriage is at the end of its leftward or letter space travel, to engage a lateral lip 48 on a slide member 49 slidably disposed on top of the plate 31. This slide plate is slotted and pins project through said slots from the bracket plate 31. One of these pins is noted at 53. Another pin 52 extends from the wall of the slide 49 and a spring 51 connects these two pins and tends to restore the slide 49 to normal position. The slide 49 has a laterally extending finger 50 adapted to engage with the upstanding finger 45 on the pawl 40 to lift the pawl when the carriage reaches the end of its travel in tabulating or letter space movement direction and permit the parts to restore to normal position.

In the operation of the mechanism, when the Skip-Fill key is depressed, the parts operate in the manner described to pull down the tabulator bar stop and the parts are held in this position by the pawl 40 until they are released by the carriage at the end of its travel in the manner above mentioned. The effect of this mechanism therefore is to lower the tabulator stop blade during a tabulating operation and to have it remain lowered to clear any set tab stops in the machine and to automatically restore the tabulator stop blade to normal position at the end of the carriage movement. Such a function is called a Skip-Fill operation.

Referring to FIG. 3, there is shown a modified mechanism which in most parts is the same as shown in FIG. 2, except that there is provided improved means to permit the Skip-Fill key to restore to normal position immediately after it is depressed and released while the remaining parts are operated as before and remain operated until released in the manner above described. In this modification there is disposed between the Skip-Fill key and the element 24 mechanism to achieve the above mentioned advantage. It comprises a slide member 54 connected at one end to the rear of the arm connected to the Skip-Fill key. This slide is provided with a curved slot 55 in which rides a pin 56 fastened to a frame plate 59. The frame plate 59 has a lateral extension 58 and a spring 57 extends from the end of this extension 58 to the end of the slide 54 tending to hold the slide 54 in the position shown in FIG. 3. Pivoted to the side of the slide 54 is a dog member having an upper finger 60 normally bearing against a stop pin 62 on the slide member 54. It has a lower finger 61 and is normally held against the stop pin 62 by a spring 60 extending between the dog and the end of the slide 54. As the slide 54 is moved to the right (as in FIG. 3) by the depression of the Skip-Fill key 21, the lower finger 61 on the dog 60 will encounter a lip 63 on the upper face of another slide member 64 to move the latter to the right. This last slide member is slotted and rides along the face of frame plate 59 on pins 65 and 66 mounted on said plate. After the slide 54 has moved to the right a short distance, the curvature of the slot 55 therein in conjunction with the pin 56 will cause the slide 54 to be lifted sufficiently to raise the lower finger 61 above the lip 63 so that they clear each other. If the finger of the operator is then released from key 21 the spring 57 will restore the slide 54 to normal as well as the key 21. It will be noted that the second slide 64 is connected to the element 24 which is moved as in the form shown in FIG. 2 to operate the mentioned parts and hold them operated until they are released by the carriage at the end of its leftward travel as above described. If the finger 61 is moved beyond the lip 63 as it is cleared therefrom it will snap over the lip on the return movement of the slide 54 against the action of spring 60' and then return to the normal position as shown. This affords a simple efficient mechanism whereby the Skip-Fill key when depressed and then released will spring back to normal position even though the other related parts mentioned are held in operated position until released, as above described by the limit travel of the carriage in leftward or letter spacing direction.

It will thus be seen that I have provided cooperative mechanisms which, each in its own time and place in the normal operation of the recording typewriter, contribute their respective effects to the achievement of the end result for which the machine was designed. When the operator leaves the machine and turns off the power the operations described take place automatically so that only a full line or blockette may be recorded. Furthermore, the Skip-Fill key is operated and returned to normal position as soon as released and the tabulator stop bar is lowered during tabulation and automatically returned to normal when the carriage reaches the limit of its travel in tabulating or letter space direction.

It should be obvious from the above description that the elements of the invention are not restricted to use with any one particular device but that they may be used in any mechanism where the particular operations and novel advantages characteristic of the invention are desired.

What I claim is:

1. In a key set power operated typewriter for magnetically recording data on a tape including motor means, carriage return means controlled by the operation of said motor means, erasing means, and an Erase key means for controlling return of the carriage and operation of the erasing means for erasing data recorded on the tape as the carriage is returned by said motor means, a Motor Control switch movable to "Off" and "On" positions and an Erase key presenting an arm, the invention which comprises a linkage extending between the switch and the arm and operable to depress the arm when the switch is moved to "Off" position to condition said motor means for carriage return and the erasing means for data erasure when the switch is subsequently moved to "On" position.

2. The invention of claim 1 in which the end of the linkage adjacent the Erase key is a stem which rests upon the Erase key arm to depress it when the switch is moved, whereby the key may be depressed independently of the movement of the switch when desired.

3. The invention of claim 1 including a Trip key for controlling said carriage return means, said Trip key being formed with a tongue extending laterally from the Trip key and lying over the Erase key arm to depress the same when the Trip key is operated.

4. In a typewriter for magnetically recording data on a tape having carriage controlling tabulating means including a tabulator stop bar and a Skip-Fill key means for controlling the operation of the carriage and the simultaneous recording of a fill character on the tape during movement of the carriage in tabulating direction, the invention which comprises a linkage means between the stop bar and the key for directly moving the stop bar to an inoperative position when the key is depressed.

5. The invention of claim 4 in which there is a movable carriage rack, a pawl means to engage and hold the linkage in its operated position, and means operated by the carriage rack to release said pawl means when the carriage reaches the end of its movement in tabulating direction.

6. The invention of claim 5 in which the linkage has an extension engaged by said pawl when the linkage is moved to operative position, an ear on said pawl, a slide member to engage said ear when the slide is moved to release said pawl from the linkage, a dependent finger on the rack, and a lip on the slide to be engaged by the finger on the rack to move the slide to release said pawl and allow the linkage to restore to normal.

7. In a typewriter for magnetically recording data on a tape having carriage controlling tabulating means including an Erase key means, a motor switch, a tabulator stop bar and Skip-Fill key mechanism for controlling the operation of the carriage and the simultaneous recording of a fill character on the tape during movement

of the carriage in tabulating direction, the invention which comprises linkage means between the Motor switch and the Erase key to operate the Erase key mechanism when the Motor switch is moved to inoperative position in combination with a linkage means between the Skip-Fill key mechanism and the tabulator stop bar to move the stop bar to inoperative position when the Skip-Fill key mechanism is operated.

8. In a typewriter for magnetically recording data on a tape having carriage controlling tabulator means including a tabulator stop bar and a Skip-Fill key mechanism for controlling the operation of the carriage and the simultaneous recording of a fill character on the tape during movement of the carriage in tabulating direction, a linkage to be operated by said key mechanism, a slide connected to said linkage, a lip on said slide, a second slide member connected to the key mechanism and operated thereby, said second slide member having a curved slot therein, a fixed pin in said slot, a pivoted pawl on said second slide, a finger on said pawl to engage said lip when the second slide is moved by the key mechanism in a given direction, said slot and pin arrangement causing the second slide to be shunted laterally with respect to said second slide after a predetermined amount of movement to disengage the finger from the lip whereby the key mechanism may be restored to normal after the linkage is operated.

9. In a typewriter for magnetically recording data on a tape having carriage controlling tabulator means including a tabulator stop bar and a Skip-Fill key means for controlling the operation of the carriage and the simultaneous recording of a fill character on the tape during movement of the carriage in tabulating direction, a tabulator stop bar control linkage to be actuated by the movement of the key means, and coacting means positioned between the key means and the linkage to permit the key to be restored to normal after the linkage is moved to actuated position and before the linkage is restored to normal.

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