

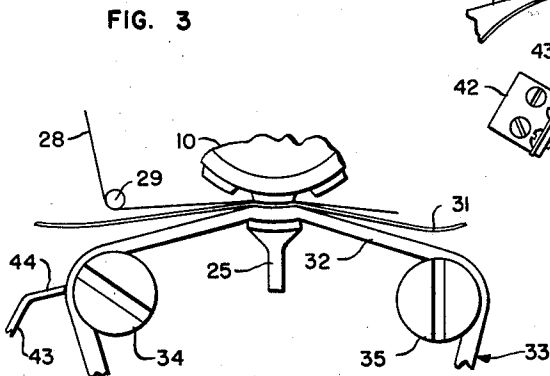
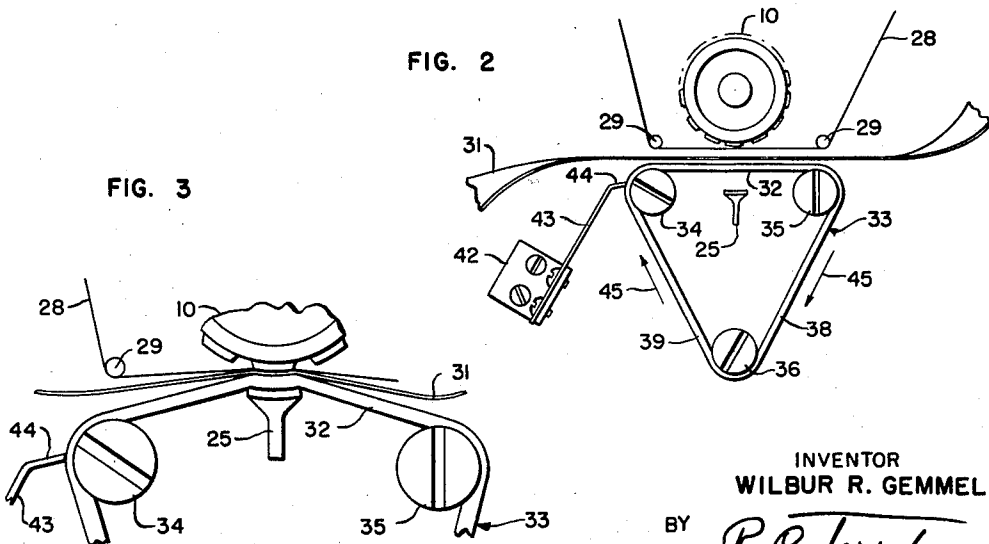
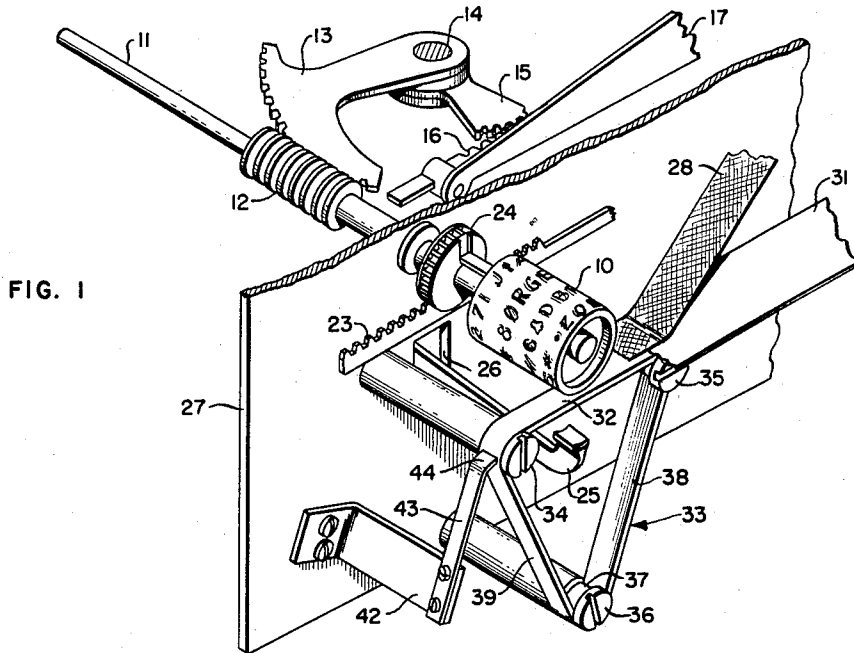
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W. R. GEMMEL

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RESILIENT BELT PLATEN FOR TYPING APPARATUS

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INVENTOR
WILBUR R. GEMMEL

BY

R. C. Terry

ATTORNEY

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RESILIENT BELT PLATEN FOR TYPING APPARATUS

Wilbur R. Gemmel, Wheaton, Ill., assignor to Teletype Corporation, Chicago, Ill., a corporation of Delaware

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5 Claims. (Cl. 197-49)

This invention relates to typewriting apparatus and more particularly to a resilient belt platen for a typewriting apparatus.

In that class of typewriting apparatus wherein relative movement between a platen and the type-carrying elements is utilized to effect printing by transferring ink from an inking ribbon to the paper, frequent replacement of the platen has been necessary due to the fact that the type on the type-carrying element is always aligned with the same portion of the platen. In order to overcome this difficulty it has, in the past, been proposed to make the platen with an outer surface of soft rubber or where a type wheel is used to cover the print hammer with a layer of soft rubber or similar material. In the latter-mentioned case however, the print hammer must have its soft rubber facing replaced frequently due to the fact that grooves will wear in the soft rubber facing because the same portion of the printing hammer always strikes the type face on the type-carrying element.

The primary object of the present invention is to provide a platen so constructed that it will present a new surface of it to the printing or typing characters at each operation.

Another object of the invention is to provide a platen for a typing apparatus which will be moved a small amount at each typing operation thereby to present a new portion of the platen to the printing characters on the typing element of the typing apparatus.

A still further object of the invention is to provide a platen for a typing apparatus which is moved a small amount at each typing or printing operation so that a relatively long interval of time will intervene between successive presentations of the same portion of the platen to the type.

In accordance with one embodiment of the invention, as applied to a typewriting apparatus of the class wherein the characters are carried on a type wheel, an endless belt is provided which is made of resilient material, such for example as relatively soft rubber. This belt serves as a platen and is driven into engagement with the under surface of the paper or tape on which the printing is to be effected by a printing hammer which will cause the paper to be driven into engagement with an inking ribbon interposed between the paper and the type characters on the type wheel.

In the preferred embodiment of the invention, the endless belt is directed over three pins so that it travels in a roughly triangular path. The course of the endless belt which is juxtaposed to the printing hammer has in engagement with it, at a point remote from the point where the print hammer strikes it, a spring detent which presses the belt against one of the guide pins which serves to guide the belt. Thus, when the print hammer drives the belt toward the type wheel, the belt will be stretched and in stretching will be pulled a very short distance past the detent as well as past another supporting pin which supports the upper course of the

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belt. Since the spring detent will resist the movement of the belt back to the position it previously occupied when it was in a relaxed condition, that is, not being forced upwardly by the print hammer, the belt will be caused to creep away from the detent one step for each printing operation. Obviously, this creeping action is very slow and consequently, there will be a relatively long period between the times when identical portions of the belt are presented to position above or in association with the print hammer.

A more complete understanding of the invention may be had by reference to the following detailed description when considered in conjunction with the accompanying drawing wherein:

Fig. 1 is a perspective view of the printing portion of a printing telegraph apparatus having a rotatably and axially movable type wheel in association with an endless belt flexible platen made in accordance with the present invention;

Fig. 2 is a side elevational view of the apparatus shown in Fig. 1 illustrating the relative position of the tape on which the printing is to be effected, the inking ribbon, the type wheel and the flexible belt platen, and

Fig. 3 is a fragmentary view, on an enlarged scale, of a portion of the structure shown in Fig 2 illustrating the manner in which the print hammer stretches the flexible belt platen.

Referring now to the drawings wherein like reference characters designate the same parts in the several views, it will be seen that in Fig. 1 there is illustrated a portion of a printing telegraph apparatus of the type disclosed in detail in the copending application of Robert E. Arko et al., Serial No. 475,628, filed December 16, 1954. In the disclosure of the application just mentioned, there is provided a type wheel 10 which is mounted on a shaft 11 and has fixed to it a cylindrical rack 12. The cylindrical rack 12 is in mesh with an arcuate gear segment 13 mounted upon a shaft 14. In addition to the arcuate gear segment 13, the shaft 14 also has fixed to it a gear segment 15 which is in turn in mesh with a rack 16 actuated by an output lever 17.

The output lever 17 may be reciprocated by any suitable mechanism to effect, through the segments 13 and 15 and the cylindrical rack 12, the axial positioning of the shaft 11 and consequently, the axially positioning of the type wheel 10.

The rotational position of the type wheel 10 may be effected by any suitable mechanism for example, such a mechanism as that shown in the aforementioned Arko et al. application wherein there is shown a rack 23 operable under control of a suitable selecting mechanism to select the position to which the type wheel should be moved. The rack 23 meshes with a pinion 24 that is slidably keyed to the shaft 11 whereby, although reciprocation may be imparted to the shaft 11 without moving the pinion 24, any rotational movement imparted to the pinion 24 will be imparted to the shaft 11 and consequently to the type wheel 10 to position the type wheel 10 over a print hammer. The print hammer 25 extends through a suitable aperture 26 formed in a support plate 27 in which the shaft 11 is slidably and rotatably mounted. An inking ribbon 28 of any suitable type may be guided for movement in a path closely adjacent to the type wheel 10 by suitable guide pins 29 as is usual in such apparatus.

Means, not shown, are provided for feeding a tape 31 in a path directly below the inking ribbon 28 and directly above an upper course 32 of a flexible belt platen 33. The flexible belt platen 33 may be made of relatively soft rubber or any other suitable resilient, elastic material and is guided about three guide pins or posts 34, 35 and 36, each of which has an annular guide groove

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37 formed in it for holding the platen 33 in the position shown. The pins 34, 35 and 36 are suitably fixed to the support plate 27 and in addition to guiding the platen 33 through the course 32 also guide it in two diagonal courses 38 and 39.

Mounted on the support plate 27 is a bracket 42 which has a spring detent 43 fixed to it and extending upwardly to proximity with the guide pin or post 34. At its upper end the spring detent 43 has a bent-over portion 44, the free lip of which will bear against the platen 33 at the point where the platen passes around the guide pin or post 34. The lip of the bent-over portion 44 is so disposed with respect to the axis of the pin 34 that it will resist the movement of the platen 33 in a direction opposite to the direction indicated by the arrows 45 on Fig. 2, but will permit the platen 33 to be moved in a clockwise direction around the three guide pins 34, 35 and 36.

In the operation of the apparatus, the type wheel 10 may be positioned in any desired rotative and axial position under the control of the rack 23 and the arcuate gear segment 15 to position any desired character in position in alignment with the print hammer 25. After the desired character on the type wheel 10 has been positioned in alignment with the print hammer 25, the print hammer may be actuated, by any suitable mechanism (not shown), to strike the under side of the course 32 of platen 33. Since the platen 33 is made of an elastic and flexible material such as soft rubber, the print hammer 25 will drive the course 32 of the platen 33 upwardly as shown in Fig. 3 to force the tape 31 upwardly and to engage it with the inking ribbon 28 and to drive the inking ribbon 28 against the selected character on the type wheel 10 thereby to cause the desired character to be imprinted upon the tape. As the print hammer drives the course 32 on the platen 33 upwardly to the position shown in Fig. 3, the platen will stretch and will slide on the guide pins 34 and 35 a short distance in tending to distribute stretch of the platen 33 over its entire length. The amount of movement of the platen 33 with respect to the guide pins 34 and 35 will be very slight but, since the spring detent 43 is a very light spring substantially equal amounts of the platen 33 will be moved around each of the guide pins 34 and 35. As soon as the print hammer starts its return stroke, the platen in relaxing to the position shown in Figs. 1 and 2 will tend to move back to its previous position. However, the detent 44 will prevent this reverse movement of the platen 33 at the point where the detent 44 engages the platen and consequently, the tendency of the resilient and elastic belt platen 33 to distribute the tension equally about the three pins 34, 35 and 36 will cause the platen 33 to "inch" or creep about the three pins 34, 35 and 36 in the direction indicated by the arrows 45 in Fig. 2. Thus, at each printing operation a new portion of the platen 33 will be presented to position between the print hammer 25 and type wheel 10 until the platen 33 has made a complete cycle around the three pins 34, 35 and 36. Due to the fact that the movement of the platen 33 is in very slight increments, it will take a substantial length of time for a portion of a platen which had been presented between the print hammer 25 and type wheel 10 to return to that position and in this time interval, the resiliency of the platen will cause it to return to its original condition.

Although the present invention has been shown and described in connection with a specific type of printing telegraph apparatus, it should be understood that numerous variations thereof may be employed without departing from the invention and that the description of the invention in connection with a printing telegraph apparatus should not be construed as an implication that the

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apparatus is usable only in printing telegraph apparatus, since obviously it is usable in connection with other type-writing apparatus.

What is claimed is:

5 1. In a typewriting machine, a platen assemblage comprising an endless belt of resilient, flexible, elastic material, means for supporting said belt in position to interpose one course of it between the elements of the machine to which relative movement is imparted to bring characters on a typing element to operative relation to a web of material, and detent means for preventing said belt from moving in one direction about said supporting means whereby, when relative movement is imparted to said elements of the machine, one of them will engage said belt and stretch it and upon disengagement of said one element from the belt, the belt will move in a direction opposite to said one direction.

2. In a typewriting apparatus having a type wheel, a printing hammer and means for driving an inking ribbon between the hammer and the wheel, a platen assemblage comprising an elastic resilient platen member having a portion disposed between the hammer and ribbon for supporting a tape whereby operation of the hammer will drive said portion of the platen, the tape and the inking ribbon toward the type wheel and will deform the platen, and a detent engaging the platen at a point remote from the point of impact of the hammer with the platen to effect displacement of said portion of the platen upon relaxation thereof after it has been deformed by the print hammer.

3. In a typewriting machine, a platen assemblage comprising an endless belt of resilient, flexible, elastic material, a plurality of stationary pins for supporting said belt in position to interpose one course of it between elements of the machine to which relative movement is imparted to print characters on a web of material, and a detent spring resiliently engaging said belt to prevent said belt from moving in one direction about said pins whereby said belt is stretched when relative movement is imparted to the machine elements and is relaxed when the machine elements disengage from the belt thereby to cause the belt to move in a predetermined direction and to present a new surface of the belt to operative relationship with the machine elements.

4. In a typewriting machine, a platen assemblage comprising an endless belt of flexible, elastic material, a plurality of stationary pins for supporting said belt in a plurality of courses and for supporting one of said courses in position between elements of the machine to which relative movement is imparted to print characters on a web of material, and a detent spring resiliently engaging the outer surface of said belt at a position to pinch the belt against one of said pins and prevent the belt from moving in one direction about said pins thereby to cause the belt to creep around the pins.

5. In a typewriting machine having a print hammer for driving a web of paper against a character printing surface, an endless belt of resilient, elastic material, a plurality of guides for guiding said belt with one course thereof between the print hammer and the web of paper on which the characters are to be impressed, and a detent positioned to engage with the belt at a point remote from the printing area whereby when the print hammer is actuated and stretches the belt in driving it against the paper, a small length of the belt will be drawn past the detent and will be prevented by the detent from returning to its original position when it relaxes after the hammer stroke.

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