

Aug. 24, 1954

R. M. FORD
HECTOGRAPHIC RIBBON-FEEDING APPARATUS
FOR TYPEWRITING MACHINES

2,687,200

Filed Feb. 20, 1951

3 Sheets-Sheet 1

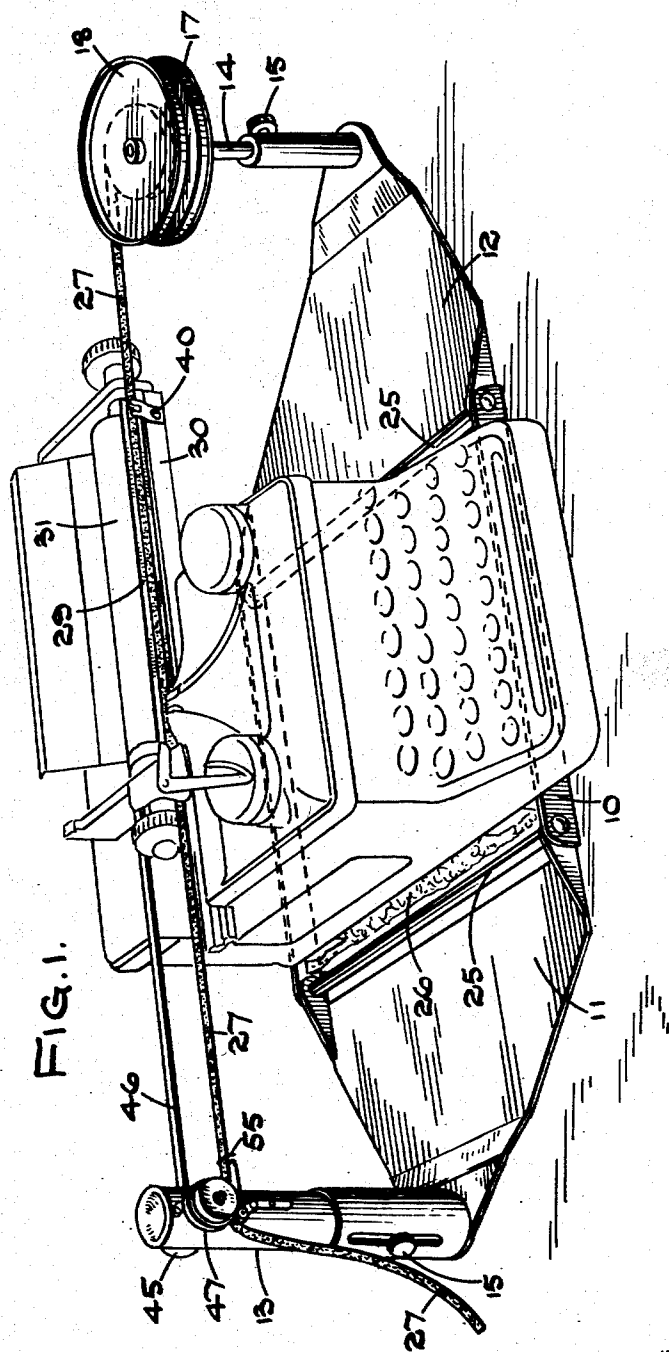


FIG. 1.

INVENTOR:

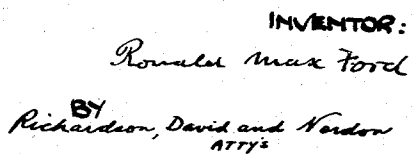
Ronald Max Ford.

Richardson, David and Gordon
ATTY'S

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

FIG. 4.

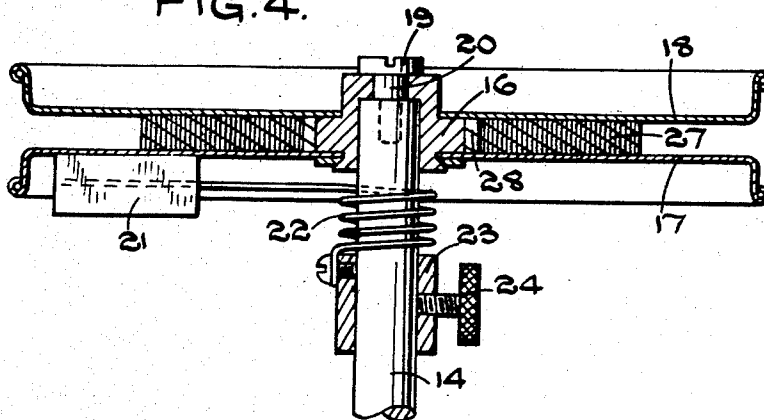


FIG. 5.

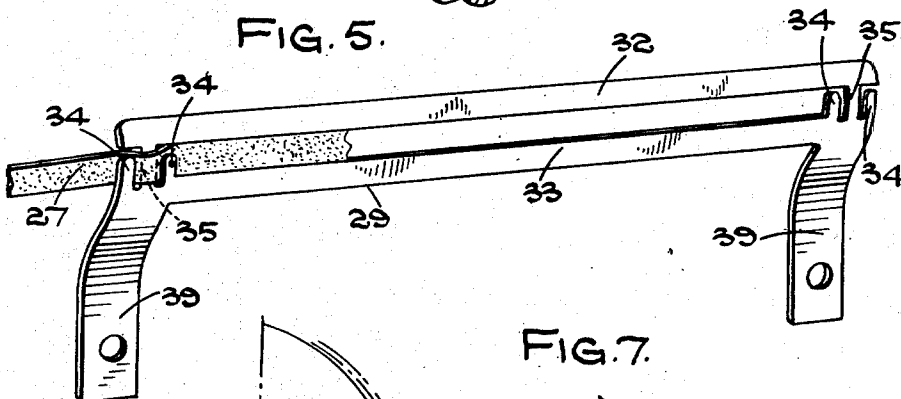


FIG. 6.

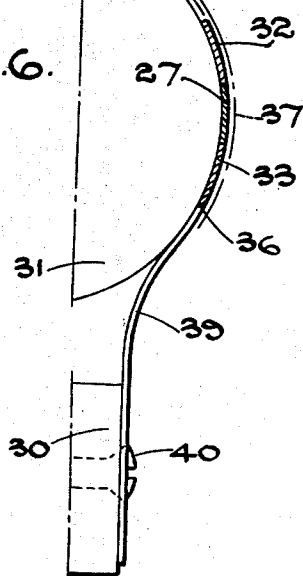
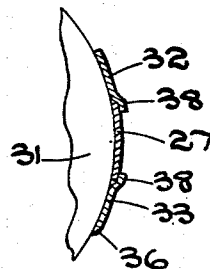


FIG. 7.



INVENTOR:

Ronald Max Ford

BY

Richardson, David and Vardon
ATTY'S

UNITED STATES PATENT OFFICE

2,687,200

HECTOGRAPHIC RIBBON-FEEDING APPARATUS FOR TYPEWRITING MACHINES

Ronald Max Ford, Sparkbrook, Birmingham,
England

Application February 20, 1951, Serial No. 211,927

Claims priority, application Great Britain
February 25, 1950

4 Claims. (Cl. 197-151)

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This invention is concerned with typewriting machines wherein the type impressions are produced in reverse on the back of a master sheet by interposing a carbon between the sheet and a support surface, such as a platen. The master sheet so produced is subsequently used to produce a number of copies in a duplicating process. When sheets of carbon paper, commonly known as hectograph carbon, are used, owing to the nature of the operative surface, the hands of the operator become marked and it has therefore been proposed to employ a carbon tape which is fed between the master sheet and the support surface, to avoid this disadvantage.

One object of the present invention is to provide a unit of new or improved construction with which a typewriter of normal construction can be operatively associated without any or any significant structural modifications thereto so that the unit can be rapidly and simply brought into use by persons normally engaged in typewriting without calling upon a typewriter mechanic.

A further object of the invention is to provide in such a unit means for advancing the carbon tape in conformity with movements of the typewriter carriage in a letter spacing direction which are adapted to maintain a substantially uniform tension therein independently of the extent of traverse of the carriage and can be connected with any type of carriage without structural modification thereof.

Yet another object of the invention is to provide a unit of the kind referred to which can conveniently be accommodated in a relatively small compass when not in use so that where office accommodation is restricted the unit does not constitute an encumbrance when not in use.

Still another object of the invention is to provide in such a unit improved tape guiding and supporting means adapted to support and locate the tape accurately in relation to the platen roller of the typewriter without offering obstruction to the working parts thereof.

The invention will be further described with reference to the accompanying drawings illustrating by way of example a preferred embodiment of same and wherein:

Figure 1 is a perspective view showing apparatus according to the present invention set up with a typewriter in position for typing a master sheet.

Figure 2 is an enlarged view showing the construction of the take-up mechanism.

Figure 3 is a section on the line 3-3 in Figure 2.

Figure 4 is an enlarged section through the carbon tape spool.

Figure 5 is a view showing details of the guide member.

Figure 6 is a section showing the guide member in position.

Figure 7 is a section of an alternative form of guide member.

In the construction shown in the accompanying drawings I provide a base member which is made in three parts 10, 11 and 12, hingedly connected together so that the whole apparatus can be folded upon itself when not in use. Mounted upon the base member and disposed one at each end is a pair of supports in the form of posts 13 and 14 of adjustable height and conveniently these are made telescopic, as shown, with securing screws 15.

The post 14 is adapted to carry a supply spool for the carbon tape and, as shown in Figure 4, this spool comprises a sleeve 16 to which is fixed the bottom plate 17 of the spool, the top plate 18 having a working fit over the sleeve 16 so that it may be removed to replenish the spool. The sleeve 16 is rotatably mounted upon the top of the post 14 by means of a screw 19 which has a portion 20 upon which the sleeve rotates.

In order that the unwinding of the tape may be yieldingly controlled a friction brake is provided for the spool and this comprises a piece 21 of sponge rubber or like material attached to one end of a coiled spring 22, the other end of which is secured to a collar 23 fixed to the post 14 by a screw 24.

The tape 27, rolled upon a core 28, is mounted upon the sleeve 16 and thus as the tape is pulled off the sleeve 16 rotates about the vertical axis of the post 14.

The parts 11 and 12 of the base are hinged on rods 25 and these provide two fixed guides between which is located the typewriter upon a pad 26.

A guide member 29 is provided for the tape 27 and as shown in Figures 5 to 7, this takes the form of a metal strip made from thin sheet metal and attached to the carriage 30 of the typewriter in front of the platen roller 31. This guide bar is formed with upper and lower spaced strips 32 and 33 extending axially along the length of the platen and at each end is provided with two upstanding fingers 34 which may be pressed or cut out of the metal of the strip and which are arranged so that the tape 27 may be looped between these fingers 34 and the intermediate portion 35 of the strip. The arrangement is such that the fingers 34 provide guides to constrain the tape to extend from end to end of the pressure roller

3 while allowing the strip 29 itself to be slid back along the tape when the carriage is moved back into its position for starting a fresh line of typing.

The strip 29 is shaped in cross section with a slight curvature to conform to the curvature of the platen roller 31 and the lower one 33 of the two spaced strip portions has its lower edge provided with a knife edge 36 so that the master sheet 37, when being placed around the roller, will ride over this edge and there will be no possibility of the master sheet being caught under the lower edge of the strip. The carbon tape extends along the strip between the upper and lower spaced strip portions which serve to prevent the tape from being displaced vertically during the typing operation.

In the modified form of guide strip shown in Figure 7 these upper and lower portions of the strip have their inner edge portions 38 pressed outwardly a slight distance away from the face of the platen roller and overlapping the edges of the carbon tape 27 so that the tape is actually held in the groove formed between these up-standing edges 38 of the strip and the surface of the platen roller.

Instead of providing fingers at each end of the strip there may be a pair of spaced vertical slots through which the tape may be looped. The guide strip 29 is conveniently attached to the carriage 30 by providing at each end a bracket 39 adapted to receive a screw 40 or other fixing means.

The other post 13, as shown in Figures 2 and 3, is provided with the take-up mechanism for the tape which is fed out of the typewriter and at its upper end it has rotatably mounted thereon a shaft 41 which is provided with a drum 42 mounted upon the shaft within the post. One end of a cord is attached to this drum and the other end is provided with a weight 44.

The ends of the shaft 41 extend outside the post and at one end there is fixed a drum 45 to which is attached one end of a band 46, the other end of the band being attached to the typewriter carriage. When the carriage is moved to its extended position (Figure 1), this band 46 is unwound from the drum 45 and causes rotation of the shaft 41 to wind the cord 43 about the drum 42 and thus raise the weight 44 to the top of the post.

At its other end the shaft 41 has a feed roller 47 loosely mounted thereon, this roller being provided with a rubber operative surface and having attached to its face adjacent the post a ratchet wheel 48 which co-operates with a spring pressed pawl 49 pivotally mounted upon the post.

Adjacent the other face of the feed roller 47 a ratchet wheel 50 is fixed upon the shaft and this co-operates with a spring pressed pawl 51 pivotally mounted upon the adjacent face of the feed roller 47. The arrangement of the pawls is such that when typing is being performed and the carriage is moving towards this post, the weight 44 descends within the post and causes rotation of the shaft 41 thereby driving the outermost ratchet wheel 50 which causes the feed roller 47 to rotate by virtue of engagement of ratchet wheel 50 with the pawl 51. The pawl 49 on the post slips over the ratchet wheel 48 which is attached to the feed roller. When the shaft 41 is rotated in the reverse direction this pawl 44 prevents rotation of the feed roller.

A pressure roller 52 is provided below the feed roller and the carbon tape is nipped between this pressure roller and feed roller 47. A guide 53

for the tape is formed from a piece of wire which is pivoted at one end on the pivot pin 54 of the pressure roller and has its other end 55 resting on the tape, this end being formed as a loop through which the tape passes.

The pressure roller 52 is mounted upon a lever 56 which is pivotally mounted upon the post and which has a slot 57 through which projects a pin 58 fixed to the post. A spring 59 coiled around the pivot of the lever 56 has one end engaging the pin 58 and the other end engaging the lever 56 so that the pressure roller 52 may be pulled away from the roller 47 against spring pressure to allow the tape to be inserted between the two rollers. The pressure roller may be made of any suitable material, such as rubber or cork.

When typing is taking place, the movement of the feed roller in the take-up mechanism is governed by the movement of the carriage so that the tape 27 moves at the same speed as the carriage and each increment of the tape is used for only one type impression, which is essential if a good clear master-sheet is required.

Further, the only attachment on the typewriter is the guide bar 29 and as this is preferably of very thin section it may be left in place when the typewriter is being used for ordinary work.

The arrangement according to the present invention provides an extremely cheap construction which forms a separate unit for application to any existing typewriter. This is a distinct advantage over constructions in which the supply spool and take-up mechanism are formed as part of the machines.

What I claim is:

1. Apparatus for feeding a carbon tape in a typewriting machine for the purpose specified, comprising a pair of supports independent of the typewriter and adapted for mounting in spaced relationship upon a base member which supports the typewriter, a dispenser for carbon tape mounted on one of the supports, a shaft rotatably mounted on the other support, a feed roller mounted for rotation about said shaft, a drum fixed on said shaft, a band having one end connected to said drum and the other end connected to the typewriter carriage, a weight connected to said shaft so as to be raised when the carriage is traversed back after a line of typing by the rotation of said shaft due to the band being unwound from said drum, a one-way drive between the feed roller and the shaft so that the feed roller is driven from said shaft when said weight descends during the typing traverse of the carriage, a pressure roller cooperating with said feed roller for engagement of the carbon tape therebetween, and a guide member attached to the carriage of the typewriter and cooperating with the platen roller thereof to constrain the carbon tape to extend lengthwise of the platen roller and move with the carriage past the typing station.

2. Apparatus for feeding a carbon tape in a typewriting machine for the purpose specified, comprising a pair of supports independent of the typewriter and adapted for mounting in spaced relationship upon a base member which supports the typewriter, a dispenser for carbon tape mounted on one of the supports, a shaft rotatably mounted on the other support, a feed roller mounted for rotation about said shaft, a drum fixed on said shaft, a band having one end connected to said drum and the other end connected to the typewriter carriage, a weight connected to said shaft so as to be raised when the carriage is

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traversed back after a line of typing by the rotation of said shaft due to the band being unwound from said drum, a ratchet wheel fixed to said feed roller cooperating with a pawl on said support so as to prevent rotation of the feed roller when said shaft is rotated during backward traverse of the carriage, a ratchet wheel fixed on said shaft cooperating with a pawl on said feed roller so that the feed roller is driven from said shaft when said weight descends during the typing traverse of the carriage, a pressure roller cooperating with said feed roller for engagement of the carbon tape therebetween, and a guide member attached to the carriage of the typewriter and cooperating with the platen roller thereof to constrain the carbon tape to extend lengthwise of the platen roller and move with the carriage past the typing station.

3. Apparatus for feeding a carbon tape in a typewriting machine for the purpose specified, comprising a pair of supports independent of the typewriter and adapted for mounting in spaced relationship upon a base member which supports the typewriter, a dispenser for carbon tape mounted on one of the supports, take-up mechanism on the other support for withdrawing the tape from the dispenser and feeding it past the typing station of the machine, and a guide member attached to the carriage of the typewriter and cooperating with the platen roller thereof to constrain the carbon tape to extend lengthwise of the platen roller and move with the carriage past the typing station, said guide member comprising a thin section sheet metal member having spaced upper and lower strips extending along the operative length

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of the platen roller and fingers at each end which engage the carbon tape and constrain it to extend lengthwise of the roller with the upper and lower edges of the tape engaged respectively by the adjacent edges of the upper and lower strips of the guide member.

4. Apparatus for feeding a carbon tape in a typewriting machine for the purpose specified, comprising a base member made in three parts, a centre part being adapted to support and locate the typewriter and two end parts hingedly connected to the centre part on opposite sides thereof, a pair of supports, one mounted upon each end part so as to be disposed on opposite sides of the typewriter with the platen roller thereof extending axially between the supports, a dispenser for carbon tape mounted on one of the supports, take-up mechanism on the other support for withdrawing the tape from the dispenser and feeding it past the typing station of the machine, and a guide member attached to the carriage of the typewriter and cooperating with the platen roller thereof to constrain the carbon tape to extend lengthwise of the platen roller and move with the carriage past the typing station.

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