Nov. 15, 1955 G. F. CARLSON 2,723,741

RIBBON DRIVE FOR MULTIPLE TYPEWRITERS

Filed Nov. 22, 1952 2 Sheets-Sheet 1

Fig. 1

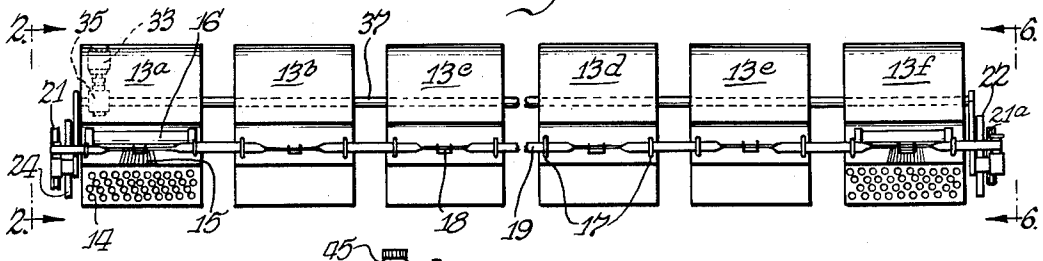


Fig. 2

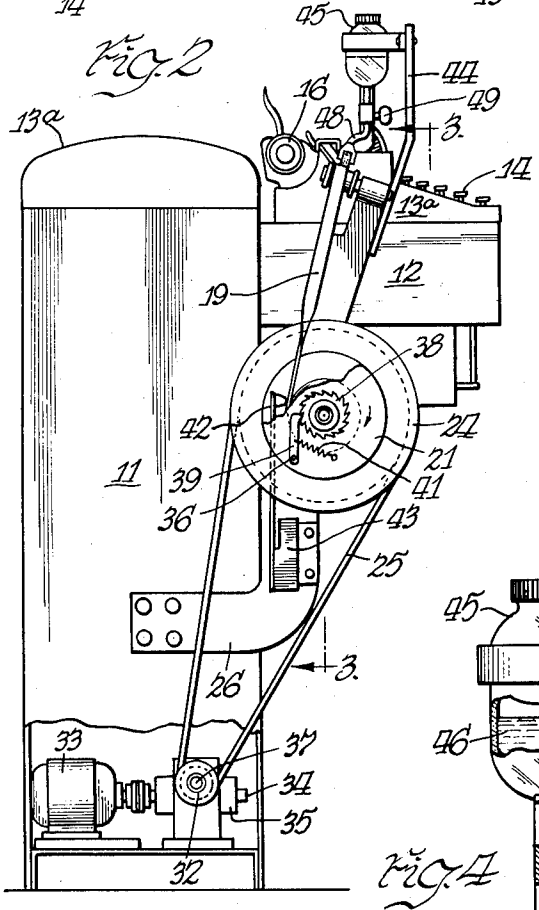


Fig. 3

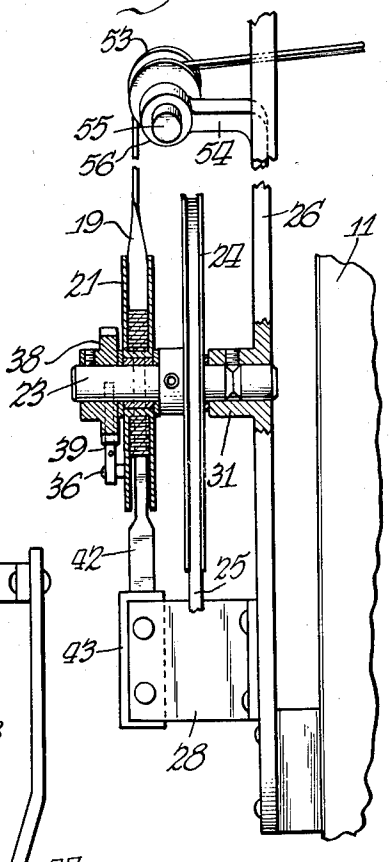


Fig. 4

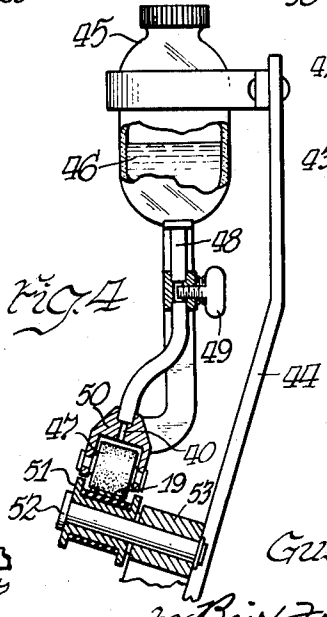
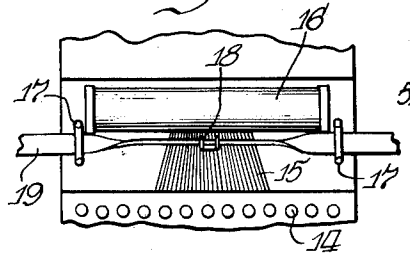


Fig. 5



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RIBBON DRIVE FOR MULTIPLE TYPEWRITERS

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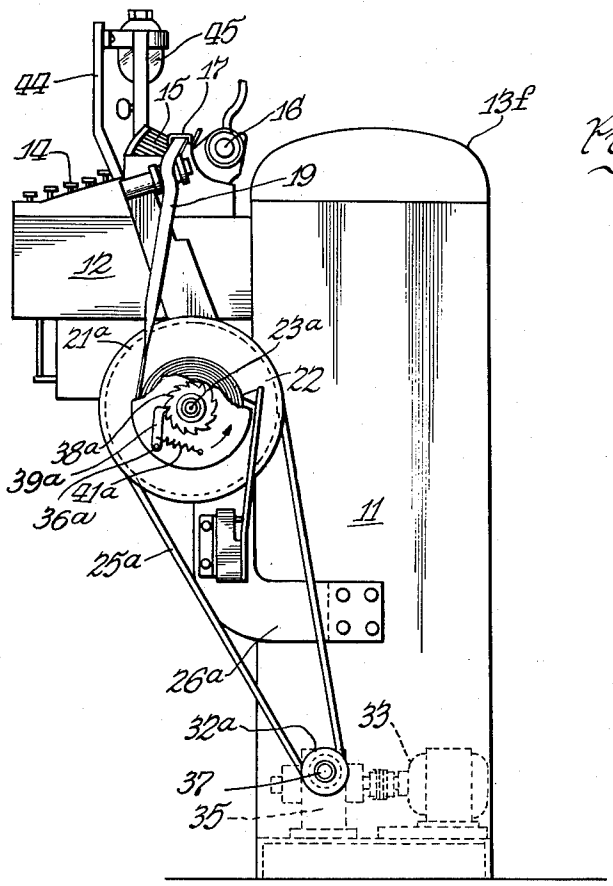
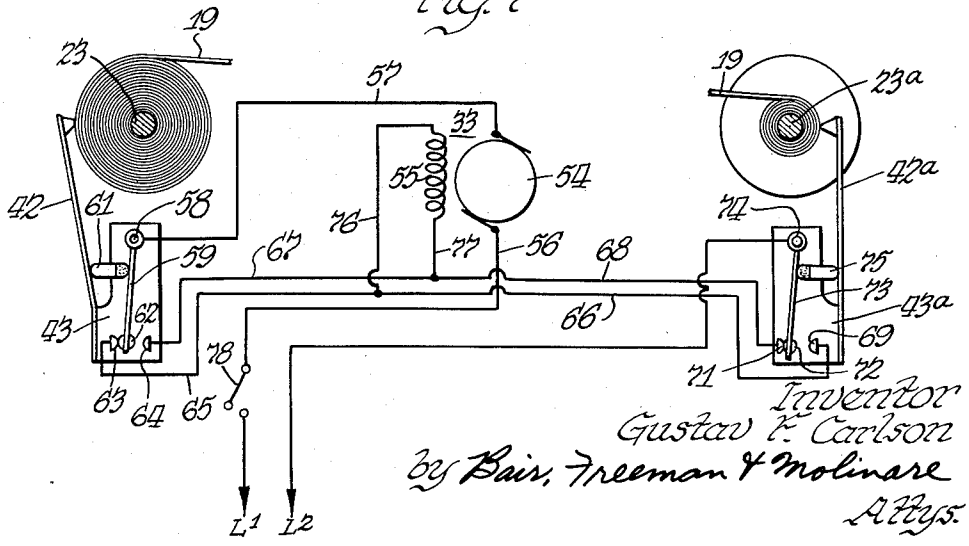


Fig. 6

Fig. 7



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RIBBON DRIVE FOR MULTIPLE TYPEWRITERS

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8 Claims. (Cl. 197—161)

This invention relates to a ribbon drive for a multiplicity of typewriters.

I have found that a ribbon for a plurality of typewriters, if properly driven and inked, may be used for an exceptionally long period of time under very heavy work conditions, thus affording a great saving in ribbons and the cost of changing such ribbons.

It is an object of the invention to provide a novel ribbon drive for a plurality of typewriters which may be automatically reversed, if desired.

It is another object of the invention to provide a novel ribbon drive for a plurality of typewriters which has provision for constantly inking the ribbon.

It is an additional object of the invention to provide a ribbon drive for a plurality of typewriters which may be utilized either when each typewriter is manually operated or automatically operated in accordance with my Patent 2,568,113, issued September 18, 1951, for Selector Device for Automatic Typewriters.

It is also an object of the invention to provide a novel mechanism and control for driving the ribbon for a plurality of typewriters first in one direction and then reversing the direction.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a top plan view of a plurality of typewriters utilizing a single ribbon drive in accordance with the invention;

Figure 2 is a side elevational view with portions thereof broken away and taken on line 2—2 of Figure 1;

Figure 3 is a partial sectional view of the typewriter ribbon drive taken on line 3—3 of Figure 2;

Figure 4 is an enlarged sectional view with portions broken away showing the inking apparatus;

Figure 5 is a partial view of a single typewriter shown in Figure 1;

Figure 6 is a view similar to Figure 2, taken on line 6—6 of Figure 1; and

Figure 7 is a wiring diagram of the switches and a reversible motor utilized in practicing the invention.

Referring specifically to the drawings for a detailed description of the invention, each of the typewriters is placed on a table 12 supported by an upright stand 11. The typewriters are numbered 13*a* to 13*f*, inclusive, and it is obvious that any number of typewriters may be utilized. Furthermore, each typewriter may be independently operated by a typist who may type the same or different letters or the like by using selector devices referred to in the aforesaid Patent 2,568,113.

The typewriters are provided with the usual keys 14, type bars 15, platens 16, end ribbon guides 17 and central ribbon guide 18. The ribbon itself is shown at 19.

The ribbon is wound on spools 21 and 21*a*, one of which is at each end of the plurality of typewriters 13*a* to 13*f*. The spools 21 and 21*a* are rotatably positioned upon shafts 23 and 23*a*, respectively. The shafts 23 and 23*a* are driven by pulleys 24 and 22, respectively, secured thereto, by belts 25 and 25*a*. Frame members 26 and 26*a* are shown in Figures 2 and 6 and support identical structure. As shown in Figure 3, frame member 26 supports a bracket 28. A bearing member 31 for shaft 23 is supported directly from frame member 26. The same construction is present on the opposite end of the machine.

Pulleys 32 and 32*a* are secured to a shaft 37 which extends from one end of the series of typewriters 13*a* to 13*f* to the other end thereof, as shown in Figure 1. Pulleys 32 and 32*a* are driven by a single motor 33 through a shaft 34 which, in turn, rotates a gear reduction device generally indicated at 35 to drive the shaft 37 at the required speed. The pulley 32 drives the pulley 24 through belt 25 and the pulley 32*a* drives the pulley 22 through belt 25*a*.

At the respective ends of the machine are ratchets 38 and 38*a* secured to the shafts 23 and 23*a*. There are also provided pawls 39 and 39*a* pivoted at 36 and 36*a* for engaging with the ratchets 38 and 38*a* and preventing movement of the shafts 23 and 23*a* and their attendant parts in one direction while driving the shafts 23 and 23*a* in the opposite direction. The pawls 39 and 39*a* are secured to the spools 21 and 21*a*.

A pair of arms 42 and 42*a* operate switches 43 and 43*a* at respective ends of the apparatus.

Referring specifically to Figure 4 in which the inking apparatus is illustrated, numeral 44 designates a bracket which supports the inking apparatus including a refillable container 45 for ink 46. An inking roller formed of absorbent material is shown at 47 and ink from the container 45 is conveyed through a conduit 48 having an adjustable flow control valve therein. The inking roller 47 is journaled on a member 50 having a passage 40 therein communicating with the conduit 48 and permitting ink to drip upon the roller 47. The ribbon 19 passes between the inking roller 47 and a rubber covered roller 51 which rotates on a shaft 52 having a journal 53 secured to the bracket 44.

Referring specifically to Figure 7 for a description of a circuit and associated parts for reversing the ribbon drive, numeral 54 designates the rotor of the motor 33 and numeral 55 the field winding thereof. A source of alternating current is designated at L_1 and L_2. A manually operated switch 78 may be placed in line L_1, if so desired. A conductor 56 connects the switch 78 to the rotor 54 of the motor 33. A conductor 57 connects the rotor 54 with a terminal 58 of switch 43. A switch arm 59 formed of conducting material is pivoted on the terminal 58. An insulating button 61 is in contact with the switch arm 59 and with the flexible arm 42 which rides upon the roll of ribbon 19 on spool 21. It is noted that a single switch arm 42*a* associated with switch 43*a* rides on the roll of ribbon 19 which is wound on spool 21*a* at the opposite end of the machine.

The switch arm 59 of switch 43 has a double movable contact 62 secured at the free end thereof. Fixed contacts 63 and 64 of switch 43 are engaged by the movable contact 62, depending upon the position of the switch arm 42, the position of which, in turn, depends upon the amount of ribbon on the spool 21. As shown in Figure 7, the spool 21 contains the maximum amount of ribbon 19 which it is intended to hold and, therefore, the movable contact 62 is in engagement with the contact 63. It is obvious that a snap acting mechanism, not shown, must be utilized in order that the swith arm 59 will snap to one position when the spool 21 is filled and to the other position when the spool 21 is substantially empty. The same is true of switch 43*a* and spool 21*a*. A conductor 65 connects contact 63 of switch 43 with a

conductor 67 which is connected to the field coil 55 and with a conductor 66 which is connected to a fixed contact 69 of switch 43*a*. A fixed contact 71 of switch 43*a* is connected by a conductor 68 to conductor 67 which is connected to a fixed contact 64 of switch 43 and to conductor 77 which is in turn connected to the field coil 55. A movable contact 72 is connected at the free end of a conducting switch arm 73 of switch 43*a*. The switch arm 73 is pivoted on a terminal 74 which is connected directly to line L_2. An insulating button 75 engages with the flexible member 42*a* and with the movable switch arm 73 to move the switch arm 73 and contact 72 into and out of engagement with the fixed contacts 69 and 71, depending upon the position of the member 42*a*.

It is clear, therefore, that when the switch arm 59 of switch 43 engages with fixed contact 63 thereof at the time the spool 21 is filled and movable contact 72 of switch 43*a* engages with fixed contact 71 thereof when spool 21*a* is substantially empty, that rotor 54 will rotate in one direction to drive the shaft 37 in one direction and thus move the ribbon from the full spool to the empty spool. When spool 21*a* is filled and spool 21 is substantially empty, switch arms 59 and 73 of switches 43 and 43*a*, respectively, will snap over and movable contacts 62 and 72 will engage with fixed contacts 64 and 69, respectively, thus immediately reversing the direction of rotation of the rotor 54 and shaft 37 which results in reversing the direction of travel of the ribbon 19.

The mechanism for reversing the direction of travel of the spools 21 and 21*a* and of the ribbon 19 comprises the ratchet and pawl members 38, 39 and 38*a*, 39*a*, which are secured to the spools 21 and 21*a*, respectively.

Referring to Figures 2 and 6, when the shaft 37 is rotated in one direction, thus rotating the spools 21 and 21*a* in the direction shown by the arrows in Figures 2 and 6, spool 21*a* will be pulling the ribbon 19 because the pawl 39*a* remains engaged with one of the teeth of ratchet 38*a*. The ribbon may be withdrawn from the spool 21 because, although the spool 21 is being rotated, the ratchet 38 is moving in such a direction that the pawl 39 engages with successive teeth but does no driving. When the direction of rotation of shaft 37 is reversed, the direction of rotation of spools 21 and 21*a* is also reversed and spool 21 will be the driven spool and spool 21*a* the free wheeling spool.

The operation of the device is clear from the above description and it is understood that the ribbon 19 moves across the typewriters 13*a* to 13*f*, inclusive, at a very slow speed so that movement does not blur the impression which results from type striking the ribbon. It has also been found that moving the ribbon slowly and continuously applying a proper quantity of ink thereto by the inking device shown in Figure 4 that the ribbon has extremely long life and may be used for a much greater period of time than the ordinary ribbon on a standard typewriter, even though the quality of the ribbon is the same.

From the foregoing, it is apparent that I have provided an improved ribbon drive for a plurality of typewriters which is simple in construction and easy to maintain.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters and means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides.

2. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters, means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides, an ink reservoir disposed above the level of the ribbon traversing said plurality of typewriters and a conduit for conveying ink from the reservoir to the ribbon.

3. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters, means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides, an ink reservoir disposed above the level of the ribbon traversing said plurality of typewriters, a conduit for conveying ink from the reservoir to the ribbon, and an adjustable valve for controlling the rate of flow of the ink to the ribbon.

4. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters, means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides, said driving means comprising a motor, a single shaft extending from one end of said plurality of typewriters to the other end thereof and means for drivingly connecting said shaft to said spools.

5. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters and means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides, said driving means including an electric motor and clutch means associated with each spool for driving one spool in one direction while affording free wheeling of the other spool, and vice versa.

6. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters, and means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides, said driving means including an electric motor and clutch means associated with each spool for driving one spool in one direction while affording free wheeling of the other spool, and vice versa, and electric switch means connected to said motor and a source of power for automatically reversing said motor and spool rotation at a predetermined time.

7. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters, and means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides, said driving means including an electric motor and clutch means associated with each spool for driving one spool in one direction while affording free wheeling of the other spool, and vice versa, and electric switch means connected to said motor and a source of power for automatically reversing said motor and spool rotation in response to one spool being substantially empty and the other substantially full, and vice versa.

8. The combination with a multiplicity of typewriters, each of said typewriters including ribbon guides, a platen, type and keys, of a ribbon drive comprising a spool at each end of said multiplicity of typewriters and means for selectively driving the spools to feed a ribbon first in one direction and then in the opposite direction laterally through said guides, said driving means including an

electric motor and clutch means associated with each spool for driving one spool in one direction while affording free wheeling of the other spool, and vice versa, said clutch means including a ratchet connected to each spool, a pair of pulleys driven by said motor and a pawl attached to each pulley and positioned to drive said respective ratchets.

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