

May 23, 1950

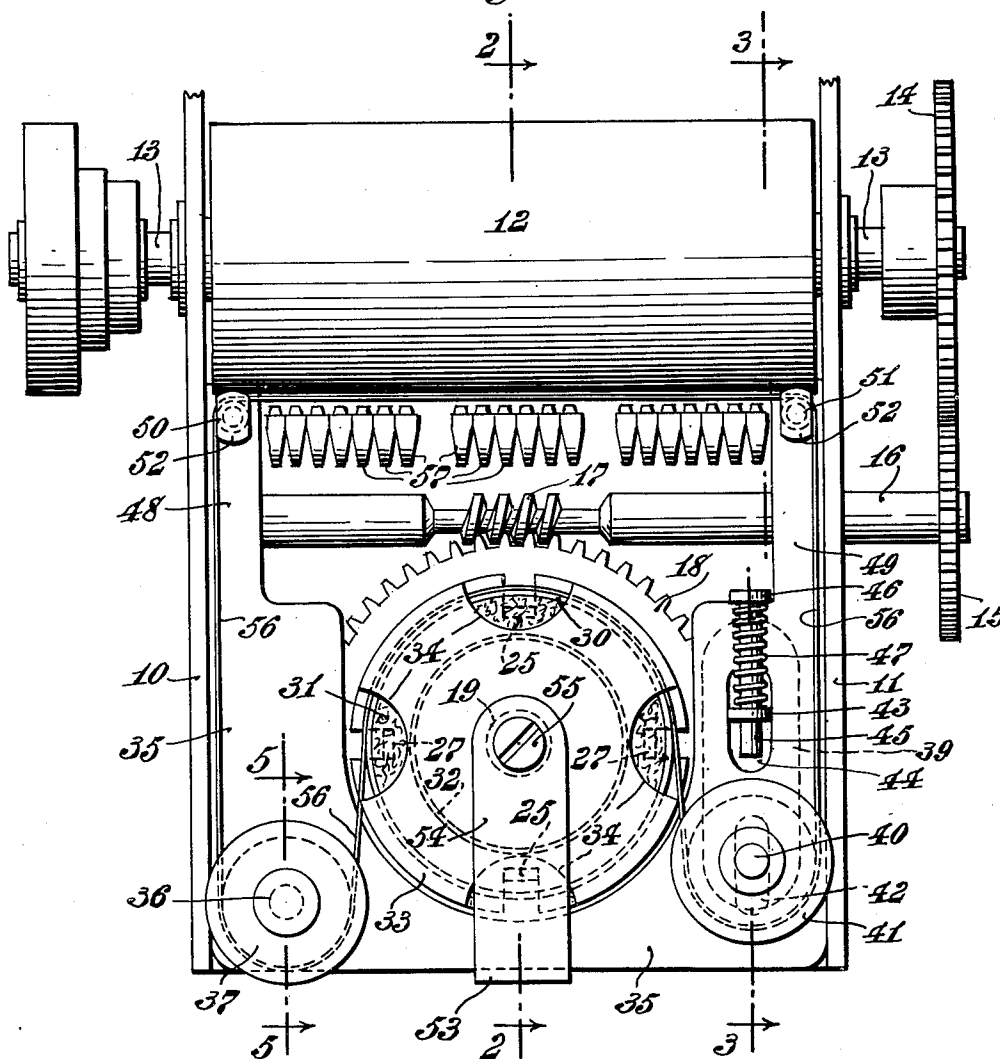
H. M. VON DUYKE
TYPEWRITER RIBBON MECHANISM

2,508,780

Filed May 13, 1947

2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

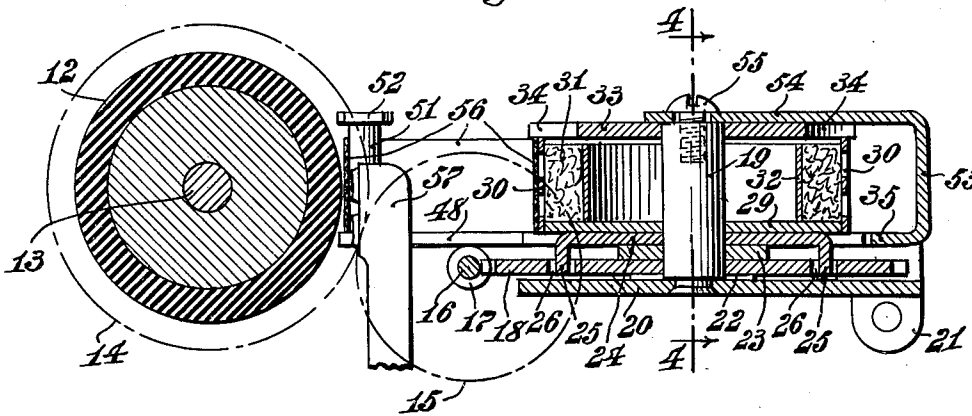


Fig. 3.

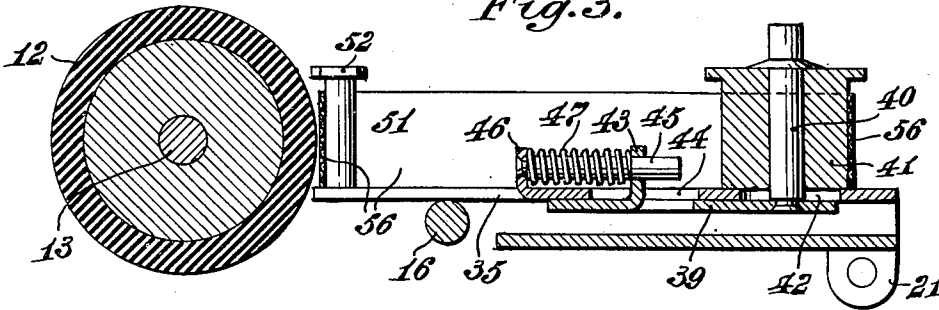


Fig. 5.

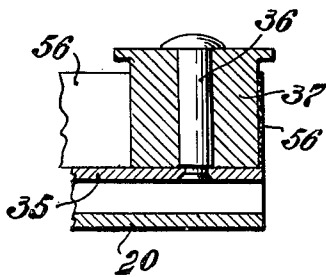
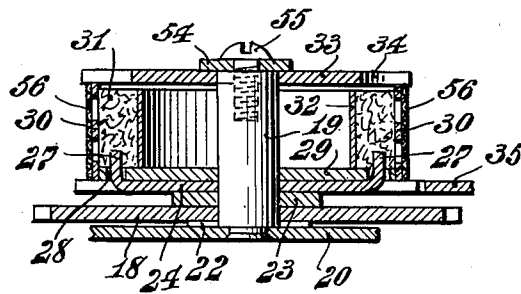


Fig. 4.



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UNITED STATES PATENT OFFICE

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TYPEWRITER RIBBON MECHANISM

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13 Claims. (Cl. 197-168)

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This invention relates to typewriter ribbon mechanism, and it relates more particularly to the ribbon mechanism of a typewriter of the stenographic type.

The principal object of the present invention is to provide, in a typewriting machine, improved mechanism for feeding an ink ribbon, with a step by step movement, between the type bars and the platen over which the paper is fed.

A further object of the present invention is to provide ribbon mechanism, of the character aforesaid, having improved means for supplying ink to the ribbon from a reservoir in which the ink is replenished from time to time.

A further object of the invention is to provide ribbon mechanism, of the character aforesaid, in which the ribbon is of endless form, whereby the same will be relatively inexpensive and easy to renew when the same becomes worn.

A further object of the invention is to provide ribbon mechanism, of the character aforesaid, with improved means for maintaining the ribbon at a proper tension and for automatically taking up any slack therein.

A further object of the invention is to provide ribbon mechanism, of the character aforesaid, which may be readily and conveniently dismantled and reassembled for repair or replacement of worn or damaged parts.

A further object of the invention is to provide ribbon mechanism, of the character aforesaid, with certain improved details of construction which will insure proper functioning and efficient operation of the same at all times.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawings forming part hereof, in which:

Figure 1 is a top or plan view of a typewriter ribbon mechanism embodying the main features of the present invention;

Fig. 2 is a vertical section thereof, taken approximately on the line 2-2 of Fig. 1;

Fig. 3 is a vertical section taken approximately on the line 3-3 of Fig. 1;

Fig. 4 is a vertical section taken approximately on the line 4-4 of Fig. 2; and

Fig. 5 is a vertical section taken approximately on the line 5-5 of Fig. 1.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes may be made in the structure disclosed

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without departing from the spirit of the invention.

Referring to the drawings, in the particular embodiment of the invention therein shown, 10 and 11 are side plates comprising a portion of the frame work of a stenographic typewriter machine in connection with which the ribbon mechanism of the present invention is adapted to be used.

A platen 12, over which the paper is fed, is journaled in the frame work by means of the shaft 13. The platen 12 is normally actuated with a step by step movement by suitable mechanism of any desired kind. In machines of this type, the platen is usually advanced a portion of a revolution for each unitary impression of one or more of the type bars.

It is of course to be understood than in such machines it is customary to actuate a number of type bars at the same time so that various characters are often imprinted on the paper at several places in a single line.

The shaft 13 upon which the platen 12 is mounted extends to one side of the frame plate 11, and said shaft has a gear wheel 14 mounted thereon. The gear wheel 14 meshes with a pinion 15 mounted on an extending end of a horizontal shaft 16. The shaft 16 is provided midway the side frame plates 10 and 11 with a worm 17 which meshes with and operates a worm wheel 18 which is rotatably mounted on a vertical spindle 19. The spindle 19 is fixedly secured at its lower end in a horizontal plate 20 which is provided at its edges with ears 21 by means of which said plate 20 is secured to the side frame plates 10 and 11.

A washer 22 is interposed between the worm wheel 18 and the horizontal plate 20 to reduce the friction between the parts. Another washer 23, for spacing purposes, is mounted on the vertical spindle 19. Above said washer 23 there is mounted a disc member 24, and said disc member is provided with downwardly struck lugs 25 which extend into apertures 26 provided in the worm wheel 18.

The foregoing arrangement is provided so that when the worm wheel 18 is actuated by the worm 17 the disc member 24 will be constrained to rotate in unison therewith.

The disc member 24 is also provided with struck up lugs 27 which extend into apertures 28 in a disc member 29, so that said disc members 24 and 29 are constrained to rotate in unison. Surrounding the periphery of the disc member 29 is a foraminous walled cylinder 30. Internally disposed with respect to the perforated wall of the

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cylinder 30 is an annulus 31 of felt or other suitable absorbent material. An internal cylinder 32 holds the felt annulus against the perforated cylinder 30. The foregoing arrangement provides a reservoir for supplying ink to the ribbon as the same passes around the perforated cylinder.

A cover plate 33 extends over the top of the cylinder 30, being provided with a plurality of cutouts 34 by means of which the ink may be supplied to the felt annulus whenever it is necessary to replenish the supply.

Another horizontal plate member 35 is disposed with its upper surface in alignment with the lower edge of the perforated cylinder 30 and said plate member 35 is provided near one front corner with a vertical spindle 36 upon which a flanged spool 37 is journaled upon a fixedly located axis.

Near the other side of the plate member 35 a slide member 39 is mounted on the under face thereof. Said slide member 39 carries a vertical spindle 40 upon which a flanged spool 41 is journaled. The spindle 40 extends through a slot 42 in the plate member 35, and the slide member 39 is also provided with an upwardly extending lug 43 which passes through a slot 44 in the plate member 35 and slidably engages a horizontal pin 45.

The pin 45 is secured at its innermost end in a lug 46 which extends upwardly from the plate member 35. The pin 45 also serves as a support for a coil spring 47 the ends of which bear against the upwardly extending lugs 43 and 46 of the slide member 39 and the plate member 35 respectively. The foregoing arrangement is such that the tension of the spring impels the slide member forwardly to take up the slack of the ribbon as will be hereinafter more fully described.

The plate member 35 is provided on each side with rearwardly extending portions 48 and 49, at the inner ends of which are provided upwardly extending guide pins 50 and 51, the lower ends of which respectively are fixedly secured to the rearward extensions 48 and 49 of the plate member 35. The upper ends of the pins 50 and 51 are provided with head portions 52.

The horizontal plate member 35 is also provided with a tongue portion 53 which extends from the front side, vertically upwards as at 53 and thence horizontally as at 54 over the top of the cover plate 33 of the reservoir, and is secured by means of a screw 55 at its inner end to the top of the vertical spindle 19 on which the ink reservoir, and its associated parts, are rotated.

The ribbon 56 extends around the semi-circumference of the perforated cylinder 30, and thence extends on one side around the spool 37 which is journaled on the fixedly located axis, and thence extends rearwardly passing around the vertical guide pin 50. The ribbon 56 then extends across between the type bar heads 57 and the platen 12 to the vertical guide pin 51 on the other side of the machine, thence passing forwardly to the spool 41 which is journaled on the spindle 40 carried by the slide member 39. After passing around a portion of the spool 41, the ribbon 56 extends to the surface of the perforated cylinder 30.

The operation of the ribbon mechanism will now be readily understood. As hereinbefore pointed out, in the normal operation of the machine the platen 12 is rotated in a step by step motion by means of any preferred mechanism

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not shown. The rotatable motion of the platen 12 is transmitted by the gear wheel 14 on the end of the platen shaft 13 through the pinion 15 on the end of the worm shaft 16 so that as the platen 12 is rotated, with the usual step by step motion, said motion will be transmitted through the gear wheel 14 and pinion 15 to the worm shaft 16. As the worm shaft is thus rotated, the movement is transmitted by means of the worm wheel 18 to the ink reservoir by means of the lugs carried by the disc member 24.

When the ink reservoir is thus rotated, the motion will be transmitted to the ribbon 56 which passes around the inner semi-circumference of the perforated cylinder 30 so that the ribbon will thus be actuated with a step by step motion whenever the machine is operated. Any slack in the endless ribbon 56 will be taken up by the tension of the spring 47 mounted on the pin 45 which tends to push the slide member 39 and spool 41 forwardly for such purpose.

It will also be seen that the replacing of the ribbon when the same becomes worn may be readily and easily accomplished, it being merely necessary to place a portion of the same over the perforated cylinder, and then pass another portion around spool 37, thence inwardly to the guide pin 50, then across between the type bar heads 57 and the platen 12 and around the guide pin 51. The spool 41 will now be pushed inwardly by the operator and the ribbon placed around in front of said spool 41. The spool 41, when the tension of the spring is released, will move forwardly to take up the slack in the ribbon and stretch the same uniformly.

I claim:

1. In a typewriter, a rotatable platen, a vertical spindle, a rotatable ink reservoir mounted on said spindle, means for rotating said ink reservoir in unison with the platen, said ink reservoir including a foraminous cylinder, an annulus of ink absorbent material within said foraminous cylinder, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a pair of idler pulleys around a portion of each of which the ribbon extends, one of said idler pulleys being journaled on a fixed axis, a slide member carrying the other of said idler pulleys, spring means for impelling said slide member and the idler pulley carried thereby forwardly, a plurality of type bar heads disposed in front of the platen, guide members at each side thereof, and the ribbon having portions extending rearwardly from the idler pulleys and around said guide members and having a portion extending across between the type bar heads and the platen.

2. In a typewriter, a rotatable platen, a worm actuated in unison with said platen, a worm wheel engaged by said worm, a vertical spindle upon which said worm wheel is rotatably mounted, a disc member mounted on said spindle having downwardly extending lugs engaging apertures in said worm wheel, said disc member also having upwardly extending lugs, a rotatable ink reservoir mounted on said spindle, said ink reservoir having a bottom member having apertures engaged by said upwardly extending lugs of the disc member, a foraminous cylinder mounted on the periphery of said bottom member, an annulus of ink absorbent material within said foraminous cylinder, and an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir.

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3. In a typewriter, a rotatable platen, a worm actuated in unison with said platen, a worm wheel engaged by said worm, a vertical spindle upon which said worm wheel is rotatably mounted, a disc member mounted on said spindle having downwardly extending lugs engaging apertures in said worm wheel, said disc member also having upwardly extending lugs, a rotatable ink reservoir mounted on said spindle, said ink reservoir having a bottom member having apertures engaged by said upwardly extending lugs of the disc member, a foraminous cylinder mounted on the periphery of said bottom member, an annulus of ink absorbent material within said foraminous cylinder, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a plurality of type bar heads disposed in front of the platen, and the ribbon having a portion extending across between the type bar heads and the platen.

4. In a typewriter, a rotatable platen, a worm actuated in unison with said platen, a worm wheel engaged by said worm, a vertical spindle upon which said worm wheel is rotatably mounted, a disc member mounted on said spindle having downwardly extending lugs engaging apertures in said worm wheel, said disc member also having upwardly extending lugs, a rotatable ink reservoir mounted on said spindle, said ink reservoir having a bottom member having apertures engaged by said upwardly extending lugs of the disc member, a foraminous cylinder mounted on the periphery of said bottom member, an annulus of ink absorbent material within said foraminous cylinder, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a plurality of type bar heads disposed in front of the platen, guide members at each side thereof, and the ribbon having portions extending around said guide members and across between the type bar heads and the platen.

5. In a typewriter, a rotatable platen, a worm actuated in unison with said platen, a worm wheel engaged by said worm, a vertical spindle upon which said worm wheel is rotatably mounted, a disc member mounted on said spindle having downwardly extending lugs engaging apertures in said worm wheel, said disc member also having upwardly extending lugs, a rotatable ink reservoir mounted on said spindle, said ink reservoir having a bottom member having apertures engaged by said upwardly extending lugs of the disc member, a foraminous cylinder mounted on the periphery of said bottom member, an annulus of ink absorbent material within said foraminous cylinder, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a plurality of type bar heads disposed in front of the platen, and the ribbon having a portion extending across between the type bar heads and the platen, and means for taking up slack in the ribbon.

6. In a typewriter, a rotatable platen, a worm actuated in unison with said platen, a worm wheel engaged by said worm, a vertical spindle upon which said worm wheel is rotatably mounted, a disc member mounted on said spindle having downwardly extending lugs engaging apertures in said worm wheel, said disc member also having upwardly extending lugs, a rotatable ink reservoir mounted on said spindle, said ink reservoir having a bottom member

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having apertures engaged by said upwardly extending lugs of the disc member, a foraminous cylinder mounted on the periphery of said bottom member, an annulus of ink absorbent material within said foraminous cylinder, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a pair of idler pulleys around a portion of each of which the ribbon extends, one of said idler pulleys being journaled on a fixed axis, a slide member carrying the other of said idler pulleys, spring means for impelling said slide member and the idler pulley carried thereby forwardly, a plurality of type bar heads disposed in front of the platen, guide members at each side thereof, and the ribbon having portions extending rearwardly from the idler pulleys and around said guide members and having a portion extending across between the type bar heads and the platen.

7. In a typewriter, a rotatable platen, a worm actuated in unison with said platen, a worm wheel engaged by said worm, a vertical spindle upon which said worm wheel is rotatably mounted, a disc member mounted on said spindle having downwardly extending lugs engaging apertures in said worm wheel, said disc member also having upwardly extending lugs, a rotatable ink reservoir mounted on said spindle, said ink reservoir having a bottom member having apertures engaged by said upwardly extending lugs of the disc member, a foraminous cylinder mounted on the periphery of said bottom member, an annulus of ink absorbent material within said foraminous cylinder, a cover plate extending over said cylinder and having cutouts for supplying ink to the absorbent material, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a pair of idler pulleys around a portion of each of which the ribbon extends, one of said idler pulleys being journaled on a fixed axis, a slide member carrying the other of said idler pulleys, spring means for impelling said slide member and the idler pulley carried thereby forwardly, a plurality of type bar heads disposed in front of the platen, guide members at each side thereof, and the ribbon having portions extending rearwardly from the idler pulleys and around said guide members and having a portion extending across between the type bar heads and the platen.

8. In a typewriter, rotatable platen, a shaft upon which said platen is mounted, a gear on said shaft, a pinion engaged by said gear, a shaft upon which said pinion is mounted, a worm on said shaft, a worm wheel engaged by said worm, a vertical spindle upon which said worm wheel is rotatably mounted, a disc member mounted on said spindle having downwardly extending lugs engaging apertures in said worm wheel, said disc member also having upwardly extending lugs, a rotatable ink reservoir mounted on said spindle, said ink reservoir having a bottom member having apertures engaged by said upwardly extending lugs of the disc member, a foraminous cylinder mounted on the periphery of said bottom member, an annulus of ink absorbent material within said foraminous cylinder, a cover plate extending over said cylinder and having cutouts for supplying ink to the absorbent material, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a pair of idler pulleys around a portion of each of which the ribbon extends, one of said idler pulleys being journaled on

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a fixed axis, a slide member carrying the other of said idler pulleys, spring means for impelling said slide member and the idler pulley carried thereby forwardly, a plurality of type bar heads disposed in front of the platen, guide members at each side thereof, and the ribbon having portions extending rearwardly from the idler pulleys and around said guide members and having a portion extending across between the type bar heads and the platen.

9. In a typewriter, a rotatable platen, a rotatable ink reservoir located forwardly of said platen, an endless ink-carrying ribbon having a portion extending around a portion of the ink reservoir, a pair of idler pulleys around a portion of each of which the ribbon extends, said idler pulleys being located to the sides and forwardly of the ink reservoir, one of said idler pulleys being journaled on a fixed axis, a slide member carrying the other of said idler pulleys, spring means for impelling said slide member and the idler pulley carried thereby forwardly, a plurality of type bar heads disposed in front of the platen, and the ribbon having a portion extending across between the type bar heads and the platen.

10. In a typewriter, a rotatable platen, a rotatable ink reservoir, an endless ink-carrying ribbon having a portion extending around a portion of the ink reservoir, a pair of idler pulleys around a portion of each of which the ribbon extends, one of said idler pulleys being journaled on a fixed axis, a slide member carrying the other of said idler pulleys, spring means for impelling said slide member and the idler pulley carried thereby forwardly, a plurality of type bar heads disposed in front of the platen, guide members at each side thereof, and the ribbon having portions extending rearwardly from the idler pulleys and around said guide members and having a portion extending across between the type bar heads and the platen.

11. In a typewriter, a rotatable platen, a rotatable ink reservoir, said ink reservoir having a foraminous cylinder, an endless ink-carrying ribbon having a portion extending around a portion of the foraminous cylinder of the ink reservoir, a pair of idler pulleys around a portion of each of which the ribbon extends, one of said idler pulleys being journaled on a fixed axis, a slide member carrying the other of said idler pulleys, spring

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means for impelling said slide member and the idler pulley carried thereby forwardly, a plurality of type bar heads disposed in front of the platen, guide members at each side thereof, and the ribbon having portions extending rearwardly from the idler pulleys and around said guide members and having a portion extending across between the type bar heads and the platen.

12. In a typewriter, a rotatable platen, a rotatable ink reservoir located centrally and forwardly of said platen, means for rotating said ink reservoir in unison with the platen, said ink reservoir having peripheral delivery of the ink contained therein, a plurality of type bar heads disposed in front of the platen, an endless ink carrying ribbon a portion of which extends around the periphery of the ink reservoir and another portion of which extends across between the type bar heads and the platen, and a pair of idler pulleys disposed to the sides and forwardly of the ink reservoir and over which said ribbon passes.

13. In a typewriter, a rotatable platen, a rotatable ink reservoir located centrally and forwardly of said platen, means for rotating said ink reservoir in unison with the platen, said ink reservoir having peripheral delivery of the ink contained therein, a plurality of type bar heads disposed in front of the platen, an endless ink carrying ribbon a portion of which extends around the periphery of the ink reservoir and another portion of which extends across between the type bar heads and the platen, a pair of idler pulleys disposed to the sides and forwardly of the ink reservoir and over which said ribbon passes, at least one of said idler pulleys being movably supported, and means for impelling said movably supported idler pulley forwardly thereby to take up slack in the ribbon.

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