Oct. 3, 1944. C. E. WYRICK 2,359,502

AUXILIARY RIBBON FEEDER ATTACHMENT

Filed July 13, 1942 4 Sheets-Sheet 1

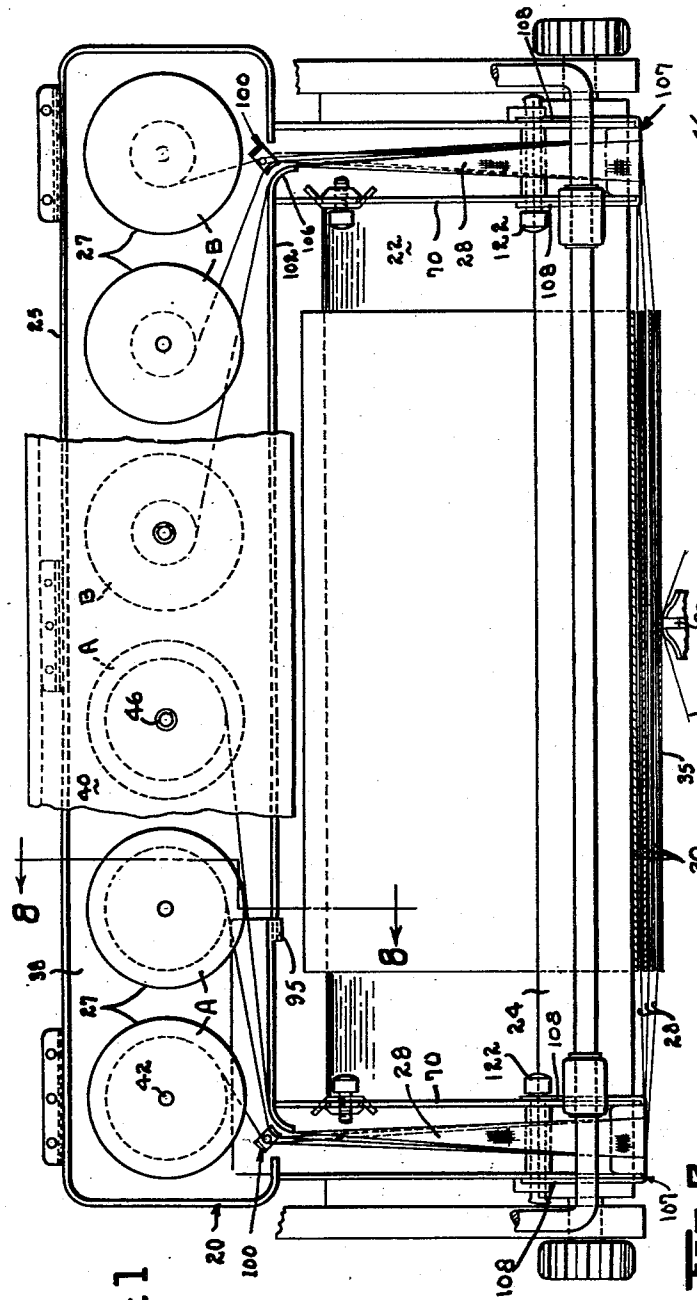


FIG. 1

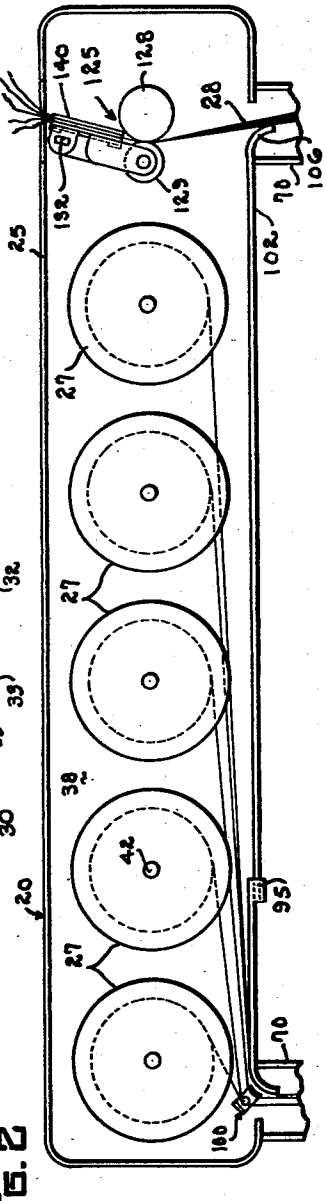


FIG. 2

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Filed July 13, 1942 4 Sheets-Sheet 2

FIG. 3

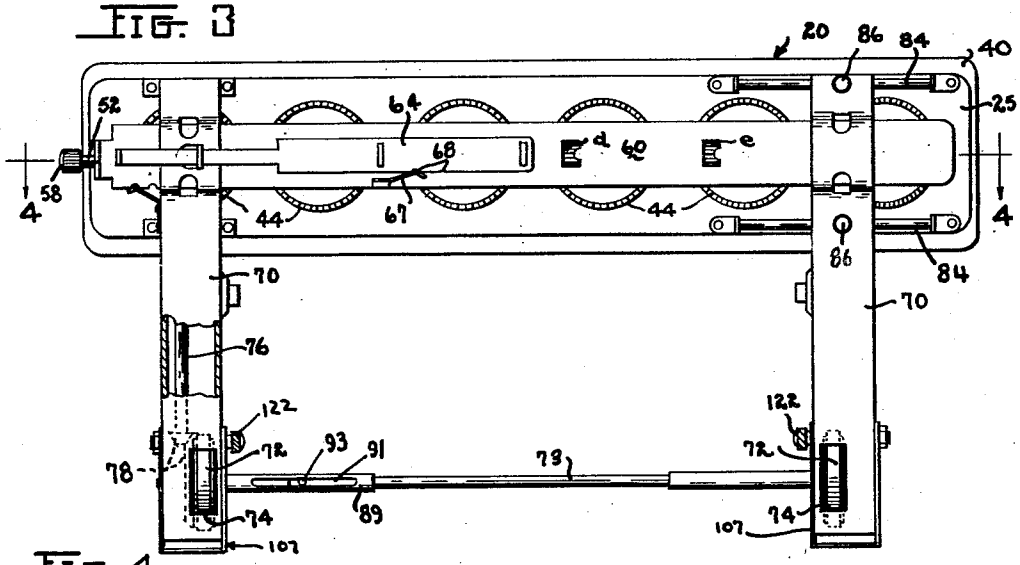


FIG. 4

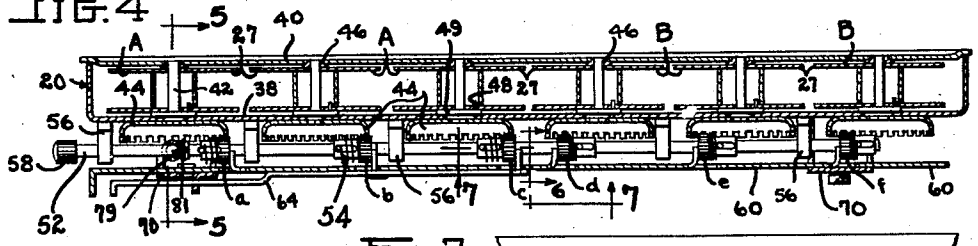


FIG. 7

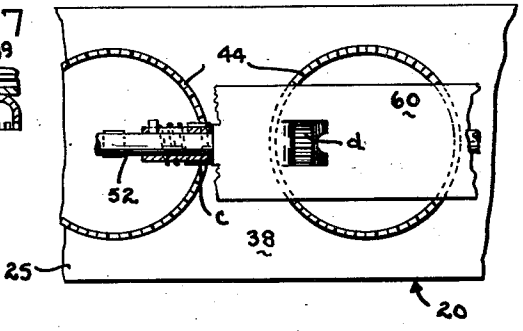


FIG. 6

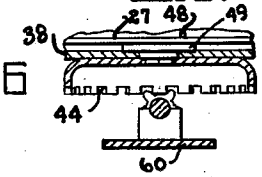
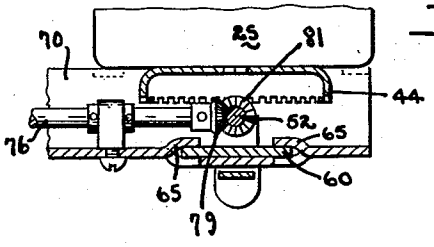


FIG. 5



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AUXILIARY RIBBON FEEDER ATTACHMENT

Filed July 13, 1942 4 Sheets-Sheet 3

FIG. 8

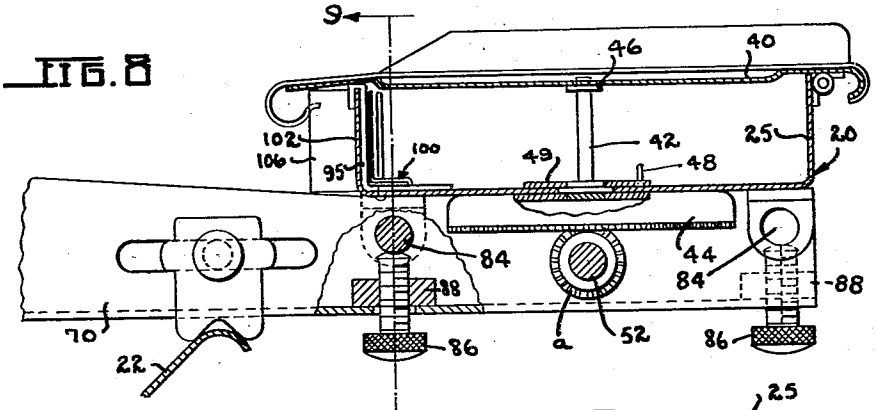


FIG. 10

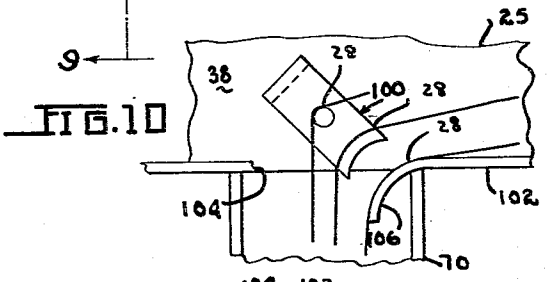
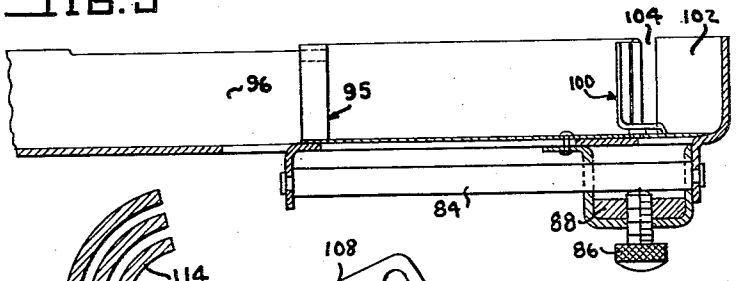


FIG. 9



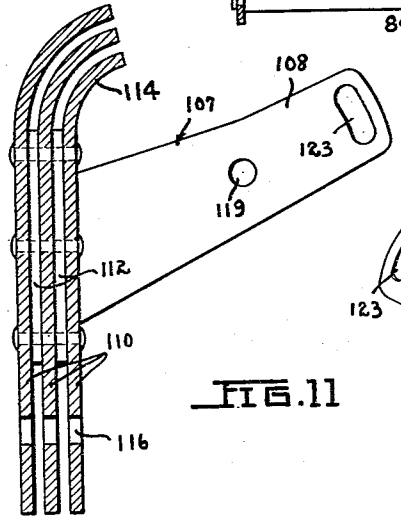
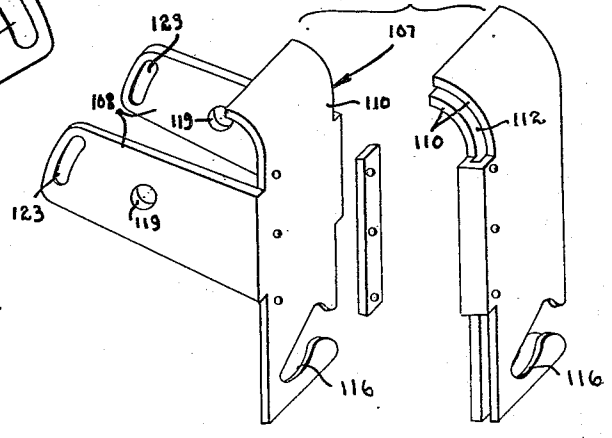


FIG. 11

FIG. 12



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AUXILIARY RIBBON FEEDER ATTACHMENT

Filed July 13, 1942 4 Sheets-Sheet 4

FIG. 13

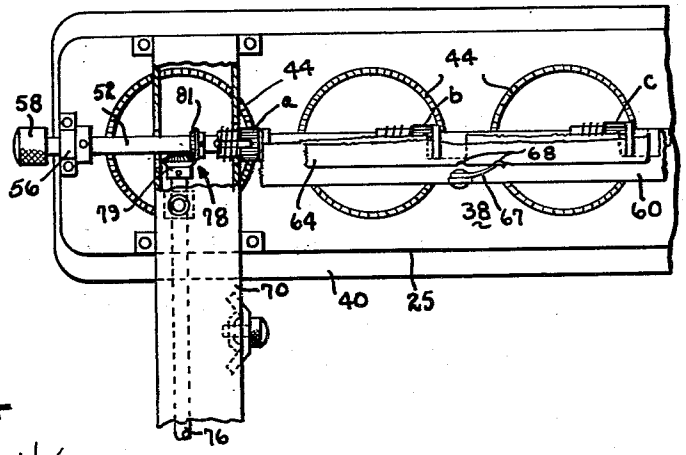


FIG. 14

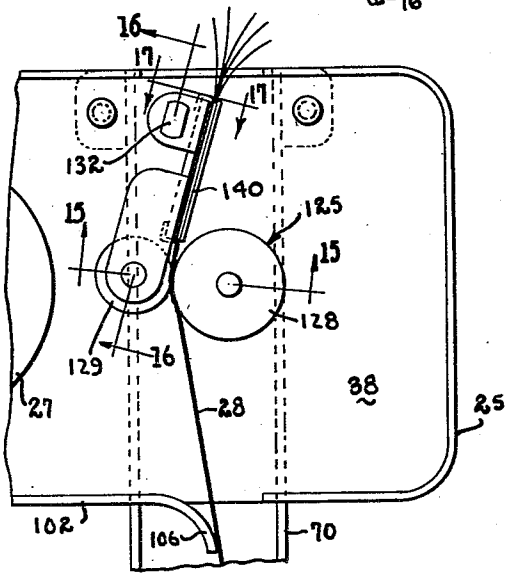


FIG. 15

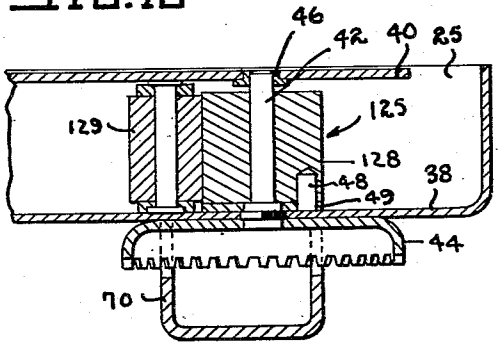


FIG. 16

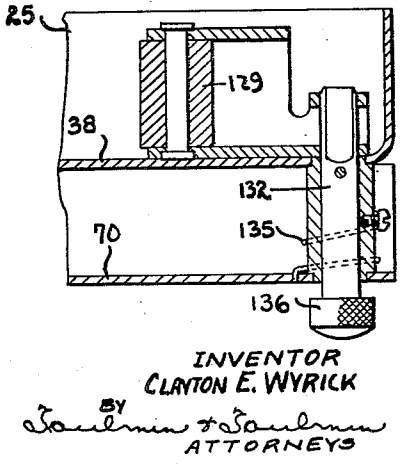
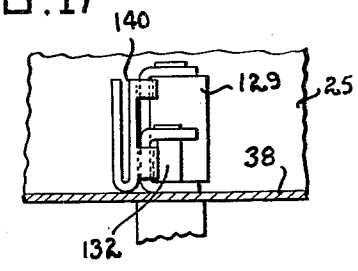


FIG. 17



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UNITED STATES PATENT OFFICE

2,359,502

AUXILIARY RIBBON FEEDER ATTACHMENT

Clayton E. Wyrick, Miami, Fla., assignor to The Egry Register Company, Dayton, Ohio, a corporation of Ohio

Application July 13, 1942, Serial No. 450,697

3 Claims. (Cl. 197—153)

This invention relates to attachments for imprinting apparatus, and more particularly an auxiliary ribbon feeding mechanism whereby one or more copies of impressions can be made simultaneously.

The auxiliary ribbon feeding mechanism of this invention is applicable to a wide range of imprinting apparatus, such as computing, tabulating, addressing and billing machines. For illustrative purposes, it is herein shown and described as incorporated with a conventional typewriting machine.

It is an object of this invention to provide a duplicator or impression copying attachment for typewriters and the like machines wherein the duplicator means comprises a ribbon which is automatically fed in position to receive and transfer the impression onto a copy sheet or other record form during the operation of the typewriter.

Another object is to provide a ribbon feeder attachment for impression type manifolding devices which can be arranged to utilize one-time duplicator strip or ribbon means for transferring the impression to copy sheet or web forms.

Another object is to provide a ribbon feeder attachment which is readily adjustable for mounting on typewriter carriages of different widths and used for forming the copies without the use of carbon sheets, as is the conventional practice.

Another object is to devise a duplicator ribbon feeder mechanism comprising one or more sets of spools upon which the ribbon is wound and unwound automatically by the rotative movement of the typewriter platen during the normal use of the typewriter.

Another object is to provide a ribbon feeder attachment which is useful for producing copies of impressions made upon continuous strips of stationery, such as commonly used in billing and addressing machines, wherein a plurality of superimposed manifold paper webs comprising a series of connected detachable form sheets are fed through the machine and imprinted upon while simultaneously making copies thereof. In the improvement provided by my attachment, the interleaving of the carbon sheets with the manifold papers is eliminated and the imprinting machine can be continuously operated until the duplicator ribbon means is worn out or requires changing.

These and other objects and advantages will appear from the specification and as hereinafter described and set forth in the claims and taken in connection with the accompanying drawings which show one embodiment of my invention, wherein

Figure 1 is a plan view of my attachment shown mounted for operation on a typewriter, certain parts being broken away to illustrate the construction and arrangement more clearly;

Figure 2 is a fragmentary plan view illustrating a modification of the device shown in Figure 1, wherein one-time carbon strip or duplicator ribbon means is used;

Figure 3 is a bottom plan view of the device illustrated in Figure 1;

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 3;

Figure 5 is a fragmentary sectional view taken substantially on the line 5—5 of Figure 4 and looking in the direction of the arrows;

Figure 6 is a fragmentary detail sectional view taken substantially on the line 6—6 of Figure 4 and looking in the direction of the arrows;

Figure 7 is a fragmentary detail view taken substantially on the line 7—7 of Figure 4 and looking in the direction of the arrows;

Figure 8 is a vertical sectional view taken through a portion of the attachment and substantially on the line 8—8 of Figure 1, looking in the direction of the arrows;

Figure 9 is a fragmentary sectional view taken substantially on the line 9—9 of Figure 8;

Figure 10 is a detail view of the uppermost ribbon guide means and associated mechanism;

Figure 11 is a sectional view taken through the vertically arranged ribbon guide means positioned at opposite sides of the device;

Figure 12 is an exploded perspective view of the ribbon guide mechanism shown in Figure 11 and illustrating the arrangement of the ribbon guide channels;

Figure 13 is a fragmentary detail view of the attachment illustrating the mechanism for driving the bowl gear ribbon spools during operation of the device;

Figure 14 is an enlarged detail view of the mechanism for operating the one-time duplicator ribbon strips whereby the same are advanced in position for receiving and transferring the imprint;

Figure 15 is a fragmentary sectional view taken substantially on the line 15—15 of Figure 14 and looking in the direction of the arrows;

Figure 16 is a similar detail view of the mechanism shown in Figure 14 and taken substantially on the line 16—16 of Figure 14 looking in the direction of the arrows;

Figure 17 is an additional detail view taken substantially on the line 17—17 of Figure 14 and looking in the direction of the arrows.

Heretofore it has been the general practice in operating typewriters and similar impression printing machines to make copies of the typing by utilizing carbon sheets which are interleaved between stationery sheets to simultaneously duplicate the printing on the copy paper. This entails time consuming manual operations of removing the carbon sheet from a pack and prearranging and aligning the same with the copy paper, which is eliminated in the use of my auxiliary ribbon feeding attachment. The auxiliary ribbon feeding mechanism is so designed and connected with the typewriter or impression type machine that it operates in synchronism therewith and after a line has been typed and the platen is advanced preparatory to imprinting the next line, the duplicator ribbon members which are interleaved between the manifold papers are automatically shifted so that a clear, sharp copy of the printing is made.

By the use of the auxiliary ribbon feeding attachment of this invention, the output of the printing machine may be substantially increased and no time is consumed in removing, placing and aligning of the carbon sheets during the operation of the device. Furthermore, a more efficient and versatile machine is provided.

Detailed description of attachment device

Referring to the drawings in detail, there is shown in Figure 1 one embodiment of my invention attached to a typewriter platen. In the drawing, the ribbon feeder attachment mechanism, generally designated **20**, is shown adjustably positioned on the typewriter carriage apron, generally designated **22**, and is arranged to be operated by rotary movement of the platen **24** of the typewriter.

As shown, the attachment consists of an elongated casing **25** in which is mounted the ribbon spools, generally designated **27**. Any suitable number of ribbon-carrying spools may be mounted in the casing depending upon the number of copies to be made. As shown, there are six spools, which constitute two sets A and B. The spools are arranged whereby the ribbons **28** are moved from one set of spools to the other during operation of the typing machine. As illustrated, the ribbon from spools A is being unwound therefrom and wound up on the spools B.

The duplicator ribbons **28**, as shown in Figure 1, are guided forward from the spools A and across the front of the typewriter platen and in between the stationery copy sheet forms **30** in position to receive and transfer the imprint of the typewriter key **32** which strikes the typewriter ribbon **33** and imprints upon the sheet **35** in the conventional manner. In this way, one or more copies of the original typing can be made without the use of carbon sheets.

The casing **25** of the attachment, as shown in Figure 4, comprises a bottom portion **38** and a hinged or removable cover member **40**. The spools **27** are mounted for rotation on the spindle shaft means **42** which extend through the bottom wall **38** and are fixedly attached to the bowl gear means **44**. The uppermost ends of the spindles **42** are received by the sockets **46** formed on the underside of the lid **40** retaining the spools on the spindles when the lid is in closed position. An upstanding pin **48** is provided on the disc-like member **49** and arranged to engage in an aperture or cavity formed in the side wall portion of the spool to lock the members together. The disc member **49** is suitably fixed to the spindle **42** at its lowermost portion adjacent the casing wall **38** and rotates with the spindle.

In order to provide for alternate driving of the two sets of bowl gears which rotate the spindles **42** whereupon the ribbons **28** can be wound off one set of spools onto the other and vice versa, a drive shaft **52** carrying the pinions *a*, *b*, *c*, *d*, *e* and *f* is mounted on the supporting bracket means **56** attached to the underside of the wall **38** of the casing **25**. As illustrated in Figure 4, the pinion gears drive the bowl gears **44** when the shaft **52** is rotated. Each pinion is mounted on the shaft **52** so as to be axially shiftable out of engagement with its respective bowl gear. A suitable clutch mechanism for accomplishing this is shown at **54** and, as illustrated, the ribbon spools A are operatively connected to the drive shaft **52** while the spools B are disconnected. One end of the shaft **52** is extended and provided with a knurled knob **58** for manually manipulating the shaft. Means is also provided comprising a laterally shiftable member **60** for declutching one set of pinions, *d*, *e* and *f*, such as shown at **62**, while connecting the pinions of the other set, *a*, *b* and *c*. Additional declutching lever means **64** is provided for disconnecting the pinions *b* and *c* when the attachment is to be operated with one-time carbon ribbon means, as shown in Figure 2. The actuating member **60** is suitably supported on the bottom of the transverse ribbon guide channelways by punching out clip-like supporting ears **65**, as shown in Figure 5. Similarly, the laterally shiftable operating lever **64** is slidably retained on the actuating member **60**. A spring clip means **67** is suitably mounted on the bottom of the member **60** which co-operates with the notches **68** in the side of the shiftable lever **64** whereby it is maintained in the desired operating position, as shown in Figure 3.

Attached to the front of the casing **25** are the spaced channelways **70** along which the ribbons **28** are suitably guided and arranged to be moved across the front of the platen and in between the manifold papers. For actuating the drive shaft **52** and pinions mounted thereon so as to rotate the bowl gears **44** during rotation of the platen **24**, there is provided the roller actuated means **72** which is mounted for rotation in the forward end of the member **70**. A shaft **73** interconnects the rollers **72** which are arranged to extend through the apertured wall portion **74** in the member **70** and frictionally contact the platen **24**. Rotary movement of the platen **24** drives the roller **72** which, in turn, drives the shaft **76** through the bevel gearing means **78**. On the upper end of the shaft **76** is mounted a bevel gear **79** which meshes with a gear **81** keyed to the shaft **52** so that revolution of the shaft **76** drives the shaft **52** and pinions to operate the spools **27**.

In Figures 8, 9 and 10 there is illustrated the construction for adjustably mounting the ribbon attachment on a typewriter carriage. To effect this, the left-hand ribbon guide channel **70** and associated mechanism are slidably mounted on the rods **84** which are attached to the base of the casing **25**, as shown in Figure 3. The thumb screws **86** are threaded into the base nut members **88** and the ribbon box is held in place on the rods by tightening the thumb screws **86** against the rods **84**. When the left-hand ribbon

channel is adjusted for a particular typewriter carriage the friction drive wheel 72 must also be moved relative to the other wheel and in order to provide for this the shaft 73 telescopes into the section 89 attached to the opposite friction drive wheel. The shaft portion 89 forms a sleeve and is provided with a slot 91 in which a pin 93 fixed to the shaft 73 is adapted to slide so as to provide for axial movement of the shaft 73 but prevents relative rotary movement between the sleeve 89 and the rod-like shaft 73.

In Figure 9 the ribbon holder left end portion, generally designated 95, is arranged so as to telescope over and adjacent the portion 96 so as to make it wider or narrower to fit a typewriter carriage apron. The ribbons 28 are guided from the spools over the adjustable guide member 100 and into the channelways 70, as shown in Figure 10. The front wall portion 102 of the casing 25 comprises the apertures 104 which communicate with the channelways 70 and through which the ribbons are guided to the front of the typewriter platen. The opposing ends of the front wall member 102 are curved outwardly as at 106 so as to serve as a guide for one of the ribbon members. It will be understood, of course, that the ribbon guide member 100 will comprise the proper number of ribbon-supporting sections to accommodate the number of ribbons employed in the attachment.

In Figures 11 and 12 the forward ribbon guideway channel members, generally designated 107, are illustrated which are adjustably connected to the forward end of the ribbon guide channelways 70 at opposite sides of the platen. These members are adjustably attached to the sides of the channelways 70 by means of the brackets 108. The side brackets 108 support the spaced wall members 110 which form the individual ribbon guide passageways 112. The spaced wall portions 110 of the guide members 107 are concentrically curved at their uppermost portions, as at 114, so as to guide the ribbons at a right angle to the channelways 70 and downwardly in front of the typewriter platen. The lowermost portions of the guide wall members 110 are provided with an aperture 116 of elliptical shape which permits movement of the ribbon at right angles to the downwardly extending guideway channel members 107. In this way, each of the individual ribbons is guided evenly from the spools outwardly through the channelways 70 and downwardly through the members 107 and across the front of the platen. Adjustment of the guide members 107 is provided for by the pivoted mounting of the brackets 108 to the side walls of the channelways 70, as at 119. Shifting of the channel guide members 107 about the pivot 119 is permitted by the pin 122 which works in the slot 123.

One-time ribbon modified construction

Where it is desired to use one-time ribbons or carbon strips as a duplicator means, the arrangement shown in Figures 2, 14, 15, 16 and 17 is used wherein the ribbon spools 27 are collectively drawn across the front of the platen by the gripper roll member, generally designated 125, as illustrated in Figure 2. In this modification, the ends of the ribbons 28 are fed into the co-acting ribbon gripping roll means 125 which is adapted to take the place of one of the spools of ribbon. This ribbon drawing roll member fits over the shaft 42 and is driven by bowl gear 44, similarly as the ribbon spools 27, as shown in Figure 15. The gripper roll mechanism 125 comprises the large driven roll means 128 and the co-acting spring attached smaller roll 129. The roll 129 is adapted to be swung away from contact with the roll 128 by rotating the shaft 132 against the action of the spring 135 to permit insertion of the ends of the duplicator ribbons 28, as shown in Figures 2 and 14, preparatory to operating the machine. This is conveniently done by grasping the knurled knob 136 of the shaft 132 and turning it. Suitable means for receiving and guiding the ribbons 28, after passing between the rolls 128 and 129, is shown in Figure 17, wherein a U-shaped member 140 is arranged to collectively receive and guide the used ribbon portions as they are advanced outwardly by the gripper roll means 125. The member 140 also functions as a tear-off member for detaching the used ribbons.

Operation

In the use of the attachment on an ordinary typewriter, as shown in Figure 1, the device is fitted on the apron carriage of the typewriter and the ribbon spools A and B placed in the casing 25 on the spindles 42. The ribbon spools A are mounted on the spindles 42 and the ribbons brought forward through the guideway channel means on the left side of the attachment, downwardly through the ribbon guide channel 107 and across the front of the platen and upwardly to the opposite set of spools B upon which the ribbons are to be rewound. After the ribbons have been properly mounted, the attachment is mounted on the typewriter, as illustrated in Figure 1. The manifold papers 30 are inserted in the typewriter in the usual manner and the copy sheets or webs interleaved between the ribbons 28 similarly as in the case of carbon paper. When the manifold papers have been arranged, the typewriter is operated in the conventional way.

Inasmuch as the friction roller members 72 are in contact with the platen 24 of the typewriter, when the operator rotates the platen by turning the knurled knobs at the side of the typewriter or otherwise moves the platen as in advancing the manifold papers, the ribbons are automatically shifted through the associated driving mechanism to present a new surface on the ribbon for receiving the next line of impressions. During the operation of the typewriter, the ribbons are gradually unwound from the spools A and taken up on the other set of spools B. In order to reverse the travel of the ribbons 28, it is merely required that the operator shift the lever 60 so as to disengage the pinions *a*, *b* and *c* from their respective bowl gears and engage the corresponding set of pinions *d*, *e* and *f*. When this is done, the machine operates to drive the spools A so as to unwind the ribbons off of the spools B back onto the spools A and the cycle is continued until the ribbons are sufficiently worn to require replacement.

In the operation of the modification shown in Figure 2, the end ribbon spools is replaced with a friction gripper roller 125 which is constructed to fit on the spindle and be driven in the same manner as the ribbon spool. In this arrangement, however, the ribbons on the spools are collectively unwound from the spools by the gripper roll 125 whereupon after one-time use the ribbons are discarded. In this modification, the ribbons may be made of strips of carbon

paper or similar inexpensive duplicator tape. When the device is used in this manner, the drive pinions for the bowl gears are all disconnected except the end one which drives the gripper roll 125. This is conveniently effected by shifting the lever 64 so as to declutch the pinion gears *b* and *c* from their respective bowl gears, as illustrated in Figure 4 and the ribbon drawing gripper roll 125 is mounted on the end bowl gear driven spindle operated by the pinion *a*, all the other pinions being disconnected so that the spools containing the ribbons are free to rotate permitting unwinding of the ribbon thereon during operation of the device.

It will be appreciated that the duplicator ribbons will be maintained taut by any suitable drag producing means so that the ribbons will be held in proper position between the manifold papers to receive the impression made by the typewriter keys and duplicate it on the copy paper arranged therebeneath.

It will be understood that my invention is not limited to the particular details of construction shown in the drawings and described but that various modifications may be made by those skilled in the art without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, in a front strike typing machine, a typing device having front striking type associated therewith, a carriage movable relative to said type, a platen on said carriage, a main inking ribbon operatively associated with said platen for transferring typed impressions onto a record web carried over said platen, an auxiliary frame structure supported by said carriage and movable therewith and extending rearwardly from said platen, a plurality of supplementary inking ribbons disposed on spools, means for individually supporting said spools on said frame rearwardly of said platen with the axes of the spools arranged vertically, guide means for directing the movement of the supplemental inking ribbons from said spools forwardly of the platen and in alignment with the main inking ribbon, individual drive means for each of said spools, a common drive means from said platen operatively connected to each of said individual drive means, individual clutch means between said common drive means and said individual drive means for individually connecting or disconnecting said spools from said common drive means, and manual means operatively associated with said clutch means to selectively connect said common drive means to the drive means for said spools to wind or unwind the auxiliary ribbons thereof, and means operatively connecting said common drive means to said platen for causing operation thereof during rotation of said platen.

2. In combination, in a front strike typing machine, a typing device having front striking type associated therewith, a carriage movable relative to said type, a platen on said carriage, a main inking ribbon operatively associated with said platen for transferring typed impressions onto a record web carried over said platen, an auxiliary frame structure supported by said carriage and movable therewith and extending rearwardly from said platen, a plurality of supplementary inking ribbons disposed on spools, means for individually supporting said spools on said frame rearwardly of said platen with the axes of the spools arranged vertically, guide means for directing the movement of the supplemental inking ribbons from said spools forwardly of the platen and in alignment with the main inking ribbon, individual drive means for each of said spools, arm means extending between said frame and said carriage for supporting said frame thereon, roller means carried by said arm means at the forward end thereof frictionally engaging said platen to be driven thereby, drive shaft means operatively connecting said roller means with said drive means for said spools, individual clutch means on said drive shaft means for connecting and disconnecting the same to the drive means for said spools, and manual means for selectively engaging and disengaging said clutch means to wind or unwind the ribbons on the spools.

3. In combination, in a front strike typing machine, a typing device having front striking type associated therewith, a carriage movable relative to said type, a platen on said carriage, a main inking ribbon operatively associated with said platen for transferring typed impressions onto a record web carried over said platen, an auxiliary frame structure supported by said carriage and movable therewith and extending rearwardly from said platen, a plurality of supplementary inking ribbons disposed on spools, means for individually supporting said spools on said frame rearwardly of said platen with the axes of the spools arranged vertically and disposed in alignment with one another, individual drive means for each of said spools, a drive shaft positioned beneath said spools and in alignment with the axes thereof, individual clutch means connecting said drive shaft with each of said drive means comprising individual drive elements mounted on said drive shaft for axial movement thereon for engagement or disengagement with said drive means for said spools, manual means for selectively connecting or disconnecting said drive elements with said drive means for said spools, and means operatively connecting said drive shaft with said platen for rotation thereof upon rotation of the platen.

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