Feb. 2, 1937. B. L. HENRY 2,069,492

MULTICOPY ATTACHMENT FOR TYPEWRITERS

Filed Aug. 11, 1932 5 Sheets-Sheet 1

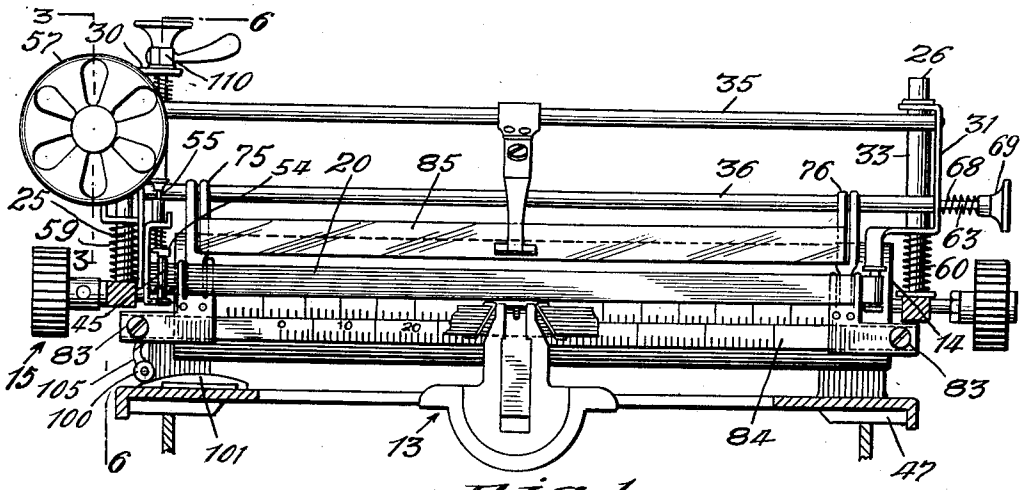

Fig. 1.

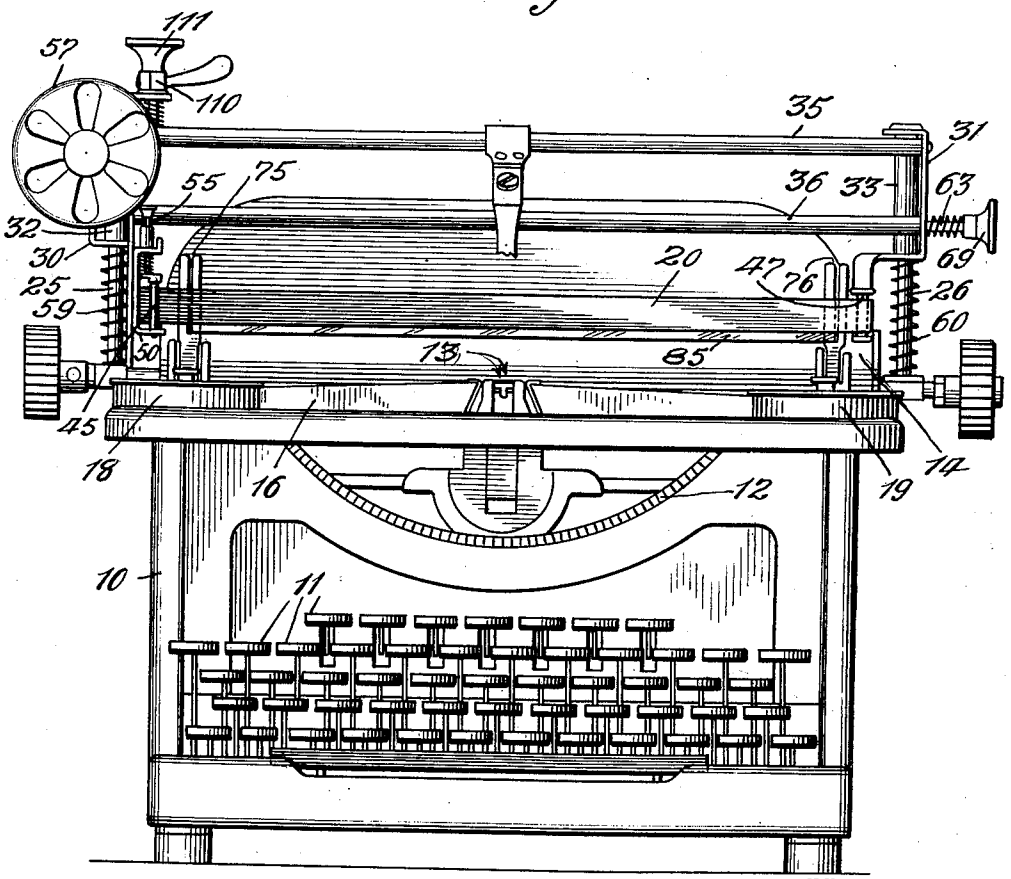

Fig. 2.

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MULTICOPY ATTACHMENT FOR TYPEWRITERS

Filed Aug. 11, 1932 5 Sheets-Sheet 2

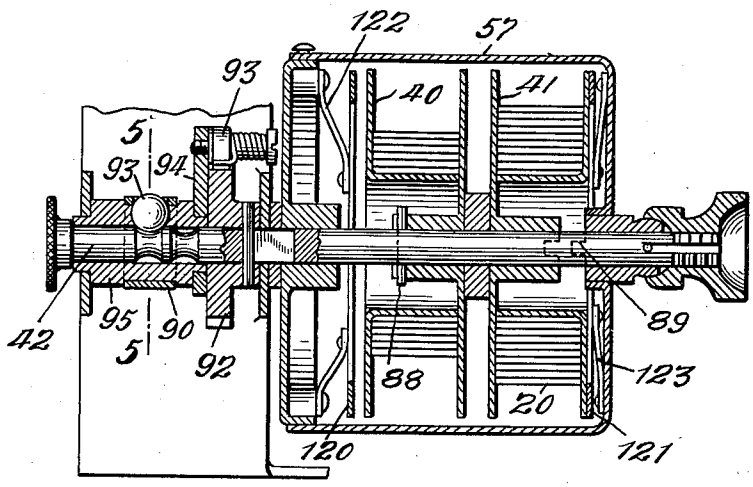
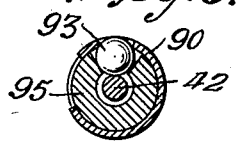


Fig. 3.

Fig. 5.



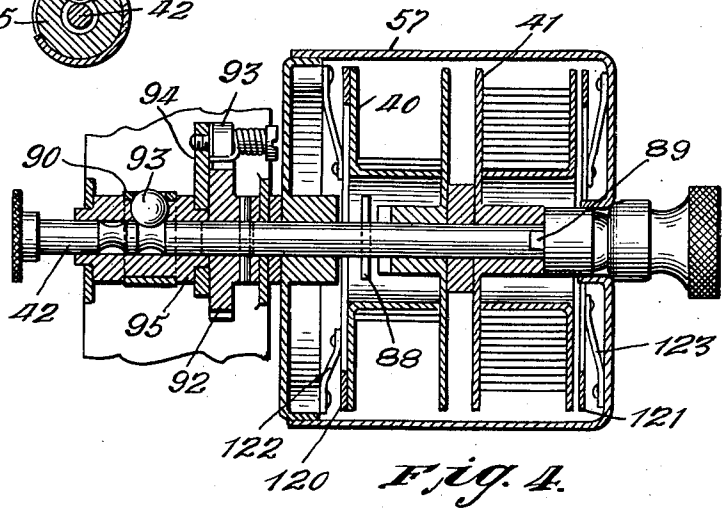


Fig. 4.

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MULTICOPY ATTACHMENT FOR TYPEWRITERS

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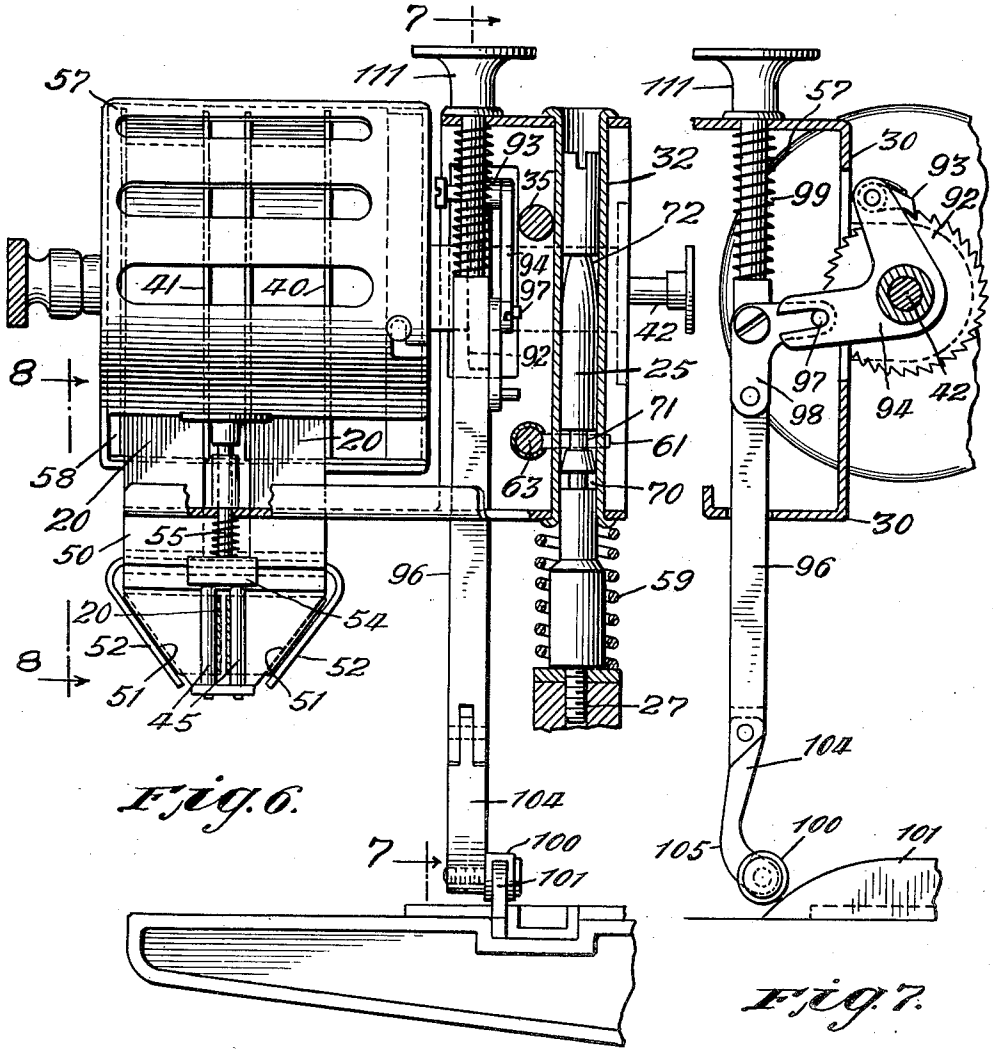

Fig. 6.

Fig. 7.

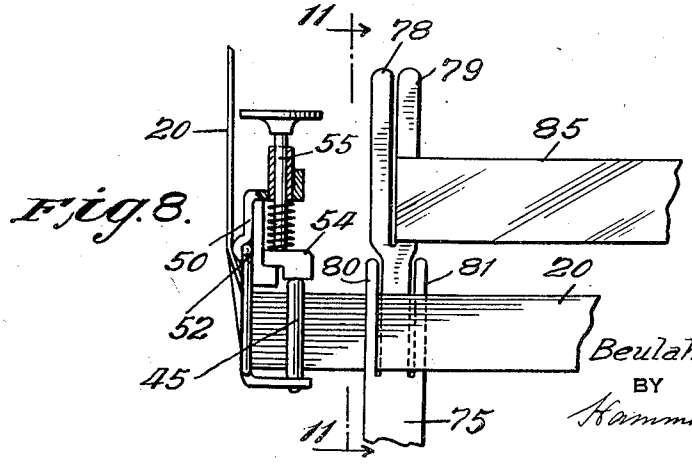

Fig. 8.

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MULTICOPY ATTACHMENT FOR TYPEWRITERS

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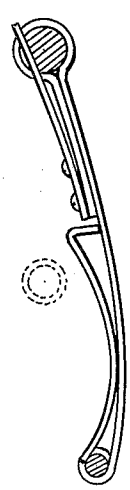

Fig. 9.

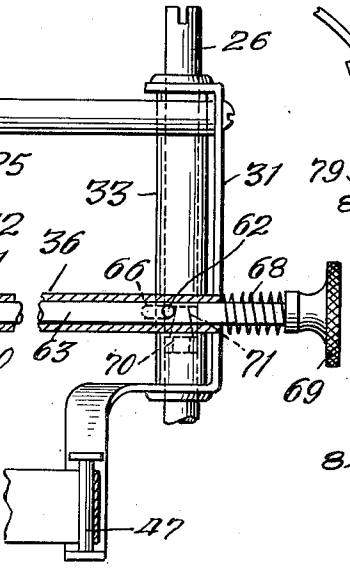

Fig. 10.

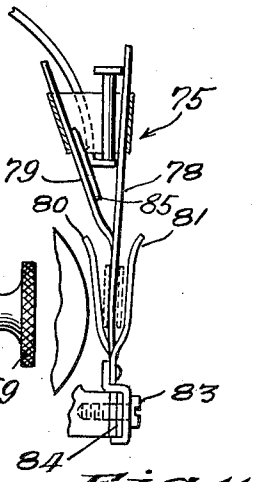

Fig. 11.

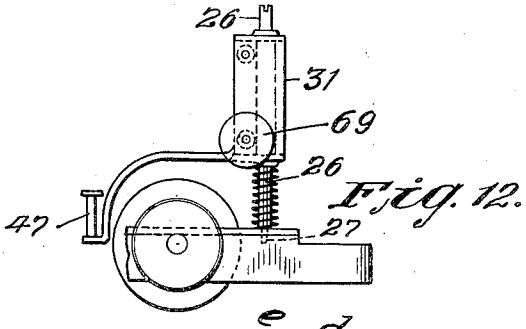

Fig. 12.

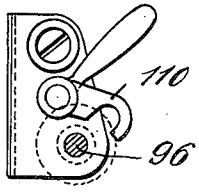

Fig. 13.

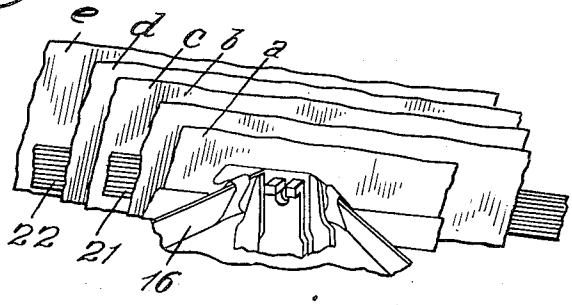

Fig. 14.

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MULTICOPY ATTACHMENT FOR TYPEWRITERS

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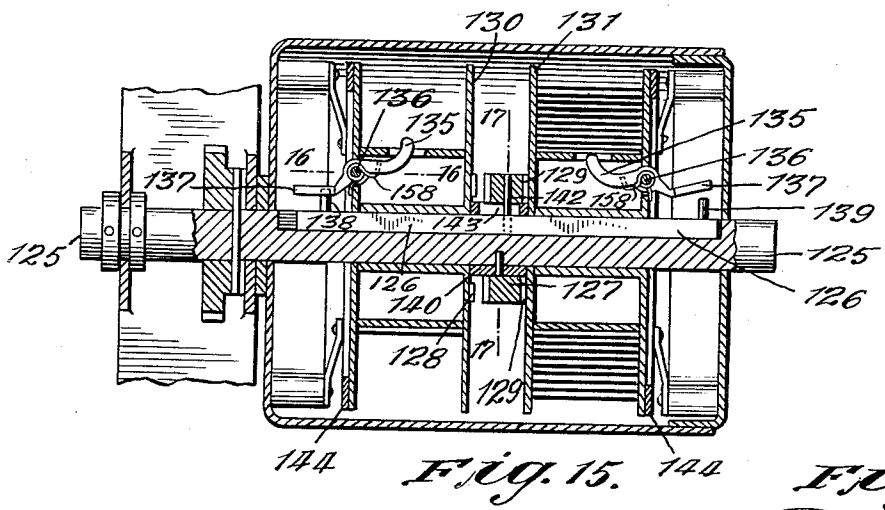

Fig. 15.

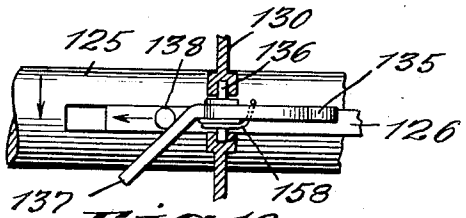

Fig. 16.

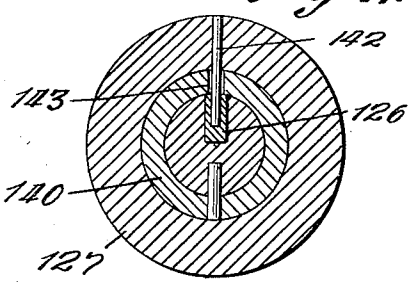

Fig. 17.

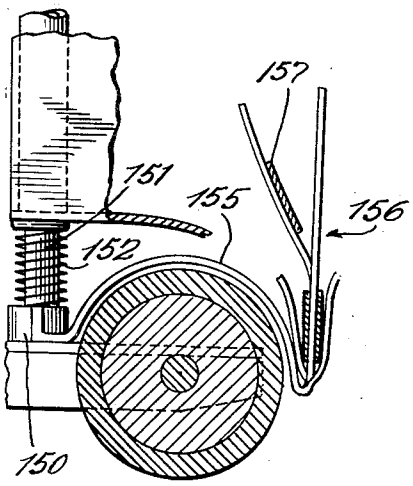

Fig. 18.

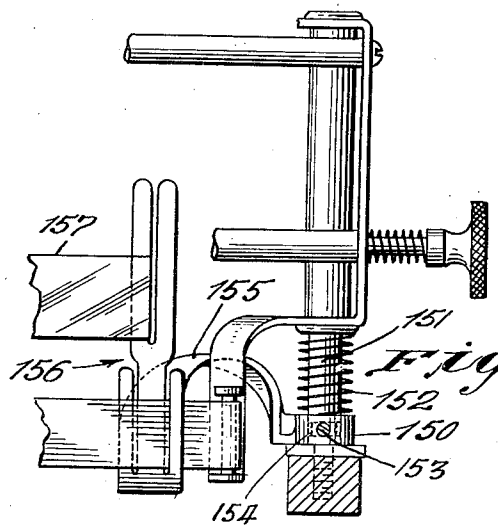

Fig. 19.

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Patented Feb. 2, 1937 2,069,492

UNITED STATES PATENT OFFICE

2,069,492

MULTICOPY ATTACHMENT FOR TYPEWRITERS

Beulah Louise Henry, New York, N. Y.

Application August 11, 1932, Serial No. 628,281

12 Claims. (Cl. 197—153)

This invention relates to typewriting machines and more particularly to attachments therefor for use in producing a plurality of copies each having the appearance of a so-called original ribbon copy.

The invention has been developed as an improvement over the device of my co-pending application in connection with the production of a typewriter attachment carrying an ink impregnated ribbon arranged to be interposed between successive sheets of paper at the writing position and such an embodiment will be more particularly described for the purpose of illustrating the principles of the invention. It will be understood, however, that the description of the particular device is illustrative merely and is not intended as defining the limits of the invention.

The invention has for its principal object to provide an improved attachment which will require a minimum of special attention on the part of the operator.

The invention has also for an object to provide an improved arrangement which will facilitate the removal of typed sheets and the introduction of fresh sheets.

Another object is to make provision whereby the attachment may be rendered inoperative and the typewriter used for single copy work, as for example the typing of envelopes.

Another object is to make provision for adjusting the ribbon to permit use of either its upper or lower portion.

Another object is to provide an attachment which can be applied to the standard typewriter with a minimum of change of the machine.

It is further an object to provide an apparatus which can be easily and effectively operated without the requirement of unusual skill.

The invention provides as a preferred embodiment an attachment adapted to be readily applied to a standard typewriter, whereby a number of ribbon copies may be made simultaneously in the operation of the machine, as distinguished from the usual procedure of making one original ribbon printed copy and several carbon copies.

The attachment is so designed that its principal parts constitute a unit which is adapted to be applied to the carriage of a standard typewriter without changing the structure of the machine. The typewriter can thus be restored at will to its original condition merely by the removal of the attachment. Furthermore, the attachment can be easily adjusted to inoperative position to permit normal use of the machine.

The attachment provided by the present invention carries preferably one ribbon which is guided in a plurality of runs extending parallel to and in front of the usual typewriter platen, and in use the several sheets of paper are placed in front of, between and behind the respective runs of the ribbon. Ordinarily the usual ribbon of the typewriter is retained and serves for the printing of the front sheet of paper.

Feeding means is provided for intermittently feeding the ribbon to vary the point of wear by constantly presenting fresh portions of the ribbon. In order to further distribute the wear of the ribbon, or to use either part of a red and black ribbon, provision is made for adjusting the vertical position of the ribbon when in use.

To facilitate the removal of printed papers and the introduction of fresh paper, the ribbon carrying means is readily movable to and from operative position and when moved from operative position the runs of the ribbon are separated preferably automatically, and they are also moved away from the surface of the platen.

The nature and objects of the invention will be better understood from a description of a particular illustrative embodiment, for the purpose of which description, reference should be had to the accompanying drawings forming a part hereof and in which—

Figures 1 and 2 are views in front elevation of a duplicating mechanism embodying the invention applied to a standard typewriter and showing the parts respectively in operative typing position and in released elevated position for the insertion of papers,

Figs. 3 and 4 are sectional views of the ribbon spools and operating shaft therefor, taken on the line 3—3 of Fig. 1, showing the parts respectively in two operating positions,

Fig. 5 is a detail view of a detent for holding the spool shaft in either of its two operative positions, taken on the line 5—5 of Fig. 3,

Fig. 6 is a view, mainly in elevation, of certain details of the ribbon carrying frame and ribbon feeding means, taken substantially on the line 6—6 of Fig. 1, but also showing the post 25 in section,

Fig. 7 is a view of the ribbon actuating mechanism, taken on the line 7—7 of Fig. 6,

Fig. 8 is a detail view in front elevation of the ribbon guide and of the separating device as seen from the line 8—8 of Fig. 6,

Fig. 9 is a detail view showing a pressure member for holding the paper in position,

Fig. 10 is a detail sectional view of a portion of the ribbon carrying frame showing especially

the detent mechanism for holding the frame in vertically adjustable position,

Fig. 11 is a side view showing the spreader device for separating the runs of the ribbon for the purpose of introducing paper, as seen from the line 11—11 of Fig. 8, but showing ribbon and its guides in elevated position,

Fig. 12 is a side view showing the position of the post in the carriage,

Fig. 13, is a detail plan view of an adjustable stop member for fixing the position of the ribbon feed rod,

Fig. 14 is a view indicating the relation of the papers and ribbon to the platen,

Fig. 15 is a sectional view of another embodiment of the invention showing an automatic reversing means for the ribbon spool driving shaft,

Fig. 16 is a detail plan view showing the clutch shifting cam of this arrangement,

Fig. 17 is a sectional view taken on the line 17—17 of Fig. 15, and

Figs. 18 and 19 are respectively end and front views of an embodiment in which the spreader members and guide bar are supported on the upright posts.

In the arrangement shown in the drawings for purposes of illustration a standard L. C. Smith typewriter is shown equipped with a duplicating attachment constructed in accordance with the present invention. The typewriter is not shown in full detail but the usual frame 10, bank of keys 11, typebars 12 arranged to operate at the printing position 13 against the platen 14, of the carriage 15 are sufficiently indicated. The usual ink ribbon 16 carried by the spools 18, 19 is generally, although not necessarily, employed in the operation of the device of the present invention.

The duplicating attachment shown as applied to the typewriter is arranged to carry a supplemental ink ribbon 20 and to guide this ribbon in runs 21, 22 Fig. 14 extending parallel to and substantially the full length of the platen 14, the ribbon being movable for operation to position along the writing line which extends horizontally through the writing position 13 in front of the platen.

In the arrangement shown, the supplemental ribbon is arranged to provide two operative runs for the purpose of making two ribbon copies in addition to the principal ribbon copy typed by the machine with the usual standard ribbon 16. It will be understood, however, that the invention is not limited to this number of runs which may be increased or reduced and suitable variations may be made as the demands of the work to be done may require. One ribbon copy may be made in the operation of the machine by each run of the supplemental ribbon 20 and one by the main ribbon 16. In addition two thin paper phantom copies may be printed on the reverse side and will serve for file copies, if a transparent paper is selected. As indicated in Fig. 14, sheets *a*, *b*, *c*, *d*, and *e* are inserted for printing. Sheets *a*, *c*, and *e* will be be printed as regular ribbon copies, but sheets *b* and *d*, preferably of thin paper, will be printed on the reverse side by being pressed against the front faces of the ribbon runs 21, 22. These thin paper sheets also protect the direct ribbon copy sheets from being printed in reverse on their back faces and are preferably always used. If desired, additional sheets of paper together with carbon paper may be inserted for extra copies.

The supplemental ribbon together with the feeding and reversing means therefor is carried by a frame designed to be readily applied as a unit to the standard fully equipped typewriter carriage without removing any of the parts or equipment thereof. As shown, two vertical posts 25, 26 are secured to the typewriter carriage.

In the L. C. Smith typewriter shown, the posts may replace the two retaining screws which ordinarily secure the platen roller holding plates. In other machines the posts may be attached as convenience or preference may suggest. If preferred a hinged support for the frame may be provided instead of the rigid vertical posts shown. On the posts is mounted for vertical movement the frame consisting principally of the brackets 30 and 31 with the sleeves 32 and 33 and the transverse tubular bars 35 and 36.

A pair of ribbon spools 40, 41, as best shown in Figs. 3 and 4 are suitably mounted on a horizontal shaft 42 carried on the frame and the supplemental ribbon 20 carried by these spools is suitably led from these spools to the guides 45, 47 by which the ribbon is supported in two runs parallel to the platen and movable to suitable typing position along the typing line. The guides 45, 47 preferably have rollers to avoid sliding friction of the ribbon on pin guides. The ribbon in use is fed from one spool to the guides and back to the companion spool, means being provided for feeding the ribbon alternately in opposite directions.

In the arrangement shown the axis of the spools is horizontal and at right angles to the axis of the platen. It is therefore necessary to guide the ribbon in an angular path from a plane parallel to the axis of the spools to another plane at right angles thereto and parallel to the axis of the platen. For this purpose there is provided a guide plate 50, Figs. 6 and 8, to the guiding portion of which the two runs of the ribbon are led in a vertical plane from which plane they pass around the edges 51 of the plate horizontally toward each other and then between and around the vertical guides 45 to pass thence to and around the guide 47, Fig. 1. The edges 51 lie at an angle of 45° to the length of the plate and wire guides 52 are preferably provided to keep the ribbon in place if it becomes slack. As shown, these wire guides 52 consist in fact of one piece of wire rigidly secured in a corrugation of the guide plate and bent to guiding position. It is desirable also to provide means of preventing the ribbon from becoming accidentally misplaced from between the vertical guides 45. As best shown in Fig. 8, a presser foot 54 carried on a vertically movable rod 55 engages the tops of the vertical guide pins 45 thus closing the gap therebetween. The rod 55 is spring pressed downwardly but may be retracted manually for the removal of a worn and substitution of a fresh ribbon. The guide plate 50 is rigidly attached to the bracket 30 of the frame. A removable casing 57 encloses the spools and is provided with a slot 58 which serves as a guide maintaining the ribbon always in the desired plane of approach to the guide plate 50, as it is wound on or unwound from the respective spools.

During the typing operation it is desirable that the runs 21, 22 of the ribbon and the papers between which they are positioned for typing should be as close together and as close to the platen as possible, but when removing typed papers and introducing fresh papers, it is desirable that the runs of the ribbon should be separated from each other and spaced from the platen. For this reason the frame is movable

vertically on the posts 25, 26 upward to inoperative position for insertion and removal of paper and downward to either of two operative, typing positions. The two operative positions are close together and permit use of different portions of the width of the ribbon to distribute the wear. These two operative positions also permit use of the standard red and black ribbon. Means is provided for spreading the runs of the ribbon when in non-typing position and for closing them together and against the platen when in typing position. For facilitating the vertical movement of the frame springs 59, 60 are mounted on the posts 25, 26 between the frame and the typewriter carriage. These springs are tensioned to lift the frame to its uppermost position but the frame may be moved downward against the tension by hand pressure and when in its lower positions may be held by suitable locking means.

It is an easy matter for the operator at will to press the frame down to the selected one of the operative positions. For this reason it is not usually necessary to provide a stop for limiting the downward movement when it is desired to use the ribbon near its lower edge and no such stop is shown in the drawings.

As shown Figs. 6 and 10, detents are provided for engaging both posts 25, 26 to retain the frame in either of its two lower operative positions against the tension of the springs 59, 60. The detents shown are pins 61, 62 rigidly secured in a rod 63 slidable within the tubular frame member 36 and projecting through suitable slots 65, 66. The detent rod 63 is yieldably pressed to frame holding position by a compression spring 68 mounted between the frame 31 and a thumb nut 69 on the end of the rod. The posts 25, 26 are similar. As best shown in Fig. 6, each post is provided with a recess 70 for holding the frame in its lowermost operative position, a second recess 71 slightly above the recess 70 for holding the frame in a second operative position, and a third recess 72 in which the detents may engage when the frame is in its uppermost position. The lower sides of the recesses 71 and 72 are tapered to permit moving the frame downward by simple hand pressure without the necessity for releasing the detent. The recesses 70, 71 are spaced from each other a distance less than the width of the ink ribbon and make possible the use of the upper and lower portions of the ribbon thereby to distribute the wear.

In order to spread the runs of the ribbon when in an uppermost position fixed spreaders 75, 76 are arranged to extend between the runs of the ribbon and closely adjacent to the guides 45, 47. As best shown in Figs. 8 and 11, each spreader comprises a guide member 78 which may be vertical and a guide member 79 extending diagonally upward and toward the platen to form together a V-shaped spreader lying between the runs of the ribbon. As the ribbon-carrying frame rises the two runs 21, 22 of the ribbon moving upward are separated by this V-shaped spreader as indicated in full lines in Fig. 11, and as the frame is moved downward to operative the runs of the ribbon are permitted to draw together or preferably, they are more or less forced together by supplementary guide members 80, 81 engaging their outer faces, as indicated in dotted lines in Fig. 11. The guides 80, 81 are designed also to limit the downward movement of the ribbon and effectively prevent the ribbon being drawn under the platen when reversely rotated. The spreaders are stationary on the carriage and may conveniently be secured to the typewriter carriage by means of the screws 83, which secure in place the bar 84 of the standard machine. The spreaders 75, 76 and more particularly the rear members 79 thereof, are connected by and support a guide bar 85 which extends parallel to the platen in such position that when the ribbon carrying frame is in elevated position ready for the removal and insertion of papers the rear run of the ribbon will lie directly behind the paper guide and the forward run will lie in front of and spaced from it. The lower edge of the guide for convenience extends somewhat below the lower edge of the ribbon. By this arrangement the guide facilitates the insertion of papers in correct position relative to the ribbon and the accurate positioning of the papers to insure the proper set up of the work.

The supplemental ribbon should be fed intermittently to change the point of wear as is common in typewriter machines. Inasmuch as the ribbon moves with the carriage during the typing of each line and accordingly each successive letter is struck in a new position on the ribbon, it is unnecessary to feed the ribbon after each letter is struck. Provision is made, however, for feeding the ribbon a predetermined distance after each line is typed. This is conveniently accomplished by rotating one of the ribbon spools to wind thereon during each return movement of the platen carriage. As shown in Figs. 3 and 4, the shaft 42 on which the spools 40, 41 are mounted may be moved longitudinally by hand to engage either of the clutch members 88, 89 carried thereby with corresponding clutch members of the spools, a spring 90 serving to retain the shaft in either adjusted position. A ratchet wheel 92 splined to the shaft 42 is rotated by a spring pressed pawl 93 Figs. 6 and 7 carried by a rocker arm 94 mounted on the bearing 95 of the shaft 42. This rocker arm is in turn actuated by a vertically movable rod 96 through a pin 97 carried in a bracket 98 rigid with the rod. The rod 96 is pressed downward by a spring 99 and may be raised to actuate the ratchet wheel by engagement of the roller 100 carried at its lower end with a cam 101 secured to the frame 10 of the typewriter, as best shown in Fig. 7. The roller 100 is carried by a hinged foot 104 pivoted to the lower end of the rod 96 for hinged movement to permit it to ride up and over the cam 101 during the step by step feeding movement of the carriage, but its movement in the opposite direction is limited whereby during the return movement of the carriage it necessarily rides up on the cam 101 to lift the rod 96 and cause a feeding rotation of the spool which is clutched to the shaft. The position of the foot 104 furthermore is such that during the return movement its rear side at the point 105 bears against the frame of the carriage thereby to prevent rearward movement and to insure feeding action. That is to say the frame braces the foot when the stress of operation is applied to the foot.

The position of the cam engaging roller 100 vertically must be correlated with the position of the ribbon carrying frame, that is to say if the frame is in its upper operative position, the rod 96 carrying the roller 100 must be projected further from the frame to suitably cooperate with the cam 101 than if the frame is in its lower operative position. In order to provide the desired adjustment, as best shown in Figs. 1 and 13, a stop 110 is arranged to be swung under the head 111 of the rod 96 to limit its downward movement

relative to the frame when the ribbon frame is to be operated in its lowermost position.

The ribbon may be fed, if desired, by rotating the shaft 42 manually.

Suitable brakes are preferably provided to engage the spools 40, 41 in order to maintain tension on the ribbon. As shown, brake disks 120, 121 are urged toward the respective spools by springs 122, 123. The movement of the shaft 42 longitudinally not only engages one pair of clutch members or the other, but also moves the spools axially to cause engagement of the unclutched spool with its corresponding brake disk.

When it is desired to place the typewriter in condition for regular operation this may be done immediately by merely elevating the ribbon carrying frame on the posts 25 and 26, to inoperative position, simply pressing the detent rod 63 to release the frame makes this possible. It is not necessary to remove the posts 25 and 26 or the spreaders 75 and 76.

An automatic reversing mechanism may be provided for reversing the drive of the ribbon spools, such an arrangement is shown by way of illustration in Figs. 15 to 17. As shown the ribbon spool supporting shaft 125 is slotted to receive a slide bar 126 connected to move a clutch member 127 to engage either of the corresponding clutch members 128 and 129 of the spools 130 and 131. When the ribbon is entirely unwound from one spool, the bar 126 is shifted to release the fully wound spool and clutch the exhausted spool, thereby to rewind the ribbon on said exhausted spool. In the arrangement shown feeler members are carried by each spool and connected to operate automatically when the spool is exhausted to shift said slide bar and clutch member. As shown a feeler 135 is pivoted in each ribbon spool at 136 and carries as an integral part a cam 137 removable to position to engage a pin 138 projecting radially outward from the slide bar 126. The feeler member is yieldably urged by a spring 156 toward operative position in which the cam 137 engages the pin 138, but when the ribbon is wound on the spool, it presses the feeler member radially inward against the action of the spring to hold the cam in inoperative position. After the inward movement of the cam 137 the rotation of the shaft in one direction and the rotation of the ribbon spool in the opposite direction as it is drawn by the ribbon will insure the necessary engagement of the cam and pin to shift the clutch member. Ordinarily it is unnecessary to provide an overthrow device to complete the movement of the clutch member 127 after it is moved to central position.

The clutch jaws may advantageously be of the ratchet tooth type to drive in one direction only.

As indicated in Fig. 17 a spacer collar 140 is keyed to the shaft 125 and serves to space the ribbon spools. The clutch member 127 is slidably mounted on this collar and connected to the slide bar 126 by a pin 142 extending through a slot 143 in the collar.

Spring pressed brake members 144 provide a slight but constant friction on each ribbon spool to maintain the ribbon taut.

In Figs. 18 and 19 an arrangement is shown whereby the spreader members and the connection guide bar may be supported on the vertical posts in order that these parts as well as the ribbon supporting arrangement may be removed with the frame as a unit when the posts are removed from the typewriter. As here shown, a collar 150 is mounted on the posts 151 beneath the frame elevating spring 152. A retaining screw 153 extends into a slot 154 on the posts. The bracket 155 integrally connected to the collar 150 is shaped to extend over the platen and carry the spreader member 156. To the spreader member 156 and a similar one at the opposite end of the carriage carried by a similar bracket a guide bar 157 is attached as in the arrangement shown in Figs. 1, 2, 8, etc.

Operation

With the attachment applied and ready for operation the papers with or without extra carbon copies are introduced into the machine, as indicated in Fig. 12; that is to say, three sheets *a*, *c*, and *e* for ribbon copies and two thin paper sheets *b* and *d* for file copies are inserted, sheet *e* being placed behind the guide plate 85 and the ribbon therebehind, while sheets *c* and *d* are placed between the guide plate 85 and the front run 21 of the supplemental ribbon and sheets *a* and *b* are placed in front of the front run 21 of the ribbon in position to be typed by the regular ribbon 16. If desired, extra sheets and carbon paper may be inserted behind the sheet *e*. When the papers are suitably positioned, the ribbon carrying frame is pressed down to one of its two operative positions. The stop 110 is adjusted to operative position if the frame is to be used in its lowermost position. The machine is then operated as usual and produces three good ribbon copies with two thin paper phantom copies usable as file copies together with additional carbon copies, if such have been included. As each line is typed the feed of the carriage past the printing point 13 brings always a fresh portion of the supplemental ribbon into place for typing thus insuring good uniform printing. As the carriage is returned after each line is typed the feed rod 96 is raised by engagement of its roller 100 with the cam 101 and the ribbon is fed forward by a suitable increment. The actual extent of feed of the ribbon may be varied by varying the position of the cap nut on the top of the feed rod 96, but ordinarily this adjustment is not necessary. When the typing of the material is finished, the ribbon carrying frame is released by pressing the detent rod 63 to the left permitting the frame to rise on the springs 59 and 60. As the frame lifts the runs of the ribbon 20 are separated by moving up on the spreader members 75 and 76, and the papers are easily removed.

The foregoing particular description is illustrative merely. Various modifications may be made and other embodiments devised without departing from the spirit of the invention.

I claim:

1. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising a frame attachable as a unit to a platen carrying typewriter carriage, a pair of ribbon spools rotatably mounted on said frame, ribbon guides carried by said frame to which the ribbon may be led from one spool and from which it may be led to the other spool, said guides being positioned to support the ribbon in operative position in a plurality of runs parallel to the platen of the typewriter carriage, and spreader means mounted on the carriage operable temporarily to separate the parallel runs of the ribbon to facilitate the introduction of fresh paper.

2. In a typewriter apparatus, the combination with a typewriter carriage of a pair of upright posts secured to the typewriter carriage, a unitary rigid frame vertically adjustable on said

posts, an impression ribbon carried by said frame in parallel runs and movable to and from operative position upon vertical movement of said frame, and means for securing said frame in adjusted position relative to said posts, together with means engageable with said ribbon when the frame is in uppermost position to separate the runs of the ribbon to facilitate the insertion of paper.

3. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising a movable ribbon support adapted to carry parallel runs of ribbon, a pair of separators arranged to extend between the parallel runs and to spread said runs as the ribbon support moves in one direction and a guide bar extending horizontally between the separators and serving as a guide in positioning papers between the ribbon runs.

4. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising a frame, ribbon guides carried by the frame for supporting a ribbon in a plurality of parallel runs and movable to carry the ribbon alternatively to an upper inoperative position and to a lower typing position, spreader means engageable with the ribbon in its upper position to separate the runs and guide bar positioned to lie between and to extend below the runs of the ribbon when in their upper position and to form a guide for the insertion of paper between the ribbon runs.

5. A typewriter attachment as defined in claim 4, wherein the guide bar is carried by the spreader means.

6. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising a frame attachable as a unit to a platen carrying typewriter carriage, a pair of ribbon spools rotatably mounted on said frame, ribbon guides carried by the frame to which the ribbon may be led from one spool and from which it may be led to the other spool, said guides being positioned to support the ribbon in operative position in a plurality of runs parallel to the platen of the typewriter carriage, said guides being adjustable to support the ribbon in either of two operative positions to permit use of the ribbon alternatively along its upper or lower portions and means operable in either position of the guides for feeding the ribbon automatically upon reciprocation of the carriage.

7. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising a frame attachable as a unit to a platen carrying typewriter carriage, a pair of ribbon spools rotatably mounted on said frame, ribbon guides carried by the frame to which the ribbon may be led from one spool and from which it may be led to the other spool, said guides being positioned to support the ribbon in operative position in a plurality of runs parallel to the platen of the typewriter carriage, means for feeding the ribbon in either of said parallel runs and automatic means for reversing the direction of feed.

8. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising ribbon guides for supporting a ribbon in a plurality of parallel runs, movable to operative position parallel to the typewriter platen and to inoperative position, spreader means engageable between the runs of the ribbon to separate the same as the ribbon is moved to inoperative position, means for drawing the ribbon runs toward each other during the movement to operative position, and for guiding the ribbon and limiting its downward movement.

9. In a typewriter attachment for use in making a plurality of duplicate ribbon copies, the combination with vertically movable ribbon guides for holding a ribbon in a plurality of runs parallel to the platen, of spreader means for separating the ribbon runs upon upward movement of the ribbon guides, guides between which the ribbon passes upon downward movement of the guides and by which the ribbon runs are drawn together, said guides being arranged to limit the downward movement of the ribbon to prevent its being drawn beneath the platen upon backward movement of the platen.

10. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising a frame attachable to a platen carrying typewriter carriage, a pair of ribbon spools rotatably mounted on said frame on a horizontal axis extending at right angles to the line of movement of the carriage, ribbon guides carried by said frame for supporting the ribbon in operative position in runs parallel to the length of the platen, a V-shaped guide plate for guiding the ribbon from a vertical line of movement to a horizontal line of movement and to said ribbon guides and means for retaining the ribbon on the guides comprising a spring-pressed detent member.

11. In a typewriting apparatus the combination with a typewriter carriage of a pair of upright posts secured to the typewriter carriage at the rear of the platen and feeding into threaded screw holes of the typewriter, a unitary frame vertically adjustable on said posts and formed to arch over the platen, a ribbon carried by said frame in parallel runs and movable downward to operative position and upward to inoperative position upon movement of said frame and means for securing said frame in lower operative position.

12. A typewriter attachment for use in making a plurality of duplicate ribbon copies comprising a ribbon carrying frame movable to and from operative position, a shaft carried by said frame, a pair of ribbon spools mounted side by side on said shaft, a clutch means slidable within the hubs of said spools for connecting said spools alternatively to the shaft including a pivoted trigger carried within the hub of each spool and projecting radially outward from within said hub into engagement with the ribbon carried by the spool and operative to cause the clutch means to slide from position of engagement with one spool to position of engagement with the other spool, substantially as and for the purpose described.

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