

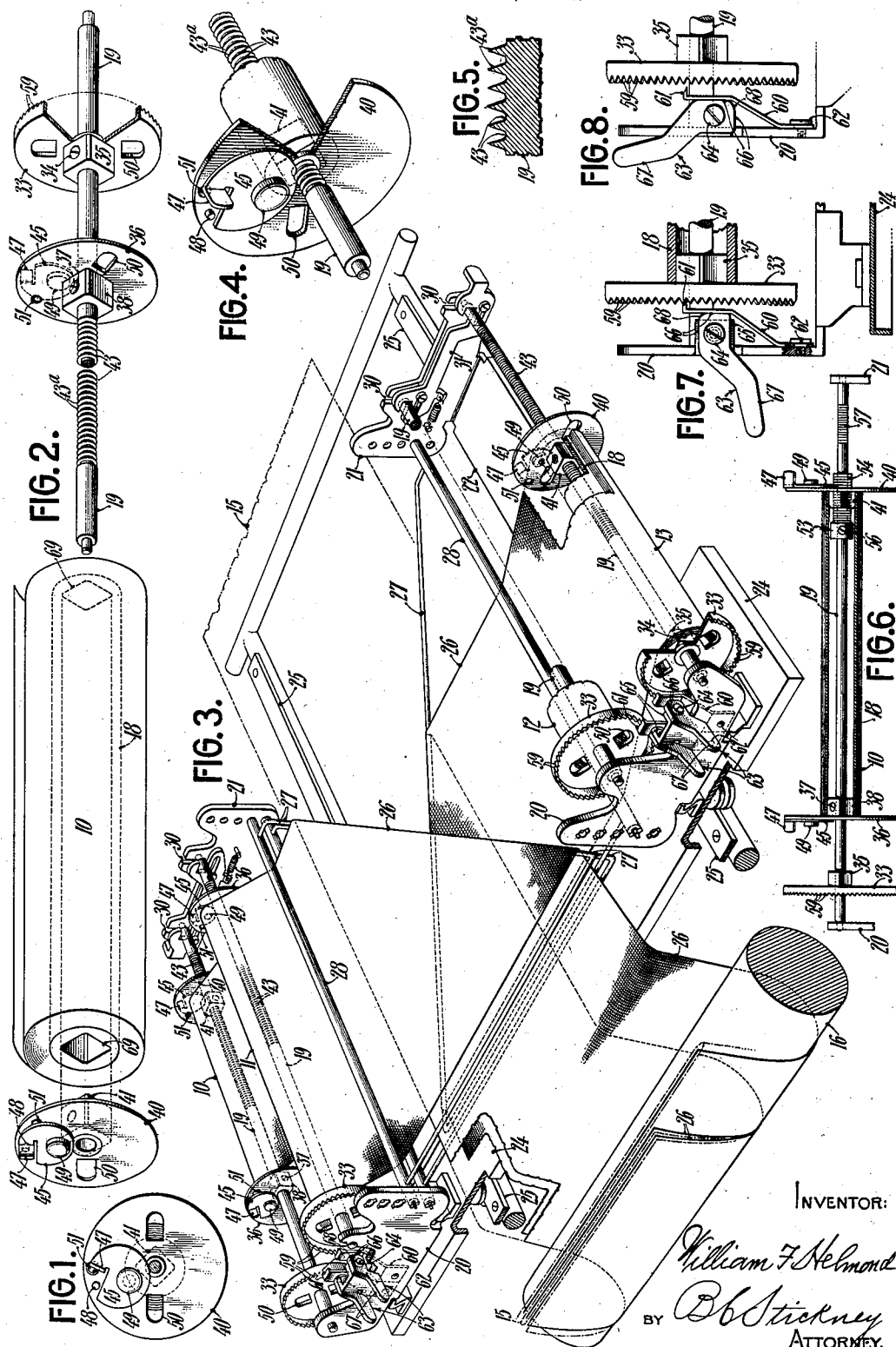
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TYPEWRITING MACHINE

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TYPEWRITING MACHINE

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This invention relates to paper-roll mounting means for typewriting machines and particularly deals with mounting the rolls of carbon-paper used in a continuous web manifolding typewriting machine of the kind shown in co-pending application No. 596,964, of J. A. B. Smith, filed March 5, 1932 (now Patent No. 1,979,292, dated November 6, 1934).

Improved mounting means are provided which may be readily adapted to accommodate carbon-rolls of different widths and which may be readily manipulated, without the use of tools, for quick removal or placement of the carbon-roll.

Improved means are also provided for releasably holding the carbon-rolls against rotation, the rolls being thus held in order that the carbons extending therefrom may be shifted, by means of the movable carbon-roll carriage, to successive forms of the work-web.

The carbon-roll, wound upon a spool or core, is slipped over a spindle and is retained endwise between heads or flanges of the spindle, one of the heads or flanges being made removable. For quick interlocking of the removable flange and the spindle, and for quick unlocking of the flange from the spindle, circumferential, transverse grooves or threads are formed in the spindle, and the removable flange has a tongue or plate manually shiftable to interlock with the grooves or to be retracted therefrom.

In practicing the invention, the shiftable flange-locking plate may be a plate of thin spring metal held facewise against the outer side of the removable flange by a headed pivot about which the plate is rotated edgewise to overlap the central hole of the flange or to be retracted from said hole, to enter or withdraw from one of the spindle-grooves. The locking plate may have a finger-piece and when it is turned so that its edge is entered into one of the spindle-grooves, the flange is thereby held lengthwise of the spindle. The spindle-grooves may be finely spaced in order to secure a correspondingly fine degree of adjustment in locating the removable flange. The spindle may be grooved throughout such part of its length as will enable the removable flange to be located in accordance with different widths of the carbon-roll and also in accordance with varying the position of the carbon-roll lengthwise of the spindle.

The use of the spindle-grooves and co-operating locking plate pertains mainly to the purpose of providing for quick removal and replacement of one flange, but it will be obvious that both flanges may be secured by means of the afore-

said grooves. In practice, however, since the position of one flange is fixed on the spindle and is seldom varied, conventional means, as, for example, a set-screw, may be used to secure said one flange in its fixed position on the spindle.

For a carbon-roll of a certain nominal length of core, and having a certain position on the spindle, only a short part of the spindle needs to be grooved to provide sufficient range of adjustment of the removable flange.

In lieu of grooving the spindle throughout a greater part of its length to provide for the use of carbon-rolls of specifically different widths, or in specifically different positions on the spindle, the removable flange may be mounted on a circumferentially grooved sleeve. Said sleeve may be adjusted along the spindle for the desired position of the removable flange, and therefore need have only a few grooves.

The form of the grooves or threads may be such that the ridges separating them are chamfered or beveled to facilitate insertion of the edge of the locking plate.

Novel means for holding the carbon-rolls against rotation include a holding disk keyed to the spindle, a holding arm movable against the disk and anchored to hold the same, and a cam manually shiftable and acting on the arm for rendering the latter effective or ineffective. The carbon-roll is keyed by means of its core to the spindle, as, for example, by having one of the core-ends formed to interlock with the fixed flange. The latter may also act as the aforesaid holding disk. The holding arm and disk may be provided with interlockable teeth.

Other features and advantages will hereinafter appear.

In the accompanying drawing,

Figure 1 is an end view of the carbon-roll spindle, illustrating the novel removable flange and its holding plate interlocked with one of the grooves of the spindle.

Figure 2 is a perspective view of the carbon-roll spindle and a carbon-roll, showing the parts spread out to illustrate the procedure in mounting or demounting the carbon-roll.

Figure 3 is a perspective view of a carbon-roll carriage, embodying the invention, and illustrates a number of carbon-rolls of different widths, from which stretches of carbon-paper are let out for interleavement between the work-web plies.

Figure 4 is an enlarged perspective view of a spindle and the removable flange.

Figure 5 is a fragmentary section of the

grooved member showing the preferred form of groove profile.

Figure 6 is a view illustrating the grooved sleeve on the carbon-roll spindle.

Figures 7 and 8 are views illustrating the novel holding means and showing respectively the holding of the carbon-roll against rotation, and its release for rotation.

Figure 3 illustrates a carbon-roll carriage supporting a plurality of carbon-rolls 10, 11, 12 and 13 at the sides of the path of a continuous work-web 15 feedable over a platen 16. Each carbon-roll wound upon the usual core 18 is mounted upon a spindle 19, and novel means, which will be described, are provided to retain the rolls on the spindle. The carbon-roll spindles at each side of the web-path are supported in upstanding front and rear plates 20 and 21 rising from a base-member 22 supported on a truck 24 which extends crosswise of the machine and is guided for the usual forward and rearward movement upon rails 25.

For interleavement between the plies of the work-web 15, a suitable length 26 of carbon-paper is let out from each roll and its course is turned into the web-path by means of diagonal guides 27 mounted upon rods 28 rotatable in the plates 20, 21. As indicated in Figure 3, the work-web plies may be of different widths and the carbon-rolls may be of corresponding width and be located on their respective spindles in accordance with the zone of the web-path into which the carbons are directed by means of the diagonal guides 27. The diagonal guide turning rods 28 co-operate to direct the incoming carbons between the plies of the web, the diagonal guides being individually insertable and swingable to facilitate the interleavement of the carbons with the web as is fully set forth in said Smith application.

Each carbon-roll spindle 19 is removably mounted in its supporting plates 20, 21, one shouldered end of the spindle being received endwise in a hole of the plate 20 and the opposite end, also shouldered, being dropped into a notch 30 of the plate 21. A catch 31 holds the dropped ends of the pair of spindles at each side of the web-path in their notches 30 and is retractable to permit lifting of the dropped end out of the notch 30 for withdrawing the spindle.

A flange 33 is secured to each spindle by a set-screw 34 threaded into a hub 35 of the flange. The flange 33 co-operates to hold the spindle against rotation and is therefore provided on each spindle. As shown for carbon-rolls 11, 12 or 13, the flange 33 abuts one end of the carbon-roll for locating the latter in the position shown and its hub 35 centers the end of the carbon-roll core and is formed to key the correspondingly formed core to the flange.

The carbon-roll 10 is a narrow roll and is so located on its spindle that the forward end of its core does not reach the flange 33, but is received by a flange 36 secured to the spindle by a set-screw 37 threaded into a hub 38 which keys the core of said roll 10 to said flange 36 and hence to the holding flange 33.

Co-operating with the fixed flange 33 or 36 to locate and retain the carbon-roll endwise on its spindle, is a novel flange 40 which is removable preparatory to removing from the spindle, or placing thereon, a carbon-roll. The removable flange has a hub 41 which co-operates with the

hub 35 or 38 to center the carbon-roll core on the spindle.

For quickly interlocking the removable flange with the spindle, the latter is formed with circumferential grooves or threads 43 and the removable flange has a plate 45. As shown in Figures 1 and 4, said plate 45 may interlock with one of the grooves 43 to hold the removable flange 40 axially of the spindle and thereby co-operate with the fixed flange 33 or 36 to retain the carbon-roll.

The locking plate 45 may be circular so that when eccentrically pivoted to the flange 40, turning of the plate between two positions by means of a finger-piece 47 will cause the edge of the plate, in one position, to overlap the central hole of the flange and enter a groove 43, Figure 4, or in the other position, Figure 2, to clear said hole and hence the grooves so that said flange may be removed or slipped on the spindle. As seen at Figure 2, the latter position of the plate 45 is determined by a stop 48. The locking plate 45 may be made of thin spring metal and is held flat against the side of the removable flange 40 by a headed pivot 49. For frictionally holding the locking plate 45 in its retracted position, Figure 2, a bead 51 may be raised from the flange 40 to press against said plate 45 when the latter is retracted.

The groove spacing may be fine enough, say $\frac{1}{16}$ of an inch, to adjust the flange 40 sufficiently close to the end of the carbon-roll to avoid undue end play of the latter. The locking plate 45 has a thin locking edge and to this end may be of spring steel, say ten thousandths of an inch thick, to readily enter, by reason of its thinness, the finely spaced grooves. The grooves may be so formed that the circumferential ridges 43^a are beveled or chamfered (see Figure 5) to further facilitate entry of the thin plate 45. Each groove 43 may be separate, that is, reentrant upon itself, or the several grooves 43 may be formed in the manner of a screw-thread. In the latter case, the removable flange is to be kept from turning on the spindle, and to this end may be keyed to the core 18, as by means of its hub 41, the core being, in turn, keyed to the fixed flange 33 or 36. The plate 45, in its effective position, may have its locking edge bottomed in the groove to be thereby frictionally held by reason of the eccentricity of said edge to the pivot 49.

Each flange 33, 36 and 40 may have sight-openings 50 through which the amount of carbon-paper remaining on the rolls may be noted.

Each spindle may be grooved throughout such part of its length that rolls varying in width and location, as indicated in Figure 3, may be readily accommodated.

Instead of grooving the spindle throughout such great part of its length as is shown in Figure 3, the spindle 19 may have a sleeve 53, Figure 6, provided with circumferential grooves 54. The removable flange 40 may have a central opening to fit over said sleeve, the locking plate 45 co-operating with said sleeve-grooves 54. Said sleeve-grooves 54 may be comparatively few in number since the sleeve itself may be adjusted lengthwise of the spindle for different widths and positions of carbon-rolls. A set-screw 56 may secure the sleeve in adjusted position on the spindle. By reason of the provision of a plurality of grooves 54 on the sleeve 53, there is obviated the necessity for exact location of the sleeve on the spindle, for a carbon-roll of given width.

Each spindle may have a short portion 57, Figure 6, grooved to accommodate a roll of standard width, that is, a roll of the mostly used width, and the sleeve may be used specially as required for carbon-roll arrangements such as seen in Figure 3.

For the fixed flange 36 for the short carbon-roll 10, there may be used, as indicated in Figure 3, one of the removable flanges which is supplied with the set-screw 37, the locking plate 45 in such case not being used.

For shifting the carbon-roll lengths 26 to a succeeding form on the work-web 15, the carbon-carriage is moved rearwardly. For the usual prevention of turning of the carbon-rolls during the carbon-shifting operation, the following novel means are provided to co-operate with the holding flanges 33 which have crown-teeth 59 facing the plates 20. Co-operative with said crown-teeth 59 for each flange 33 is a holding arm 60 made of spring metal. Said arm 60 has formed at one end a tooth 61 and is secured at its other end by a screw 62 to the plate 20. Said arm 60 tends, by its resiliency, to spring away from the crown-teeth 59 as indicated in Figure 8.

A cam-lever 63 is manually turnable on a pivot 64 which co-operates with an ear 65 of the plate 20 to support said lever. As seen in Figures 7 and 8, the cam contour has two angularly-disposed flats 66 at different distances from the pivot 64. As seen in Figure 7, the flat 66 farthest from the pivot forces the arm 60 and hence its tooth 61 into engagement with the crown-teeth 59 when said lever is in the indicated position, thereby locking the carbon-roll against rotation. In the Figure 8 position of the lever 63, the flat 66 nearest the pivot is brought opposite said arm which is free therefore to swing away, by its resiliency, from the crown-teeth 59 to release the carbon-roll for rotation. The lever 63 has an arm 67 which serves as a finger-piece and the corner formed between the flats 66 may be rounded as at 68 to ease the movement of the lever between its Figure 7 and Figure 8 positions.

As seen in Figure 3, which shows a pair of carbon-roll spindles at each side of the web-path, the arrangement may be such that the holding arms 60 engage those portions of their respective holding flanges 33 which are contiguous. In this manner the two cam-levers 63 are disposed close together for joint manipulation.

Figures 1 and 2 are illustrative of the manner of using the invention. For mounting or demounting a carbon-roll, the spindle 19 is removed from the carbon-carriage and one end of the carbon-roll core is received by the hub 35 or 38 of the fixed flange 33 or 36, or is with-

drawn from said hub. For this purpose, the removable flange 40 is withdrawn from the spindle, as indicated in Figure 2. When said end of the carbon-roll is received by said fixed-flange hub, the removable flange 40 is set against the other end of the carbon-roll and the locking plate 45 is turned to enter one of the grooves 43, as indicated in Figures 1 and 4. The spindle is then replaced in the carbon-carriage. For keying the carbon-roll core to the spindle-flanges, its central opening 69 may be formed to act as a spline, as indicated in Figure 2, and the hubs of the fixed and removable flanges may be correspondingly formed.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. A roll-retaining flange removably mountable on a transversely-grooved web-roll spindle, said flange having a central opening to fit over the spindle, and a locking plate pivoted in face-wise abutment with the outer face of the flange and having a locking edge eccentric to the plate-pivot, whereby rotation of the plate to one position makes said edge overlap the flange-opening for interlocking with the spindle-groove, and whereby rotation of said plate to another position against a stop brings said edge clear of said opening for removal of the flange from the spindle, said plate being made of thin springy material to enter a relatively narrow spindle-groove, the springiness of the material co-operating to spring the plate against the flange to frictionally hold the plate in opening clearing position.

2. A web manifolding typewriter including a carbon spool truck having on opposite sides of the work-web path a universal rack for parallel carbon rolls, said rack having at its sides mounting spindles or arbors, each suitable for carbon rolls having cores of a variety of lengths, said truck having middle diagonal turning bars for the carbon webs led off from the spools, said spindles being universal to all lengths of cores, and detachably mounted upon the sides of the truck, one group at each side of the web work, each spindle being connectible to the carbon core, a pair of spool heads carried by said spindle and having supports for the spool ends, one of said spool heads being universally adjustable along the spindle with respect to the other head for accommodating all lengths of cores, a carbon checking disc keyed to said spindle, and means cooperating therewith to prevent the carbon web from paying off from the core at the web-strip-ping operation.

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