Nov. 11, 1924. 1,515,213

W. P. KEENE

TYPEWRITING MACHINE

Filed Dec. 20, 1920 2 Sheets-Sheet 1

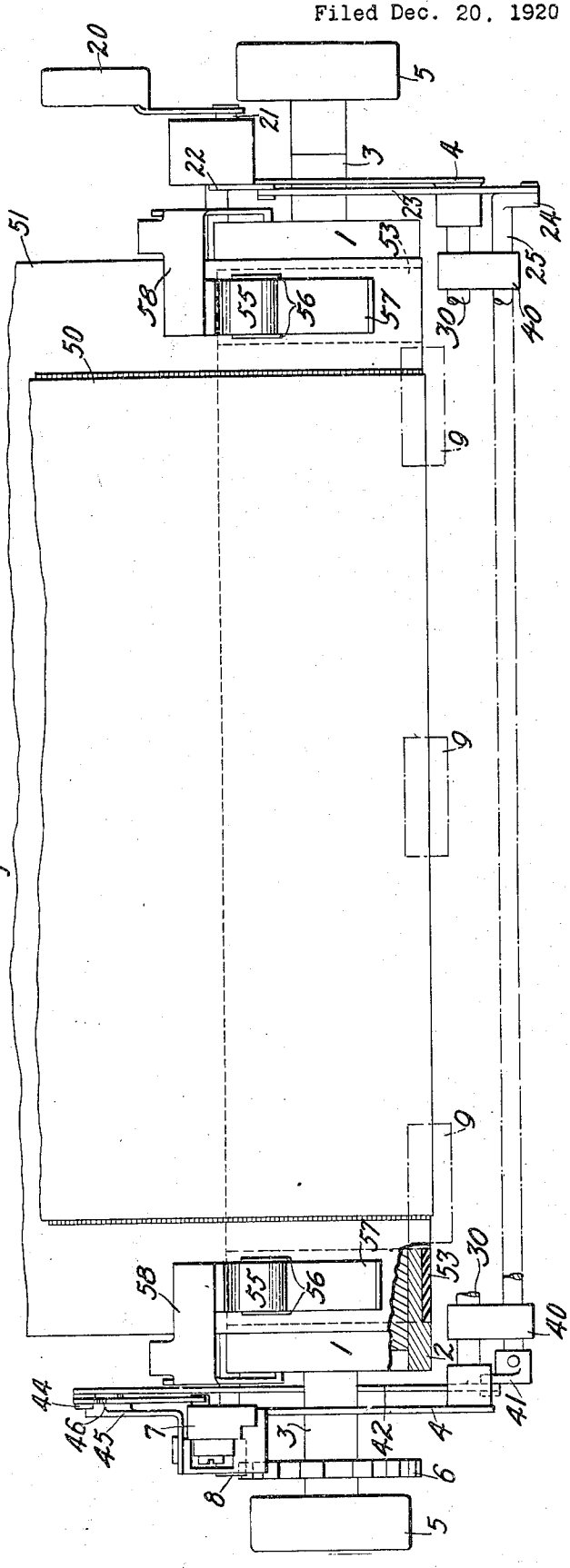


Fig. 1

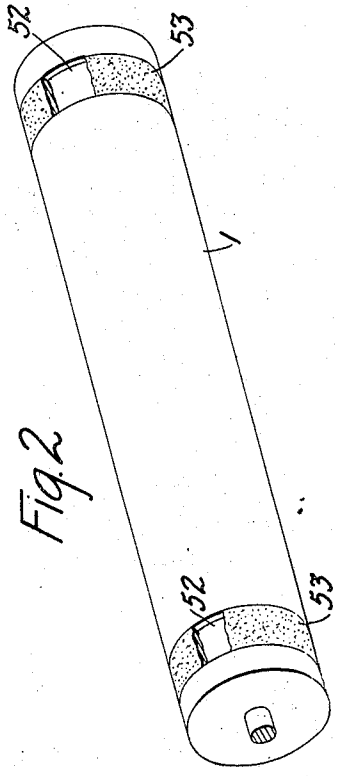


Fig. 2

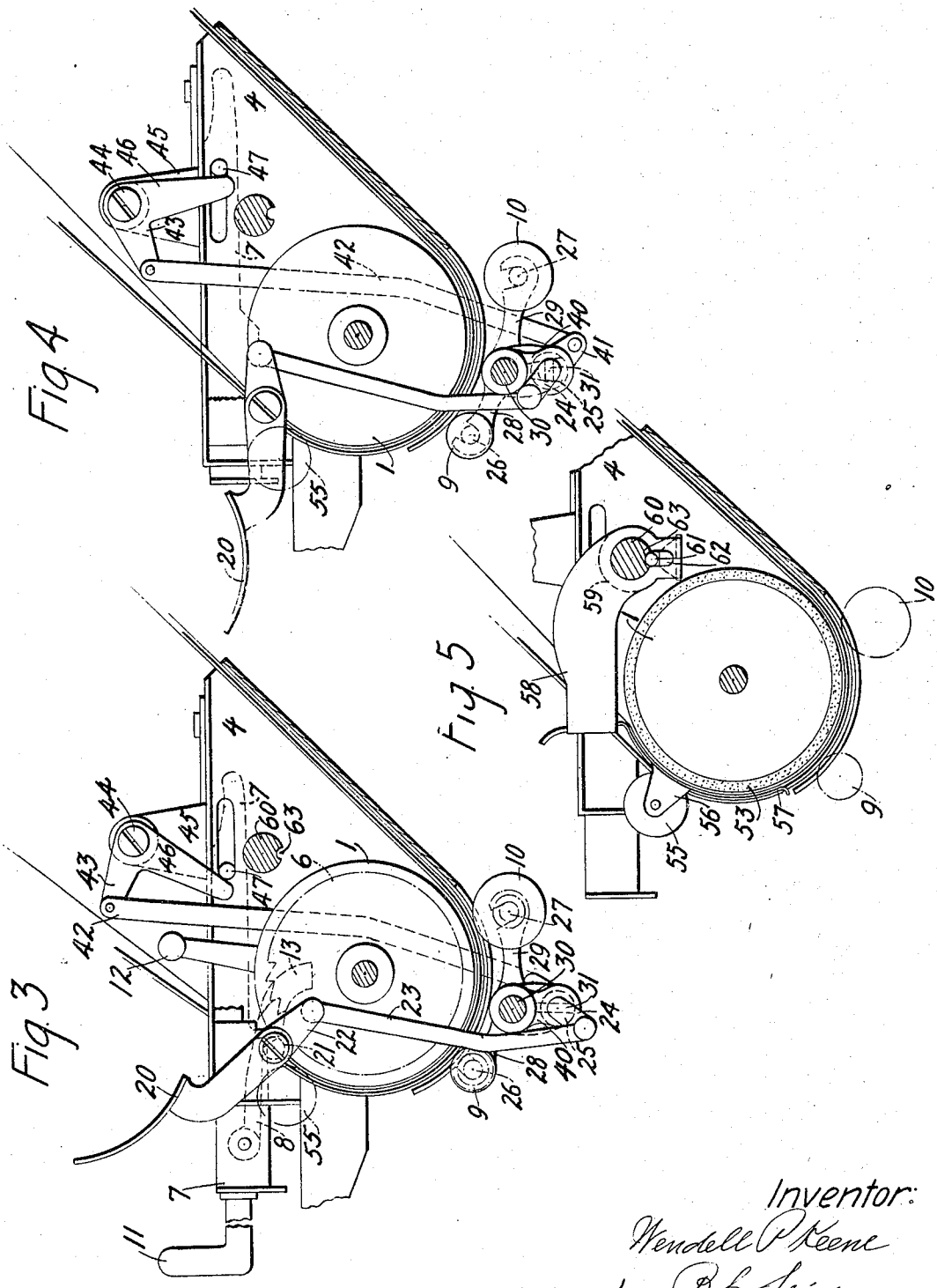
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UNITED STATES PATENT OFFICE.

WENDELL P. KEENE, OF BROOKLYN, NEW YORK, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPEWRITING MACHINE.

Application filed December 20, 1920. Serial No. 431,695.

To all whom it may concern:

Be it known that I, WENDELL P. KEENE, a citizen of the United States, residing in Brooklyn Borough, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a specification.

This invention relates to typewriting machines of the kind in which a record-sheet or tally-sheet is to remain in the machine while a typed bill-sheet or other work-sheet is withdrawn from the machine and replaced by a new work-sheet, means being provided for advancing the record-sheet preparatory to inserting the new work-sheet, thereby to avoid the liability of typing the first line on the new work-sheet over the last line on the record-sheet.

A record-sheet or tally-sheet usually contains the items of several bill-sheets, and it is therefore frequently necessary to insert a new bill-sheet without disturbing the record-sheet. The present invention, therefore, comprises improved means for holding the record-sheet in position while the ordinary pressure rolls or feed-rolls are thrown off to allow insertion of a new bill-sheet and the proper positioning thereof relatively to the record-sheet.

The means employed for this purpose comprise auxiliary pressure-rolls, located preferably at the front of the platen, and adapted to press against inserts of soft rubber bands, in the hard-rubber surface of the platen. Rolls pressing against the soft rubber provide a gripping action which is sufficient to hold a record-sheet in position against the platen while a new bill-sheet is adjusted. Since the last line of the record-sheet remains at the printing point, means are provided to advance the record-sheet, so that the first line typed on the new bill-sheet will not be superposed upon the last line of the record-sheet. This invention provides means whereby the platen is automatically line-spaced by the act of throwing off the usual feed-rolls or pressure rolls, thereby to advance the record-sheet, through the co-operation of said soft rubber inlays and said auxiliary front feed-rolls, thus avoiding the necessity of remembering to rotate the platen to advance the record-sheet the necessary distance. The co-operation of said auxiliary feed-rolls with said annular soft rubber inserts or inlays provides a sufficiently strong gripping of the record-sheet to assure its advance with the platen, without the use of the usual feed-rolls.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a front view of an Underwood machine with the invention applied thereto, only the necessary co-operating parts of the machine being shown.

Figure 2 is a perspective view of the platen, showing the modified surface.

Figure 3 is an end view of the device, partly sectioned, showing the pressure rolls in effective position and the co-operating line-spacing mechanism.

Figure 4 is a view similar to Figure 3, showing the pressure rolls in ineffective position and the line-spacing mechanism as having been automatically operated.

Figure 5 is a vertical section, showing auxiliary rolls in operative position upon the modified platen.

A platen 1, having a hard-rubber surface 2, is mounted upon a shaft 3 journaled in the end-walls 4 of a frame forming part of the usual typewriter carriage. The platen may be rotated by finger-wheels 5, or by the usual ratchet wheel 6 which is engaged by a slide 7 provided with a pawl 8, said slide being operated by a line-space lever 11 of the usual type. A line-space regulator 12 adjusts member 13 which operates over a slide (not shown), to control pawl 8, so that the latter operates the ratchet wheel for one, two or three line-spaces in a manner usual in the Underwood standard typewriting machine. Front and rear pressure rolls 9 and 10, respectively, co-operate with the platen to feed all the sheets as the platen is rotated. The pressure rolls may be thrown off the platen to allow the free insertion of sheets, and for this purpose a feed-roll release key 20 is fixed at the one end of the shaft 21 journaled in an end-wall 4, and is connected through a rock arm 22, on the other end of shaft 21, and a link 23 to a rock arm 24 fixed to a rock-shaft 25. Said shaft is supported by hangers 40 fixed to the rod 30, and is provided at its other end with a

second rock arm 41 turned 180 degrees with respect to the rock arm 24. The feed-rolls are mounted on shafts 26 and 27 supported in the ends of levers 28 and 29 pivoted on the rod 30 fixed in the end-walls 4. The levers 28 and 29 comprise depending arms at the other side of the fulcrum point, and said arms may be spread by means of flats or cams 31 on the rock-shaft 25. Thus, when the key 20 is depressed to the Figure 4 position, the feed-rolls 9 and 10 are thrown off the platen and held in such position until an upward pressure is applied to the key 20 to restore said rolls to the platen where they are held by springs (not shown) on the shaft 30.

Upon depressing release key 20 to throw the feed-rolls off the platen, rock arm 24 is moved upwardly (see Figure 4) while rock arm 41 is moved downwardly. Pivoted to the other end of arm 41 is a link 42, said link being pivoted at its upper end to one arm 43 of a bell-crank pivoted at 44 to a bracket 45 fixed to an end-wall 4. The other arm 46 extends downwardly and is adapted to engage a pin 47 fixed on slide 7 near the rearward end thereof. The arm 46 is normally in front of the pin, so that actuation of the slide does not affect the bell-crank. However, when release key 20 is depressed, raising arm 24, arm 41 is lowered, drawing down link 42 and arm 43 of the bell-crank. Arm 46 will be rotated rearwardly, pushing pin 47, and hence slide 7, rearwardly to line-space the platen.

It will be thus seen, in carrying out the invention, that when the feed-rolls are released, for removing a typed bill-sheet and to allow insertion of a new bill-sheet, while the record-sheet remains in the machine, the platen will be automatically line-spaced. Moreover, the platen will be spaced the same number of lines as it would be spaced by the operation of lever 11, since the slide 7, pawl 8 and member 13 move the same distance in both cases. The record-sheet will not be held in place nor will it advance with the platen after the pressure rolls have been cast off unless it is held thereto. In accordance with the present invention, means, now to be described, are provided for holding the record-sheet to the platen while the pressure rolls are cast off, thereby to advance the record-sheet when the platen is automatically line-spaced by casting off the usual feed-rolls 9 and 10, as above described, so that the last line typed on the record-sheet will be brought above the printing line on the platen, thereby to avoid the liability of typing the first line on the new bill-sheet over the last line on the record-sheet; and also to detain the record-sheet in place in the machine while the typed bill-sheet is withdrawn and replaced by another bill-sheet.

The platen 1 is provided near its ends, outside the limits of an ordinary bill-sheet 50 but within the limits of a wider underlying record-sheet 51, with grooved portions 52 into which are inserted bands or inlays 53 flush with the surface of the platen. These bands are of soft rubber, or other material considerably softer than the hard rubber surface of the ordinary platen, and it has been found that pressure rolls applied to a soft surface of this type produces a more effective grip than when applied to the hard rubber surface.

Adapted to co-oparte with the soft rubber bands are rolls 55. These rolls may be supported against the platen in any position, either below, as in the case of ordinary pressure rolls, or at the front. The latter position is to be preferred, since a wide sheet held at the sides tends to bulge in the center after passing the holding means. By positioning the rolls at the front of the platen, bulging of the sheets is prevented in the region of the printing point. Rolls 55 may be supported against the platen in any suitable manner, but are here shown as mounted in brackets 56 on downwardly extending fingers 57 which act as paper-guides, said fingers being fixed to rearwardly extending arms 58 terminating in members 59 journaled on and movable along a rod 60 fixed in the end-walls of the carriage frame. Each member 59 terminates in a U-shaped portion having a small rod 61 slidable vertically therein and pressed upwardly by a spring 62 into a groove 63 in the lower portion of rod 60. When arms 58 are in position, shown in Figure 5, the rods 61 engage the groove 63 to hold the rollers in lowered or effective position. Upon rotation of the arms 58, the rods 61 disengage the groove and the rolls may be swung upwardly to ineffective position.

During the typing operation, the usual feed-rolls 9 and 10 are effective to line-feed both of the sheets 50 and 51 together, when the platen is line-spaced, by means of the usual line-space lever 11. When pressure rolls 9 and 10 are thrown off the platen, preparatory to withdrawing the typed bill-sheet 50 and replacing it by a new bill-sheet, the auxiliary marginal rolls 55 remain in co-operating relation with the soft rubber bands and press the sheet 51 against the platen, each roll 55 for its entire length engaging the inlaid soft rubber band or ring 53 and not running upon the hard surface of the platen at any point. Said soft rubber rings 53, being flush with and not bulging from the surface of the platen, have no tendency to hold the record-sheet 51 and overlying bill-sheet 50 away from the platen, but enable the underlying record-sheet 51 to lie snugly against the hard printing surface of the platen. As previously pointed out, it has been found that rolls pressing against such soft rubber inserts provide a more effective

grip, or bite, than is obtained by the pressure of rolls against the hard rubber surface. The pressure of rolls 55 is therefore sufficient to hold the sheet 51 to the platen, so that said sheet moves with the platen when the pressure rolls 9 and 10 are cast off, and the platen is line-spaced by the mechanism previously described. The pressure of rolls 55 also serves to hold said record-sheet to the platen while a new bill-sheet is inserted. When using a bill-sheet which covers the printing field of the platen substantially throughout its entire width, the necessarily slight difference between the width of the bill-sheet and the width of the wider underlying record-sheet leaves only very narrow side margins on the record-sheet that are available to be pressed against the platen for holding the record-sheet in place and for advancing the record-sheet with the platen when the usual feed-rolls are cast off. In accordance with the present invention, such holding and advancing of the record-sheet is accomplished by employing the inlaid soft rubber rings 53 against which the short pressure rolls 55 at the ends of the platen press the narrow side margins of the wider underlying record-sheet 51, thereby to obtain a sufficient grip upon the narrow projecting margins of the record-sheet.

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

Having thus described my invention, I claim:

1. In a typewriting machine of the condensed billing type, in combination, a platen around which record-sheets and bill-sheets are adapted to be fed, pressure rolls adapted to be pressed against said platen to hold said sheets, means for normally line-spacing said platen comprising a ratchet wheel fixed to move with said platen and a slide having a pawl engaging said ratchet wheel, a pin on said slide, means for removing said pressure rolls from said platen to allow the insertion of a new bill-sheet, and means connected to said pressure-roll-removing means for line-spacing said platen simultaneously with the removal of said rolls, said last-mentioned means engaging said pin to actuate said slide and line-space said platen.

2. In a typewriting machine of the condensed billing type, in combination, a platen around which record-sheets and bill-sheets are adapted to be fed, pressure rolls adapted to be pressed against said platen to hold said sheets, means for normally line-spacing said platen comprising a ratchet wheel fixed to move with said platen and a slide having a pawl engaging said ratchet wheel, a pin on said slide, means for removing said pressure rolls from said platen to allow the insertion of a new bill-sheet, and means connected to said pressure-roll-removing means for line-spacing said platen simultaneously with the removal of said rolls, said last-mentioned means comprising a bell-crank pivoted on the machine and engaging said pin to actuate said slide and line-space said platen.

3. In a typewriting machine of the condensed billing type, in combination, a platen around which record-sheets and bill-sheets are adapted to be fed, pressure rolls adapted to press against said platen to hold said sheets, means for normally line-spacing said platen comprising a ratchet wheel fixed to move with said platen, a slide having a pawl engaging said ratchet wheel, and a lever for operating said slide, a pin on said slide, means for removing said pressure rolls from said platen to allow the insertion of a new bill-sheet, and means connected to said pressure-roll-removing means for line-spacing said platen simultaneously with the removal of said rolls, said last-mentioned means engaging said pin to actuate said slide and line-space said platen, said last-named means being out of the path of said pin when the slide is actuated by said lever.

4. In a typewriting machine of the condensed billing type, in combination, a platen around which record-sheets and bill-sheets are adapted to be fed, pressure rolls adapted to press against said platen to hold said sheets, means for normally line-spacing said platen comprising a ratchet wheel fixed to move with said platen, a slide having a pawl engaging said ratchet wheel, and a lever for operating said slide, a pin on said slide, means for removing said pressure rolls from said platen to allow the insertion of a new bill-sheet, and means connected to said pressure-roll-removing means for line-spacing said platen simultaneously with the removal of said rolls, said last-mentioned means comprising a bell-crank pivoted on the machine, and engaging said pin to actuate said slide and line-space said platen, said bell-crank being out of the path of said pin when the slide is actuated by said lever.

5. In a typewriting machine of the condensed billing type, in combination, a platen around which record-sheets and bill-sheets are adapted to be fed, pressure rolls adapted to be pressed against said platen to hold said sheets, means for normally line-spacing said platen comprising a ratchet wheel fixed to move with said platen and a slide having a pawl engaging said ratchet wheel, a pin on said slide, means for removing said pressure rolls from said platen to allow the insertion of a new bill-sheet, and means connected to said pressure-roll-removing means for line-spacing said platen simultaneously with the removal of said rolls, comprising a bell-crank pivoted on the machine, and a link pivoted at one end to said pressure-roll-removing means and at the other end to one arm of said bell-crank, the other arm of said

crank engaging said pin to actuate said slide and line-space said platen.

6. In a typewriting machine of the condensed billing type, in combination, a platen around which record-sheets and bill-sheets are adapted to be fed, pressure rolls adapted to be pressed against said platen to hold said sheets, means for normally line-spacing said platen comprising a ratchet wheel fixed to move with said platen, a slide having a pawl engaging said ratchet wheel, and a lever for operating said slide, a pin on said slide, means for removing said pressure rolls from said platen to allow the insertion of a new bill-sheet, and means connected to said pressure-roll-removing means for line-spacing said platen through a number of spaces equal to that effected by the line-space lever simultaneously with the removal of said rolls, said last-mentioned means engaging said pin to actuate said slide and line-space said platen.

7. In a typewriting machine, a rotary platen, auxiliary feed-rolls for work-sheets, means for holding the auxiliary feed-rolls to the platen, main feed-rolls, means for holding the main feed-rolls to the platen, and means acting both to release the main feed-rolls and to line-space the platen, such means first releasing the main feed-rolls and then line-spacing the platen to cause the latter, through the action of the auxiliary feed-rolls, to line-space a work-sheet with the platen after the main feed-rolls are released.

8. In a typewriting machine, a rotary platen, feed-rolls, means for holding the feed-rolls to the platen, means for releasing the feed-rolls, a ratchet-wheel for line-spacing the platen, a pawl for actuating the ratchet-wheel, a carrier for the pawl, an abutment on the carrier, and means in front or advance of the abutment and connected to the roll-releasing means for engagement with the abutment to actuate the pawl-carrier and ratchet-wheel in the operation of releasing the feed-rolls, while permitting movement of the abutment away therefrom for line-spacing operations of the platen with the feed-rolls held to the latter.

9. In a typewriting machine, a rotary platen, auxiliary feed-rolls for work-sheets, means for holding the auxiliary feed-rolls to the platen, main feed-rolls, means for holding the main feed-rolls to the platen, and means acting to release the main feed-rolls, to line-space the platen and to lock the platen against further rotation, such means first releasing the main feed-rolls, then line-spacing the platen to cause the latter, through the action of the auxiliary feed-rolls, to line-space a work-sheet with the platen after the main feed-rolls are released, and then to lock the platen against further rotation while the feed-rolls are cast off to prevent accidental or erroneous misplacement of the sheet held by the platen and the auxiliary feed-rolls.

10. In a typewriting machine, a rotary platen, line-spacing mechanism for the platen, main feed-rolls co-operating with the platen to grip and feed outside and inside sheets together, auxiliary sheet-gripping means co-operating with the platen to securely grip the inside sheet, means for casting off the main feed-rolls to permit removal of the outside sheet from the machine, and means controlled by the feed-roll cast-off means to lock the platen against rotation, and so to cause the platen, in co-operation with the auxiliary sheet-gripping means, to hold the inside sheet stationary and against accidental or erroneous misplacement, while a succeeding outside sheet is being collated over it.

11. In a typewriting machine, a rotary platen, line-spacing mechanism therefor, main feed-rolls co-operating with the platen to grip and feed outside and inside sheets together, auxiliary feeding means co-operating with the platen to grip and feed the inside sheet when the feed-rolls are cast off, a finger-piece for both line-spacing the platen and casting off the main feed-rolls, and connections from the finger-piece to the line-spacing mechanism and to the feed-rolls, constructed and arranged to cause the feed-rolls to be cast off first by the actuation of the finger-piece, and the platen to be line-spaced thereafter, the arrangement being such that the feed-rolls may be cast off to permit adjustment of the outside sheet by a partial actuation of the finger-piece without line-spacing the platen.

12. In a typewriting machine, a rotary platen, line-space mechanism for the platen, at one end thereof, main feed-rolls co-operating with the platen to grip and feed outside and inside sheets together, auxiliary feeding means co-operating with the platen to grip and feed the inside sheet when the main feed-rolls are cast off, a main-feed-roll cast-off finger-piece at the opposite end of the platen from the line-space mechanism, and connections from said finger-piece to the line-space mechanism to operate the latter at the casting off of the main feed-rolls.

13. In a typewriting machine, a rotary platen, line-space mechanism for the platen, at one end thereof, main feed-rolls co-operating with the platen to grip and feed outside and inside sheets together, auxiliary feed-rolls co-operating with the platen to grip and feed the inside sheet when the main feed-rolls are cast off, a cam-shaft for casting off the main feed-rolls, means at the opposite end of the platen from the line-space mechanism for operating the cam-shaft, and connections from the

cam-shaft to the line-space mechanism for operating the latter when the cam-shaft is operated to cast off the main feed-rolls.

14. In a typewriting machine, a rotary platen, line-space mechanism therefor, comprising a line-space ratchet-wheel, main feed-rolls co-operating with the platen to grip and feed outside and inside sheets together, auxiliary feed-rolls co-operating with the platen to firmly grip the inside sheet, means for casting off the main feed-rolls to permit removal of the outside sheet, and connections from the feed-roll cast-off means to said line-space mechanism to line-space the platen by rotation of said ratchet-wheel as an incident of the casting off of the main feed-rolls, the line-space mechanism also including a carriage-returning handle connected to rotate the ratchet-wheel to line-space the platen independently of the casting off of the main feed-rolls at the return of the carriage.

WENDELL P. KEENE

Witnesses:
JENNIE P. THORNE,
CATHERINE A. NEWELL.