C. E. SMITH.

TYPE WRITING MACHINE.

APPLICATION FILED APR. 2, 1906.

954,894.

Patented Apr. 12, 1910.

4 SHEETS—SHEET 1.

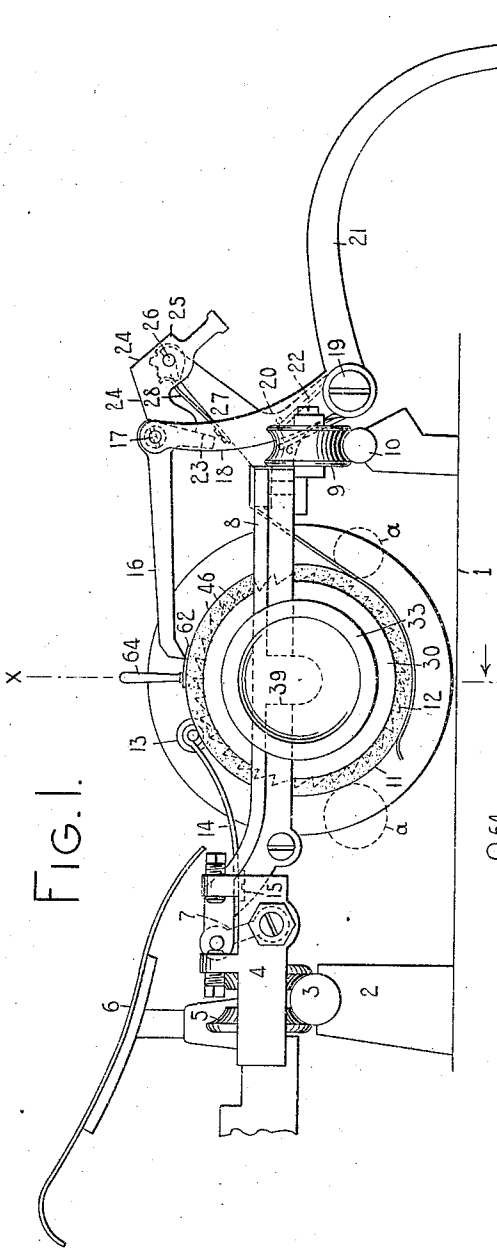

FIG. 1.

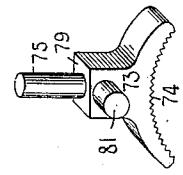

FIG. 3.

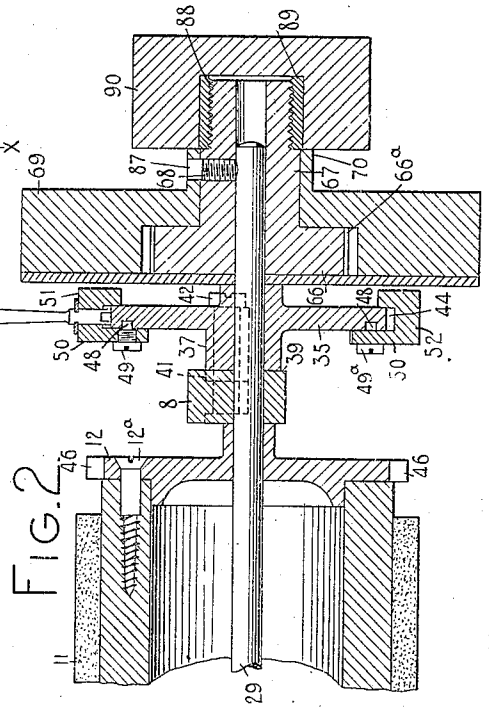

FIG. 2.

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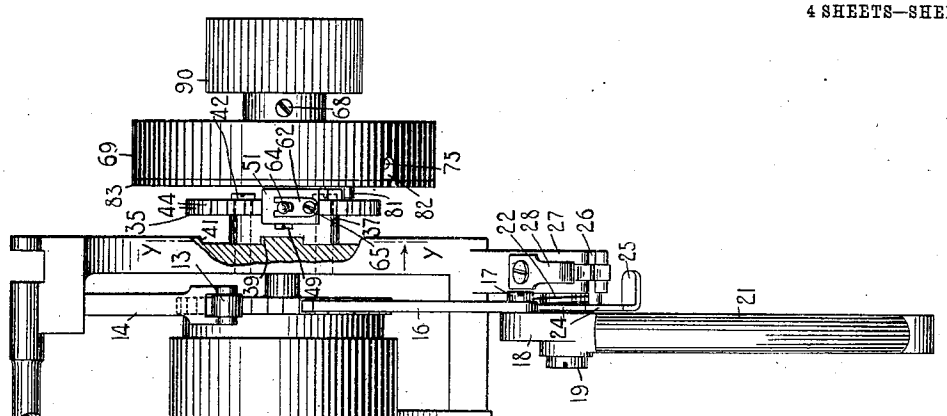

FIG. 6.

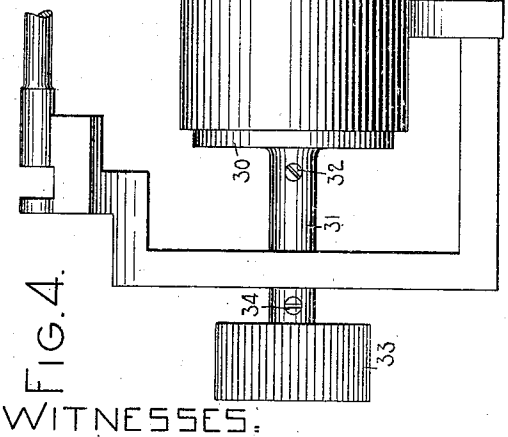

FIG. 4.

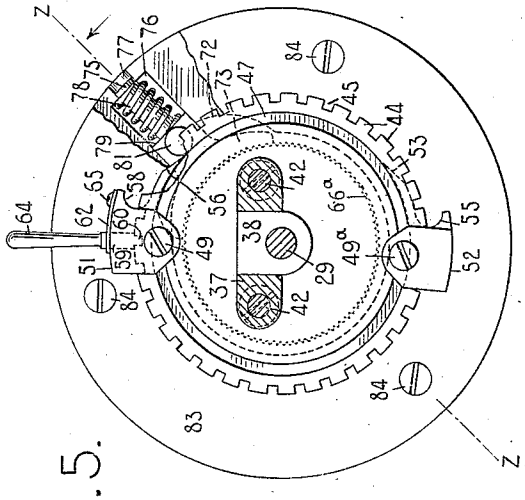

FIG. 5.

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4 SHEETS—SHEET 3.

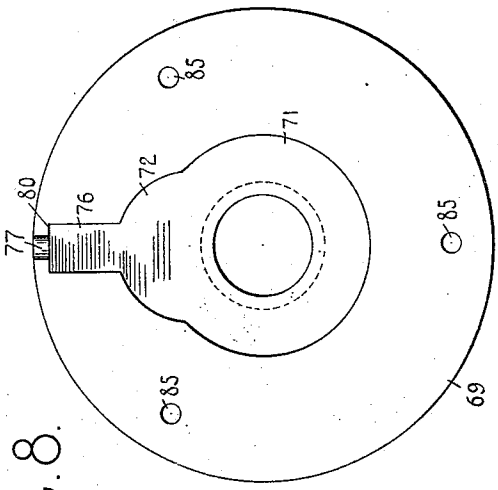

FIG. 8.

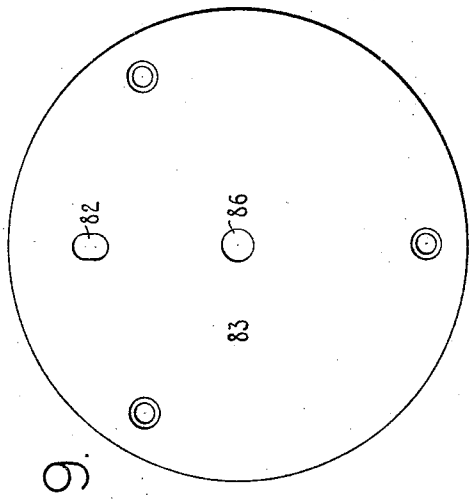

FIG. 9.

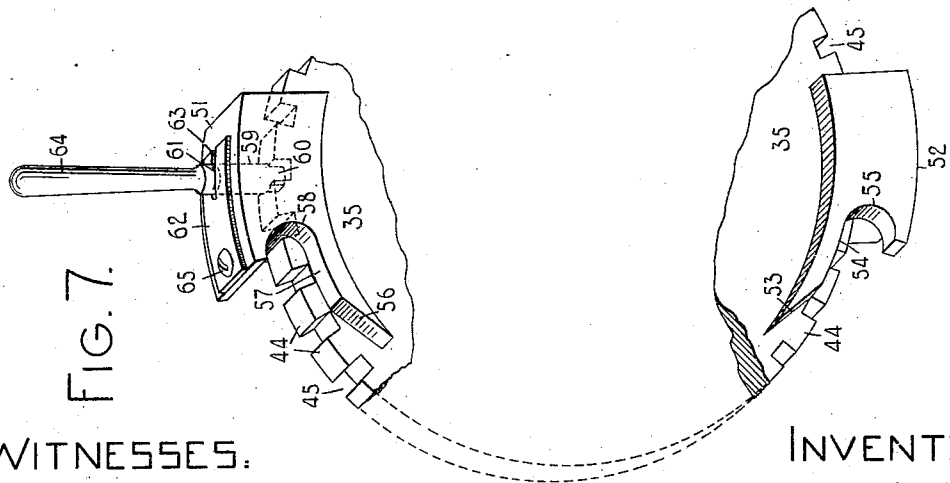

FIG. 7.

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4 SHEETS—SHEET 4.

FIG. 10.

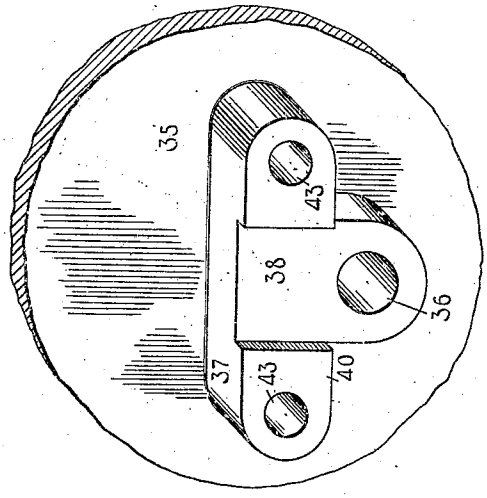
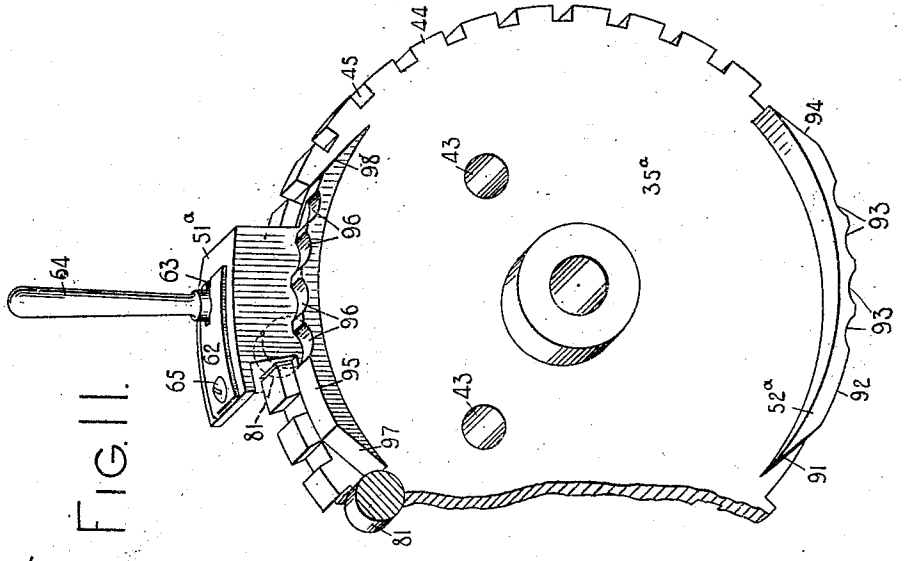


FIG. 11.



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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

954,894. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed April 2, 1906. Serial No. 309,363.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to billing mechanism for typewriting machines and more particularly to mechanism for doing "condensed record" work.

One object of my invention is to provide a simple and efficient billing mechanism operative to aid in mechanically positioning the platen and with the aid of which "condensed record" and other billing work can readily be done without taxing the mind of the operator with mental calculations or the recollection of given indices or numbers and without taxing the mind and eyes of the operator in observing when parts are in certain positions relatively to each other.

Another object of my invention is to provide simple and efficient mechanism in the nature of an attachment which can be readily applied to existing forms of typewriting machines without changing the structural features of said machines.

Another object of my invention is to provide billing mechanism for "condensed record" and other billing work in which the use of index numbers or indices may be entirely dispensed with.

A still further object of my invention is to provide means by which the platen may be mechanically positioned for doing "condensed record" and other billing work without at any time obstructing the rotation of the platen so that it is at all times free to be turned to any desired extent.

To the above and other ends which will hereinafter appear my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and claimed.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a fragmentary end elevation showing the upper portion of one form of typewriting machine with my invention applied thereto. Fig. 2 is an enlarged detail fragmentary longitudinal sectional view of a portion of the same, the section being taken on the line *x*—*x* of Fig. 1 and looking in the direction of the arrow at said line. Fig. 3 is an enlarged detail perspective view of an engaging member to be hereinafter more fully described. Fig. 4 is a fragmentary plan view with parts broken away showing a platen and platen frame and embodying my invention. Fig. 5 is an inner face view with parts in section and parts broken away of the attachment forming the subject-matter of my invention, the view being taken on the line *y*—*y* of Fig. 4 and looking in the direction of the arrow at said line. Fig. 6 is a transverse sectional view of a portion of the same taken on the line *z*—*z* of Fig. 5 and looking in the direction of the arrow at said line. Fig. 7 is an enlarged fragmentary detail perspective view of the supporting disk and cams carried thereby. Fig. 8 is an enlarged detail inner face view of the regulating finger wheel with the cover plate thereof removed. Fig. 9 is a detail face view of the cover plate. Fig. 10 is an enlarged detail fragmentary perspective view showing a portion of the supporting disk to be hereinafter more fully described; and Fig. 11 is a view corresponding to Fig. 7 but showing another form of construction embodying my invention.

I have shown my invention applied to a No. 6 Remington typewriting machine to which my attachment may be readily connected without changing the structural features of said machine, although it should be understood that the attachment may be applied to various styles of machines and is applicable to different styles of machines without making any structural changes therein.

The top plate 1 of the machine supports upwardly projecting lugs or standards 2 on which a traverse rod 3 is mounted. A carriage truck 4 carries rollers 5 which cooperate with the traverse rod and the truck supports the usual paper table 6. Links 7 pivotally connect the platen frame 8 to the truck 4 and the forward side of the platen frame carries a roller 9 which coöperates with the usual shift rail 10 which supports the platen frame at the forward side thereof. A platen 11 is mounted to rotate in bearings in the platen frame in the usual manner and a line space wheel 12 forming a part of the right-hand platen head is connected to the platen by wood screws 12ª

which engage in the wooden core of the platen. A detent roller 13 is carried by the usual spring 14 secured to the platen frame by a screw 15, the roller bearing against the teeth of the line spacing wheel. A line spacing pawl 16 is pivoted at 17 to an actuating lever 18 pivoted at 19 to a bracket arm 20 which projects forwardly and downwardly from the platen frame. One arm 21 of the lever 18 serves as a handle by which the line spacing pawl may be actuated. A spring 22 coöperates with the lever 18 to restore it to the normal position shown in Fig. 1 and to bring the tail 23 of the line spacing pawl into coöperation with one of the contact faces 24 on a controlling device 25 which is pivoted at 26 to an upwardly and forwardly extending bracket arm 27. A spring 28 coöperates with the controlling device 25 in the usual maner to maintain it in any one of the three different positions to which it may be set, so as to bring any one of the contact faces 24 into the path of the tail 23 of the line spacing pawl and thus determine the extent of line spacing movement which may be transmitted to the line spacing wheel and the platen which is connected therewith. The platen is supported in place by a platen shaft 29 which is received in bearing openings in end bars of the platen frame 8 and extends beyond said end bars. A platen head 30 is secured in the usual manner to the left-hand end of the platen and is provided with an outwardly extending boss 31 through which the platen shaft extends and a screw 32 enters a threaded opening in the boss and bears at its inner end against the platen shaft to unite the platen to the shaft. The left-hand end of the shaft carries the usual finger wheel 33 which is secured to the shaft by a screw 34 received in a threaded opening in the hub of the finger wheel and bearing at its inner end against the shaft. The features of construction thus far described constitute parts of the No. 6 Remington machine and further description of them is deemed unnecessary except to say that the usual paper feeding devices are employed to coöperate with the platen, the main feed rollers *a* being diagrammatically shown in Fig. 1. The ordinary finger wheel at the right-hand end of the platen shaft is removed and replaced by the billing attachments comprised in the subject-matter of my present invention.

A supporting disk 35 is formed with a central opening 36 (Fig. 10) through which the right-hand end portion of the platen shaft extends and in which it is free to turn. The disk is provided with an inwardly extending bearing portion or support 37, shown in detail in Fig. 10. This support is cut out or recessed at 38 for the reception of one of the two bearing lugs 39 usually formed on the side or end bars of the platen frame of a No. 6 Remington machine. By cutting away the support at 38 the part 37 is adapted to straddle the bearing lug or enlargement 39 on the right-hand side or end bar of the platen frame and the inner faces 40 of the part 37 may be seated against the bar of the platen frame under a flange 41 on said frame. Headed screws 42 enter the disk and pass freely through openings 43 that extend through the disk 35 and through the enlargement 37 and take at their inner ends into threaded openings in the right hand end bar, thus rigidly connecting the disk 35 to the platen frame. The periphery of the disk is formed with a series of teeth 44 which are preferably square and have corresponding locking openings 45 between them. The locking openings preferably are equal in number to the number of teeth 46 of the line spacing wheel 12 and the openings 45 are preferably spaced apart to correspond to the spacing between the teeth of the line spacing wheel.

A circular groove 47 is formed in the inner face of the disk 35, as shown in Fig. 5, for the reception of the inner unthreaded bearing ends 48 of headed screws 49 and 49ª which extend laterally through inwardly extending side pieces 50 formed by slots in actuating, disengaging, controlling or cam pieces, designated as a whole in Figs. 2 and 7 by reference characters 51 and 52. The slots enable the cam pieces 51 and 52 to straddle the disk at the periphery thereof and to bear on opposite faces of the disk. When the screws 49 and 49ª are in place, with the bearing ends 48 thereof in the circular groove 47, the cam pieces will be prevented from being removed from the disk although they may be adjusted around the periphery thereof, as will hereinafter more clearly appear.

The cam piece 52 has an inclined face 53 (Fig. 7) which runs into a dwell 54, the latter terminating in an arresting portion 55 at one end. The cam piece 52 may be adjusted to any desired position around the periphery of the disk 35 by loosening the screw 49ª whose bearing portion is adapted to be seated firmly in the groove 47 to lock the cam piece in its adjusted position. While I have shown the cam piece 52 as capable of being adjusted on the disk 35 it should be understood that this cam may be rigidly connected to or formed as a part of the disk if desired. The cam piece 51 is also provided with a cam portion or inclined edge 56, a dwell 57 at the highest portion of the cam and an arresting portion 58 at the termination of the dwell. The inner end 48 of the screw 49 is loosely received in the groove 47 and does not hold the cam piece 51 in place, although it prevents the piece from being detached from the disk unless

the screw 49 be loosened to wholly withdraw the end 48 from the groove or the screw is entirely removed.

The cam piece 51 has a transverse bearing opening that extends through the body thereof to receive a bearing portion of a locking pin 59 which is adapted to move longitudinally in said bearing opening. The inner end of the locking pin is provided with an engaging portion 60 flattened on two sides thereof and adapted to be seated in the spaces 45 between the teeth of the disk to lock the cam piece in its adjusted position. The locking pin is provided with oppositely disposed transverse grooves 61 in two sides thereof for the reception of a flat spring 62 bifurcated at 63 for coöperation with the grooves 61 in the locking pin. The upper end of the locking pin is provided with a handle 64 by means of which it may be moved longitudinally in its bearing in the cam piece against the tension of the spring 62 which is secured at one end of the cam piece by a screw 65. An outward movement of the locking pin against the tension of the spring 62, removes the engaging end 60 of the locking pin from between the teeth 44 of the disk so that the cam piece 51 is free to be moved by the handle 64 in either direction around the periphery of the disk. When the operator releases the handle 64, the spring 62 forces and maintains the locking pin in engagement between two of the teeth 44, and thus locks the cam piece in its newly adjusted position. In this manner a relative adjustment between the cam pieces or actuating devices 51 and 52 may be readily effected.

An engaging wheel or clutch member 66 is provided with a hub 67 and with fine teeth 66[a] (Fig. 5) and a central opening extends through the engaging wheel and its hub for the reception of the platen shaft 29. A laterally extending threaded opening passes through the hub 67 and a screw 68 is received in said opening and bears at its inner end against the platen shaft to rigidly connect the engaging wheel or clutch member 66 to the shaft (Fig. 2).

A hand actuated device or finger wheel 69 is provided with a laterally extending hub 70 and the finger wheel and hub are adapted to turn freely on the hub 67 of the engaging wheel 66. The finger wheel 69 has a central depression or cut out portion 71 (see Figs. 2 and 8) for the reception of the engaging wheel 66, the bottom wall of the depression 71 bearing against the outer side of the engaging wheel, so that the engaging wheel 66 is contained or housed within the finger wheel 69. An opening or cut out portion 72 is provided in the finger wheel for the reception of an engaging or clutch member 73 which is shown in detail in Fig. 3. This engaging member is preferably provided with teeth 74 which are adapted to coöperate with the corresponding engaging teeth 66[a] formed on the periphery of the engaging wheel 66. A stem 75 extends outwardly from the engaging or clutch member 73 and is received in an opening 76 in the finger wheel 69 and projects into an opening 77 that may extend through said wheel at the periphery thereof (Figs. 5 and 6). A coiled expansion spring 78 surrounds the stem 75 and bears at one end against a shoulder 79 formed on the engaging member and at its other end against a wall 80 formed by the depression 76 in the finger wheel. The pressure of the spring 78 is thus exerted to normally maintain the engaging or clutching device 73 in clutching engagement with the wheel 66, as shown in Fig. 5.

A pin 81 projects laterally from the clutch member 73 and extends through an elongated radially extending opening 82 formed in a cover plate 83 which is secured to the inner face of the finger wheel 69 by headed screws 84, the screws being received in threaded openings 85 in the finger wheel. The cover plate also has a central opening 86 through which the platen shaft extends and in which it turns freely. The hub 70 of the finger wheel 69 is provided with an opening 87 by which access may be gained to the screw 68 which secures the engaging member or wheel 66 to the platen shaft (Fig. 2). The outer end of the hub 67 of the engaging wheel is threaded at 88 for coöperation with an internally threaded collar or bushing 89 fixedly seated in a finger wheel 90.

From the foregoing description it will be understood that the engaging wheel or clutch member 66 is rigidly or fixedly connected to the platen through the platen axle, whereas the finger wheel 69 is disconnectibly connected to the platen through the engagement of the clutch members 73 and 66, and that when said engaging member 73 is moved against the tension of its spring so as to disconnect it from the toothed wheel 66 there is no connection between the finger wheel 69 and the platen and the platen may rotate in either direction independently of the finger wheel 69. Said independent movement may be communicated to the platen by the usual line spacing mechanism, by the finger wheel 90 or by the finger wheel 33 at the other end of the platen. The inwardly projecting pin 81 carried by the clutch member 73 extends into the path of the cams 51 and 52 as indicated in Figs. 4 and 5 and when the clutch members 73 and 66 are engaged the pin 81 is adapted to cooperate with the lowest portion of each of said cams (see Fig. 5), and a continued movement of the pin 81 effected through the rotation of the finger wheel 69 and the platen is effective to cause the pin 81 to ride

up on the coöperating cam and move the clutch member 73 outwardly, automatically effecting a disengagement between the clutch members before the pin reaches the dwell 54 or 57 on the cam. Thus if the clutch members are in clutching engagement and the finger wheel 69 be employed to transmit a forward rotatory movement to the platen, such movement will continue until the pin 81 is engaged by the inclined face on the cam piece 51 and the clutch members are then automatically disengaged and the finger wheel 69 becomes ineffective to transmit further forward movement to the platen so that the platen will stop at a predetermined point in its forward movement, said point being determined by the position of the cam piece 51. When the disengagement between the clutch members has been thus automatically effected the platen may be turned by the ordinary line spacing mechanism, by the finger wheel 90 or by the finger wheel 33 without affecting the finger wheel 69 or the clutch member 73 carried thereby; the clutch member at this time remaining on the dwell 57 of the cam piece 51. If, however, the operator should desire to take up the platen and give it a backward rotation for a predetermined extent by the billing devices, it is merely necessary to give the finger wheel 69 a reverse or backward rotation which is effective to remove the pin 81 from the dwell 57 on the cam member 51 and thus establish a reëngagement between the clutch members 73 and 66 at a predetermined point. An automatic disengagement of the clutch members similar to that effected by the cam piece 51 is effected during the backward rotation of the platen by the cam piece 52. Thus, the clutch members 73 and 66 having been brought into engagement with each other by the backward rotation of the finger wheel 69 as just described, the finger wheel 69 and platen will continue to rotate together until the pin 81 is brought into engagement with the cam on the piece 52 which is effective to disconnect the clutch members and render the finger wheel 69 ineffective to transmit further rotary movement to the platen in a backward direction, although it has mechanically positioned the platen in its backward rotation at a predetermined point determined by the position of the cam piece 52. After the disengagement between the clutch members has thus been automatically effected the pin 81 will remain upon the dwell 54 of the cam until sufficient movement of the finger wheel 69 in an opposite direction is effected. The purpose of the stopping portions 55 and 58 on the cam pieces 52 and 51 respectively is solely to prevent undue displacement of the finger wheel 69 relatively to the coacting cam pins 51 or 52 after a disengagement of the clutch members through either of said cam pieces has been effected. These arresting portions 55 and 58 in no sense act to arrest the platen in its forward or backward rotation or to mechanically position the platen, inasmuch as a disengagement of the clutch members which unites the finger wheel 69 to the platen has been automatically effected before the pin 81 can reach either of the stop portions 55 or 58 and the stop portions may, if desired, be entirely dispensed with, as will hereinafter more clearly appear.

If for any reason the clutch members 73 and 66 should become accidentally engaged during the operation of the machine for ordinary work, an automatic disengagement of the clutch members is effected when the platen is turned in either direction whether it be turned by the line spacing mechanism, the finger wheel 90 or the finger wheel 33, by carrying the pin 81 into contact with one of the coöperating cams but without arresting the platen. In this case the platen is or may be given a continued movement after the clutch members have been automatically disengaged and the platen is not automatically and mechanically positioned at given points in its forward and backward rotation as is the case when the platen is turned through the finger wheel 69. It will therefore be seen that the billing devices are at all times inoperative to prevent or obstruct the rotation of the platen whether or not the clutch member is in engagement, or whether the billing devices or the ordinary means are employed to turn the platen either forwardly or backwardly.

In doing "condensed record" work, bill or invoice sheets of a given character are employed and a copy of the different items on the various bills is produced through an interposed carbon sheet on what is termed a "condensed record" sales or charge sheet. The copy of one bill on the record sheet follows closely after the copy of the preceding bill without leaving a space on the record or sales sheet corresponding to the printed matter or bill head of the invoice sheet.

I will now describe one method of employing my devices for "condensed record" work. It is necessary first to set the cam devices or controlling pieces for the particular character of work to be done or for the particular character of invoice sheets employed. To accomplish this the finger wheel 69 is turned backwardly until the pin 81 is brought into coöperation with the cam of the controlling piece 52 and is seated on the dwell 54 on said cam, thus automatically disengaging the clutch members 73 and 66. A bill or invoice sheet, a "condensed record" sheet and an interposed carbon sheet, with the leading edges thereof together and the record sheet next to the platen, are then introduced into the machine until the leading edges of the sheets are at points where the feed rollers *a*

contact with the platen. The finger wheel 69 is then given a forward rotation which is ineffective to move the platen until the pin 81 has moved off the dwell 54 when the spring 78 brings about an engagement between the clutch members at a predetermined point in the movement of the pin 81 on the cam faces 53. The disengagement or the reëngagement of the clutch members is always effected when the pin 81 reaches essentially the same point on the cam 52. The platen is taken up when the pin 81 reaches a given point on the cam in a movement of the finger wheel 69, and the platen is rotated forwardly, thus effecting a forward feed of the invoice, carbon and record sheets. The extent of forward or feed movement of these sheets in the first instance is determined by turning the platen until the part of the bill or invoice sheet where the first line of writing is to appear is brought to the printing line, which may be determined in the first instance by swinging the platen frame back and observing when the point or line in question reaches the printing line. The forward feed of the platform just described is effective to carry the pin 81 away from the cam piece 52 a distance corresponding to the rotary movement that has been given the platen in feeding the invoice, carbon and record sheets forward.

The part of the invoice sheet where the first line of writing is to appear having been brought to the printing line in the manner described, the adjustable cam piece 51 is now set in position where the cam face 56 thereon will effect a disengagement of the clutch member and the pin 81 will rest on the dwell 57 of the cam, so that the platen cannot be moved forward beyond this point through the finger wheel 69. The operator may then proceed to write the bill or invoice and it will be reproduced in duplicate on the "condensed record" sheet through the interposed carbon sheet. During the forward rotation of the platen in writing the various items on the bill sheet, the finger wheel 69 will remain at rest and the pin 81 will remain seated on the dwell 57 of the cam piece 51, the platen traveling independently of the finger wheel 69, the clutch member 73 and the cam pieces 51 and 52. The pressure of the spring 78 is sufficient to maintain the said members 73 and 69 fixed against movement whether the platen be turned forwardly or backwardly. When the invoice sheet has been written the operator will effect a double line space movement of the platen by the line spacing mechanism in order to provide a double line space on the record sheet between the last line of the bill on the record sheet and the first line of the next succeeding bill to be reproduced on the record sheet. The operator will then turn the finger wheel backwardly so as to move the pin 81 off of the dwell on the cam piece 51 and enable the clutch sections to be automatically reëngaged, after which a further rearward movement of the finger wheel 69 will be effective to rotate the platen with the finger wheel until the pin 81 reaches the cam piece 52 and automatically disengages the clutch members, thus causing the platen to stop in its rearward rotation at a predetermined point determined by the position of the cam piece 52. A reverse rotation of the platen through a predetermined distance controlled and automatically determined by the cam pieces 51 and 52 and the coöperating mechanism is sufficient to bring the platen back to a point where a new or second invoice sheet may be introduced into the machine in front or outside of the invoice sheet last written.

In introducing the second invoice sheet, the leading edge thereof should be brought to the points of engagement between the feed roller and the platen. The finger wheel 69 is then given a forward rotation which is effective to move the pin 81 along the dwell 54 and down the inclined face 53 of the cam piece 52, thus automatically enabling a reestablishing of the engagement between the clutch members and a turning of the platen forwardly until the clutch members are automatically disengaged by the cam piece 51. The mechanical positioning of the platen in its forward rotation brings the invoice sheet last introduced into the machine to a position where it may receive the first line of writing in the proper position thereon. The clutch devices having been automatically disengaged the operator may proceed to write as before. When the bill has been completed a double line space movement of the platen is again effected and a reverse rotation of the platen is given through the finger wheel 69 until the pin 81 reëngages the cam piece 52 and automatically releases the clutch. A new or third invoice sheet may then be introduced into the machine as before in front or outside of the invoice sheet last written and the platen is given a forward rotation by the finger wheel 69 until the pin 81 is brought into coöperation with the cam piece 51. The operator may then proceed to write the third invoice and the carbon copy thereof which is produced on the "condensed record" sheet has its first line situated two line space distances from the last written line of the next preceding record on the "condensed record" sheet.

The operations above described may continue indefinitely after the cam pieces 51 and 52 have once been adjusted relatively to each other in the manner described. After a number of invoice sheets, say three, have been introduced into the machine and written, the first written invoice sheet will, during the forward movement of the platen, be

fed out of the machine, or to a position where it may be readily removed without disturbing the other sheets. When one record sheet has been filled it may be removed from the machine together with the carbon sheet and such written invoice sheets as there may be in the machine. The finger wheel 69 is then turned rearwardly to automatically effect a disengagement of the clutch members by the cam piece 52 in the manner previously described. A new record sheet, carbon sheet and invoice sheet may then be introduced into the machine as before and the platen is turned forwardly through the finger wheel 69 until the clutch is automatically disconnected by the engagement of the pin 81 with the adjustable cam piece 51. The operator may then proceed to write as before.

Instead of introducing a record sheet, carbon sheet and invoice sheet into the machine with the leading edges thereof together, as hereinbefore described, the invoice sheet may be given a "lead" over the other sheets sufficient to bring the first line of the carbon copy to be produced on the record sheet near the top or leading edge of said sheet, and thus avoid unnecessary space at the top of the record sheet.

From the foregoing description it will be seen that the finger wheel 69 is employed solely for the purpose of turning the platen back and forth predetermined extents, the extents being determined by the positions of the cams or engaging devices 51 and 52 and that the connection between the finger wheel 69 and the platen is automatically broken when a given extent of movement has been mechanically effected, thereby leaving the platen properly positioned with mechanical accuracy; that either the line spacing mechanism or either of the finger wheels 33 and 90, which are independent of the wheel 69 that controls the predetermined mechanical positioning of the platen, are operable to move the platen at any time; that although the platen is mechanically positioned it is never at any time blocked or obstructed in its movement in either the forward or backward rotation thereof; that although the finger wheel 69 and the associated mechanism is operable to position mechanically the platen in both the forward and backward rotation thereof, such means are inoperative to prevent a rotation of the platen at any time; that the only operation involved in doing "condensed record" work besides introducing the work into the machine is to turn the finger wheel 69 back and forth after each bill is written and a double line space has been given to provide proper spacing between bills on the record sheet; that the wheel 69 is turned either forward or backward until the platen ceases to be moved thereby; that the operation of the device for billing work properly positions the sheets with reference to each other and relieves the mind of the operator from making any calculations or from observing any indices and greatly facilitates the speed and accuracy with which the work can be accomplished.

By the terms a "mechanically positioned" platen, and means operable to "mechanically position" the platen and the like, employed herein, I wish to be understood to mean a mechanically positioned platen as distinguished from a construction in which the position of the platen is determined by means of index devices or indices or in which the positioning of the platen depends on the judgment or skill of the operator and the attention of the operator is required to determine when the platen should be arrested in order to properly position it. It will also be observed that the devices are simple in construction, cheap to manufacture, are efficient in operation and are not cumbersome when applied to the machine and may be easily manipulated without interfering with the travel of the carriage or the operation of the machine for other purposes.

While I have described in detail the construction of the support or disk 35 and the means for effecting an adjustment of the cams or engaging devices 51 and 52 thereon it should be understood that the part 35 need not be a disk and may be of segmental or other suitable form, since in condensed billing work it seldom, if ever, occurs that the angular adjustment of one of the cams 51 or 52 throughout 360° is required, and that various means may be employed to afford a relative adjustment between the engaging devices or cams. For instance, the periphery of the disk or support 35 may have fine teeth like the teeth 66^a on the engaging wheel 66 and corresponding teeth may be provided on the end of the locking pin, or the periphery of the disk or support 35 may be smooth and be engaged by the smooth end of the locking pin for holding the engaging device into place frictionally, or a screw such, for instance, as that employed to hold the device 52 in place may be employed. However, I prefer to provide some means such as those shown for adjusting the device 51 to different points that correspond to the spacing between the teeth of the line space ratchet wheel, because the device 51 may then always be set at a point where it will cause the engagement or disengagement between the clutch members to be effected when the platen is in a line space position, or when the detent roller 13 is properly seated between two teeth of the line spacing wheel and not when said detent roller is bearing on the crown of a tooth of said wheel, in which event a slight accidental displacement of the platen might be effected which would result in the improper posi-

tioning of the platen. It should be understood therefore that when the platen is being positioned through a turning movement of the wheel 69 and the platen reaches the predetermined line space position and is automatically released, the detent roller will be properly seated between two teeth of the line spacing wheel and there is no liability of an overthrow of the platen, the platen being held by the spring detent against accidental displacement from the position at which it was released from the wheel 69.

In Fig. 11 I have shown another form of device embodying my invention. In this construction the disk 35ª is similar to the corresponding disk previously described, except that the cam device, designated as a whole at 52ª in Fig. 11, may be considered as rigidly connected to or formed as a part of the disk and may be situated at any desired point circumferentially thereof. The cam device 52ª in this instance has an inclined face 91 corresponding to the cam face 53 on the device 52 hereinbefore described and also has a dwell 92 corresponding to the dwell 54. Instead, however, of providing an arresting member such as 55 for coöperating with the pin 81 to prevent undue or accidental displacement of the pin from the dwell on the cam member, I dispense, in the modified construction, with such arresting member and make the dwell 92 a continuous one with serrations or indentations 93 in the face thereof and in which the pin 81 is adapted to be seated in the event of the pin passing beyond the smooth portion of the dwell. The construction is such, however, that the operator is not apt to turn the wheel 69 far enough to carry the pin 81 beyond the dwell as will more clearly appear from the following description. It will be understood that the construction, arrangement and relation of the parts are such that when the pin 81 is seated in a depression 93 no engagement of the clutch members 73 and 66 can take place. The additional resistance to the turning of the wheel 69 and the ratchet-like action of the pin 81 passing into and out of the depressions will warn the operator that no further movement should be given the wheel. If through any accident the wheel 69 should be turned far enough to carry the pin 81 beyond the serrations 93, which, however, is not apt to happen, the pin 81 will ride down a cam 94 at the other end of the dwell and a reëngagement of the clutch members will take place, but this clutching engagement may be again broken by merely turning the finger wheel 69 back again until the pin 81 is again seated on the dwell or in any of the serrations thereon and the platen will be mechanically positioned in the same position as that attained when a disengagement was effected by the inclined face 91.

The cam device designated as a whole by the reference character 51ª is like the adjustable cam device 51 previously described except that it has no arresting member such as 58 but is constructed with a continuous dwell 95 with serrations 96 in the face thereof and with two oppositely disposed cam faces 97 and 98. In other words the parts 95, 96, 97 and 98 of this adjustable cam device are like the corresponding parts on the cam device 52ª and coöperate with the pin 81 in a similar manner.

It should be understood that in the construction shown in Fig. 11, as well as that shown in the other figures, the pin 81 in riding up the cam to effect a disengagement of the clutch members gives an additional amount of resistance to the turning of the finger wheel 69, it being necessary at this time to overcome the power of the spring 78, and this in itself may ordinarily be sufficient to warn the operator to cease turning the finger wheel 69 when the pin 81 is on the dwell of the cam, even if the operator is not looking at the platen or the machine while effecting a positioning of the platen through the finger wheel 69.

It will be observed that it is unnecessary to make any essential changes in the construction of a typewriting machine in order to apply my invention thereto, the billing device as a whole being arranged outside of the platen frame and most of said parts taking the place of the ordinary finger wheel at one end of the platen shaft. This I regard as an important feature of my invention in that it enables me to employ devices in the nature of attachments and to apply them to various forms of typewriting machines without changing the structural features of said machines and without interfering with the ordinary operation of the typewriting machine as such.

While the devices of my invention are intended primarily for "condensed record" work they may be employed for purposes and for other characters of billing work. It is not deemed necessary to describe the methods of procedure under the various uses to which the invention may be put, but it may be well to point out that it may be employed in facilitating the writing of bills or invoices or accurately filling in partly printed blanks and with the aid of which the sheet may be accurately and mechanically positioned in the machine to receive the type impressions at the proper point or points so that uniform, neat and properly positioned work on the various bill heads or other blanks may be done.

I believe that I am the first to provide means for mechanically positioning a platen for doing "condensed record" and other billing work without at any time obstructing the rotation of that platen and wish to

be understood as claiming such means broadly. Furthermore, I believe that I am the first to provide hand-actuated means for moving the platen, together with means for automatically connecting said hand-actuated means with and disconnecting it from the platen at predetermined points in both the forward and backward rotation of the platen or at predetermined points in the backward and forward movement of such hand-actuated means and wish to be understood as claiming such means broadly.

Various changes may be made in the construction and arrangement of the parts without departing from the spirit and scope of my invention and certain features of the invention may be employed without others.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a platen; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member for rotating the platen forwardly and backwardly; and means for automatically connecting said hand-actuated member with and automatically disconnecting it from the platen at predetermined points in both the forward and backward rotation of the platen.

2. In a typewriting machine, the combination of a platen; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member to said platen, and means for automatically throwing said clutch into and out of operative connection with the platen at predetermined points in both the forward and backward rotation of the platen.

3. In a typewriting machine, the combination of a platen; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member with said platen, a spring which tends to maintain a clutching engagement between the clutch and platen, and means for automatically releasing said clutch at predetermined points in both the backward and forward rotation of the platen.

4. In a typewriting machine, the combination of a platen; means for automatically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member for rotating the platen forwardly and backwardly; and means for automatically connecting said hand-actuated member with and for automatically disconnecting it from the platen at predetermined points in both the forward and backward rotation of the platen; and means independent of said hand-actuated member for rotating the platen in either direction to any desired extent at any time.

5. In a typewriting machine, the combination of a platen; means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member to said platen, means for automatically throwing said clutch into and out of operative connection with the platen at predetermined points in both the forward and backward rotation of the platen; and means independent of said hand-actuated member for rotating the platen in either direction to any desired extent at any time.

6. In a typewriting machine, the combination of a platen; means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member with said platen, a spring that tends to maintain a clutching engagement between the clutch and platen, means for automatically releasing said clutch at predetermined points in both the backward and forward rotation of the platen; and means independent of said hand-actuated member for rotating the platen in either direction to any desired extent at any time.

7. In a typewriting machine, the combination of a platen; and means for mechanically determining the extent of rotation of the platen, said determining means comprising a finger wheel for rotating the platen, and means automatically connecting said finger wheel with the platen at a predetermined point in the rotation thereof.

8. In a typewriting machine, the combination of a platen; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated finger wheel for rotating the platen forwardly and backwardly, and means for automatically connecting said finger wheel with and for automatically disconnecting it from the platen at predetermined points in the forward and backward rotation thereof.

9. In a typewriting machine and billing mechanism, the combination of a platen, and billing devices comprising turning and tripping means which are operative to mechanically determine the extent of rotation of the platen without obstructing the rotation thereof.

10. In a typewriting machine and billing mechanism, the combination of a platen free

at all times to be rotated to any desired extent, and billing devices including engageable means to rotate the platen, and tripping means to release the engageable means and by such releasing action cause the platen to stop.

11. In a typewriting machine and billing mechanism, the combination of a platen, and billing devices comprising turning and tripping means which are operative to mechanically determine the extent of rotation of the platen but which are inoperative to prevent the rotation of the platen.

12. In a typewriting machine and billing mechanism, the combination of a platen free always to be rotated to any desired extent; and billing devices for predetermining the extent of rotation of the platen, said billing devices being arranged to release the platen when it has been turned to the predetermined extent.

13. In a typewriting machine and billing mechanism, the combination of a platen, and billing devices comprising turning and tripping means which are operative to mechanically determine the extent of both forward and backward rotation of the platen but which are inoperative to prevent the rotation of the platen in either direction.

14. In a typewriting machine and billing mechanism, the combination of a platen, and billing devices which are operative to mechanically determine the extent of rotation of the platen, the platen being free at all times to be turned to any desired extent, said billing devices including a hand operated device engageable with the platen to rotate it and automatically disengaged from the platen when the latter has been turned to the determined extent.

15. In a typewriting machine and billing mechanism, the combination of a platen at all times free to be rotated to any desired extent, and billing devices coöperative to turn the platen and automatically separable to release the platen, the stoppage of the platen being caused wholly by the said automatic separation.

16. In a typewriting machine and billing mechanism, the combination of a platen; and means for mechanically determining the extent of forward and backward rotation of the platen, said means comprising a set of co-acting devices, certain of said devices being operatively connected to turn with the platen and others being maintained fixed relatively thereto, and means for automatically disconnecting the rotary device from the platen when said rotary device engages either of the relatively fixed devices.

17. In a typewriting machine and billing mechanism, the combination of a carriage; a platen; and means for mechanically determining the extent of forward and backward rotation of the platen, said means comprising a set of co-acting devices, certain of said devices being operatively connected to turn with the platen and others being maintained fixed on the carriage, said devices on the carriage being adjustable relatively to each other, and means for automatically disconnecting the rotary device from the platen when said rotary device engages either of said fixed devices.

18. In a typewriting machine and billing mechanism, the combination of a platen, a hand actuated device, a device that is adapted to rotate with the platen and which is adapted to form an operative connection between said hand-actuated device and platen, and a relatively fixed coöperating cam with which the rotary device is adapted to contact, a disconnection being effected between the hand actuated device and the platen when said rotary device is brought into contact with said relatively fixed cam.

19. In a typewriting machine and billing mechanism, the combination of a platen, a finger wheel, a device that is adapted to rotate with the platen and which is adapted to form an operative connection between said finger wheel and platen, and coöperating relatively fixed devices with which said rotary device is adapted to contact, a disconnection being automatically effected between the rotary device and the platen when said rotary device is brought into contact with either of said relatively fixed devices.

20. In a typewriting machine and billing mechanism, the combination of a platen, a finger wheel, a device that is adapted to rotate with the finger wheel and which is adapted to form an operative connection between said finger wheel and platen to turn the latter in either direction, and coöperating relatively fixed devices with which said rotary device is adapted to contact in its backward and forward rotation with the platen, a disconnection being automatically effected between the rotary device and the platen when said rotary device is brought into contact with either of said relatively fixed devices.

21. In a typewriting machine, the combination of a platen, a finger wheel adapted to turn the platen and to permit a rotation of the platen independently thereof, engaging means that turns with the finger wheel and which is adapted to operatively connect the finger wheel and platen to rotate together, and means for automatically disengaging said engaging means at a predetermined point in the rotation of the finger wheel.

22. In a typewriting machine, the combination of a platen, a hand-actuated device adapted to turn the platen and to afford a rotation of the platen independently thereof, engaging means that turns with the hand-actuated device and which is adapted to

operatively connect said hand actuated device and platen to turn together in opposite directions, and means for automatically disengaging said engaging means at predetermined points in the forward and backward rotation of the hand actuated device.

23. In a typewriting machine, the combination of a platen, two finger wheels, one connected to turn the platen and to turn therewith at all times, and automatically operating means coöperating with the other finger wheel to afford a turning movement of the platen thereby in opposite directions and to mechanically predetermine the extents of such movements and to afford a movement of the platen independently of said last mentioned finger wheel after the platen has been moved a predetermined distance thereby.

24. In a typewriting machine, the combination of a rotary platen, a finger wheel, and means for automatically placing the platen in control of said finger wheel and for automatically throwing the platen out of control of the finger wheel at predetermined points in the rotation of said wheel.

25. In a typewriting machine, the combination of a rotary platen, a finger wheel, and means for automatically placing the platen in control of said finger wheel and for automatically throwing the platen out of control of the finger wheel at predetermined points in both the forward and backward rotation of said wheel.

26. In a typewriting machine, the combination of a rotary platen, a finger wheel, and means for automatically placing the platen in control of said finger wheel and for automatically throwing the platen out of control of the finger wheel at predetermined points in the backward and forward rotation of said wheel, said means including adjustable means for determining the points in the forward and backward rotation of the finger wheel when the platen will be thrown into and out of its control.

27. In a typewriting machine, the combination of a platen, a finger wheel, a clutch member operatively connected to the platen, a second clutch member connected with said finger wheel, and means for automatically disengaging said clutch members by the rotation of the finger wheel.

28. In a typewriting machine, the combination of a platen, a finger wheel, a clutch member operatively connected to the platen, a second clutch member connected with said finger wheel, and means for automatically disengaging said clutch members in both the forward and backward rotation of the finger wheel.

29. In a typewriting machine, the combination of a platen, a finger wheel, a clutch member operatively connected to the platen, a second clutch member connected with said finger wheel, and means for automatically disengaging said clutch members at predetermined points in the forward and backward rotation of said finger wheel, whereby the finger wheel is operative to turn the platen predetermined distances either forwardly or backwardly and the platen is free to be turned independently of said finger wheel after the platen has been turned a predetermined distance by said finger wheel.

30. In a typewriting machine, the combination of a platen, a finger wheel, a clutch member operatively connected to the platen, a second clutch member connected with said finger wheel, said clutch members being normally in engagement, and means for automatically disengaging said clutch members at predetermined points in the forward and backward rotation of said finger wheel, whereby the finger wheel is operative to turn the platen predetermined distances either forwardly or backwardly and the platen is free to be turned independently of said finger wheel after the platen has been turned a predetermined distance by said finger wheel.

31. In a typewriting machine, the combination of a platen, a hand-actuated device, a clutch member operatively connected to the platen, a second clutch member connected with said hand-actuated device, means for automatically disengaging said clutch members at predetermined points in the forward and backward movement of said hand-actuated device, whereby the hand-actuated device is operative to turn the platen predetermined distances either forwardly or backwardly and the platen is free to be turned independently of said hand actuated device after the platen has been turned a predetermined distance by said hand-actuated device, and adjustable means for determining the points at which said clutch members shall be disengaged.

32. In a typewriting machine, the combination of a platen, a finger wheel, and means controlled by the turning movement of the finger wheel for automatically and rigidly connecting and disconnecting the finger wheel and platen at a predetermined point or points.

33. In a typewriting machine, the combination of a platen, a finger wheel, means controlled by the turning movement of the finger wheel for automatically and rigidly connecting and disconnecting the finger wheel and platen at a predetermined point or points, and adjustable means for locating the point or points of disconnection of the finger wheel and platen.

34. In a typewriting machine, the combination of a platen; a platen frame; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising

a hand-actuated member for rotating the platen forwardly and backwardly, and means for automatically connecting said hand-actuated member with and automatically disconnecting it from the platen at predetermined points in the forward and backward rotations of the platen, said determining means being situated outside of the platen frame.

35. In a typewriting machine, the combination of a platen; a platen frame; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member to said platen, and means for automatically throwing said clutch into and out of operative connection with the platen at predetermined points in the forward and backward rotation of the platen, said determining means being situated outside of the platen frame.

36. In a typewriting machine, the combination of a platen; a platen frame; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member with said platen, a spring which tends to maintain a clutching engagement between the clutch and platen, and means for automatically releasing said clutch at predetermined points in the backward and forward rotations of the platen, said determining means being situated outside of the platen frame.

37. In a typewriting machine, the combination of a platen; a platen frame; means for automatically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member for rotating the platen forwardly and backwardly, and means for automatically connecting said hand-actuated member with and for automatically disconnecting it from the platen at predetermined points in the forward and backward rotation of the platen, said determining means being situated outside of the platen frame; and means independent of said hand-actuated member for rotating the platen in either direction to any desired extent at any time.

38. In a typewriting machine, the combination of a platen; a platen frame; means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member to said platen, means for automatically throwing said clutch into and out of operative connection with the platen at predetermined points in the forward and backward rotation of the platen, said determining means being situated outside of the platen frame; and means independent of said hand-actuated member for rotating the platen in either direction to any desired extent at any time.

39. In a typewriting machine, the combination of a platen; a platen frame; means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated member, a clutch that operatively connects said hand-actuated member with said platen, a spring that tends to maintain a clutching engagement between the clutch and platen, and means for automatically releasing said clutch at predetermined points in the backward and forward rotation of the platen, said determining means being situated outside of the platen frame; and means independent of said hand-actuated member for rotating the platen in either direction to any desired extent at any time.

40. In a typewriting machine, the combination of a platen; a platen frame; and means for mechanically determining the extent of rotation of the platen, said determining means comprising a finger wheel for rotating the platen and means automatically connecting said finger wheel with the platen at a predetermined point in the rotation thereof, said determining means being situated outside of the platen frame.

41. In a typewriting machine, the combination of a platen; a platen frame; and means for mechanically determining the extent of rotation of the platen in opposite directions, said determining means comprising a hand-actuated finger wheel for rotating the platen forwardly and backwardly and means for automatically connecting said finger wheel with and for automatically disconnecting it from the platen at predetermined points in the forward and backward rotation thereof, said determining means being situated outside of the platen frame.

42. In a typewriting machine and billing mechanism, the combination of a platen, a platen frame, and billing devices which are operative to determine mechanically the extent of rotation of the platen without obstructing the rotation thereof, said billing devices being situated outside of the platen frame.

43. In a typewriting machine and billing mechanism, the combination of a platen, a platen frame, and billing devices which are operative to determine mechanically the extent of rotation of the platen but which are inoperative to prevent the rotation of the platen, said billing devices being situated outside of the platen frame.

44. In a typewriting machine and billing mechanism, the combination of a platen, a

platen frame, and billing devices which are operative to mechanically determine the extent of forward and backward rotation of the platen but which are inoperative to prevent the rotation of the platen in either direction, said billing devices being situated outside of the platen frame.

45. In a typewriting machine and billing mechanism, the combination of a platen frame; a platen carried thereby; and means for mechanically determining the extent of rotation of the platen, said means including a part carried by the platen frame, and a part with means for operatively connecting it to rotate with the platen and adapted to co-act with said part on the platen frame to determine mechanically the extent of rotation of the platen without obstructing the rotation thereof and to be disconnected from operative connection with the platen when said parts are brought into coöperation, said mechanically determining means being situated outside of the platen frame.

46. In a typewriting machine and billing mechanism, the combination of a platen frame; a platen; and means for mechanically determining the extent of forward and backward rotation of the platen, said means comprising a series of co-acting devices, certain of said devices being operatively connected to turn with the platen and others being maintained fixed relatively thereto, and means for automatically disconnecting the rotary device from the platen when it engages either of the relatively fixed devices, said mechanically determining means being situated outside of the platen frame.

47. In a typewriting machine and billing mechanism, the combination of a carriage; a platen; and means for mechanically determining the extent of forward and backward rotation of the platen, said means comprising a series of co-acting devices, certain of said devices being operatively connected to turn with the platen and others being maintained fixed relatively thereto, said relatively fixed devices being adjustable relatively to each other, and means for automatically disconnecting the rotary device from the platen when it engages either of said relatively fixed devices.

48. In a typewriting machine and billing mechanism, the combination of a platen; a platen frame; a hand-actuated device for turning the platen in billing operation; a device that is adapted to rotate with the platen and which is adapted to form an operative connection between said hand actuated device and platen; and a coöperating relatively fixed cam with which the rotary device is adapted to contact, a disconnection being effected between the hand actuated device and the platen when said rotary device is brought into contact with said relatively fixed cam, all of said parts except the platen being situated outside of the platen frame.

49. In a typewriting machine and billing mechanism, the combination of a platen; a platen frame; a finger wheel; a device that is adapted to rotate with the platen and which is adapted to form an operative connection between said finger wheel and platen; and coöperating relatively fixed devices with which said rotary device is adapted to contact, a disconnection being effected between the rotary device and the platen when said rotary device is brought into contact with either of said relatively fixed devices, all of said parts except the platen being situated outside of the platen frame.

50. In a typewriting machine and billing mechanism, the combination of a platen; a finger wheel; a device that is adapted to rotate with the finger wheel and which is adapted to form an operative connection between said finger wheel and platen to turn the latter in either direction; and coöperating relatively fixed devices with which said rotary device is adapted to contact in its backward and forward rotation with the platen, a disconnection being automatically effected between the rotary device and the platen when said rotary device is brought into contact with either of said relatively fixed devices.

51. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, a clutch member connected with the platen shaft, a second clutch member carried by the finger wheel and adapted to cooperate with the other clutch member at any point in the rotation of the platen, and a relatively fixed member for automatically disengaging said clutch members at a predetermined point in the rotation of said finger wheel.

52. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, a clutch member connected with the platen shaft, a clutch member carried by the finger wheel and adapted to coöperate with the other clutch member at any point in the rotation of the platen, and relatively adjustable fixed members for automatically disengaging said clutch members at predetermined points in the forward and backward rotation of said finger wheel.

53. In a typewriting machine, the combination of a platen, a platen frame, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, a clutch member connected with the platen shaft, a clutch member carried by the finger wheel and adapted to co-

operate with the other clutch member at any point in the rotation of the platen, and a relatively fixed member for automatically disengaging said clutch members at a predetermined point in the rotation of said finger wheel, said finger wheel, clutch members and relatively fixed member being situated outside of the platen frame.

54. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, an engaging member secured to the platen shaft, a clutch member carried by said finger wheel and adapted to coöperate with said engaging member, and a member with which the clutch member coöperates to disconnect it automatically from said engaging member at a predetermined point in the rotation of said finger wheel.

55. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, an engaging wheel secured to the platen shaft, a spring-pressed clutch member carried by said finger wheel and adapted to coöperate with said engaging wheel, and a member with which the clutch member cooperates to automatically disconnect it from said engaging wheel at a predetermined point in the rotation of said finger wheel.

56. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, an engaging wheel secured to the platen shaft, a spring-pressed clutch member carried by said finger wheel and adapted to coöperate with said engaging wheel, and two relatively adjustable members with which the clutch member coöperates to automatically disconnect it from said engaging wheel at predetermined points in the forward and backward rotation of said finger wheel.

57. In a typewriting machine, the combination of a platen, a platen frame, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, an engaging wheel secured to the platen shaft, a spring-pressed clutch member carried by said finger wheel and adapted to coöperate with said engaging wheel, and two relatively adjustable members with which the clutch member cooperates to disconnect it automatically from said engaging wheel at predetermined points in the forward and backward rotation of said finger wheel, said finger wheel, engaging wheel, clutch member and relatively adjustable members being situated outside of the platen frame.

58. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, a clutch member connected with the platen shaft, a clutch member carried by the finger wheel and adapted to coöperate with the other clutch member at any point in the rotation of the platen, a disk, and a member carried by said disk and which coöperates with one of said clutch members for automatically disengaging the clutch members at a predetermined point in the rotation of said finger wheel.

59. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel relatively to which the platen shaft may receive an independent rotary movement, a clutch member connected with the platen shaft, a clutch member carried by the finger wheel and adapted to coöperate with the other clutch member at any point in the rotation of the platen, a relatively fixed disk, two members carried by and adjustable relatively to each other on said disk, said two members coöperating with one of said clutch members for automatically disconnecting it from the coöperating clutch member at predetermined points in the forward and backward rotation of the platen.

60. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel carried by the platen shaft, the said shaft being adapted to turn independently of said finger wheel, a toothed device fixed to the platen shaft, an engaging member carried by said finger wheel and movable relatively thereto into and out of engagement with said toothed device and adapted to lock the finger wheel and platen to rotate together in backward and forward directions, and means coöperating with said engaging member to automatically disengage it from said toothed device at a predetermined point in the rotation of said finger wheel.

61. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel carried by the platen shaft, the said shaft being adapted to turn independently of said finger wheel, a toothed wheel fixed to the platen shaft, a spring pressed engaging member carried by said finger wheel and movable relatively thereto into and out of engagement with said toothed wheel and adapted to lock the finger wheel and platen to rotate together in backward and forward directions, and a cam coöperating with said engaging member to automatically disengage it from said toothed wheel at a predetermined point in the rotation of said finger wheel.

62. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel carried by the platen shaft, the said

shaft being adapted to turn independently of said finger wheel, a toothed wheel fixed to the platen shaft, an engaging member carried by said finger wheel and movable relatively thereto into and out of engagement with said toothed wheel and adapted to lock the finger wheel and platen to rotate together in backward and forward directions, a disk, and a device carried by and adjustable on said disk and coöperating with said engaging member to automatically disengage it from said toothed wheel at a predetermined point in the rotation of said finger wheel.

63. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel carried by the platen shaft, the said shaft being adapted to turn independently of said finger wheel, a toothed wheel fixed to the platen shaft, an engaging member carried by said finger wheel, and movable relatively thereto into and out of engagement with said toothed wheel and adapted to lock the finger wheel and platen to rotate together in backward and forward directions, a disk, and two devices carried by and adjustable relatively to each other on said disk and coöperating with said engaging member to automatically disengage it from said toothed wheel at predetermined points in the backward and forward rotation of said finger wheel.

64. In a typewriting machine, the combination of a platen, a platen frame, a platen shaft, a finger wheel carried by the platen shaft, the said shaft being adapted to turn independently of said finger wheel, a toothed wheel fixed to the platen shaft, an engaging member carried by said finger wheel and movable relatively thereto into and out of engagement with said toothed wheel and adapted to lock the finger wheel and platen to rotate together in backward and forward directions, and means coöperating with said engaging member to automatically disengage it from said toothed wheel at a predetermined point in the rotation of said finger wheel, said finger wheel, toothed wheel, engaging member and cooperating means being situated outside of the platen frame.

65. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel carried by the platen shaft, the said shaft being adapted to turn independently of said finger wheel, a toothed wheel fixed to the platen shaft, an engaging member carried by said finger wheel and movable relatively thereto into and out of engagement with said toothed wheel and adapted to lock the finger wheel and platen to rotate together in backward and forward directions, a disk, and two cams carried by and adjustable relatively to each other on said disk and coöperating with said engaging member to automatically disengage it from said toothed wheel at predetermined points in the backward and forward rotation of said finger wheel, all of said parts except the platen being situated outside of the platen frame.

66. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel loosely mounted on the platen shaft, an engaging wheel secured to the platen shaft and contained in an opening in said finger wheel, an engaging member carried by the finger wheel and adapted to co-act with said engaging wheel, and adjustable means for automatically releasing said engaging member from said engaging wheel.

67. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel loosely mounted on the platen shaft, an engaging wheel secured to the platen shaft and housed within said finger wheel, a spring pressed engaging member carried by the finger wheel and pressed by its spring toward and adapted to co-act with said engaging wheel to lock the finger wheel and shaft to rotate together in backward and forward directions, and means for automatically releasing said engaging member from said engaging wheel.

68. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel loosely mounted on said platen shaft, a toothed engaging wheel secured to the platen shaft and contained in an opening in said finger wheel, a toothed engaging device carried by said finger wheel and normally pressed toward and coöperative with said toothed wheel to lock the finger wheel and the platen shaft to turn together in backward and forward directions, and means for automatically disengaging said toothed engaging device from the toothed wheel at a predetermined point in the rotation of the finger wheel.

69. In a typewriting machine, the combination of a platen, a platen shaft, a finger wheel loosely mounted on said platen shaft, a toothed engaging wheel secured to the platen shaft and contained in an opening in said finger wheel, a spring pressed toothed engaging device carried by said finger wheel and coöperating with said toothed wheel to lock the finger wheel and the platen shaft to turn together in backward and forward directions, a disk, and cams which are carried by said disk and are adjustable relatively to each other, said cams coöperating with said toothed engaging device for automatically releasing it from said toothed engaging wheel at a predetermined point in either the forward or backward rotation of said finger wheel.

70. In a typewriting machine, the combination of a platen, a hand-actuated device

normally connected to turn the platen, and means for automatically breaking the connection between said actuated device and the platen at a predetermined point in the rotation of the platen.

71. In a typewriting machine, the combination of a platen, a hand-actuated device normally connected to turn the platen, and means for automatically breaking the connection between said hand-actuated device and the platen at predetermined points in both the forward and backward rotation of the platen.

72. In a typewriting machine, the combination of a rotary platen at all times free to be rotated to any desired extent, a hand actuated device for rotating the platen, and means for automatically throwing the platen out of control of said hand-actuated device to cause the arrest of the platen.

73. In a typewriting machine, the combination of a platen, a hand actuated device for rotating the platen, and means for automatically throwing the platen out of control of said hand actuated device to cause the arrest of the platen; said means including a device adjustable to various set positions for varying the point in the rotation of the platen at which said means shall operate to throw the platen out of control of said hand actuated device.

74. In a typewriting machine, the combination of a platen, and means for mechanically determining the extent of rotation of the platen, said determining means comprising a hand actuated member for rotating the platen, and means for automatically disconnecting the hand actuated member from the platen at a predetermined point in the rotation of the platen, and by such disconnection alone determining the point of arrest of the platen.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 31st day of March A. D. 1906.

CHARLES E. SMITH.

Witnesses:
E. M. WELLS,
J. B. DEEVES.