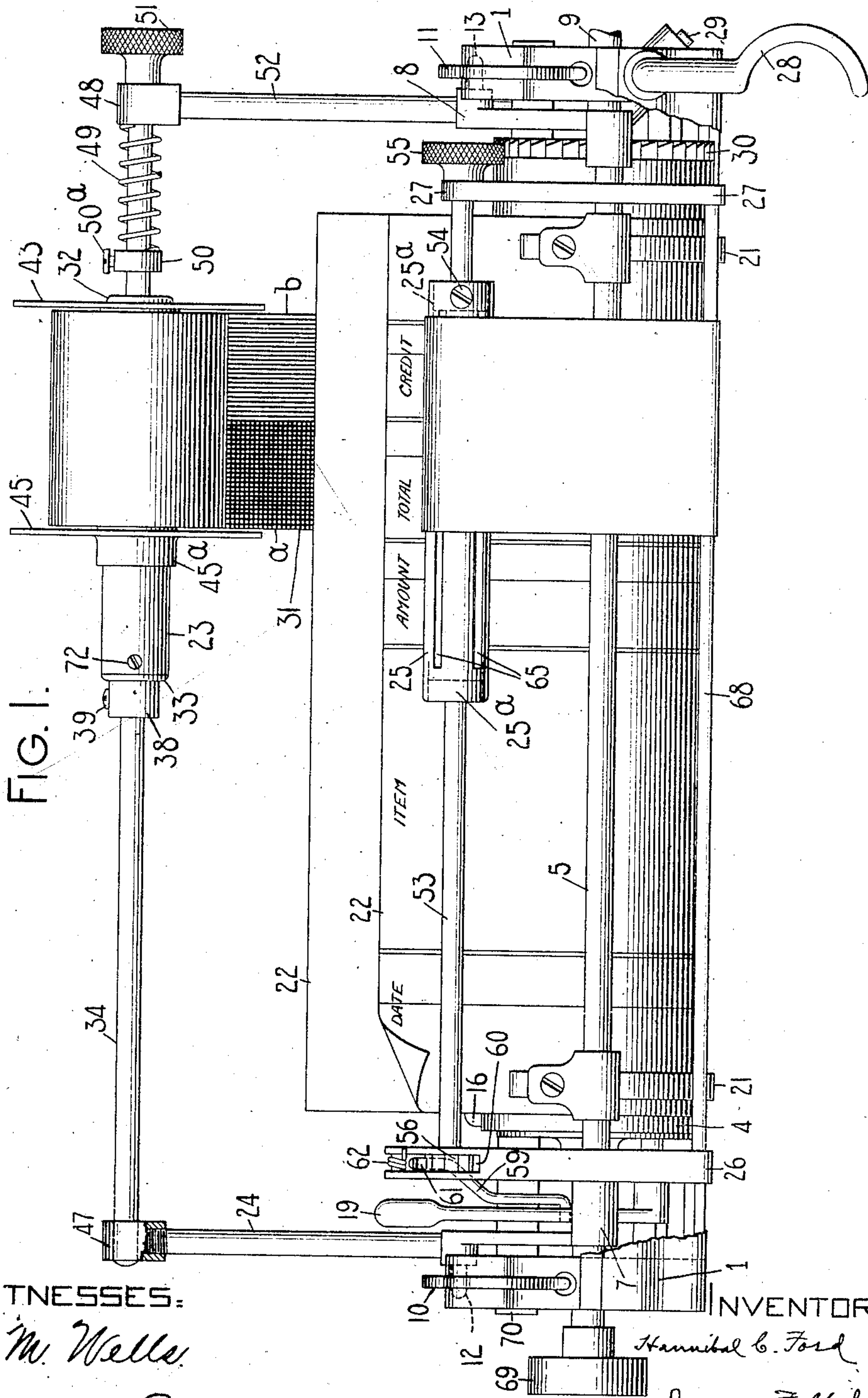


993,234.

H. C. FORD.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 11, 1907.

Patented May 23, 1911

3 SHEETS—SHEET 1.



WITNESSES:

E. M. Wells

W. W. Pool

INVENTOR:

Hannibal C. Ford

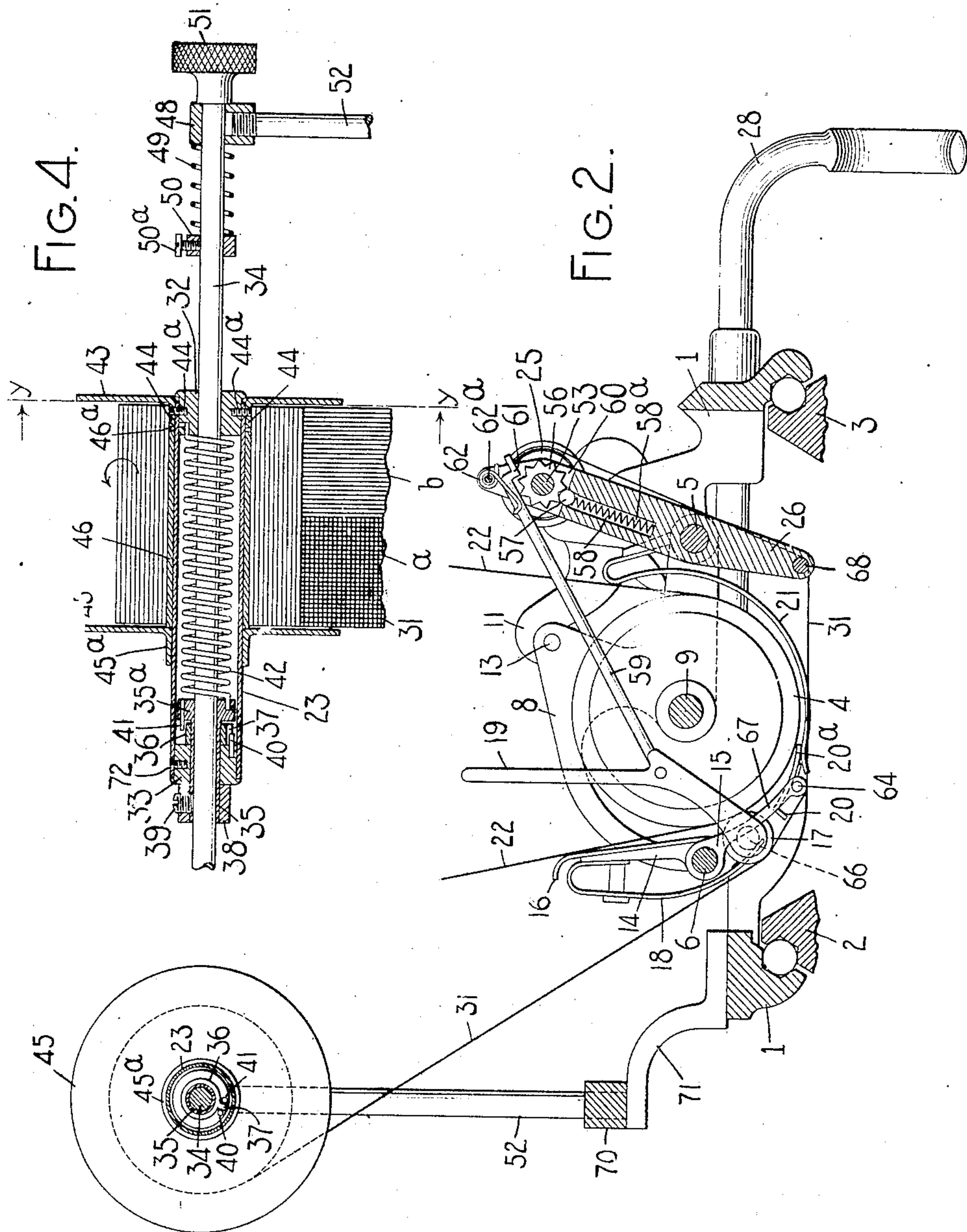
By Jacob Felber

HIS ATTORNEY

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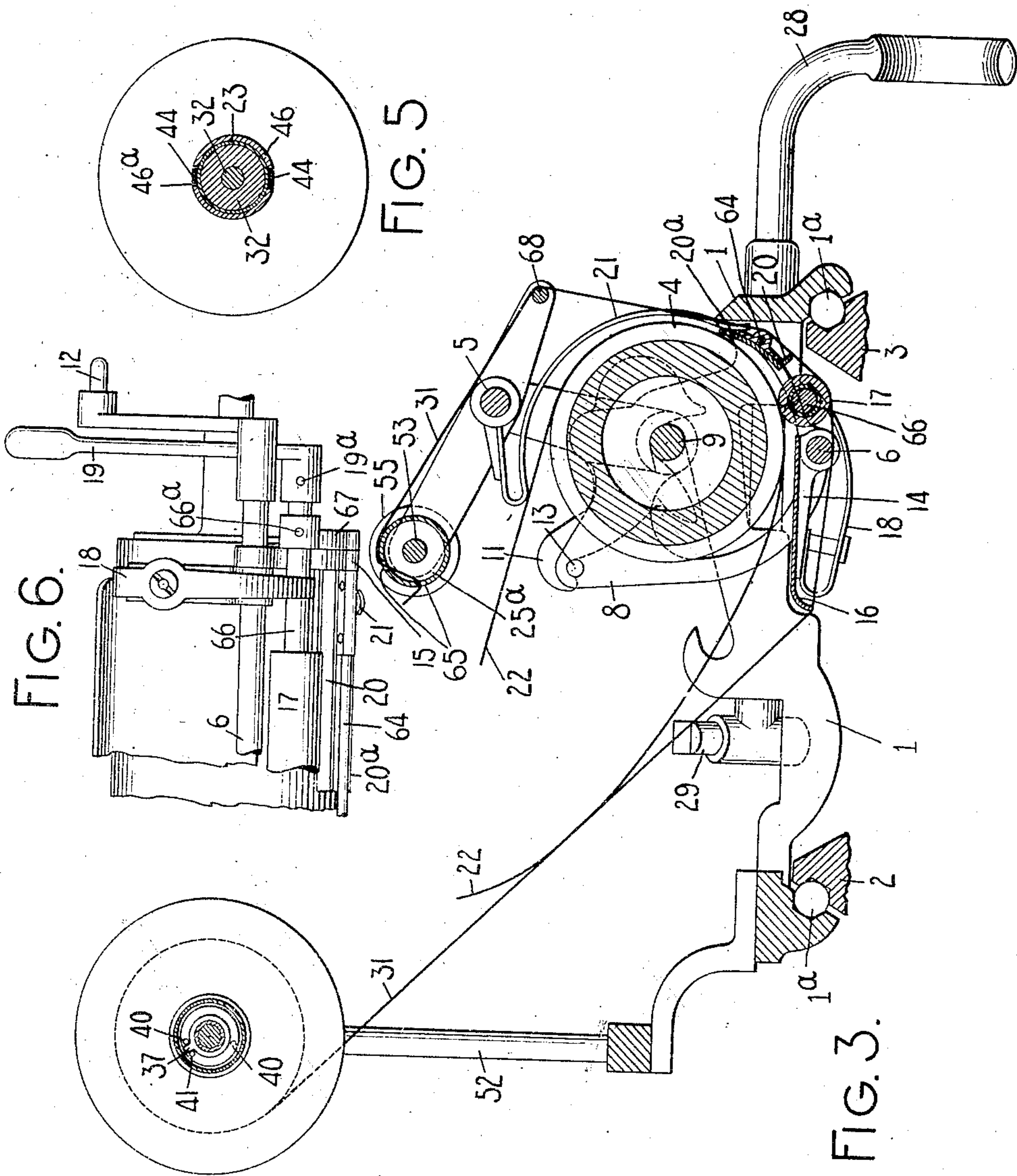
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INVENTOR:

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UNITED STATES PATENT OFFICE.

HANNIBAL C. FORD, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE SMITH PREMIER TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

993,234.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed May 11, 1907. Serial No. 373,165.

To all whom it may concern:

Be it known that I, HANNIBAL C. FORD, a citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 especially to paper feeding and paper supply devices for typewriting machines and has for its main object to provide improved mechanism for continuous ribbon-like work sheets, such as those commonly termed tally strips.

To the above and other ends, the invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

I have shown my invention as applied to a Smith Premier typewriter, although it is to be understood that said invention may be adapted in whole or in part to other forms of writing machines.

In carrying out the invention in the present instance, two rotary work sheet holders or tally strip carriers are employed, the delivery holder or carrier being mounted on a supporting frame secured to the paper carriage truck and the receiving holder or carrier being mounted on a support secured to the front bar of the platen frame or carrier. The tally strip passes around and under the platen outside of the work or bill sheet and preferably the inner face of it is coated with carbon or other transfer medium enabling a separate transfer or carbon strip to be dispensed with. In the present case the transfer medium is of two different colors, preferably black and red which are disposed in stripes longitudinal of the tally strip. Provision is made for adjusting the holders or carriers lengthwise of the platen so as to bring the fields or stripes of the tally strip in register with the total and credit columns on the bill sheet wherever such columns may be located widthwise of said bill sheet, and so that by operating the usual printing instrumentalities the item on the tally strip and the corresponding item in the total or credit column of the bill sheet may be simultaneously written. Furthermore, as the Smith Premier machine employs a rocker platen (that is a platen which may be rocked on its support) means are

provided for taking up the slack of the tally strip during the return of the platen to normal position after it has been so rocked and also for keeping the tally strip in a taut condition between the carriers or holders. As is well understood it is desirable to line space the tally strip or move it in the direction of its length a single line space distance only for each bill sheet, so that the amounts on the tally strip may appear condensed or close together. Furthermore, in styles of billing work in which it is desirable to employ a tally strip it is also highly desirable to square or aline each bill sheet as it is introduced into the machine. I have, therefore, in the present instance provided means for connecting the handle or arm which operates the alining or leading edge stop device for the bill sheet with the means for line spacing the tally strip, so that the latter is automatically line spaced each time the leading edge stop is positioned to cooperate with a bill sheet on the introduction of the latter into the machine. The line spacing mechanism for the tally strip comprises in the present instance a ratchet wheel fixedly related to the receiving tally strip carrier and a pawl carrying arm pivotally connected with the finger piece or operating arm for actuating the leading edge stop device and also for releasing the main paper feed roller.

Having thus briefly outlined the main features of my invention I will proceed to describe it more in detail in connection with the accompanying drawings, wherein—

Figure 1 is a front elevation of the platen and carriage of a Smith Premier typewriter having my invention applied thereto, said figure showing the parts in normal or writing position, the front portion of the carriage frame or truck being broken away for the sake of clearness. Fig. 2 is a left-hand end view, partly in section, of Fig. 1. Fig. 3 is a left-hand end view, partly in section, and showing the platen rocked forward to expose the writing. Fig. 4 is a fragmentary longitudinal sectional view of the delivery tally strip carrier or holder and its support. Fig. 5 is a sectional view taken on a plane represented by the line $y-y$ in Fig. 4 and seen in the direction of the arrows at said line. Fig. 6 is a fragmentary rear view showing parts of the paper feeding mechanism of the machine.

In the drawings, 1 designates the carriage truck or frame which runs on anti-friction balls 1^a, the latter being seated on grooved rear and front track-ways or guide rails numbered respectively 2 and 3, said guide rails being secured to the top plate (not shown). A platen 4 is mounted in a platen frame or carrier, consisting of a front rod or bar 5, a rear bar 6 and left-hand and right-hand end or side plates or bars numbered respectively 7 and 8. A platen shaft or axle 9 passes through the end plates of the platen frame and at its end portion bears on the carriage truck or frame 1, the ends of said axle being provided with the usual finger wheels 69. The platen carrier is normally held in the position illustrated in Fig. 2 by spring pressed hook-like arms 10 and 11 which engage pins or studs 12 and 13 projecting laterally from the end plates 7 and 8. The platen frame and the carriage truck together constitute a platen carriage which is adapted to be fed step by step for letter spacing in the usual way. The rear bar 6 of the platen carrier has fixed to it brackets or standards 14 to which is secured a paper table 13. Links 15 are mounted on and depend from the rear bar 6, said links at their lower ends being connected to a shaft or spindle 64 having bearings in the links. Short arms 67 fixed to a shaft or rod 66 extend downwardly from said shaft outside of the links 15, as shown in Fig. 6, these arms being connected at their lower ends with the shaft 64. The arms 67 are provided with eyes which receive the rod 66, pins 66^a securing said rod and arms 67 in fixed relation. The rod 66 carries a main feed roller 17 which is normally maintained in contact with the platen 4 or the paper thereon by springs 18 which are secured to the standards 14 at their upper ends and press against the rod 66 at their lower end portions.

A stop device or gage for the leading edge of the paper is provided, said stop device consisting of a lip or shelf 20 turned outwardly at the rear from a paper plate 20^a, which paper plate is pivotally mounted on the shaft 64 and is normally pressed at its forward edge portion against the platen or the paper thereon by the usual paper fingers 21, as shown in Fig. 2. From an inspection of this figure it will be apparent that the leading edge stop 20 is normally separated from the platen and is hence then in an inoperative position. An operating arm, finger piece or releasing member 19 is fixed to the left end portion of the rod 66 by a pin 19^a. The construction is such that when the finger piece or arm 19 is pulled forward from normal position by the operator the feed roller 17 is moved backward and the forward portion of the paper plate 20^a together with the paper fingers 21 is moved

away from the platen. The leading edge stop 20, however, remains inoperative during this movement of the paper plate 20^a. When, however, the finger piece or operating arm 19 is pushed in the opposite direction or rearward from the normal position, it first operates to swing the leading edge stop 20 into operative position against the platen and next operates to release the feed roller 17 or move it away from the platen.

The paper controlling devices comprising leading edge stop and feed roller devices above described form the subject-matter of the patent to A. J. Briggs No. 813,345, dated February 20, 1906 and it is not therefore considered necessary to describe herein the mechanism or explain its manner of operation in greater detail. In practice it is common when the writing is finished to release the written work sheet by pulling the arm 19 forward, thus enabling said written work sheet or bill sheet to be readily withdrawn from the machine. Thereafter the arm 19 is pushed rearward bringing the leading edge stop 20 into operative position and releasing the feed roller 17, this concurrent operation of the stop and feed roller enabling a new work sheet or bill sheet to be readily inserted over the paper table 16 and aligned against the leading edge stop 20.

The usual line spacing handle 28 controls a slidable line spacing pawl 29, the latter being adapted to cooperate with the crown teeth of a line spacing ratchet wheel 30 (Fig. 1) to enable line spacing movements to be communicated to the platen, with the right-hand end of which the ratchet wheel 30 is operatively connected.

Referring now to the novel tally strip devices, these include a delivery holder or carrier for a supplementary work sheet or tally strip, said holder being arranged at the rear of and above the platen and mounted on a support comprising left-hand and right-hand uprights or standards numbered respectively 24 and 52, which may be secured at the back of the carriage truck or frame in any suitable manner. For example, the uprights 24 and 52 may be fixed at their lower ends to the tabulating rack bar 70 with which the machine is commonly supplied, said bar 70 being attached to brackets 71 secured to the carriage truck. Bearing blocks 47 and 48 are screwed to the upper ends of the uprights 24 and 52 respectively, said bearing blocks supporting a shaft 34. The shaft 34 may rotate within the bearing blocks but is restrained from turning freely by the friction of a coiled spring 49 surrounding the right-hand end portion of the shaft and confined between the bearing block 48 and a collar 50 secured to the shaft 34 by a set screw 50^a (Fig. 4). By moving and setting the collar 50 nearer to the bearing 48 the spring 49 may be compressed to

increase the resistance offered by the shaft 34 to rotary movement; and, of course, by setting the collar 50 farther from the bearing block 48 the resistance of the shaft 34 to rotary movement will be lessened. A finger button 51 is secured to the end of the shaft 34 outside the right-hand bearing block 48. By pulling rightward on this button the spring 49 may be compressed and the shaft 34 moved longitudinally rightward so as to withdraw its left-hand end portion from the bearing block 47. The construction is such that after being thus withdrawn from the left-hand bearing block the shaft 34 may be swung horizontally rearward, the bearing block 43 turning on the upright 52 to permit of such swinging movement. When thus swung to the rear a continuous work sheet or tally strip wound in a roll may be readily arranged on or removed from the shaft 34 which is adapted to carry it.

The delivery holder or carrier comprises a tubular part or hub 23 having bushings 32 and 33 suitably secured in its ends as by screws 44^a and 72 respectively, said bushings being formed with openings through which shaft 34 passes, the tubular hub 23 surrounding the shaft and being adapted, through the bushings, to turn thereon (Fig. 4). The holder or carrier is constructed to be rotated to a limited extent on the shaft 34 and a spring means is provided for automatically retracting the carrier after such limited rotary movement, said movement and automatic retraction being for the purpose of permitting the platen to be rocked forward and backward for inspecting the writing without interfering with the proper operation of said devices. The construction by which the results just referred to are obtained will now be described.

A collar 35 surrounds the shaft 34 and passes through the bushing 33, said bushing bearing on said collar. At its inner end which lies within the tube 23, said collar 35 is provided with a flange 35^a. The left-hand end portion of the collar 35 extends outside the bushing 33 and is surrounded by a second collar 38 which provides a support for a set screw 39, the latter passing through both the collars 35 and 38 and abutting against the shaft 34 thereby securing the two collars in a fixed relation with said shaft. This relation, it will be apparent, may be varied both circumferentially and longitudinally of the shaft. A sleeve 36 is arranged between the flange 35^a and the bushing 33, said sleeve having a bearing on the collar 35 and being adapted to turn freely thereon. The sleeve 36 is provided with a lug or projection 37 which is adapted to operatively engage with a stud or pin 40 projecting laterally inward from the bushing 33 and also with a stud or pin 41 projecting laterally from the flange 35^a and oppositely from the

pin or stud 40. The pins or studs 40 and 41 are of such length that they may freely pass the one by the other when the parts which carry them are relatively rotated. A wire spring 42 is coiled around the shaft 34 within the tube 23 and has one of its ends secured to the bushing 32 and its other end secured to the flange 35^a. The tension of the spring may be adjusted by loosening the set screw 72 and turning the hub 23 relatively to the bushing 33. This spring tension should be such that when wound up as much as it may be in the operation of the machine it will exert a force slightly less than that necessary to overcome the spring 49.

The operation of the parts described immediately above will presently be explained more at length.

The tubular hub 23 is provided with a right-hand flange 43 having oppositely disposed and inwardly projecting tongues 44 (Figs. 4 and 5). The flange 43 is fixedly secured to the hub 23 in any suitable manner as by screws 44^a passing through the tongues 44 into the tube 23 and bushing 32. The hub 23 also receives a left-hand flange 45 having a hub portion 45^a which frictionally engages the surface of the hub 23. The flange 45 may be adjusted at various distances from the flange 43 to accommodate tally strips of varying width. The continuous ribbon-like work sheet shown in the present instance is numbered 31 and will hereafter be referred to as a tally strip. Preferably the inner face of the tally strip is coated with a suitable transfer medium. In the present instance this medium is applied in two colors dividing the inner surface of the tally strip into two longitudinally extending bands or color fields *a* and *b* which preferably are respectively black and red. The tally strip is wound or rolled on a core piece or sleeve 46; the latter being adapted to be slid on and off the tubular hub 23 of the delivery carrier. At its right-hand end the core piece 46 is provided with oppositely disposed notches 46^a with which the tongues 44 are adapted to engage. The construction is such that the core piece 46 carrying the tally strip 31 is forced to turn with the delivery carrier when the latter is turned.

The free end of the tally strip 31 is drawn downwardly from the back of the delivery carrier and around the under side of the platen, passing outside of and over the feed roller 17 and the paper plate 20^a, thence passing over the under and front sides of a guide rod 68 and upwardly over the front and top of the receiving carrier presently to be described. The guide rod 68 extends from side to side of the platen in front of and about on a line with the bottom of the latter and is secured at its ends to standards or brackets 26 and 27 fixed to the front bar

or rod 5 of the platen carrier near the ends thereof (Figs. 1 and 2). It will be seen that the standards 26 and 27 are substantially upright and extend partly below the frame bar 5 and partly above the latter and that the guide rod 68 is secured at the lower ends of the standards 26 and 27. Near their upper ends said standards are perforated to provide bearing openings for a shaft 53 on which the forward or receiving tally strip carrier or holder is mounted. This receiving carrier comprises a hollow tubular body 25 provided with end plugs or bushings 25^a through which the shaft 53 passes. A set screw 54 engages a threaded opening in the right-hand bushing 25^a and secures the receiving carrier in a fixed relation with the shaft 53. By loosening the screw 54 the receiving carrier may be adjusted lengthwise of its shaft. The body 25 of the receiving carrier is provided with slots 65 (Figs. 1 and 3) through which the free end of the tally strip 31 is adapted to be threaded and by which said tally strip is frictionally held in engagement with the carrier.

Referring to the operation of the tally strip spring 42 and its associate parts, it will be apparent that the spring 42, being fixed at its left-hand end to the flange 35^a, tends constantly to turn the delivery carrier in the direction of the arrow in Fig. 2, thereby, of course, tending to wind the tally strip 31 on the delivery carrier. When the outer end of the tally strip is free or loose, the delivery carrier is checked or prevented from turning beyond a certain point by reason of the fact that the stud or engaging member 40 on the carrier engaging the lug or engaging member 37 on the sleeve 36 forces said sleeve to turn with the carrier until the opposite side of the lug 37 is arrested by the stud or engaging member 41. The stud 41 is fixed to the sleeve 35 which is fast on the shaft 34, said shaft being frictionally held by the spring 49 and the spring 42 not being strong enough to overcome the friction of said spring 49. When the free end of the tally strip is drawn downward toward the platen the delivery carrier is turned in the direction of the arrow in Fig. 4, thereby winding up the spring 42 and turning the stud 40 away from the lug 37, said lug and its sleeve, of course, remaining quiescent. When the carrier is turned through almost a complete revolution the stud 40 will contact with the opposite side of the lug 37 and as the carrier continues to turn, said stud 40 will, through the lug 37, turn the sleeve 36 on the collar 35 moving the lug 37 away from the stud 41 on said collar. When a second revolution of the carrier has been nearly completed the lug 37 will engage with the opposite side of the stud 41 and thereafter as the carrier continues to turn, will force said lug, with the collar 35 and

the shaft 34, to turn with it, overcoming the friction of the spring 49 and forcing the delivery carrier and the shaft 34 on which it is mounted to turn together as a unit. The relations of the connecting members 40, 37 and 41 during this last described stage are illustrated in Fig. 2.

It will be seen that the construction is such that substantially two revolutions of the delivery carrier may take place independently of the shaft 34 and that after these two revolutions the shaft is taken up and forced to turn with the carrier, the connecting member or lug 37 serving to provide in effect a lost motion connection between the shaft 34 and the delivery carrier. It will also be apparent that before enough of the tally strip has been drawn from the delivery carrier to enable said tally strip to be fastened to the receiving carrier the delivery carrier will have been turned through more than two revolutions and consequently the shaft 34 will be forced to turn with the delivery carrier. It will further be seen that when the tally strip is attached to the receiving carrier the spring 42 will be under such tension that if the tally strip were released or freed said spring would turn the delivery carrier through substantially two revolutions and would thereby rewind a corresponding amount of the tally strip on the delivery roll. It may be well at this stage to point out the advantages of this construction with a machine of the rocker platen style like the Smith Premier typewriter. When the platen is rocked forward from the position shown in Fig. 2 to that shown in Fig. 3 the delivery carrier and the shaft 34 will be turned together through something less than two revolutions, the devices 40, 37 and 41 being rotated to the position shown in full lines in Fig. 2. When the writing has been inspected or an erasure made or whatever the desired purpose was has been accomplished and the platen is rocked back to normal position, the spring 42 will automatically take up the slack in the tally strip, rewinding it on the delivery carrier which will be turned on the shaft 34 in the direction of the arrow in Fig. 2, said shaft itself, during this operation, remaining motionless. The position of the connecting member or contact device 40 after the platen has been rocked forward and returned to writing position is indicated in Fig. 3 by dotted lines. Of course, during subsequent line spacing movements of the tally strip the delivery carrier will turn independently of the shaft 34 until the engaging members 40, 37 and 41 again are brought into the relations shown in full lines in Fig. 3 after which the shaft 34 will be forced to turn with the carrier. Without the spring 42 and the cooperating parts or the equivalent of said

spring and parts it will be clear that a tally strip of the character described could not be used advantageously with a rocker platen for the reason that each time the platen was rocked forward a considerable length of the tally strip would be drawn off the carrier and when the platen was rocked back to normal position the slack would not be taken up. The construction is such that when the platen is rocked forward at any time, slack in the tally strip will be taken up by the action of the spring 42 when the platen is restored to its normal position.

As has been stated it is desirable in order to condense the items on the tally strip, that said tally strip should be line spaced once only for each bill sheet which is written. In the present instance in order to accomplish this result I provide supplementary line spacing devices for the tally strip which are operative automatically, when the arm 19 is pressed or pushed rearward to move the leading edge stop 20 to operative position and the feed roller 17 away from the platen. The supplementary line spacing devices comprise a toothed wheel 56 which is suitably secured to the shaft 53 and is arranged in a slot or recess 60 formed in the upper portion of the standard 26. A ball detent 57 is supported on a coiled spring 58 arranged in a depression 58^a drilled or otherwise formed at the bottom of the recess 60 in the standard 26 (Fig. 2). Said ball detent coöperates with the toothed wheel 56 to maintain the shaft 53 and the forward receiving carrier carried by said shaft in desired line space position. The parts are so proportioned that the space between two adjoining teeth of the wheel 56 gives the desired line space distance between the items on the tally strip. The central line of the depression 58^a is slightly to the rear of the axis of the shaft 53 so that the ball 57 coöperates with the teeth of the wheel 56 in such a way that said wheel is more easily turned forward than backward, although a sufficient force exerted on the shaft 53 or pull on the tally strip will enable the receiving carrier to be turned backward for any purpose without the necessity of releasing the ball detent manually. The right-hand end portion of the shaft 53 has fixed to it outside the standard 27 a finger button 55 by which the shaft and the receiving carrier may be conveniently turned by hand. A pawl-carrying arm 59 is pivotally connected at 63 with the arm 19, said arm 59 extending upward and forward, as shown in Fig. 2, and being off-set inward, as shown in Fig. 1, so that its upper end portion may enter the recess 60, the latter serving as a guide for the arm which may move fore and aft of the machine in the recess. The forward end portion of the arm 59 terminates in a hook or pawl 61 which

coöperates with the teeth of the wheel 56 and is held from accidental displacement by a coiled spring 62 which is carried by a cross pin 62^a which bridges the upper part of the recess 60. When the arm 19 is pulled forward to release the feed roller 17, the pawl 61 is moved away from the toothed wheel 56 so that no movement is communicated to the forward or receiving tally strip or carrier and hence the tally strip itself is not affected. When, however, the arm 19 is pushed rearwardly to operative position the leading edge stop 20 and move the feed roller 17 away from the platen, the pawl 61 coöperates with the toothed wheel 56 to turn the latter one tooth and so advance the tally strip a single line space distance.

Referring now to certain features in the manner of using and operating my improvements, when it is desired to arrange a tally strip roll in place the shaft 34 is withdrawn from its left-hand bearing 47 and swung rearward, after which the flange 45 is removed and the tally strip roll with its core piece 46 is slipped on the tubular hub 23 and adjusted in place with the notches 46^a engaging the tongues 44. Then the flange 45 is replaced and the shaft 34 swung forward and caused to reengage in the bearing block 47. The free end of the tally strip is then led around the platen and connected with the receiving carrier thus increasing the tension of the spring 42 as has been described so that the tally strip is maintained in a taut condition. Assuming that bill sheets of the character best shown in Fig. 1 of the drawings and designated by the reference numeral 22 are to be employed, the operator next introduces one of said bill sheets into the machine making use preferably of a side guide (not shown) of any desired character for properly positioning the bill sheet lengthwise of the platen. An inspection of the bill sheet 22 shows it to be provided with "date", "item", "amount", "total" and "credit" columns. The delivery and receiving carriers are adjusted lengthwise of their respective shafts 34 and 53 so that the black field *a* of the tally strip 31 overlies or is superposed on the "total" column of the bill sheet and the red field *b* overlies the "credit" column of the bill sheet. In adjusting the rear or delivery carrier lengthwise of its shaft 34 it is only necessary to loosen the set screw 39 and move the carrier along to the desired position after which the set screw may be tightened. When it is tightened, the collars 35 and 38 are thereby fixed to the shaft 34 and motion of the delivery carrier leftward along its shaft is prevented by the bushing 33 which is adapted to abut against the collar 38, while motion of said carrier rightward is prevented by the flange 35^a against which the sleeve 36 is adapted to abut at its right side, said

sleeve at its left side being engaged by the right side or face of the bushing 33.

Returning now to the bill sheet 22, from an inspection of Fig. 2 it will be understood that said bill sheet when properly fed into the machine contacts with the platen, passing between said platen and the feed roller 17, paper plate 20^a and leading edge stop 20, while the tally strip passes outside of the feed roller, paper plate and stop and is separated from the platen at the printing line by the bill sheet 22. Assuming that a bill sheet has been properly introduced and written and that it is desired to withdraw it and introduce a new bill sheet, the operator pulls forward the finger piece or arm 19, thereby releasing the written bill sheet from the control of the paper feeding and controlling devices including the paper feed roller 17, paper plate 20^a and paper fingers 21. The written bill sheet may then readily be withdrawn after which the operator presses the arm 19 rearward. This operation positions the stop 20 against the platen and moves the feed roller 17 away from the platen, at the same time automatically advancing the tally strip so that the "total" or "credit" item next printed upon it will be a line space distance below the item last printed on it. With the finger piece or arm 19 maintained in its rearmost position a new bill sheet may be introduced and alined against the stop 20, after which the arm 19 may be released, permitting the parts to return to normal position and causing the feed roller 17 to engage with the bill sheet. By operating the line spacing handle 28 or a platen finger wheel 69 the platen may be turned in line spacing direction until the bill sheet is in position for receiving the first item or line of writing. This turning of the platen and advance of the bill sheet occurs without affecting the tally strip 31. The first and subsequent lines or items on the bill sheet may now be printed by operating the usual printing instrumentalities (not shown) causing the types to make their impressions on the bill sheet through the usual inking ribbon (not shown). The final item to be written on the bill is the daily total or the credit as the case may be, and this final item is printed through the ribbon on the outer or plain surface of the tally strip 31 while simultaneously the transfer medium on the inner surface of said tally strip off-sets on the bill sheet thereby reproducing the total or credit item in the proper column on said bill sheet. Next the arm 19 may be pulled forward releasing the bill sheet so that it may be withdrawn from the machine, after which the arm 19 may be pushed rearward, again operatively positioning the stop 20 and automatically line spacing the tally strip. When, in the course of printing the bill it is desired to inspect the writing, make an erasure

or the like, the platen may be rocked forward in the usual way and when it is returned to normal position the spring 42 will take up the slack in the tally strip as has been described.

At the end of the day's work the used portion of the tally strip, which has for the most part been wound upon the receiving carrier, may be separated from the unused portion and removed from the machine, to be then taken to the bookkeeping department where it is made use of to check or prove the billing work. It is not deemed necessary to take up in detail this phase of billing systems in which a tally strip of the character described may be employed. The free end of the unused portion of the tally strip is, of course, threaded through the slots 65, thereby reconnecting the tally strip with the receiving carrier, and the parts are then so arranged that work may be resumed when desired.

While I have described one mode of making use of my improvements it will, of course, be understood that said improvements may be used in other ways than that described and that parts of my invention may be employed without other parts.

Various changes may be made without departing from the spirit and scope of my invention.

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

1. In a typewriting machine, the combination with a platen, paper controlling devices including a paper feed roller normally in operative position, a paper stop device normally in inoperative position, and means for moving said paper feed roller to inoperative position independently of said stop device and for moving said stop device to operative position and concurrently moving said feed roller to inoperative position, of means operating automatically to line space a work sheet when said first recited means is actuated to move the paper stop to operative position and the feed roller to inoperative position, the automatic means remaining inoperative when said first recited means is actuated for the purpose only of moving the feed roller to inoperative position.

2. In a typewriting machine, the combination with a platen, paper controlling devices including a paper feed roller normally in operative position, a paper stop device normally in inoperative position, and means for moving said paper feed roller to inoperative position independently of said stop device and for moving said stop device to operative position and concurrently moving said feed roller to inoperative position, of a rotary work sheet holder, and means operative to turn said holder automatically to advance the work sheet carried by it when said first recited means is actuated to move

the paper stop to operative position and the feed roller to inoperative position, said holder remaining at rest when said first recited means is actuated for the purpose only of moving the feed roller to inoperative position.

3. In a typewriting machine, the combination with a platen, paper controlling devices including a paper feed roller normally in operative position, a paper stop device normally in inoperative position, and means for moving said paper feed roller to inoperative position independently of said stop device and for moving said stop device to operative position and concurrently moving said feed roller to inoperative position, of a rotary work sheet holder, and a pawl and ratchet line spacing mechanism operative automatically to turn said holder and advance the work sheet carried by it when said first recited means is actuated to move the paper stop to operative position and the feed roller to inoperative position, said holder and work sheet remaining motionless when said first recited means is actuated for the purpose only of moving the feed roller to inoperative position.

4. In a typewriting machine, the combination with a platen, paper controlling devices including a normally inoperative paper stop, and a paper releasing finger piece or arm operative at will either to release the paper without operating said paper stop or to operate said paper stop, of means operating automatically to line space a work sheet only when said finger piece is actuated to operate said paper stop.

5. In a typewriting machine, the combination with a platen, paper controlling devices including a paper feed roller normally in operative position, and a paper stop device normally in inoperative position, and means for operating said feed roller and said stop, said means including a finger piece operative in one direction to only release the feed roller and in the opposite direction both to operate said stop and also to release the feed roller, of means operating automatically to line space a work sheet when said finger piece is moved to operative position said stop and release said feed roller.

6. In a typewriting machine, the combination with a platen and paper controlling devices including a main feed roller extending longitudinally of the platen, and a paper stop device, of tally strip devices comprising means for supporting the tally strip on the outer side of the main feed roller and paper stop, said feed roller and paper stop lying between the tally strip and the main work sheet or bill sheet, said bill sheet being adapted to contact with the platen.

7. In a typewriting machine, the combination of a carriage comprising a truck and a

rocker frame, a platen on said carriage, tally strip devices comprising a pair of supports on said truck, a shaft rotatable on said supports, a pair of supports on said rocker frame, a second shaft rotatable on said last named supports, a pair of tally strip carriers adjustable one on each of said shafts so that said carriers may be moved along said shaft lengthwise of said platen, and means connected to each carrier at one of its ends only for securing said carrier in adjusted positions.

8. In a typewriting machine, the combination with a platen carriage comprising a truck and a rocker frame and a platen mounted on said rocker frame, of a pair of work sheet carriers, and supports for said carriers, one of said supports being on said truck and the other on said rocker frame, each support comprising a shaft and two standards on which said shaft is rotatable, said standards being supported on said platen carriage.

9. In a typewriting machine, the combination with a platen carriage and a platen mounted thereon, of a pair of supports mounted on said carriage, a shaft rotatable on said supports, a work sheet holder mounted on and rotatable with said shaft, and line spacing devices for said work sheet holder, said devices including a toothed wheel fixed to said shaft and arranged in a recess in one of said supports, a detent for said wheel in said recess, a pawl guided in said recess and cooperative with said wheel, and means for actuating said pawl.

10. In an understrike typewriting machine, the combination with a platen carriage and a platen mounted thereon, of a pair of tally strip holders one mounted on the carriage at the rear of the platen and the other mounted on a shaft supported on standards arranged at the front of the platen and secured to the platen carriage, said shaft being carried at the upper end portions of said standards, and a guide rod carried at the lower end portions of said standards, the tally strip being guided partly around said rod in passing from one tally strip holder under the platen to the other.

11. In a typewriting machine, the combination with a platen, of a rotary work sheet carrier, a rotary shaft on which said carrier is mounted, and means enabling the carrier to be turned in operation relatively to the shaft or together with the shaft, said means comprising a rotary sleeve having a projecting lug cooperative with two engaging studs or members one fixed relatively to the shaft and the other fixed relatively to the carrier.

12. In a typewriting machine, the combination with a platen, of a rotary work sheet carrier, a rotary shaft on which said carrier is mounted, means enabling the carrier to

be turned in operation relatively to the shaft or together with the shaft, a spring between said shaft and said carrier, and means for applying friction to said shaft.

5 13. In a typewriting machine, the combination with a platen, of a rotary work sheet carrier, a rotary shaft on which said carrier is mounted, means enabling the carrier to be turned in operation relatively to the shaft
10 or together with the shaft, a spring between said shaft and said carrier, and adjustable means for applying friction to said shaft, said means comprising a spring surrounding said shaft.

15 14. In a typewriting machine, the combination with a platen, of a rotary work sheet carrier comprising a tubular hub or body portion, a rotary shaft on which said carrier is mounted, said shaft passing through said
20 hub, a spring coiled on said shaft within said hub, said spring being secured at one end to said carrier and at its opposite end to said shaft, said shaft being frictionally mounted, and a lost motion connection between said carrier and its shaft, said connection comprising a sleeve rotatable freely
25 on said shaft and having an engaging part adapted to cooperate with engaging members fixed to said carrier and said shaft.

30 15. In a typewriting machine, the combination with a platen, of a rotary work sheet carrier comprising a tubular hub or body portion, a rotary shaft on which said carrier is mounted, said shaft passing through
35 said hub, a spring coiled on said shaft within said hub, said spring being secured at one end to said carrier and at its opposite end to a flanged collar fixed to said shaft, and

a lost motion connection comprising a stud projecting from the flange of said collar, 40 a stud projecting oppositely from one end of said hub, and a sleeve rotatable on said shaft and having a projecting lug cooperative with said studs.

16. In a typewriting machine, the combination of a carriage truck, a rocking frame 45 mounted thereon, a platen mounted on said frame, a frictionally controlled shaft mounted on said carriage truck, a work sheet carrier rotatable on said shaft and having
50 a lost motion connection therewith, a spring between said carrier and said shaft, and a second work sheet carrier mounted on said rocking frame, the work sheet passing from one carrier to the other across the platen. 55

17. In a typewriting machine, the combination of a carriage truck, a rocking frame mounted thereon, a platen on said frame, a rotary work sheet carrier mounted on said carriage truck, a second work sheet carrier 60 mounted on said rocking frame, the work sheet passing across the platen from one of said carriers to the other, and a spring restoring means for the work sheet connected with one of said carriers and operating to
65 take up slack in the work sheet when the rocking frame having been rocked to abnormal position on the truck is afterward rocked back to normal position.

Signed at Syracuse, in the county of 70 Onondaga and State of New York, this 7th day of May A. D. 1907.

HANNIBAL C. FORD.

Witnesses:

CLARENCE BUFFINTON,
H. A. JOHNSTONE.