May 9, 1933. W. W. LANDSIEDEL 1,908,027

TALLY ROLL MECHANISM

Filed Jan. 14, 1930 4 Sheets-Sheet 1

Fig. 2

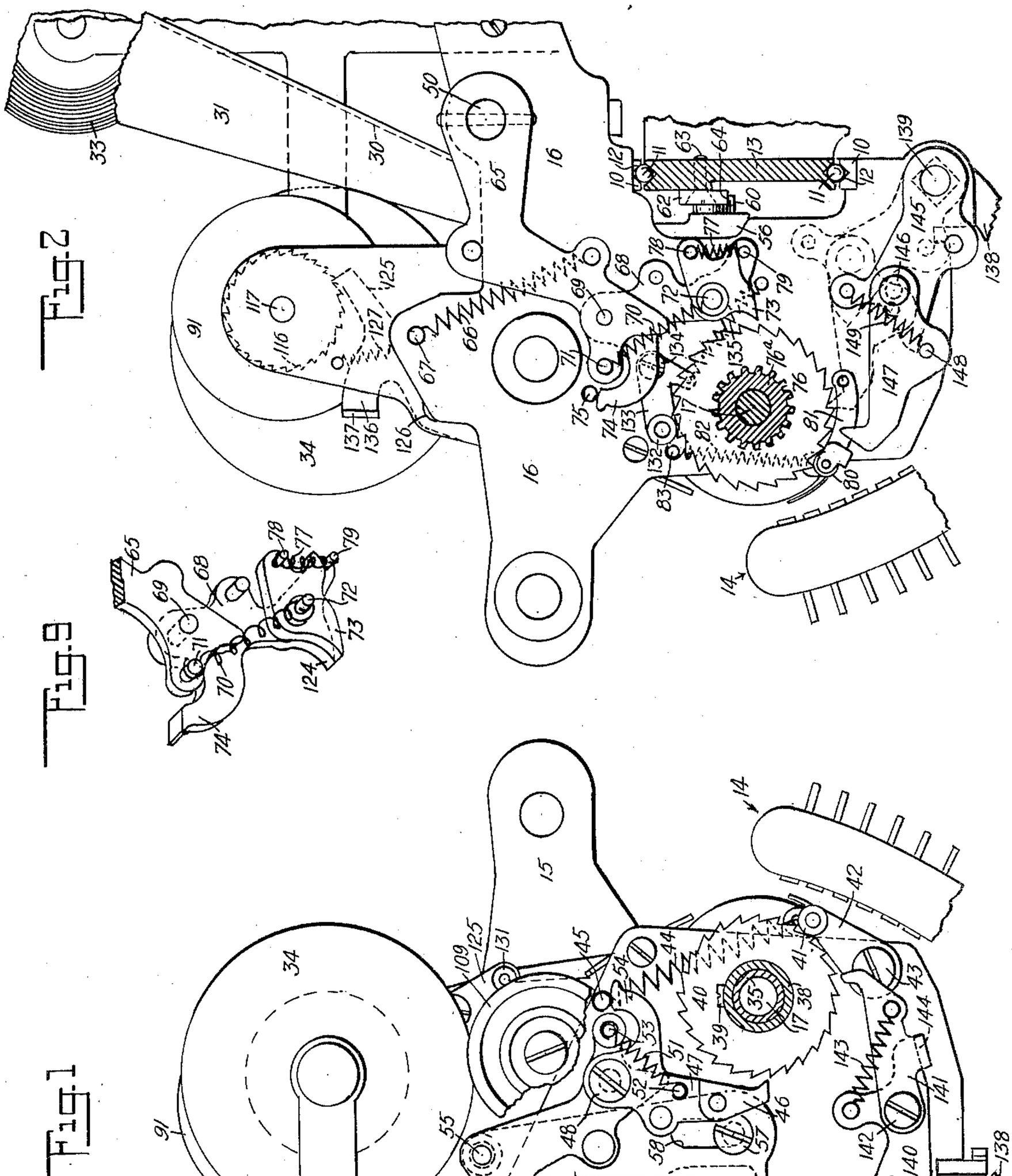
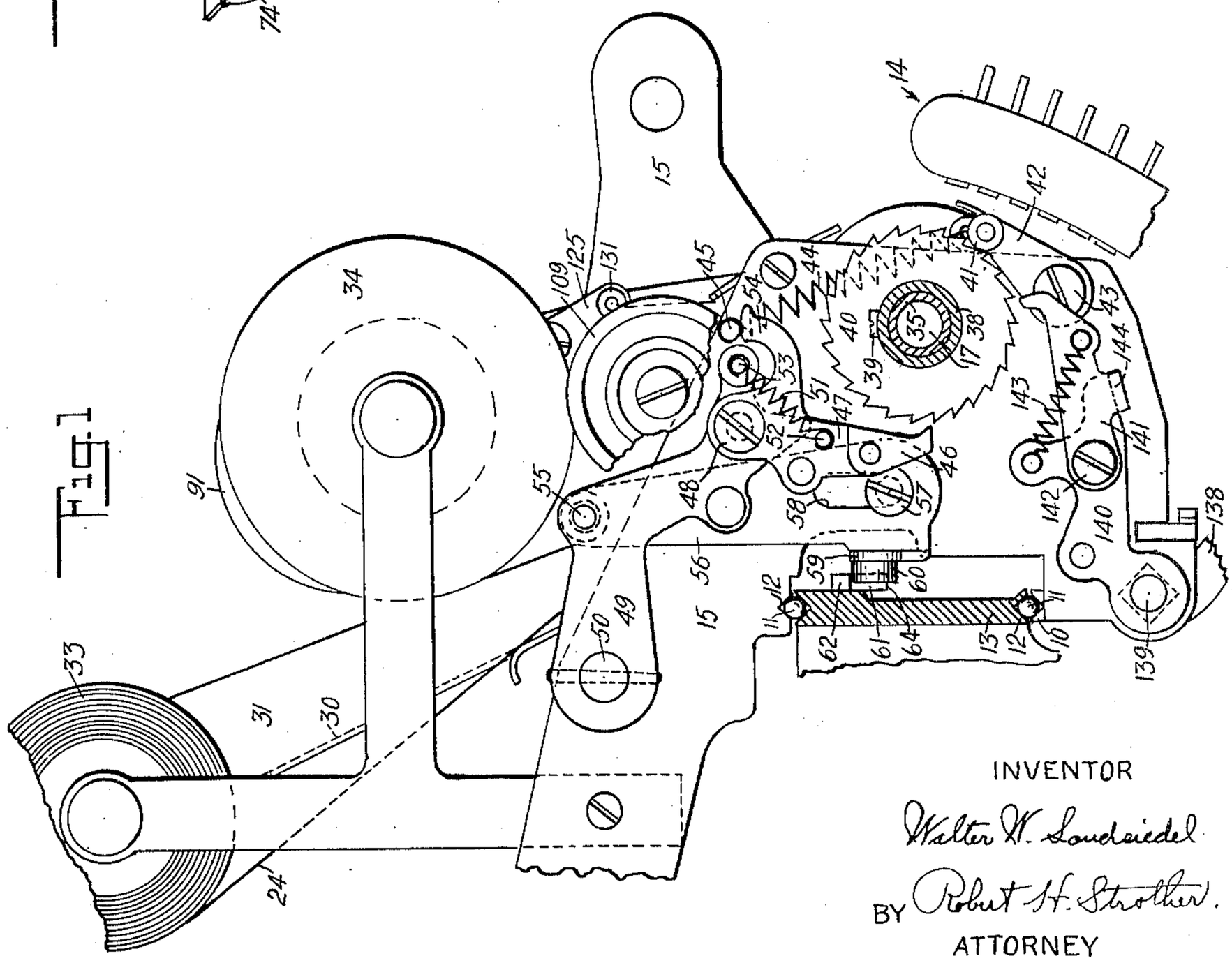


Fig. 3

Fig. 1



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TALLY ROLL MECHANISM

Filed Jan. 14, 1930 4 Sheets-Sheet 2

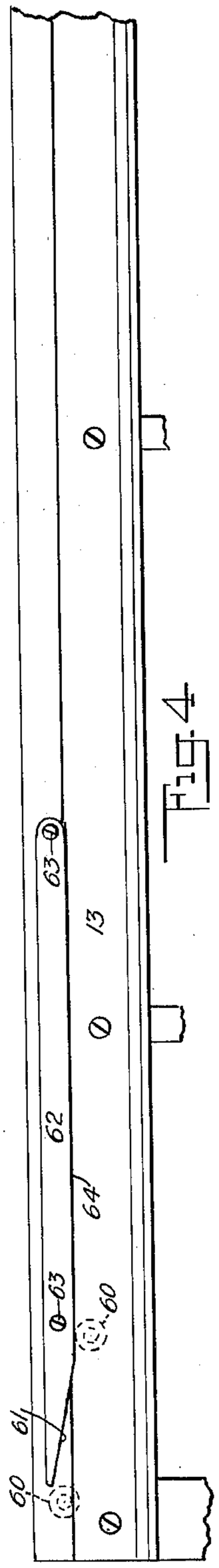

FIG. 4

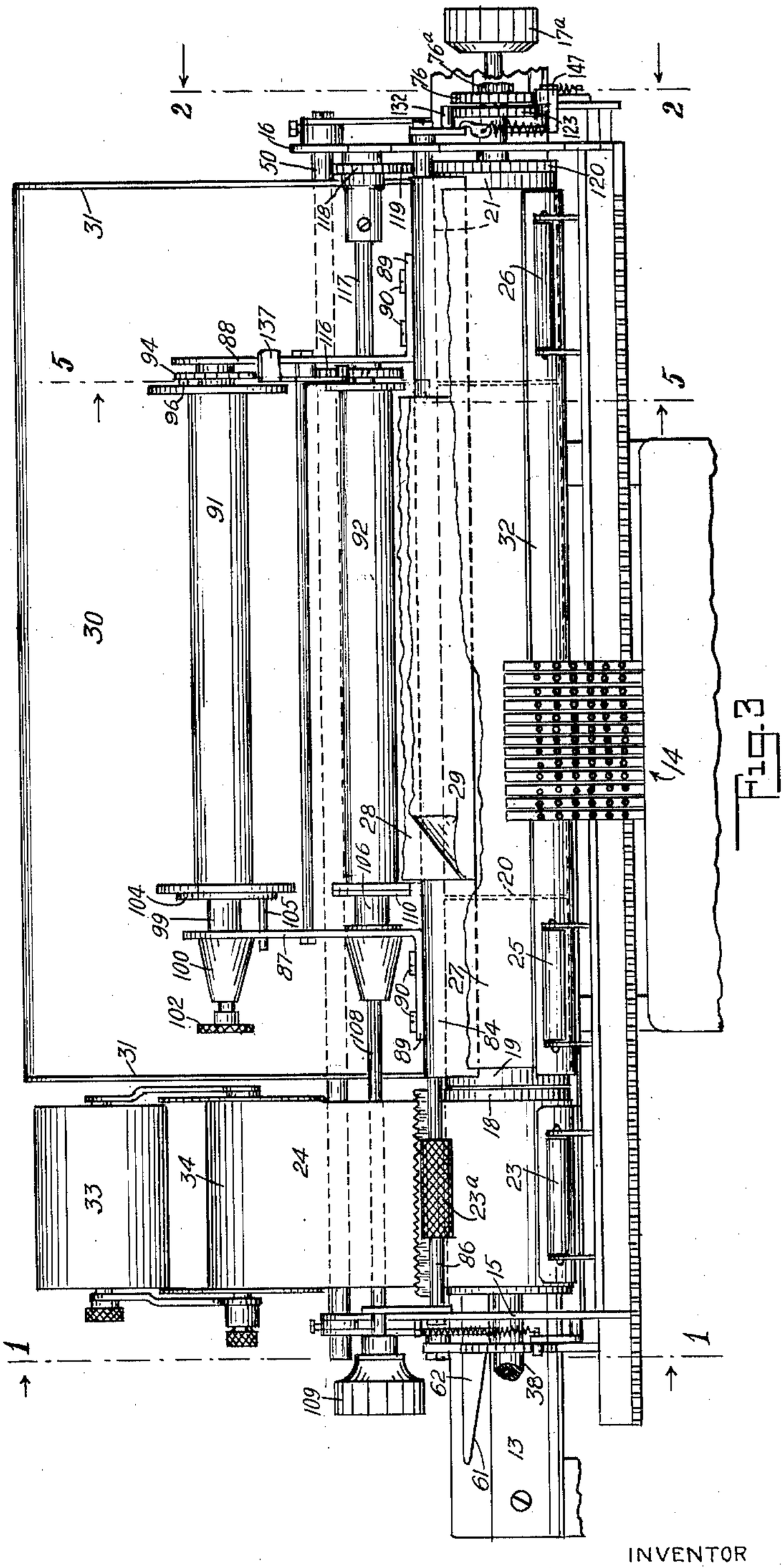

FIG. 3

WITNESSES

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TALLY ROLL MECHANISM

Filed Jan. 14, 1930 4 Sheets-Sheet 3

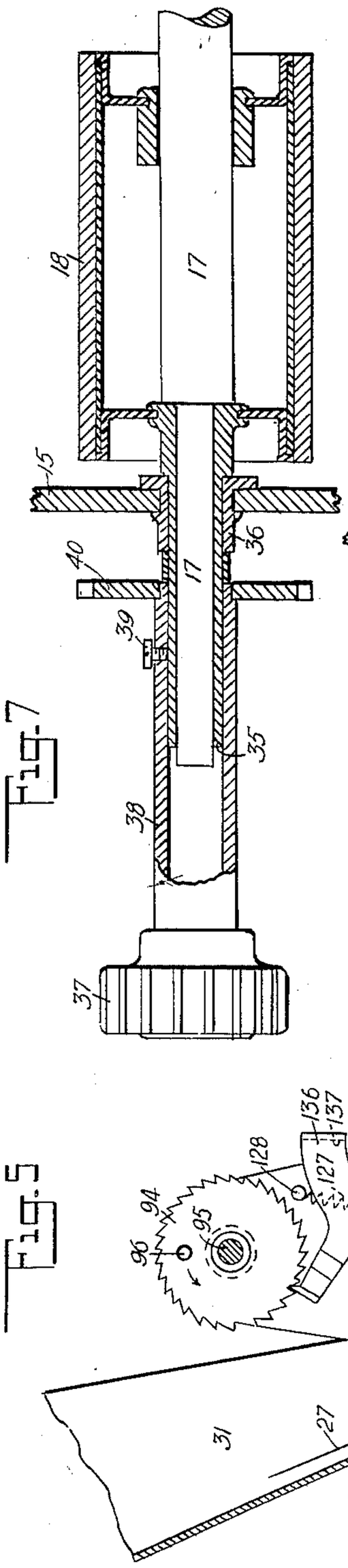

FIG. 7

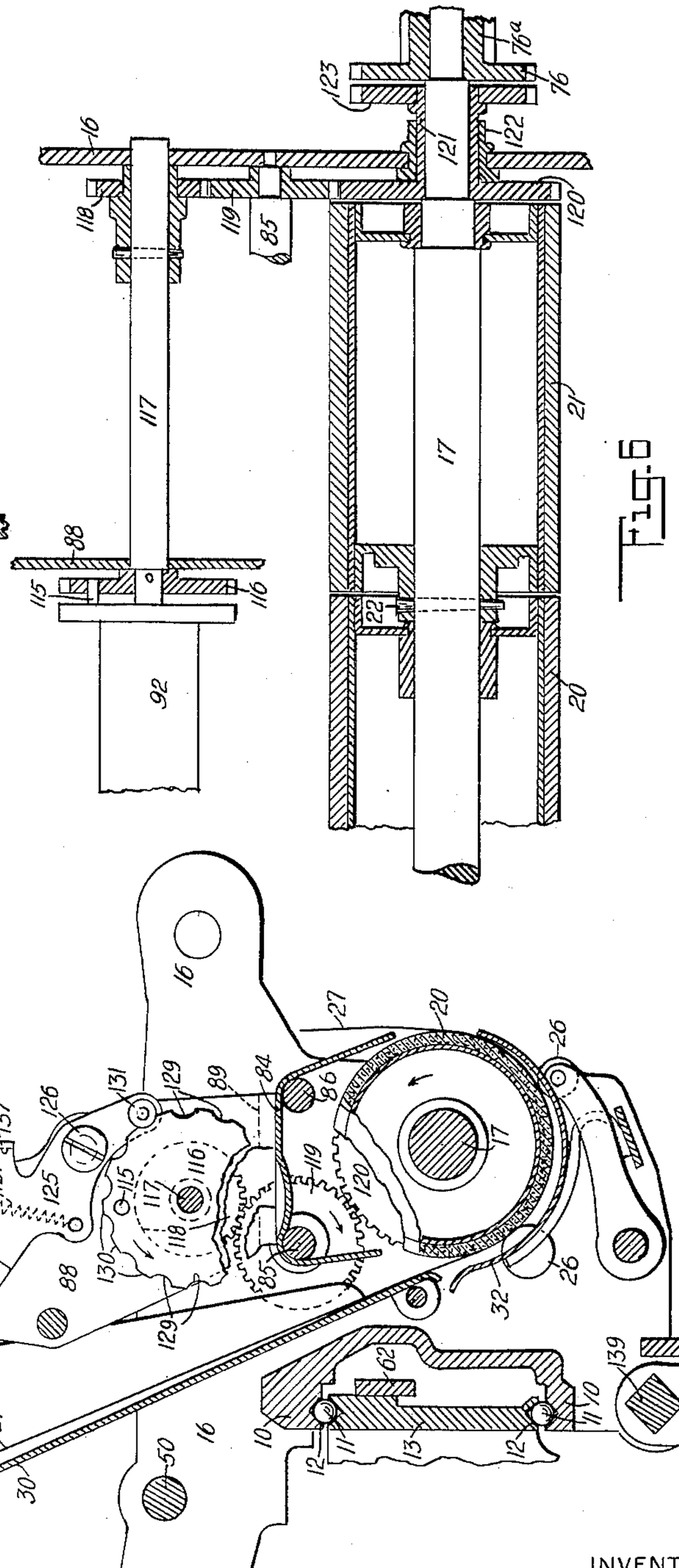

FIG. 6

FIG. 5

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TALLY ROLL MECHANISM

Filed Jan. 14, 1930

4 Sheets-Sheet 4

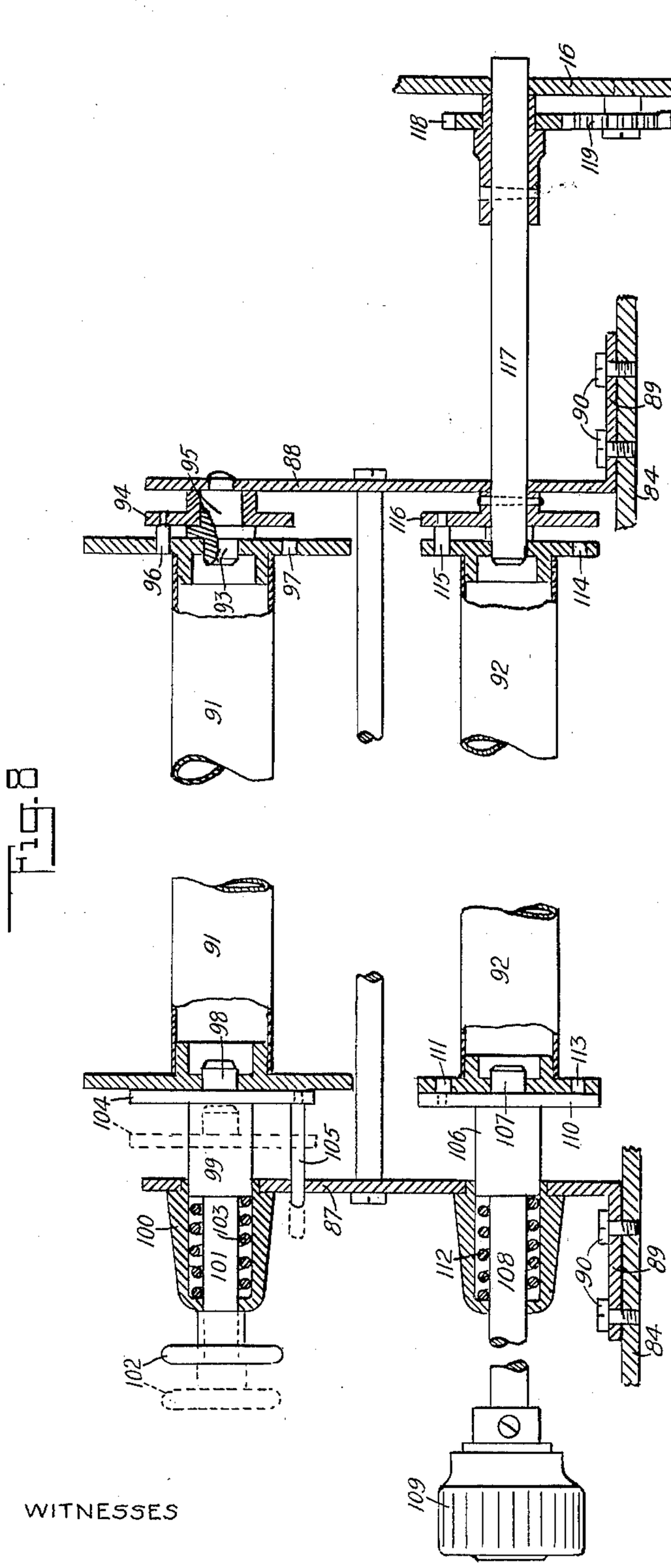

Fig. 5.

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Patented May 9, 1933 1,908,027

UNITED STATES PATENT OFFICE

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TALLY ROLL MECHANISM

Application filed January 14, 1930. Serial No. 420,710.

My invention relates to tally roll mechanism for computing, typewriting and like machines.

One of the main objects of my invention, generally stated, is to provide simple and efficient tally roll mechanism including means for controlling the line spacing and feed of a tally strip or strips.

A further object of my invention is to provide automatically operating means for normally locking one of the tally rolls against advance movement to prevent the tally strip on said roll from being accidentally advanced when a superposed work sheet is withdrawn by hand from the machine, and for automatically releasing said locking means when the means employed for feeding or advancing the tally strip are actuated.

A still further object of my invention is to provide improved means for controlling a plurality of tally strips, to line space said strips in unison or effect a feed of either of the strips independently of the other.

To the above and other ends which will hereinafter appear, my invention consists of the features of construction, arrangements of parts and combinations of devices set forth in the following description and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the different views,

Fig. 1 is a fragmentary, detail, vertical fore and aft sectional view of the carriage equipped with the devices of my invention, together with some of the associated parts, the section being taken on the line 1—1 of Fig. 3 and looking in the direction of the arrows at said line.

Fig. 2 is a like sectional view of the same taken on the line 2—2 of Fig. 3 and looking in the direction of the arrows at said line.

Fig. 3 is a fragmentary, detail, front elevation of the same.

Fig. 4 is a fragmentary, detail front view, showing a portion of the carriage supporting rail and the line spacing cam carried thereby.

Fig. 5 is a sectional view like Figs. 1 and 2 except that Fig. 5 is taken on the line 5—5 of Fig. 3 and is seen as viewed from the direction of the arrows at said line.

Fig. 6 is a vertical, transverse, staggered sectional view taken through the axes of the platen and the take-up roll holder for the main tally strip.

Fig. 7 is a detail, longitudinal sectional view of the left-hand platen section together with some of the associated parts.

Fig. 8 is a detail, substantially vertical, transverse, staggered sectional view of the main tally strip mechanism, the view being taken centrally through the tally roll holders and gears of the driving train therefor.

Fig. 9 is a detail perspective view of the driving pawls and associated parts for the line spacing wheel attached to the platen shaft and the line spacing wheel for the main take-up tally roll holder.

I have shown my invention embodied, in the present instance, in a computing machine known as the Dalton "Multiplex" Bank Ledger Posting and Statement Machine, model 490V-131V in which the devices of my invention may be readily incorporated without modifying, or materially modifying, other structural features of said machine as they now exist. It should be understood, however, that the invention may be embodied in various forms of computing machines, combined typewriting and computing machines, and in typewriting and like machines.

I have only shown so much of a Dalton computing machine as is necessary to arrive at an understanding of my invention in its embodiment therein.

In the use of a tally strip in certain prior machines the ledger sheet posting is simultaneously manifolded on a tally strip, and the ledger sheet after being filled in is rapidly withdrawn, by the operator pulling it out of the machine in the direction of the feed of the work sheets. In such machines, this withdrawal of the ledger sheet tended, through frictional contact with the tally strip, to inadvertently advance the latter and leave it in a slack condition between the supply and take-up rolls for the tally strip. This resulted in irregular and improper feeding of the tally strip and an improper and irregular

entry of items thereon with the possibility of writing one item on top of another. It is one of the main objects of the present invention to overcome this difficulty by providing means for positively locking the supply roll from which the tally strip is taken whenever the parts are in normal position, and it is always at this position that the ledger sheet is withdrawn. The construction of the present invention in the specific embodiment shown is such that a cam wheel on the shaft of the take-up roll of the tally strip automatically releases the lock of the supply roll from which the tally strip is taken and holds such lock ineffective until a line space advance of the take-up roll has been completed, when the lock again becomes effective to lock the supply roll against advance movement in order to resist an advance of the tally strip when the ledger sheet is withdrawn from the machine, as described above. The cam wheel referred to is actuated to release the lock as described, whether the take-up tally roll is automatically advanced by a cam during the travel of the carriage to the right, or is advanced by hand from a finger wheel at an end of the shaft which carries the take-up tally roll and cam wheel, or is advanced by the auxiliary line spacing mechanism to be hereinafter more specifically referred to. A hand-actuated finger piece is connected to the locking member to enable the latter to be held at will in released position, in order, for example, to enable the operator to pull forward the free end of the tally strip by hand and thereby advance it far enough to connect the free end of the strip with the take-up roll.

The cam for feeding the take-up tally roll is located to function for that purpose when the carriage in returning to the right passes a predetermined position.

These, together with various other features of the invention will be hereinafter fully described in detail in connection with the accompanying drawings.

The carriage of the machine is of the usual construction and has grooved raceways in its rails 10 in which anti-friction rollers or balls 11 are received, such balls also being received in the grooved raceways 12 of a fixed supporting bar or rail 13. The carriage is thus supported for traveling movement from side-to-side of the machine and relatively to the usual printing instrumentalities designated as a whole by the reference numeral 14.

The usual, or any suitable means are employed for propelling the carriage and arresting it in its different columnar positions for the entry of items in the different columnar fields on a work sheet or sheets carried by the carriage. The usual means are also employed for "normalizing" the machine and thereby preventing tabulating jumping of the carriage where the entries are to be made vertically instead of horizontally on the ledger sheet. However, inasmuch as a showing of such means is unnecessary to arrive at an understanding of my present invention illustration thereof has been omitted.

The end or side plates 15 and 16 of the carriage are provided with bearings to receive and support a platen shaft 17. In the present instance I employ a so-called sectional platen comprising four coaxial sections 18, 19, 20 and 21 arranged end-to-end on the shaft 17. The sections 18 and 20 are loose on the shaft, whereas each of the sections 19 and 21 is fixed by suitable means, as by pins 22, to turn with the shaft.

A paper feed roller 23 and knurled metal feed roller 23[a] coact with the platen section 18 to effect a feed of a tally strip 24 when said section is turned, whereas feed rollers 25 and 26 coact with the platen sections 19 and 21 respectively to feed a ledger sheet 27 when the platen shaft is turned. There are no feed rollers cooperating with the loosely disposed platen section 20 with which a tally strip 28 that underlies the ledger sheet 27 coacts, said tally strip 28 and an overlying carbon strip 29, coextensive therewith, receiving a step-by-step line spacing feed by the actuation of take-up tally roll on which the strips 28 and 29 are wound, as will hereinafter clearly appear.

Before describing further the means by which the different work sheets and tally and carbon strips 24, 27, 28 and 29 are fed, it may be briefly pointed out how such sheets and strips are related, and the purposes thereof as employed in the present instance, although it will be understood that this is by way of example only and illustrates but one of a number of uses to which the machine is put and that consequently various changes in the construction may be made without departing from my invention as it is defined in the accompanying claims.

The ledger sheets 27 are separate sheets introduced successively into the machine from the rear of the sectional platen with the aid of a paper table 30 provided with forwardly projecting flanges 31 at the ends thereof which constitute side edge guides for determining the lateral positioning of the ledger sheet on the carriage. The leading end of a ledger sheet passes from the paper table to a paper deflector 32 arranged beneath the platen and is guided up in front of the platen and past the printing line, the spring pressed feed rollers 25 and 26 pressing the sheet against the platen sections 19 and 21 to effect a feed of such sheet when the platen shaft is turned. This ledger sheet is intended to receive entries in different columns, of the old balance, the date of the deposit, a detail statement of the amount of each check, and the amount of the new balance. These items are printed directly from the printing instrumentalities 14

through an interposed ribbon, not shown. In accordance with one method of using the machine, as each item is printed the carriage is automatically shifted to bring the next column on the ledger sheet to the printing zone.

The tally strip 24 receives a printed list of all new balances, constituting therefore a proof of postings. Said tally strip passes around the platen section 18 from the rear to the front thereof, said platen section being individually controlled, as will hereinafter be described, to advance with the aid of the feed rollers 23 and 23ª the strip from a supply tally roll 33 and is wound on a take-up tally roll 34. Imprints from the printing instrumentalities 14 are made directly on the tally strip 24 through the ribbon referred to above.

The so-called main tally strip 28 is intended to receive a manifold copy of some, but not all, of the items printed on each of the ledger sheets 27, it being observed that the width of the tally strip 28 is less than that of the ledger sheet. A ledger sheet is introduced into the machine, the items are entered thereon and the sheet withdrawn while the tally strip 28 remains in the machine and has produced thereon, through the carbon sheet 29, a manifold copy or accumulation of all items written on the various ledger sheets, or so many of such items as are intended to be included on the tally strip 28.

In successively and rapidly forwardly withdrawing the various ledger sheets 27 after they are written, there is a tendency to advance the tally and carbon strips 28 and 29 respectively due to the frictional engagement between them and the ledger sheet. In the event of any such accidental forward displacement of the strips 28 and 29, entries will not be manifolded in proper successive line space positions on the tally strip and it may follow that one entry will be made on top of another on the tally strip since an actuation of the take-up roll to line space the tally strip may work against slack portion of the strip and not advance it at the printing line.

One of the main objects of my present invention as indicated above is to overcome this difficulty an provide efficient means for preventing the tally strip 28 and its carbon strip 29 from being accidentally advanced during the withdrawal of the ledger sheet.

I will first describe the means by which the line spacing of the platen sections 18, 19 and 21 and the take-up roll for the tally-strip 28 and carbon strip 29 is effected and then will describe the automatically controlled locking means by which an accidental displacement of the tally strip 28 is prevented.

From an inspection of Fig. 7 it will be seen that the platen section 18, loosely mounted on the platen shaft 17 has a long cylindrical hub 35 secured thereto. This hub is received in a bearing bushing 36 in the left-hand end plate 15 of the carriage and thus provides a support for the platen and its shaft 17 at the left-hand end thereof. A finger wheel 37 is fixed to a sleeve-like hub 38 that fits on and is detachably secured to the hub 35 by a set screw 39. The inner end of the sleeve 38 has a line spacing ratchet wheel 40 secured thereto.

Referring more particularly to Fig. 1, it will be seen that a detent roller 41 coacts with the teeth of the line spacing wheel 40 to hold said wheel 40, and the platen section 18 with which it is connected, against accidental displacement from the line spacing position to which said parts are turned. The detent roller 41 is carried at the end and on one side of an arm 42 pivoted at 43 on the end plate 15 of the carriage. A contractile spring 44 is anchored at one end to a pin 45 secured to the end plate 15 and is attached at its opposite end to the arm 42, thus exerting a spring pressure against the detent roller.

It also will be seen from Fig. 1 that a line spacing pawl 46 is secured to a carrier 47 pivoted at 48 to an arm 49 fixed to one end of a rock shaft 50. Said shaft is mounted in bearings in the end plates 15 and 16 of the carriage and extends to and outside of said end plates. A contractile spring 51 is connected at one end to a pin 52 on the carrier 47 and is connected at its other end to a pin 53 on the arm 49. The force of this spring is exerted to move the engaging nose of the line spacing pawl 46 towards the line spacing wheel 40. Such movement is, however, resisted by a tail piece 54 on the pawl carrier abutting the fixed pin 45. The arm 49 is pivoted at 55 to a vertically movable slide 56. Said slide is guided at its lower end by a headed screw 57, the stem of which passes through a vertical slot 58 in the slide and is received in a tapped opening in the end plate 15 of the carriage. As the slide 56 moves down the nose of the pawl 46 engages a tooth of the line spacing wheel and a continued movement of the slide causes the pawl to turn the line spacing wheel 40 and advances the platen section 18 connected therewith one line space.

The downward motion of the slide 56 just described is automatically brought about during the return of the carriage after it has reached the limit of its movement to the left. This result is effected by the following means: An outwardly projecting ear 59 on the slide carries a roller 60 which as the carriage moves to the right engages an inclined face 61 (Fig. 4) of a cam member 62 secured by screws 63 to the front face of the carriage supporting bar 13. The lower horizontal edge 64 of the cam member constitutes a dwell on which the roller 60 rides after the slide has been moved down to actuate the line spacing pawl, holding the latter in the advanced position until the carriage moves forward to the left far enough to carry the

roller 60 away from the cam member 62. There is a spring, as will hereinafter appear, for turning the rock shaft 50 back and restoring the parts to normal position after the roller 60 passes to the left off the cam member 62.

In this manner the platen section 18 is individually and automatically line spaced by the pawl 46 to advance the tally strip 24, although the platen section 18 may be turned either forward or backward at any time and to any desired extent, when the pawl 46 is disengaged, by turning the finger wheel 37.

As hereinbefore indicated the rock shaft 50 extends to the right beyond the right-hand end plate 16. As shown in Fig. 2 there is an arm 65 secured to the right-hand end of the shaft 50 and there is a contractile spring 66 secured at one end to said arm and secured at its other end to a pin 67 on the end plate 16. This is the spring, hereinbefore referred to, which returns the rock shaft 50 and the parts connected therewith to normal position.

The arm 65 has a pawl carrier 68 pivoted thereto at 69. A contractile spring 70 is connected at one end to a pin 71 on the pawl carrier and at the other end to the extended end of a pivot pin 72 by which a line spacing pawl 73 is pivoted on the carrier 68. A tail piece 74 on the pawl carrier normally bears against a stop pin 75 on the end plate 16 and resists a movement of the pawl carrier around its pivot 69 under the force of the spring 70. When, however, the shaft 50 is rocked in an anti-clockwise direction, as the parts appear in Fig. 2, the arm 65 will be lowered permitting the carrier 68 to turn on its pivot 69 and engage a tooth of a line spacing wheel 76. A further downward movement of the arm 65 will cause the pawl 73 to advance the line spacing wheel 76 a line space distance. The normal relation between the pawl 73 and its carrier 68 is maintained by a contractile spring 77 connected at one end to a pin 78 on the pawl and at its opposite end connected to a pin 79 on the pawl carrier 68. Said spring 77 normally maintains the pawl 73 against the pin 79 but permits the pawl to be ratcheted out of the wheel 76 against the force of said spring and around the pivot 69 in the event that the wheel 76 is advanced without operating the arm 65 in a manner which will presently appear.

The line spacing wheel 76 is provided with a hub 76ª (see Fig. 6) formed as a pinion and with which a gear wheel (not shown) meshes. Said gear wheel forms part of a sweep mechanism by which a ledger sheet may be rapidly introduced into the machine in position to receive the first line of writing. However, inasmuch as a consideration of such sweep mechanism is unnecessary to arrive at an understanding of the present invention and illustration thereof has been omitted and further reference thereto is deemed unnecessary.

From the foregoing it will be understood that the return of the carriage is not only effective to automatically feed the platen section 18 for the tally strip 24, but likewise to automatically turn the line spacing wheel 76. This wheel is fixedly connected through a platen clutch, not shown, to the platen shaft 17, which as hereinbefore indicated has the platen sections 19 and 21 fixedly connected therwith and is provided at its outer end with a finger wheel 17ª. For the purposes of the present invention the line spacing wheel 76 and finger wheel 17ª may be regarded as fixed to the platen shaft. The result therefore of advancing the line spacing wheel 76 is to turn the platen sections 19 and 21 and effect a line spacing advance of the ledger sheet 27 pressed against these sections by the feed rollers 25 and 26 respectively.

A detent roller 80 carried by a pivoted arm 81 is pressed against the teeth of the line spacing wheel 76 by a spring 82 connected at one end to said arm and at the other end to a fixed pin 83 on the end plate 16, the line spacing wheel and parts connected therewith being thus retained against accidental displacement from the line space position to which they are turned.

The means by which the tally strip 28 and coacting carbon strip 29 are supported, fed and controlled will now be described.

An inverted substantially U-shaped sheet metal supporting member 84 is supported on and fixed to tie rods 85 and 86 secured at their ends to the end plates 15 and 16 of the carriage. Upstanding auxiliary supporting brackets 87 and 88 are provided with foot pieces 89 by which they are secured with the aid of screws 90 to the upper side of the supporting member 84. These brackets 87 and 88 constitute supporting means for the supply and take-up tally roll holders 91 and 92 respectively and for various parts associated therewith to control them.

Referring more particularly to Figs. 5 and 8 it will be seen that the talley roll holders 91 and 92 are supported one above the other in the space between the intake and forward advancing end portions of the work or ledger sheet 27, so that said sheet extends around and outside of the tally and carbon strips that pass around the platen from the supply roll holder 91 to the take-up roll holder 92. Both of these roll holders in the present instance are shown detachably mounted in place. Thus, the right-hand flange of the supply roll holder 91 is apertured centrally to provide a bearing opening for a stub shaft 93 fixed to the supporting bracket 88 and on which the roll holder 91 is free to turn. A locking ratchet wheel 94 turns freely on an enlarged bearing portion 95 of the stub shaft

93. Said wheel is provided with a laterally projecting pin 96 that is adapted to be received in any one of several openings 97 in the right-hand flange of the roll holder 91 to connect said roll holder and its locking wheel 94 to turn together.

A disconnection of the roll holder 91 from said wheel may, however, be readily effected by giving the roll holder an axial displacement to the left to free it from the stub shaft 93 and pin 96. The means for supporting the roll holder 91 at the left-hand end thereof enable this to be done. Thus, a stub shaft 98 is received in a central bearing opening in the left-hand flange of the roller holder 91. This stub shaft forms part of a cylindrical supporting member 99 that is received in a bearing member 100 supported by the bracket 87. A reduced stem 101 on the member 99 extends through an opening in the outer end of the bearing member 100 and is provided with a finger piece 102. A coiled expansion spring 103 surrounds the stem 101 and bears at one end against the bearing member 100 and at its other end against the supporting member 99 for the stub shaft. A disk-like bearing plate 104 is fixed to the bearing member 99 and coacts with the left-hand flange of the roll holder, so that the force of the spring 103 is exerted against the roll holder to hold it on the stub shaft 93 and to hold the stub shaft 98 in effective position. An outwardly projecting pin 105 on the disk 104 is seated for a free axial movement in a bearing opening in the supporting bracket 87 preventing, however, a rotative movement of the disk 104 and the parts fixedly connected therewith. This results in said disk operating with a braking action on the roll holder 91 to prevent too free an unwinding movement thereof as the tally and carbon strips 28 and 29 respectively are unwound therefrom. By pulling the finger piece 102 to the dotted line position shown in Fig. 8, a removal of the roll holder 91 may be readily effected.

The take-up roll holder 92 is, or may be, detachably mounted in much the same manner as the roll holder 91, with the following exceptions:

The supporting member 106 for the stub shaft 107 may receive a turning movement as well as an axial movement and the reduced stem 108 connected therewith is in the nature of a long shaft that extends to the left-hand side of the carriage where it terminates in a finger wheel 109. A bearing disk 110 carries a pin 111 that may be seated, and held seated, by a spring 112 in any one of a number of openings 113 in the left-hand flange of the roll holder 92. The parts are thus connected to turn together so that the finger wheel 109 may be turned at any time to turn the roll holder 92. By pulling to the left on the finger wheel 109 the parts are disconnected and the roll may be removed.

The right-hand flange of the roll holder has a number of openings 114 pierced therethrough and in any one of which may be seated a pin 115 carried by a controlling wheel 116 which is in the nature of a cam wheel to be hereinafter more clearly described. The cam wheel 116 is fixed on a shaft 117 that carries a gear 118 meshing with an intermediate gear 119 which in turn meshes with a driving gear 120. This last mentioned gear is loosely mounted on the platen shaft 17 and is provided with a hub 121 that receives a bearing in a bushing 122 secured to the end plate 16 of the carriage. The hub 121 has a line spacing ratchet wheel 123 secured thereto and located beyond the outer side of the end plate 16 and adjacent to the line spacing wheel 76.

From an inspection of Fig. 9 it will be seen that the pawl carrier 68 carries a fixed pawl 124 formed as a part thereof. This pawl coacts with the line spacing wheel 123 by which the take-up roll holder 92 is turned intermittently through the gears 120, 119 and 118 to advance the tally and carbon strips 28 and 29, respectively, positively feeding the take-up roll holder 92 to wind the strips thereon and unwind them from the supply roll holder 91. It will be understood that this feed of said strips is automatically effected during the return of the carriage by the same movement of the arm 65 that effects a line spacing advance of the platen sections 19 and 21 by which the ledger sheet 27 is line spaced.

As hereinbefore indicated an important feature of the present invention is to prevent an accidental forward displacement of the tally and carbon strips 28 and 29 respectively when a ledger sheet 27 is withdrawn from the machine after having been filled in. To this end I provide a locking device, detent or pawl 125 (see Fig. 5) that is pivoted at 126 on the bracket 88. A contractile spring 127 is connected at one end to the pawl and at the other end is anchored to a pin 128 on the bracket 88. The spring 127 normally maintains the pawl in engagement with the locking ratchet wheel 94 and when thus engaged prevents said wheel and the supply roll holder 91 from turning in the direction of the arrow in Fig. 5. Consequently any tendency to advance the tally and carbon strips 28 and 29 respectively as the ledger sheet 27 is withdrawn, and through the frictional contact between said strips and sheet will be resisted by the locked supply roll holder 91. It will of course be understood that ordinarily it is only when the parts are in normal position and the supply roll holder is locked, as pointed out, that the ledger sheet is withdrawn.

It is essential that the locking means described above shall be released before the tally and carbon strips are fed forward or line spaced, whether such forward feed be effected

automatically during the return of the carriage as hereinbefore pointed out or is fed forward by turning the finger wheel 109. In either event this will result in turning the controlling wheel 116 in the direction of the arrow in Fig. 5. From an inspection of this view it will be seen that the periphery of the cam wheel 116 is provided with a series of regularly spaced depressions or low portions 129 and a series of intermediate high portions or dwells 130. On the tail of the locking pawl 125 and on one side thereof is mounted an anti-friction roller 131 which coacts with the periphery of the cam wheel 116. The construction and arrangement of the parts are such that in the normal position, or when the parts are at rest, the roller 131 will be seated in a depression 129 allowing the spring 127 to hold the pawl 125 in locking engagement with the wheel 94. As soon, however, as the take-up roll holder 92 starts to turn, whether by the finger wheel 109 or the pawl 124 and intermediate train, the cam wheel 116 will turn, forcing the roller 131 out and releasing the locking pawl 125. As the cam wheel 116 continues its turning movement the roller will ride on the adjacent dwell 130 until a line spacing of the tally and carbon strips has been completed. The locking pawl 125 will therefore be held in the released position until the completion of the line spacing operation when the roller 131 will drop into the next depression 129 and the pawl 125 will again engage the wheel 94 and lock the supply roll against further advance movement until the pawl is again automatically released in the manner described. When the finger wheel 109 is turned to advance the tally and carbon strips, the motion may be a continuous one, there being sufficient slack in the stretch of said strips between the supply and take-up roll holders so that any intermittent locking operation by the pawl 125 is not noticed and does not interfere with a continuous feed of the strips by the finger wheel.

From the foregoing description it will be understood that the automatically operating means for controlling the locking member 125 are mechanical means which function independently of the pull on the tally strip; or in other words the functioning of said mechanical means to release the member 125 is preliminary to the feed of the tally strip past the printing line and is not dependent on the pull on the tally strip as it is thus fed.

In order to assure an arrest of the parts of the line spacing train 123, 120, 119, 118 etc., and prevent an accidental displacement or advance thereof, I have provided a roller detent 132 (see Fig. 2) which engages the teeth of the line spacing wheel 123. This roller is carried on one side of a lever 133 pivoted at 134 on the end plate 16 of the carriage and is connected to a spring 135, the force of which is applied to the detent roller through the lever 133.

I prefer to provide the locking pawl 125 with a forwardly projecting arm 136 (see Figs. 2 and 5) that terminates in a finger piece 137. By exerting a rearward pressure on this finger piece 137 the pawl may be disengaged and held disengaged from the locking wheel 94. This may be availed of to enable the tally and carbon strips to be pulled forward and unwound from the supply roll holder, as for example, when it is desired to pass the free ends of such strips down and around the platen section 20 and connect them to the take-up roll holder.

At times the character of the work is such that it is deemed desirable to make the entries of the checks deposited on the ledger sheet 27 (and consequently on the tally strip 28 as well) in a vertical column one under another instead of across the sheet and strip as assumed up to the present. In order that this may be accomplished the model of the Dalton machine hereinbefore referred to has a vertical spacing key (not shown) in the key board of the machine and means are controlled thereby for actuating an auxiliary line spacing mechanism other than that which has been referred to so far. Said machine also has a finger piece or button (not shown) on the front plate of the machine for "normalizing" the machine, which button when in one position causes the carriage to be advanced or stepped forward at each actuation of the handle to a new columnar field or tabulated position. Said button when in the "normalizing" position will cut out the tabulating operation of the carriage at each actuation of the handle so that the carriage remains at rest, but at each such operation will cause the auxiliary line spacing mechanism to be actuated in order to print the items one under another in a vertical column.

In the present instance I have shown only so much of the mechanism referred to above as is necessary to arrive at an understanding of the same in its cooperation with the devices of my invention. Before describing the auxiliary line spacing mechanism above referred to it should be understood that the locking mechanism for the roll holder 91 will function in the manner hereinbefore pointed out whether the roller holder 92 and platen sections 19 and 21 are line spaced by the mechanism previously described in detail or are line spaced by the auxiliary line spacing mechanism about to be described.

From an inspection of Fig. 1 it will be seen that a depending arm 138 extends into the body of the machine. This arm is given an anti-clockwise movement (as the parts are viewed in this figure) at each actuation of the handle of the machine in the event that the button hereinbefore referred to is set in the "normalizing" position, or in the event that the vertical spacing key in the key board

is actuated. The effect of operating the arm 138 in this manner is to rock a rock shaft 139 with which said arm has an operative connection. The shaft 139 is mounted to turn in bearings in the end plates 15 and 16 and at its ends extends beyond said plates. Secured to the left-hand end of the shaft 139 is a crank arm 140 to which a line spacing pawl 141 is pivoted at 142. A contractile spring 143 is connected at one end to the pawl and at its opposite end to the crank arm 140. A stop lug 144 projects laterally from the pawl 141 and underlies and coacts with the forward end portion of the arm 140 to limit the relative movement between the pawl and its carrying arm 140 in one direction and under the force of the spring 143. The pawl 141 coacts with the ratchet wheel 40 by which the tally strip 24 is line spaced, so that at each actuation of the operating handle or vertical spacing key under the conditions mentioned, the crank arm 140 will be given an upward movement carrying the pawl 141 against the wheel 40 and stressing the spring 143 as will be understood from a consideration of the dotted line showing of the corresponding pawl and arm at the other end of the carriage, shown in Fig. 2. When the arm 140 returns to normal position the wheel 40 will first be advanced one step line spacing the tally strip 24 and the pawl will then be disengaged from said wheel, leaving the parts in the position shown in Fig. 1 ready for the next operation.

The opposite end of the rock shaft 139 has a crank arm 145 secured thereto. Pivoted at 146 to said arm is a line spacing pawl 147 limited in its movement in one direction relatively to said arm by a stop pin 148 that underlies and coacts with the forward end of the arm 145. A spring 149 is connected at one end to the arm 145 and at its opposite end to the pawl 147. The pawl 147 is broad enough to coact with both ratchet wheels 76 and 123, the first line spacing the platen sections 19 and 21 and the second the take-up roll holder 92. Therefore, the same operation of the arm 138 which results in line spacing the tally strip 24 also actuates the pawl 147 to line space the ledger sheet 27 and tally and carbon strips 28 and 29 respectively just as such feeding operations are automatically produced by the pawls 46, 73, and 124 during the return of the carriage when the machine is conditioned for cross line entries and for tabulating movements of the carriage. It will be understood therefore that the automatically operating locking and unlocking means for the supply tally roll holder 91 will function in the same manner and with the same effectiveness whether the machine is conditioned for cross entries on the ledger sheets and tally strip 28 or for vertical entries thereon. The fact that the locking means for the supply roll holder is automatically controlled from the takeup roll holder, or by means operative in unison therewith, enables the locking and unlocking to be automatically effected in the manner indicated irrespective of which of the different line spacing means employed are actuated or whether the platen sections 19 and 21 be advanced by the finger wheel 17ª at the right-hand end of the platen shaft 17.

From the foregoing description it will be understood that means are provided whereby the tally strips 24 and 28 may be fed in unison whether during the return of the carriage or by an actuation of the depending arm 138, and that when desired either of said tally strips may be fed by hand independently of the other with the aid of the finger wheel 37 or 109. Moreover, it will be understood that the ledger sheet is fed or line spaced in unison with the tally strips 24 and 28 or may be fed independently of said strips by either the finger wheel 17ª or by the sweep mechanism which coacts with the pinion 76ª, as hereinbefore pointed out.

In practice machines embodying the present invention have proved highly efficient and reliable in use.

While I have shown with considerable detail a Dalton machine embodying my invention it should be understood that the mechanism of my invention may be embodied in various machines varying widely in character; that parts of the mechanism disclosed may be employed without others and that various changes may be made in such mechanism without departing from my invention as it is defined in the accompanying claims.

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

1. The combination of a tally roll holder carrying a tally strip, feeding means for advancing the tally strip, locking means normally maintaining said tally roll holder locked against advance rotation and thereby preventing an advance of the tally strip past the printing line, and automatically operating releasing means actuated independently of any pull on the tally strip at each operation of said feeding means for releasing said locking means to thereby enable the tally strip to be fed past the printing line by said feeding means.

2. The combination of a tally roll holder carrying a tally strip, feeding means for advancing the tally strip, positively acting locking means normally maintaining said tally roll holder positively locked against advance rotation and thereby preventing an advance of the tally strip past the printing line, and automatically operating mechanical releasing means actuated independently of any pull on the tally strip at each operation of said feeding means for releasing said locking means thereby enabling the tally strip to be fed past the printing line by said feeding

means and for bringing about a restoration of said locking means to normal position after a feeding of said tally strip past the printing line has been effected.

3. The combination of a tally supply roll, a take-up tally roll on which the tally strip is wound, means for feeding said take-up tally roll and thereby advancing the tally strip, locking means normally effective to lock the tally supply roll against turning movement that permits an advance of the tally strip, and automatically operating means actuated independently of the pull on the tally strip for releasing said locking means at each operation of said feeding means.

4. The combination of a tally supply roll, a take-up tally roll on which the tally strip is wound, means for feeding said take-up tally roll and thereby advancing the tally strip, locking means normally effective to lock the tally supply roll against turning movement that permits an advance of the tally strip, and automatically operating means actuated independently of the pull on the tally strip for releasing said locking means at each operation of said feeding means before motion can be transmitted through the tally strip from the take-up roll to the supply roll and for bringing about a return of said locking means to normal locking position when an actuation of the take-up roll has been effected.

5. The combination of a tally supply roll, a take-up tally roll on which the tally strip is wound, line spacing means for turning said take-up tally roll to line space the tally strip, said line spacing means comprising a feed pawl and ratchet mechanism, a locking ratchet wheel connected with said supply roll, a locking pawl normally engaging said locking ratchet wheel and preventing an advancing movement thereof, and automatically operating releasing means controlled at each actuation of said feed pawl and actuated independently of the pull on the tally strip for releasing the locking pawl from engagement with its ratchet wheel.

6. The combination of a tally supply roll, a take-up tally roll on which the tally strip is wound, line spacing means for turning said take-up tally roll to line space the tally strip, said line spacing means comprising a feed pawl and ratchet mechanism, a locking ratchet wheel connected with said supply roll, a locking pawl normally engaging said locking ratchet wheel and preventing an advancing movement thereof, and automatically operating releasing means controlled at each actuation of said feed pawl for releasing the locking pawl from engagement with its ratchet wheel, said releasing means comprising a cam wheel provided with a series of cams, said cam wheel being operatively connected to be intermittently advanced as the take-up roll is fed and to intermittently release the locking pawl.

7. The combination of a tally roll, feeding means for advancing the tally strip, locking means normally maintaining said tally roll locked, and automatically operating releasing means actuated at each operation of said feeding means for releasing said locking means, said releasing means comprising a cam wheel, means for advancing said cam wheel at an operation of said feeding means, and means controlled by said cam wheel for releasing the locked tally roll.

8. The combination of a tally roll, feeding means for advancing the tally strip, locking means normally maintaining said tally roll locked, and automatically operating releasing means actuated at each operation of said feeding means for releasing said locking means, said releasing means comprising a cam wheel, means for advancing said cam wheel at an operation of said feeding means, and means controlled by said cam wheel for releasing the locked tally roll and for bringing about a locking of said tally roll as the cam wheel completes its movement.

9. The combination of a carriage, a tally roll holder carried thereby and carrying a tally strip, line spacing means for intermittently line spacing the tally strip and advancing the tally roll holder at each line spacing operation, positively acting locking means normally maintaining said tally roll holder positively locked against advance rotation thereby preventing an advance of the tally strip past the printing line, and intermittently actuated releasing means operated independently of any pull on the tally strip at each actuation of the line spacing means for releasing said locking means thereby enabling the tally strip to be fed past the printing line by said line spacing means.

10. The combination of a carriage, a tally roll holder carried thereby and carrying a tally strip, automatically operating line spacing means for intermittently line spacing the tally strip past the printing line and for simultaneously advancing the tally roll holder, hand controlled feeding means operable at will for advancing the tally strip, locking means for normally maintaining said tally roll holder locked against advance rotation to thereby prevent an advance of the tally strip past the printing line, and automatically operating releasing means actuated independently of any pull on the tally strip for releasing said locking means whether the tally strip and roll holder be advanced either by said automatically operating line spacing means or the said hand controlled feeding means.

11. The combination of a carriage, a tally roll carried thereby, automatically operating line spacing means controlled by the travel of the carriage for intermittently line spac-

ing the tally strip and advancing the tally roll, hand controlled feeding means operable at will for advancing the tally strip, locking means for normally maintaining said tally roll locked, and mechanical automatically operating releasing means actuated independently of the pull on the tally strip for releasing said locking means whether the tally strip be advanced either by said automatically operating line spacing means or the said hand controlled feeding means, said releasing means controlling the locking means to again lock said tally roll after an advance of the tally strip has been effected either by the automatically operated line spacing means or by the hand controlled feed means.

12. The combination of a carriage, a tally supply roll carried thereby, a take-up tally roll on which the tally strip is wound, automatically operating line spacing means controlled by the travel of the carriage for line spacing the take-up tally roll, hand controlled feeding means operable at will for advancing said take-up tally roll, locking means cooperative with the supply tally roll and normally operative to lock it against unwinding movement, and automatically operating releasing means for releasing said locking means at each operation of either the automatically operating line spacing means or said hand controlled feeding means.

13. The combination of a tally roll, intermittently actuated line spacing means for advancing the tally strip a line space at each operation, locking means normally maintaining said tally roll locked against movement that would permit an advance of the tally strip, and automatically operating releasing means actuated at each operation of the line spacing means for releasing said locking means, said releasing means comprising an intermittently actuated cam wheel having a series of cams, means for advancing said cam wheel a step at each operation of the line spacing means, and means controlled by the cams on said cam wheel for releasing the locking means and freeing the tally roll.

14. The combination of a tally roll, intermittently actuated line spacing means for advancing the tally strip a line space at each operation, locking means normally maintaining said tally roll locked against movement that would permit an advance of the tally strip, and automatically operating releasing means actuated at each operation of the line spacing means for releasing said locking means, said releasing means comprising an intermittently actuated cam wheel having a series of cams, means for advancing said cam wheel a step at each operation of the line spacing means, and means controlled by the cams on said cam wheel for releasing the locking means and freeing the tally roll, the active cam permitting a reengagement of the locking means when the cam wheel has completed its stepping movement, thereby leaving the tally roll locked.

15. The combination of a carriage, a tally supply roll carried by the carriage, a take-up tally roll carried by the carriage and on which the tally strip is wound after having passed from said supply roll around the platen, automatically operating line spacing mechanism controlled by the travel of the carriage and intermittently turning said take-up roll to line space the tally strip, normally effective locking means cooperative with the supply roll to lock it against advance movement and thus resist an advance of the tally strip, a hand actuated finger piece by which said locking means may be released at will, and automatically operating releasing means operable at each actuation of said line spacing mechanism to release said locking means and free the supply roll so that the tally strip may be unwound therefrom as the take-up roll is turned to advance the tally strip a line space distance.

16. The combination of a carriage, a tally supply roll carried by the carriage, a take-up tally roll carried by the carriage and on which the tally strip is wound after having passed from said supply roll around the platen, automatically operating line spacing mechanism controlled by the travel of the carriage and intermittently turning said take-up roll to line space the tally strip, normally effective locking means cooperative with the supply roll to lock it against advance movement and thus resist an advance of the tally strip, a hand actuated finger piece by which said locking means may be released at will, hand controlled means operable at will for turning said take-up roll to advance the tally strip, and automatically operating releasing means operable at each automatic actuation of said line spacing mechanism or by a turning of the take-up roll by said hand controlled means to release said locking means and free the supply roll so that the tally strip may be unwound therefrom as the take-up roll is turned to advance the tally strip, said releasing means enabling the locking means to be thrown into effective position after each advance of the tally strip whether such advance be effected by the automatic line spacing mechanism or the hand controlled means.

17. The combination of a carriage, a platen, a tally supply roll, a take-up tally roll for winding a tally strip from the supply roll after it has passed around a centrally disposed portion of the platen, a second tally supply roll, a second take-up tally roll that receives a tally strip from said second tally supply roll after it has passed around an end portion of the platen, and automatically operating means controlled by the travel of the carriage for simultaneously line spacing both tally strips.

18. The combination of a carriage, a plat-

en, a tally supply roll, a take-up tally roll for winding a tally strip from the supply roll after it has passed around a centrally disposed portion of the platen, a second tally supply roll, a second take-up tally roll that receives a tally strip from said second tally supply roll after it has passed around an end portion of the platen, automatically operating means for simultaneously line spacing both tally strips, and hand controlled means operable at will for advancing either tally strip independently of the other.

19. The combination of a carriage, a sectional platen, a tally supply roll, a take-up tally roll for winding a tally strip from the supply roll after said strip has passed around a centrally disposed platen section that is loosely disposed on the platen shaft, a second tally supply roll, a second take-up tally roll that receives a tally strip from said second tally supply roll after said last mentioned tally strip has passed around an end section of the platen loose on the platen shaft, and automatically operating means controlled by the travel of the carriage for simultaneously line spacing both tally strips.

20. The combination of a carriage, a sectional platen, a tally supply roll, a take-up tally roll for winding a tally strip from the supply roll after said strip has passed around a centrally disposed platen section that is loosely disposed on the platen shaft, a second tally supply roll, a second take-up tally roll that receives a tally strip from said second tally supply roll after said last mentioned tally strip has passed around an end section of the platen that is loosely mounted on the platen shaft, automatically operating means for simultaneously line spacing both tally strips, and hand controlled means operable at will for advancing either tally strip independently of the other.

21. The combination of a tally roll, means for automatically and intermittently line spacing a tally strip from said tally roll, hand controlled line spacing means operable at will for intermittently line spacing the tally strip from said tally roll, hand actuated means operable at will for advancing the tally strip from said roll any extent, normally operative locking means for locking the tally roll against advance movement, and automatically operating means for releasing said locking means preliminary to advancing the tally strip by either of said line spacing means or said hand actuated means.

22. The combination of a tally roll, means for automatically and intermittently line spacing a tally strip from said tally roll, hand controlled line spacing means operable at will for intermittently line spacing the tally strip from said tally roll at will, hand actuated means operable at will for advancing the tally strip from said roll any extent, normally operative locking means for locking the tally roll against advance movement, and automatically operating means for releasing said locking means preliminary to advancing the tally strip by either of said line spacing means or said hand actuated means and for reengaging said locking means after the advance of the tally strip has been effected.

23. The combination of a divided platen having at least three sections, one an intermediate section loose on the platen shaft and one on each side of the intermediate section fast on the platen shaft, feed rollers coacting only with the said platen sections which are fixed on the platen shaft to effect a feed of a work sheet when the platen shaft is turned, a tally roll from which a tally strip is drawn into cooperation only with said intermediate loosely mounted platen section, means other than the platen for feeding the tally strip, and automatically operating locking means for locking the tally roll to prevent advance movement of the tally strip when a work sheet with which the feed rollers coact as stated is withdrawn from the machine.

24. The combination of a divided platen having at least three sections, one an intermediate section loose on the platen shaft and one on each side of the intermediate section fast on the platen shaft, feed rollers coacting only with the said platen sections which are fixed on the platen shaft to effect a feed of a work sheet when the platen shaft is turned, automatically operating means for turning said platen shaft, hand controlled means operable at will for turning said shaft, a tally roll from which a tally strip is drawn into cooperation only with said intermediate loosely mounted platen section, means other than the platen for feeding the tally strip, and automatically operating normally effective locking means for locking the tally roll to prevent advance movement of the tally strip when a work sheet with which the feed rollers coact as stated is withdrawn from the machine.

25. The combination of a divided platen comprising four platen sections two of which are loosely mounted on the platen shaft and two of which are fixed on said shaft and are separated by one of said loosely mounted platen sections, feed rollers which coact with the sections which are fixed on the shaft and with one of the loosely mounted sections, line spacing means for turning the platen shaft to advance a work sheet that is fed by the platen sections which are fixed on the platen shaft, line spacing means coacting with and for turning the platen section that is loosely mounted on the platen shaft and with which feed rollers coact to thus advance a tally strip, a tally roll that turns on a fixed axis and from which a second tally strip is unwound and carried into cooperation with the other loose

section of the platen, and means independent of the platen for effecting a line spacing of the second tally strip.

26. The combination of a divided platen comprising four platen sections two of which are loosely mounted on the platen shaft and two of which are fixed on said shaft and are separated by one of said loosely mounted platen sections, feed rollers which coact with the sections which are fixed on the shaft and with one of the loosely mounted sections, line spacing means for turning the platen shaft to advance a work sheet that is fed by the platen sections which are fixed on the platen shaft, line spacing means for turning the platen section that is loosely mounted on the platen shaft and with which feed rollers coact to advance a tally strip, a tally roll from which a second tally strip is unwound and carried into cooperation with the other loose section of the platen, means independent of the platen for effecting a line spacing of the second tally strip, and automatically operating means for locking said tally roll against advance movement, whereby the second tally strip will be locked against advance movement when a work sheet is withdrawn from the machine.

27. The combination of a supply tally roll holder, a take-up tally roll holder, a loosely disposed platen section around which a tally strip passes from said supply holder to said take-up holder, line spacing means for advancing said take-up holder a locking wheel connected to turn with said supply holder, a locking pawl coacting with and positively engaging and locking said locking wheel, and mechanical means controlled by said take-up holder and actuated independently of the pull on the tally strip for controlling said locking pawl.

28. The combination of a supply tally roll holder, a take-up tally roll holder, a loosely disposed platen section around which a tally strip passes from said supply holder to said take-up holder, line spacing means for advancing said take-up holder, a locking wheel connected to turn with said supply holder, a locking pawl coacting with said locking wheel, a spring for normally holding said locking pawl engaged with said locking wheel, and automatically operating mechanical means that operate independently of the pull on the tally strip and in unison with said take-up roll holder to release said locking pawl from said locking wheel preparatory to a line spacing advance of the supply roll holder and for affording a reengagement of the locking wheel with said pawl after a line spacing advance of the tally strip from the supply roll holder has been effected.

29. The combination of a supply tally roll holder, a take-up tally roll holder, a loosely disposed platen section around which a tally strip passes from said supply holder to said take-up holder, line spacing means for advancing said take-up holder, a locking wheel connected to turn with said supply holder, a locking pawl coacting with said locking wheel, a spring for normally holding said locking pawl engaged with said locking wheel, and a cam wheel which turns in unison with said take-up roll holder and which coacts with said locking pawl to release it preparatory to an advance of the tally strip from said supply roll holder and which affords a reengagement of the locking pawl with the locking wheel after a line spacing advance of the tally strip from said supply roll holder has been effected.

30. The combination of a divided platen having two platen sections secured to the platen shaft and an intermediate platen section which is loosely mounted on the platen shaft, a supply tally roll holder, a take-up tally roll holder, a tally strip passing from one to the other of said roll holders around the loosely mounted platen section only, means for directing a work sheet outside or over the tally strip and so that the marginal portions of said sheet will overlap the platen sections fixed on the platen shaft, feed rollers coacting with said last mentioned platen sections and with the marginal portions of the work sheet, means for line spacing the platen shaft to advance the work sheet, line spacing mechanism for advancing the take-up roll holder to advance the tally strip, and automatically operating means for locking said tally roll supply holder against advance movement and for automatically releasing the locking means preparatory to effecting a line spacing advance of the tally strip from said supply holder, whereby the tally strip is locked against advance movement when a work sheet is withdrawn from the machine.

31. The combination of a tally roll holder carrying a tally strip, feeding means for advancing the tally strip, and means for positively holding the tally strip against advance movement with a superposed work sheet when the latter is withdrawn from the machine, said last mentioned means comprising locking means coacting with said tally roll holder, and automatically operating mechanical means functioning independently of any pull on the tally strip for releasing said locking means preliminary to advancing the tally strip past the printing line.

Signed at Stamford in the county of Fairfield and State of Connecticut this 13th day of January A. D. 1930.

WALTER W. LANDSIEDEL.