Nov. 9, 1948. O. THIEME 2,453,282

FEEDING MECHANISM FOR ACCOUNTING MACHINE CARRIAGE PLATENS

Filed Dec. 29, 1944 7 Sheets-Sheet 1

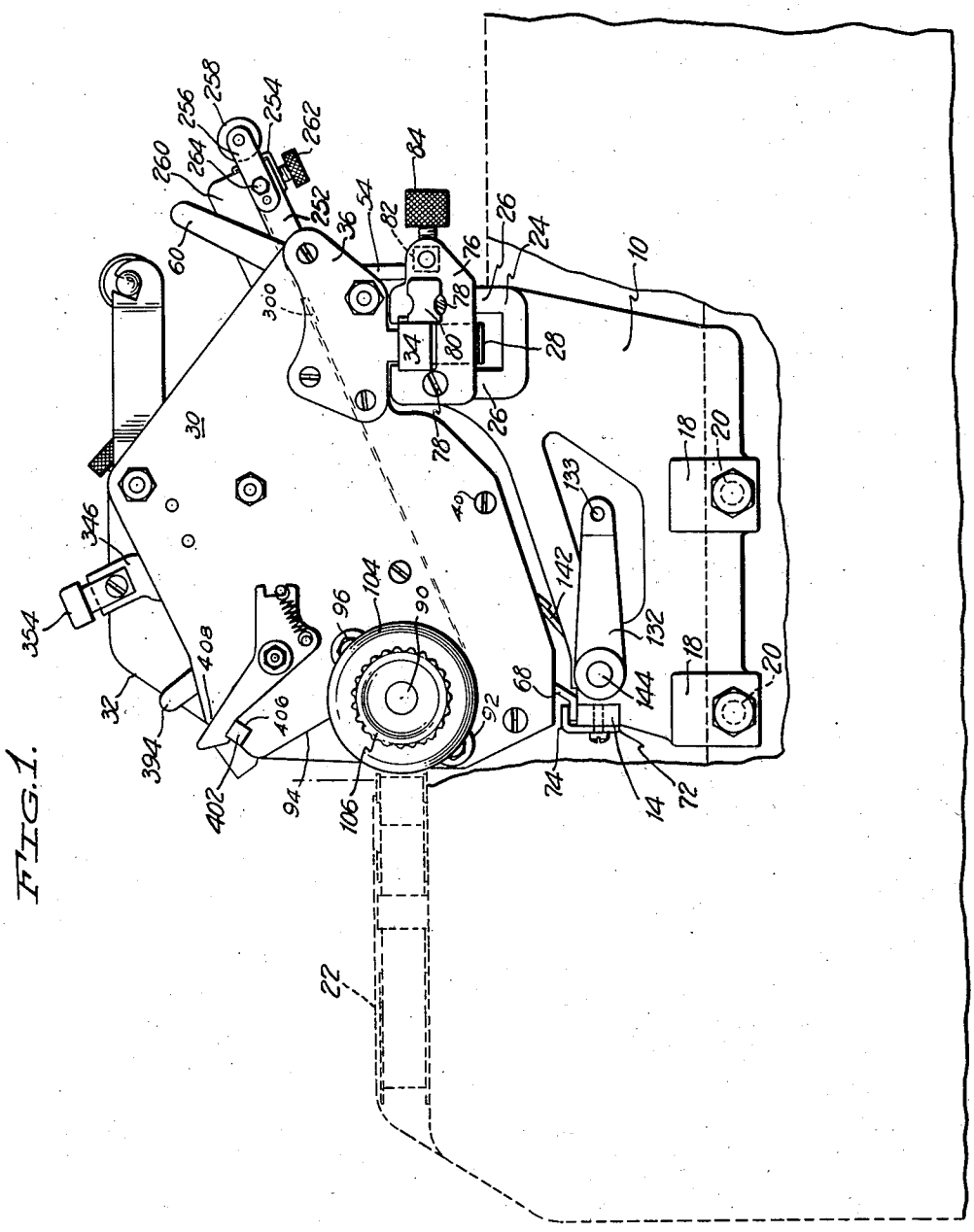


FIG. 1.

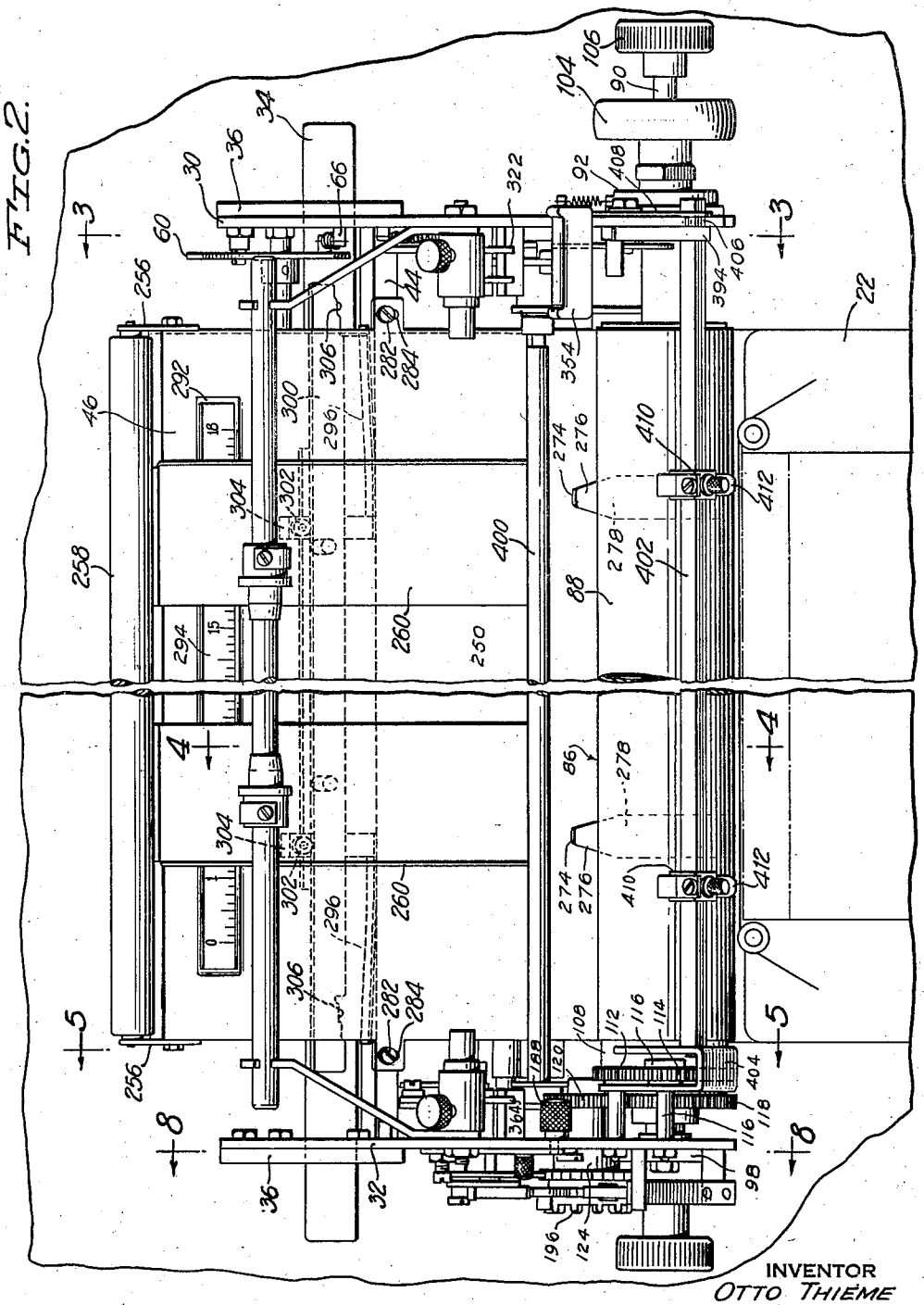
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FIG. 2.



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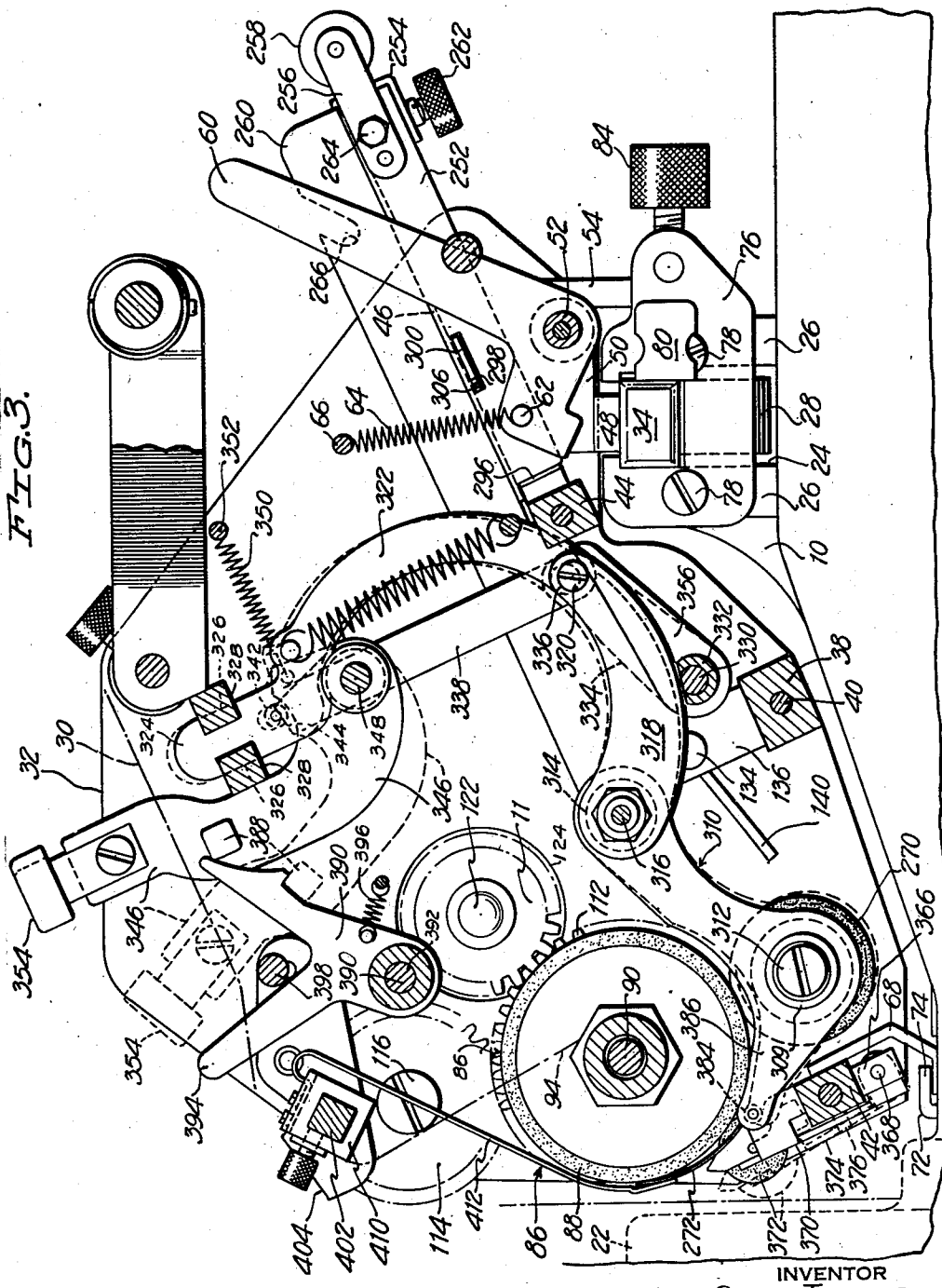
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FEEDING MECHANISM FOR ACCOUNTING MACHINE CARRIAGE PLATENS

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FIG. 3.



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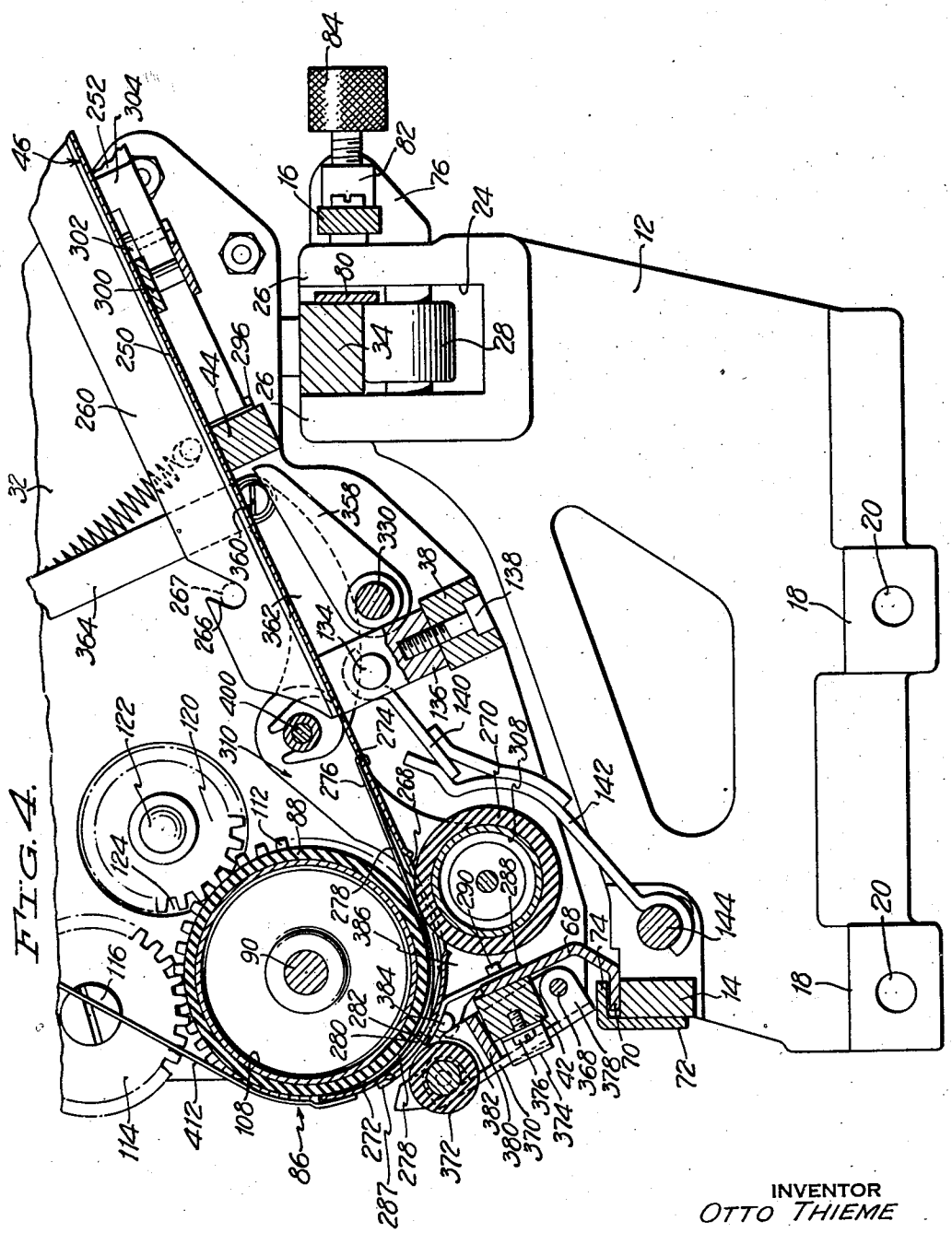


FIG. 4.

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FEEDING MECHANISM FOR ACCOUNTING MACHINE CARRIAGE PLATENS

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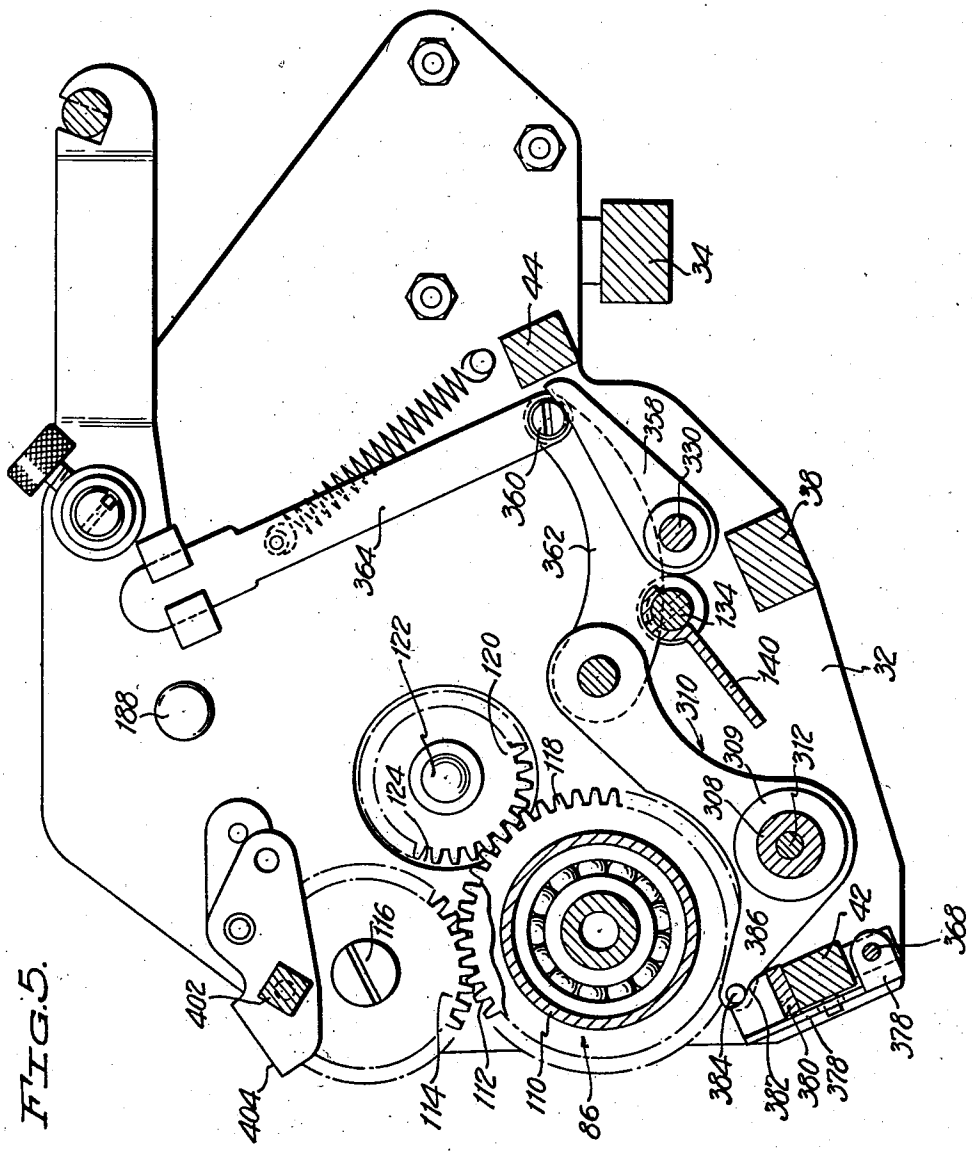


FIG. 5.

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FEEDING MECHANISM FOR ACCOUNTING MACHINE CARRIAGE PLATENS

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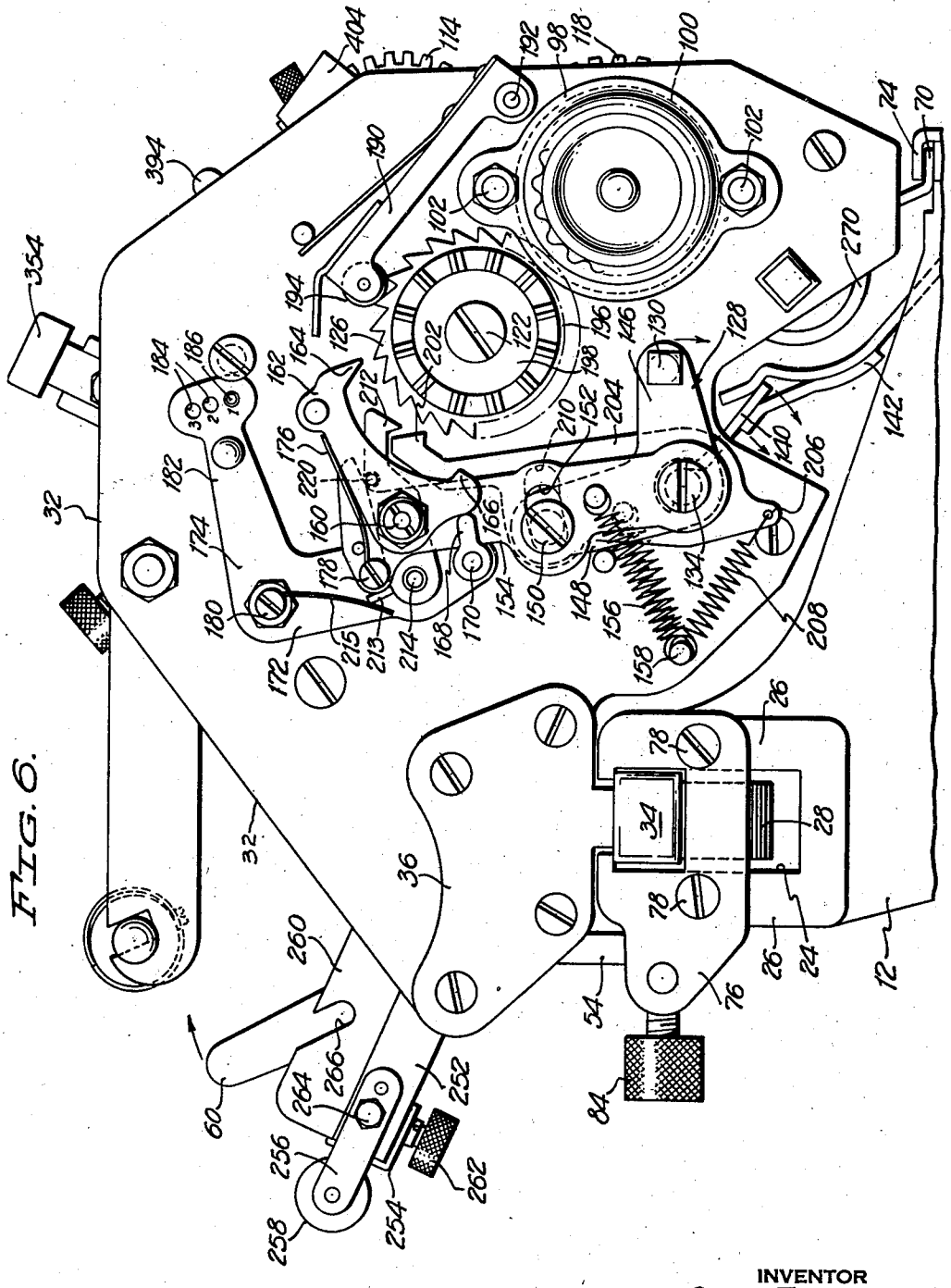


FIG. 6.

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FEEDING MECHANISM FOR ACCOUNTING MACHINE CARRIAGE PLATENS

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FIG. 7.

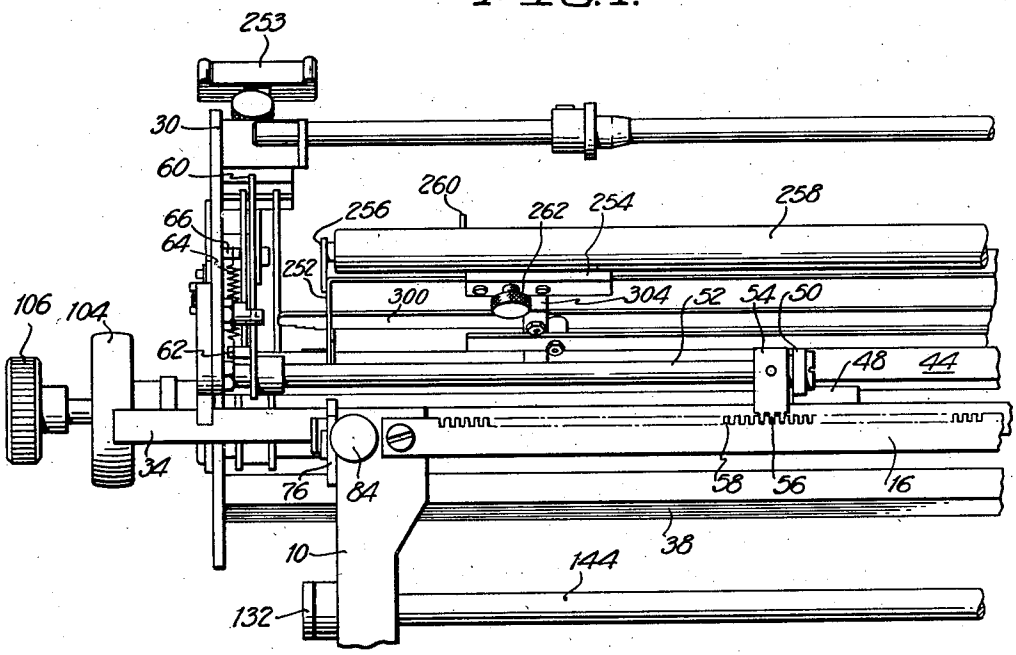
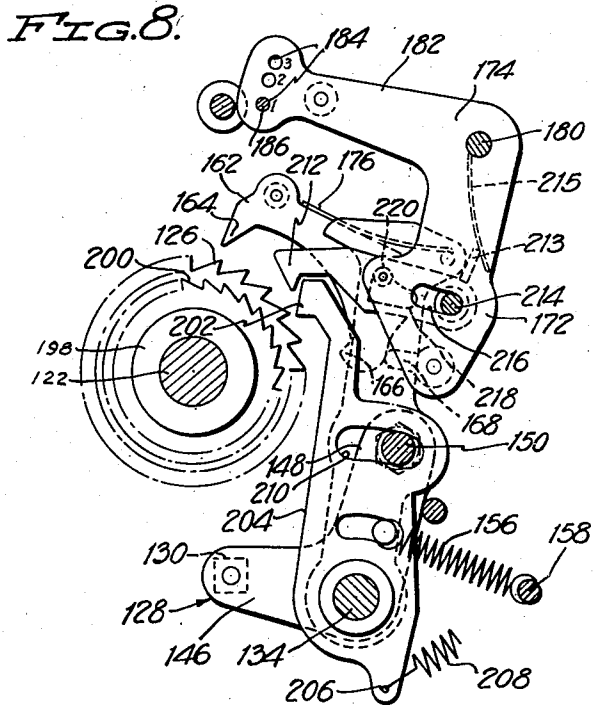


FIG. 8.



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UNITED STATES PATENT OFFICE

2,453,282

FEEDING MECHANISM FOR ACCOUNTING MACHINE CARRIAGE PLATENS

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Application December 29, 1944, Serial No. 570,323

6 Claims. (Cl. 197—114)

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The improved carriage comprising the present invention is primarily adapted for use in connection with tabulating machines of the type shown in the patent to Peirce, No. 2,042,324, dated May 26, 1936, for a Tabulator. Such carriages may be of the numerical type, of the alphabetical type, or both. The invention, however, is capable of other uses and the same may, with or without modification, be employed in connection with various other types of tabulating machines, whether the same be numerical or alphabetical and whether the same be controlled by means of a keyboard or by means of record cards.

The principal object of the present invention is to provide a carriage of the type outlined above having an improved feeding means for record media on which tabulations are to be made and which will accommodate both single sheets and relatively thicker pamphlet or booklet type material, manual means being provided for converting the carriage from one use to the other.

More specifically, it is an object of the present invention to provide a carriage of this type having a rotary printing platen, and a cooperating paper support table including an integrally formed paper guide which cooperates with the platen in feeding the record material around the latter, together with front and rear auxiliary feed rolls that also cooperate with the printing platen for feeding purposes. This object also further embraces the provision of means for manually bodily shifting the position of the paper support table and guide, while at the same time adjusting the relative positions of the auxiliary feed rolls so that the machine will accommodate record material of varying thicknesses and so that the carriage may readily be converted from one use to the other.

Another object of the present invention is to provide a novel type of releasing means for the record media whereby both the front and rear auxiliary feed rolls may be withdrawn from the platen for release and withdrawal of the record media from the carriage.

A still further object of the invention is to provide a novel form of platen mounting by means of which the platen assembly in its entirety may readily be removed from the carriage frame for purposes of inspection, repair or replacement.

Yet another object of the invention is to provide a novel form of carriage construction including a carriage slide whereby the position of the carriage with respect to the printing elements of the machine with which it is associated may be shifted, together with a novel form of locking

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means for maintaining the carriage in any desired shifted position.

A still further object of the invention is to provide a carriage of this type having novel means in the form of yieldable curved spring plates which act as a piloting means for feeding flexible forms into printing position around the printing platen, the nature of the spring plates being such that their curvature will automatically accommodate itself to the forms and assist in holding the latter taut against the periphery of the platen. In carrying out the above mentioned object, the curved yieldable spring plates are mounted upon and bodily movable with the paper support table in such a manner that as different thicknesses of forms are encountered these plates, together with the entire paper support table assembly, is moved bodily relative to the platen to afford the desired clearance for form feeding purposes.

Yet another object of the invention is to provide an improved mechanism for indexing the printing platen to accommodate one, two or three indexing spaces between adjacent printing operations.

A still further object of the invention is to provide an improved indexing mechanism for the printing platen, as outlined above, including means whereby overthrow of the platen will automatically be prevented when the mechanism is set for either double or triple spacing of the platen.

The provision of a carriage of the type set forth above which is comprised of a minimum number of moving parts, yet which is extremely rugged and durable and which, consequently, is unlikely to get out of order, one which may be manufactured at a relatively low cost, and one which otherwise is well adapted to perform the services required of it are further desirable features that have been borne in mind in the production and development of the present invention.

Other objects and advantages of the present invention not at this time enumerated will become apparent as the nature of the invention is better understood.

In the accompanying sheets of drawings forming a part of this specification:

Fig. 1 is a side elevational view of the improved carriage showing the same operatively assembled upon a conventional accounting machine.

Fig. 2 is a fragmentary, top plan view of the machine.

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken substantially along the line 4—4 of Fig. 2.

Fig. 5 is a sectional view taken substantially along the line 5—5 of Fig. 2.

Fig. 6 is a side elevational view of the machine taken in a direction opposed to that of Fig. 1.

Fig. 7 is a rear view of a portion of the carriage.

Fig. 8 is a sectional view taken substantially along the line 8—8 of Fig. 2.

In all of the above described views like characters of reference are employed to designate like parts throughout.

Referring now to the drawings in detail, the carriage assembly involves in its general organization a pair of side frame members 10 and 12, shown in Figs. 1 and 6 respectively. These frame members are preferably in the form of steel castings which are connected together by a front carriage-supporting bar 14 which constitutes a front rail upon which the carriage proper is slidably mounted for lateral shifting movement to a selected position. The side frame members 10 and 12 are also rigidly held in position by means of a toothed transverse rack 16 (Figs. 4 and 7) which extends across these members near the top and adjacent the rear thereof.

The side members 10 and 12 are provided with lower foot portions 18 having bolt holes 20 passing therethrough and constituting a means whereby the carriage structure may be attached to a tabulating or other accounting machine, such as is shown at 22 in dotted lines in Fig. 1. The arrangement of parts thus far described constitutes the stationary framework for the carriage proper.

Referring now to Figs. 1, 3, 4 and 6, the two framework castings 10 and 12 are provided adjacent their upper rear portions with an integral bifurcated extension 24 affording parallel upstanding arms 26 across which there are journaled a pair of roller elements 28 affording antifriction means upon which the rear portion of the carriage proper is adapted to be slidably supported. The front bar or rail 14 serves as a support for the front portion of the carriage proper and this bar, together with the two roller elements 28, are adapted to receive thereon and slidably carry the entire weight of the carriage proper in a manner that will be set forth hereinafter.

The carriage proper involves in its general organization a pair of end plates 30 and 32 (Figs. 1 and 2). These spaced end plates are rigidly connected together by means of a slide bar 34 which is secured thereto by means of brackets 36 that are bolted or otherwise secured to the end plates and which are also welded or otherwise secured to the slide bar. A cross piece 38 (Figs. 3 and 4) extends between the end plates 30 and 32 and is secured thereto at its end in any suitable manner, as for example, by means of cap screws 40, and serves as an additional rigid supporting connection between the two pieces. A third cross member 42, similar to the member 38, is likewise secured to the end plates 30 and 32 adjacent their forward edge and further lends rigidity to the carriage structure. An additional or fourth cross piece 44 is similarly secured at its ends to the two end plates 30 and 32 near the rear and toward the bottom thereof and, in addition to further strengthening the frame structure of the carriage proper, also serves as a mounting for a paper or work table 46.

Referring now to Figs. 3 and 7, the slide bar 34 has mounted thereon a bracket 48 which is

provided with a rearwardly projecting portion 50. A rock shaft 52 is suitably journaled at one end in the rearwardly extending portion 50 of the bracket 48 and its other end is journaled in the end plate 30. The rock shaft 52 has secured thereto and adjacent the bracket 48 a locking member 54 provided with teeth 56 designed for selective locking engagement with a series of teeth 58 provided on the transverse rack 16. An operating lever or handle 60 is mounted on the shaft 52 adjacent the end plate 30 and is provided with a pin 62 which projects laterally therefrom. A coil spring 64 has one end thereof anchored to the pin 62 and the other end thereof anchored to a similar but stationary pin 66 which projects rearwardly from the end plate 30. From the arrangement of parts just described, it will be seen that by virtue of the biasing action of the spring 64 the locking member 54 will normally be maintained in operating engagement with the rack 16 and when the teeth 56 on the locking member 54 are in engagement with the teeth 58 on the rack 16 the carriage framework, including the end plates 30 and 32 and the various transverse bars 34, 38, 44, etc., will be locked in a predetermined lateral position on the stationary carriage supporting framework 10, 12, etc. When it is desired to shift the position of the carriage laterally, it is merely necessary for the operator to engage the lever or handle 60 and swing the same forwardly of the machine, thus disengaging the teeth 56 from the teeth 58 and freeing the carriage for lateral shifting movement.

A channel-shaped slide plate 68 is suitably secured to the cross piece 42, as shown in Fig. 4, and is provided with a foot portion 70 which slidably rests upon the upper edge of the front bar or rail 14. An angle piece 72 is suitably secured to the bar or rail 14 and is provided with a flange 74 which overlies the foot portion 70 of the slide plate 68 to retain the carriage proper in its slidable position on the stationary carriage framework. The slide plate 68 thus serves to bear the entire weight of the front portion of the carriage proper, while the slide bar 34 carries the entire weight of the rear portion of the carriage proper and these two slide members together, between them, support the entire weight of the carriage proper and afford the means whereby they are slidably supported on the carriage framework.

Referring now to Figs. 1, 3, 4 and 7, means are provided whereby independently of the locking member 54 the carriage proper may be securely fastened against lateral shifting movement thereof in any selected position. Toward these ends, each of the stationary side frame members 10 and 12 is provided with a clamping means for the slide bar 34 whereby this member may be securely clamped against the inner arm 26 of the bifurcated extension 24 thereof. Since the two clamping means just mentioned are substantially identical in construction it is thought that a description of one of them will suffice for them both. The clamping means associated with the side frame 10 includes a generally U-shaped bracket 76 which is loosely attached to one side face of the extension 24 by means of pin and slot connections 78. The bracket 76 is thus capable of limited sliding movement on the extension 24. An elongated bearing strip 80 is adapted to be inserted into the space between the slide bar 34, which rides in the bifurcation of the bracket 76, and one edge of the bracket 76 has affixed thereto a block 82 through which there extends a thumb screw 84, the inner end of which is

adapted, upon tightening of the thumb screw 84, to bear against the rear edge of the frame member 10, thus forcing the loosely mounted bracket 76 rearwardly and causing one inner edge thereof to engage the slide bar 34 and clamp it, together with the clamping strip 80, firmly against the rear arm 26 of the extension 24. In this manner, the slide bar 34, and consequently the carriage proper, is firmly clamped against lateral displacement regardless of the effectiveness or ineffectiveness of the clamping assembly including the lever 60, shaft 52 and locking member 54.

The platen assembly 86 is best illustrated in Fig. 2 wherein it is shown assembled in its entirety. This assembly is more or less conventional in its design and includes an elongated rubber-covered platen roller 88. This roller 88 has associated therewith an internal clutch mechanism (not shown) of conventional design, the function of which is to render the step-by-step indexing mechanism ordinarily associated with such platens inoperative when desired in order that a record sheet mounted on the platen may be manually adjusted to any desired position of registry with the printing line of the platen. Toward these ends, the assembly 86 also includes a central shaft 90, one end of which is rotatably journaled in an anti-friction bearing unit or assembly 92 contained within a recess 94 provided in the end plate 30 of the carriage proper. The anti-friction bearing unit 92 is removably secured to the end plate 30 by means of suitable studs 96 or the like. The other end of the shaft 90 is rotatably supported in an anti-friction unit or member 98 (Fig. 6) which is positioned within an opening 100 provided in the end plate 32 and which is similarly secured to the end plate by means of studs 102. The shaft 90 projects completely through the bearing 92 and is provided with a hand wheel 104. A clutch-operating knob 106 is also associated with this end of the platen assembly and is adapted to be pulled outwardly to the right, as shown in Fig. 2, for the purpose of releasing the internal clutch mechanism to render the indexing mechanism for the platen inoperative and to permit manual adjustment of the position of the platen. Such clutch mechanisms are well known in the art and no claim is made herein to any novelty associated with this feature.

The platen assembly 86 includes an outer sleeve 108 upon which the rubber-covered platen roller proper 88 is mounted and with which it is adapted to turn in unison. This sleeve 108 is mounted upon an inner sleeve 110 which, when the internal clutch mechanism is in full engagement, is adapted to turn in unison with the outer sleeve 108. When the inner clutch mechanism is thrown out of engagement the outer sleeve 108 is adapted to turn independently of the inner sleeve 110. The outer sleeve 108 has mounted thereon a gear 112 which appears at the left-hand side of Fig. 2. This gear is adapted to mesh with an idler gear 114 mounted on a stud 116 carried by the end plate 32. The inner sleeve 110 has mounted thereon a gear 118 which meshes with a driving gear 120 mounted on a shaft 122 which is rotatably supported in a bearing member 124 suitably supported within an opening provided in the end plate 32. The shaft 122 also has mounted thereon a ratchet wheel 126 which constitutes one element of a platen feed mechanism subsequently to be described.

From the above description it will be seen that the entire platen assembly is capable of relatively easy removal from its position within the carriage proper. To accomplish this purpose, it is merely necessary to remove the studs 96 and shift the entire platen assembly to the right, as viewed in Fig. 2. Upon such shifting of the platen assembly, the gears 118, 120 and the gears 112, 114 will move out of mesh and the end of the shaft 90 may be withdrawn from its bearing support in the end plate 32. The bearing unit 92 may, upon slight movement thereof to the right as viewed in Fig. 2, be withdrawn from its recess and as soon as this has been accomplished the platen assembly is free from the carriage proper.

The operating instrumentalities whereby the platen is adapted to be periodically indexed appear in Fig. 6. These operating instrumentalities are adapted to be set into operation periodically upon actuation or depression of a pivoted arm or lever 128 which carries a square attachment stud 130 adjacent its outer end. The stud 130 is adapted to be connected to an actuating link (not shown) which depends downwardly therefrom and is operatively associated with the internal mechanism of the tabulating machine with which the present carriage assembly is associated. These platen indexing instrumentalities are also adapted to be actuated upon depression of a lever 132 (Fig. 1) which similarly carries attaching means 133 for a second link (not shown), also operatively connected to the internal operating instrumentalities of the tabulating machine.

The two operating levers 128 and 132, which alternatively control the indexing of the platen, are situated on opposite sides of the carriage proper. The lever 128 is mounted upon and movable with a rock shaft 134 (Figs. 4 and 6) which passes through the end plate 32 and extends partway across the machine and has its end rotatably journaled in a block 136 which is secured to the cross bar 38 by means of a stud 138. The shaft 134 has attached thereto an elongated rib 140 which cooperates with a forked member or arm 142 secured to a transverse shaft 144 that extends between the two side frame members 10 and 12 adjacent the rear of the machine. The other operating lever 132 is affixed to this latter shaft.

The lever 128 constitutes one element of a ratchet type indexing control for the platen. This lever is the main operating lever for the ratchet control and it is adapted to be directly operated through the square attachment stud 130 or indirectly operated by depression of the lever 132 which, upon such depression, causes rocking of the shaft 144 and cooperation between the forked member 142 or rib 140 to translate rocking motion to the shaft 144 and consequent angular movement of the lever 128, all in a manner similar to that illustrated and described in the above mentioned patent to Peirce.

Referring now to Fig. 6, the main operating lever 128 is of the bell crank type and includes an operating arm 146 on which the attachment stud 130 is mounted and a vertical arm 148 which carries an operating pin 150 adjacent its upper end. The operating pin extends through a slot 152 provided medially of a pawl arm 154 loosely mounted on the rock shaft 134. The pawl arm 154 is normally maintained in a retracted position by means of a tension spring 156, one end of which is anchored to an elongated pin 158 carried on the end plate 32. The upper end of the pawl arm 154 has pivoted thereto as at 160 a pawl

element 162 having a pawl tooth 164 designed for cooperation with the ratchet wheel 126 for single, double or triple indexing purposes wherein the record media associated with the platen is advanced one, two or three spaces, as the case may be. The pawl element 162 is generally of angular design and includes a depending arm or finger 166 designed for engagement with a second finger 168 mounted on a pin 170 carried at the lower end of a depending arm 172 formed on an index setting member 174. This latter finger 168 serves as a limit stop for the pawl element 162 to determine the normal retracted position of this latter element. The pawl element 162 is normally biased in a clockwise direction, as viewed in Fig. 6, about the axis of its pivotal point 160 by means of a leaf spring 176 which is anchored to a pin 178 carried at the upper end of the pawl arm 154. Since, however, this latter arm 154 is normally biased by means of the spring 156 to a retracted position and since the spring 156 is stronger than the spring 176, it exerts a predominating influence on the pawl arm 154 so that as the finger 168 bears against the finger 166 the pawl element 162 is brought to a retracted position wherein the tooth 164 thereof is out of engagement with the teeth on the ratchet wheel 126. It will be seen that upon rocking of the lever 128 about the axis of the rock shaft 134 in a clockwise direction, the pawl arm 154 will be swung to the right, thus carrying with it the pawl element 162 which, upon such movement of the arm 154, will be moved in a clockwise direction relative to the arm on which it is mounted until the tooth 164 thereof engages the ratchet wheel 126. The index setting member 174 is pivoted as at 180 to the end plate 32 and includes an adjusting arm 182, the outer end of which is provided with a series of three openings or holes 184 adapted upon manual adjustment of the member 174 to selectively receive therethrough a locking pin 186 which projects through an opening formed in the end plate 32 and which carries an operating knob 188 (Fig. 2) which is positioned inside the end plate 32. The operating knob and pin have associated therewith an internal spring arrangement whereby the pin is normally biased so that it will project completely through the opening provided in the end plate 32 and be selectively received in one of the three holes 184 formed in the index setting member 174.

The three holes 184 are so arranged that when they are shifted into register with the locking pin 186 different initial settings of the pawl arm 154 and pawl element 162 carried thereby will be attained. The three holes 184 have been labeled 1, 2 and 3 to conform to the number of the respective index settings. When the hole labeled 1 is in register with the locking pin 186, the finger 168 will occupy an extreme position toward the right, as viewed in Fig. 6, so that when the lever 128 is manipulated the pawl tooth 164 will engage one tooth on the ratchet wheel 126 and, during its operative stroke, index the platen one position. When the hole labeled 2 is in register with the locking pin 186 and the lever 128 is manipulated, the tooth 164 on the pawl element 162 will engage a different tooth on the ratchet wheel 126 and index the platen two positions. Similarly, when the hole labeled 3 is in register with the locking pin 186 and the lever 128 is operated, the tooth 164 of the pawl element 162 will engage still another tooth on the ratchet wheel 126 to index the platen three positions.

In order to stabilize the indexing operations of the platen so that each operation will be uniform, a spring-pressed biasing element 190 is pivoted as at 192 to the end plate 32 and carries at its free end a biasing roller 194 which bears against the surface of the ratchet wheel 126 so that the indexing operations are clear and distinct one from another.

While the biasing member 190 ordinarily will serve to prevent overthrow of the platen when single indexing operations are resorted to, this member cannot always be relied upon to prevent such overthrow operations when double and triple indexing operations are resorted to. To insure that no such overthrow operation shall be encountered during such double and triple indexing operations, an overthrow clutch mechanism is associated with the platen and is adapted to be rendered operative only when double or triple indexing operations are resorted to.

The overthrow clutch mechanism just referred to includes a friction clutch element 196 (Figs. 6 and 8) which is mounted upon a drum 198 which is in turn carried by the shaft 122. This clutch is capable of turning movement relative to the ratchet wheel 126 but is restrained from such relative turning movement by a predetermined degree of frictional resistance with respect to the drum 198. The friction clutch element 196 also has associated therewith a ratchet wheel 200, the teeth of which are presented in a direction opposite to the presentation of the teeth formed on the ratchet wheel 126. These latter teeth, which are associated with the friction clutch element 196, are adapted to be engaged by a pawl tooth 202 carried on a holding pawl 204 but only when the index setting member 174 is set for double or triple spacing purposes. In the other position of the index setting member, the pawl tooth 202 and clutch arrangement above described remains inoperative.

Toward these ends, the pawl arm 204 is loosely pivoted on the rock shaft 134 and is provided with a downwardly extending lug 206 to which there is attached one end of a biasing spring 208, the other end of the spring being attached to the pin 158. Thus the holding pawl 204 is normally urged in a clockwise direction, as shown in Fig. 6, under the influence of the spring 208. The operating pin 150 which projects through the slot 152 in the pawl arm 154 also projects through a similar slot 210 formed in the holding pawl 204 and, since this pawl is biased in a clockwise direction, the left-hand edge of the slot 210 normally bears against the operating pin 150. Therefore, the movement of the pawl 204 follows the movement of the operating pin 150 which moves under the control of either of the arms 128 or 132.

When the index setting member 174 is set for double or triple spacing functions, the pawl arm 204 is free to move into engagement with the teeth provided on the ratchet wheel 200 at such times as either of the operating arms 128 or 132 is actuated. When, however, the index setting member 174 is set for single spacing purposes, as in the position shown in Fig. 6, the pawl arm 204 is restrained during forward movement of the arms 128 or 132 by means of a latch member 212.

Toward these ends, the latch member 212 is pivoted on a stud 214 mounted on the end plate 32. A pin 213, which projects upwardly from the latch member 212 (Fig. 8), is adapted to be engaged by a biasing leaf spring 215 anchored to the pivotal point 180 and in this manner the latch

member 212 is normally urged downwardly to the position shown in Fig. 6 wherein the pawl arm 204 is restrained or maintained in its inoperative position. The index setting arm 174 is provided with a slot 216 therein through which the stud 214 projects and this slot affords a clearance for the stud in order that the arm 174 may have freedom of movement to any of its selected preset positions. The latch member 212 is provided with a slot 218 therein through which there projects a pin 220 which is mounted on the index setting member 174. Whenever the index setting member 174 is set to its single spacing position, the pin 220 carried thereby has no effect upon the latch member 212. Upon setting of the index arm 174 for either double or triple spacing operations, the pin 220 carried thereby exerts a camming effect upon the upper edge of the slot 218, thus elevating the latch member 212 and preventing the latter from moving into its holding position during indexing operations. With the latch member 212 thus elevated and held against lowering movement, the holding pawl 204 is free to move forwardly during indexing operations and engage the teeth of the ratchet wheel 200 and render the clutch element 196 effective to prevent platen overthrow.

Various extraneous disclosures have been made in Fig. 6 which are beyond the scope of the present invention. For example, the ratchet wheel 126 is shown as being provided with a series of laterally extending, radially disposed clutch teeth. These teeth and other incidental disclosures appearing in the present drawings are effective in connection with an automatic carriage control device, the subject matter of which will be presented in a companion application subsequently to be filed.

The record or work table 46 for the machine, upon which the record media is adapted to be supported and over which it is fed to the platen assembly, is illustrated in Figs. 1, 2, 3 and 4. This table occupies an inclined position within the machine confines and is of the floating type, that is to say, it is possessed of limited sliding movement in its own plane to accommodate varying thicknesses of record media ranging from single sheets to thin booklets or pamphlets. The work table 46 involves in its general organization a light sheet metal tray-like structure including an inclined table portion 250 which is provided with downwardly extending side flanges 252 extending along the side edges thereof adjacent the rear portion of the machine. A depending rear flange 254 extends along the back of the tray-like structure. A pair of brackets 256 secured to the side flanges 252 project rearwardly of the tray structure and carry an elongated guide roller 258 which is coextensive with the table and is freely supported for rotation between the two brackets 256. A pair of paper guides 260 of conventional form are positioned upon the table portion 250 and are adjustable laterally therealong and are adapted to be clamped in any desired position by means of thumb screws 262, the ends of which when tightened bear against a transverse rod 264 extending between the brackets 256. The paper guides 260 are provided with slots 266 across which there may, if desired, be placed weighted paper retaining rods or the like 267.

The forward portion of the paper table 46 is provided with a series of openings 268 to accommodate an equivalent number of adjustable auxiliary paper rollers 270, the nature and function of which will be made clear presently. The extreme forward portion of the paper table 46 is curved upwardly as shown at 272 and in general this latter curved portion of the paper table conforms in curvature to the cylindrical contour of the platen proper. The table portion 250 of the paper table 46 is provided with a series of relatively small slots 274 therein, which slots are spaced transversely across the table and, as shown in the present instance, are six in number. These slots are adapted to loosely receive therein and guide the tapered ends 276 of a series of leaf springs 278. Each of these leaf springs is loosely anchored as at 280 by means of loosely set rivets 282 that project through small apertures provided in the curved forward portion of the paper table. The tendency of the leaf springs 278 is to bear upwardly against the underneath side of the platen and guide the record media in its arcuate path around the platen. These arcuate leaf springs may thus be said to have a floating support upon the paper table and they are so designed as to yield slightly when record media of different thicknesses are encountered.

The paper table itself has a floating support within the framework of the machine or in other words, it is possessed of limited motion in its own plane to accommodate different thicknesses of work material. Toward this end, a series of slots 284 are formed at various points across the width of the table and each of these slots serves to receive therein a mounting screw 286 which is threadedly received in the cross bar 44. The forward regions of the table have secured thereto a series of brackets 287 having downwardly projecting arms or extensions 288 provided with apertures through which there extend a series of guide pins 290. These latter guide pins serve to retain the forward region of the carriage in position within the machine, while at the same time permitting limited floating movement of the latter.

The paper table 46 is formed with an elongated transverse depression 292 which extends along the rear edge thereof. A suitable work scale 294 is riveted or otherwise secured in this depression for reference purposes. The paper table 46 is normally urged in its own plane in a rearward direction in order that the curved portion 272 thereof will cooperate with the platen roller 88. To accomplish this, a pair of leaf springs 296 (Fig. 3) are attached to the cross bar 44 and the end thereof bear against the ends of the downwardly extending side flanges 252.

Means are provided whereby the paper table 46 may be locked in any one of three different positions relative to the platen assembly. Toward this end, a pair of oppositely disposed, narrow slots 298 are formed in the downwardly extending side flanges 252 and serve to receive therein the ends of an elongated rod 300 (see Figs. 1 and 3). The rod 300 is slidably received between a plurality of pairs of guides 302 formed on a plurality of bars 304 that project rearwardly from the cross bar 44 and are shiftable laterally between these guides, while at the same time being slidable in the slots 298. The rod 300 is provided with a notch 306 adjacent each end thereof, these notches having stepped portions of different depth designed for sliding engagement with the edges of the slots 298. Because of the fact that the rod 300 is maintained between the guide portions 302 against lateral shifting movement relative to the framework of the machine, it will be seen that by shifting the rod 300 laterally a camming action will be exerted on the paper table as a

whole, thus moving the same to any one of its three selected positions to accommodate record media of varying thicknesses. It is to be noted that while ordinarily a thin record media or a fairly thick one may be fed to the machine when the paper table is in its rearmost position without adjusting the position of the rod 300, this rod is provided for the purpose of manually locking the paper table in its foremost position wherein there is maximum clearance between the curved portion 272 thereof and the platen roller 88.

Referring now to Figs. 3 and 4, the adjustable auxiliary paper rollers 270, of which there are five in number and which project upwardly through the openings 268 provided in the work table 46, are preferably of resilient material, such as rubber, and are mounted upon an elongated tubular shaft 308 journaled at its opposite ends in a pair of anti-friction bearings 309 carried on a pair of cradles 310. End screws or plugs 312 associated with the anti-friction bearings 309 serve to center the shaft in position in order that the rubber paper rollers 270 may be accurately aligned with the openings 268 through which they project. The cradles 310 are formed with sleeve portions 314 which are mounted for limited rocking movement on a pair of studs 316 supported from the end plates 30 and 32. Each of the sleeves 314 is provided with a rearwardly extending curved arm 318. The arm 318 at the right-hand side of the carriage, as viewed in Figs. 2 and 3, is pivotally connected as at 320 to a curved link 322. The upper end of the link 322 is provided with a straight guide portion 324 which is received in and guided by a pair of oppositely disposed slots 326 formed in respective guide posts 328.

An elongated rod or rock shaft 330 is pivotally supported between the two end plates 30 and 32 and extends transversely across the machine medially beneath the level of the work table 46. At the right-hand end of the carriage the shaft 330 carries a sleeve 332 from which there projects rearwardly and upwardly an arm 334, the free end of which is pivotally secured as at 336 to a slide member 338. The upper end of the slide member 338 is slidably received in a pair of opposed slots 340 formed in the guide posts 328. A pin 342 formed on the slide member 338 overlies an arcuate cam surface 344 provided on an operating lever 346 which is pivotally mounted on a stud 348 mounted on the end plate 32. Thus it will be seen that as the operating lever 346 is swung from its full line to its dotted line position, as shown in Fig. 3, the camming action of the cam portion 344 thereof will cause the pin 342, and consequently the slide member 338, to become elevated, thus causing the rod or rock shaft 330 to turn to slight angular distance under the influence of the arm 334 connected thereto. A coil spring 350 is pivotally connected at one end to the operating lever 346 and at the other end to a pin 352 mounted on the end plate 32, and thus the operating lever 346 is normally maintained in its retracted position wherein the rear edge thereof abuts against one of the guide posts 328. The operating lever 346 has suitably secured thereto adjacent its upper end an operating handle 354.

The rock shaft 330 has mounted thereon a lever 356, the extreme outer end of which underlies the pivotal point 320 between the two curved links 318 and 322, and thus it will be seen that as the operating lever 346 is moved from its retracted to its advanced position, the slide member 338 will be moved upwardly, as previously described, to rock the shaft 330 throughout a limited degree of angular movement. This rocking of the shaft 330 will cause the lifting lever 356 to engage the pivotal point 320 between the two curved links 318 and 322, thus lowering the cradle 310 and causing the rubber auxiliary rollers 270 to become lowered away from the platen roller 88.

At the left-hand end of the carriage, as viewed in Fig. 2, a similar condition obtains wherein a lifting lever 358 (Fig. 5) similar to the lever 356, is mounted on the elongated rod 330 and bears against a pivotal connection 360 existing between a curved arm 362 similar to the curved arm 318 and a slide rod 364, similar to the slide member 338 and similarly mounted in the machine. Thus upon tilting of the operating lever 346, both cradles 310 are lowered so as to cause all of the auxiliary rollers 270 to be lowered away from the platen roller 88 in unison.

Referring now to Figs. 3 and 5, a pair of supporting studs 366 are anchored to and depended downwardly from the opposite ends of the cross bar 42 and serve to support therebetween an elongated rod 368. A plurality of cradles 370 serve to rotatably support therebetween a plurality of front auxiliary rollers 372. A plurality of leaf springs 374, each of which serves to accommodate two adjacent cradles, are secured medially of their ends as at 376 to the cross bar 42. The extreme outer ends of these leaf springs 374 bear against their respective cradles and serve to maintain the front auxiliary rollers 372 supported thereby normally in frictional engagement with the platen roller 88.

An additional pair of cradles 378 are provided adjacent the extreme ends of the rod 368 and serve to support therebetween a horizontal bar 380 which in its normal position closely overlies the bar 42. The cradles 378 are provided with cam surfaces 382 designed for camming engagement with pins 384 formed at the outer end of a pair of arms 386 which form a part of the auxiliary roller carrying cradles 310. Thus it will be seen that as the cradle 310 is lowered in the manner previously described upon operation of the lever 346, the bar 380 is swung outwardly to the position indicated in dotted lines in Fig. 3 and in so moving its forward edge bears against all of the cradles 370 and causes them to be swung outwardly so that the rollers 372 carried thereby are withdrawn from the platen roller 88. It will be seen, therefore, that movement of both the auxiliary roller 270 and of all of the front auxiliary rollers 372 is controlled in common by manipulation of the operating lever 346.

Referring now to Fig. 3, the operating lever 346 carries a square stud 388 thereon designed for cooperation with a latch member 390 pivoted on a stud 392 carried by the end plate 32. The latch member 390 is provided with an operating finger 394. A spring 396 serves to maintain the latch member in a normal position wherein the finger 394 bears against a stop member 398 mounted on the end plate 32. Thus the operating lever 346 will, when it is moved to its retracted position, be maintained in this position until such time as it is manually released by the latch member 390.

Referring now to Figs. 2 and 4, the studs 316 which are mounted on the end plates 30 and 32 serve to rotatably support therebetween an elongated paper guide rod 400 which overlies and is slightly spaced from the upper surface of the inclined paper table 46.

A removable bar **402** has one end thereof received in an aperture formed in a bracket **404** secured to the end plate **30** and has its other end received in a slot **406** formed in the end plate **32**. A spring-pressed locking element **408** serves to removably maintain the end of the bar **402** in the slot **406**. A plurality of laterally adjustable paper retaining elements **410** are mounted on the bar **402** and may be moved to any desired position therealong for reference purposes. These elements are provided with depending spring fingers **412**, the lower ends of which overlap and bear against the extreme forward edge of the paper table **46**.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit of the invention. Only insofar as the invention has been particularly pointed out in the accompanying claims is the same to be limited.

What is claimed is:

1. In a typewriting machine of the character described, a rotary platen assembly including a platen, a ratchet wheel and a drum, all of which are rotatable in unison, a driving pawl for said ratchet wheel, means for actuating said pawl to index the platen, means for selectively presetting said pawl whereby upon actuation thereof the extent of its stroke will be varied to effect single or plural spacing indexing operations of the platen, a friction member mounted on said drum and normally rotatable therewith, said member being operable when maintained stationary to retard the movement of the drum and thus prevent overthrow of the platen, a ratchet wheel carried by said friction member, a holding pawl movable upon actuation of said driving pawl from an inoperative position wherein it is out of engagement with said latter ratchet wheel to an operative position wherein it is in holding engagement with the latter, means operable upon presetting of said driving pawl for single spacing operations to prevent movement of said holding pawl to its operative position, and means operable during actuation of said driving pawl when the latter is preset for plural spacing operations to move said holding pawl to its operative position.

2. In a typewriting machine of the character described, a rotary platen assembly including a platen, a ratchet wheel and a drum, all of which are rotatable in unison, a driving pawl for said ratchet wheel, means for actuating said pawl to index the platen, means for selectively presetting said pawl whereby upon actuation thereof the extent of its stroke will be varied to effect single or plural spacing indexing operations of the platen, a friction member mounted on said drum and normally rotatable therewith, said member being operable when maintained stationary to retard the movement of the drum and thus prevent overthrow of the platen, a ratchet wheel carried by said friction member, a holding pawl movable during actuation of said driving pawl from an inoperative position wherein it is out of engagement with said latter ratchet wheel to an operative position wherein it is in holding engagement with the latter, means operable when said driving pawl is preset for plural spacing operations and upon actuation of the latter for moving said holding pawl to its operative position, and means operable when said driving pawl is preset for single spacing operations for preventing such movement of said holding pawl.

3. In a typewriting machine of the character described, a rotary platen assembly including a platen, a ratchet wheel and a drum, all of which are rotatable in unison, a driving pawl for said ratchet wheel, means for actuating said pawl to index the platen, means for selectively presetting said pawl whereby upon actuation thereof the extent of its stroke will be varied to effect single or plural spacing indexing operations of the platen, a friction member mounted on said drum and normally rotatable therewith, said member being operable when maintained stationary to retard the movement of the drum and thus prevent overthrow of the platen, a ratchet wheel carried by said friction member, a holding pawl movable during actuation of said driving pawl from an inoperative position wherein it is out of engagement with said latter ratchet wheel to an operative position wherein it is in holding engagement with the latter, means operable when said driving pawl is preset for plural spacing operations and upon actuation of the latter for moving said holding pawl to its operative position, and a latch member operable when said driving pawl is preset for single spacing operations to move into engagement with said holding pawl and prevent movement of the same.

4. In a typewriting machine of the character described, a rotary platen assembly including a platen, a ratchet wheel and a drum, all of which are rotatable in unison, a driving pawl for said ratchet wheel, means for actuating said pawl to index the platen, means for selectively presetting said pawl whereby upon actuation thereof the extent of its stroke will be varied to effect single spacing, double spacing or triple spacing indexing operations of the platen, a friction member mounted on said drum and normally rotatable therewith but adapted when held against rotation to retard said drum and prevent overthrow of the platen, a ratchet wheel carried by said friction member, a holding pawl movable from an inoperative position wherein it is out of engagement with said latter ratchet wheel to an operative position wherein it is in holding engagement with the latter, means operable upon presetting of said driving pawl for single spacing operations to prevent movement of said holding pawl to its operative position, and means operable during actuation of said driving pawl when the latter is preset for double or triple spacing operations to move said holding pawl to its operative position to prevent overthrow of the platen.

5. In a typewriting machine of the character described, a rotary platen assembly including a platen, a ratchet wheel and a drum, all of which are rotatable in unison, a driving pawl for said ratchet wheel, means for actuating said pawl to index the platen, means for selectively presetting said pawl whereby upon actuation thereof the extent of its stroke will be varied to effect single spacing, double spacing or triple spacing indexing operations of the platen, a friction member mounted on said drum and normally rotatable therewith but adapted when held against rotation to retard said drum and prevent overthrow of the platen, a ratchet wheel carried by said friction member, a holding pawl movable upon actuation of said driving pawl from an inoperative position wherein it is out of engagement with said latter ratchet wheel to an operative position wherein it is in holding engagement with the latter, means operable during actuation of said driving pawl when the latter is preset for double or triple spacing operations for moving said holding pawl to its

operative position, and a latch member operable upon presetting of said driving pawl for single spacing operations to engage said holding pawl and prevent movement of the latter to its operative holding position.

6. In a typewriter carriage of the character described, a rotary printing platen, manually settable ratchet mechanism selectively operable to index the platen for single or plural spacing of a record medium associated with the platen, means for actuating said ratchet mechanism for either single or plural spacing operations, friction means automatically operable during actuation of said ratchet mechanism when the latter is preset for plural spacing operations to prevent overthrow of the platen, and latch means operable when the ratchet mechanism is preset for single spacing operations to prevent operation of said friction means.

OTTO THIEME.

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