March 29, 1955 H. M. FLEMING 2,705,068

SPLIT PLATEN PAPER FEED MECHANISM

Filed Aug. 21, 1953

3 Sheets-Sheet 1

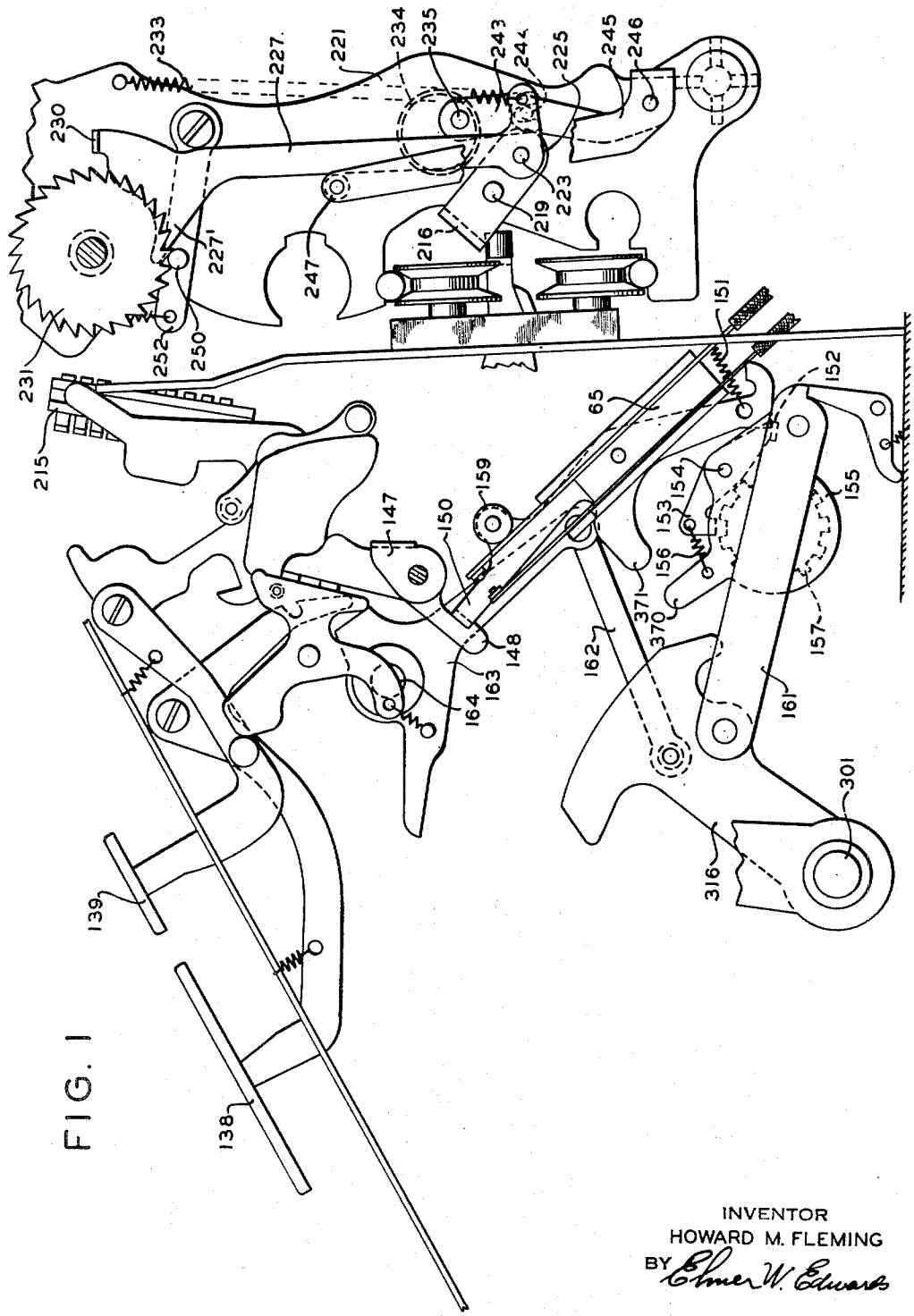


FIG. 1

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3 Sheets-Sheet 2

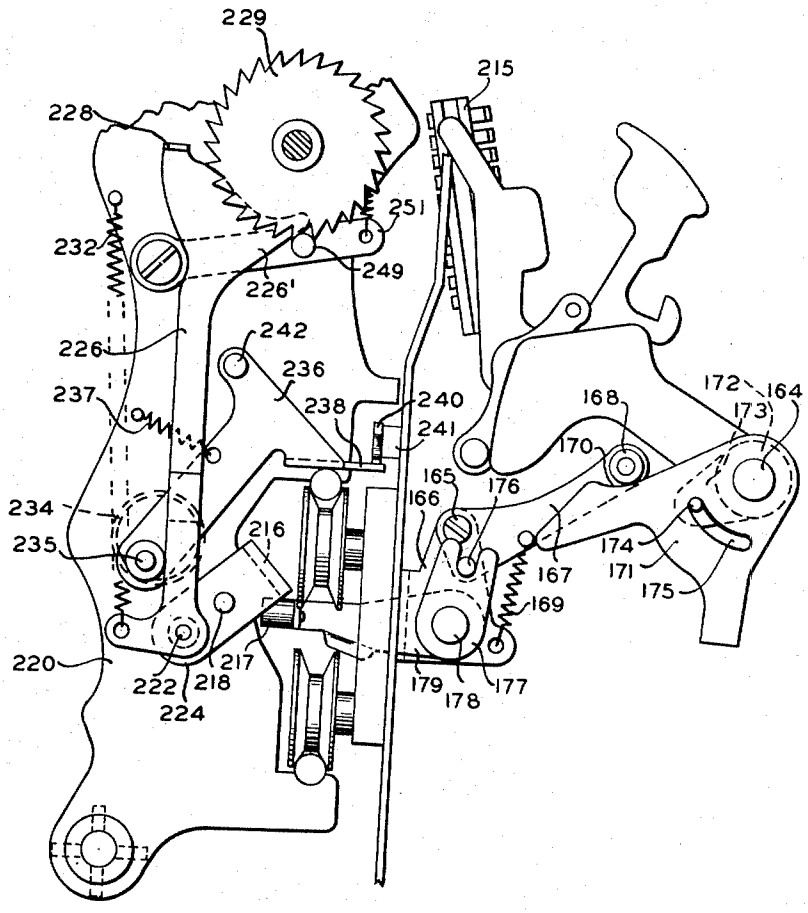


FIG. 2

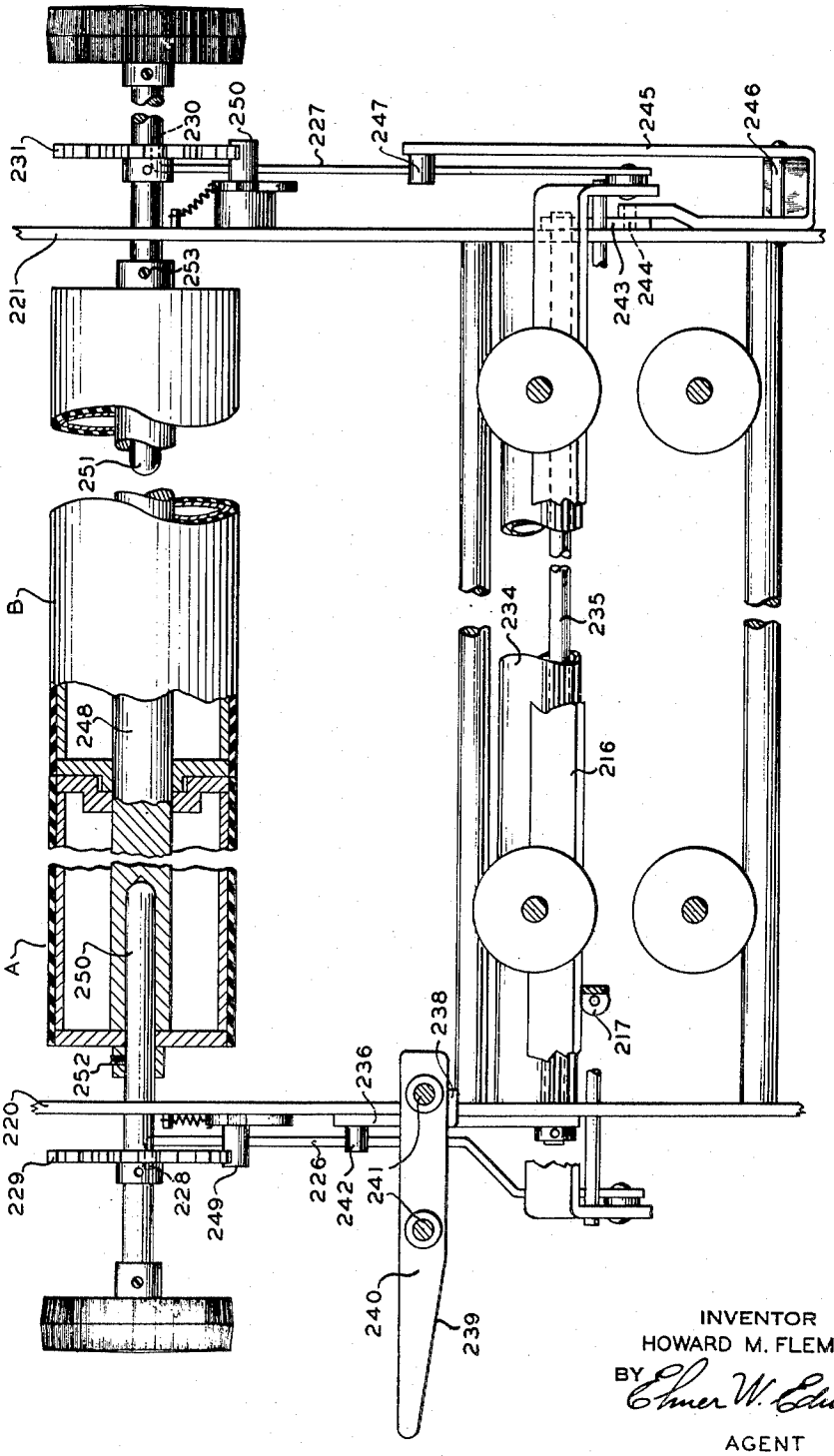
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FIG. 3



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SPLIT PLATEN PAPER FEED MECHANISM

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5 Claims. (Cl. 197—129)

The present invention relates to paper feed mechanism for printing calculating machines or the like and more particularly to an improved means for advancing alternatively one or the other of separate record sheets supported independently upon a two part platen mounted within the shiftable carriage of said machines.

It is known in the art to employ independent split platen feed devices, one located on each of the end frames of the shiftable carriage and to operate selectively one or the other of said devices through means of a split actuating bail on the carriage wherein each section of said bail is brought into active cooperation with suitable cyclic power operating means of the base structure of the machine in accordance with the lateral position of the carriage. It may occur, however, in such feed device that under certain conditions, a carriage movement might be effected while the cyclic means in operating one section of the split feed bail is displaced out of alignment with the other section of the bail and this could cause interference with the carriage movement and possible damage to the parts. Also, unless special means are provided, it would be possible that one section of the feed bail might become positioned on the wrong side of the stroke movement of the cyclic operating means for the bail.

Other means well known to the art employ a single actuating feed bail which extends completely across the carriage and include cam means located on each side of the base structure of the machine adapted to cooperate with related suitably spaced rollers on the carriage to selectively enable and disable each of the platen feed devices. In such means when one portion of the split platen is moved into relation with the printing hammers one of the rollers engages its related cam means and enables operation of the corresponding feed device while at the same time the other roller moves out of engagement with its cam and so disables the operation of the feed devices related to the other portion of the split platen. Such means however, require long extended cams and require proper clearance of parts to permit the rollers to move across the base structure of the machine.

An object of the present invention is the provision of improved means whereby split platen dual feed devices located one on each side of the shiftable carriage are controlled from one side of the base structure only, and in such manner that as one feed means is rendered effective the other will be rendered ineffective.

Among other advantages of the invention apparent from the following description is the elimination of such disadvantages above set forth in the heretofore known art.

With this and other incidental objects in view, the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in the appended claims, and a preferred embodiment of which is hereinafter described with reference to the drawings which accompany and form part of the specification.

In the drawings:

Fig. 1 is a right side elevation of the cyclic clutch control means and showing the paper feed devices related to the right hand section of the platen.

Fig. 2 is a left side elevation showing the paper feed devices for the left hand section of the platen.

Fig. 3 is a fragmentary front elevation of the platen carriage showing the split platen and controls therefor.

The invention is shown as applied to a listing calculating machine of well known type, such as disclosed in U. S. Patent 1,946,572 issued April 28, 1932 to Loring P. Crosman entitled "Listing Calculator," and insofar as is practicable, like parts herein will be numbered in accordance with said patent.

It will be sufficient to say that, in operation, amounts set up on the usual digit keyboard are accumulated in one or more registers, either additively, by engagement of a register during the upward stroke, or subtractively, by engagement thereof during the downward stroke of reciprocatory actuating segments. The extent of movement of each segment is determined by the value of the corresponding set digit key, and type bars, connected with the segments are designed to bring type of corresponding values to the printing line. The record sheet and platen are supported in a transversely shiftable carriage, mounted upon a plurality of flanged rollers secured to the rear framing of the base structure of the machine, so that the accumulated values may be printed in any one of several columns. The accumulating printing and carriage shifting operations are preferably performed by power means under control of suitable operating keys.

As fully described in the aforementioned patent an operation of the plus or minus keys **138**—**139** will rock a latch lever **147** to disengage the hook end **148** thereof from the clutch release lever **150**.

Disengagement of hook **148** from lever **150** will cause said lever, under influence of a spring **151** to be rocked out of engagement with the projection **152** of a pawl **153**, pivotally mounted at **154** upon the crank arm **155**, and cause said pawl under influence of its spring **156** to be rocked into engagement with a notched disc **157** having suitable drive connections with an electric motor.

During the above-described movement of lever **150**, an insulated roller **159** mounted thereon will effect engagement of the motor switch **65** and initiate an operating cycle of the machine.

During an operating cycle of the machine, crank arm **155**, having link connection **161** with a cam arm **316** fast to a transverse shaft **301** will impart reciprocating movement to said cam. Cam **316** has link connection **162** with an arm **163** fast to a second transverse shaft **164** so that said movement of the cam **316** is transmitted to shaft **164** to effect an operation of the paper feed devices, in the manner to be described. Near the end of a cycle of operation a projection **370** of crank arm **155** will contact an arm **371** of lever **150** and rock said lever into the path of movement of the projection **152** of clutch pawl **153** to disengage said pawl from driving disc **157** for terminating the operation.

Pivotally mounted at **165** (Fig. 2) upon a bracket **166**, suitably secured to the rear casing of the machine, is a bell crank lever **167** provided with a roller **168**, held by tension of a spring **169** against the surface **170** of an arm **171**, loosely secured to a shouldered hub **172** of an arm **173** fast to the shaft **164**.

Arm **173** is provided with a pin **174** having engagement with a slotted opening **175** of arm **171**. During an operation of shaft **164** by the forward movement of cam **316** said pin is carried downwardly and arm **171** is allowed to fall away from roller **168** to allow lever **167** to be rocked downwardly by spring **169**.

A pin **176** fast to lever **167** has engagement with a lever **177** fast to a short shaft **178** mounted in bracket **166** which pin, during said movement of lever **167**, will rock lever **177** and shaft **178** in a counterclockwise direction, as viewed in Fig. 2.

Secured to the shaft **178** is an arm **179** provided at its free end with a roller **217** underlying a transverse bail **216** pivotally mounted at **218**—**219** (Figs. 1 and 2) upon the left and right hand end plates **220**—**221** of the platen carriage. Roller **217** normally holds the bail **216** in raised position and during the above operation of shaft **178** arm **179** carries roller **217** downwardly releasing said bail for a downward movement and thereafter in a return movement of roller **217**, upon restoral of shaft **164** by cam **316**, bail **216** will effect a selective operation of the split platen paper feed devices in the manner to be described.

Pivotally mounted at **222**—**223** upon rearwardly extending arms **224**—**225**, formed by bending the left and

right hand ends of bail **216**, are upwardly extending platen indexing pawls **226—227**. Pawl **226** on the left end of bail **216** is provided with a lug **228** for cooperating with a ratchet wheel **229** fast with the left hand section A (Fig. 3) of the split platen while pawl **227** is provided with a similar lug **230** for cooperation with a ratchet wheel **231** fast with the right hand section B of the platen. Each of the pawls **226—227** is biased upwardly and toward its respective ratchet wheel by means of suitable tension springs **232—233** respectively. Indexing pawls **226—227** are provided with cam projections **226'—227'** respectively, adapted in the lowered normal condition of rest of said pawls for engagement with rollers **249—250** of suitable spring tensioned locator clicks **251—252** for the platen sections A and B to hold said pawls **226—227** out of engagement with the related ratchet wheels **229** and **231**. In the above operation of bail **216**, however, pawls **226—227** are carried upwardly and projections **226'—227'** moving away from rollers **249—250** will permit selective engagement of said pawls with their respective ratchet wheels **229, 231** under control of the means hereinafter to be described.

Means for selectively controlling paper feed devices

Supported for rotative movement within the left and right end frames **220—221** of the carriage and extending for convenience through the tubular frame spacing structure **234** of the carriage is a shaft **235**. To the left end of shaft **235** is secured a T-shaped lever **236** biased for counterclockwise movement as viewed in Fig. 2 by a spring **237**. One arm of lever **236** is provided with a projection **238** adapted in a rightward movement of the platen carriage to engage the camming edge **239** (Fig. 3) of a cam member **240** secured by studs **241** to the rear casing of the machine, and rock said lever **236** into a clockwise, or forward position, as shown in Fig. 2. Thus, when the paper carriage is positioned with the left hand section A of the platen opposite the printing type **215**, lever **236** will be held in its forward clockwise position wherein a pin **242** in said lever will be held free of the forward edge of the pawl **226**, thereby permitting said pawl under influence of spring **232** to be rocked into engagement with ratchet wheel **239**, upon operation of said pawl by the bail **216**. In a return movement of bail **216**, lug **228** of pawl **226** advances the platen A, as will be described, during which operation the projection **226** reengages roller **250** to again rock the pawl **226** out of engagement with ratchet wheel **229**.

Fast to the right hand end of shaft **235** is a downwardly extending arm **243**, the bifurcated lower edge of which embraces a pin **244** fast in one arm of a bail lever **245** pivotally mounted at **246** upon the carriage end plate **221**. The other arm of bail lever **245** is provided with a pin **247** engaging the forward edge of the pawl **227**. Thus, a movement of lever **236** and shaft **235** is transmitted to lever **245** in reverse manner through arm **242**, so that in the described forward positioning of lever **236**, lever **245** is positioned rearwardly and pin **247** will hold the pawl **227** rearwardly, whereby lug **230** is held out of engagement with the ratchet wheel **231** related to the right hand section B of the paper platen.

In forward machine cycles of operation, bail **216** permits pawls **226—227** to raise under influence of their respective springs **232—233** and the parts being in the above described position, projection **228** will advance over the serrated teeth of ratchet wheel **229** while projection **230** moves freely of ratchet wheel **231**.

Upon return movement of cam **316**, link **162** and arm **163** will rock shaft **164** clockwise as viewed in Fig. 2 and pin **174** of arm **173** will lift the lever **171** upwardly to cause the surface **170** of said lever, contacting roller **168**, to rock the lever **167** counterclockwise about point **165**, and pin **176** through lever **177** will rock shaft **178** and arm **179** clockwise. Upon clockwise movement of arm **179** roller **217** will lift the transverse bail **216** and pawls **226—227** are carried downwardly thereby, whereupon projection **228** of pawl **226** engaging ratchet wheel **229** will advance the left end section A of the platen. Projection **230** of pawl **227**, however, being held free of ratchet wheel **231** by pin **247**, will move idly so that no movement of the right end section B is effected.

In a lateral displacement leftward of the paper carriage to bring the right end section B of the paper platen opposite the printing type **215**, projection **238** of lever **236** will be carried free of cam **240**, whereupon lever **236** is caused to be rocked rearwardly by its spring **237**. Upon rearward movement of lever **236** pin **242** engages pawl **226** to prevent the described subsequent engagement of projection **228** of said pawl with the ratchet wheel **229**. Also, said movement of lever **236**, acting through shaft **235**, arm **243**, bail lever **245** and pin **247** will release the pawl **227** for a forward movement by its spring **233**, so that projection **230** of said pawl at this time will be permitted to engage with ratchet wheel **231** of the platen section B, in the subsequent operation of bail **216**, and will now operate to advance platen B while projections **228** of pawl **226** operates idly relative to ratchet wheel **229** of platen A.

The sections A—B of the split platen may vary in length relative one to the other and are mounted in known manner within the framing **220—221** of the carriage, as shown in Fig. 3, wherein each section is rotatably supported at its inner end upon a shaft or rod **248** extending the length of the platen and suitably recessed at each end for receiving stub shafts **250—251** rotatably bearinged in the end plates **220—221** of the carriage. The outer ends of each section A—B of the platen are secured by set screws **252—253** to their respective shafts **250—251**, to which shafts are also secured the ratchet wheels **229—231** as shown.

It will be obvious from the foregoing description that the novel means embodied in the present invention for controlling independent platen feed devices for the two sections of a split platen carried in the shiftable carriage from a single cam located on one side of the base structure of the machine is not limited to one particular side only, but could as well have been placed on the opposite side of the machine to that shown. Thus, since the length of the cam means **240** is directly related to the length of the related platen section, said cam means may be kept to a minimum length by being placed on that side which is related to the shorter of the two platen sections.

While the above description sets forth a preferred embodiment of the invention and the manner of use to which it is to be put, it will be understood that the invention is not limited to the precise form disclosed, but is susceptible of embodiment in various other forms.

What is claimed is:

1. In a machine of the class described the combination comprising a base structure, a laterally movable paper carriage supported thereon, a sectional platen mounted upon said carriage, each section adapted for an independent spacing operation, line spacing mechanism for each platen section including a wheel fast with each section and related indexing means for each of said wheels, an actuator common to said indexing means and cyclically operable means for imparting movement to said actuator; control means mounted on the carriage and common to all of said line spacing mechanisms, means on one end of the carriage for adjusting said control means, and operating means for said adjusting means located on said base structure and cooperable with said adjusting means at one predetermined side only of said base structure to adjust said control means, and wherein said adjustment selectively enables certain of said line spacing mechanism and disables others or vice versa in accordance with the lateral displacement of said carriage.

2. In a machine of the class described the combination comprising a base structure, a laterally movable paper carriage supported thereon, a two-part platen mounted within said carriage, line spacing mechanism for said platen parts including a ratchet wheel and operating pawl related to each part, an actuator bail extending transversely of said carriage and common to said line spacing mechanisms, cyclic operating means including a member adapted for imparting movement to said actuator bail; control means on the carriage common to both of said pawls and adapted for controlling adjustment of one of said pawls to an effective position for engagement with its related ratchet wheel while simultaneously controlling adjustment of the other of said pawls to an ineffective position relative to its related ratchet wheel, operating means for said control means located at one end of the carriage, and means on one side of said base structure cooperable with said operating means to effect an operation of said control means to selectively enable one of said line spacing means and to disable the other of said

line spacing means in accordance with a lateral displacement of said platen carriage.

3. In a machine of the class described the combination comprising a base structure, a movable paper carriage supported thereon, a two part platen mounted within the end framing of said carriage, line spacing mechanisms for said platen parts including a wheel for rotating each of said parts, a transverse bail pivoted upon the end framing of the carriage, indexing pawls for said wheels mounted each upon the related end portions of said bail and movable therewith to effect an independent spacing operation of the related platen part, and a cyclically operable member for imparting movement to said bail; control devices for said line spacing mechanisms including means upon one end frame of said carriage for enabling or disabling the related indexing pawl, means on the opposite end frame of said carriage for enabling or disabling the other of said indexing pawls, connections on the carriage including a shaft between said enabling or disabling means, an operating member for said control devices mounted upon one end of said shaft, and a cam mounted on the corresponding side of said base structure adapted for cooperation with said operating member in a lateral movement of the carriage to effect an operation of said control devices and thereby in accordance with the columnar position of said carriage selectively rendering the indexing pawls effective or ineffective relative to advancing their respective platen parts.

4. The invention in accordance with claim 3 and including reversing means in the said connections between said enabling or disabling means for the indexing pawls whereby the said enabling or disabling of one of said indexing pawls also concurrently effects an alternative adjustment of the other of said indexing pawls.

5. In a machine of the class described the combination comprising a base structure, printing means thereon, a movable paper carriage supported on said structure, a two part platen mounted within the carriage for independent rotation, line spacing mechanism for said platen

including a ratchet wheel rotatable with each of said platen parts, a transverse bail having end portions mounted for pivotal movement in the right and left end framing of said carriage, cyclically operable means including a member adapted to impart reciprocatory movement to said bail, an indexing pawl for each of said ratchet wheels mounted upon the related end portions of and movable with said bail to effect a spacing operation of the related platen part, means biasing the said pawls toward engagement with their respective ratchet wheels, means normally holding the pawls out of engagement with said wheels and adapted in the said operation of said pawls to release the pawls for a selective engagement with their related ratchet wheels, control devices for selectively controlling the path of movement of said pawls, including a shaft mounted transversely within the end framing of the carriage, a lever fast upon one end of said shaft and cooperable with one of said pawls, a second lever pivoted to the opposite carriage end framing and cooperable with the other of said pawls, an arm secured to the opposite end of said shaft to said first lever and having pivotal connection with said second lever, and cam means on one side of the base structure cooperable with the first said lever in a lateral movement of the carriage to effect an adjustment of said levers whereby the lever related to that platen part moved out of relation with the printing means will prevent engagement of the index pawl related to said platen part with its ratchet wheel while the other of said levers concurrently adjusts its related pawl for engagement with the ratchet wheel related to that platen part moved into relation with the printing means.

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